United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Research Triangle Park, NC 27711

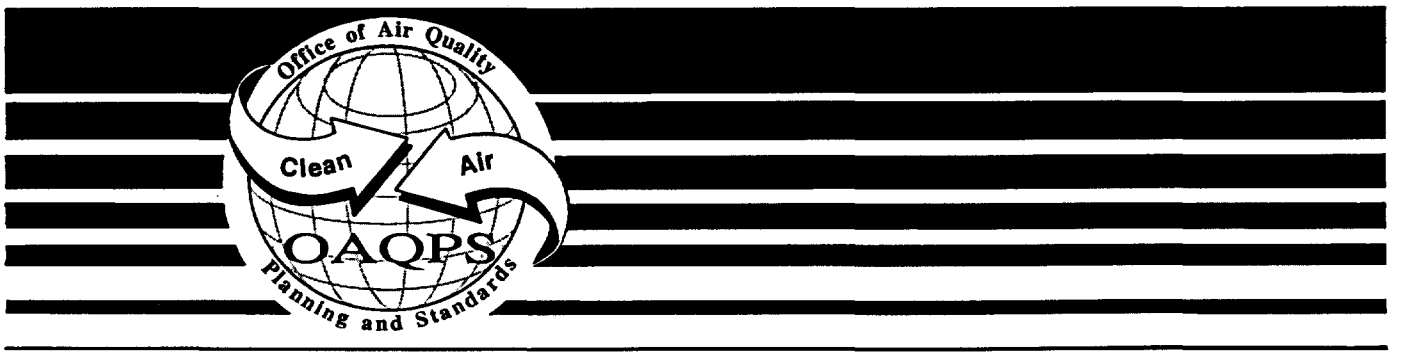
EPA-454/R-99-049
September 1999

Air

EPA

EMISSION TEST EVALUATION OF A CREMATORY AT WOODLAWN CEMETERY IN THE BRONX, NY

VOLUME II OF III



MRI

Emission Test Evaluation of a Crematory at Woodlawn Cemetery in the Bronx, NY

Appendices A—D
Volume II

For U.S. Environmental Protection Agency
Office of Air Quality Planning and Standard
Emission Measurement Center
4930 Old Page Road
Research Triangle Park, North Carolina 27709

Attn: Mr. Foston Curtis

EPA Contract No. 68-D-98-027
Work Assignment No. 2-08
MRI Project No. 4951-08

September 30, 1999

Midwest Research Institute • 425 Volker Boulevard • Kansas City, Missouri 64110-2299

DISCLAIMER

This report presents the results of a single test program at a single cremation facility. It should not be assumed that these results would characterize emissions at other cremation facilities without further study.

Contents

Appendix A

List of Samples Collected

INTEROFFICE COMMUNICATION

MIDWEST RESEARCH INSTITUTE

August 2, 1999

To: Kathy Boggess

cc: Jamie Fox and John Hosenfeld

From: Jim Surman, ext. 1441, pager 990-8556

Subject: Request for Analysis of Samples from the Emission Test Evaluation of a Crematory at The Woodlawn Cemetery in the Bronx, NY.
MRI Project Nos. 4951.08 and 5587

Note: Please distribute copies of this memo and pertinent portions of the QAPP to all staff who will be working on the samples.

The emissions tests were carried out as follows:

Run number	Date	Time	Remarks
1	06/11/99	1520-1801	Test condition at 1,400°F
2	06/12/99	1145-1411	Test condition at 1,400°F
3	06/13/99	0906-1131	Test condition at 1,400°F
4	06/13/99	1605-1835	Test condition at 1,600°F
5	06/14/99	1550-1820	Test condition at 1,600°F, no outlet samples
6	06/15/99	1045-1312	Test condition at 1,600°F
7	06/15/99	1750-2011	Test condition at 1,800°F
8	06/16/99	1540-1819	Test condition at 1,800°F
9	06/17/99	1005-1219	Test condition at 1,800°F
10	06/17/99	1602-1806	Test condition at 1,400°F, no outlet samples

Please charge all work on samples to the following project/task numbers:

4951.08.04.02 For samples from runs 1, 2, 3, 4, 5, 6, and 10. For example, sample numbers 4xxx are from run 4.

5587.04.02 For samples from runs 7, 8, and 9.

ANALYSIS

All samples are to be analyzed for PCDDs and PCDFs according to procedures in SW-846, Method 8290 as specified in the QAPP to achieve the lowest possible detection limits. This is especially important because the flow rates measured at the source were considerably lower than expected, and thus the sample volumes collected with each train were lower than those used to predict detection limits before testing started. The sample volumes collected are presented in the sample list below. The desired volumes to meet detection limits before testing began were 2.43 dsm^3 for inlet trains and 2.46 dsm^3 for outlet trains. Note that front and back rinses were recovered as separate samples in the field to minimize the size of the sample bottles used. Front and back rinses of respective trains are to be combined for analysis. Toluene QA rinse samples are to be analyzed separately.

FIELD SAMPLES SUBMITTED FOR ANALYSIS

Each table below is for a separate sampling run. Samples listed within a heavy outlined box are to be combined for one set of analytical results.

Run 1 5 analyses	Inlet train - 1.726 dsm^3		Outlet train - 1.316 dsm^3	
Sample type	Sample number	Remarks	Sample number	Remarks
Front rinses	1022*	Combine and analyze sample 1022 with inlet train samples.	1008** 1032	Combine and analyze inlet train sample 1008 with the outlet train samples.
Back rinses	1010		1034	
Filter	1009		1033	
XAD cartridge	1011	trap #12	1035	trap #16
Toluene QA rinses	1012***	Analyze as a separate sample.	1036***	Analyze as a separate sample.
Toluene QA rinses	1023****	Analyze as a separate sample.		

* Sample 1022 contains inlet train sample transfer line, probe, and nozzle rinses, but no filter holder front rinses. It was saved as a separate sample after the mix-up in the field was discovered.

** Sample 1008 contains outlet train sample transfer line, probe, and nozzle rinses that should have been placed in sample 1032. These rinses were added to the filter holder front rinses of the inlet train which were placed in the bottle first. Since analyte amounts in the filter holder rinses are expected to be insignificant, inlet sample 1008 is to be analyzed as an outlet sample.

*** Sample 1012 contains outlet train sample transfer line, probe, and nozzle QA rinses that should have been placed in sample 1036. These rinses were added to the filter holder front and back, elbow, and condenser QA rinses of the inlet train which were placed in the bottle first. Sample 1036 contains only the filter holder front and back, elbow, and condenser QA rinses of the outlet train.

**** Sample 1023 contains inlet train sample transfer line, probe, and nozzle QA rinses, but no filter holder front QA rinses.

Run 2 4 analyses	Inlet train - 1.739 dsm^3		Outlet train - 1.391 dsm^3	
Sample type	Sample number	Remarks	Sample number	Remarks
Front rinses	2008		2032	
Back rinses	2010		2034	
Filter	2009		2033	
XAD cartridge	2011	trap #18	2035	trap #15
Toluene QA rinses	2012		2036	

Run 3 4 analyses	Inlet train - 1.983 dsm^3		Outlet train - 1.592 dsm^3	
Sample type	Sample number	Remarks	Sample number	Remarks
Front rinses	3008		3032	
Back rinses	3010		3034	
Filter	3009		3033	
XAD cartridge	3011	trap #5	3035	trap #7
Toluene QA rinses	3012		3036	

Run 4 4 analyses	Inlet train - 2.730 dsm^3		Outlet train - 1.476 dsm^3	
Sample type	Sample number	Remarks	Sample number	Remarks
Front rinses	4008		4032	
Back rinses	4010		4034	
Filter	4009		4033	
XAD cartridge	4011	trap #11	4035	trap #6
Toluene QA rinses	4012		4036	

Run 5 2 analyses	Inlet train - 2.263 dsm^3		Outlet train - no samples	
Sample type	Sample number	Remarks	Sample number	Remarks
Front rinses	5008			Samples not recovered.
Back rinses	5010			Train failed final leak checks.
Filter	5009			
XAD cartridge	5011	trap #3		trap #9
Toluene QA rinses	5012			

Run 6 4 analyses	Inlet train - 2.126 dsm^3		Outlet train - 1.786 dsm^3	
Sample type	Sample number	Remarks	Sample number	Remarks
Front rinses	6008		6032	
Back rinses	6010		6034	
Filter	6009		6033	
XAD cartridge	6011	trap #17	6035	trap #13
Toluene QA rinses	6012		6036	

Run 7 4 analyses	Inlet train - 1.926 dsm^3		Outlet train - 1.473 dsm^3	
Sample type	Sample number	Remarks	Sample number	Remarks
Front rinses	7008		7032	
Back rinses	7010		7034	
Filter	7009		7033	
XAD cartridge	7011	trap #23	7035	trap #4
Toluene QA rinses	7012		7036	

Run 8 4 analyses	Inlet train - 2.386 dsm^3		Outlet train - 1.826 dsm^3	
Sample type	Sample number	Remarks	Sample number	Remarks
Front rinses	8008		8032	
Back rinses	8010		8034	
Filter	8009		8033	
XAD cartridge	8011	trap #19	8035	trap #22
Toluene QA rinses	8012		8036	

Run 9 4 analyses	Inlet train - 1.943 dsm^3		Outlet train - 1.402 dsm^3	
Sample type	Sample number	Remarks	Sample number	Remarks
Front rinses	9008		9032	
Back rinses	9010		9034	
Filter	9009		9033	
XAD cartridge	9011	trap #8	9035	trap #2
Toluene QA rinses	9012		9036	

Run 10 2 analyses	Inlet train - 1.776 dsm^3		Outlet train - no samples	
Sample type	Sample number	Remarks	Sample number	Remarks
Front rinses	10008			Samples not recovered.
Back rinses	10010			Train failed final leak checks.
Filter	10009			
XAD cartridge	10011	trap #24		trap # - don't know
Toluene QA rinses	10012			

REAGENT BLANK SAMPLES TO BE ARCHIVED

Sample type	Sample number
Acetone	1054
Methylene chloride	1055
Toluene	1056
Filter	1057
XAD cartridge #14	1058
ASTM Type II water	1059

EPA AUDIT SAMPLE TO BE ANALYZED

EPA audit sample #M23-028 is to be analyzed in the same manner, to the extent possible, as the train samples.

SUMMARY

Samples are submitted for a total of 18 trains (10 inlet trains and 8 outlet trains). Sample components from each train (front and back rinses, filter, and XAD) shall be extracted/combined and analyzed for PCDDs and PCDFs by Method 8290. In addition, 19 toluene QA rinse samples are to be analyzed. One EPA audit sample is to be analyzed with the train samples. Six reagent blank samples are to be archived until sample analysis is completed and the final test report is issued.

INTEROFFICE COMMUNICATION

MIDWEST RESEARCH INSTITUTE

August 2, 1999

To: Russ Friesen

cc: Nancy Friederich and John Hosenfeld

From: Jim Surman, ext. 1441, pager 990-8556

Subject: Request for Analysis of Samples from the Emission Test Evaluation of a Crematory at The Woodlawn Cemetery in the Bronx, NY.
MRI Project No. 5587

Note: Please distribute copies of this memo and pertinent portions of the QAPP to all staff who will be working on the samples.

The emissions tests were carried out as follows:

Run number	Date	Time	Remarks
1	06/11/99	1520-1801	Test condition at 1,400°F
2	06/12/99	1145-1411	Test condition at 1,400°F
3	06/13/99	0906-1130	Test condition at 1,400°F
4	06/13/99	1605-1835	Test condition at 1,600°F
5	06/14/99	1550-1821	Test condition at 1,600°F
6	06/15/99	1045-1312	Test condition at 1,600°F
7	06/15/99	1750-2011	Test condition at 1,800°F
8	06/16/99	1540-1819	Test condition at 1,800°F
9	06/17/99	1005-1219	Test condition at 1,800°F

Please charge all work on samples to the following project/task numbers: **5587.04.03**

ANALYSIS

Samples are to be digested, combined, and analyzed for **cadmium, lead, and mercury** according to procedures in 40 *CFR* 60, Appendix A, Method 29 as specified in Section 2.4.2 of the QAPP. Specifically, SW-846, Method 7000A (MRI SOP ASF-602) will be used for graphite furnace atomic absorption spectroscopy with Method 7131A for cadmium and Method 7421 for lead. SW-846, Method 7470A (MRI SOP ASF-420 for preparation and ASF-603 for analysis) will be used for cold vapor atomic absorption spectroscopy for mercury.

FIELD SAMPLES SUBMITTED FOR ANALYSIS

Sample weights (net) from the field laboratory recovery sheets are listed under "remarks" below.

Run 1	Inlet train		Outlet train	
Sample type	Sample number	Remarks	Sample number	Remarks
Front 0.1N HNO_3 rinses	1015	92.1 g	1039	88.2 g
Filter	1016		1040	
Impingers 1-3 HNO_3/H_2O_2	1017	445.6 g	1041	427.2 g
Impinger 4	1018	95.5 g	1042	96.3 g
Impingers 5-6 $KMnO_4/H_2SO_4$	1019	431.8 g	1043	427.4 g
Impingers 5-6 HCl rinses	1020	220.9 g	1044	224.3 g

Run 2	Inlet train		Outlet train	
Sample type	Sample number	Remarks	Sample number	Remarks
Front 0.1N HNO_3 rinses	2015	91.5 g	2039	90.3 g
Filter	2016		2040	
Impingers 1-3 HNO_3/H_2O_2	2017	497.4 g	2041	513.8 g
Impinger 4	2018	97.9 g	2042	97.7 g
Impingers 5-6 $KMnO_4/H_2SO_4$	2019	425.9 g	2043	422.4 g
Impingers 5-6 HCl rinses	2020	221.8 g	2044	224.9 g

Run 3	Inlet train		Outlet train	
Sample type	Sample number	Remarks	Sample number	Remarks
Front 0.1N HNO_3 rinses	3015	81.4 g	3039	77.9 g
Filter	3016		3040	
Impingers 1-3 HNO_3/H_2O_2	3017	484.7 g	3041	528.0 g
Impinger 4	3018	101.9 g	3042	100.9 g
Impingers 5-6 $KMnO_4/H_2SO_4$	3019	431.5 g	3043	425.9 g
Impingers 5-6 HCl rinses	3020	226.1 g	3044	224.7 g

Run 4	Inlet train		Outlet train	
Sample type	Sample number	Remarks	Sample number	Remarks
Front acetone and water rinses for PM	4014	To be submitted after PM analysis - 84.5 g acetone used 27.3 g water used	NA	
Front 0.1N HNO_3 rinses	4015	87.7 g	4039	98.3 g
Filter	4016	To be submitted after PM analysis (Filter #26)	4040	
Impingers 1-3 HNO_3/H_2O_2	4017	570.8 g	4041	574.5 g
Impinger 4	4018	94.0 g	4042	98.7 g
Impingers 5-6 $KMnO_4/H_2SO_4$	4019	430.8 g	4043	422.2 g
Impingers 5-6 HCl rinses	4020	217.9 g	4044	225.2 g

Run 5	Inlet train		Outlet train	
Sample type	Sample number	Remarks	Sample number	Remarks
Front 0.1N HNO_3 rinses	5015	92.3 g	5039	92.4 g
Filter	5016		5040	
Impingers 1-3 HNO_3/H_2O_2	5017	524.1 g	5041	532.1 g
Impinger 4	5018	100.3 g	5042	96.4 g
Impingers 5-6 $KMnO_4/H_2SO_4$	5019	450.5 g	5043	431.0 g
Impingers 5-6 HCl rinses	5020	222.5 g	5044	226.4 g

Run 6	Inlet train		Outlet train	
Sample type	Sample number	Remarks	Sample number	Remarks
Front 0.1N HNO_3 rinses	6015	103.2 g	6039	74.6 g
Filter	6016		6040	
Impingers 1-3 HNO_3/H_2O_2	6017	502.3 g	6041	513.0 g
Impinger 4	6018	97.1 g	6042	97.3 g
Impingers 5-6 $KMnO_4/H_2SO_4$	6019	425.7 g	6043	421.8 g
Impingers 5-6 HCl rinses	6020	218.2 g	6044	222.9 g

Run 7	Inlet train		Outlet train	
Sample type	Sample number	Remarks	Sample number	Remarks
Front 0.1N HNO_3 rinses	7015	77.9 g	7039	106.0 g
Filter	7016		7040	
Impingers 1-3 HNO_3/H_2O_2	7017	499.3 g	7041	504.5 g
Impinger 4	7018	101.9 g	7042	103.0 g
Impingers 5-6 $KMnO_4/H_2SO_4$	7019	431.8 g	7043	423.4 g
Impingers 5-6 HCl rinses	7020	224.0 g	7044	225.3 g

Run 8	Inlet train		Outlet train	
Sample type	Sample number	Remarks	Sample number	Remarks
Front acetone and water rinses for PM	NA		8038	To be submitted after PM analysis - 135.3 g acetone used 42.2 g water used
Front 0.1N HNO_3 rinses	8015	91.5 g	8039	93.7 g
Filter	8016		8040	To be submitted after PM analysis (Filter #16)
Impingers 1-3 HNO_3/H_2O_2	8017	582.3 g	8041	673.7 g
Impinger 4	8018	99.7 g	8042	99.5 g
Impingers 5-6 $KMnO_4/H_2SO_4$	8019	428.2 g	8043	430.4 g
Impingers 5-6 HCl rinses	8020	223.5 g	8044	222.9 g

Run 9	Inlet train		Outlet train	
Sample type	Sample number	Remarks	Sample number	Remarks
Front acetone rinses for PM	NA		9038	To be submitted after PM analysis - 167.2 g acetone used
Front 0.1N HNO_3 rinses	9015	93.4 g	9039	96.5 g
Filter	9016		9040	To be submitted after PM analysis (Filter #18)
Impingers 1-3 HNO_3/H_2O_2	9017	532.6 g	9041	552.0 g
Impinger 4	9018	104.8 g	9042	96.0 g
Impingers 5-6 $KMnO_4/H_2SO_4$	9019	424.6 g	9043	420.8 g
Impingers 5-6 HCl rinses	9020	222.2 g	9044	225.3 g

REAGENT BLANK SAMPLES SUBMITTED

Sample type	Sample number	Approx. Volume
Acetone	1060	120 mL
Filters (5)	1062	
0.1 N HNO_3	1061	600 mL
5% HNO_3/10% H_2O_2	1063	200 mL
4% $KMnO_4$/10% H_2SO_4	1064	100 mL
ASTM Type I Water	1065	100 mL
8N HCl added to Water	1066	225 mL
0.1 N HNO_3	2061	100 mL

See the attached field reagent blank assembly during preparation for analysis sheets for guidance in assembling aliquots of these samples.

EPA AUDIT SAMPLES TO BE ANALYZED

EPA audit samples are to be analyzed in the same manner, to the extent possible, as the train sample components.

Audit sample number	Sample type	Analytes
M29-019/FL-112	Spiked filter (low level) + blank filter	Cd and Pb
M29-019/MMA-124	Spiked solution (extra low level)	Cd and Pb
M29-019/Hg-117	Spiked solution	Hg

MIDWEST RESEARCH INSTITUTE
425 Volker Boulevard
Kansas City, Missouri 64110-2299
Telephone (816) 753-7600
Telefax (816) 753-8420

June 25, 1999

Ms. Ima Proffitt
Galbraith Laboratories, Inc.
2323 Sycamore Drive
Knoxville, TN 37921-1750

Re: Request for analysis of samples for chloride concentration, MRI project no. 5587.04.01, MRI purchase order no. A039172
Galbraith Laboratories sample tracking no. 0625ICP1

Dear Ms. Proffitt:

Midwest Research Institute (MRI) is submitting the following liquid samples to be analyzed for chloride (Cl^-) concentration:

MRI sample numbers	Sample matrix	Remarks
1004, 2004, 3004, 5004, 6004, 7004, 8004, 9004	0.1 N H_2SO_4 diluted by combustion gas condensate and sample recovery rinses.	Collected at inlet to emission control device using an EPA Method 26A train.
1028, 2028, 3028, 4028, 5028, 6028, 7028	0.1 N H_2SO_4 diluted by combustion gas and control device condensate and sample recovery rinses.	Collected at outlet of emission control device using an EPA Method 26A train.
1052	5 parts 0.1 N H_2SO_4 diluted with 2 parts of water.	Reagent blank simulating sample collection reagent and sample recovery rinses.
1071 (EPA no. J2017) 1072 (EPA no. J2572)	Unknown	EPA audit samples

The eighteen (18) samples listed above are from a test project to collect data in support of U.S. EPA regulatory development. These samples are to be analyzed according to procedures in 40 *CFR* 60, Appendix A, Method 26A for chloride concentration expressed as µg/mL or mg/L. Method 26A requires duplicate injections of each sample with values from duplicate injections being within 5 percent of their mean. If the values from duplicate injections are not within 5 percent of their mean, the duplicate injections are to be repeated and all four values are used to determine the average response. Otherwise, the analytical procedures in Method 26A are the

same as those in Method 26.

The 15 train samples and the reagent blank sample submitted to you are only parts of the larger samples collected at the test site. Therefore, an aliquot of known volume must be taken from each of these samples submitted to you. Those aliquots of known volume are to be analyzed for chloride. The chloride concentration determined through analysis of the sample aliquots along with the total sample volumes measure in the field by MRI will be used by MRI to calculate the total mass of chloride in each sample collected at the test site .

The 2 EPA audit samples are to be handled in different manner. The contents of an ampule are to be quantitatively transferred to a 100 mL volumetric flask and diluted to 100 mLs before analysis. Instructions are enclosed with the audit samples.

When you receive these samples, please do the following first:

1. Complete the sample traceability record (2 sheets) enclosed with the samples. Inventory the samples and complete the fourth checkoff column on each sheet. Complete the bottom line on each sheet.
2. Check the condition of each sample container (bottle or ampule) for leaks or damage. Weigh each sample container (bottles only) with sample to the nearest 0.1g and document the weights on the sample condition at receiving laboratory form enclosed with the samples Sign and date the form at the bottom.
3. Mail the original forms to James Surman at MRI as soon as they are completed.

The first of these samples was collected on June 11. Because of the 28-day maximum holding time, all samples must be analyzed by July 9. The EPA project officer requires that copies of the raw analytical data be included in the test report to be prepared by MRI. Therefore, we will need copies of that data. Send all analytical results, including audit sample results, to James Surman at MRI. We would appreciate receiving analytical results and data by July 23.

Please fax me a copy of any request for analysis form you fill out for these samples if the analyst will not see this letter so that I can review it for completeness. If you have any questions or need additional information, please call me at (816) 753-7600, extension 1441.

Sincerely,

James S. Surman, Jr.
Sr. Environmental Scientist

cc: John Hosenfeld

Appendix B

Process Data

PROCESS AND SUPPORTING TEST DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Emissions Test of Crematory Incinerator Unit at The Woodlawn Cemetery, Bronx, NY

Date: 6/11/99 Emission Test Run No. 1 Data Recorded By Curtis

Incinerator Unit Information: 1400°F

Body Container Description: 78-yr old male (#15942) Cardboard container (½" plywood base), body wrapped in thin plastic (No clothes)

Body Container Gross Weight _____ lb
Body Container Tare Weight _____ lb
Net Weight _____ lb

Scale No. _____
Gas Meter No. _____
Barometer No. Thommen Classic
Ambient Temperature/Relative Humidity Meter No. DM/034 112

24-Hr Time	Primary Chamber Temperature, °F	Secondary Chamber Temperature, °F	Gas Meter Reading, cu.ft.	Barometric Pressure, in. Hg	Outdoor Air Temperature, °F	Outdoor Relative Humidity, percent	Presence of Odors	Remarks
3:20		Charted	8,375,000	30.20	74°	44.1	None	
3:35			8,375,375	30.20	75	40.2		
3:50			8,375,630	30.20	74	40.0		
4:05			8,375,890	30.20	74	40.0		
4:20			8,376,150	30.20	74	39.9		
~~4:35~~	Port Chg		~~8,376,870~~	~~30.19~~	~~74~~	~~40.0~~		
4:56			8,376870	30.19	74	40.0		
5:11			8,377,118	30,19	76	37.1		
5:26			missed		—			
5:41			8,377,645	30.18	76	36.2		
5:56			8,377,945	30.18	75	38.7		

PROCESS AND SUPPORTING TEST DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Emissions Test of Crematory Incinerator Unit at The Woodlawn Cemetery, Bronx, NY

Date: 6/13/99 Emission Test Run No. 3 Data Recorded By F. Curtis

Incinerator Unit Information: 1400°F 91-yr old male / body bag / cardboard container

Body Container Description: Shoulder joint (metal), eyeglass rims, partials, molten metal mass found in ashes

Body Container Gross Weight _____ lb
Body Container Tare Weight _____ lb
Net Weight 182 lb

Scale No. _____
Gas Meter No. _____
Barometer No. _____
Ambient Temperature/Relative Humidity Meter No. _____

24-Hr Time	Primary Chamber Temperature, °F	Secondary Chamber Temperature, °F	Gas Meter Reading, cu.ft.	Barometric Pressure, in. Hg	Outdoor Air Temperature, °F	Outdoor Relative Humidity, percent	Presence of Odors	Remarks
9:02		Charted	8,388,115	30.09	70°	82.2	None	
9:17			415	30.10	70	85.4		
9:32			685	30.10	70	85.5		
9:50			8,389,320	30.10	71	84.5		
10:02		?	8,390,127	30.10	69	87.6		
Port	Change							
10:21			8,389,430	30.10	70	85.4		
10:29								
10:44			805	30.10	70	86.8		
10:59			8,390,025	30.07	70	87.0		
11:14			275	30.06	70	86.7		
11:29			8,391,550	30.08	72	84.8		

PROCESS AND SUPPORTING TEST DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Emissions Test of Crematory Incinerator Unit at The Woodlawn Cemetery, Bronx, NY

Date: 6/13/99 Emission Test Run No. 4 @ 1600° Data Recorded By F. Curtis

Incinerator Unit Information: 1600°

Body Container Description: 55-yr old male in body bag / card board container

Body Container Gross Weight _____ lb
Body Container Tare Weight _____ lb
Net Weight 199 lb

Scale No. _____
Gas Meter No. _____
Barometer No. _____
Ambient Temperature/Relative Humidity Meter No. _____

24-Hr Time	Primary Chamber Temperature, °F	Secondary Chamber Temperature, °F	Gas Meter Reading, cu.ft.	Barometric Pressure, in. Hg	Outdoor Air Temperature, °F	Outdoor Relative Humidity, percent	Presence of Odors	Remarks
4:07		Charted	8,392,555	30.06	75°	80.4	None	No HCl train this run
4:22			8,392,830	30.03	81	64.6		Particulates-taken with metals train
4:37			8,393,160	30.02	75	76.0		Only horizontal traverse taken -
4:52								vertical traverse causes water-
5:07			8,393,805	30.03	76	74.6		cooled probe problems
	Port Change -		for outlet only					
5:27			8,394,205	30.01	77	72.0		Inlet trains operated through
5:42			8,394,482	30.01	77	72.6		outlet port change
5:57			8,394,810	30.00	76	74.3		
6:12			8,395,100	30.00	76	73.9		
6:27			8,395,325	30.00	76	72.6		

PROCESS AND SUPPORTING TEST DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Emissions Test of Crematory Incinerator Unit at The Woodlawn Cemetery, Bronx, NY

Date: 6/14/99 Emission Test Run No. 5 1600° Data Recorded By Foston Curtis

Incinerator Unit Information: _____

Body Container Description: 74-yr old male -Embalmed- body fully dressed incl shoes particle board casket with cloth lining

Body Container Gross Weight 280 lbs lb
Body Container Tare Weight _____ lb
Net Weight ~180 lbs est lb

Scale No. _____
Gas Meter No. _____
Barometer No. Thommen Classic
Ambient Temperature/Relative Humidity Meter No. DM/034 112

est scale 10-15 lbs high at 200 lbs

24-Hr Time	Primary Chamber Temperature, °F	Secondary Chamber Temperature, °F	Gas Meter Reading, cu.ft.	Barometric Pressure, in. Hg	Outdoor Air Temperature, °F	Outdoor Relative Humidity, percent	Presence of Odors	Remarks
3:30 PM		1593		29.78	80°	64.7	None	Scrubber water sample taken
4:05		1701		29.77	79°	66.5		15 min into cremation
4:20		1627		29.79	78°	69.0		
4:35		1688		29.77	78°	68.7		No gas meter reading taken -
4:50		1625		29.77	78°	67.9		cremation ending in other
	Port	Change						chamber @ 30min into
5:10		1692		29.77	77°	69.2		run
5:35		1629		29.77	77°	70.6		
5:50		1692		29.80	77°	69.2		No metals in ashes
6:05				29.80	75°	73.8		
6:20				29.75	75°	73.5		

PROCESS AND SUPPORTING TEST DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Emissions Test of Crematory Incinerator Unit at The Woodlawn Cemetery, Bronx, NY

Date: 6/15/99 Emission Test Run No. 6 Data Recorded By Foston Curtis

Incinerator Unit Information: 1600°

Body Container Description: 76-yr old male Cardboard container with wood base - plastic sheet over body

Body Container Gross Weight 228 lb
Body Container Tare Weight 30 lb
Net Weight 198 lb

Scale No. _____
Gas Meter No. _____
Barometer No. _____
Ambient Temperature/Relative Humidity Meter No. _____

24-Hr Time	Primary Chamber Temperature, °F	Secondary Chamber Temperature, °F	Gas Meter Reading, cu.ft.	Barometric Pressure, in. Hg	Outdoor Air Temperature, °F	Outdoor Relative Humidity, percent	Presence of Odors	Remarks
10:45		1581	8,415,343	29.92	82°	37.9	None	
11:00		1658	615	29.92	82	39.8	None	
11:15		1650	—	29.92	82	—	None	
11:30		1620	8,416,085	29.91	82	39.6	None	
11:45		1680	—	29.90	81	39.8	None	
	Port Change							
Final		1686	29.90	79	~~43~~ 79	~~43~~ None	None	

PROCESS AND SUPPORTING TEST DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Emissions Test of Crematory Incinerator Unit at The Woodlawn Cemetery, Bronx, NY

Date: 6/15/99 Emission Test Run No. 7 1800° Data Recorded By F Curtis

Incinerator Unit Information: 1800°

65 yr old male - Embalmed

Body Container Description: false casket/particleboard - cloth covering; in hospital gown

Body Container Gross Weight 240 lb
Body Container Tare Weight 100 lb
Net Weight 140 lb

Scale No. _____
Gas Meter No. _____
Barometer No. _____
Ambient Temperature/Relative Humidity Meter No. _____

24-Hr Time	Primary Chamber Temperature, °F	Secondary Chamber Temperature, °F	Gas Meter Reading, cu.ft.	Barometric Pressure, in. Hg	Outdoor Air Temperature, °F	Outdoor Relative Humidity, percent	Presence of Odors	Remarks
5:50		1825	8,420,530	29.86	80°	31.0		
6:05		1863	8,420,710	29.85	79°	38.4		
6:20		1848	8,420,910	29.88	80°	34.0		
6:35		1855	8,421,198	29.90	81°	39.9		
6:50		1867	8,421,420	29.90	80	40.7		
	Prd change							
7:10		1857	8,421,870	29.90	78	43.9		
7:25		1814	8,422,133	29.91	77	43.3		
7:40		1869	8,422,450	29.91	77	42.8		
7:55		1822	8,422,785	29.91	77	43.6		
8:10		1825	8,423,180	29.95	76	43.4		

PROCESS AND SUPPORTING TEST DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Emissions Test of Crematory Incinerator Unit at The Woodlawn Cemetery, Bronx, NY

Date: 6/16/99 Emission Test Run No. 8 Data Recorded By F Curtis

Incinerator Unit Information: 1800°

Body Container Description: 88-yr old female not embalmed Cardboard container, in body bag

Body Container Gross Weight 210 lb
Body Container Tare Weight _____ lb
Net Weight _____ lb

Scale No. _____
Gas Meter No. _____
Barometer No. _____
Ambient Temperature/Relative Humidity Meter No. _____

24-Hr Time	Primary Chamber Temperature, °F	Secondary Chamber Temperature, °F	Gas Meter Reading, cu.ft.	Barometric Pressure, in. Hg	Outdoor Air Temperature, °F	Outdoor Relative Humidity, percent	Presence of Odors	Remarks
2:40		1903°	8,427,875	29.95	73°	40.1	None	No inlet HCl this run - warped probe
3:55		1845	8,428,165	29.95	72	41.7		
4:10		1890	8,428,585	29.95	71	44.4		
4:25		1808	8,428,965	29.95	72	42.1		
4:40		1806	8,429,335	29.95	71	43.5		
	Port Change							
4:45	"	"						
5:00		1807	8,429,825	29.95	71	43.6		
5:15		1859	8,430,185	29.95	71	44.3		
5:30		1852	8,430,545	29.95	71	46.9		
5:45		1819	8,430,890	29.95	72	43.4		
6:00		1812	8,431,285	29.93	70	47.4		Extra run time because burn
6:20		1869	8,431,685	29.92	70	47.4		" not complete

PROCESS AND SUPPORTING TEST DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Emissions Test of Crematory Incinerator Unit at The Woodlawn Cemetery, Bronx, NY

Date: 6/17/99 Emission Test Run No. 9 Data Recorded By F Curtis

Incinerator Unit Information: 1800°

Body Container Description: Male in body bag in cardboard container

Body Container Gross Weight 115 lb
Body Container Tare Weight _____ lb
Net Weight _____ lb

Scale No. _____
Gas Meter No. _____
Barometer No. _____
Ambient Temperature/Relative Humidity Meter No. _____

24-Hr Time	Primary Chamber Temperature, °F	Secondary Chamber Temperature, °F	Gas Meter Reading, cu.ft.	Barometric Pressure, in. Hg	Outdoor Air Temperature, °F	Outdoor Relative Humidity, percent	Presence of Odors	Remarks
10:05		1810°	8,442,485	29.93	63	80.9		
10:20		1843	825	29.93	64	75.5		
10:35		1857	8,443,160	29.95	66	72.9		
10:50		1832	555	29.96	65	73.5		
11:05		1840	955	29.97	65	71.8		
	Port chg	sometime	this period					Not sure about start after port chg
11:18								
11:34		1832		29.96	66	66.5		
12:20		1852		29.95	66	62.6		

PROCESS AND SUPPORTING TEST DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Emissions Test of Crematory Incinerator Unit at The Woodlawn Cemetery, Bronx, NY

Date: 6/17/99 Emission Test Run No. Dioxin Rerun Data Recorded By F Curtis

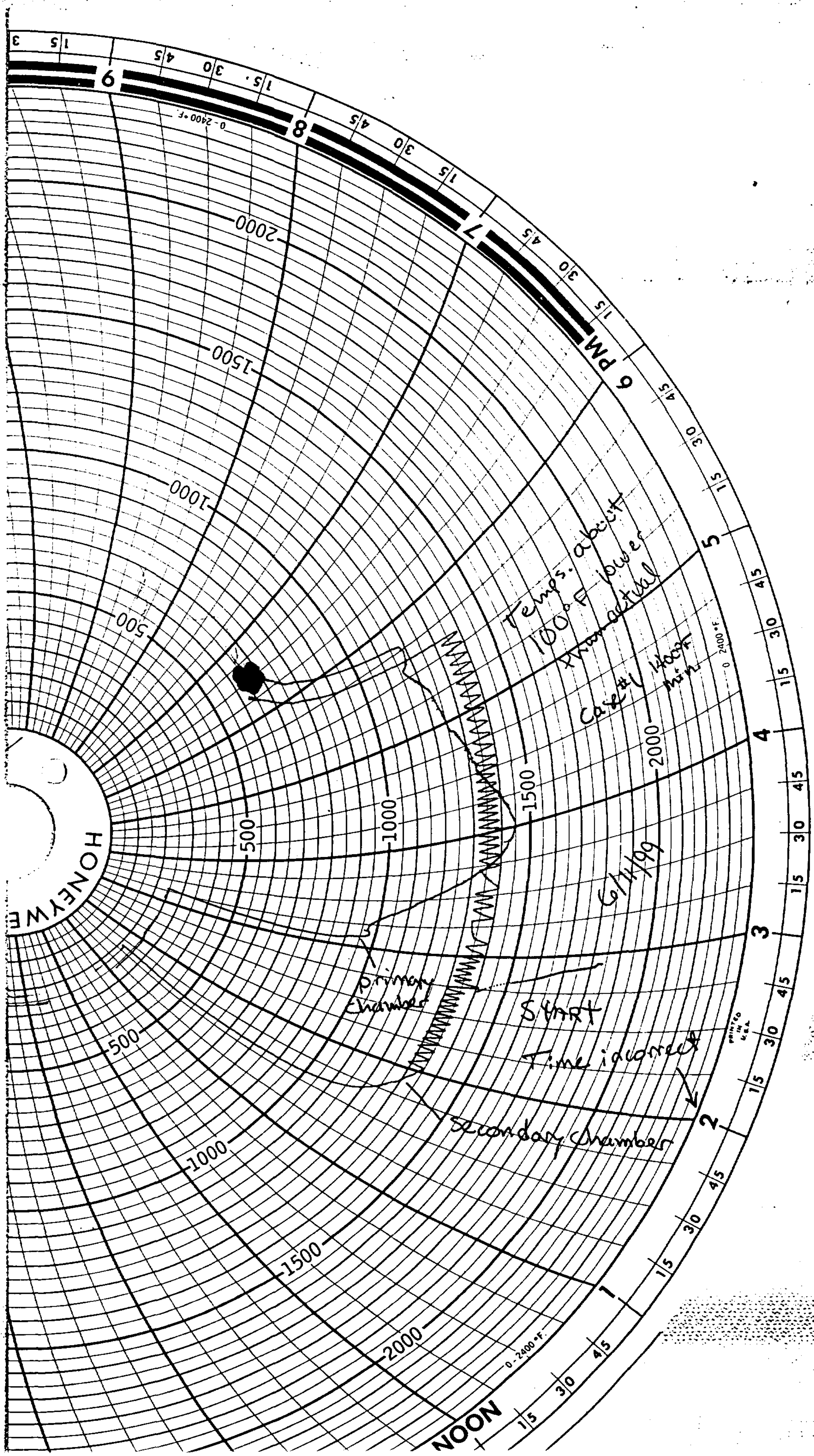
Incinerator Unit Information: 1400° Dioxin inlet & outlet only
Port clog at outlet, not inlet; inlet train stopped during outlet port change

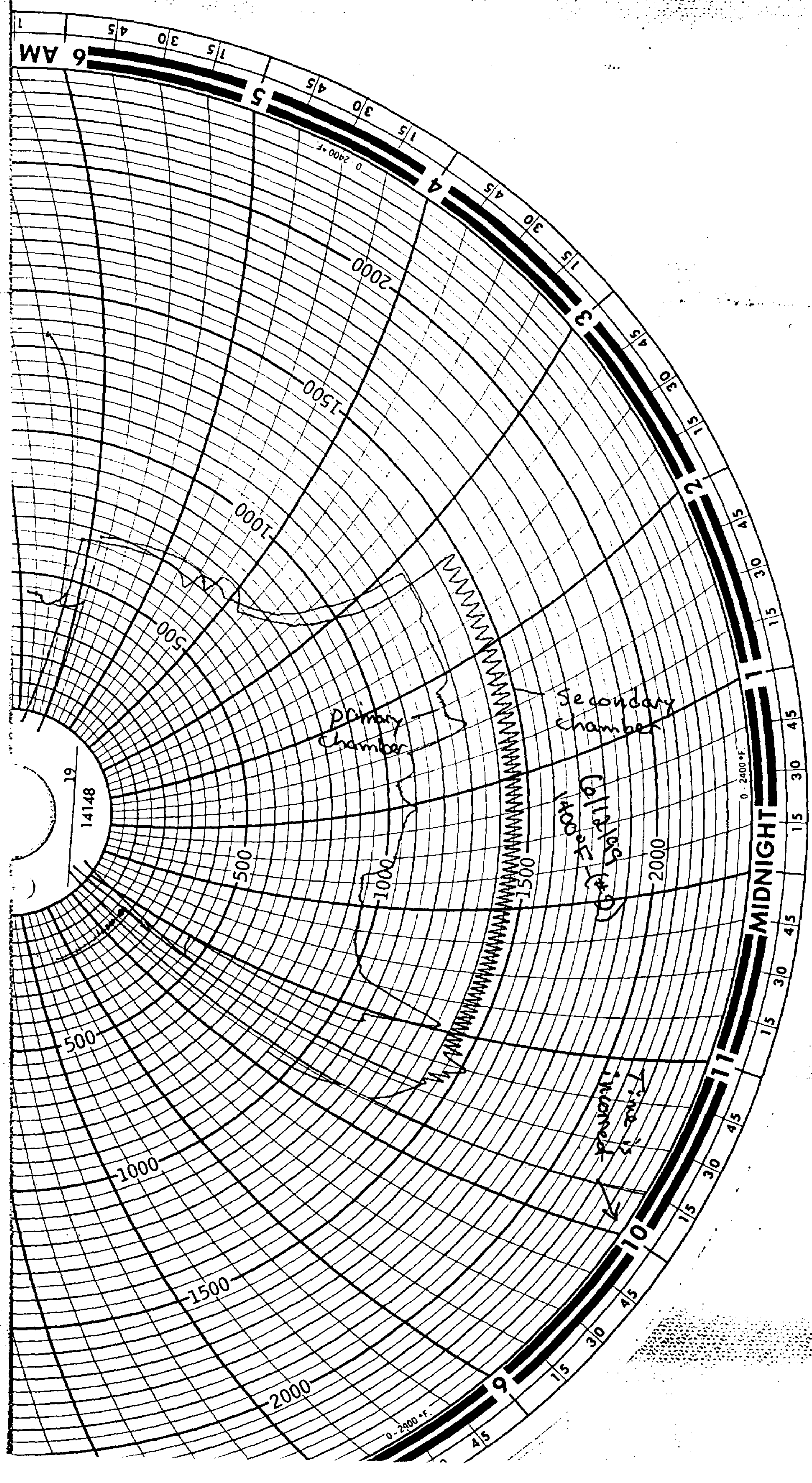
Body Container Description: 58-yr old female in body bag (plastic) in cardboard container

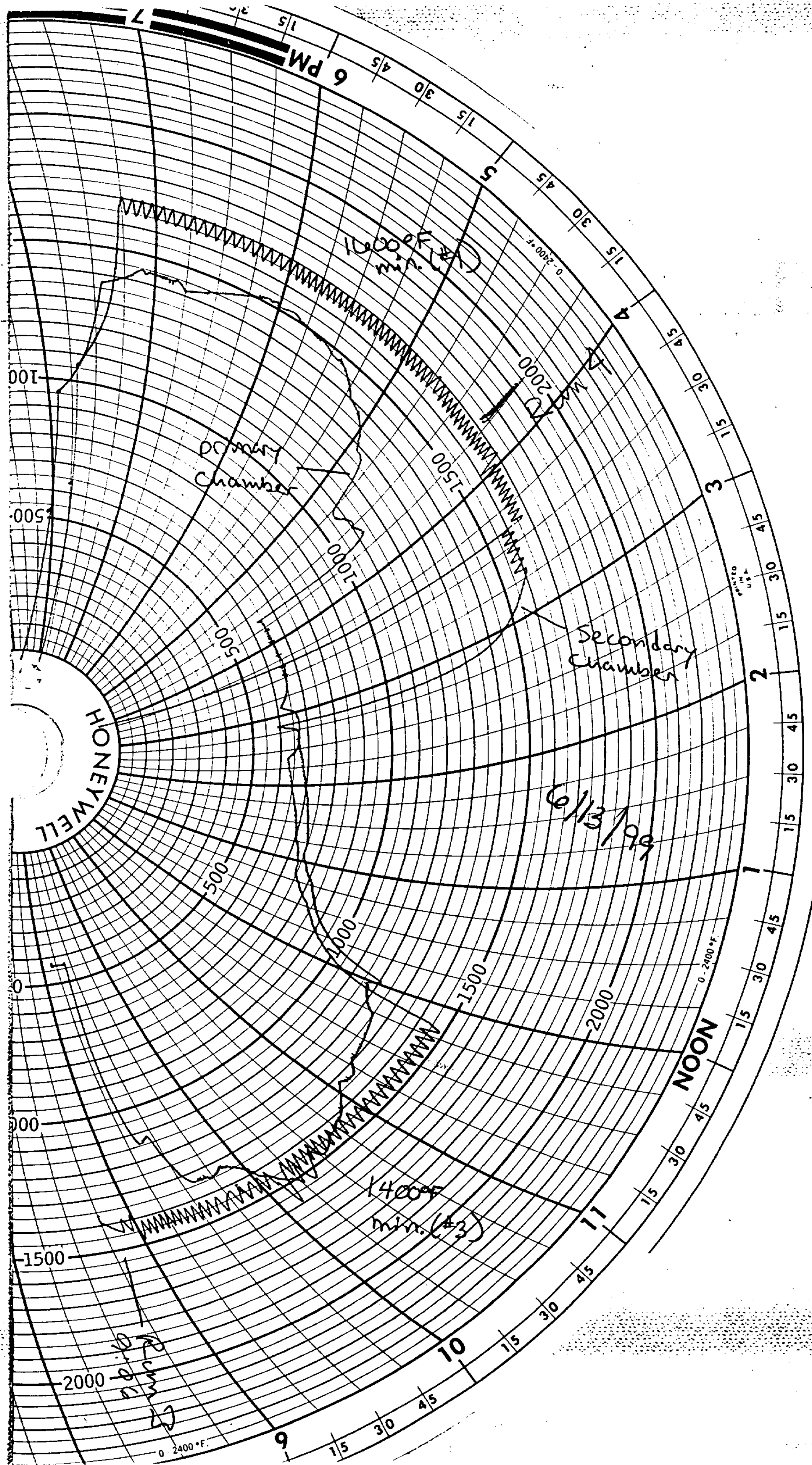
Body Container Gross Weight 142 lb
Body Container Tare Weight _____ lb
Net Weight _____ lb

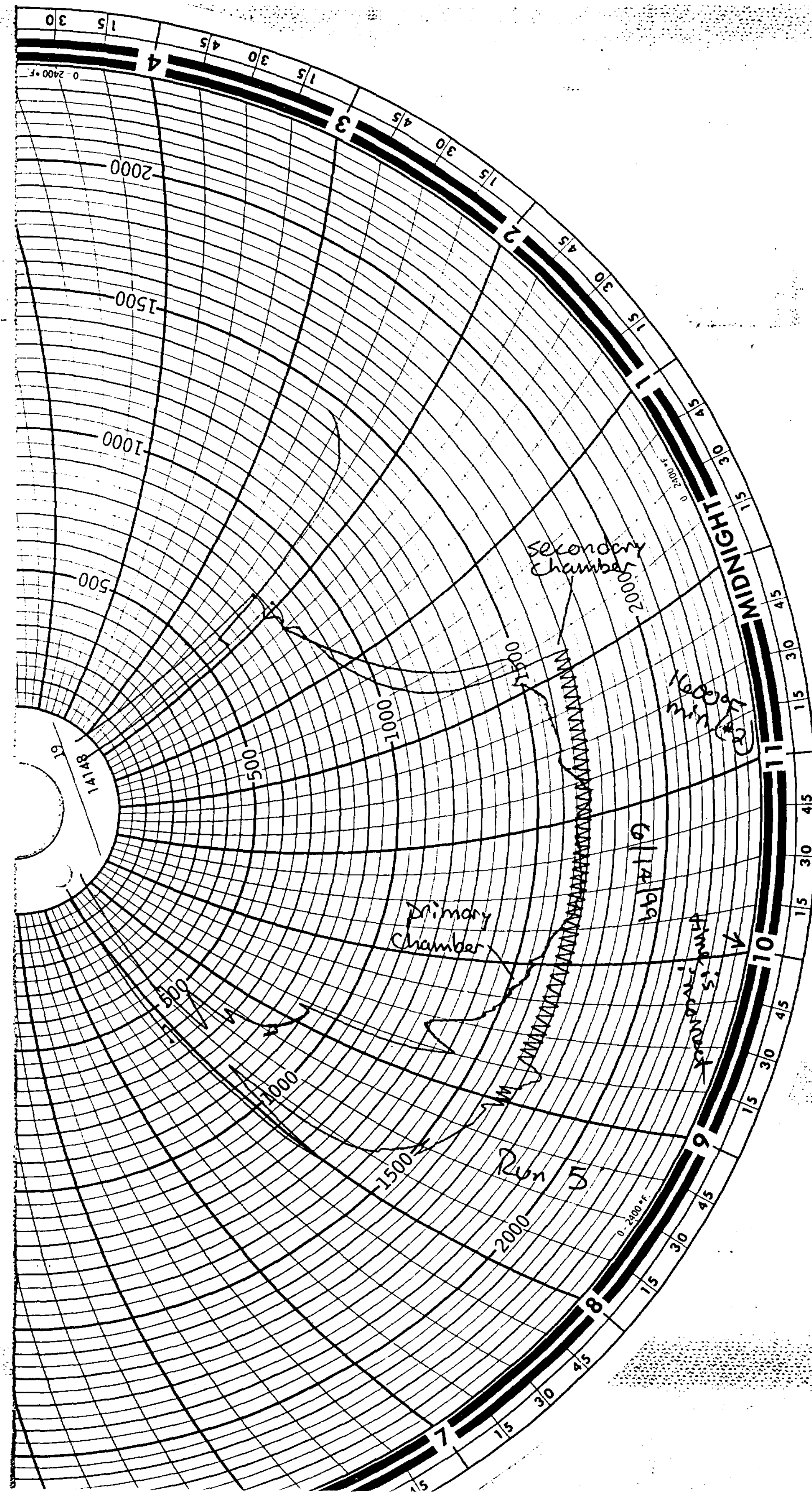
Scale No. _____
Gas Meter No. _____
Barometer No. _____
Ambient Temperature/Relative Humidity Meter No. _____

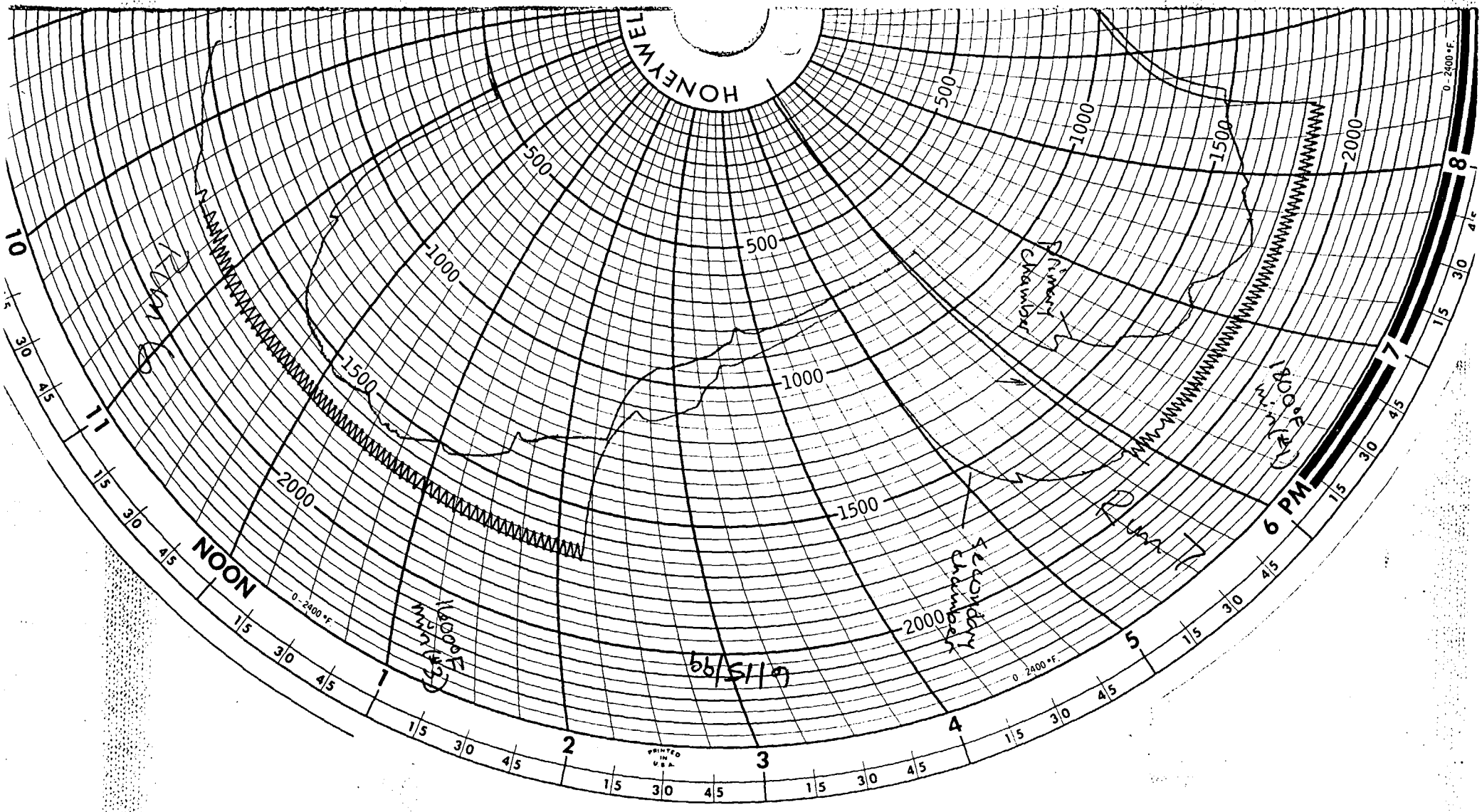
24-Hr Time	Primary Chamber Temperature, °F	Secondary Chamber Temperature, °F	Gas Meter Reading, cu.ft.	Barometric Pressure, in. Hg	Outdoor Air Temperature, °F	Outdoor Relative Humidity, percent	Presence of Odors	Remarks
4:03		1462	8,446,925	29.97	63°	72.3	None	
5:03		1498	8,447,820	29.97	65°	71.1	✓	
6:03		1458	8,448,770	29.98	68°	65.3	✓	

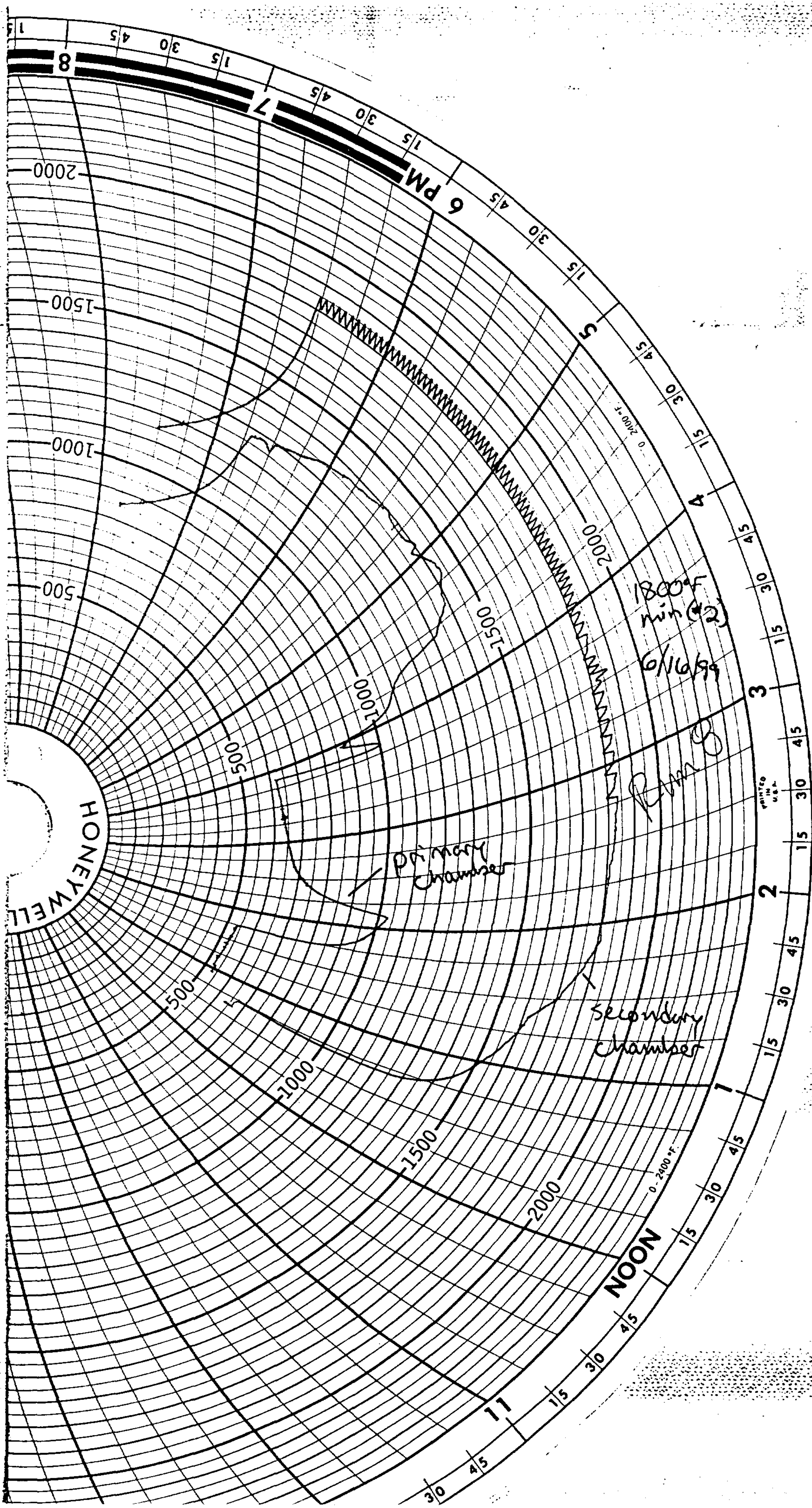

NOON
PM
0-2400°F
Temps. about 100°F lower than actual
6/14/99
START
Time incorrect
Primary Chamber
Secondary Chamber

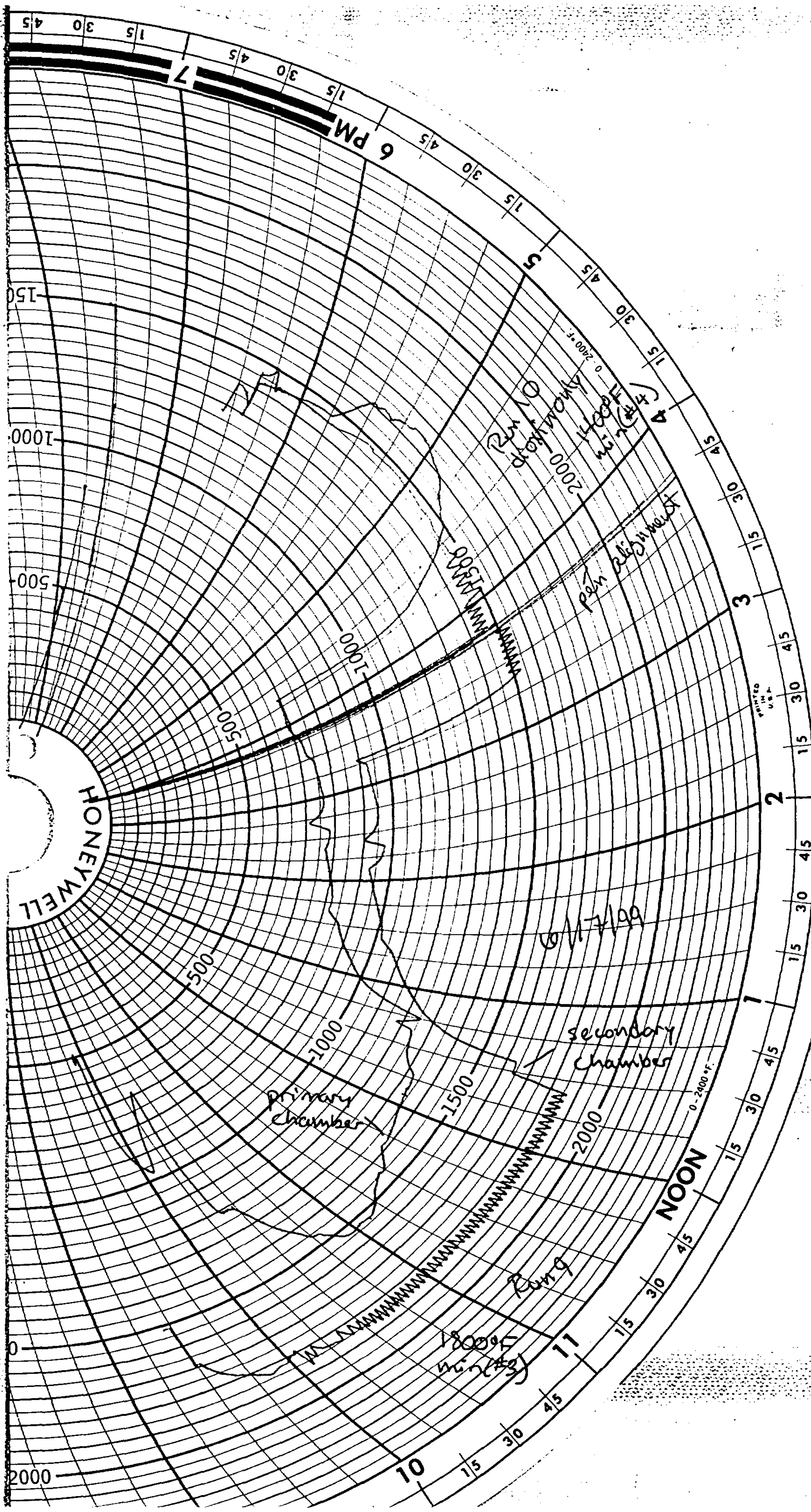

6 AM
5
4
3
2
1
MIDNIGHT
11
10
9
0 - 2400 °F
14148
Primary Chamber
Secondary chamber


HONEYWELL
0 - 2400 °F
6 PM
NOON
1600°F min. (#1)
primary Chamber
Secondary Chamber
6/13/99
1400°F min. (#3)


MIDNIGHT
0 - 2400 °F
500
1000
1500
2000
14148
19
Secondary Chamber
Primary Chamber
Run 5


HONEYWELL
500
1000
1500
2000
0 - 2400 °F.
NOON
6 PM
10
11
1
2
3
4
5
7
8
1/5
3/0
4/5
PRINTED IN U.S.A.
Primary Chamber
Secondary Chamber
0/15/99


HONEYWELL
6 PM
NOON
0 - 2400 °F
PRINTED IN U.S.A.
1800°F min (+2)
6/16/99
Run 8
primary chamber
secondary chamber



HONEYWELL
6 PM
7
5
4
3
2
1
NOON
11
10
0-2400°F.
PRINTED IN U.S.A.
Run 10
dioxin only
1400F
min (#4)
pen alignment
6/17/99
secondary chamber
primary chamber
Run 9
1800F
min (#3)

SUMMARY OF BODY AND CONTAINER CHARACTERISTICS

Test #	Secondary Chamber Min. Temp. (° F)	Body Weight (lb)	Body Embalmed?	Body Description	Container Type, Weight	Body Wrappings, Container Contents
1	1400 (#1)	157	no	78 year old male, lean build	White fiberboard, chipboard bottom, 15 lb	No clothes, white plastic sheet
2	1400 (#2)	163	no	70 year old female	White fiberboard, wooden inserts, chipboard on sides, bottom, and top, 85 lb	No clothes, cloth sheet, white plastic sheets
3	1400 (#3)	182	no	91 year old male	Brown fiberboard, no wood, 10 lb	Light white plastic pouch, note on box "no jewelry", shoulder joint and unknown metal found in remains
4	1600 (#1)	199	no	55 year old male	Brown fiberboard, no wood, 10 lb	Light white plastic pouch
5	1600 (#2)	180	yes	74 year old male, lean build	Cloth covered casket, particle board sides, bottom, and top, fabric lining, plastic fiber stuffing, white plastic sheet, 100 lb	Body dressed in a suit, leather shoes
6	1600 (#3)	188	no	76 year old male	Fiberboard with pine base, chipboard bottom, 30 lb	White plastic sheets

7	1800 (#1)	140	yes	65 year old male	Cloth covered casket, particle board sides, bottom, and top, fabric lining, plastic fiber stuffing, white plastic sheet, 100 lb	Body dressed in hospital gown, cloth sheet
8	1800 (#2)	200	no	88 year old female	Brown fiberboard, no wood, 10 lb	Light white plastic pouch, surgical gloves
9	1800 (#3)	105	no	88 year old male	Brown fiberboard, no wood, 10 lb	Light white plastic pouch
10	1400 (#4)	132	no	58 year old female	Brown fiberboard, no wood, 10 lb	Light white plastic pouch

Appendix C

Field Sampling Data and Sample Traceability

Contents

Section 1

EPA Method 23 for PCDD/PCDF Sampling and Recovery

40 CFR 60, APPENDIX A, METHOD 1 -
LOCATION OF TRAVERSE POINTS IN A CIRCULAR DUCT

MRI Project Nos. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct (cross section A)
Date: 06/10/99 For Run Numbers: All
Dimensions obtained by/from: direct measurements
Data recorded by: D. Alburty & J. Surman

Port - A

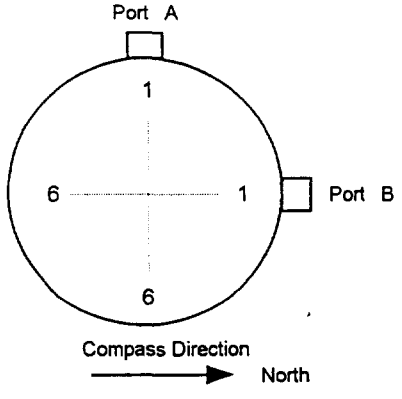
Inside of far wall to outside reference point (distance Li):	28.125	inches
Inside of near wall to outside reference point (distance Lo):	6.937	inches
Duct inside diameter (Li - Lo):	21.188	inches

Port - B

Inside of far wall to outside reference point (distance Li):	28.125	inches
Inside of near wall to outside reference point (distance Lo):	6.937	inches
Duct inside diameter (Li - Lo):	21.188	inches
Nearest flow disturbance upstream from ports:	18	inches, (0.8 D)
Nearest flow disturbance downstream from ports:	54	inches, (2.5 D)
Minimum number of points for velocity (nonparticulate) traverses:	16	
Minimum number of points for particulate traverses:	24	

Inside diameter of the duct:	21.188	inches
Number of traverse points to be used on a diameter:	6	
Length of port from reference point to inside surface of duct:	6.937	inches
Cross sectional area of sampling location:	2.449	ft²

Traverse Point	Percent of Duct Diameter from Wall to Traverse Point	Distance from Reference Point to Traverse Point, inches
1	4.4%	7.86
2	14.6%	10.04
3	29.6%	13.21
4	70.4%	21.86
5	85.4%	25.02
6	95.6%	27.20



Horizontal Duct - Flow Away From Observer

Comments:

40 CFR 60, APPENDIX A, METHOD 1 -
LOCATION OF TRAVERSE POINTS IN A CIRCULAR DUCT

MRI Project Nos. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct (cross section B)
Date: 06/07/99 For Run Numbers: All
Dimensions obtained by/from: direct measurements
Data recorded by: D. Alburty & J. Surman

Port - C

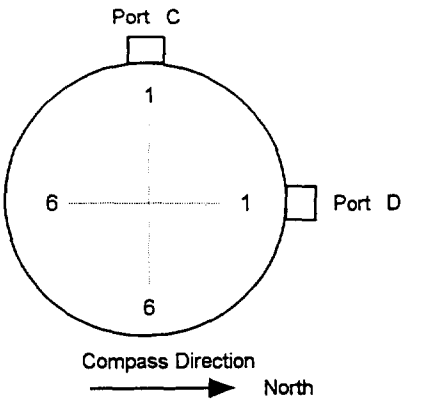
Inside of far wall to outside reference point (distance Li):	28.125	inches
Inside of near wall to outside reference point (distance Lo):	6.937	inches
Duct inside diameter (Li - Lo):	21.188	inches

Port - D

Inside of far wall to outside reference point (distance Li):	28.125	inches
Inside of near wall to outside reference point (distance Lo):	6.937	inches
Duct inside diameter (Li - Lo):	21.188	inches
Nearest flow disturbance upstream from ports:	54	inches, (2.5 D)
Nearest flow disturbance downstream from ports:	18	inches, (0.8 D)
Minimum number of points for velocity (nonparticulate) traverses:	16	
Minimum number of points for particulate traverses:	24	

Inside diameter of the duct:	21.188	inches
Number of traverse points to be used on a diameter:	6	
Length of port from reference point to inside surface of duct:	6.937	inches
Cross sectional area of sampling location:	2.449	ft²

Traverse Point	Percent of Duct Diameter from Wall to Traverse Point	Distance from Reference Point to Traverse Point, inches
1	4.4%	7.86
2	14.6%	10.04
3	29.6%	13.21
4	70.4%	21.86
5	85.4%	25.02
6	95.6%	27.20



Horizontal Duct - Flow Away From Observer

Comments:

40 CFR 60, APPENDIX A, METHOD 1 -
LOCATION OF TRAVERSE POINTS IN A CIRCULAR DUCT

MRI Project Nos. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct (cross section C)
Date: 06/10/99 For Run Numbers: All
Dimensions obtained by/from: direct measurements
Data recorded by: D. Alburty & J. Surman

Port - E

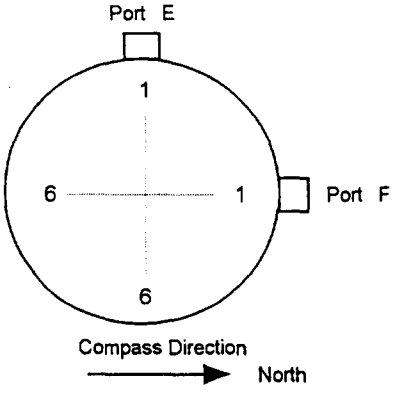
Inside of far wall to outside reference point (distance Li):	32.000	inches
Inside of near wall to outside reference point (distance Lo):	3.250	inches
Duct inside diameter (Li - Lo):	28.750	inches

Port - F

Inside of far wall to outside reference point (distance Li):	32.000	inches
Inside of near wall to outside reference point (distance Lo):	3.250	inches
Duct inside diameter (Li - Lo):	28.750	inches
Nearest flow disturbance upstream from ports:	6	inches, (0.2 D)
Nearest flow disturbance downstream from ports:	24	inches, (0.8 D)
Minimum number of points for velocity (nonparticulate) traverses:	16	
Minimum number of points for particulate traverses:	24	

Inside diameter of the duct:	28.75	inches
Number of traverse points to be used on a diameter:	6	
Length of port from reference point to inside surface of duct:	3.25	inches
Cross sectional area of sampling location:	4.508	ft²

Traverse Point	Percent of Duct Diameter from Wall to Traverse Point	Distance from Reference Point to Traverse Point, inches
1	4.4%	4.50
2	14.6%	7.46
3	29.6%	11.76
4	70.4%	23.49
5	85.4%	27.79
6	95.6%	30.75



Horizontal Duct - Flow Away From Observer

Comments:

40 CFR 60, APPENDIX A, METHOD 1 -
LOCATION OF TRAVERSE POINTS IN A CIRCULAR DUCT

MRI Project Nos. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct (cross section D)
Date: 06/10/99 For Run Numbers: All
Dimensions obtained by/from: direct measurements
Data recorded by: D. Alburty & J. Surman

Port - G

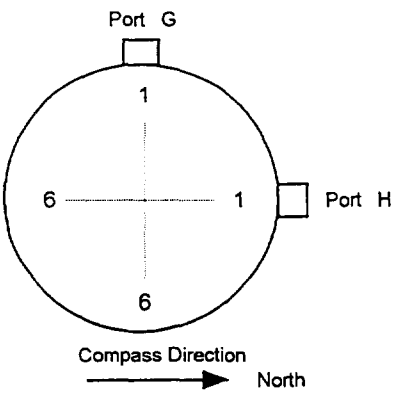
Inside of far wall to outside reference point (distance Li):	32.000	inches
Inside of near wall to outside reference point (distance Lo):	3.250	inches
Duct inside diameter (Li - Lo):	28.750	inches

Port - H

Inside of far wall to outside reference point (distance Li):	32.000	inches
Inside of near wall to outside reference point (distance Lo):	3.250	inches
Duct inside diameter (Li - Lo):	28.750	inches
Nearest flow disturbance upstream from ports:	24	inches, (0.8 D)
Nearest flow disturbance downstream from ports:	6	inches, (0.2 D)
Minimum number of points for velocity (nonparticulate) traverses:	16	
Minimum number of points for particulate traverses:	24	

Inside diameter of the duct:	28.75	inches
Number of traverse points to be used on a diameter:	6	
Length of port from reference point to inside surface of duct:	3.25	inches
Cross sectional area of sampling location:	4.508	ft²

Traverse Point	Percent of Duct Diameter from Wall to Traverse Point	Distance from Reference Point to Traverse Point, inches
1	4.4%	4.50
2	14.6%	7.46
3	29.6%	11.76
4	70.4%	23.49
5	85.4%	27.79
6	95.6%	30.75

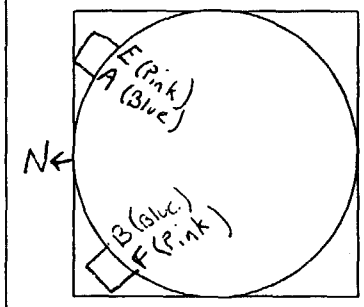


Horizontal Duct - Flow Away From Observer

Comments:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

	(Blue)	(Pink)
Run No. 1 Date 6/11/99	Train A Type/No. M23-1 (Inlet)	Train B Type/No. M23-2 (Outlet)
Project No. 4951-08	Probe No. WC3-7 Length: 3 ft	Probe No. WC3-6 Length: 3 ft
Client EPA/EMC and CANA	Liner Type Quartz Heated? (Y) n	Liner Type Quartz Heated? (Y) n
Source Incinerator #4	Nozzle No. 23-1 Tip Dia. 0.708 in	Nozzle No. 23-2 Tip Dia. 0.708 in
Sampling Location Inlet Scrubber and Outlet	Pitot Tube No. WC3-7 C_p 0.813	Pitot Tube No. WC3-6 C_p 0.821
Operator A. Carender	Stack Thermocouple No. WC3-7	Stack Thermocouple No. WC3-6
Record data every 10 minutes	Filter No. NA	Filter No. N/A
Barometer No. X4029	Sample Box No. 10288	Sample Box No. 011191
Barometric Pressure 30.3 in Hg	Umbilical/Impinger Hookup UH-35	Umbilical/Impinger Hookup UH-22
Elevation to Meter Boxes 0 ft	Umbilical Nos. N-125-6	Umbilical Nos. N-125-3
Meter Box P_{bar} 30.30 in Hg	Meter Box No. N13	Meter Box No. N9
Elevation to Sampling Loc. 0 ft	DGM Correction (Y) 0.985	DGM Correction (Y) 0.990
Sampling Location P_{bar} 30.30 (IN) 30.27 (OUT) in Hg	Orifice Meter ΔH@ 1.881	Orifice Meter ΔH@ 1.982
Static Pressure -0.05 and -0.07 in H_2O	Assumed Moisture 10 (IN) / 22 (OUT) %	Assumed %CO_2 6.0 %O_2 10 Nozzles are quartz-glass.



Traverse Point Layout

Compass Direction ➢

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1348	1851									1235	18:18								
Pass or Fail		Pass										Pass								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	12:25	18:55								
Vacuum, in Hg	15	11.0								
Leak Rate, cfm	0.006	0.002								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	12:41	18:20								
Vacuum, in Hg	15	9.0								
Leak Rate, cfm	0.004	0.004								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	5/62191 → ~~958.630~~	958.630
Meter Volume at End of Run	635.384	1006.008
Total Leak Check Volume	—0—	—0—
Adjusted Final Volume		

Run No. 1 Date 6/11/99 Sampling Location Incin #4 Inlet and Outlet page 2 of 2

Project No. 4951-08 Train A Type/No. M23-1 (Inlet) Operator A. Carender

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 567.191 Desired	Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
	0	1520														
Blue B6	10	1530	572.8	572.91	0.01	1.186	1.2	635	73	73	6.5	84	236	248	250	79
5	20	1540	579.2	578.70	0.02	1.10	1.10	1365	77	74	7.0	57	246	249	251	79
4	30	1550	585.52	585.13	0.02	1.33	1.3	1369	81	75	7.0	58	246	251	252	80
3	40	1600	590.87	590.25	0.015	0.93	0.93	1373	85	77	6.8	59	246	252		82
2	50	1610	591.01	missed	0.025	0.98	0.98	1371	87	78	7.0	59	247	251	250	80
~~Initial~~	60	1620	598.13	597.86	0.022	1.41	1.5	1457	88	79	9.0	57	246	251		80
Initial		~~1630~~	~~604.660~~	~~603.38~~												85
A 1	70	1700	605.25	606.55	0.025	1.69	1.6	1351	81	79	7.8	62	[illegible]	253		85
	80	1710	612.36	612.86	0.025	1.68	1.6	1359	82	79	9.0	51		249		81
	90	1720	620.15	621.00	0.03	2.01	2.0	1378	87	79	10.5	51		250		81
	100	1730	624.70	624.9	0.01	0.66	0.66	1358	91	81	6.0	56		252		82
	110	1740	627	630.44	0.01	—	0.9	1359	89	82	6.2	54		251		81
	120	1750		635.38	0.01	—	0.9	1344	91	83	7.0	58		249		81
		1800	End Run													

Thermocouple line shorted out / Repaired after run

	0	152	Initial 958.2630	Train B Type/No. M23-2 (Outlet)												
Pink E1	10	1531	960.7	960.78	0.001	0.48	0.48	199	73	72	6.0	56	238	247	54	51
* 2	20	1541	~~964.87~~	~~964.47~~	0.001	0.15	0.15	554	75	73	6.0	49	227	248		49
3	30	1551	964.04	964.87	0.001	0.10	0.10	597	76	74	6.0	58	227	250		53
4	40	1600	971.35	missed	0.02	1.89	1.89	626	79	76	6.0	60	228	250		55
5	50	1610	973.01	972.90	0.001	0.09	0.09	607	84	77	2.5	46	240	249	251	50
	60	1620	974.69	974.885	0.001	0.09	0.09	586	81	86	3.5	65	235	251		56
Initial		~~1630~~	974.69	~~974.885~~	~~0.008~~											
F1	70	1701	977.85	missed	0.008	0.90	0.9	457	80	79	8.0	49	210	253		67
2	80	1711	985.601	missed	0.01	1.15	1.15	435	82	79	8.5	46	235	251		48
3	90	~~1721~~	987.28	986.56	0.01	1.12	1.12	463	86	79	8.5	46	241	251		48
4	100	1731	991.57	990	0.01	0.78	0.98	595	88	80	8.5	46	240	251		48
5	110	1741	996.59	missed	0.008	0.98	0.98	615	90	82	7.0	46	251	252		50
6	120	1751	1000.15	1006.008	0.005	—	0.7	627	90	83	7.0	52	251	249		50
		1801	End Run													

Remarks and Notes: * 962.79 963.12

A lot of smoke filled area after start of run

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct 1 PSM

Run No. 1 Sampling Train No. M23-X Inlet Sample Box No. 10288
Set-up person(s): P Murowchick Date: 6/10/99

Transfer to Sampler:
Relinquished By P. Murowchick Received By D. Alberty Date/Time 6/11/99 0830

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz) *	M23-1			
Water-cooled Probe (Liner-Quartz) *				
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL *				
90° Bypass *				
Cyclone *				
Flask				
Filter Holder Front				
Filter Holder Back with Teflon®-coated 316 SS Filter Support		Filter Type: Whatman QM-A		
Short 90° Connector				
Condenser (Standard)		Thermocouple No. 91-11		
XAD-2 Resin Cartridge (Standard)	#12	~65 grams XAD-2 Resin + Surrogates		510.4 ***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.				
1st Impinger (Mod-GBS)		Empty	465.4	
U-Connector (A)				
2nd Impinger (Mod-GBS)		100 mLs	514.9	630.0
U-Connector (B)		ASTM Type II Water		
3rd Impinger (GBS)		100 mLs	482.9	580.1
U-Connector (C)		ASTM Type II Water		
4th Impinger (Mod-GBS)		Empty	560.5	
U-Connector (D)				
5th Impinger (Mod-GBS)		~200 g indicating silica gel		657.1
U-Connector (E)				
6th Impinger (Mod-GBS)		~200 g indicating silica gel		739.6
Impinger Outlet Connector	UH-35			

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct 1 PSM

Run No. 1 Sampling Train No. M23-8 Inlet Sample Box No. 0288

Transfer for Recovery:
Relinquished By D Alberty Received By P Murawchick Date/Time 6/11/99 1900
Sample box recovery person(s): P Murawchick Date: 6/11/99
Probe/STL recovery person(s): D Neal, J Hesenfeld, D Alberty, A Page Date: 6/11/99
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	516.2	658.9	624.7	584.5	563.4	670.8	744.8
Initial Wt.	510.4	465.4	630.0	580.1	560.5	657.1	739.6
Net Wt.	4.8	193.5	-5.3	4.4	2.9	13.7	5.2

[Total Condensate Collected: 219.2 grams]

Description and/or color:	white	clear	clear	clear	clear	5	10
Sample Recovery:	Cartridge*	→ → → → → → → Dispose of properly ← ← ← ← ← ← ←				% Blue	

Sample Number: 1011

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 1009 Description/Color: light tan dusting of particulate

CYCLONE/FLASK ASSEMBLY:
Description/Color: N/A

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	1008	1010	1012
Sample Bottle Tare Wt.	498.5	498.6	497.8
Components Rinsed**:	Front -- nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front; Back -- filter support, filter holder back, short 90° connector, condenser		
Sample Bottle Final Wt.	990.6	832.5	835.5
Net Sample Wt.	723.1	333.9	337.7

* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:
The Outlet Transfer line, probe, and nozzle rinses were placed in to sample 1008 and 1012 by mistake. The Inlet Transfer line, probe and nozzle rinses were placed in separate sample bottles 1022 (Acetone + $MeCl_2$) and 1023 (Toluene QA Rinse)

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD REAGENT BLANK PREPARATION DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Locations: Scrubber Inlet and Outlet Ducts

Blank(s) Prepared By: P Murowchick Date: 06/11/99

Weights below are in grams.

Reagent Blank Description	Sample Number	Bottle Tare Weight	Bottle Gross Weight	Net Sample Weight
Acetone to be archived Volume needed: 700 mLs Lot Number: BV113	1054	498.9	1198.4	699.5
Methylene chloride to be archived Volume needed: 700 mLs Lot Number: BU401	1055	499.6	1225.5	725.9
Toluene to be archived Volume needed: 700 mLs Lot Number: BV253	1056	498.6	1087.2	588.6
Filter to be archived Type: Whatman QM-A Lot Number: 65335	1057			
XAD Cartridge to be archived Cartridge Number: #14	1058			
ASTM Type II Water to be archived Volume needed: 200 mLs Lot Number: 5/26/99	1059	500.3	1176.4	676.1

NOTE: Lots may be identified above by a manufacturer's lot number or by the date of reagent preparation. If different lots of a particular reagent are used, indicate the applicable test and/or run number(s) and sampling location(s) where the train(s) loaded and/or recovered with that reagent are used (i.e., list each reagent blank sample number with the applicable test and/or run number(s) and sampling location(s) below).

Sample Number	For Test and/or Run Number(s)	For Sampling Location(s)

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct 2 PSM

Run No. 1 Sampling Train No. M23-~~X~~ Outlet Sample Box No. 011191
Set-up person(s): PMurowchick Date: 06/10/99
Transfer to Sampler:
Relinquished By P. Murowchick Received By D. Alduty Date/Time 06/11/99 0830

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M23-2 *			
Water-cooled Probe (Liner-Quartz)	*			
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL	*			
90° Bypass	*			
Filter Holder Front				
Filter Holder Back with Teflon®-coated 316 SS Filter Support	F-210	Filter Type: Whatman QM-A		
Short 90° Connector				
Condenser (Standard)		Thermocouple No. XAD-3		
XAD-2 Resin Cartridge (Standard)	# 160	~65 grams XAD-2 Resin + Surrogates	495.2 ***	
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.				
1st Impinger (Mod-GBS)		Empty	464.4	
U-Connector (A)				
2nd Impinger (Mod-GBS)		100 mLs	458.1	580.9
U-Connector (B)		ASTM Type II Water		
3rd Impinger (GBS)		100 mLs	PSM ~~468.0~~ 467.0	590.7
U-Connector (C)		ASTM Type II Water		
4th Impinger (Mod-GBS)		Empty	565.4	
U-Connector (D)				
5th Impinger (Mod-GBS)		~200 g indicating silica gel	468.7	663.2
U-Connector (E)				
6th Impinger (Mod-GBS)		~200 g indicating silica gel		687.5
Impinger Outlet Connector	4H-22			

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct 2 PSM

Run No. 1 Sampling Train No. M23-~~X~~ Outlet Sample Box No. 011191
Transfer for Recovery:
Relinquished By D Neel Received By P Murowchick Date/Time 6/11/99 2100
Sample box recovery person(s): P Murowchick Date: 6/11 199
Probe/STL recovery person(s): D Neel, J Hosenfeld Date: 6/11 199
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger: XAD-2

	Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	499.4	740.5	584.3	590.7	566.9	673.7	688.6
Initial Wt.	PSM ~~499.4~~ 495	464.4	580.9	590.7	565.4	663.2	687.5
Net Wt.	4.2	276.1	3.4	0.0	1.5	10.5	1.1

[Total Condensate Collected: 296.8 grams]

Description and/or color:	White	Clear	Clear	Clear	Clear	20	30
Sample Recovery:	Cartridge*	→ → → → → → → Dispose of properly ← ← ← ← ← ← ←				% Blue	

Sample Number: 1035

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 1033 Description/Color: Very Light Taupe particulate Coating

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	1032	1034	1036
Sample Bottle Tare Wt.	500.8	499.2	500.4
Components Rinsed**:	Front -- nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front; Back -- filter support, filter holder back, short 90° connector, condenser		
Sample Bottle Final Wt.	PSM ~~722.4~~ 754.2	879.8	PSM ~~724.0~~ 731.4
Net Sample Wt.	253.4	380.6	231.0

* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

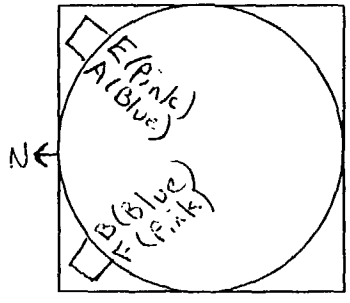
COMMENTS:

Probe, Transfer line, and nozzle rinses were placed in the Inlet Front Half rinse bottles (1008 + 1012) by mistake

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 2 Date 6/12/99
Project No. 4951-08
Client EPA/EMC and CANA
Source Incinerator #4
Sampling Location Scrubber Inlet and Outlet
Operator A. Carender
Record data every 10 minutes
Barometer No. X4029
Barometric Pressure 30.28 in Hg
Elevation to Meter Boxes 0 ft
Meter Box P_{bar} 30.23 in Hg
Elevation to Sampling Loc. 0 ft
Sampling Location P_{bar} 30.23 in Hg
Static Pressure IN -0.050 OUT -0.01 in H_2O

Train A (Blue)	Train B
Train A Type/No. M23-3 (Inlet)	Train B Type/No. M23-4 (OUTLET)
Probe No. WC3-7 Length: 3 ft	Probe No. WC3-6 Length: 3 ft
Liner Type Quartz Heated? (Y) n	Liner Type Quartz Heated? (Y) n
Nozzle No. 23-1 Tip Dia. 0.709 in	Nozzle No. 23-2 Tip Dia. 0.708 in
Pitot Tube No. WC3-7 C_p 0.813	Pitot Tube No. WC3-6 C_p 0.821
Stack Thermocouple No. WC3-7	Stack Thermocouple No. WC3-6
Filter No. N/A	Filter No. N/A
Sample Box No. 012-003	Sample Box No. 10285
Umbilical/Impinger Hookup DH-32	Umbilical/Impinger Hookup DH-11
Umbilical Nos. N-125-6	Umbilical Nos. N-125-3
Meter Box No. N13	Meter Box No. N9
DGM Correction (Y) 0.985	DGM Correction (Y) 0.990
Orifice Meter ΔH@ 1.861	Orifice Meter ΔH@ 1.982



Traverse Point Layout
Compass Direction ➢

Assumed Moisture IN 14.5 OUT 23.9 %
Assumed $\%CO_2$ IN 6.9 OUT 6.1 $\%O_2$ IN 10.0 OUT 11.4
Nozzles are quartz-glass.

Train A Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	10:57	1418								
Pass or Fail		PASS								

Train B Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	10:30	1417								
Pass or Fail		PASS								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	11:00	14:45								
Vacuum, in Hg	15	9								
Leak Rate, cfm	0.005	0.004*								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	10:50	14:26								
Vacuum, in Hg	15	12								
Leak Rate, cfm	0.008	0.006								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

* Sample train leak checked at sample transfer line due to leak from nozzle during leak check

	TRAIN A	TRAIN B
Meter Volume at Start of Run	635.681	6.811
Meter Volume at End of Run	698.990	56.361
Total Leak Check Volume	-0-	-0-
Adjusted Final Volume		

Run No. 2 Date 6/12/99 Sampling Location Incin #4 Scrubber Inlet/Outlet (or Below) page 2 of 2

Project No. 4690-06-03 Train A Type/No. M23-3 Inlet ~~M23-4 Outlet~~ Operator A. Carender

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 635.681 Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
B1	10	11:55	637.42	637.39	0.001	~~0.078~~	0.1	634	74	73	3.0	66	239	248		66
B2	20	1205	639.06	639.37	0.001	0.009	0.009	761	75	73	3.0	65	247	247		58
B3	30	1215	645.11	644.84	0.02	1.23	1.2	1350	77	74	7.8	53	249	249	263	57
B4	40	1225	650.42	650.39	0.015	0.94	0.96	1332	83	76	6.9	54	247	252	248	53
B5	50	1235	656.86	656.74	0.022	1.38	1.38	1340	86	78	7.9	50	248	251	248	50
B6	60	1245	663.13	662.990	0.02	1.30	1.3	1288	90	80	7.5	52	247	252	248	52
		1310		662.990												
A1	70	1320	670.35	670.09	0.027	1.73	1.7	1298	83	82	9.0	50	244	247	252	51
A2	80	1330	677.1	676.75	0.025	1.51	1.5	1319	89	82	8.9	49	248	251	252	48
A3	90	1340	683.22	683.11	0.02	1.22	1.23	1400	92	83	8.1	48	247	250	252	48
A4	100	1350	688.52	688.57	0.015	0.92	0.92	1396	93	84	6.8	51	247	251	252	50
A5	110	1400	693.94	694.09	0.015	0.96	0.96	1320	93	85	7.0	50	244	250	252	49
A6	120	1410	~~699.99~~ 699.016	698.99	0.013	0.83	0.83	1321	94	86	6.7	52	245	251		49
	0	11:46	006.811		Train B Type/No. M23-4 Outlet											
E6	10	11:56	8.48	8.47	0.001	0.1	0.1	537	73	73	2.9	63	245	248	250	62
E5	20	1206	10.13	10.47	0.001	0.09	0.09	577	75	74	3.0	59	246	248	250	49
E4	30	1216	15.23	15.34	0.01	0.92	0.90	627	77	75	5.6	54	249	249	250	47
E3	40	1226	20.11	20.25	0.008	0.84	0.84	497	82	76	5.5	51	250	250	250	49
E2	50	1236	21.83	22.13	0.001	0.1	0.1	516	85	78	3.4	54	247	250	250	51
E1	60	1246	23.66	23.887	0.001	0.11	0.1	400	83	79	3.2	~~74~~ 62	235	250	250	49
		1318		23.887												
F6	70	1321	28.83	28.90	0.01	~~0.01~~ 0.94	0.94	613	81	80	6.4	56	248	248	250	50
F5	80	1331	34.51	34.67	0.012	1.13	1.13	616	85	80	6.9	45	245	249	250	45
F4	90	1341	39.96	40.10	0.011	1.03	1.0	620	89	81	6.5	46	250	250	250	46
F3	100	1351	45.54	45.62	0.01	1.08	1.0	483	90	82	5.2	47	244	250	250	46
F2	110	1401	51.32	51.18	0.01	1.16	1.15	427	92	83	6.5	48	241	250	250	45
E1	120	1411	57.10	56.861	0.01	1.16	1.15	424	93	84	6.7	49	239	250	250	45

Remarks and Notes: Smoke in area after start of Run

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 2 Sampling Train No. M23-~~2~~ 3 PSM Inlet Sample Box No. 012003
Set-up person(s): P Murowchick Date: 6/16/99
Transfer to Sampler:
Relinquished By P Murowchick Received By D Neal Date/Time 6/12/99 0800

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M23-1 *			
Water-cooled Probe (Liner-Quartz)	*			
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL	*			
90° Bypass	*			
Cyclone	*			
Flask				
Filter Holder Front				
Filter Holder Back with Teflon®-coated 316 SS Filter Support		Filter Type: Whatman QM-A		
Short 90° Connector				
Condenser (Standard)		Thermocouple No. 91-11		
XAD-2 Resin Cartridge (Standard)	#18	~65 grams XAD-2 Resin + Surrogates		498.8 ***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.				
1st Impinger (Mod-GBS)		Empty	465.4	
U-Connector (A)				
2nd Impinger (Mod-GBS)		100 mLs	490.6	595.6
U-Connector (B)		ASTM Type II Water		
3rd Impinger (GBS)		100 mLs	478.1	587.4
U-Connector (C)		ASTM Type II Water		
4th Impinger (Mod-GBS)		Empty	491.4	
U-Connector (D)				
5th Impinger (Mod-GBS)		~200 g indicating silica gel		633.2
U-Connector (E)				
6th Impinger (Mod-GBS)		~200 g indicating silica gel		633.9
Impinger Outlet Connector	UH-32			

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 2 Sampling Train No. M23-3 Inlet Sample Box No. 012003
Transfer for Recovery:
Relinquished By D. Neal Received By P Murowchick Date/Time 1530 6/12/99
Sample box recovery person(s): P Murowchick Date: 6/12/99
Probe/STL recovery person(s): D Neal, J Hosmfeld, D Griffin Date: 6/12/99
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	504.1	671.2	596.0	589.2	493.2	646.5	637.1
Initial Wt.	498.8	465.4	595.6	587.4	491.4	633.2	633.9
Net Wt.	5.3	205.8	0.4	1.8	1.8	13.3	3.2

[Total Condensate Collected: 231.6 grams]

Description and/or color:	white	Clear	Clear	Clear	empty	10	20
Sample Recovery:	Cartridge*	→ → → → → → → Dispose of properly ← ← ← ← ← ← ←				% Blue	

Sample Number: 2011

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 2009 Description/Color: Light Taupe Particulate Matter

CYCLONE/FLASK ASSEMBLY:
Description/Color: N/A

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	2008	2010	2012
Sample Bottle Tare Wt.	498.7	498.6	500.2
Components Rinsed**:	Front -- nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front; Back -- filter support, filter holder back, short 90° connector, condenser		
Sample Bottle Final Wt.	962.8	901.7	766.3
Net Sample Wt.	464.1	403.1	266.1

* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct 4 psm

Run No. 2 Sampling Train No. M23-~~B~~ Outlet Sample Box No. 10285
Set-up person(s): P. Murowchick Date: 06/10/99
Transfer to Sampler:
Relinquished By PMurowchick Received By O Neal Date/Time 6/11/99 0800

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA		
				Initial Weights (grams)**	
				Empty	Loaded
Sampling Nozzle (Quartz)	M23-2	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front					
Filter Holder Back with Teflon®-coated 316 SS Filter Support			Filter Type: Whatman QM-A		
Short 90° Connector					
Condenser (Standard)			Thermocouple No. XAD-3		
XAD-2 Resin Cartridge (Standard)	≈15		~65 grams XAD-2 Resin + Surrogates		501.7 ***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.					
1st Impinger (Mod-GBS)			Empty	467.1	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs	488.2	603.4
U-Connector (B)			ASTM Type II Water		
3rd Impinger (GBS)			100 mLs	513.2	609.7
U-Connector (C)			ASTM Type II Water		
4th Impinger (Mod-GBS)			Empty	472.6	
U-Connector (D)					
5th Impinger (Mod-GBS)			~200 g indicating silica gel		672.0
U-Connector (E)					
6th Impinger (Mod-GBS)			~200 g indicating silica gel		711.3
Impinger Outlet Connector	UH-11				

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 2 Sampling Train No. M23-4 Outlet Sample Box No. 10285
Transfer for Recovery:
Relinquished By D Neal Received By P Murowchick Date/Time 6/12/99 15/30
Sample box recovery person(s): P Murowchick Date: 6/12/99
Probe/STL recovery person(s): D Albert, ONeil, A Page Date: 6/12/99
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	506.0	788.8	605.2	611.5	475.7	683.9	714.5
Initial Wt.	501.7	467.1	603.4	609.7	472.6	672.0	711.3
Net Wt.	4.9	321.7	1.8	1.8	3.1	11.9	3.2

[Total Condensate Collected: 348.4 grams]

Description and/or color:	White	clear	clear	clear	empty	30	40
Sample Recovery:	Cartridge*	→ → → → → → → Dispose of properly ← ← ← ← ← ← ←				% Blue	
Sample Number:	2035						

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 2033 Description/Color: light, taupe particulate matter

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	2032	2034	2036
Sample Bottle Tare Wt.	499.5	499.6	498.0
Components Rinsed**:	Front -- nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front; Back -- filter support, filter holder back, short 90° connector, condenser		
Sample Bottle Final Wt.	920.7	978.5	805.9
Net Sample Wt.	421.2	478.9	307.90

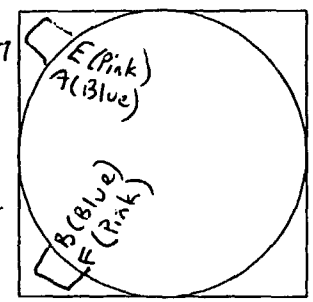
* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

	(BLUE)	(PINK)
Run No. 3 Date 6/13/99	Train A Type/No. M23-1 (Inlet)	Train B Type/No. M23-2 (outlet)
Project No. 4951-08	Probe No. WC3-7 Length: 3 ft	Probe No. WC3-6 Length: 3 ft
Client EPA/EMC and CANA	Liner Type Quartz Heated? (y) n	Liner Type Quartz Heated? (y) n
Source Incinerator #4	Nozzle No. 23-3 Tip Dia. 0.703 0.713 in	Nozzle No. 23-2 Tip Dia. 0.708 in
Sampling Location SCRUBBER INLET and OUTLET	Pitot Tube No. WC3-7 C_p 0.813	Pitot Tube No. WC3-6 C_p 0.821
Operator A. Carendar	Stack Thermocouple No. WC3-7	Stack Thermocouple No. WC3-6
Record data every 10 minutes	Filter No. N/A	Filter No. N/A
Barometer No. X4029	Sample Box No. 10288	Sample Box No. 011191
Barometric Pressure 30.16 in Hg	Umbilical/Impinger Hookup UH-35	Umbilical/Impinger Hookup UH-22
Elevation to Meter Boxes Ø ft	Umbilical Nos. N-125-6	Umbilical Nos. N-125-3
Meter Box P_{bar} 30.16 in Hg	Meter Box No. N13	Meter Box No. N9
Elevation to Sampling Loc. Ø ft	DGM Correction (Y) 0.985	DGM Correction (Y) 0.990
Sampling Location P_{bar} 30.16 in Hg	Orifice Meter ΔH@ 1.881	Orifice Meter ΔH@ 1.982
Static Pressure IN 0.050 OUT 0.017 in H_2O	Assumed Moisture IN 14.5 OUT 23.1 %	Assumed $\%CO_2$ IN 6.9 OUT 6.1 $\%O_2$ IN 10 OUT 11.9 Nozzles are quartz-glass.

a707



Traverse Point Layout

Compass Direction ➢

Train A Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	Pass	1145								
Pass or Fail		Pass								

Train B Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	Pass	1134								
Pass or Fail		Pass								

Train A Sampling System Leak Checks

Blue

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	8:18	11:47								
Vacuum, in Hg	15	11.5								
Leak Rate, cfm	0.011	0.006								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

Pink

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	08:01	11:37								
Vacuum, in Hg	15	9.5								
Leak Rate, cfm	0.005	2.04 0.011								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	100.995	57.194
Meter Volume at End of Run	773.244	114.755
Total Leak Check Volume	-0-	-0-
Adjusted Final Volume		

Run No. 3 Date 6/13/99 Sampling Location Incin. #4 Scrubber In and Out page 1 of 2

Project No. 4951-08 Train A Type/No. M23-1 (INLET) Operator

	Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft³ Initial 700.995 Desired	Dry Gas Meter Reading (V_m), ft³ Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
BLUE	B 1	10	0916	704.86	705.12	0.005	0.50	0.50	643	73	73	4.1	66	247	242	246	*79
	B 2	20	0926	710.83	710.79	0.015	1.2	1.1	934	76	73	7.5	45	266	244	246	*78
	B 3	30	0936	716.97	716.87	0.02	1.26	1.26	1315	81	75	7.6	46	247	251	246	*80
	B 4	40	0946	722.60	722.50	0.017	1.05	1.0	1355	85	*~~576~~	7.0	46	247	252	246	*79
	~~B 5~~	~~50~~	0956	728.32	728.20	0.017	1.08	1.1	1311	86	78	7.1	47	247	251	246	*80 *Changed TC
	B 6	60	1006	735.15	734.874	0.024	1.54	1.54	1300	88	79	8.9	46	246	250	246	40
	A 1	—	1029	735.15	734.874												
	A 1	70	1039	741.24	741.10	0.02	1.23	1.23	1371	82	81	7.9	50	241	246		41
	A 2	80	1049	749.05	748.52	0.032	2.02	2.0	1331	86	80	11.0	49	247	251		38
	A 3	90	1059	756.42	756.21	0.028	1.79	1.7	1324	92	81	9.6	53	247	252		40
	A 4	100	1109	762.16	762.01	0.017	1.08	1.1	1333	93	82	7.5	54	249	252		40
	A 5	110	1119	768.06	767.80	0.015	1.14	1.15	1319	92	83	7.8	54	246	252	258	40
	A 6	120	1129	773.11	773.244	0.013	0.83	0.83	1319	93	84	7.0	54	245	251	258	41
		0	0907	57.194		Train B Type/No. M23-2 (OUTLET)											
PINK	E 6	10	0917	58.87	59.28	0.001	0.10	0.10	521	73	72	2.6	48	247	248	250	53
	E 5	20	0927	61.21	61.48	0.002	0.19	0.19	555	73	72	4.0	44	220	248	250	50
	E 4	30	0937	66.38	66.69	0.010	0.95	0.95	584	75	73	7.3	43	226	249	250	50
	E 3	40	0947	71.78	missed	0.01	1.03	1.0	510	83	74	7.9	44	233	250	250	48
	E 2	50	0957	75.62	76.15	0.005	0.51	0.5	510	85	77	6.0	45	227	251	250	50
	E 1	60	1007	78.22	78.431	0.002	0.23	0.2	388	84	78	4.1	47	221	251	250	52
			1030	78.22	78.431												
	F 6	70	1040	84.45	84.41	0.015	1.36	1.36	642	81	80	8.6	46	232	249	250	55
	F 5	80	1050	90.40	90.11	0.013	1.24	1.24	594	84	79	7.9	43	243	250	250	51
	F 4	90	1100	96.82	missed	0.015	1.44	1.45	593	88	80	9.0	45	244	251	250	49
	F 3	100	1110	102.46	102.23	0.010	1.11	1.1	454	91	81	7.6	46	231	251	250	49
	F 2	110	1120	108.98	108.80	0.013	1.47	1.5	435	91	82	10.0	46	285	250	250	49
	F 1	120	1130	114.79	114.755	0.010	1.17	1.2	407	93	83	8.6	46	220	251	250	49

Remarks and Notes: * High temp readings are due to bad thermocouple, changed TC at Point 5

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 3 Sampling Train No. M23-1 Inlet Sample Box No. 10288
Set-up person(s): PMurowchick Date: 6/11/99
Transfer to Sampler: PSM PMurowchick
Relinquished By ~~D Neal~~ Received By D Neal Date/Time 6/13/99 0730

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	
			Initial Weights (grams)**	
			Empty	Loaded
Sampling Nozzle (Quartz)	M23-3	*		
Water-cooled Probe (Liner-Quartz)		*		
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL		*		
90° Bypass		*		
Cyclone		*		
Flask				
Filter Holder Front				
Filter Holder Back with Teflon®-coated 316 SS Filter Support			Filter Type: Whatman QM-A	
Short 90° Connector				
Condenser (Standard)			Thermocouple No. XAD-4 (Replaced with 41-11 during run)***	
XAD-2 Resin Cartridge (Standard)	#5		~65 grams XAD-2 Resin + Surrogates	494.2
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.				
1st Impinger (Mod-GBS)			Empty	471.4
U-Connector (A)				
2nd Impinger (Mod-GBS)			100 mLs	514.9 / 524.7
U-Connector (B)			ASTM Type II Water	
3rd Impinger (GBS)			100 mLs	482.9 / 627.6
U-Connector (C)			ASTM Type II Water	
4th Impinger (Mod-GBS)			Empty	563.1
U-Connector (D)				
5th Impinger (Mod-GBS)			~200 g indicating silica gel	688.0
U-Connector (E)				
6th Impinger (Mod-GBS)			~200 g indicating silica gel	750.9
Impinger Outlet Connector	UH-35			

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 3 Sampling Train No. M23-1 Inlet Sample Box No. 10288
Transfer for Recovery:
Relinquished By J Surman Received By P Murowchick Date/Time 6/13/99 1230
Sample box recovery person(s): P Murowchick Date: 6/13/99
Probe/STL recovery person(s): D Albarty, J Surman, J Hosenfeld Date: 6/13/99
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	496.3	496.4	628.9	628.8	567.0	707.5	755.9
Initial Wt.	494.2	471.4	624.7	627.6	563.1	688.0	750.9
Net Wt.	2.1	225.0	4.2	1.2	3.9	19.5	5.0

[Total Condensate Collected: 260.9 grams]

Description and/or color:	White	Clear	Clear	Clear	Empty	5	20
Sample Recovery:	Cartridge*	→ → → → → → → Dispose of properly ← ← ← ← ← ← ←				% Blue	

Sample Number: 3011

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 3009 Description/Color: Light tan w/ some sooty particles

CYCLONE/FLASK ASSEMBLY:
Description/Color: N/A

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	3008	3010	3012
Sample Bottle Tare Wt.	498.7	501.0	499.5
Components Rinsed**:	Front -- nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front; Back -- filter support, filter holder back, short 90° connector, condenser		
Sample Bottle Final Wt.	954.3	912.9	818.4
Net Sample Wt.	455.6	411.9	318.9

* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 3 Sampling Train No. M23-2 Outlet Sample Box No. 011191
Set-up person(s): PMurowchick Date: 06/11/99

Transfer to Sampler:
Relinquished By PMurowchick Received By J Surma Date/Time 6/13/99 0730

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M23-4 *			
Water-cooled Probe (Liner-Quartz)	*			
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL	*			
90° Bypass	*			
Filter Holder Front				
Filter Holder Back with Teflon®-coated 316 SS Filter Support		Filter Type: Whatman QM-A		
Short 90° Connector				
Condenser (Standard)		Thermocouple No. XAD-3		
XAD-2 Resin Cartridge (Standard)	#7	~65 grams XAD-2 Resin + Surrogates		468.2 ***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.				
1st Impinger (Mod-GBS)		Empty	470.9	
U-Connector (A)				
2nd Impinger (Mod-GBS)		100 mLs	458.1	567.0
U-Connector (B)		ASTM Type II Water		
3rd Impinger (GBS)		100 mLs	467.0	585.0
U-Connector (C)		ASTM Type II Water		
4th Impinger (Mod-GBS)		Empty	566.0	
U-Connector (D)				
5th Impinger (Mod-GBS)		~200 g indicating silica gel		644.5
U-Connector (E)				
6th Impinger (Mod-GBS)		~200 g indicating silica gel		678.5
Impinger Outlet Connector	UH-22			

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 3 Sampling Train No. M23-2 Outlet Sample Box No. 011191
Transfer for Recovery:
Relinquished By J. Surman Received By PMurowchick Date/Time 6/13/99 1230
Sample box recovery person(s): PMurowchick Date: 6/13/99
Probe/STL recovery person(s): O Neal J Surman A Page Date: 6/13/99
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	495.4	838.3	571.4	587.6	569.2	656.4	681.5
Initial Wt.	488.2	470.9	567.0	585.0	566.0	644.5	678.5
Net Wt.	7.2	367.4	4.4	2.6	3.2	11.9	3.0

[Total Condensate Collected: 399.7 grams]

Description and/or color:	white	clear	clear	clear	empty	5	30
Sample Recovery:	Cartridge*	→ → → → → → Dispose of properly ← ← ← ← ← ←				% Blue	

Sample Number: 3035

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 3033 Description/Color: Light Taupe Particles

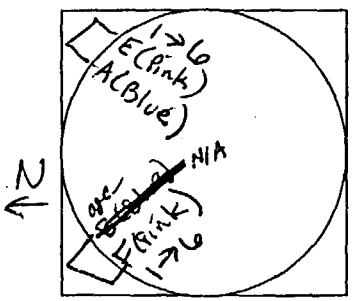
TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	3032	3034	3036
Sample Bottle Tare Wt.	498.8	498.8	499.4
Components Rinsed**:	Front -- nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front; Back -- filter support, filter holder back, short 90° connector, condenser		
Sample Bottle Final Wt.	808.2	931.1	753.7
Net Sample Wt.	309.4	432.3	254.3

* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

	(Blue)	(Pink)
Run No. 4 Date 6/13/99	Train A Type/No. M23-3 (Inlet)	Train B Type/No. M23-4 (OUTLET)
Project No. 4951-08	Probe No. WC3-7 Length: 3 ft	Probe No. WC3-6 Length: 3 ft
Client EPA/EMC and CANA	Liner Type Quartz Heated? (Y) n	Liner Type Quartz Heated? (Y) n
Source Incin # 4	Nozzle No. M23-3 Tip Dia. 0.708 in	Nozzle No. M23-4 Tip Dia. 0.707 in
Sampling Location SCRUBBER INLET & OUTLET	Pitot Tube No. WC3-7 C_p 0.813	Pitot Tube No. WC3-6 C_p 0.821
Operator A. Carender	Stack Thermocouple No. WC3-7	Stack Thermocouple No. WC3-6
Record data every 10 and 125 minutes	Filter No. N/A	Filter No. N/A
Barometer No. X4029	Sample Box No. 012003	Sample Box No. 10285
Barometric Pressure 30.12 in Hg	Umbilical/Impinger Hookup UH-32	Umbilical/Impinger Hookup UH-11
Elevation to Meter Boxes 0 ft	Umbilical Nos. N-125-6	Umbilical Nos. N-125-3
Meter Box P_{bar} 30.12 in Hg	Meter Box No. N13	Meter Box No. N9
Elevation to Sampling Loc. 0 ft	DGM Correction (Y) 0.985	DGM Correction (Y) 0.990
Sampling Location P_{bar} 30.12 in Hg	Orifice Meter ΔH@ 1.881	Orifice Meter ΔH@ 1.982



Traverse Point Layout

Compass Direction ➢

Static Pressure IN 0.050 OUT -0.017 in H_2O Assumed Moisture IN 14.5 OUT 23.1 % Assumed %CO_2 IN 6.9 OUT 6.1 %O_2 IN 10 OUT 11.4 Nozzles are quartz-glass.

(Blue) Train A Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	Pass	1836	19:00 QC							
Pass or Fail		Pass								

(Pink) Train B Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	Pass	18:39								
Pass or Fail		Pass								

Train A Sampling System Leak Checks

Blue

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	15:23	1900								
Vacuum, in Hg	15	10.5								
Leak Rate, cfm	0.004	0.005								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

PINK

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	15:15	18:38								
Vacuum, in Hg	15	7								
Leak Rate, cfm	0.011	0.005								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	773.539	115.102
Meter Volume at End of Run	874.028	168.785
Total Leak Check Volume	—0—	—0—
Adjusted Final Volume		

Run No. 4 Date 6/13/99 Sampling Location Incin # 4 Scrubber Inand Out page 2 of 2

Project No. 4951-08 Train A Type/No. M23-3 (Inlet) Operator A. Cavender

BLUE

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 773.539 Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
A1	12.5	1617.5	780.17	781.63	0.025	1.47	1.47	1430	76	75	5.7	52	246	249	249	44
A1	25	1630	791.29	790.85	0.033	1.91	1.92	1473	80	76	7.5	50	246	251	247	43
A2	37.5	1642.5	801.25	800.60	0.036	2.10	2.1	1538	88	78	7.7	51	247	251	249	44
A2	50	1655	812.13	811.58	0.043	2.49	2.55	1603	92	80	10	50	268	251	252	43
A3	62.5	1707.5	822.21	821.87	0.038	2.13	2.15	1583	95	83	8.9	52	294	250	251	44
A3	75	1720	832.38	832.01	0.037	2.15	2.2	1513	98	85	8.9	52	243	250	253	43
A4	87.5	1732.5	839.87	839.39	0.02	1.16	1.15	1510	98	86	4.1	53	260	251	251	43
A4	100	1745	846.71	846.65	0.017	0.97	1.0	1538	96	87	4.1	51	246	250	252	44
A5	112.5	1807.5	853.58	853.76	0.017	0.98	1.0	1525	96	87	5.0	52	246	249	250	45
A5	125	1820	860.69	860.99	0.018	1.05	1.05	1504	95	87	5.2	51	246	249	251	44
A6	137.5	1832.5	867.12	867.60	0.015	0.86	0.85	1536	95	87	4.9	52	246	249		44
A6	150	1845	873.57	874.028	0.015	0.87	0.85	1516	94	87	5.0	53	245	249		46

PINK

Train B Type/No. M23-4 (Outlet)

	0	1606	115.102													
E6	10	1616	117.45	117.68	0.022	0.19	0.2	554	75	75	3.1	56	236	248	250	47
E5	20	1626	119.04	119.29	0.001	0.08	0.08	651	76	75	2.7	56	235	248	250	47
E4	30	1636	124.94	124.71	0.014	1.23	1.2	675	78	76	5.7	52	243	249	250	46
E3	40	1646	130.10	130.01	0.010	0.93	0.95	611	84	77	5.9	48	251	250	250	44
E2	50	1656	131.75	132.01	0.001	0.09	0.09	599	87	79	3.1	54	250	251	250	46
E1	60	1706	135.56	135.625	0.005	0.50	0.5	533	85	80	4.9	53	239	251	250	46
		1720	135.56	135.625												
F6	70	1736	141.64	141.62	0.015	1.29	1.3	709	83	82	6.1	58	248	248	250	52
F5	80	1746	146.85	146.94	0.01	0.95	0.95	711	87	82	5.9	48	247	248	250	45
F4	90	1756	152.99	152.86	0.015	1.31	1.3	700	89	83	6.0	51	251	253	250	46
F3	100	1806	158.76	158.51	0.013	1.15	1.15	685	92	84	6.4	49	249	251	250	46
F2	110	1816	164.25	163.98	0.01	1.04	1.04	519	93	85	6.2	51	247	251	250	47
F1	120	1826	168.94	168.785	0.007	0.76	0.76	477	93	85	6.0	52	241	251	250	47

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 4 Sampling Train No. M23-3 Inlet Sample Box No. 012003
Set-up person(s): PMurowchick Date: 6/12/99
Transfer to Sampler:
Relinquished By PMurowchick Received By O Neal Date/Time 6/13/99 1600

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz) *	M23-3			
Water-cooled Probe (Liner-Quartz) *				
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL *				
90° Bypass *				
Cyclone *				
Flask				
Filter Holder Front				
Filter Holder Back with Teflon®-coated 316 SS Filter Support		Filter Type: Whatman QM-A		
Short 90° Connector				
Condenser (Standard)		Thermocouple No. 91-11		
XAD-2 Resin Cartridge (Standard)	#11	~65 grams XAD-2 Resin + Surrogates		500.6 ***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.				
1st Impinger (Mod-GBS)		Empty	471.1	
U-Connector (A)				
2nd Impinger (Mod-GBS)		100 mLs	490.6	595.6
U-Connector (B)		ASTM Type II Water		
3rd Impinger (GBS)		100 mLs	478.1	588.9
U-Connector (C)		ASTM Type II Water		
4th Impinger (Mod-GBS)		Empty	492.9	
U-Connector (D)				
5th Impinger (Mod-GBS)		~200 g indicating silica gel		652.3
U-Connector (E)				
6th Impinger (Mod-GBS)		~200 g indicating silica gel		649.7
Impinger Outlet Connector	UH-32			

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 4 Sampling Train No. M23-3 Inlet Sample Box No. 012003
Transfer for Recovery:
Relinquished By _____ Received By P Murowchick Date/Time 6/13/99 1910
Sample box recovery person(s): P Murowchick Date: 6/13/99
Probe/STL recovery person(s): D Neal, J Surman, D Alberty Date: 6/13/99
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	508.9	837.3	626.2	591.2	495.3	670.6	656.4
Initial Wt.	500.6	471.1	595.6	588.9	492.9	652.3	649.7
Net Wt.	8.3	366.2	30.6	2.3	2.4	18.3	6.7

[Total Condensate Collected: 434.8 grams]

Description and/or color:	white	clear	clear	clear	empty	5	10
Sample Recovery:	Cartridge*	→ → → → → → → Dispose of properly ← ← ← ← ← ← ←				% Blue	

Sample Number: 4011

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 4009 Description/Color: Light, taupe particulate

CYCLONE/FLASK ASSEMBLY:
Description/Color: N/A

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	4008	4010	4012
Sample Bottle Tare Wt.	499.5	499.5	498.5
Sample Bottle Final Wt.	839.6	825.3	781.4
Net Sample Wt.	340.1	325.8	282.9

Components Rinsed**: Front -- nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front;
Back -- filter support, filter holder back, short 90° connector, condenser

* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 4 Sampling Train No. M23-4 Outlet Sample Box No. 10285
Set-up person(s): P Murowchick Date: 6/12/99

Transfer to Sampler:
Relinquished By P Murowchick Received By D Neal Date/Time 6/13/99 1600

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA		
				Initial Weights (grams)**	
				Empty	Loaded
Sampling Nozzle (Quartz)	M23-4	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front					
Filter Holder Back with Teflon®-coated 316 SS Filter Support			Filter Type: Whatman QM-A		
Short 90° Connector					
Condenser (Standard)			Thermocouple No. XAD-3		
XAD-2 Resin Cartridge (Standard)	#6		~65 grams XAD-2 Resin + Surrogates		498.7 ***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.					
1st Impinger (Mod-GBS)			Empty	468.2	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs	488.2	593.7
U-Connector (B)			ASTM Type II Water		
3rd Impinger (GBS)			100 mLs	513.2	610.5
U-Connector (C)			ASTM Type II Water		
4th Impinger (Mod-GBS)			Empty	474.0	
U-Connector (D)					
5th Impinger (Mod-GBS)			~200 g indicating silica gel		695.6
U-Connector (E)					
6th Impinger (Mod-GBS)			~200 g indicating silica gel		719.6
Impinger Outlet Connector	UH-11				

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 4 Sampling Train No. M23-4 Outlet Sample Box No. 10285

Transfer for Recovery:
Relinquished By D. Neal Received By P Murowchick Date/Time 6/13/95 1910

Sample box recovery person(s): P Murowchick Date: 6/13/95

Probe/STL recovery person(s): S Surman, J Hosenfeld, D Alburty Date: 6/13/95

Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	504.8	871.7	596.7	614.6	477.3	708.2	722.3
Initial Wt.	498.7	468.2	593.7	610.5	474.0	695.6	719.6
Net Wt.	6.1	403.5	3.0	4.1	3.3	12.6	2.7

[Total Condensate Collected: 435.3 grams]

Description and/or color:	white	Clear	Clear	Clear	empty	10	30
Sample Recovery:	Cartridge*	→ → → → → → → Dispose of properly ← ← ← ← ← ← ←				% Blue	

Sample Number: 4035

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 4033 Description/Color: Light taupe particulate

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	4032	4034	4036
Sample Bottle Tare Wt.	499.4	499.2	498.9
Components Rinsed**:	Front -- nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front; Back -- filter support, filter holder back, short 90° connector, condenser		
Sample Bottle Final Wt.	890.2	938.1	641.0
Net Sample Wt.	390.8	438.9	142.1

* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.

** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

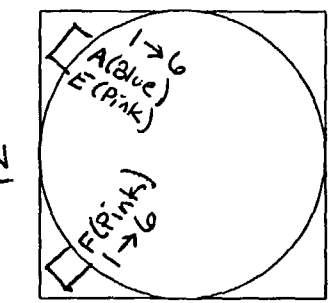
COMMENTS:

Last toluene soak was put into the back half rinse bottle (4034)

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 5 Date 6/14/99
Project No. 4951-08
Client EPA/EMC and CANA
Source Incin #4
Sampling Location SCRUBBER INLET and OUTLET
Operator A. Carender
Record data every ~~1 2 3~~ 10 minutes
Barometer No. X4029
Barometric Pressure 29.86 in Hg
Elevation to Meter Boxes 0 ft
Meter Box P_{bar} 29.86 in Hg
Elevation to Sampling Loc. 0 ft
Sampling Location P_{bar} IN 29.86 OUT in Hg
Static Pressure IN -0.050 OUT -0.017 in H_2O

(BLUE)	(PINK)
Train A Type/No. M23-1 (inlet)	Train B Type/No. M23-2 (outlet)
Probe No. WC3-7 Length: 3 ft	Probe No. WC3-6 Length: 3 ft
Liner Type Quartz Heated? (Y) n	Liner Type QUARTZ Heated? (Y) n
Nozzle No. M23-1 Tip Dia. 0.708 in	Nozzle No. M23-2 Tip Dia. 0.708 in
Pitot Tube No. WC3-7 C_p 0.813	Pitot Tube No. WC3-6 C_p 0.821
Stack Thermocouple No. WC3-7	Stack Thermocouple No. WC3-6
Filter No. N/A	Filter No. N/A
Sample Box No. 10288	Sample Box No. 011191
Umbilical/Impinger Hookup UH-35	Umbilical/Impinger Hookup UH-22
Umbilical Nos. N-125-6	Umbilical Nos. N-125-3
Meter Box No. N13	Meter Box No. N9
DGM Correction (Y) 0.985	DGM Correction (Y) 0.990
Orifice Meter ΔH@ 1.881	Orifice Meter ΔH@ 1.982



Traverse Point Layout
Compass Direction ➢

Assumed Moisture IN 15.1 OUT 26.1 %
Assumed $\%CO_2$ IN 7.9 OUT 7.5 $\%O_2$ IN 9.2 OUT 10
Nozzles are quartz-glass.

(BLUE) Train A Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1400	1843								
Pass or Fail		Pass								

(PINK) Train B Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1425	1830								
Pass or Fail		Pass								

Train A Sampling System Leak Checks

BLUE	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1401	18:51								
Vacuum, in Hg	15	12.5								
Leak Rate, cfm	0.012	0.002 *								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

PINK	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1426	Fail								
Vacuum, in Hg	15	8.5								
Leak Rate, cfm	0.011	—								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

* From STL on back, failed at nozzle

	TRAIN A BLUE	TRAIN B PINK
Meter Volume at Start of Run	874.749	169.121
Meter Volume at End of Run	958.288	231.641
Total Leak Check Volume	— 0 —	— 0 —
Adjusted Final Volume		

Run No. 5 Date 6/14/9 Sampling Location Incin 4th Scrubber In and Out page 2 of 2

Project No. 4951-08 Train A Type/No. M23- (Inlet) Operator A. Corender

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 874.749 Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
(BLUE)	Ø	1550														
A 1	10	1600	882.46	882.63	0.033	2.12	2.12	1359	75	74	9.2	48	244	246	256	54
A 1	20	1610	891.22	891.01	0.042	2.44	2.5	1448	79	75	11	48	261	250	256	53
A 2	30	1620	900.26	900.09	0.048	2.71	2.7	1500	87	77	12.1	50	292	252	256	54
A 2	40	1630	909.04	908.61	0.045	2.54	2.54	1527	91	79	12.0	49	285	251	256	54
A 3	50	1640	917.52	917.28	0.042	2.36	2.46	1544	93	81	11.8	51	280	251	256	52
* A 3	60	1650	925.96	925.643	0.040	2.33	2.35	1482	95	83	11.1	51	271	251	265	52
A 4	70	1730	931.41	931.33	0.017	0.98	0.98	1479	85	83	6.9	49	247	249	265	53
A 4	80	1740	937.29	937.11	0.02	1.14	1.14	1510	87	82	7.2	51	245	250	265	53
** A 5	90	1750	942.72	942.70	0.017	0.97	0.97	1516	91	83	7.0	52	245	251	259	53
A 5	100	1800	947.92	947.99	0.013	0.88	0.88	1450	92	84	7.6	52	244	251	259	54
A 5	110	1810	952.75	953.02	0.013	0.76	0.76	1460	92	85	6.5	53	245	250	259	54
A 5	120	1820	957.92	958.288	0.015	0.87	0.87	1480	92	85	6.9	53	244	250	259	53
	Ø	1551	169.121		Train B Type/No. M23- (OUTLET)											
(PINK) E 6	10	1601	172.72	172.84	0.005	0.45	0.45	562	76	75	4.0	60	232	247	250	53
E 5	20	1611	176.17	176.47	0.005	0.42	0.42	656	77	76	4.3	58	248	248	250	50
E 4	30	1621	183.37	183.52	0.023	1.82	1.8	730	80	77	8.4	51	250	249	250	48
E 3	40	1631	188.29	188.62	0.01	0.84	0.84	667	87	79	5.9	55	240	250	250	50
E 2	50	1641	190.99	191.31	0.003	0.25	0.22	663	88	80	3.3	60	235	251	250	53
E 1	60	1651	194.91	195.251	0.005	0.53	0.5	427	86	81	5.0	60	236	250	250	52
		1721	~~201.11~~													
** F 4	70	1731	201.11	201.19	0.017	1.34	1.3	746	83	83	6.0	53	248	248	250	51
F 4	80	1741	207.33	207.39	0.017	1.34	1.34	743	86	82	6.9	50	248	250	250	51
F 4	90	1751	213.20	213.01	0.015	1.19	1.2	741	90	83	6.0	51	244	250	250	50
F 3	100	1801	219.10	219.01	0.013	1.20	1.23	573	91	83	6.5	52	250	251	250	51
F 2	110	1811	225.58	224.95	0.014	1.45	1.45	466	93	84	7.4	52	249	249	256	50
F 1	120	1821	231.91	231.641	0.013	1.37	1.37	449	94	86	6.9	52	247	250	250	49

Remarks and Notes: * 1650: Stopped sampling for port change at outlet, Resumed at 1720

** Something is now blocking duct

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 5 Sampling Train No. M23-1 Inlet Sample Box No. 10288
Set-up person(s): PMurowchick Date: 6/13/99

Transfer to Sampler:
Relinquished By PMurowchick Received By ONeil Date/Time 6/14/99 1100

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA		
				Initial Weights (grams)**	
				Empty	Loaded
Sampling Nozzle (Quartz)	M23-1	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Cyclone		*			
Flask					
Filter Holder Front					
Filter Holder Back with Teflon®-coated 316 SS Filter Support			Filter Type: Whatman QM-A		
Short 90° Connector					
Condenser (Standard)			Thermocouple No. ~~8~~ PSM 91-11		
XAD-2 Resin Cartridge (Standard)	#3		~65 grams XAD-2 Resin + Surrogates		501.3 ***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.					
1st Impinger (Mod-GBS)			Empty	471.3	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs	514.9	611.6
U-Connector (B)			ASTM Type II Water		
3rd Impinger (GBS)			100 mLs	482.9	586.9
U-Connector (C)			ASTM Type II Water		
4th Impinger (Mod-GBS)			Empty	565.8	
U-Connector (D)					
5th Impinger (Mod-GBS)			~200 g indicating silica gel		678.2
U-Connector (E)					
6th Impinger (Mod-GBS)			~200 g indicating silica gel		749.5
Impinger Outlet Connector	UH-35				

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 5 Sampling Train No. M23-1 Inlet Sample Box No. 10288
Transfer for Recovery:
Relinquished By J Hosenfeld Received By PMurowchick Date/Time 6/14/99 1900
Sample box recovery person(s): PMurowchick Date: 6/14/99
Probe/STL recovery person(s): J Hosenfeld, D Albury, D Neal Date: 6/14/99
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	501.5	742.4	630.3	587.9	569.5	700.7	754.2
Initial Wt.	501.3	471.3	611.6	586.9	565.8	678.2	749.5
Net Wt.	0.2	271.1	18.7	1.0	3.7	22.5	4.7

[Total Condensate Collected: 321.9 grams]

Description and/or color:	White	Clear	Clear	Clear	Empty	10	80
Sample Recovery:	Cartridge*	→ → → → → → → Dispose of properly ← ← ← ← ← ← ←				% Blue	

Sample Number: 5011

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 5009 Description/Color: Very light

CYCLONE/FLASK ASSEMBLY:
Description/Color: N/A

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	5008	5010	5012
Sample Bottle Tare Wt.	497.8	499.6	500.9
Sample Bottle Final Wt.	1027.4	899.5	792.6
Net Sample Wt.	529.6	399.9	291.7

Components Rinsed**: Front -- nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front;
Back -- filter support, filter holder back, short 90° connector, condenser

* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartrid
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably cle and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but with brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No.. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 5 Sampling Train No. M23-2 Outlet Sample Box No. 011191
Set-up person(s): P Murowchick Date: 6/13/99

Transfer to Sampler:
Relinquished By P Murowchick Received By D Ner Date/Time 6/14/99 1100

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M23-2 *			
Water-cooled Probe (Liner-Quartz)	*			
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL	*			
90° Bypass	*			
Filter Holder Front				
Filter Holder Back with Teflon®-coated 316 SS Filter Support		Filter Type: Whatman QM-A		
Short 90° Connector				
Condenser (Standard)		Thermocouple No. XAD-3		
XAD-2 Resin Cartridge (Standard)	# 9	~65 grams XAD-2 Resin + Surrogates		491.8***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.				
1st Impinger (Mod-GBS)		Empty	469.2	
U-Connector (A)				
2nd Impinger (Mod-GBS)		100 mLs	458.1	570.3
U-Connector (B)		ASTM Type II Water		
3rd Impinger (GBS)		100 mLs	467.0	555.3
U-Connector (C)		ASTM Type II Water		
4th Impinger (Mod-GBS)		Empty	568.1	
U-Connector (D)				
5th Impinger (Mod-GBS)		~200 g indicating silica gel		654.6
U-Connector (E)				
6th Impinger (Mod-GBS)		~200 g indicating silica gel		687.5
Impinger Outlet Connector	UH-22			

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 5 Sampling Train No. M23-2 Outlet Sample Box No. 011191
Transfer for Recovery:
Relinquished By D Neal Received By PMurovchick Date/Time 6/14/99 1900
Sample box recovery person(s): PMurovchick Date: 6/14/99
Probe/STL recovery person(s): JHosenfeld, DAlbuch Date: 6/14/99
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	496.4 491.1	556.4	574.0	557.3	571.1	669.1	690.1
Initial Wt.	491.8	469.2	570.3	555.3	564.5	654.6	687.5
Net Wt.	5.3	87.2	3.7	2.0	3.6	14.50	2.6

[Total Condensate Collected: _____ grams]

Description and/or color:	white	clear	clear	clear	empty	50	80
Sample Recovery:	Cartridge*	→ → → → → → → Dispose of properly ← ← ← ← ← ← ←				% Blue	

Sample Number: 5 035

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 5 033 Description/Color: Very light particulate

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	5 032	5 034	5 036
Sample Bottle Tare Wt.	499.1	500.7	501.1
Components Rinsed**:	Front -- nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front; Back -- filter support, filter holder back, short 90° connector, condenser		
Sample Bottle Final Wt.	Samples not recovered, train leaking (bypass condenser.		
Net Sample Wt.			

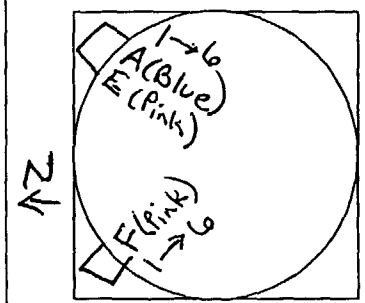
* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 6 Date 6/15/99
Project No. 4951-08
Client EPA/EMC and CANA
Source Incin #4
Sampling Location SCRUBBER Inlet and Outlet
Operator A. Carender
Record data every 10 minutes
Barometer No. X4029
Barometric Pressure 29.92 in Hg
Elevation to Meter Boxes 0 ft
Meter Box P_{bar} 29.92 in Hg
Elevation to Sampling Loc. 0 ft
Sampling Location P_{bar} 29.92 in Hg
Static Pressure IN -2.05 OUT -0.97 in H_2O

(Blue) Train A	(Pink) Train B
Train A Type/No. M23-3 (inlet)	Train B Type/No. M23-4 (outlet)
Probe No. WC3-7 Length: 3 ft	Probe No. WC3-6 Length: 3 ft
Liner Type Quartz Heated? (Y) n	Liner Type Quartz Heated? (Y) n
Nozzle No. M23-3 Tip Dia. 0.708 in	Nozzle No. M23-4 Tip Dia. 0.707 in
Pitot Tube No. WC3-7 C_p 0.813	Pitot Tube No. WC3-6 C_p 0.821
Stack Thermocouple No. WC3-7	Stack Thermocouple No. WC3-6
Filter No. N/A	Filter No. N/A
Sample Box No. 012003	Sample Box No. 10285
Umbilical/Impinger Hookup UH-32	Umbilical/Impinger Hookup UH-11
Umbilical Nos. N-125-6	Umbilical Nos. N-125-3
Meter Box No. N13	Meter Box No. N9
DGM Correction (Y) 0.985	DGM Correction (Y) 0.990
Orifice Meter ΔH@ 1.881	Orifice Meter ΔH@ 1.982



Traverse Point Layout
Compass Direction ➤

Assumed Moisture IN 15.5 OUT 25.0 %
Assumed $\%CO_2$ IN 2.2 OUT 2.5 $\%O_2$ IN 10 OUT 10
Nozzles are quartz-glass.

(Blue) Train A Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	08:16	13:42								
Pass or Fail		pass								

(Pink) Train B Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	08:07	13:21								
Pass or Fail		Pass								

Train A Sampling System Leak Checks

BLUE

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	08:19	13:39								
Vacuum, in Hg	≥15	12.0								
Leak Rate, cfm	0.004	0.006								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

PINK

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	08:11	13:25								
Vacuum, in Hg	≥15"	10.0								
Leak Rate, cfm	0.007	0.006								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	959.646	234.308
Meter Volume at End of Run	1037.702	299.511
Total Leak Check Volume	—0—	—0—
Adjusted Final Volume		

Run No. 6 Date 6/15/99 Sampling Location Scrubber Inlet/Out page 1 of 2

Project No. 4951-08 Train A Type/No. M23-3 Operator A. Carender

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 959.646 Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
BLUE																
A1	10	1055	966.65	966.25	0.027	1.52	1.5	1476	73	72	7.7	48	242	247	263	48
A1	20	1105	974.60	974.44	0.04	2.27	2.3	1470	77	73	11.6	44	246	249	263	44
A2	30	1115	982.76	982.49	0.04	2.2	2.2	1538	83	75	11.1	47	274	251	263	45
A2	40	1125	989.86	989.30	0.030	1.66	1.66	1537	87	76	8.0	46	259	251	263	45
A3	50	1135	998.07	997.missed	0.04	2.22	2.3	1545	89	78	12.0	45	250	250	263	45
A3	60	1145	1006.47	1006.088	0.041	2.31	2.5	1520	92	80	13.1	44	258	251	263	45
		1211	1006.47	1006.088												
A4	70	1221	1011.55	1011.32	0.015	0.85	0.88	1492	82	81	7.0	45	243	247	260	50
A4	80	1231	1016.96	1016.99	0.017	0.96	0.98	1492	85	80	7.8	43	245	250	260	47
A5	90	1241	1022.10	1022.28	0.015	0.86	0.86	1465	89	81	7.2	43	247	250	260	48
A5	100	1251	1027.25	1027.51	0.015	0.86	0.86	1472	90	82	7.1	44	248	251	260	48
A6	110	1301	1032.35	1032.65	0.015	0.85	0.85	1512	91	83	7.0	44	247	250	264	49
A6	120	1311	1037.36	1037.702	0.014	0.81	0.8	1459	92	84	7.0	45	247	251	264	48

Train B Type/No. M23-4

	0	1046	234.308													
PINK																
E6	10	1056	237.83	238.13	0.005	0.44	0.44	613	72	71	4.4	54	247	248	250	54
E5	20	1106	241.24	missed	0.005	0.41	0.40	683	73	72	4.9	52	249	248	250	51
E4	30	1116	248.04	248.0	0.02	1.63	1.63	709	78	74	8.6	50	248	249	250	50
E3	40	1126	253.67	253.52	0.013	1.11	1.1	663	84	75	7.0	49	251	251	250	50
E2	50	1136	256.81	256.82	0.004	0.34	0.34	662	87	77	4.0	53	250	251	250	51
E1	60	1146	260.42	260.620	0.005	0.45	0.45	599	86	79	5.5	52	247	250	250	51
		1212	260.42	260.620												
F6	70	1222	267.18	267.21	0.02	1.6	1.6	748	82	81	8.9	48	247	246	250	48
F5	80	1232	274.03	273.77	0.02	1.64	1.6	721	86	81	8.9	48	250	249	250	47
F4	90	1242	280.51	280.31	0.018	1.45	1.5	742	90	81	9.0	50	250	250	250	47
F3	100	1252	286.93	286.77	0.015	1.44	1.5	753	92	82	9.0	49	250	250	250	46
F2	110	1302	293.31	292.97	0.013	1.39	1.4	450	93	83	8.9	50	250	249	250	48
F1	120	1312	299.85	299.511	0.014	1.48	1.5	466	93	84	9.7	52	245	249	250	48

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 6 Sampling Train No. M23-Inlet 3 Sample Box No. 012003
Set-up person(s): PMurawchick Date: 6/14/99
Transfer to Sampler:
Relinquished By DNeal ← Received By PMurawchick Date/Time 6/14/99 1100

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	
			Initial Weights (grams)**	
			Empty	Loaded
Sampling Nozzle (Quartz)	M23-3 *			
Water-cooled Probe (Liner-Quartz)	*			
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL	*			
90° Bypass	*			
Cyclone	*			
Flask				
Filter Holder Front				
Filter Holder Back with Teflon®-coated 316 SS Filter Support		Filter Type: Whatman QM-A		
Short 90° Connector				
Condenser (Standard)		Thermocouple No. 91-11		
XAD-2 Resin Cartridge (Standard)	17	~65 grams XAD-2 Resin + Surrogates		497.1 ***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.				
1st Impinger (Mod-GBS)		Empty	471.1	
U-Connector (A)				
2nd Impinger (Mod-GBS)		100 mLs	490.6	613.1
U-Connector (B)		ASTM Type II Water		
3rd Impinger (GBS)		100 mLs	478.1	580.5
U-Connector (C)		ASTM Type II Water		
4th Impinger (Mod-GBS)		Empty	493.5	
U-Connector (D)				
5th Impinger (Mod-GBS)		~200 g indicating silica gel		675.3
U-Connector (E)				
6th Impinger (Mod-GBS)		~200 g indicating silica gel		691.4
Impinger Outlet Connector	UH-32			

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 6 Sampling Train No. M23-3 Inlet Sample Box No. 012003
Transfer for Recovery:
Relinquished By A Page Received By P Murowchick Date/Time 6/15/99 1400
Sample box recovery person(s): P Murowchick Date: 6/15/99
Probe/STL recovery person(s): D Albury A Page Date: 6/15/99
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	500.6	733.0	614.6	580.7	495.7	692.7	694
Initial Wt.	497.1	471.1	613.1	580.5	493.5	675.3	691.4
Net Wt.	3.5	261.9	1.5	0.2	2.2	17.4	3.0

[Total Condensate Collected: 289.7 grams]

Description and/or color:	white	clear	clear	clear	empty	10	90
Sample Recovery:	Cartridge*	→ → → → → → → Dispose of properly ← ← ← ← ← ← ←				% Blue	

Sample Number: 6011

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 6009 Description/Color: Light gray particulate matter

CYCLONE/FLASK ASSEMBLY:
Description/Color: N/A

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	6008	6010	6012
Sample Bottle Tare Wt.	499.4	500.3	500.5
Components Rinsed**:	Front -- nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front; Back -- filter support, filter holder back, short 90° connector, condenser		
Sample Bottle Final Wt.	936.0	1227.2	842.9
Net Sample Wt.	436.6	726.9	342.4

* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 6 Sampling Train No. M23-4 Outlet Sample Box No. 10285
Set-up person(s): PMurowchick Date: 6/14/99

Transfer to Sampler:
Relinquished By DNed Received By PMurowchick Date/Time 6/15/99 1400

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M23-4 *			
Water-cooled Probe (Liner-Quartz)	*			
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL	*			
90° Bypass	*			
Filter **Holder Front**				
Filter Holder Back with **Teflon®**-coated 316 SS Filter Support		Filter Type: Whatman QM-A		
Short 90° Connector				
Condenser (Standard)		Thermocouple No. XAD-3		
XAD-2 Resin Cartridge (Standard)	#13	~65 grams XAD-2 Resin + Surrogates		486.2***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.				
1st Impinger (Mod-GBS)		Empty	471.6	
U-Connector (A)				
2nd Impinger (Mod-GBS)		100 mLs	488.2	589.4
U-Connector (B)		ASTM Type II Water		
3rd Impinger (GBS)		100 mLs	513.2	623.8
U-Connector (C)		ASTM Type II Water		
4th Impinger (Mod-GBS)		Empty	473.9	
U-Connector (D)				
5th Impinger (Mod-GBS)		~200 g indicating silica gel		729.0
U-Connector (E)				
6th Impinger (Mod-GBS)		~200 g indicating silica gel		700.6
Impinger Outlet Connector	UH-11			

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 6 Sampling Train No. M23-4 Outlet Sample Box No. 012085
Transfer for Recovery:
Relinquished By Dan Nezl Received By Pam Mroczkick Date/Time J Surman 1400
Sample box recovery person(s): P Mroczkick Date: 6/15/99
Probe/STL recovery person(s): DAlbert, A Page Date: 6/15/99
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	495.4	861.5	609.9	627.1	476.2	742.4	705.1
Initial Wt.	486.2	471.6	589.4	623.8	473.9	729.0	700.6
Net Wt.	9.2	389.9	20.5	3.3	2.3	13.4	4.5

[Total Condensate Collected: 443.1 grams]

Description and/or color:	white	clear	clear	clear	empty	10	80
Sample Recovery:	Cartridge*	→ → → → → → → Dispose of properly ← ← ← ← ← ← ←				% Blue	

Sample Number: 6035

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 6033 Description/Color: Light tan

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	6032	6034	6036
Sample Bottle Tare Wt.	499.6	497.9	499.7
Components Rinsed**:	Front -- nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front; Back -- filter support, filter holder back, short 90° connector, condenser		
Sample Bottle Final Wt.	920.0	937.7	797.8
Net Sample Wt.	420.4	439.8	298.1

* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

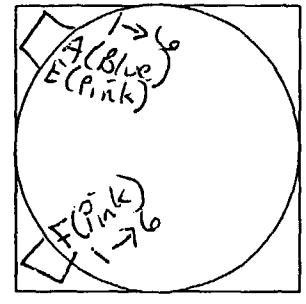
COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 7 Date 6/15/99
Project No. 4951-08
Client EPA/EMC and CANA
Source Incin #4 Inlet and Outlet
Sampling Location Inlet and Outlet
Operator A. Curendi
Record data every 10 minutes
Barometer No. X-4029
Barometric Pressure 29.89 in Hg
Elevation to Meter Boxes 0 ft
Meter Box P_{bar} 29.89 in Hg
Elevation to Sampling Loc. 0 ft
Sampling Location P_{bar} 29.89 in Hg
Static Pressure IN -.005 OUT -0.017 in H_2O

Blue	Pink
Train A Type/No. M23-1 (Inlet)	Train B Type/No. M23-2 (Outlet)
Probe No. WC3-7 Length: 3 ft	Probe No. WC3-6 Length: 3 ft
Liner Type Quartz Heated? (Y) n	Liner Type Quartz Heated? (Y) n
Nozzle No. M23-1 Tip Dia. 0.708 in	Nozzle No. M23-2 Tip Dia. 0.708 in
Pitot Tube No. WC3-7 C_p 0.813	Pitot Tube No. WC3-6 C_p 0.821
Stack Thermocouple No. WC3-7	Stack Thermocouple No. WC3-6
Filter No. N/A	Filter No. N/A
Sample Box No. 10238 35	Sample Box No. UH22
Umbilical/Impinger Hookup UH-7	Umbilical/Impinger Hookup N-125-3
Umbilical Nos. N-125-6	Umbilical Nos. N-125-3
Meter Box No. N13	Meter Box No. N9
DGM Correction (Y) 0.985	DGM Correction (Y) 0.990
Orifice Meter ΔH@ 1.881	Orifice Meter ΔH@ 1.982

Assumed Moisture IN 15.5 OUT 25.0 %
Assumed %CO_2 IN 7.2 OUT 7.5 %O_2 IN 10 OUT 10
Nozzles are quartz-glass.



Traverse Point Layout
Compass Direction ➢

(Blue) Train A Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1706	2030								
Pass or Fail		Pass								

(Pink) Train B Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1645	2016								
Pass or Fail		Pass								

Train A Sampling System Leak Checks

BLUE

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1727	20:38								
Vacuum, in Hg	15	≥11.5								
Leak Rate, cfm	0.005	0.017								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

PINK

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1655	2018								
Vacuum, in Hg	15	7.2								
Leak Rate, cfm	0.003	0.003								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	38.203	299.956
Meter Volume at End of Run	109.212	354.057
Total Leak Check Volume	-0-	-0-
Adjusted Final Volume		

Run No. 7 Date 6/15/99 Sampling Location Incin #4 Inlet and Outlet page 1 of 2

Project No. 4951-08 Train A Type/No. M23-1 Operator A. Carenlee

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft³ Initial 38.203 Desired	Dry Gas Meter Reading (V_m), ft³ Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
Blue A 1	10	1800	44.19	44.37	~~0.027~~ 0.017	1.19	1.2	1553	76	75	6.1	57	244	247	263	52
A 1	20	1810	51.36	51.35	0.032	1.70	1.7	1605	81	76	9.0	55	249	250	263	49
A 2	30	1820	57.95	57.91	0.038	1.55	1.5	1638	85	77	9.0	53	258	251	263	48
A 2	40	1830	65.42	65.22	0.035	1.83	1.8	1662	88	79	10.8	52	254	251	263	49
A 3	50	1840	72.84	72.58	0.035	1.80	1.8	1704	91	80	11.1	54	263	251	263	48
A 3	60	1850	80.29	79.828	0.035	1.81	1.8	1701	93	82	11.2	53	260	251	263	47
		1910	80.29	79.828												
A 4	70	1920	85.22	84.82	0.015	0.79	0.79	1629	85	82	7.5	53	246	245	253	51
A 4	80	1930	91.39	91.29	0.014	1.25	1.3	1668	86	82	10.3	50	245	250	253	48
A 5	90	1940	95.43	95.66	0.010	0.53	0.53	1640	91	83	6.9	53	245	250	253	48
A 5	100	1950	99.99	100.00	0.013	0.68	0.68	1664	89	83	7.3	54	249	249	253	49
A 6	110	2000	104.43	104.66	0.012	0.64	0.64	1632	90	84	7.6	54	243	250	253	48
A 6	120	2010	109.01	109.212	0.013	0.68	0.65	1671	91	84	7.5	55	243	249	253	49
	Ø	1751	~~299.956~~ 299.956		Train B Type/No. M23-2											
Pink E 6	10	1801	301.55	301.77	0.001	0.08	0.08	612	75	75	2.0	69	211	248	250	53
E 5	20	1811	304.97	305.06	0.005	0.41	0.4	701	77	76	2.3	54	226	248	250	47
E 4	30	1821	310.84	310.56	0.015	1.21	1.2	735	80	77	5.0	49	249	250	250	44
E 3	40	1831	315.72	315.49	0.010	0.83	0.8	712	86	79	4.0	51	250	252	250	45
E 2	50	1841	317.27	317.05	0.001	0.08	0.08	713	90	81	2.5	63	245	251	250	54
E 1	60	1851	318.91	318.808	0.001	0.09	0.09	583	87	82	3.0	67	228	251	250	55
		1911	318.91	318.868												
F 6	70	1921	324.88	324.78	0.016	1.24	1.24	798	85	83	5.8	57	249	247	250	47
F 5	80	1931	330.69	missed	0.014	~~1.25~~ 1.25	1.17	788	87	83	5.4	54	237	249	250	47
F 4	90	1941	336.53	336.50	0.015	1.18	1.18	788	91	84	6.7	55	251	250	250	49
F 3	100	1951	342.58	342.22	0.016	1.26	1.26	786	93	85	6.0	55	238	249	250	48
F 2	110	2001	348.85	348.31	0.012	1.35	1.35	416	94	86	6.5	54	232	250	250	49
F 1	120	2011	354.35	354.057	0.010	1.03	1.1	492	95	87	6.1	54	234	250	250	50

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 7 Sampling Train No. M23-1 Inlet Sample Box No. 10288
Set-up person(s): P Murowchick Date: 6/15/99

Transfer to Sampler:
Relinquished By P Murowchick Received By D Nevil Date/Time 6/15/99 1600

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M23-1 *			
Water-cooled Probe (Liner-Quartz)	*			
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL	*			
90° Bypass	*			
Cyclone	*			
Flask				
Filter Holder Front				
Filter Holder Back with Teflon®-coated 316 SS Filter Support		Filter Type: Whatman QM-A		
Short 90° Connector				
Condenser (Standard)		Thermocouple No. 91-11		
XAD-2 Resin Cartridge (Standard)	#23	~65 grams XAD-2 Resin + Surrogates		498.0 ***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.				
1st Impinger (Mod-GBS)		Empty	475.6	
U-Connector (A)				
2nd Impinger (Mod-GBS)		100 mLs	514.9	629.5
U-Connector (B)		ASTM Type II Water		
3rd Impinger (GBS)		100 mLs	482.9	587.3
U-Connector (C)		ASTM Type II Water		
4th Impinger (Mod-GBS)		Empty	564.0	
U-Connector (D)				
5th Impinger (Mod-GBS)		~200 g indicating silica gel		693.4
U-Connector (E)				
6th Impinger (Mod-GBS)		~200 g indicating silica gel		753.4
Impinger Outlet Connector	4H-35			

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 - MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 7 Sampling Train No. M23-1 Inlet Sample Box No. 10288
Transfer for Recovery:
Relinquished By D Griffin Received By PMurowchick Date/Time 6/15/99 2100
Sample box recovery person(s): PMurowchick Date: 6/15/99
Probe/STL recovery person(s): DAlbright, DNeal Date: 6/15/99
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	500.4	730.1	631.9	588.6	566.7	703.1	758.6
Initial Wt.	498.0	475.6	629.5	587.3	564.0	683.4	753.4
Net Wt.	2.4	254.5	2.4	1.3	2.7	19.7	5.2

[Total Condensate Collected: 288.2 grams]

Description and/or color:	White	Clear	Clear	Clear	Clear	10	30
Sample Recovery:	Cartridge*	→ → → → → → → Dispose of properly ← ← ← ← ← ← ←				% Blue	

Sample Number: 7011

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 7009 Description/Color: White particulate

CYCLONE/FLASK ASSEMBLY:
Description/Color: N/A

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	7008	7010	7012
Sample Bottle Tare Wt.	497.8	498.4	499.3
Sample Bottle Final Wt.	958.3	982.1	776.1
Net Sample Wt.	460.5	483.7	276.8

Components Rinsed**: Front -- nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front;
Back -- filter support, filter holder back, short 90° connector, condenser

* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 7 Sampling Train No. M23-2 Sample Box No. 011191
Set-up person(s): P Murowchick Date: 6/13/99
Transfer to Sampler
Relinquished By P Murowchick Received By D Neal Date/Time 6/15/99 1600

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M23-2 *			
Water-cooled Probe (Liner-Quartz)	*			
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL	*			
90° Bypass	*			
Filter Holder Front				
Filter Holder Back with Teflon®-coated 316 SS Filter Support		Filter Type: Whatman QM-A		
Short 90° Connector				
Condenser (Standard)		Thermocouple No. XAD-3		
XAD-2 Resin Cartridge (Standard)	#4	~65 grams XAD-2 Resin + Surrogates		503.1 ***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.				
1st Impinger (Mod-GBS)		Empty	467.9	
U-Connector (A)				
2nd Impinger (Mod-GBS)		100 mLs	458.1	544.2
U-Connector (B)		ASTM Type II Water		
3rd Impinger (GBS)		100 mLs	467.0	556.9
U-Connector (C)		ASTM Type II Water		
4th Impinger (Mod-GBS)		Empty	568.5	
U-Connector (D)				
5th Impinger (Mod-GBS)		~200 g indicating silica gel		679.8
U-Connector (E)				
6th Impinger (Mod-GBS)		~200 g indicating silica gel		690.1
Impinger Outlet Connector	4H-2			

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 7 Sampling Train No. M23-2 Sample Box No. 011191
Transfer for Recovery:
Relinquished By D Griffin Received By PMurovchick Date/Time 6/15/99 1600
Sample box recovery person(s): PMurovchick Date: 6/15/99
Probe/STL recovery person(s): D Ned D Albert Date: 6/15/99
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	515.2	354.3	555.3	558.0	570.0	696.6	692.9
Initial Wt.	503.1	467.9	544.2	556.9	568.5	679.8	690.1
Net Wt.	12.1	386.4	11.1	1.1	1.5	16.8	2.8

[Total Condensate Collected: 431.8 grams]

Description and/or color:	White	Clear	Clear	Clear	Empty	40	80
Sample Recovery:	Cartridge*	→ → → → → → → Dispose of properly ← ← ← ← ← ← ←				% Blue	

Sample Number: 7035

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 7033 Description/Color: White

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	7032	7034	7036
Sample Bottle Tare Wt.	499.5	498.5	498.6
Components Rinsed**:	Front -- nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front; Back -- filter support, filter holder back, short 90° connector, condenser		
Sample Bottle Final Wt.	858.6	980.7	768.9
Net Sample Wt.	359.1	482.2	270.3

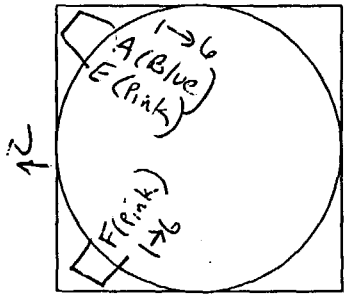
* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

	Blue	Pink
Run No. 8 Date 6-16-99	Train A Type/No. M23-3	Train B Type/No. M23-4 SV
Project No. 5581 4951-08	Probe No. WC3-7 Length: 3 ft	Probe No. WC 3-6 Length: 3 ft
Client USEPA CANA	Liner Type Quartz Heated? (Y) n	Liner Type Quartz Heated? (Y) n
Source Woodlawn Cemetery	Nozzle No. M23-3 Tip Dia. 0.708 in	Nozzle No. M23 4 Tip Dia. .707 in
Sampling Location Scrubber Outlet Unit 4	Pitot Tube No. WC3-7 C_p 0.813	Pitot Tube No. WC 3-6 C_p .821
Operator Carender	Stack Thermocouple No. WC 3-7	Stack Thermocouple No. WC 3-6
Record data every 10 minutes	Filter No. N/A	Filter No. N/A
Barometer No. X 4029	Sample Box No. 012003	Sample Box No. 10285
Barometric Pressure 30.08 in Hg	Umbilical/Impinger Hookup UH-32	Umbilical/Impinger Hookup UH 11
Elevation to Meter Boxes 0 ft	Umbilical Nos. N-125-6	Umbilical Nos. N125-3
Meter Box P_{bar} 30.05 in Hg	Meter Box No. N13	Meter Box No. N9
Elevation to Sampling Loc. 0 ft	DGM Correction (Y) 0.985	DGM Correction (Y) 0.990
Sampling Location P_{bar} 30.08 in Hg	Orifice Meter ΔH@ 1.881	Orifice Meter ΔH@ 1.982

Static Pressure IN-0.5 / OUT = -0.017 in H_2O Assumed Moisture 25.0 OUT % Assumed %CO_2 7.5 OUT %O_2 10.5 OUT Nozzles are quartz-glass.



Traverse Point Layout

Compass Direction ➤

Train A Pitot Tube Pressure Measurement System Leak Checks

	Blue Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1330	1842								
Pass or Fail		12.55								

Train B Pitot Tube Pressure Measurement System Leak Checks

	Pink Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1310	1825								
Pass or Fail		12.55								

Train A Sampling System Leak Checks

BLUE	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1342	1844								
Vacuum, in Hg	15	11								
Leak Rate, cfm	0.006	0.008								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

PINK	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1313	1830								
Vacuum, in Hg	15	10								
Leak Rate, cfm	.006	0.005								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

Assumed H_2O: IN = 15.5 / Out = 25.0
Assumed CO_2: IN = 7.2 / Out = 7.5
Assumed O_2: IN = 10.0 / Out = 10.0

	TRAIN A	TRAIN B
Meter Volume at Start of Run	110.358	354.307
Meter Volume at End of Run	197.761	420.821
Total Leak Check Volume	0	0
Adjusted Final Volume		

Run No. 8 Date 6/16/99 Sampling Location Incin #4 Scrubber In and Outlet page 2 of 3

Project No. 4951-08 Train A Type/No. M23 - 3 Inlet Operator A. Carender

	Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft³ Initial 110.358 Desired	Dry Gas Meter Reading (V_m), ft³ Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
Blue	A 1	10	1650	115.89	115.87	0.020	1.03	1.0	1650	73	72	6.5	44	244	247	257	55
	A 1	20	1600	122.47	122.37	0.028	1.45	1.45	1637	75	72	8.0	43	246	249	257	52
	A 2	30	1610	129.76	129.53	0.035	1.78	1.78	1703	82	74	9.0	46	253	251	257	52
	A 2	40	1620	136.90	136.70	0.033	1.69	1.7	1695	86	76	9.0	48	267	250	257	52
	A 3	50	1630	143.18	143.04	0.025	1.30	1.3	1674	89	78	3.0	51	269	251	257	51
	A 3	60	1640	150.53	150.493	0.035	1.78	1.8	1727	90	79	10.0	48	259	250	257	51
			1648	150.53	150.493												
	A-4	70	1658	155.37	155.50	0.015	0.77	0.77	1684	84	82	7.4	45	243	247	257	54
	A-4	80	1708	160.21	160.50	0.015	0.77	0.77	1701	85	81	7.0	45	245	250	257	54
	A-5	90	1718	165.11	165.45	0.015	0.79	0.77	1654	89	82	7.0	46	248	249	257	53
	A-5	100	1728	169.65	170.01	0.013	0.67	0.65	1685	~~83~~ 90	83	6.8	46	244	250	257	54
	A-6	110	1738	174.50	174.71	0.015	0.77	0.70	1705	90	83	6.9	46	249	248	257	53
	A-6	120	1748	179.66	179.80	0.017	0.87	0.82	1718	91	84	7.2	47	245	249	257	54
A-C	~~A-C~~ Dyc	130	1758	184.83	184.93	0.017	0.87	0.82	1713	92	84	7.2	47	244	248	257	54
		0	1541	354.307		Train B Type/No. M23 - 4 Outlet											
Pink	E 6	10	1551	355.85	355.86	0.001	0.08	0.08	655	72	72	4.6	56	248	247	250	51
	5	20	1601	357.81	357.84	0.002	0.14	0.14	736	74	72	4.6	54	250	248	250	49
	4	30	1611	363.51	363.21	0.015	1.16	1.16	774	76	74	7.0	46	248	249	250	44
	3	40	1621	367.52	367.46	0.007	0.56	0.56	725	82	75	5.8	44	251	250	250	44
	2	50	1631	370.21	370.12	0.003	0.25	0.25	668	84	77	4.1	52	249	250	250	47
	1	60	1641	372.79	373.008	0.003	0.27	0.27	606	84	79	4.5	48	250	250	250	46
			1649	372.99	373.008												
	F 6	70	1659	378.68	378.51	0.015	1.14	1.14	810	82	81	7.0	43	248	248	250	45
	5	80	1709	384.21	384.05	0.014	1.07	1.1	803	86	81	7.0	43	248	249	250	43
	4	90	1719	389.59	389.56	0.013	1.01	1.1	794	90	82	7.1	44	249	249	250	43
	3	100	1729	394.81	394.86	0.012	0.94	0.94	776	91	83	7.0	45	250	249	250	43
	2	110	1739	400.55	400.35	0.013	1.15	1.15	843	91	84	7.6	44	250	249	250	43
	1	120	1749	403.60	403.53	0.003	0.32	0.32	448	72	84	5.1	47	248	250	250	45
	~~F3~~	130	1759	409.01	409.07	0.012	1.02	1.02	687	59	84	8.0	44	250	249	250	43
F-C	~~F-C~~			continued on next page													

Remarks and Notes:

Run No. 8 Date 6/16/99 Sampling Location Incin #4 Inlet and Outlet page 3/2 of 3/2

Project No. 4951-08 Train A Type/No. M23-3 Inlet Operator A. Carmichael

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial cont from p1 Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
A-C	130	1758														
A-C	140	1808	191.09	191.11	0.025	1.28	1.28	192	~~85~~ 92	85	9.1	47	246	249	257	53
A-C	150	1818	197.59	197.761	0.027	1.38	1.38	1742	95	85	9.5	48	246	248	257	53
	130	1759	Con't from P1													
F-C	140	1809	415.42	415.60	0.017	1.42	1.42	706	93	85	9.1	43	251	249	250	42
F-C	150	1819	420.81	420.82	0.012	1.00	1.0	719	95	88	7.9	44	249	250	250	43

Train B Type/No. M23-4 Outlet

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 8 Sampling Train No. M23-3 Inlet Sample Box No. 012003
Set-up person(s): P Murowchick Date: 6/25/99
Transfer to Sampler:
Relinquished By D Neal Received By P Murowchick Date/Time 6/26/99 1130

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA		
				Initial Weights (grams)**	
				Empty	Loaded
Sampling Nozzle (Quartz)	M23-3	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Cyclone		*			
Flask					
Filter Holder Front					
Filter Holder Back with Teflon®-coated 316 SS Filter Support			Filter Type: Whatman QM-A		
Short 90° Connector					
Condenser (Standard)			Thermocouple No. 91-11		
XAD-2 Resin Cartridge (Standard)	#19		~65 grams XAD-2 Resin + Surrogates		492.5 ***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.					
1st Impinger (Mod-GBS)			Empty	470.8	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs	490.6	594.6
U-Connector (B)			ASTM Type II Water		
3rd Impinger (GBS)			100 mLs	478.1	580.4
U-Connector (C)			ASTM Type II Water		
4th Impinger (Mod-GBS)			Empty	493.4	
U-Connector (D)					
5th Impinger (Mod-GBS)			~200 g indicating silica gel		659.6
U-Connector (E)					
6th Impinger (Mod-GBS)			~200 g indicating silica gel		693.7
Impinger Outlet Connector	UH-32				

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 8 Sampling Train No. M23-3 Inlet Sample Box No. 012003
Transfer for Recovery:
Relinquished By J Surman Received By PMurowchick Date/Time 6/16/99 1900
Sample box recovery person(s): PMurowchick Date: 6/16/99
Probe/STL recovery person(s): DNeal, DAlberty Date: 6/16/99
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	497.5	797.2	596.3	582.2	496.6	678.0	698.2
Initial Wt.	492.5	470.8	594.6	580.4	493.4	659.6	693.7
Net Wt.	5.0	326.4	1.7	1.8	3.2	18.4	4.5

[Total Condensate Collected: 361.0 grams]

Description and/or color:	white	clear	clear	clear	empty	10	70
Sample Recovery:	Cartridge*	→ → → → → → → Dispose of properly ← ← ← ← ← ← ←				% Blue	

Sample Number: 8 011

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 8 009 Description/Color: white

CYCLONE/FLASK ASSEMBLY:
Description/Color: N/A

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	8 008	8 010	8 012
Sample Bottle Tare Wt.	498.7	499.4	497.9
Sample Bottle Final Wt.	930.4	894.3	865.9
Net Sample Wt.	431.7	394.9	368.0

Components Rinsed**: Front -- nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front;
Back -- filter support, filter holder back, short 90° connector, condenser

* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 8 Sampling Train No. M23-4 Outlet Sample Box No. ~~#02~~ PSM 12095
Set-up person(s): PMurowchick Date: 6/25/99
Transfer to Sampler:
Relinquished By P Murowchick Received By D Neal Date/Time 6/26/99 1130

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA		
				Initial Weights (grams)**	
				Empty	Loaded
Sampling Nozzle (Quartz)	M23-4	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front					
Filter Holder Back with Teflon®-coated 316 SS Filter Support			Filter Type: Whatman QM-A		
Short 90° Connector					
Condenser (Standard)			Thermocouple No. XAD-3		
XAD-2 Resin Cartridge (Standard)	#22		~65 grams XAD-2 Resin + Surrogates		494.5 ***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.					
1st Impinger (Mod-GBS)			Empty	469.8	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs	488.2	592.7
U-Connector (B)			ASTM Type II Water		
3rd Impinger (GBS)			100 mLs	513.2	620.6
U-Connector (C)			ASTM Type II Water		
4th Impinger (Mod-GBS)			Empty	474.1	
U-Connector (D)					
5th Impinger (Mod-GBS)			~200 g indicating silica gel		742.2
U-Connector (E)					
6th Impinger (Mod-GBS)			~200 g indicating silica gel		704.7
Impinger Outlet Connector	UH-11				

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 8 Sampling Train No. M23-4 Outlet Sample Box No. 12085
Transfer for Recovery:
Relinquished By D Ned Received By P Murowchick Date/Time 6/16/99 1900
Sample box recovery person(s): P Murowchick Date: 6/16/99
Probe/STL recovery person(s): D Ned, A Fay Date: 6/16/96
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	501.7	878.0	659.3	624.9	477.7	756.3	707.7
Initial Wt.	494.5	469.8	592.7	620.6	474.1	742.2	704.7
Net Wt.	7.2	408.2	66.6	4.3	3.6	14.1	3.0

[Total Condensate Collected: 507.0 grams]

Description and/or color:	White	Clear	Clear	Clear	Empty	20	50
Sample Recovery:	Cartridge*	→ → → → → → → Dispose of properly ← ← ← ← ← ← ←				% Blue	

Sample Number: 8 035

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 8 033 Description/Color: White

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	8 032	8 034	8 036
Sample Bottle Tare Wt.	498.7	499.0	498.7
Components Rinsed**:	Front -- nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front; Back -- filter support, filter holder back, short 90° connector, condenser		
Sample Bottle Final Wt.	858.3	887.8	759.6
Net Sample Wt.	359.6	388.8	260.9

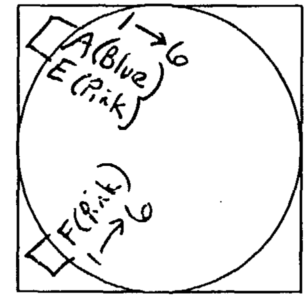
* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 9 Date 6/17/99	Train A Type/No. M23-1 (inlet)	Train B Type/No. M23-2 (outlet)
Project No. 4951-08	Probe No. WC3-7 Length: 3 ft	Probe No. WC3-6 Length: 3 ft
Client EPA/EMC and CANA	Liner Type Quartz Heated? (y) n	Liner Type Quartz Heated? (y) n
Source Incin #4 In and Outlet	Nozzle No. M23-1 Tip Dia. 0.708 in	Nozzle No. M23-2 Tip Dia. 0.708 in
Sampling Location In and Outlet	Pitot Tube No. WC3-7 C_p 0.813	Pitot Tube No. WC3-6 C_p 0.821
Operator A. Cavender	Stack Thermocouple No. WC3-7	Stack Thermocouple No. WC3-6
Record data every 10 minutes	Filter No. N/A ~~10888~~	Filter No. N/A
Barometer No. X4029	Sample Box No. ~~011190~~	Sample Box No. 0111901
Barometric Pressure 30.00 in Hg	Umbilical/Impinger Hookup UH-X35 ~~N-125-6~~	Umbilical/Impinger Hookup UH-22
Elevation to Meter Boxes Ø ft	Umbilical Nos. N-125-6	Umbilical Nos. N-125-3
Meter Box P_{bar} 30.00 in Hg	Meter Box No. N13	Meter Box No. N9
Elevation to Sampling Loc. Ø ft	DGM Correction (Y) 0.985	DGM Correction (Y) 0.990
Sampling Location P_{bar} 30.00 in Hg	Orifice Meter ΔH@ 1.881	Orifice Meter ΔH@ 1.982

Static Pressure IN -0.05 OUT -0.017 in H_2O Assumed Moisture IN 5 172 OUT 2 8 % Assumed $\%CO_2$ IN OUT $\%O_2$ IN OUT Nozzles are quartz-glass.



Traverse Point Layout

Compass Direction ➢

	Blue Train A Pitot Tube Pressure Measurement System Leak Checks										Pink Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0832	1240									0830	1224								
Pass or Fail		pass										pass								

Train A Sampling System Leak Checks

Blue	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0930	1244								
Vacuum, in Hg	15	11.3								
Leak Rate, cfm	0.006	0.006								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

Pink	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0849	1227								
Vacuum, in Hg	15	8								
Leak Rate, cfm	0.003	0.004								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

IN = CO_2 8.6; O_2 8.1
OUT = CO_2 8.5; O_2 8.5

	TRAIN A	TRAIN B
Meter Volume at Start of Run	200.261	421.538
Meter Volume at End of Run	271.536	472.331
Total Leak Check Volume	0	0
Adjusted Final Volume		

Run No. 9 Date 6/17/99 Sampling Location Inlet #4 Scrubber Inlet/Outlet page 2 of 2

Project No. 4951-08 Train A Type/No. M23-1 Inlet Operator

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 200.261 Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
Blue A1	10	1015	206.210	206.00	0.021	1.15	1.15	1527	73	73	7.0	56	244	245	244	45
A1	20	1025	212.81	212.69	0.028	1.51	1.51	1574	79	74	9.1	52	245	246	244	45
A2	30	1035	220.74	220.62	0.040	2.10	2.10	1648	85	76	11.3	52	250	251	259	44
A2	40	1045	228.73	228.51	0.040	2.11	2.11	1640	89	77	11.1	52	273	251	259	44
A3	50	1055	236.28	236.00	0.036	1.88	1.88	1674	92	79	10.1	52	241	251	259	45
A3	60	1105	243.81	243.231	0.035	1.87	1.87	1630	92	80	10.1	52	272	249	259	44
--	—	1118	248.64		0.015	0.79	0.79	1650	84	82	6.9	60	243	244	255	46
A4	70	1128	248.69	248.27	0.015	0.79	0.79	1650	84	82	6.9	60	273	244	261	46
A4	80	1138	254.01	253.85	0.018	0.94	0.96	1674	286	82	7.7	52	246	249	261	45
A5	90	1148	258.40	258.73	0.012	0.63	0.65	1646	89	82	6.2	53	243	250	261	44
A5	100	1158	262.99	263.27	0.013	0.69	0.65	1630	90	83	6.8	54	246	250	261	44
A6	110	1208	267.42	267.25	0.012	0.64	0.64	1616	90	83	6.1	56	246	250	261	44
A6	120	1218	271.45	271.536	0.010	0.53	0.50	1637	91	84	5.7	56	247	250	261	45

Train B Type/No. M23-2 Outlet

	Ø	1006	421.538													
Pink E6	10	1016	425.25	425.37	0.005	0.49	0.49	675	71	70	3.8	63	247	246	250	47
E5	20	1026	430.39	430.68	0.010	0.95	0.95	729	73	70	5.4	57	249	249	250	46
E4	30	1036	436.67	436.67	0.005	1.41	1.41	738	73	70	5.5	56	250	250	250	45
E3	40	1046	439.02	438.99	0.002	0.19	0.19	708	82	74	3.9	63	250	251	250	50
E2	50	1056	440.68	440.44	0.001	0.09	0.09	706	81	75	3.1	65	246	250	250	54
E1	60	1106	442.37	442.052	0.004	0.40	0.40	660	79	76	3.2	65	250	239	250	54
—	—	1119	442.37	442.052	0.014	1.27	1.27	791	79	78	6.6	62	248	247	250	49
E6	70	1129	448.37	447.95	0.014	1.27	1.27	797	79	78	6.6	62	248	247	250	49
F5	80	1139	454.25	453.84	0.013	1.22	1.25	766	84	78	6.8	53	248	250	250	45
F4	90	1149	459.47	459.37	0.010	0.96	0.98	741	87	79	6.0	54	250	250	250	46
F3	100	1159	466.27	466.02	0.014	1.61	1.61	540	88	80	8.0	55	251	250	250	44
F2	110	1209	470.43	470.36	0.005	0.60	0.60	495	90	81	4.0	58	250	250	250	47
F1	120	1219	472.33	472.331	0.001	0.12	0.12	452	83	82	4.0	62	243	250	250	52

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 9 Sampling Train No. M23-1 Inlet Sample Box No. 10288
Set-up person(s): PMurowchick Date: 6/16/99

Transfer to Sampler:
Relinquished By PMurowchick Received By D Griffin Date/Time 6/16/99 2100

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	
			Initial Weights (grams)**	
			Empty	Loaded
Sampling Nozzle (Quartz)	M23-1	*		
Water-cooled Probe (Liner-Quartz)		*		
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL		*		
90° Bypass		*		
Cyclone		*		
Flask				
Filter Holder Front				
Filter Holder Back with Teflon®-coated 316 SS Filter Support			Filter Type: Whatman QM-A	
Short 90° Connector				
Condenser (Standard)			Thermocouple No. 91-11	
XAD-2 Resin Cartridge (Standard)	#8		~65 grams XAD-2 Resin + Surrogates	505.0 ***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.				
1st Impinger (Mod-GBS)			Empty	470.3
U-Connector (A)				
2nd Impinger (Mod-GBS)			100 mLs	514.9 631.0
U-Connector (B)			ASTM Type II Water	
3rd Impinger (GBS)			100 mLs	482.9 587.8
U-Connector (C)			ASTM Type II Water	
4th Impinger (Mod-GBS)			Empty	562.6
U-Connector (D)				
5th Impinger (Mod-GBS)			~200 g indicating silica gel	673.5
U-Connector (E)				
6th Impinger (Mod-GBS)			~200 g indicating silica gel	677.6
Impinger Outlet Connector	UH-35			

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

[redacted]

40 *CFR* 60, APPENDIX A, METHOD 23 - MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 9 Sampling Train No. M23-1 Inlet Sample Box No. 10288
Transfer for Recovery: P. Griffin
Relinquished By P Murowchick Received By P Murowchick Date/Time 6/17/99 0845
Sample box recovery person(s): P Murowchick Date: 6/17/99
Probe/STL recovery person(s): D. Neel, A. Page Date: 6/17/99
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	511.6	718.0	633.8	588.7	566.1	693.3	686.3
Initial Wt.	505.0	470.3	631.0	587.8	562.6	673.5	677.6
Net Wt.	6.6	247.7	2.8	0.9	3.5	19.8	8.7

[Total Condensate Collected: 290.0 grams]

Description and/or color: white clear clear clear ~~dark~~ 20 70
Sample Recovery: Cartridge* → → → → → → → Dispose of properly ← ← ← ← ← ← ← % Blue

Sample Number: 9011

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 9009 Description/Color: light beige

CYCLONE/FLASK ASSEMBLY:
Description/Color: N/A

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	9008	9010	9012
Sample Bottle Tare Wt.	499.0	498.0	500.1
Sample Bottle Final Wt.	997.4	854.9	752.9
Net Sample Wt.	498.4	356.9	252.8

Components Rinsed**: Front -- nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front;
Back -- filter support, filter holder back, short 90° connector, condenser

* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 9 Sampling Train No. M23-2 Outlet Sample Box No. 011191
Set-up person(s): P Murowchick Date: 6/16/99

Transfer to Sampler:
Relinquished By P Murowchick Received By D Neal Date/Time 6/16/99 2100

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M23-2 *			
Water-cooled Probe (Liner-Quartz)	*			
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL	*			
90° Bypass	*			
Filter Holder Front				
Filter Holder Back with Teflon®-coated 316 SS Filter Support		Filter Type: Whatman QM-A		
Short 90° Connector				
Condenser (Standard)		Thermocouple No. XAD-3		
XAD-2 Resin Cartridge (Standard)	#2	~65 grams XAD-2 Resin + Surrogates		475.5 ***
(Documentation of standards injection is separate); resin spiked on 06/03-99 and maintained near 4°C until use.				
1st Impinger (Mod-GBS)		Empty	470.0	
U-Connector (A)				
2nd Impinger (Mod-GBS)		100 mLs	458.1	555.3
U-Connector (B)		ASTM Type II Water		
3rd Impinger (GBS)		100 mLs	567.0	557.7
U-Connector (C)		ASTM Type II Water		
4th Impinger (Mod-GBS)		Empty	568.3	
U-Connector (D)				
5th Impinger (Mod-GBS)		~200 g indicating silica gel		734.5
U-Connector (E)				
6th Impinger (Mod-GBS)		~200 g indicating silica gel		6926
Impinger Outlet Connector	UH-22			

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 9 Sampling Train No. M23-2 Outlet Sample Box No. 011191
Transfer for Recovery:
Relinquished By D. Neal Received By P Murouchick Date/Time 6/17/99 1330
Sample box recovery person(s): P Murouchick Date: 6/17/99
Probe/STL recovery person(s): D. Neal, A. Page Date: 6/17/99
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	483.7	841.0	557.9	560.0	571.2	765.5	697.8
Initial Wt.	475.5	470.0	555.3	557.7	568.3	734.5	692.6
Net Wt.	8.2	371.0	2.6	23	2.9	31.0	5.2

[Total Condensate Collected: 423.2 grams]

Description and/or color:	white	clear	clear	clear	clear	0	50
Sample Recovery:	Cartridge*	→ → → → → → → Dispose of properly ← ← ← ← ← ← ←				% Blue	

Sample Number: 9035

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 9033 Description/Color: whitish

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	9032	9034	9036
Sample Bottle Tare Wt.	499.2	499.9	498.4
Components Rinsed**:	Front -- nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front; Back -- filter support, filter holder back, short 90° connector, condenser		
Sample Bottle Final Wt.	848.7	916.9	757.4
Net Sample Wt.	349.5	417.0	259.0

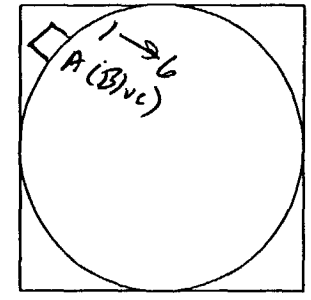
* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Blue

Run No. 10 Date 6/17/99	Train A Type/No. M23-3 (Inlet)	Train B Type/No.
Project No. 4951-08	Probe No. WC3-7 Length: 3 ft	Probe No. Length: ft
Client EPA/EMC and CANA	Liner Type Quartz Heated? (Y) n	Liner Type Heated? y n
Source Incinerator #4	Nozzle No. M23-3 Tip Dia. 0.708 in	Nozzle No. Tip Dia. in
Sampling Location Scrubber Inlet	Pitot Tube No. WC3-7 C_p 0.813	Pitot Tube No. C_p
Operator A. Carender	Stack Thermocouple No. WC3-7	Stack Thermocouple No.
Record data every 10 minutes	Filter No. N/A	Filter No.
Barometer No. ~~03-00~~ X4029	Sample Box No. 012003	Sample Box No.
Barometric Pressure 30.00 in Hg	Umbilical/Impinger Hookup UH-32	Umbilical/Impinger Hookup
Elevation to Meter Boxes ~~30.00~~ ft	Umbilical Nos. N-125-6	Umbilical Nos.
Meter Box P_{bar} 30.00 in Hg	Meter Box No. N13	Meter Box No.
Elevation to Sampling Loc. 0 ft	DGM Correction (Y) 0.985	DGM Correction (Y)
Sampling Location P_{bar} 30.00 in Hg	Orifice Meter ΔH@ 1.881	Orifice Meter ΔH@



Traverse Point Layout

Compass Direction ➤ South

Static Pressure −0.05 in H_2O Assumed Moisture 15 % Assumed %CO_2 7 %O_2 10 Nozzles are quartz-glass.

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1516	1816																		
Pass or Fail		Pass																		

Train A Sampling System Leak Checks

Blue	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1520	1815								
Vacuum, in Hg	≥15" Hg	11.5								
Leak Rate, cfm	0.006	0.006								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)										
Vacuum, in Hg										
Leak Rate, cfm										
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	271.878	
Meter Volume at End of Run	336.366	
Total Leak Check Volume	0	
Adjusted Final Volume		

Run No. 10 Date 6/17/99 Sampling Location Incin #4 Scrubber Inlet page 2 of 2

Project No. 4951-08 Train A Type/No. M23-3 (Blue) Operator A. Carender

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 271.878 Desired	Dry Gas Meter Reading (V_m), ft^3 Initial 271.878 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
C1	10	1612	276.97	277.03	0.013	0.87	0.87	1186	73	72	7.1	49	245	247	250	48
C1	20	1622	283.00	283.02	0.018	1.22	1.22	1161	75	72	8.3	48	249	248	250	47
C2	30	1632	290.63	290.54	0.029	1.93	1.93	1202	80	75	11.2	46	246	251	250	46
C2	40	1642	296.45	296.48	0.017	1.12	1.12	1224	85	75	8.4	46	246	250	250	48
C3	50	1652	301.74	301.90	0.014	0.92	0.92	1231	86	76	7.8	47	247	250	250	47
C3	60	1702	307.20	307.337	0.015	0.98	0.97	1240	86	77	7.9	42	248	250	250	47
		1706	307.20	307.337												
C4	70	1716	311.77	312.08	0.010	~~0.67~~ 0.010	0.67	1203	86	79	7.0	44	245	248	250	47
C4	80	1726	316.28	316.41	0.010	0.67	0.64	1207	84	79	6.8	46	244	249	250	47
C5	90	1736	321.79	321.90	0.015	1.00	1.00	1213	85	79	8.2	46	247	249	250	46
C5	100	1746	326.95	327.18	0.013	0.88	0.88	1200	87	80	7.8	44	244	249	250	45
C6	110	1756	331.54	331.86	0.010	0.69	0.67	1165	88	81	7.0	46	245	249	250	46
C6	120	1806	336.13	336.366	0.010	0.69	0.65	1160	88	81	6.8	46	245	248	250	47

Train B Type/No. N/A

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 10 Sampling Train No. M23-3 Inlet Sample Box No. 012003
Set-up person(s): PMurowchick Date: 6/17/99
Transfer to Sampler:
Relinquished By PMurowchick Received By D. Griffin Date/Time 6/17/99 1450

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA		
				Initial Weights (grams)**	
				Empty	Loaded
Sampling Nozzle (Quartz)	M23-3	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Cyclone		*			
Flask					
Filter Holder Front					
Filter Holder Back with Teflon®-coated 316 SS Filter Support			Filter Type: Whatman QM-A		
Short 90° Connector					
Condenser (Standard)			Thermocouple No. 91-11		
XAD-2 Resin Cartridge (Standard)	#24		~65 grams XAD-2 Resin + Surrogates		497.0***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.					
1st Impinger (Mod-GBS)			Empty	468.0	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs		605.5
U-Connector (B)			ASTM Type II Water		
3rd Impinger (GBS)			100 mLs		581.4
U-Connector (C)			ASTM Type II Water		
4th Impinger (Mod-GBS)			Empty	494.3	
U-Connector (D)					
5th Impinger (Mod-GBS)			~200 g indicating silica gel		698.3
U-Connector (E)					
6th Impinger (Mod-GBS)			~200 g indicating silica gel		718.9
Impinger Outlet Connector	UH-32				

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 10 Sampling Train No. M23-3 Inlet Sample Box No. 012003
Transfer for Recovery:
Relinquished By D. Griffin Received By PMurowchick Date/Time 6-16-99 1830
Sample box recovery person(s): PMurowchick Date: 6-17-99
Probe/STL recovery person(s): D. Neal, A. Pegg Date: 6-17-99
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.	501.0	655.9	608.3	583.2	496.9	711.4	722.3
Initial Wt.	497.0	468.0	605.5	581.4	494.3	698.3	718.9
Net Wt.	4.0	187.9	2.8	1.8	2.6	13.1	3.4

[Total Condensate Collected: 215.6 grams]

Description and/or color: white clear clear clear empty 20 50
Sample Recovery: Cartridge* → → → → → → → Dispose of properly ← ← ← ← ← ← ← % Blue

Sample Number: 10011

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 10009 Description/Color: light gray

CYCLONE/FLASK ASSEMBLY:
Description/Color: N/A

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	10008	10010	10012
Sample Bottle Tare Wt.	499.6	499.7	499.3
Sample Bottle Final Wt.	782.4	812.0	738.5
Net Sample Wt.	282.8	312.3	239.2

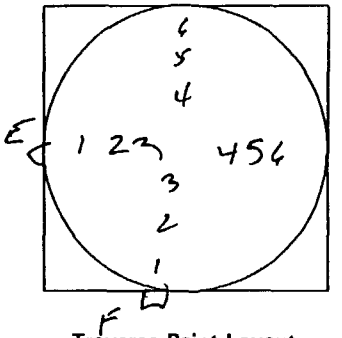
Components Rinsed**: Front -- nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front;
Back -- filter support, filter holder back, short 90° connector, condenser

* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 10 Date 6-17-99	Train A Type/No. M23-4	Train B Type/No.
Project No. 5587 4951-08	Probe No. WC3-6 Length: 3 ft	Probe No. Length: ft
Client USEPA CANA	Liner Type Quartz Heated? (y) n	Liner Type Heated? y n
Source Woodlawn Cemetery	Nozzle No. M23-4 Tip Dia. .707 in	Nozzle No. Tip Dia. in
Sampling Location Scrubber Outlet Unit 4	Pitot Tube No. WC 3-6 C_p .821	Pitot Tube No. C_p
Operator Griffin	Stack Thermocouple No. WC3-6	Stack Thermocouple No.
Record data every 10 minutes	Filter No. NA	Filter No.
Barometer No. X4029	Sample Box No. 10285	Sample Box No.
Barometric Pressure 30.00 in Hg	Umbilical/Impinger Hookup UH11	Umbilical/Impinger Hookup
Elevation to Meter Boxes 0 ft	Umbilical Nos. N-125-3	Umbilical Nos.
Meter Box P_{bar} 30.00 in Hg	Meter Box No. N9	Meter Box No.
Elevation to Sampling Loc. 0 ft	DGM Correction (Y) 0.990	DGM Correction (Y)
Sampling Location P_{bar} 30.00 in Hg	Orifice Meter ΔH@ 1.982	Orifice Meter ΔH@



Traverse Point Layout

Compass Direction ➢ N

Static Pressure -0.017 in H_2O Assumed Moisture 24 % Assumed %CO_2 6.1 %O_2 11.4 Nozzles are quartz-glass.

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1510	1813																		
Pass or Fail		pass																		

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1514	1815								
Vacuum, in Hg	15	6								
Leak Rate, cfm	.008	0.4								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)										
Vacuum, in Hg										
Leak Rate, cfm										
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

Final train leak check failed

	TRAIN A	TRAIN B
Meter Volume at Start of Run	472.729	
Meter Volume at End of Run	530.429	
Total Leak Check Volume	0	
Adjusted Final Volume		

Run No. 10 Date 6-11-99 Sampling Location Scrubber Outlet Unit 4 page 2 of 2

Project No. 5589 4951-08 Train A Type/No. M23 Operator Grfb

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 472.729 Desired	Dry Gas Meter Reading (V_m), ft^3 Initial 472.729 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
E-6	10	1612	476.12	476.12	~~.484~~ .004	0.41	0.41	484	71	76	4	55	248	247	250	59
E 5	20	1622	480.14	480.14	.006	0.57	0.57	546	71	71	5	47	248	252	250	49
E 4	30	1632	484.51	484.51	.007	0.67	0.67	547	74	72	5	47	249	252	250	49
E 3	40	1642	488.65	488.62	.006	0.60	0.60	504	77	73	5	46	250	250	250	49
E 2	50	1652	492.90	492.83	.006	0.63	0.63	461	80	74	5	47	243	257	250	49
E 1	60	1702	498.06	498.02	.009	0.93	0.93	486	82	76	6	48	250	248	250	48
(Init Hr)		1706														
F-6	70	1716	503.55	503.55	.011	1.05	1.05	565	82	78	6	52	239	251	250	50
F-5	80	1726	509.05	509.34	.011	1.05	1.05	572	85	79	6	49	235	249	250	48
F-4	90	1736	514.47	514.52	.011	1.02	1.02	601	87	79	6	49	243	252	250	50
F-3	100	1746	519.75	519.75	.010	0.96	0.96	564	88	80	6	49	245	250	250	48
F-2	110	1756	525.04	524.99	.009	0.97	0.97	462	88	81	6	49	233	249	250	49
F-1	120	1806	530.399	530.429	.009	1.00	1.00	434	88	81	6	48	223	254	250	50

Train B Type/No. _____

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 10 Sampling Train No. M23-4 Outlet Sample Box No. 1028
Set-up person(s): P.Murowchick Date: 6/17/99

Transfer to Sampler:
Relinquished By P.Murowchick Received By D. Griffin Date/Time 6/17/99 1450

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M23-4	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front					
Filter Holder Back with Teflon®-coated 316 SS Filter Support			Filter Type: Whatman QM-A		
Short 90° Connector					
Condenser (Standard)			Thermocouple No. XAD-3		
XAD-2 Resin Cartridge (Standard)	#1		~65 grams XAD-2 Resin + Surrogates		494.2 ***
(Documentation of standards injection is separate); resin spiked on 06-03-99 and maintained near 4°C until use.					
1st Impinger (Mod-GBS)			Empty	473.7	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs	488.2	591.9
U-Connector (B)			ASTM Type II Water		
3rd Impinger (GBS)			100 mLs	513.2	608.1
U-Connector (C)			ASTM Type II Water		
4th Impinger (Mod-GBS)			Empty	476.9	
U-Connector (D)					
5th Impinger (Mod-GBS)			~200 g indicating silica gel		664.1
U-Connector (E)					
6th Impinger (Mod-GBS)			~200 g indicating silica gel		689.3
Impinger Outlet Connector	4H-11				

* Before and after sampling: Nozzle inlet opening covered with toluene/acetone-rinsed aluminum foil. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with toluene/acetone-rinsed aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with toluene/acetone-rinsed aluminum foil or as described above.

*** Cartridge weighed with blank-offs in place; then, cartridge covered with aluminum foil to seal out light during storage and sampling.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 23 -
MODIFIED SEMIVOLATILE ORGANICS TRAIN (M23) FOR PCDDs/PCDFs
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 10 Sampling Train No. M23-4 Outlet Sample Box No. 10285
Transfer for Recovery:
Relinquished By _____ Received By P.Murowchick Date/Time _____
Sample box recovery person(s): P.Murowchick Date: _____
Probe/STL recovery person(s): _____ Date: _____
Weights below are in grams.

RESIN CARTRIDGE AND IMPINGERS RECOVERY

Impinger:	XAD-2 Cartridge*	1st	2nd	3rd	4th	5th	6th
Final Wt.						677.8	691.9
Initial Wt.	494.2	473.7	591.9	508.1	476.9	664.1	689.3
Net Wt.		+420.3				13.7	2.6

[Total Condensate Collected: 436.6 grams]

Description and/or color: _____
Sample Recovery: Cartridge* → → → → → → → Dispose of properly ← ← ← ← ← ← ← % Blue

Sample Number: 10035

FILTER RECOVERY AND TRAIN RINSES

FILTER:
Sample Number: 10033 Description/Color: _____

TRAIN RINSES:	FRONT RINSES	BACK RINSES	QA RINSES
Sample Number:	10032	10034	10036
Sample Bottle Tare Wt.	~~501.3~~ 500.6	499.4	499.4
Components Rinsed**:	Front -- nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front; Back -- filter support, filter holder back, short 90° connector, condenser		
Sample Bottle Final Wt.			
Net Sample Wt.			

* Replace blank-offs and remove aluminum foil, then weigh the cartridge; replace aluminum foil to cover the entire cartridge.
** For TRAIN FRONT/BACK RINSES: Acetone rinses with brushing of front components 3 times or more until perceivably clean, and acetone rinses of back components 3 times. Follow with methylene chloride rinses in the same manner, but without brushing, and include 5-minute soaks of underlined components 3 times.
For QA RINSES: Follow with toluene rinses and soaks in the same manner as above for the methylene chloride rinses.

COMMENTS:

Sample not recovered - Train failed Final Leak Check

Section 2

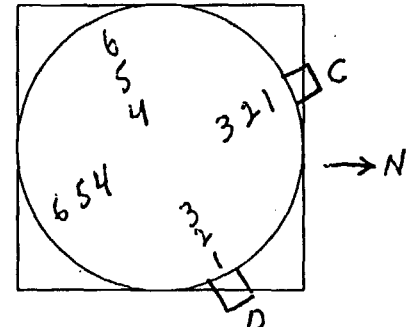
EPA Method 26A for Particulate/HCl/Cl_2 and EPA Method 29 for Multiple Metals Sampling and Recovery at the Inlet

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 1 Date 6-11-99	Train A Type/No. Part III C1 - M26A	Train B Type/No. METALS - M29
Project No. 5587-04-01, 4951-08	Probe No. WC3-1 Length: 3 ft	Probe No. WC3-4 Length: 3 ft
Client USEPA OAQPS SCGA BLANT	Liner Type QUARTZ Heated? (Y) n	Liner Type QUARTZ Heated? (Y) n
Source WOODLAWN CEMETERY - BROOKLYN	Nozzle No. M26A-1 Tip Dia. .708 in	Nozzle No. M29-1 Tip Dia. .709 in
Sampling Location SCRUBBER INLET	Pitot Tube No. WC3-1 C_p 0.770	Pitot Tube No. WC3-4 C_p 0.770
Operator D. NEAL	Stack Thermocouple No. WC3-1	Stack Thermocouple No. WC3-4
Record data every 10 minutes	Filter No. 1	Filter No. N/A
Barometer No. X4029	Sample Box No. 012002	Sample Box No. 12
Barometric Pressure 30.30 in Hg	Umbilical/Impinger Hookup UH10	Umbilical/Impinger Hookup UH39
Elevation to Meter Boxes 0 ft	Umbilical Nos. N-175-7	Umbilical Nos. N-175-2
Meter Box P_{bar} 30.30 in Hg	Meter Box No. N11	Meter Box No. N12
Elevation to Sampling Loc. 0 ft	DGM Correction (Y) 0.988	DGM Correction (Y) 1.001
Sampling Location P_{bar} 30.30 in Hg	Orifice Meter ΔH@ ~~1.7 in. Hg~~ 1.960	Orifice Meter ΔH@ ~~1.8 in. Hg~~ 1.846

Static Pressure -0.05 in H_2O Assumed Moisture 11 % Assumed %CO_2 6 %O_2 10 Nozzles are quartz-glass.

FLOW IS AWAY FROM OBSERVER



Traverse Point Layout

Compass Direction → N

Train A Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1336	1833	← ON 6-11-99 EE.							
Pass or Fail		Pass								

Train B Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1305	1816								
Pass or Fail		Pass								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	~~1305~~ 1348	1838								
Vacuum, in Hg	≥ 15" Hg.	≥ 3.5" Hg								
Leak Rate, cfm	.007	.001 Pass from END OF STL. FAILED LEAK CHECK AT NOZZLE DUE TO COOLING								
Final Meter Volume										
Initial Meter Volume		1048.621								
Leak Check Volume										

ON 6-11-99 EE

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1333	1818								
Vacuum, in Hg	≥ 15" Hg.	≥ 2.5" Hg.								
Leak Rate, cfm	.012	.007								
Final Meter Volume		~~621.501~~								
Initial Meter Volume		~~621.424~~								
Leak Check Volume		~~0.077~~								

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	989.258	576.338
Meter Volume at End of Run	1048.621	~~1048.621~~ 621.424
Total Leak Check Volume	0	~~0.077~~
Adjusted Final Volume		

DNJ 6-11-99 E.E.

Run No. 1 Date 6-11-99 Sampling Location SCRUBBER INLET page 2 of 2

Project No. 5587-04-01, 4951-08 Train A Type/No. PART/HCl - M26A Operator D. Neal

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft³ Desired	Dry Gas Meter Reading (V_m), ft³ Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
	0	1520	Initial 989.258													
D-1	10	1530	993.559	993.705	0.010	0.65	0.65	1234	73	73	3.0	57	246	251	251	
2	20	1540	999.190	999.160	0.0175	1.11	1.00	1279	76	73	3.5	48	255	254	252	
3	30	1550	1004.790	1004.840	0.0175	1.10	1.10	1309	77	75	3.5	47	253	255	258	
4	40	1600	1010.402	1010.355	0.0175	1.10	1.00	1311	79	76	3.5	48	255	255	260	
5	50	1610	1015.172	1015.285	0.018	0.79	0.80	1302	82	77	3.0	47	254	254	256	
(1) 6	60	1620	1020.342	1020.508	0.015	0.73	0.93	1345	82	78	3.5	48	254	254	258	
C-6	70	1710	1024.823	1024.950	0.010	0.65	0.65	1258	79	78	3.0	56	251	251	259	
5	80	1720	1029.667	1029.950	0.0175	0.82	0.80	1244	79	78	3.0	45	251	254	260	
4	90	1730	1034.520	1034.735	0.0175	0.82	0.78	1247	81	79	3.0	48	254	254	257	
3	100	1740	1039.376	1039.435	0.0175	0.82	0.72	1249	82	79	3.0	51	254	254	258	
2	110	1750	1044.207	1044.280	0.0175	0.81	0.75	1272	83	80	3.0	50	254	254	260	
1	120	1800	1048.620	1048.621	0.010	0.67	0.66	1207	84	81	3.0	49	255	254	258	

Train B Type/No. METALS-M29

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	DGM Desired	DGM Actual	Velocity Head	Orifice Desired	Orifice Actual	Stack Temp.	DGM Inlet	DGM Outlet	Pump Vacuum	Silica Gel Impinger Outlet Temp.	Probe Liner Outlet Temp.	Filter Holder Temp.	STL Outlet Temp.	XAD Inlet Temp.
	0	1521	576.338													
C-6	10	1531	579.364	579.515	0.005	0.30	0.30	1217	73	73	1.0	65	254	253	250	
5	20	1541	583.081	583.140	0.0075	0.44	0.43	1275	76	74	1.0	55	244	256	249	
4	30	1551	586.679	586.905	0.0075	0.44	0.43	1283	78	75	1.0	55	252	257	262	
3	40	1601	590.341	590.541	0.0075	0.44	0.40	1290	80	76	1.0	60	257	258	259	
2	50	1611	595.913	596.015	0.0175	1.03	1.00	1313	82	77	2.0	53	251	255	262	
(1) 1	60	1621	602.240	602.234	0.0225	1.32	1.30	1321	85	78	2.5	52	255	257	262	
D-1	70	1711	605.230	605.370	0.005	0.29	0.29	1286	79	78	1.0	64	248	253	261	
2	80	1721	608.223	608.510	0.005	0.29	0.29	1292	80	78	1.0	62	253	257	259	
3	90	1731	611.185	611.650	0.005	0.29	0.29	1339	82	79	1.0	60	252	256	262	
4	100	1741	614.200	614.670	0.005	0.30	0.25	1281	83	79	1.0	62	252	255	262	
5	110	1751	617.190	617.460	0.005	0.29	0.21	1312	83	80	1.0	64	250	257	261	
6	120	1801	621.420	621.424	0.010	0.59	0.46	1314	84	80	1.0	61	252	256	262	

Remarks and Notes: (1) SHUT DOWN FOR PORT CHANGE. RESUME SAMPLING AT 1700 ON M26A TRAIN AND 1701 ON M29 TRAIN.

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 1 Sampling Train No. M26A-1 Sample Box No. 012002
Set-up person(s): A. Carender Date: 6/10/99

Transfer to Sampler:
Relinquished By A. Carender Received By D. Griffin Date/Time 6/11/99 7:50

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M26A-1	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Cyclone		*			
Flask					
Filter Holder Front			Filter Type: Whatman QM-A		
Filter Holder Back with Teflon® Filter Support			Filter Number: # 1		
Short 90° Connector					
1st Impinger (Mod-GBS)			50 mLs ±1 mL	486.2	535.0
U-Connector (A)			0.1 N H_2SO_4		
2nd Impinger (GBS)			100 mLs ±2 mLs	479.1	579.8
U-Connector (B)			0.1 N H_2SO_4		
3rd Impinger (GBS)			100 mLs ±2 mLs	477.1	576.9
U-Connector (C)			0.1 N H_2SO_4		
4th Impinger (Mod-GBS)			Empty	466.5	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs	473.9	574.0
U-Connector (E)			0.1 N NaOH		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs	471.6	571.4
U-Connector (F)			0.1 N NaOH		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		652.7
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		652.7
Impinger Outlet Connector	UH-10				

* Before and after sampling: Nozzle inlet opening covered with aluminum foil or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with aluminum foil, Teflon® tape or as described above.

Component Changes After Set-up And Before Recovery And Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 26A -
MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Location

Run No. 1 Sampling Train No. M26A-1 Sample Box No. 012002
Train Purge with Ascarite-filtered Air if condensate is observed:
Condensate in front-half? No Purged By NA Purge Rate: [ΔH=NA in. H_2O]
Date/Start Time: NA _____ Stop Time NA Moisture Removed? NA
Transfer for Recovery:
Relinquished By D. Griffin Received By J. McCann Date/Time 6-11-99 2030
Sample box recovery person(s): J. McCann Date: 6-12-99
Probe/STL recovery person(s): D. Griffin & D. Albury & A. Page Date: 6-11-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	681.7	607.2	580.0	467.9	574.1	573.4	666.4	653.2
Initial Wt.	535.0	579.8	576.9	466.5	574.0	571.4	652.7	652.7
Net Wt.	146.7	27.4	3.1	1.4	0.1	2.0	13.7	0.5
Description and/or color:	clear	clear	clear	clear	clear	clear	40	100

[Total Condensate Collected: 194.9 grams]
Recovery: →→→→→ Impingers 1-3 ←←←←← →→→→→ Impingers 4-6 ←←←←← % Blue

Sample Number: 1003 / 1005
Sample Bottle Tare Wt. 498.3 _____
Sample Bottle Gross Wt. 918.3 _____ Before Rinses
Components Rinsed*: filter support, filter holder back, 4th-6th impingers,
Short 90° connector, 1st-3rd impingers, U-connectors A-B U-connectors C-E
Sample Bottle Gross Wt. 1052.0 _____ After Rinses
Net Sample Wt. 553.7 for Mass Collected Calcs _____ (A) for Preliminary Calcs after SIE check
Sample mixed, then aliquot removed for Specific Ion Electrode check:
Sample Bottle Gross Wt. _____ After Aliquoting
Net Sample Wt. _____ After Aliquoting (B)
Sodium thiosulfate added**: _____ grams x 0.5 = _____ (C)
Sample Bottle Gross Wt. _____ after $Na_2S_2O_3 \cdot 5H_2O$ is added
Net Sample Wt. _____ (B+C) x A/B for Mass Collected
CalcsSample mixed, then aliquot taken for HCl analysis for Cl_2 analysis
Aliquot Sample Number: →→→→→ 1004 →→→→→ 006 for Chloride Analysis
Sample Bottle Tare Wt. 101.3 _____
Sample Bottle Final Wt. 945.9 207.7 _____ _____ After Aliquoting
Net Sample Wt. 947.6 106.4 _____ _____

FRONT HALF RECOVERY

RINSES: Sample Number: 1001
Sample Bottle Tare Wt. 168.2
Components Rinsed***: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front
Sample Bottle Gross Wt. 362.2 with Acetone Rinses
Net Acetone Sample Wt. 192.0
Sample Bottle Final Wt. NA with added Water Rinses
Net Water Sample Wt. _____

FILTER: Sample Number: 1002
Description/color: Intact / ghostly gray
CYCLONE/FLASK ASSEMBLY:
Description/Color: NA

* Using a total of 100 mLs ±2 mLs ASTM Type I water per sample, rinse components twice. Thoroughly mix each sample before aliquoting.
** Add [25 mg of sodium thiosulfate per ppm Cl_2-dscm of gas sampled x (B/A)] to sample number XX005.
*** Acetone rinses with brushing 3 times or more until perceivably clean. If any residue remains in a component, follow with ASTM Type I water rinses with brushing until perceivably clean. Do not add any water rinses to the sample bottle until after the bottle is weighed with all of the acetone rinses.

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD REAGENT BLANK PREPARATION DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Locations: Scrubber Inlet and Outlet Ducts

Blank(s) Prepared By: J. McCann Date: 6-11-99

Weights below are in grams.

Reagent Blank Description	Sample Number	Bottle Tare Weight	Bottle Gross Weight	Net Sample Weight
Acetone for particulate matter Volume needed: 200 mLs Lot Number: BDJ BV113	/ 049	168.4	317.8	149.4
Filter for particulate matter Type: Whatman QM-A Filter Number: ~~K 25~~ ///				
Lot Number: 65335	/ 050			
ASTM Type I water for particulate matter Volume needed: 200 mLs Lot Number: 5-26-99	/ 051	168.5	363.9	195.4
50 mLs ±1 mL 0.1 N H_2SO_4 plus 20 mLs ±0.5 mL ASTM Type I Water for chloride 0.1 N H_2SO_4 Lot Number: 5/25/99 Water Lot Number: 5/24/99	/ 052	102.2	171.2	69.0
50 mLs ± 1 mL 0.1 N NaOH, plus 25 mLs ±0.5 mL ASTM Type I Water plus ¼ of the amount of sodium thiosulfate used for one train, for chloride 0.1 N NaOH Lot Number: 5/25/99 Water Lot Number: 5/26/99 $Na_2S_2O_3 \cdot 5H_2O$ Lot Number:	/ 053	102.3	176.0	73.7

NOTE: Lots may be identified above by a manufacturer's lot number or by the date of reagent preparation. If different lots of a particular reagent are used, indicate the applicable test run number(s) and sampling location(s) where the train(s) loaded and/or recovered with that reagent are used (i.e., list each reagent blank sample number with the applicable test run number(s) and sampling location(s) below).

Sample Number	For Test Run Number(s)	For Sampling Location(s)

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber ~~Outlet~~ Inlet Duct

Run No. 1 Sampling Train No. M29-1 Sample Box No. 12
Set-up person(s): J. McC Date: 6-10-99
Transfer to Sampler:
Relinquished By J. McC Received By D. Griffin Date/Time 6-11-99 7:50

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M29-1	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front					
Filter Holder Back with			Filter Type: Whatman QM-A		
Teflon® Filter Support					
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	469.1	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	470.7	574.6
U-Connector (B)			5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)			100 mLs ±2 mLs	487.4	591.3
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	532.1	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	463.1	574.4
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	500.2	611.3
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		653.5
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		649.7
Impinger Outlet Connector	VH39				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 1 Sampling Train No. M29-1 Sample Box No. 12
Transfer for Recovery:
Relinquished By D. Griffin Received By J. McCann Date/Time 6-11-99 2015
Sample box recovery person(s): April Campbell / J. McCa Date: 6-11-99
Probe/STL recovery person(s): D. Griffin, D. Albury, A. Page Date: 6-11-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	574.9	603.2	595.9	532.5	573.9	610.7	662.8	650.4
Initial Wt.	469.1	574.6	591.3	532.1	574.4	611.3	653.5	649.7
Net Wt.	105.8	28.6	4.6	0.4	-0.5	-0.6	9.3	0.7

[Total Condensate Collected: 148.3]

Description and/or color: clear clear clear clear purple purple 1% 90%
Recovery: → → → → → → → Impingers 1-3 ← ← ← ← → → 4th Impinger → Impingers 5-6 ← % Blue

Sample Number:	1017	1018	1019	1020
Sample Bottle Tare Wt.	498.4	168.1	255.5	168.3
Sample Bottle Gross Wt:	537.4	168.1	464.3	Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$,	then 8 N HCl
Components Rinsed*: filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C		**4th impinger	***5th-6th impingers, U-connectors D-E	
Sample Bottle Final Wt.	944.0	263.6	687.3	389.2 After Rinses
Net Sample Wt.	445.6	95.5	431.8	220.9

FRONT HALF RECOVERY

FILTER:
Sample Number: 1016 Description/Color: Intact / Greyish

CYCLONE/FLASK ASSEMBLY:
Description/Color: NA

TRAIN RINSES:
Sample Number: 1015
Sample Bottle Tare Wt. 168.2
Rinse Solution: 0.1 N HNO_3
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front
Sample Bottle Final Wt. 260.3
Net Sample Wt. 92.1

*. Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~100~~ 588 mLs ±2 mLs of 0.1 N HNO_3, plus an additional 100 mLs if a cyclone and flask are used, rinse components 3 times or more with brushing until perceivably clean.

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD REAGENT BLANK PREPARATION DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Locations: Scrubber Inlet and Outlet Ducts

Blank(s) Prepared By: J. McCann Date: 6-11-99

Weights below are in grams.

Sample Number	Group Number and Reagent Blank Description	
	Group I	For Run Number(s) 1-9
/ 062	4.9-inch diameter Whatman QM-A Filter (5 filters)	Lot Number 65335
	Groups I, II, and III	For Run Number(s) 1-9
/ 061	625 ±5 mLs 0.1 N HNO_3	Lot Number 5/25/99
		Sample Bottle Tare Wt. 500.5
		Sample Bottle Final Wt. 1117.6
		Net Sample Wt. 617.1
	Group II	For Run Number(s) 1-9
/ 063	200 ±2 mLs 5% HNO_3/10% H_2O_2	Baker J35913 Lot Number 5-10-99
		Baker H2035 Sample Bottle Tare Wt. 168.2
		Sample Bottle Final Wt. 377.4
		Net Sample Wt. 209.2
	Group IV	For Run Number(s) 1-9
/ 064	100 ±2 mLs 4% $KMnO_4$/10% H_2SO_4	Mallinckrodt 7068KMSG Lot Number 5-10-99
		Sample Bottle Tare Wt. 168.5
		Baker J3104G Sample Bottle Gross Wt. 278.5
		Net Sample Wt. 110.0
	Group IV	For Run Number(s) 1-9
/ 065	100 ±2 mLs ASTM Type I Water	Lot Number 5/24/99
		Sample Bottle Tare Wt. 168.0
		Sample Bottle Gross Wt. 266.8
		Net Sample Wt. 98.8
	Group V	For Run Number(s) 1-9
/ 066	25 ±0.5 mLs 8 N HCl added to	Fisher 943881 8 N HCl Lot Number 5/25/99
	200 ±2 mLs ASTM Type I Water	Sample Bottle Tare Wt. 168.6
		Sample Bottle Gross Wt. 392.9
		Net Sample Wt. ~~376.3~~ 224.3

NOTE: If a new lot of any reagent is prepared and used, a reagent blank sample of the new lot, plus additional reagent blank samples of all other reagents being used and belonging to the same reagent blank group(s) of which the new reagent is a part, must be prepared and designated for the applicable run number(s) and sampling location(s) where the train(s) loaded and/or recovered with those reagents are used. Lots may be identified above by a manufacturer's lot number or by the date of reagent preparation. Use more than one data form if necessary. Reagent blank samples will be combined and processed in the laboratory in the same manner as the samples recovered from the source sampling trains according to the groups specified above. Therefore, adequate numbers of reagent blank samples of the specific volumes described above must be obtained and be properly identified so that each train will be represented (i.e., by reagent blank for run number and sampling location).

COMMENTS:

1060 Tare wt. 168.5 Final wt 320.9
Acetone for runs where used.

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD REAGENT BLANK PREPARATION DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Locations: Scrubber Inlet and Outlet Ducts

Blank(s) Prepared By: J. McC Date: 6-17-99

Weights below are in grams.

Sample Number	Group Number and Reagent Blank Description	
	Group I	For Run Number(s) _____
062	4.9-inch diameter Whatman QM-A Filter (5 filters)	Lot Number 65335
	Groups I, II, and III	For Run Number(s) 4, 8-9
2061	625 ±5 mLs 0.1 N HNO_3	Lot Number 5/25/99
		Sample Bottle Tare Wt. 169.1
		Sample Bottle Final Wt. 268.1
		Net Sample Wt. 99.0
	Group II	For Run Number(s) _____
063	200 ±2 mLs 5% HNO_3/10% H_2O_2	Lot Number _____
		Sample Bottle Tare Wt. _____
		Sample Bottle Final Wt. _____
		Net Sample Wt. _____
	Group IV	For Run Number(s) _____
064	100 ±2 mLs 4% $KMnO_4$/10% H_2SO_4	Lot Number _____
		Sample Bottle Tare Wt. _____
		Sample Bottle Gross Wt. _____
		Net Sample Wt. _____
	Group IV	For Run Number(s) _____
065	100 ±2 mLs ASTM Type I Water	Lot Number _____
		Sample Bottle Tare Wt. _____
		Sample Bottle Gross Wt. _____
		Net Sample Wt. _____
	Group V	For Run Number(s) _____
066	25 ±0.5 mLs 8 N HCl added to	8 N HCl Lot Number _____
	200 ±2 mLs ASTM Type I Water	Sample Bottle Tare Wt. _____
		Sample Bottle Gross Wt. _____
		Net Sample Wt. _____

NOTE: If a new lot of any reagent is prepared and used, a reagent blank sample of the new lot, plus additional reagent blank samples of all other reagents being used and belonging to the same reagent blank group(s) of which the new reagent is a part, must be prepared and designated for the applicable run number(s) and sampling location(s) where the train(s) loaded and/or recovered with those reagents are used. Lots may be identified above by a manufacturer's lot number or by the date of reagent preparation. Use more than one data form if necessary. Reagent blank samples will be combined and processed in the laboratory in the same manner as the samples recovered from the source sampling trains according to the groups specified above. Therefore, adequate numbers of reagent blank samples of the specific volumes described above must be obtained and be properly identified so that each train will be represented (i.e., by reagent blank for run number and sampling location).

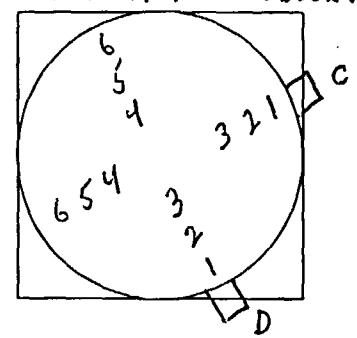
COMMENTS: Same lot as sample 1061. Taken for additional volume if needed.

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 2 Date 6-12-99
Project No. 5587-04-01, 4951-06
Client USEFA OAPPS SCEA&CANT
Source WOODLAWN CEMETERY-BRONX, NY
Sampling Location SCRUBBER INLET
Operator D. NEAL
Record data every 10 minutes
Barometer No. X4029
Barometric Pressure 30.23 in Hg
Elevation to Meter Boxes 0 ft
Meter Box P_{bar} 30.23 in Hg
Elevation to Sampling Loc. 0 ft
Sampling Location P_{bar} 30.23 in Hg
Static Pressure −0.05 in H_2O

Train A	Train B
Train A Type/No. PART/HCl-M26R	Train B Type/No. METALS-M29
Probe No. WC3-1 Length: 3 ft	Probe No. WC3-4 Length: 3 ft
Liner Type QUARTZ Heated? (Y) n	Liner Type QUARTZ Heated? (Y) n
Nozzle No. ~~M26-3~~ M29-3 Tip Dia. 0.108 in	Nozzle No. M29-3 Tip Dia. .108 in
Pitot Tube No. WC3-1 C_p 0.770	Pitot Tube No. WC3-4 C_p 0.770
Stack Thermocouple No. WC3-1	Stack Thermocouple No. WC3-4
Filter No. 3	Filter No. N/A
Sample Box No. 011187	Sample Box No. 55
Umbilical/Impinger Hookup UH37	Umbilical/Impinger Hookup UH1
Umbilical Nos. N-125-7	Umbilical Nos. N-125-2
Meter Box No. N11	Meter Box No. N12
DGM Correction (Y) 0.988	DGM Correction (Y) 1.001 1.846
Orifice Meter ΔH@ ~~1.9 in. Hg~~ 1.962	Orifice Meter ΔH@ ~~1.8 in. Hg.~~

FLOW IS AWAY FROM OBSERVER



Traverse Point Layout
Compass Direction ➢ N

Assumed Moisture 14.5 % Assumed %CO_2 6.9 %O_2 10.0 Nozzles are quartz-glass.

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1031	1451									1049	1500								
Pass or Fail		PASS										PASS								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1036	1453								
Vacuum, in Hg	≥15" Hg.	≥4.5" Hg.								
Leak Rate, cfm	.006	.004								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1052	1510								
Vacuum, in Hg	≥15" Hg.	≥4" Hg.	*1506 FAIL LEAK CHECK AT NOZZLE							
Leak Rate, cfm	.003	.001 PASSED LEAK CHECK FROM END OF STL ONLY.								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	49.644	621.702
Meter Volume at End of Run	103.754	679.843
Total Leak Check Volume	N/A	N/A
Adjusted Final Volume	103.754	679.843

Run No. 2 Date 6-12-99 Sampling Location SCRUBBER INLET page 1 of 2

Project No. Train A Type/No. PART/HCl - M26A Operator D. NEAL

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 49.844 Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
D-1	10	1155	52.886	53.000	0.005	0.32	0.32	1125	74	73	3.0	67	252	250	257	
2	20	1205	56.605	56.760	0.0075	0.48	0.45	1136	75	74	3.5	52	249	253	260	
3	30	1215	62.045	62.035	0.0175	1.04	1.00	1291	77	75	4.0	56	253	254	259	
4	40	1225	67.170	67.295	0.015	0.92	0.72	1240	79	76	4.0	56	252	255	258	
5	50	1235	71.291	71.580	0.010	0.59	0.55	1303	81	77	3.5	61	255	254	255	
(1) 6	60	1245	76.365	76.362	0.015	0.89	0.80	1297	83	79	4.0	62	251	254	253	
			77.990 ON 6-12-99 EE	~~0.0075~~	ON 6-12-99 EE											
C-6	70	1320	~~76.362~~	80.030	0.0075	0.45	0.45	1255	81	80	3.5	55	251	250	250	
5	80	1330	84.147	84.160	0.010	0.60	0.55	1286	82	80	4.0	56	250	253	252	
4	90	1340	88.294	88.520	0.010	0.59	0.58	1303	84	81	4.0	57	251	253	251	
3	100	1350	92.996	93.190	0.0135	0.76	0.70	1264	85	83	4.0	57	250	254	250	
2	110	1400	98.554	98.510	0.0175	1.07	1.00	1268	86	82	4.5	56	256	254	249	
1	120	1410	103.254	103.254	0.0125	0.76	0.76	1272	87	83	4.0	57	250	253	250	
	D	1146	621.702		Train B Type/No. METOCS - M29											
C-6	10	1156	625.445	625.570	0.0075	0.47	0.47	1174	74	73	2.5	53	250	254	258	
5	20	1206	629.777	629.950	0.010	0.63	0.61	1172	75	74	3.0	48	249	255	259	
4	30	1216	634.575	634.735	0.0125	0.77	0.74	1219	79	75	3.0	54	254	258	258	
3	40	1226	639.392	639.560	0.0125	0.77	0.74	1218	82	76	3.0	54	254	257	260	
2	50	1236	645.355	645.050	0.020	1.18	1.10	1302	84	77	4.0	49	253	257	256	
(1) 1	60	1246	650.874	650.873	0.015	1.01	1.10	1097	87	79	4.0	51	254	257	254	
		ON 6-12-99 EE														
D-1	70	1321	654.558	654.670	0.0075	0.45	0.45	1270	81	80	2.5	50	245	253	247	
2	80 (1331)	~~1332~~	659.324	659.520	0.0125	0.75	0.73	1267	82	80	3.0	49	249	255	249	
3	90 (1341)	~~1342~~	664.063	664.280	0.0175	0.74	0.71	1303	86	81	3.0	51	255	257	250	
4	100	1351	668.889	669.015	0.0125	0.76	0.71	1249	88	82	3.0	53	248	257	248	
5	110	1401	674.585	674.320	0.0175	1.07	1.00	1261	89	82	4.0	55	253	256	249	
6	120	1411	679.850	679.843	0.015	0.91	0.91	1273	90	83	4.0	55	254	258	248	

Remarks and Notes: (1) STOP FOR PORT CHANGE. RESUMED SAMPLING AT 1310 FOR M26A AND 1311 FOR M29.

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber ~~Outlet~~ Inlet Duct

Run No. 2 Sampling Train No. M26A-3 Sample Box No. 011187
Set-up person(s): A. Carender Date: 6/10/99

Transfer to Sampler:
Relinquished By A. Carender Received By D. Griffin Date/Time 6/12/99 0930

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	
			Initial Weights (grams)**	
			Empty	Loaded
Sampling Nozzle (Quartz) *	M26A-1			
Water-cooled Probe (Liner-Quartz) *				
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL *				
90° Bypass *				
Filter Holder Front		Filter Type: Whatman QM-A		
Filter Holder Back with Teflon® Filter Support		Filter Number: #3		
Short 90° Connector				
1st Impinger (Mod-GBS)		50 mLs ±1 mL	464.9	516.3
U-Connector (A)		0.1 N H_2SO_4		
2nd Impinger (GBS)		100 mLs ±2 mLs	492.5	592.6
U-Connector (B)		0.1 N H_2SO_4		
3rd Impinger (GBS)		100 mLs ±2 mLs	500.5	600.2
U-Connector (C)		0.1 N H_2SO_4		
4th Impinger (Mod-GBS)		Empty	475.9	
U-Connector (D)				
5th Impinger (Mod-GBS)		100 mLs ±2 mLs	488.4	586.6
U-Connector (E)		0.1 N NaOH		
6th Impinger (Mod-GBS)		100 mLs ±2 mLs	461.6	560.0
U-Connector (F)		0.1 N NaOH		
7th Impinger (Mod-GBS)		~200 g indicating silica gel		653.3
U-Connector (G)				
8th Impinger (Mod-GBS)		~200 g indicating silica gel		687.1
Impinger Outlet Connector	U1-37			

* Before and after sampling: Nozzle inlet opening covered with aluminum foil or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with aluminum foil, Teflon® tape or as described above.

Component Changes After Set-up And Before Recovery And Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Location

Run No. 2 Sampling Train No. M26A-3 Sample Box No. 011187
Train Purge with Ascarite-filtered Air if condensate is observed:
Condensate in front-half? NO Purged By N/A Purge Rate: [ΔH= _____ in. H_2O]
Date/Start Time: ~~11:00~~ ~~6/12/99~~ 6/13/99 Stop Time ~~11:30~~ Moisture Removed? N/A
Transfer for Recovery:
Relinquished By D Griffin Received By A. Carender Date/Time 6/12/99 15:55
Sample box recovery person(s): A. Carender Date: 6/12/99
Probe/STL recovery person(s): D. Duffy, D. Griffin, A. Page Date: 6/12/99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	667.6	618.9	604.6	476.8	588.5	560.8	665.4	689.1
Initial Wt.	516.3	592.6	600.2	475.9	586.6	560.0	653.3	687.1
Net Wt.	151.3	26.3	4.4	0.9	1.9	0.8	12.1	2.0
Description and/or color:	clear	clear	clear	clear	clear	clear	[Total Condensate Collected: 199.7 grams] 50%	90%
Recovery:	→→→→→ Impingers 1-3 ←←←←←				→→→→→ Impingers 4-6 ←←←←←			% Blue

Sample Number: 2003 2005
Sample Bottle Tare Wt. 498.3 254.5
Sample Bottle Gross Wt. 942.1 448.5 Before Rinses
Components Rinsed*: filter support, filter holder back, 4th 6th impingers,
Short 90° connector, 1st-3rd impingers, U-connectors A-B U-connectors C-E
Sample Bottle Gross Wt. 1013.0 543.0 After Rinses
Net Sample Wt. 514.7 for Mass Collected Calcs _____ (A) for Preliminary Calcs after SIE check
Sample mixed, then aliquot removed for Specific Ion Electrode check:
Sample Bottle Gross Wt. 461.6 After Aliquoting
Net Sample Wt. _____ After Aliquoting (B)
Sodium thiosulfate added**: _____ grams x 0.5 = _____ (C)
Sample Bottle Gross Wt. _____ after $Na_2S_2O_3 \cdot 5H_2O$ is added
Net Sample Wt. _____ (B + C) x A/B for Mass Collected

Calcs Sample mixed, then aliquot taken	for HCl analysis		for Cl_2 analysis	
Aliquot Sample Number:	→→→→→ 2004		→→→→→ 2006	for Chloride Analysis
Sample Bottle Tare Wt.	102.4		103.5	
Sample Bottle Final Wt.	925.8	189.8	_____	After Aliquoting N/A
Net Sample Wt.	427.5	87.4	_____	

FRONT HALF RECOVERY

RINSES: Sample Number: 2001
Sample Bottle Tare Wt. ~~966.3~~ 263.0
Components Rinsed***: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front
Sample Bottle Gross Wt. 444.3 with Acetone Rinses
Net Acetone Sample Wt. 181.3
Sample Bottle Final Wt. 501.7 with added Water Rinses
Net Water Sample Wt. ~~238.7~~ 57.4

FILTER: Sample Number: 2002
Description/color: _____

CYCLONE/FLASK ASSEMBLY: N/A
Description/Color: intact / White with wood specs

* Using a total of 100 mLs ±2 mLs ASTM Type I water per sample, rinse components twice. Thoroughly mix each sample before aliquoting.
** Add [25 mg of sodium thiosulfate per ppm Cl_2-dscm of gas sampled x (B/A)] to sample number XX005.
*** Acetone rinses with brushing 3 times or more until perceivably clean. If any residue remains in a component, follow with ASTM Type I water rinses with brushing until perceivably clean. Do not add any water rinses to the sample bottle until after the bottle is weighed with all of the acetone rinses.

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber ~~Outlet~~ Inlet Duct

Run No. 2 Sampling Train No. M29-3 Sample Box No. — 55
Set-up person(s): J. McCann Date: 6-10-99
Transfer to Sampler:
Relinquished By J. McC Received By D. Griffin Date/Time 6-12-99 0930

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M29-3 *			
Water-cooled Probe (Liner-Quartz)	*			
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL	*			
90° Bypass	*			
Filter Holder Front				
Filter Holder Back with Teflon® Filter Support		Filter Type: Whatman QM-A		
Short 90° Connector				
1st Impinger (Mod-GBS)		Empty	478.4	
U-Connector (A)				
2nd Impinger (Mod-GBS)		100 mLs ±2 mLs	448.6	554.0
U-Connector (B)		5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)		100 mLs ±2 mLs	493.4	598.5
U-Connector (C)		5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)		Empty	487.1	
U-Connector (D)				
5th Impinger (Mod-GBS)		100 mLs ±2 mLs***	516.2	626.8
U-Connector (E)		4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)		100 mLs ±2 mLs***	474.0	584.1
U-Connector (F)		4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)		~200 g indicating silica gel		645.2
U-Connector (G)				
8th Impinger (Mod-GBS)		~200 g indicating silica gel		647.6
Impinger Outlet Connector	LH-1			

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 2 Sampling Train No. M29-3 Sample Box No. 55
Transfer for Recovery:
Relinquished By D. Griffin Received By J. McLean Date/Time 6-12-99 1525
Sample box recovery person(s): J. McC Date: 6-12-99
Probe/STL recovery person(s): D. Gibrty, D. Griffin, A. Page Date: 6-12-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	623.0	599.7	605.5	~~605.5~~ 487.8 gc	~~487.8~~ 627.1 gc	586.7	656.8	649.5
Initial Wt.	478.4	554.0	598.5	487.1	626.8	584.1	645.2	647.6
Net Wt.	144.6	45.7	7.0	0.7	0.3	2.6	11.6	1.9

[Total Condensate Collected: 214.4]

Description and/or color:	clear	clear	clear	clear	purple	purple	5%	100

Recovery: → → → → → → → Impingers 1-3 ← ← ← ← → → 4th Impinger → Impingers 5-8 ← % Blue

Sample Number:	2017	2018	2019	2020	
Sample Bottle Tare Wt.	497.9	168.2	256.1	168.1	
Sample Bottle Gross Wt.	599.1	168.2	462.6		Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$,	then 8 N HCl	

Components Rinsed*: filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C **4th impinger ***5th-6th impingers, U-connectors D-E

Sample Bottle Final Wt.	995.3	266.1	682.0	389.9	After Rinses
Net Sample Wt.	497.4	97.9	425.9	221.8	

FRONT HALF RECOVERY

FILTER:
Sample Number: 2016 Description/Color: pale yellow/tan

CYCLONE/FLASK ASSEMBLY:
Description/Color: NA

TRAIN RINSES:
Sample Number: 2015 ~~2014~~
Sample Bottle Tare Wt. 168.3 ~~168.3~~
Rinse Solution: 0.1 N HNO_3
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front
Sample Bottle Final Wt. 259.8
Net Sample Wt. 91.5

* Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~100~~ 200 mLs ±2 mLs of 0.1 N HNO_3, plus an additional 100 mLs if a cyclone and flask are used, rinse components 3 times or more with brushing until perceivably clean.

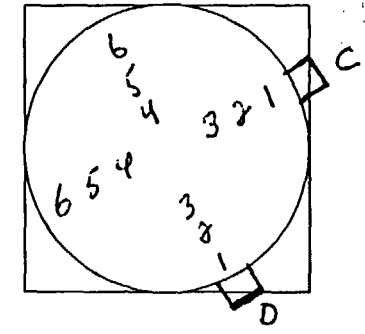
COMMENTS: Impinger contents has foul odor
putrid odor

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 3 Date 6-13-99
Project No. 5587-04-01, 4951-08
Client USEPA ORD PSCGRDUNA
Source WOODLAWN CEMETERY
Sampling Location SCRUBBER INLET
Operator O. NEAL
Record data every 10 minutes
Barometer No. X-4029
Barometric Pressure 30.16 in Hg
Elevation to Meter Boxes 0 ft
Meter Box P_{bar} 30.16 in Hg
Elevation to Sampling Loc. 0 ft
Sampling Location P_{bar} 30.16 in Hg
Static Pressure -0.05 in H_2O

Train A	Train B
Train A Type/No. PART/HCl-M26A	Train B Type/No. METALS-M29
Probe No. WC3-8 Length: 3 ft	Probe No. WC3-1 Length: 3 ft
Liner Type QUARTZ Heated? (Y) n	Liner Type QUARTZ Heated? (N) n
Nozzle No. M26A-1 Tip Dia. .208 in	Nozzle No. M29-4 Tip Dia. .209 in
Pitot Tube No. WC3-3A C_p .770	Pitot Tube No. WC3-1 C_p .770
Stack Thermocouple No. WC3-3A	Stack Thermocouple No. WC3-1
Filter No. 5	Filter No. N/A
Sample Box No. 012002	Sample Box No. 12
Umbilical/Impinger Hookup UH10	Umbilical/Impinger Hookup UH39
Umbilical Nos. N-125-7	Umbilical Nos. N-125-2
Meter Box No. N11	Meter Box No. N12
DGM Correction (Y) 0.998	DGM Correction (Y) 1.001
Orifice Meter ΔH@ 1.960	Orifice Meter ΔH@ 1.946

FLOW IS AWAY FROM OBSERVER



Traverse Point Layout
Compass Direction ➢ N

Assumed Moisture 14.5 % Assumed $\%CO_2$ 6.9 $\%O_2$ 10.3 Nozzles are quartz-glass.

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0836										0822	1140								
Pass or Fail												PASS								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0852	1151								
Vacuum, in Hg	≥ 15" Hg.	≥ 3.5" Hg.	⊛ PROBE NOZZLE MISSING FROM		PROBE AT	END OF RUN. DID LEAK CHECK				
Leak Rate, cfm	.015	.001	FROM END OF STL.							
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0828	1142								
Vacuum, in Hg	≥ 15" Hg.	≥ 4.0" Hg.								
Leak Rate, cfm	.006	.003								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	104.041	681.542
Meter Volume at End of Run	154.006	733.579
Total Leak Check Volume	0	0
Adjusted Final Volume		

Run No. 3 Date 6-13-99 Sampling Location SCRUBBER INLET page 2 of 2

Project No. 5587-04-01, 4951-08 Train A Type/No. PART/HCl - M26A Operator D. NEAL

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft³ Initial 104.041 Desired	Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
	0	0906														
D-1	10	0916	107.836	107.935	0.0075	0.50	0.50	1065	73	72	3.0	47	253	251	252	
2	20	0926	112.148	112.265	0.010	0.65	0.65	1174	75	73	3.0	42	254	254	251	
3	30	0936	116.349	116.515	0.010	0.62	0.58	1218	77	74	3.0	44	254	255	248	
4	40	0946	120.490	120.630	0.010	0.60	0.55	1277	79	75	3.0	47	253	255	250	
5	50	0956	124.695	124.745	0.010	0.61	0.55	1231	80	76	3.0	47	257	254	249	
6	60	1006	129.338	129.348	0.0125	0.75	0.72	1233	81	78	3.5	42	255	254	248	
		1029	129.348													
D-6	70	1039	133.539	133.645	0.010	0.61	0.60	1248	80	78	3.0	42	246	251	251	
5	80	1049	137.764	137.995	0.010	0.62	0.58	1227	81	79	3.0	39	253	254	250	
4	90	1059	141.941	142.165	0.010	0.60	0.55	1270	82	79	3.0	40	252	254	249	
3	100	1109	146.152	146.270	0.010	0.61	0.55	1247	83	80	3.0	40	251	254	249	
2	110	1119	150.352	150.440	0.010	0.61	0.55	1261	84	80	3.0	41	247	254	248	
1	120	1129	154.009	154.006	0.0075	0.46	0.40	1244	84	81	3.0	42	237	254	247	
	0	0907	681.542													
C-6	10	0917	685.152	685.165	0.0075	0.43	0.43	1191	73	72	2.0	57	251	253	249	
5	20	0927	688.736	688.800	0.0075	0.43	0.43	1225	75	73	2.0	54	254	256	250	
4	30	0937	692.852	692.845	0.010	0.56	0.54	1256	78	74	2.0	56	255	257	248	
3	40	0947	697.849	697.885	0.015	0.83	0.82	1296	80	75	3.0	53	255	258	249	
2	50	0957	703.676	703.565	0.020	1.13	1.10	1315	83	76	4.0	51	257	257	249	
1	60	1007	708.699	708.704	0.015	0.83	0.83	1307	86	78	3.0	53	255	255	250	
		1030	708.704	~~712.465~~ on 6-13-99 E.E.												
C-1	70	1040	712.401	~~0.0075~~	0.0075	0.45	0.44	1156	80	79	2.0	60	249	251	249	
2	80	1050	716.536	716.615	0.010	0.56	0.54	1266	81	79	2.5	52	253	256	249	
3	90	1100	720.638	720.635	0.010	0.55	0.51	1300	83	79	2.5	53	253	257	250	
4	100	1110	724.770	724.770	0.010	0.56	0.56	1284	85	80	2.5	50	253	257	249	
5	110	1120	729.393	729.480	0.0125	0.70	0.70	1285	86	80	3.0	50	253	256	249	
6	120	1130	733.528	733.529	0.010	0.56	0.51	1292	87	81	2.0	51	252	256	249	

Train B Type/No. METALS - M29

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 3 Sampling Train No. M26A-1 Sample Box No. 012002
Set-up person(s): J. McCann Date: 6/12/99

Transfer to Sampler:
Relinquished By J. McCann Received By J. Surman Date/Time 6/12/99 16:00

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M26A-1 *			
Water-cooled Probe (Liner-Quartz)	*			
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL	*			
90° Bypass	*			
Cyclone	*			
Flask				
Filter Holder Front		Filter Type: Whatman QM-A		
Filter Holder Back with Teflon® Filter Support		Filter Number: #5		
Short 90° Connector				
1st Impinger (Mod-GBS)		50 mLs ±1 mL	486.2	538.4
U-Connector (A)		0.1 N H_2SO_4		
2nd Impinger (GBS)		100 mLs ±2 mLs	479.1	581.8
U-Connector (B)		0.1 N H_2SO_4		
3rd Impinger (GBS)		100 mLs ±2 mLs	477.1	579.4
U-Connector (C)		0.1 N H_2SO_4		
4th Impinger (Mod-GBS)		Empty	467.8	
U-Connector (D)				
5th Impinger (Mod-GBS)		100 mLs ±2 mLs	473.9	575.4
U-Connector (E)		0.1 N NaOH		
6th Impinger (Mod-GBS)		100 mLs ±2 mLs	471.6	573.5
U-Connector (F)		0.1 N NaOH		
7th Impinger (Mod-GBS)		~200 g indicating silica gel		632.7
U-Connector (G)				
8th Impinger (Mod-GBS)		~200 g indicating silica gel		653.4
Impinger Outlet Connector	UH-10			

* Before and after sampling: Nozzle inlet opening covered with aluminum foil or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with-glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with aluminum foil, Teflon® tape or as described above.

Component Changes After Set-up And Before Recovery And Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 26A -
MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Location

Run No. 3 Sampling Train No. M26A-1 Sample Box No. 012002
Train Purge with Ascarite-filtered Air if condensate is observed:
Condensate in front-half? NO Purged By N/A Purge Rate: [ΔH = N/A in. H_2O]
Date/Start Time: N/A _____ Stop Time N/A Moisture Removed? N/A
Transfer for Recovery:
Relinquished By S. Surman Received By A. Carender Date/Time 6/13/99 19:30
Sample box recovery person(s): A. Carender Date: 6/13/99
Probe/STL recovery person(s): D. Griffin, D. Alberty, A. Page Date: 6/13/99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	680.6	598.1	582.9	472.5	578.2	577.2	645.2	656.2
Initial Wt.	538.4	581.8	579.4	467.8	575.4	573.5	632.7	653.4
Net Wt.	142.2	16.3	3.5	4.7	2.8	3.7	12.5	2.8
Description and/or color:	Clear	Clear	Clear	Clear	Clear	Clear	5%	80%

[Total Condensate Collected: 188.5 grams]
Recovery: →→→→→ Impingers 1-3 ←←←←← →→→→→ Impingers 4-6 ←←←←← % Blue

Sample Number: 3 003 3 005
Sample Bottle Tare Wt. 499.4 254.9
Sample Bottle Gross Wt. 908.8 _____ Before Rinses
Components Rinsed*: filter support, filter holder back, 4th-6th impingers,
Short 90° connector, 1st-3rd impingers, U-connectors A-B U-connectors C-E
Sample Bottle Gross Wt. 1004.8 _____ After Rinses
Net Sample Wt. 505.4 for Mass Collected Calcs _____ (A) for Preliminary Calcs after SIE check
Sample mixed, then aliquot removed for Specific Ion Electrode check:
Sample Bottle Gross Wt. _____ After Aliquoting
Net Sample Wt. _____ After Aliquoting (B)
Sodium thiosulfate added**: _____ grams x 0.5 = _____ (C)
Sample Bottle Gross Wt. _____ after $Na_2S_2O_3 \cdot 5H_2O$ is added
Net Sample Wt. _____ (B + C) x A/B for Mass Collected
CalcsSample mixed, then aliquot taken for HCl analysis for Cl_2 analysis
Aliquot Sample Number: →→→→→ 3 004 →→→→→ 3 006 for Chloride Analysis
Sample Bottle Tare Wt. 901.7 101.4 102.2
Sample Bottle Final Wt. ~~1004.2~~ 204.2 _____ _____ After Aliquoting
Net Sample Wt. 402.3 102.8 _____ _____ N/A

FRONT HALF RECOVERY

RINSES: Sample Number: 3 001
Sample Bottle Tare Wt. ~~965.6~~ 263.3
Components Rinsed***: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front
Sample Bottle Gross Wt. 515.0 with Acetone Rinses
Net Acetone Sample Wt. 251.7
Sample Bottle Final Wt. NA with added Water Rinses
Net Water Sample Wt. _____

FILTER: Sample Number: 3 002
Description/color: intact / faint yellowish

CYCLONE/FLASK ASSEMBLY:
Description/Color: N/A

* Using a total of 100 mLs ±2 mLs ASTM Type I water per sample, rinse components twice. Thoroughly mix each sample before aliquoting.
** Add [25 mg of sodium thiosulfate per ppm Cl_2-dscm of gas sampled x (B/A)] to sample number XX005.
*** Acetone rinses with brushing 3 times or more until perceivably clean. If any residue remains in a component, follow with ASTM Type I water rinses with brushing until perceivably clean. Do not add any water rinses to the sample bottle until after the bottle is weighed with all of the acetone rinses.

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 3 Sampling Train No. M29-1 Sample Box No. 12
Set-up person(s): A. Caronda Date: 6/11/99
Transfer to Sampler:
Relinquished By A. Caronda Received By D. Griffin Date/Time 6/13/99 0745

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M29-4	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Cyclone		*			
Flask					
Filter Holder Front					
Filter Holder Back with Teflon® Filter Support			Filter Type: Whatman QM-A		
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	474.2	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	473.4	578.8
U-Connector (B)			5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)			100 mLs ±2 mLs	489.5	595.3
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	535.5	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	504.5	614.3
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	467.6	576.8
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		684.8
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		650.2
Impinger Outlet Connector	UH-39				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 3 Sampling Train No. M29-1 Sample Box No. 12
Transfer for Recovery:
Relinquished By D. Griffin Received By J. McCann Date/Time 6-13-99 1235
Sample box recovery person(s): J McCann Date: 6-13-99
Probe/STL recovery person(s): D. Griffin, D. Alberty, A. Pegg Date: 6-13-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	600.3	621.4	605.0	538.0	617.4	578.3	698.0	652.4
Initial Wt.	474.2	578.8	595.3	535.5	614.3	576.8	634.8	650.2
Net Wt.	126.1	42.6	9.7	2.5	3.1	1.5	13.2	2.2

[Total Condensate Collected: 202.9]

Description and/or color: clear clear clear clear purple purple 60 100
Recovery: → → → → → → → Impingers 1-3 ← ← ← ← → → 4th Impinger → Impingers 5-6 ← % Blue

Sample Number:	3017	3018	3019	3020
Sample Bottle Tare Wt.	499.6	168.4	255.6	168.3
Sample Bottle Gross Wt.	889.1	172.2	476.3	Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$, then 8 N HCl	
Components Rinsed*:	filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C	**4th impinger	***5th-6th impingers, U-connectors D-E	
Sample Bottle Final Wt.	984.3	270.3	687.1	394.4 After Rinses
Net Sample Wt.	484.7	101.9	431.5	226.1

FRONT HALF RECOVERY

FILTER:
Sample Number: 016 Description/Color: intact / very pale yellow

CYCLONE/FLASK ASSEMBLY:
Description/Color: NA

TRAIN RINSES:
Sample Number: 3015
Sample Bottle Tare Wt. 168.7 ~~3014~~ 168.3
Rinse Solution: 0.1 N HNO_3
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front
Sample Bottle Final Wt. 250.1
Net Sample Wt. 81.4

*. Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~150~~ 100 mLs ±2 mLs of 0.1 N HNO_3, plus an additional 100 mLs if a cyclone and flask are used, rinse components 3 times or more with brushing until perceivably clean.

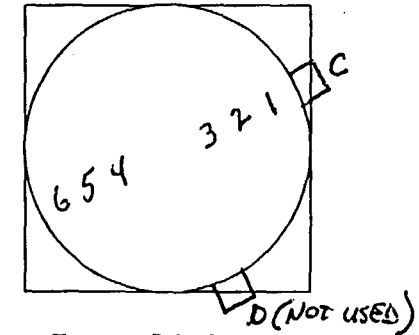
COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 4 Date 6-13-99
Project No. 5587-04-01, 4951-08
Client USEPA OAQPS / SCGASLANA
Source WOODLAWN CEMETARY
Sampling Location SCRUBBER INLET
Operator D. NERL ON 6-13 99 EE
Record data every ~~5~~ 15 minutes
Barometer No. X-4079
Barometric Pressure 30.12 in Hg
Elevation to Meter Boxes 0 ft
Meter Box P_{bar} 30.12 in Hg
Elevation to Sampling Loc. 0 ft
Sampling Location P_{bar} 30.12 in Hg

Train A	Train B
Train A Type/No. METALS - M29-3	Train B Type/No.
Probe No. WC3-1 Length: 3 ft	Probe No. Length: ft
Liner Type QUARTZ Heated? (Y) n	Liner Type Heated? Y n
Nozzle No. M-29-3 Tip Dia. .308 in	Nozzle No. Tip Dia. in
Pitot Tube No. WC3-1 C_p .813	Pitot Tube No. C_p
Stack Thermocouple No. WC3-1	Stack Thermocouple No.
Filter No. 26	Filter No.
Sample Box No. 55	Sample Box No.
Umbilical/Impinger Hookup UH1	Umbilical/Impinger Hookup
Umbilical Nos. N-125-2	Umbilical Nos.
Meter Box No. N12	Meter Box No.
DGM Correction (Y) 1.001	DGM Correction (Y)
Orifice Meter ΔH@ 1.846	Orifice Meter ΔH@

FLOW IS AWAY FROM OBSERVER



Traverse Point Layout
Compass Direction > N

Static Pressure ~ 0.05 in H_2O Assumed Moisture 14.5 % Assumed %CO_2 6.9 %O_2 10.0 Nozzles are quartz-glass.

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1510	1847																		
Pass or Fail		PASS																		

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1550	1849								
Vacuum, in Hg	≥ 15" Hg.	≥ 3.5" Hg.								
Leak Rate, cfm	.002	.006								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)										
Vacuum, in Hg										
Leak Rate, cfm										
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	733.893	
Meter Volume at End of Run	800.437	
Total Leak Check Volume		
Adjusted Final Volume		

Run No. 4 Date 6-13-99 Sampling Location SCRUBBER INLET page 2 of 2

Project No. _____ Train A Type/No. METOLS - M29 DN 6-13-99 EE. Operator D. NEAL

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 733.893 Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
0	0	1605														
C-1	12.5	1617.5	738.831	738.735	0.0075	0.44	0.42	1373	76	75	2.5	60	251	255	249	
1	25	1630	744.337	744.440	0.0125	0.74	0.72	1360	79	76	3.0	49	255	256	247	
2	37.5	1642.5	751.157	751.165	0.0175	0.98	0.96	1470	84	78	3.5	49	253	258	249	
2	50	1655	758.046	758.035	0.0175	1.00	0.99	1449	87	79	3.5	50	254	257	252	
3	62.5	1707.5	764.450	764.520	0.0150	0.86	0.86	1440	88	80	3.5	52	254	257	251	
3	75	1720	770.307	770.385	0.0125	0.72	0.70	1446	90	82	3.5	52	255	257	253	
4	87.5	1732.5	775.489	775.635	0.010	0.56	0.55	1492	90	83	3.0	55	252	257	251	
4	100	1745	780.727	780.780	0.010	0.57	0.53	1454	90	84	3.0	54	255	257	252	
5	112.5	1757.5	785.981	785.895	0.010	0.57	0.53	1442	90	84	3.0	55	255	256	250	
5	125	1810	791.222	791.220	0.010	0.57	0.57	1452	90	84	3.0	57	253	256	251	
6	137.5	1822.5	795.829	795.875	0.0075	0.44	0.43	1399	90	85	3.0	57	251	255	253	
6	150	1835	800.432	800.432	0.0075	0.44	0.42	1402	90	85	3.0	60	253	256	255	

Train B Type/No. _____

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 4 Sampling Train No. M29-3 Sample Box No. — 55
Set-up person(s): J. McCa Date: 6-13-99
Transfer to Sampler:
Relinquished By J. McCann Received By D. Griffin Date/Time 6-13-99 1430

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M29-3	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Cyclone		*			
Flask					
Filter Holder Front					
Filter Holder Back with Teflon® Filter Support			Filter Type: Whatman QM-A #26 For PM		
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	450.1	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	445.6	585.1
U-Connector (B)			5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)			100 mLs ±2 mLs	493.4	601.2
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	488.5	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	516.2	627.0
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	474.0	588.5
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		665.5
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		658.7
Impinger Outlet Connector	UH-1				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 4 Sampling Train No. M29-3 Sample Box No. - 55
Transfer for Recovery: D. Griffin
Relinquished By J. McCann Received By J. McCann Date/Time 6/13/99 19:40
Sample box recovery person(s): J. McCann/A. Carende Date: 6/13/99
Probe/STL recovery person(s): D. ADurty, D. Griffin, A. Page Date: 6/13/99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	661.8	632.9	608.1	489.2	631.2	590.5	677.7	~~677.7~~ 661.5
Initial Wt.	450.1	585.1	601.2	488.5	~~590.5~~ 627.0	~~665.5~~ 588.5	665.5	658.7
Net Wt.	211.7	47.8	6.9	0.7	4.2	2.0	12.2	2.8

[Total Condensate Collected: 288.3]

Description and/or color: clear clear clear ~~purple~~ clear purple purple 52 70% (% Blue)

Recovery: → → → → → → → Impingers 1-3 ← ← ← ← → 4th Impinger → Impingers 5-6 ←

	Impingers 1-3	4th Impinger	Impingers 5-6		
Sample Number:	4017	4018	4019	4020	
Sample Bottle Tare Wt.	499.3	167.0	258.7	163.4	
Sample Bottle Gross Wt.	994.4	167.6	467.0		Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$,	then 8 N HCl	
Sample Bottle Final Wt.	1070.1	261.0	689.5	386.3	After Rinses
Net Sample Wt.	570.8	94.0	430.8	217.9	

Components Rinsed*: filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C; **4th impinger; ***5th-6th impingers, U-connectors D-E

FRONT HALF RECOVERY

FILTER:
Sample Number: 4016 Description/Color: intact / faint yellowish (pre-weighed #26)

CYCLONE/FLASK ASSEMBLY:
Description/Color: N/A

TRAIN RINSES:
Sample Number: 4015 4014 For PM
Sample Bottle Tare Wt. ~~170~~ 168.3 168.3
Rinse Solution: 0.1 N HNO_3
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front 252.8 Acetone
Sample Bottle Final Wt. ~~264.8~~ 256.0 84.5
Net Sample Wt. 87.7 250.1 Water 273

* Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~150~~ 100 mLs ±2 mLs of 0.1 N HNO_3, plus an additional 100 mLs if a cyclone and flask are used, rinse components 3 times or more with brushing until perceivably clean.

COMMENTS:

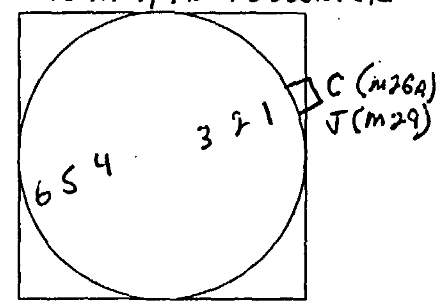
FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 5 Date 6-14-99
Project No. 5587-04-01, 4951-08
Client USEPA ON 8-141-95EE CANADA
Source WOODLAWN CEMETARY
Sampling Location SCRUBBER INLET
Operator D. NEAL
Record data every ~~12.5~~ 10 (1) minutes
Barometer No. X-4029
Barometric Pressure 29.86 in Hg
Elevation to Meter Boxes 0 ft
Meter Box P_{bar} 29.86 in Hg
Elevation to Sampling Loc. 0 ft
Sampling Location P_{bar} 29.86 in Hg
Static Pressure -0.05 in H_2O

	Train A (GREEN)	Train B (RED)
Type/No.	PART/HCl - M26A-1	METALS - M29-1
Probe No.	WC3-8, Length: 3 ft	WC3-1, Length: 3 ft
Liner Type	QUARTZ, Heated? (y) n	QUARTZ, Heated? (y) n
Nozzle No.	M26A-3, Tip Dia. .708 in	M29-2, Tip Dia. .708 in
Pitot Tube No.	WC3-8, C_p .813	WC3-1, C_p .813
Stack Thermocouple No.	WC3-8	WC3-1
Filter No.	9	N/A
Sample Box No.	012002	12
Umbilical/Impinger Hookup	UH10	UH39
Umbilical Nos.	N-125-7	N-125-7
Meter Box No.	N11	N12
DGM Correction (Y)	0.988	1.001
Orifice Meter ΔH@	1.960	1.846

Assumed Moisture 15.1 % Assumed $\%CO_2$ 7.9 $\%O_2$ 9.2 Nozzles are quartz-glass.

FLOW IS AWAY FROM OBSERVER



Traverse Point Layout
Compass Direction > N

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1402	1833									1408	1837								
Pass or Fail		PASS										PASS								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1405	1835								
Vacuum, in Hg	≥15" Hg.	≥4.0" Hg.								
Leak Rate, cfm	.004	.003								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1410	1839								
Vacuum, in Hg	≥15" Hg.	≥3.5" Hg.								
Leak Rate, cfm	.007	.004								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

(1) IT WAS DECIDED TO GO TO 10 MIN. DATA POINTS AND SHUT DOWN INLET AT PORT CHANGE

	TRAIN A	TRAIN B
Meter Volume at Start of Run	154.253	800.704
Meter Volume at End of Run	207.272	866.485
Total Leak Check Volume	0	0
Adjusted Final Volume		

Run No. 5 Date 6-14-99 Sampling Location SCRUBBER INLET page 2 of 2

Project No. 5587-04-01, 4951-08 Train A Type/No. PORT/HCl - M26A Operator D. NEAL

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft³ Initial 154.253 Desired	Dry Gas Meter Reading (V_m), ft³ Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
(1) C-1	~~15~~ 10	1600	158.132	158.190	0.0075	0.52	0.50	1177	76	75	3.0	46	250	251	253	
1	~~25~~ 20	1610	161.963	162.180	0.0075	0.51	0.49	1221	77	75	3.0	43	251	254	251	
2	30	1620	165.701	165.865	0.0075	0.48	0.45	1316	79	76	3.0	45	253	254	248	
2	40	1630	170.043	170.195	0.010	0.65	0.60	1301	80	77	3.5	45	253	250	249	
3	50	1640	174.410	174.535	0.010	0.66	0.60	1291	82	78	3.5	43	251	254	250	
3	60	1650	178.153	178.341	0.0075	0.48	0.43	1340	84	80	3.0	44	252	253	251	
		1720	178.341													
4	70	1730	183.612	183.650	0.015	0.96	0.93	1346	81	80	4.0	43	247	250	249	
4	80	1740	188.897	188.935	0.015	0.86	0.80	1343	82	81	4.0	44	251	254	250	
5	90	1750	193.730	193.895	0.0125	0.80	0.78	1340	83	81	4.0	44	253	254	251	
5	100	1800	198.585	198.670	0.0125	0.81	0.74	1337	86	82	4.0	45	251	254	252	
6	110	1810	202.904	202.995	0.010	0.64	0.58	1360	86	83	3.5	42	250	254	251	
6	120	1820	207.269	207.272	0.010	0.65	0.58	1325	87	83	3.5	41	251	253	252	
	0	1551	800.704	Train B Type/No. METALS - M29												
(1) J-6	~~15~~ 10	1601	805.899	805.955	0.015	0.90	0.89	1318	76	75	3.0	56	251	253	249	
6	~~25~~ 20	1611	812.463	812.135	0.015	1.43	1.40	1406	78	76	3.5	52	252	256	250	
5	30	1621	818.301	818.110	0.020	1.12	1.20	1449	83	77	3.0	53	257	256	248	
5	40	1631	824.163	824.135	0.020	1.13	1.20	1451	86	79	3.0	55	254	257	248	
4	50	1641	829.702	829.750	0.0125	1.00	0.98	1423	88	80	3.0	53	252	257	253	
4	60	1651	834.848	834.846	0.015	0.86	0.84	1417	89	81	3.0	56	255	257	259	
		1721	834.846													
3	70	1731	840.720	840.520	0.020	1.13	1.00	1436	87	81	3.0	56	252	253	258	
3	80	1741	846.676	846.490	0.020	1.16	1.00	1398	86	81	3.5	51	252	256	252	
2	90	1751	851.882	851.990	0.015	0.88	0.73	1377	89	82	3.0	53	251	257	253	
2	100	1801	857.025	857.075	0.015	0.86	0.80	1429	90	83	3.0	56	252	257	252	
1	110	1811	861.743	861.720	0.0125	0.72	0.70	1411	90	83	2.5	55	252	258	252	
1	120	1821	866.485	866.485	0.0125	0.73	0.71	1395	90	84	3.0	56	252	256	253	

Remarks and Notes: (1) IT WAS DECIDED TO GO TO 10 MIN. BOTH POINTS AND SHUT DOWN INLET AT PORT CHANGE.

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 5 Sampling Train No. M26A-1 Sample Box No. 012002
Set-up person(s): A. Cacendar Date: 6/13/99
Transfer to Sampler:
Relinquished By J. McCann Received By ~~J. McCann~~ D Griffin Date/Time 6/14/99 12:00

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M26A-3	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Cyclone		*			
Flask					
Filter Holder Front			Filter Type: Whatman QM-A		
Filter Holder Back with Teflon® Filter Support			Filter Number: #9		
Short 90° Connector					
1st Impinger (Mod-GBS)			50 mLs ±1 mL	488.5	538.2
U-Connector (A)			0.1 N H_2SO_4		
2nd Impinger (GBS)			100 mLs ±2 mLs	481.1	582.4
U-Connector (B)			0.1 N H_2SO_4		
3rd Impinger (GBS)			100 mLs ±2 mLs	480.1	580.2
U-Connector (C)			0.1 N H_2SO_4		
4th Impinger (Mod-GBS)			Empty	470.1	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs	478.1	576.1
U-Connector (E)			0.1 N NaOH		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs	475.9	575.2
U-Connector (F)			0.1 N NaOH		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		657.0
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		668.5
Impinger Outlet Connector	UH-10				

* Before and after sampling: Nozzle inlet opening covered with aluminum foil or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with aluminum foil, Teflon® tape or as described above.

Component Changes After Set-up And Before Recovery And Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 26A -
MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Location

Run No. 5 Sampling Train No. M26A-1 Sample Box No. 012002
Train Purge with Ascarite-filtered Air if condensate is observed:
Condensate in front-half? NO Purged By N/A Purge Rate: [ΔH = N/A in. H_2O]
Date/Start Time: N/A _____ Stop Time N/A Moisture Removed? N/A
Transfer for Recovery:
Relinquished By D. Griffin Received By A. Carender Date/Time 6/14/99 19:30
Sample box recovery person(s): A. Carender Date: 6/14/99
Probe/STL recovery person(s): D. Griffin, D. Albert, A. Pegg Date: 6/14/99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	691.1	601.3	583.9	471.8	577.7	577.7	668.9	670.9
Initial Wt.	538.2	582.4	580.2	470.1	576.1	575.2	657.0	668.5
Net Wt.	152.9	18.9	3.7	1.7	1.6	2.5	11.9	2.4
Description and/or color:	clear	clear	clear	clear	clear	clear	5%	90%

[Total Condensate Collected: 195.6 grams]
Recovery: →→→→→ Impingers 1-3 ←←←←← →→→→→ Impingers 4-6 ←←←←← % Blue

Sample Number: 5003 5005
Sample Bottle Tare Wt. 500.9 259.4
Sample Bottle Gross Wt. 925.9 _____ Before Rinses
Components Rinsed*: filter support, filter holder back, 4th-6th impingers,
Short 90° connector, 1st-3rd impingers, U-connectors A-B U-connectors C-E
Sample Bottle Gross Wt. ~~925.9~~ 1020.0 _____ After Rinses
Net Sample Wt. 519.1 for Mass Collected Calcs _____ (A) for Preliminary Calcs after SIE check
Sample mixed, then aliquot removed for Specific Ion Electrode check:
Sample Bottle Gross Wt. _____ After Aliquoting
Net Sample Wt. _____ After Aliquoting (B)
Sodium thiosulfate added**: _____ grams x 0.5 = _____ (C)
Sample Bottle Gross Wt. _____ after $Na_2S_2O_3 \cdot 5H_2O$ is added
Net Sample Wt. _____ (B + C) x A/B for Mass Collected

CalcsSample mixed, then aliquot taken	for HCl analysis		for Cl_2 analysis	
Aliquot Sample Number:	→→→→→	5004	→→→→→ 5006	for Chloride Analysis
Sample Bottle Tare Wt.	940.8	101.3	102.0	
Sample Bottle Final Wt.	~~1020.0~~	179.8	_____	After Aliquoting
Net Sample Wt.	439.9	78.5	_____	N/A

FRONT HALF RECOVERY

RINSES: Sample Number: 5001
Sample Bottle Tare Wt. 168.3
Components Rinsed***: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front
Sample Bottle Gross Wt. 341.7 with Acetone Rinses
Net Acetone Sample Wt. 173.4
Sample Bottle Final Wt. N/A with added Water Rinses
Net Water Sample Wt. ~~173.4~~

FILTER: Sample Number: 5002
Description/color: intact / black flecks
bypass was broken on tip and glass was on filter
CYCLONE/FLASK ASSEMBLY:
Description/Color: N/A

* Using a total of 100 mLs ±2 mLs ASTM Type I water per sample, rinse components twice. Thoroughly mix each sample before aliquoting.
** Add [25 mg of sodium thiosulfate per ppm Cl_2-dscm of gas sampled x (B/A)] to sample number XX005.
*** Acetone rinses with brushing 3 times or more until perceivably clean. If any residue remains in a component, follow with ASTM Type I water rinses with brushing until perceivably clean. Do not add any water rinses to the sample bottle until after the bottle is weighed with all of the acetone rinses.

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 5 Sampling Train No. M29-1 Sample Box No. 12
Set-up person(s): J. McCann Date: 6/13/99
Transfer to Sampler:
Relinquished By J. McCann Received By D. Gattin Date/Time 6/14/99 1310

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M29-2	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Cyclone		*			
Flask					
Filter Holder Front					
Filter Holder Back with Teflon® Filter Support			Filter Type: Whatman QM-A		
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	472.6	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	473.4	578.0
U-Connector (B)			5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)			100 mLs ±2 mLs	489.5	595.3
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	535.3	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	504.5	614.6
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	467.6	577.6
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		679.4
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		652.1
Impinger Outlet Connector	UH-39				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 5 Sampling Train No. M29-3 Sample Box No. 12
Transfer for Recovery:
Relinquished By D. Griffin Received By J. McCann Date/Time 6-14-99 1920
Sample box recovery person(s): J. M. C Date: 6-14-99
Probe/STL recovery person(s): D. Griffin, D. Albury, A. Page Date: 6-14-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	605.2	643.2	615.7	540.1	618.9	578.9	693.1	654.8
Initial Wt.	472.6	578.0	595.3	535.3	614.6	577.6	679.4	652.1
Net Wt.	132.6	65.2	20.4	4.8	4.3	1.3	13.7	2.7

[Total Condensate Collected: 245.0]

Description and/or color: clear clear clear clear purple purple 5 40
Recovery: → → → → → → → Impingers 1-3 ← ← ← ← → → 4th Impinger → Impingers 5-6 ← % Blue

Sample Number:	5 017	5 018	5 019	5 020
Sample Bottle Tare Wt.	499.2	168.7	260.1	168.6
Sample Bottle Gross Wt.	925.0	174.1	483.4	Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$,	then 8 N HCl
Components Rinsed*: filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C		**4th impinger	***5th-6th impingers, U-connectors D-E	
Sample Bottle Final Wt.	1023.3	269.0	710.6	391.1 After Rinses
Net Sample Wt.	524.1	100.3	450.5	222.5

FRONT HALF RECOVERY

FILTER:
Sample Number: 5 016 Description/Color: intact / faint gray

CYCLONE/FLASK ASSEMBLY:
Description/Color: NA

TRAIN RINSES:
Sample Number: 5 015
Sample Bottle Tare Wt. 168.4
Rinse Solution: 0.1 N HNO_3
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front
Sample Bottle Final Wt. 260.7
Net Sample Wt. ~~292.3~~ 292.3

*. Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~150~~ 200 mLs ±2 mLs of 0.1 N HNO_3, plus an additional 100 mLs if a cyclone and flask are used, rinse components 3 times or more with brushing until perceivably clean.
COMMENTS:

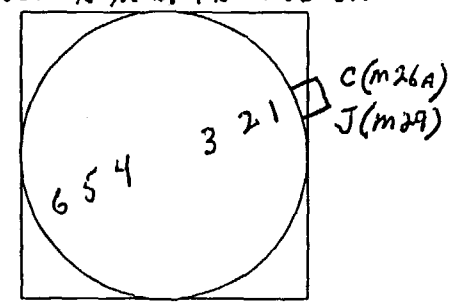
FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 6 Date 6-15-89
Project No. 5587-04-01, 4951-AB
Client USEPA / CANA
Source WAUKEGAN CEMENT
Sampling Location SCRUBBER INLET
Operator D. NEAL
Record data every 10 minutes
Barometer No. X-4029
Barometric Pressure 29.92 in Hg
Elevation to Meter Boxes 0 ft
Meter Box P_{bar} 29.92 in Hg
Elevation to Sampling Loc. 0 ft
Sampling Location P_{bar} 29.92 in Hg
Static Pressure -0.05 in H_2O

	Train A (GREEN)	Train B (RED)
Type/No.	PORT/HCl-M26A-3	METALS-M29-3
Probe No.	WC3-B	WC3-1
Length	3 ft	3 ft
Liner Type	QUARTZ	QUARTZ
Heated?	(Y) n	(Y) n
Nozzle No.	M26A-3	M29-3
Tip Dia.	.708 in	.708 in
Pitot Tube No.	WC3-B	WC3-1
C_p	.813	.823
Stack Thermocouple No.	WC3-B	WC3-1
Filter No.	#7	N/A
Sample Box No.	011187	55
Umbilical/Impinger Hookup	UH3-1	UH1
Umbilical Nos.	N-135-7	N-135-2
Meter Box No.	N11	N12
DGM Correction (Y)	0.988	1.001
Orifice Meter ΔH@	1.960	1.846

Assumed Moisture 15.5 % Assumed %CO_2 7.2 %O_2 10 Nozzles are quartz-glass.

FLOW IS AWAY FROM OBSERVER



Traverse Point Layout
Compass Direction ➢ N

Train A Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0758	1325								
Pass or Fail		PASS								

Train B Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0873	1337								
Pass or Fail		PASS								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0902	1335								
Vacuum, in Hg	≥15" Hg.	≥4.5" Hg.								
Leak Rate, cfm	.012	.010								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0875	1340								
Vacuum, in Hg	≥15" Hg.	≥5.0" Hg								
Leak Rate, cfm	.001	.003								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	207.596	866.761
Meter Volume at End of Run	260.477	932.438
Total Leak Check Volume	0	0
Adjusted Final Volume		

Run No. 6 Date 6-15-99 Sampling Location SCRUBBER INLET 0.1 6-15-99 EL page 2 of 2

Project No. 5587-04-01, 4951-08 Train A Type/No. PART/HCl - M26A ~~(RED)~~ (RED) Operator D. Neal

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft³ Initial 207.556 Desired	Dry Gas Meter Reading (V_m), ft³ Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F	
C-1	10	1055	211.459	211.525	0.0075	0.52	0.48	1160	73	72	3.0	68	249	251	250		
1	20	1105	215.310	215.320	0.0075	0.51	0.46	1179	75	73	3.0	57	251	252	251		
2	30	1115	219.138	219.235	0.0075	0.51	0.49	1205	76	74	3.0	58	250	254	249		
2	40	1125	223.037	223.070	0.0075	0.52	0.47	1160	79	76	3.0	57	252	255	250		
3	50	1135	227.015	226.945	0.0075	0.54	0.47	1105	81	77	3.0	57	246	254	249		
3	60	1145	231.419	231.419	0.010	0.67	0.65	1289	82	78	3.5	52	251	256	251		
		1211	231.419														
4	70	1221	236.232	236.325	0.0125	0.80	0.78	1325	80	79	4.0	49	247	249	250		
4	80	1231	241.555	241.660	0.015	0.98	0.94	1295	81	79	4.5	48	252	253	250		
5	90	1241	246.880	246.925	0.015	0.98	0.92	1300	83	79	4.5	51	250	254	251		
5	100	1251	251.752	251.865	0.0125	0.81	0.77	1298	84	80	4.0	49	252	254	252		
6	110	1301	256.097	256.195	0.010	0.65	0.58	1315	85	81	3.5	49	251	254	255		
6	120	1311	260.415	260.477	0.010	0.65	0.55	1275	86	82	3.5	49	249	254	258		
	0	1046	866.761		Train B Type/No. METALS - M29 (RED)												
J-6	10	1056	871.339	871.395	0.0125	0.70	0.68	1413	73	72	3.0	55	249	255	253		
6	20	1106	877.085	876.945	0.020	1.10	1.05	1456	76	73	3.5	49	254	255	252		
5	30	1116	882.517	882.485	0.0175	0.98	0.97	1434	80	74	3.5	50	254	257	251		
5	40	1126	887.930	887.975	0.0175	0.96	0.96	1465	83	76	3.5	48	254	257	251		
4	50	1136	893.373	893.445	0.0175	0.97	0.95	1454	85	77	3.5	49	256	257	255		
4	60	1146	898.844	898.844	0.0175	0.98	0.94	1442	86	78	3.5	48	258	257	258		
		1212	898.844														
3	70	1222	904.638	904.440	0.020	1.11	1.05	1464	81	79	4.0	49	250	253	260		
3	80	1232	910.424	910.170	0.020	1.10	1.10	1476	83	79	4.0	49	253	255	259		
2	90	1242	916.343	916.350	0.020	1.15	1.25	1404	86	80	5.0	50	256	257	261		
2	100	1252	922.200	922.115	0.020	1.12	1.10	1454	89	80	4.5	48	256	257	258		
1	110	1302	927.273	927.305	0.015	0.84	0.87	1460	90	81	4.0	49	256	257	252		
1	120	1312	932.437	932.438	0.015	0.87	0.83	1394	89	82	4.0	51	251	257	249		

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 6 (#4) Sampling Train No. M26A-3 Sample Box No. 011187
Set-up person(s): A. Carender Date: 6/12/99
Transfer to Sampler:
Relinquished By A. Carender Received By D. Griffin Date/Time 6/15/99 0730

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M26A-3	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Cyclone		*			
Flask					
Filter Holder Front			Filter Type: Whatman QM-A		
Filter Holder Back with Teflon® Filter Support			Filter Number: #7	468.7	517.2
Short 90° Connector					
1st Impinger (Mod-GBS)			50 mLs ±1 mL	~~495.6~~ 496 gm	~~546.6~~ 546 gm
U-Connector (A)			0.1 N H_2SO_4		
2nd Impinger (GBS)			100 mLs ±2 mLs	495.6	595.6
U-Connector (B)			0.1 N H_2SO_4		
3rd Impinger (GBS)			100 mLs ±2 mLs	504.2	603.9
U-Connector (C)			0.1 N H_2SO_4		
4th Impinger (Mod-GBS)			Empty	477.2	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs	492.7	591.8
U-Connector (E)			0.1 N NaOH		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs	465.4	563.0
U-Connector (F)			0.1 N NaOH		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		690.8
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		689.1
Impinger Outlet Connector	UH-37				

* Before and after sampling: Nozzle inlet opening covered with aluminum foil or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with aluminum foil, Teflon® tape or as described above.

Component Changes After Set-up And Before Recovery And Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Location

Run No. 06 of 16 Sampling Train No. M26A-3 Sample Box No. 011187
Train Purge with Ascarite-filtered Air if condensate is observed:
Condensate in front-half? N/A Purged By N/A Purge Rate: [ΔH = N/A in. H_2O]
Date/Start Time: N/A _____ Stop Time N/A Moisture Removed? N/A
Transfer for Recovery:
Relinquished By D. Griffin Received By A. Carender Date/Time 6/14/99 1125
Sample box recovery person(s): A. Carender / S. Mi Date: 6-15-99
Probe/STL recovery person(s): D. Griffin, D. Albert, A. Page Date: 6-15-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	663.6	621.5	607.1	479.4	593.6	566.2	705.2	691.9
Initial Wt.	517.2	595.6	603.9	477.2	591.8	563.0	690.8	689.1
Net Wt.	146.4	25.9	3.2	2.2	1.8	3.2	14.4	2.8
Description and/or color:	clear	clear	clear	clear	clear	clear	40	90

[Total Condensate Collected: 199.9 grams]
Recovery: →→→→→ Impingers 1-3 ←←←←← →→→→→ Impingers 4-6 ←←←←← % Blue

Sample Number: 6 003 6 005
Sample Bottle Tare Wt. 500.1 259.3
Sample Bottle Gross Wt. 925.8 _____ Before Rinses
Components Rinsed*: filter support, filter holder back, 4th-6th impingers,
Short 90° connector, 1st-3rd impingers, U-connectors A-B U-connectors C-E
Sample Bottle Gross Wt. 1019.3 _____ After Rinses
Net Sample Wt. 519.2 for Mass Collected Calcs _____ (A) for Preliminary Calcs after SIE check
Sample mixed, then aliquot removed for Specific Ion Electrode check:
Sample Bottle Gross Wt. _____ After Aliquoting
Net Sample Wt. _____ After Aliquoting (B)
Sodium thiosulfate added**: _____ grams x 0.5 = _____ (C)
Sample Bottle Gross Wt. _____ after $Na_2S_2O_3 \cdot 5H_2O$ is added
Net Sample Wt. _____ (B + C) x A/B for Mass Collected

Calcs Sample mixed, then aliquot taken	for HCl analysis		for Cl_2 analysis	
Aliquot Sample Number:	→→→→→	6004	→→→→→ 6006	for Chloride Analysis
Sample Bottle Tare Wt.		103.1	102.9	Nt
Sample Bottle Final Wt.	905.1	217.4	_____ _____	After Aliquoting
Net Sample Wt.	405.0	114.3	_____ _____	

FRONT HALF RECOVERY

RINSES: Sample Number: 6 001
Sample Bottle Tare Wt. 168.8
Components Rinsed***: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front
Sample Bottle Gross Wt. 291.5 with Acetone Rinses
Net Acetone Sample Wt. 122.7
Sample Bottle Final Wt. NA with added Water Rinses
Net Water Sample Wt. _____

FILTER: Sample Number: 6 002
Description/color: intact / off white

CYCLONE/FLASK ASSEMBLY:
Description/Color: N/A

* Using a total of 100 mLs ±2 mLs ASTM Type I water per sample, rinse components twice. Thoroughly mix each sample before aliquoting.
** Add [25 mg of sodium thiosulfate per ppm Cl_2-dscm of gas sampled x (B/A)] to sample number XX005.
*** Acetone rinses with brushing 3 times or more until perceivably clean. If any residue remains in a component, follow with ASTM Type I water rinses with brushing until perceivably clean. Do not add any water rinses to the sample bottle until after the bottle is weighed with all of the acetone rinses.

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 6 Sampling Train No. M29-3 Sample Box No. — 55
Set-up person(s): J McC Date: 6-14-99
Transfer to Sampler:
Relinquished By J. McCann Received By D. Griffin Date/Time 6-15-99 0725

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M29-3	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Cyclone		*			
Flask					
Filter Holder Front					
Filter Holder Back with Teflon® Filter Support			Filter Type: Whatman QM-A		
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	489.7	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	448.6	584.5
U-Connector (B)			5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)			100 mLs ±2 mLs	493.4	587.3
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	450.6	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	516.2	627.8
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	474.0	588.1
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		659.2
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		661.1
Impinger Outlet Connector	UH-1				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with aluminum foil.

**. Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 6 Sampling Train No. M29-3 Sample Box No. —55
Transfer for Recovery:
Relinquished By D. Griffin Received By J. McCann Date/Time 6-15-99 1435
Sample box recovery person(s): J. McCann Date: 6-15-99
Probe/STL recovery person(s): D. Griffin, D. Albury, A. Feige Date: 6-15-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	651.8	631.4	593.7	451.6	630.8	590.8	672.5	663.7
Initial Wt.	489.7	584.5	587.3	450.6	627.8	588.1	659.2	661.1
Net Wt.	162.1	46.9	6.4	1.0	3.0	2.7	13.3	2.6

[Total Condensate Collected: 238.0]

Description and/or color: clear clear clear clear purple purple 28 30
Recovery: → → → → → → → Impingers 1-3 ← ← ← ← → → 4th Impinger → Impingers 5-8 ← % Blue

Sample Number:	6017	6018	6019	6020
Sample Bottle Tare Wt.	510.3	168.7	259.4	168.8
Sample Bottle Gross Wt.	908.8	170.1	480.7	Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$,	then 8 N HCl
Components Rinsed*: filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C		**4th impinger	***5th-6th impingers, U-connectors D-E	
Sample Bottle Final Wt.	1002.6	265.8	685.1	387.0 After Rinses
Net Sample Wt.	502.3	97.1	425.7	218.2

FRONT HALF RECOVERY

FILTER:
Sample Number: 6016 Description/Color: intact / offwhite

CYCLONE/FLASK ASSEMBLY:
Description/Color: NA

TRAIN RINSES:
Sample Number: 6015
Sample Bottle Tare Wt. 168.7
Rinse Solution: 0.1 N HNO_3
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front
Sample Bottle Final Wt. 271.9
Net Sample Wt. 103.2

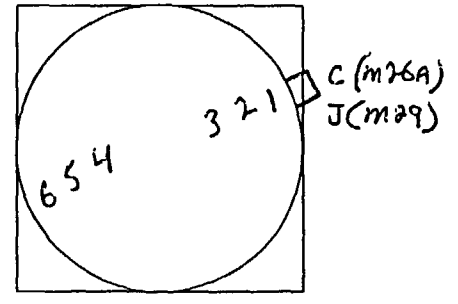
* Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~150~~ 200 mLs ±2 mLs of 0.1 N HNO_3, plus an additional 100 mLs if a cyclone and flask are used, rinse components 3 times or more with brushing until perceivably clean.

COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 7 Date 6-15-99	Train A Type/No. (GREEN) PORT/HCl-M26A-1	Train B Type/No. (RED) METALS-M29-1
Project No. 5587-04-01, 4951-08	Probe No. WC3-8 Length: 3 ft	Probe No. WC3-1 Length: 3 ft
Client USEPA / CANA	Liner Type QUARTZ Heated? (Y) n	Liner Type QUARTZ Heated? (N) n
Source WOODLAWN CEMETERY	Nozzle No. M26A-1 Tip Dia. .308 in	Nozzle No. M29-2 Tip Dia. .308 in
Sampling Location SCRUBBER INLET	Pitot Tube No. WC3-8 C_p .813	Pitot Tube No. WC3-1 C_p .813
Operator O. NEAL	Stack Thermocouple No. WC3-8	Stack Thermocouple No. WC3-1
Record data every 10 minutes	Filter No. 13	Filter No. N/A
Barometer No. X-4029	Sample Box No. ~~1200~~ 1200 2	Sample Box No. 12
Barometric Pressure 29.89 in Hg	Umbilical/Impinger Hookup ~~QUICK~~ 10	Umbilical/Impinger Hookup CIH 39
Elevation to Meter Boxes 0 ft	Umbilical Nos. N-125-7	Umbilical Nos. N-125-2
Meter Box P_{bar} 29.89 in Hg	Meter Box No. ~~QUICK~~ N11	Meter Box No. N12
Elevation to Sampling Loc. 0 ft	DGM Correction (Y) 0.988	DGM Correction (Y) 1.001
Sampling Location P_{bar} 29.89 in Hg	Orifice Meter ΔH@ 1.960	Orifice Meter ΔH@ 1.846

FLOW IS AWAY FROM OBSERVER



Traverse Point Layout

Compass Direction ➢ N

Static Pressure -0.05 in H_2O Assumed Moisture 15.5 % Assumed %CO_2 7.2 %O_2 10 Nozzles are quartz-glass.

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1654	2020									1700	2025								
Pass or Fail		Pass										Pass								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1657	2023								
Vacuum, in Hg	≥ 15" Hg.	≥ 5.0" Hg.								
Leak Rate, cfm	.003	.009								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1703	2027								
Vacuum, in Hg	≥ 15" Hg.	≥ 4.0" Hg.								
Leak Rate, cfm	.002	.002								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	261.068	932.702
Meter Volume at End of Run	314.355	991.479
Total Leak Check Volume	0	0
Adjusted Final Volume		

Run No. 7 Date 6-15-99 Sampling Location SCRUBBER INLET page 2 of 2

Project No. 5587-04-01, 4951-08 Train A Type/No. PORT/HCl - M26A (GREEN) Operator B. NEAL

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft³ Initial 261.068 Desired	Dry Gas Meter Reading (V_m), ft³ Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
C-1	10	1800	264.063	264.100	0.0050	0.31	0.28	1349	74	74	2.5	41	249	251	250	
1	20	1810	266.956	267.055	0.0050	0.29	0.27	1486	76	74	2.5	40	253	253	250	
2	30	1820	271.580	271.500	0.0125	0.74	0.70	1458	78	76	3.5	39	250	254	251	
2	40	1830	275.130	275.125	0.0075	0.43	0.42	1503	80	77	3.0	41	254	255	252	
3	50	1840	279.256	279.165	0.010	0.58	0.55	1489	82	78	3.5	41	254	255	250	
3	60	1850	283.360	283.363	0.010	0.58	0.59	1517	83	79	4.0	42	252	254	250	
		1910	283.363													
4	70	1920	288.777	288.750	0.0175	1.01	0.97	1571	80	80	4.5	40	248	250	248	
4	80	1930	294.161	294.204	0.0175	1.00	0.98	1550	82	80	5.0	42	250	253	249	
5	90	1940	299.173	299.290	0.015	0.86	0.83	1540	84	81	4.5	43	251	254	247	
5	100	1950	304.233	304.300	0.015	0.88	0.83	1505	85	81	5.0	44	252	254	248	
6	110	2000	309.260	309.330	0.015	0.86	0.83	1539	86	82	5.0	44	251	253	247	
6	120	2010	314.355	314.355	0.015	0.89	0.85	1489	86	83	5.0	40	250	253	247	
	0	1751	932.702		Train B Type/No. METOLS - M29 (RED)											
J-6	10	1801	936.215	936.190	0.0075	0.41	0.38	1464	75	74	2.0	63	251	253	252	
6	20	1811	940.205	940.160	0.010	0.53	0.51	1540	77	75	2.0	54	252	258	252	
5	30	1821	945.065	944.965	0.015	0.78	0.76	1578	80	76	3.0	52	256	257	251	
5	40	1831	949.914	949.980	0.015	0.77	0.76	1602	83	77	3.0	52	254	256	253	
4	50	1841	954.777	954.500	0.015	0.77	0.75	1601	85	78	3.0	53	255	257	252	
4	60	1851	959.638	959.640	0.015	0.77	0.80	1615	87	79	3.0	50	255	258	251	
		1911	959.640													
3	70	1921	964.941	965.855	0.0175	0.92	0.99	1560	87	80	3.5	49	252	253	254	
3	80	1931	970.186	970.210	0.0175	0.90	0.90	1612	84	80	3.5	48	253	256	255	
2	90	1941	975.462	975.435	0.0175	0.91	0.90	1602	87	81	4.0	49	256	257	253	
2	100	1951	980.804	980.765	0.0175	0.93	0.90	1555	88	81	4.0	48	254	257	254	
1	110	2001	986.175	986.075	0.0175	0.92	0.90	1579	89	82	4.0	48	253	257	254	
1	120	2011	991.481	991.479	0.0175	0.93	0.90	1552	89	82	4.0	49	252	257	253	

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 7 Sampling Train No. M26A-1 Sample Box No. 012002
Set-up person(s): A. Carender Date: 6/14/99
Transfer to Sampler:
Relinquished By A. Carender Received By D. Griffin Date/Time 6/15/99 1610

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M26A-1	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Cyclone		*			
Flask					
Filter Holder Front			Filter Type: Whatman QM-A		
Filter Holder Back with Teflon® Filter Support			Filter Number: #13		
Short 90° Connector					
1st Impinger (Mod-GBS)			50 mLs ±1 mL	489.5	540.3
U-Connector (A)			0.1 N H_2SO_4		
2nd Impinger (GBS)			100 mLs ±2 mLs	482.2	583.6
U-Connector (B)			0.1 N H_2SO_4		
3rd Impinger (GBS)			100 mLs ±2 mLs	480.3	581.7
U-Connector (C)			0.1 N H_2SO_4		
4th Impinger (Mod-GBS)			Empty	468.9	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs	477.4	576.8
U-Connector (E)			0.1 N NaOH		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs	474.7	573.5
U-Connector (F)			0.1 N NaOH		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		643.3
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		671.3
Impinger Outlet Connector	UH-10				

* Before and after sampling: Nozzle inlet opening covered with aluminum foil or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with aluminum foil, Teflon® tape or as described above.

Component Changes After Set-up And Before Recovery And Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Location

Run No. 7 Sampling Train No. 26A-1 Sample Box No. 012002
Train Purge with Ascarite-filtered Air if condensate is observed:
Condensate in front-half? NO Purged By N/A Purge Rate: [ΔH = N/A in. H_2O]
Date/Start Time: N/A _____ Stop Time N/A Moisture Removed? N/A
Transfer for Recovery:
Relinquished By D. Griffin Received By A. Carendar Date/Time 6/15/99 2050
Sample box recovery person(s): A. Carendar Date: 6/16/99
Probe/STL recovery person(s): D. Griffin, D. Alberty, B. Page Date: 6-15-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	~~696.5~~ 696.0	604.0	584.8	471.4	578.7	575.6	654.2	671.8
Initial Wt.	540.3	593.6	581.7	463.9	576.3	573.5	643.3	671.3
Net Wt.	156.2	20.4	3.1	2.5	1.4	2.1	10.9	0.5
Description and/or color:	clear	clear	clear	clear	clear	clear	5%	60%

[Total Condensate Collected: ~~195.7~~ 197.6 grams]
Recovery: →→→→→ Impingers 1-3 ←←←←← →→→→→ Impingers 4-6 ←←←←← % Blue

Sample Number:	7003	7005
Sample Bottle Tare Wt.	499.1	500.0
Sample Bottle Gross Wt.	934.1	_____ Before Rinses
Components Rinsed*:	filter support, filter holder back, Short 90° connector, 1st-3rd impingers, U-connectors A-B	4th-6th impingers, U-connectors C-E
Sample Bottle Gross Wt.	1026.4 521.3	_____ After Rinses
Net Sample Wt.	~~931.3~~ for Mass Collected Calcs	_____ (A) for Preliminary Calcs after SIE check
Sample mixed, then aliquot removed for Specific Ion Electrode check:		
Sample Bottle Gross Wt.		_____ After Aliquoting
Net Sample Wt.		_____ After Aliquoting (B)
Sodium thiosulfate added**:		_____ grams x 0.5 = _____ (C)
Sample Bottle Gross Wt.		_____ after $Na_2S_2O_3 \cdot 5H_2O$ is added
Net Sample Wt.		_____ (B + C) x A/B for Mass Collected
CalcsSample mixed, then aliquot taken	for HCl analysis	for Cl_2 analysis NT
Aliquot Sample Number:	→→→→→ 7004	→→→→→ 006 for Chloride Analysis
Sample Bottle Tare Wt.	931.8 101.3	_____ _____
Sample Bottle Final Wt.	432.7 195.9	_____ _____ After Aliquoting
Net Sample Wt.	94.6	_____ _____

FRONT HALF RECOVERY

RINSES: Sample Number: 7001
Sample Bottle Tare Wt. 253.7
Components Rinsed***: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front
Sample Bottle Gross Wt. 424.3 with Acetone Rinses
Net Acetone Sample Wt. 170.6
Sample Bottle Final Wt. 460.8 with added Water Rinses
Net Water Sample Wt. ~~207.1~~ 36.5

FILTER: Sample Number: 7 002
Description/color: intact/greyish (#13)

CYCLONE/FLASK ASSEMBLY:
Description/Color: ~~intact/greyish~~ N/A

* Using a total of 100 mLs ±2 mLs ASTM Type I water per sample, rinse components twice. Thoroughly mix each sample before aliquoting.
** Add [25 mg of sodium thiosulfate per ppm Cl_2-dscm of gas sampled x (B/A)] to sample number XX005.
*** Acetone rinses with brushing 3 times or more until perceivably clean. If any residue remains in a component, follow with ASTM Type I water rinses with brushing until perceivably clean. Do not add any water rinses to the sample bottle until after the bottle is weighed with all of the acetone rinses.

COMMENTS: *End of bypass was chipped - removed small amount of broken glass from filter

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 7 Sampling Train No. M29-1 Sample Box No. 12
Set-up person(s): J. M-C. Date: 6-15-99
Transfer to Sampler:
Relinquished By J. McCann Received By J. Surman Date/Time 6-15-99 1605

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M29-2	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Cyclone		*			
Flask					
Filter Holder Front					
Filter Holder Back with Teflon® Filter Support			Filter Type: Whatman QM-A		
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	471.0	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	473.4	579.3
U-Connector (B)			5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)			100 mLs ±2 mLs	489.5	594.6
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	534.5	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	307.5	614.8
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	467.6	578.4
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		660.7
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		654.2
Impinger Outlet Connector	UH-39				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 7 Sampling Train No. 29-1 Sample Box No. ~~—~~ 12
Transfer for Recovery:
Relinquished By D. Griffin Received By J. McCann Date/Time 6/15/99 2130
Sample box recovery person(s): J. McCann / A. Carender Date: 6/15/99
Probe/STL recovery person(s): D. Griffin, D. Albury, A. Page Date: 6/15/99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	611.6	629.0	602.5	537.3	617.5	579.2	673.8	655.9
Initial Wt.	471.0	579.3	594.6	534.5	614.8	578.4	660.7	654.2
Net Wt.	140.6	49.7	7.9	2.8	2.7	0.8	13.1	1.7

[Total Condensate Collected: 219.3]

Description and/or color: clear clear clear clear purple purple 20% 50%
Recovery: → → → → → → → Impingers 1-3 ← ← ← ← → → 4th Impinger → Impingers 5-6 ← % Blue

Sample Number:	7017	7018	7019	7020
Sample Bottle Tare Wt.	498.9	168.3	254.2	168.4
Sample Bottle Gross Wt.	906.6	~~270.2~~	472.6	Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$, then 8 N HCl	
Components Rinsed*: filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C		**4th impinger	***5th-6th impingers, U-connectors D-E	
Sample Bottle Final Wt.	998.2	270.2	686.0	392.4 After Rinses
Net Sample Wt.	499.3	101.9	431.8	224.0

FRONT HALF RECOVERY

FILTER:
Sample Number: 7016 Description/Color: intact/lt gray with multi-colored specs

CYCLONE/FLASK ASSEMBLY:
Description/Color: N/A

TRAIN RINSES:
Sample Number: 7015
Sample Bottle Tare Wt. 168.7
Rinse Solution: 0.1 N HNO_3
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front
Sample Bottle Final Wt. 246.6
Net Sample Wt. 77.9

* Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~150~~ 200 mLs ±2 mLs of 0.1 N HNO_3, plus an additional 100 mLs if a cyclone and flask are used, rinse components 3 times or more with brushing until perceivably clean.

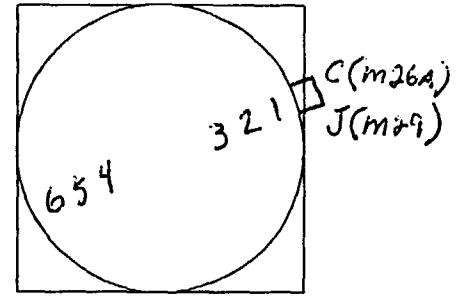
COMMENTS: Front half is coated with multi-colored specs and whitish residue, except for filterholder front

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No.	8	Date	6-16-99
Project No.	5587-04-01, 4951-08		
Client	USEPA / CRNA		
Source	WOODLAWN CEMETERY		
Sampling Location	SCRUBBER INLET		
Operator	O. NEAL		
Record data every	10	minutes	
Barometer No.	X-4029		
Barometric Pressure	30.08	in Hg	
Elevation to Meter Boxes	0	ft	
Meter Box P_{bar}	30.08	in Hg	
Elevation to Sampling Loc.	0	ft	
Sampling Location P_{bar}	30.08	in Hg	
Static Pressure	-0.05	in H_2O	

Train A (GREEN)		Train B (RED)	
Train A Type/No.	PART/HCL-M26A-3	Train B Type/No.	(1) METOLS-M29-3
Probe No.	WC3-B	Probe No.	WC3-X5
Length:	3 ft	Length:	3 ft
Liner Type	QUARTZ	Heated?	(Y) n
Heated?	(Y) n	Nozzle No.	M29-3 46.3
Nozzle No.	M26A-3	Tip Dia.	.708 in
Tip Dia.	.708 in	Pitot Tube No.	WC3-X5
Pitot Tube No.	WC3-B	C_p	.813
C_p	.813	Stack Thermocouple No.	WC3-X5
Stack Thermocouple No.	WC3-B	Filter No.	N/A
Filter No.	15	Sample Box No.	55
Sample Box No.	011187	Umbilical/Impinger Hookup	UH-1
Umbilical/Impinger Hookup	UH37	Umbilical Nos.	N-125-2
Umbilical Nos.	N-125-7	Meter Box No.	N12
Meter Box No.	N11	DGM Correction (Y)	1.001
DGM Correction (Y)	0.993	Orifice Meter ΔH@	1.846
Orifice Meter ΔH@	1.760		

FLOW IS AWAY FROM OBSERVER



Traverse Point Layout

Compass Direction ➤ N

Assumed Moisture 15.5 % Assumed $\%CO_2$ 9.8 $\%O_2$ 7.1 Nozzles are quartz-glass.

Train A Pitot Tube Pressure Measurement System Leak Checks																					
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1321	1831									1427		1513	1835							
Pass or Fail		Pass									WC3-1		WC3-5	Pass							

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1425	1833								
Vacuum, in Hg	≥15" Hg.	≥3.5" Hg.								
Leak Rate, cfm	.004	.002								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1516	1838								
Vacuum, in Hg	≥15" Hg	≥5.0" Hg.								
Leak Rate, cfm	.002	.002								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

(1) PROBE WC3-1 DAMAGED FROM HEAT AND REPLACED WITH PROBE WC3-5 AND NOZZLE NO. M26A-4 - 6-16-99

	TRAIN A	TRAIN B
Meter Volume at Start of Run	317.060	992.615
Meter Volume at End of Run	378.135	1068.190
Total Leak Check Volume	0	0
Adjusted Final Volume		

Run No. 8 Date 6-15-99 Sampling Location SCRUBBER INLET page 2 of 3

Project No. 5587-04-01, 4751-08 Train A Type/No. PONT/HCl-M26A (GREEN) Operator D. NEAL

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft³ Initial 317.060 Desired	Dry Gas Meter Reading (V_m), ft³ Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
C-1	10	1550	320.561	320.685	0.0075	0.43	0.41	1488	73	73	2.0	53	251	251	249	
1	20	1600	324.066	324.145	0.0075	0.43	0.38	1498	76	74	2.0	51	250	253	256	
2	30	1610	327.607	327.650	0.0075	0.44	0.39	1465	77	75	2.0	51	254	254	255	
2	40	1620	331.671	331.715	0.010	0.56	0.53	1549	79	76	2.0	47	252	253	257	
3	50	1630	335.114	335.155	0.0075	0.43	0.38	1537	80	77	2.0	50	250	254	256	
3	60	1640	338.602	339.602	0.0075	0.42	0.38	1550	81	78	2.0	49	249	253	258	
		1648	338.602													
4	70	1658	343.503	343.550	0.015	0.84	0.80	1573	80	78	3.0	51	252	250	258	
4	80	1708	348.037	348.105	0.0125	0.72	0.67	1534	82	80	3.0	52	251	252	258	
5	90	1718	352.068	352.180	0.010	0.57	0.52	1562	83	80	2.5	54	253	254	257	
5	100	1728	356.175	356.145	0.010	0.57	0.50	1543	84	81	2.5	55	253	253	258	
6	110	1738	360.166	360.785	0.010	0.57	0.55	1559	84	81	2.5	54	249	253	257	
6	120	1748	364.212	364.245	0.010	0.57	0.50	1561	85	82	2.5	54	252	253	256	
C-C	130	1758	368.268	368.370	0.010	0.57	0.53	1553	85	82	3.0	56	249	253	255	
C	140	1808	373.219	373.150	0.015	0.85	0.78	1565	85	82	3.5	52	252	252	254	
	0	1541	992.615		Train B Type/No. METALS-M29 (RED)											
J-6	10	1551	997.703	997.750	0.0175	0.88	0.84	1632	73	72	3.5	53	254	255	253	
6	20	1601	1001.571	1001.645	0.010	0.50	0.48	1630	75	73	2.5	50	259	257	254	
5	30	1611	1006.341	1006.350	0.015	0.76	0.72	1609	78	74	3.0	48	254	257	253	
5	40	1621	1011.476	1011.430	0.0175	0.86	0.87	1637	81	75	3.5	49	255	257	255	
4	50	1631	1015.830	1015.835	0.0125	0.64	0.63	1673	84	77	3.0	50	255	258	254	
4	60	1641	1021.002	1021.003	0.0175	0.88	0.87	1650	85	78	3.5	50	256	258	253	
		1649	1021.003													
3	70	1659	1026.510	1026.570	0.020	1.01	0.94	1639	81	79	4.5	50	253	254	252	
3	80	1709	1031.716	1031.800	0.0175	0.90	0.88	1614	85	80	4.0	51	253	257	253	
2	90	1719	1036.541	1036.550	0.0150	0.77	0.73	1618	87	80	3.5	53	254	256	251	
2	100	1729	1041.403	1041.385	0.0150	0.78	0.75	1593	88	81	4.0	50	253	257	250	
1	110	1739	1046.670	1046.610	0.0175	0.90	0.88	1621	88	81	4.5	51	255	257	251	
1	120	1749	1051.840	1051.865	0.0175	0.90	0.88	1626	89	82	4.5	50	254	258	250	
J-C	130	1759	1057.070	1057.115	0.0175	0.90	0.88	1618	89	82	4.5	53	254	256	250	
C	140	1809	1062.641	1062.585	0.020	~~1.03~~ 1.03	0.78	1637	90	82	5.0	51	254	256	249	

Remarks and Notes: 6-16-99 ed.

Run No. 8 Date 6-15-99 Sampling Location SCRUBBER INLET page 3 of 3
Project No. 5587-04-01, 4951-08 Train A Type/No. PART/HCl - M26A (GREEN) Operator D. Nelson

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft³ Initial N/A Desired	Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
	N/A	N/A														
C-C	150	1818	378.135	378.135	0.015	0.84	0.79	1598	86	82	3.5	54	252	253	254	

Train B Type/No. METALS - M29 (RED)

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading Desired	Actual	Velocity Head	ΔH Desired	ΔH Actual	Stack Temp.	DGM Inlet	DGM Outlet	Pump Vacuum	Silica Gel Impinger Outlet Temp.	Probe Liner Outlet Temp.	Filter Holder Temp.	STL Outlet Temp.	XAD Inlet Temp.
	N/A	N/A														
J-C	150	1819	1068.190	1068.190	0.020	1.02	0.98	1653	90	82	5.0	51	254	256	250	

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 8 Sampling Train No. M26A-3 Sample Box No. 011187
Set-up person(s): J. McC Date: 6-15-99
Transfer to Sampler:
Relinquished By J. Melan Received By D. Griffin Date/Time 6-16-99 1300

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M23A-3	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Cyclone		*			
Flask					
Filter Holder Front			Filter Type: Whatman QM-A		
Filter Holder Back with Teflon® Filter Support			Filter Number: 15		
Short 90° Connector					
1st Impinger (Mod-GBS)			50 mLs ±1 mL	468.7	517.4
U-Connector (A)			0.1 N H_2SO_4		
2nd Impinger (GBS)			100 mLs ±2 mLs	495.6	593.5
U-Connector (B)			0.1 N H_2SO_4		
3rd Impinger (GBS)			100 mLs ±2 mLs	504.2	601.6
U-Connector (C)			0.1 N H_2SO_4		
4th Impinger (Mod-GBS)			Empty	463.6	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs	492.7	592.4
U-Connector (E)			0.1 N NaOH		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs	465.4	575.6
U-Connector (F)			0.1 N NaOH		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		631.2
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		691.7
Impinger Outlet Connector	UH-37				

* Before and after sampling: Nozzle inlet opening covered with aluminum foil or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with aluminum foil, Teflon® tape or as described above.

Component Changes After Set-up And Before Recovery And Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Location

Run No. 8 Sampling Train No. M26A-3 Sample Box No. 011187
Train Purge with Ascarite-filtered Air if condensate is observed:
Condensate in front-half? No Purged By NA Purge Rate: [ΔH = NA in. H_2O]
Date/Start Time: NA _____ Stop Time NA Moisture Removed? NA
Transfer for Recovery:
Relinquished By D. Griffin Received By J. McCann Date/Time 6-16-99 1915
Sample box recovery person(s): J McCann Date: 6-17-99
Probe/STL recovery person(s): D. Griffin, D. Alberty, A. Pegg Date: 6-16-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	717.8	617.6	610.6	466.2	594.6	578.7	644.9	698.6
Initial Wt.	517.4	593.5	601.6	463.6	592.4	575.6	631.2	691.7
Net Wt.	200.4	24.1	9.0	2.6	2.2	3.1	13.7	6.9
Description and/or color:	clear	clear	clear	clear	clear	clear	80	20

[Total Condensate Collected: 262.0 grams]
Recovery: → → → → → Impingers 1-3 ← ← ← ← ← → → → → → Impingers 4-6 ← ← ← ← ← % Blue

Sample Number: 8003 8005
Sample Bottle Tare Wt. 560.7 499.2
Sample Bottle Gross Wt. 977.2 _____ Before Rinses
Components Rinsed*: filter support, filter holder back, Short 90° connector, 1st-3rd impingers, U-connectors A-B; 4th-6th impingers, U-connectors C-E
Sample Bottle Gross Wt. 1072.7 _____ After Rinses
Net Sample Wt. 572.0 for Mass Collected Calcs _____ (A) for Preliminary Calcs after SIE check
Sample mixed, then aliquot removed for Specific Ion Electrode check:
Sample Bottle Gross Wt. _____ After Aliquoting
Net Sample Wt. _____ After Aliquoting (B)
Sodium thiosulfate added**: _____ grams x 0.5 = _____ (C)
Sample Bottle Gross Wt. _____ after $Na_2S_2O_3 \cdot 5H_2O$ is added
Net Sample Wt. _____ (B + C) x A/B for Mass Collected
CalcsSample mixed, then aliquot taken for HCl analysis for Cl_2 analysis
Aliquot Sample Number: → → → → → 8004 → → → → → 006 for Chloride Analysis
Sample Bottle Tare Wt. 101.1 _____ NA
Sample Bottle Final Wt. 971.5 202.3 _____ _____ After Aliquoting
Net Sample Wt. 470.8 101.2 _____ _____

FRONT HALF RECOVERY

RINSES: Sample Number: 8001
Sample Bottle Tare Wt. 255.0
Components Rinsed***: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front
Sample Bottle Gross Wt. ~~480.7~~ 450 with Acetone Rinses
Net Acetone Sample Wt. 195.7
Sample Bottle Final Wt. 483.1 with added Water Rinses
Net Water Sample Wt. 32.4

FILTER: Sample Number: 8002
Description/color: intact / off white
broken glass removed from filter
CYCLONE/FLASK ASSEMBLY:
Description/Color: NA

* Using a total of 100 mLs ±2 mLs ASTM Type I water per sample, rinse components twice. Thoroughly mix each sample before aliquoting.
** Add [25 mg of sodium thiosulfate per ppm Cl_2-dscm of gas sampled x (B/A)] to sample number XX005.
*** Acetone rinses with brushing 3 times or more until perceivably clean. If any residue remains in a component, follow with ASTM Type I water rinses with brushing until perceivably clean. Do not add any water rinses to the sample bottle until after the bottle is weighed with all of the acetone rinses.

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 8 Sampling Train No. M29-3 Sample Box No. — 53
Set-up person(s): J. McCann Date: 6-15-99
Transfer to Sampler:
Relinquished By J. McCann Received By D. Griffin Date/Time 06-16-99 1305

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA		
				Initial Weights (grams)**	
				Empty	Loaded
Sampling Nozzle (Quartz)	M29-4	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Cyclone		*			
Flask					
Filter Holder Front					
Filter Holder Back with Teflon® Filter Support			Filter Type: Whatman QM-A		
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	490.6	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	448.6	586.4
U-Connector (B)			5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)			100 mLs ±2 mLs	493.4	600.8
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	451.2	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	516.2	627.9
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	474.0	586.3
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		653.2
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		673.5
Impinger Outlet Connector	6H-1				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 8 Sampling Train No. 29-833 Sample Box No. — 55

Transfer for Recovery:
Relinquished By D. Griffin Received By J. McLean Date/Time 6/16/99 1910
Sample box recovery person(s): J. McLean Date: 6/16/99
Probe/STL recovery person(s): D. Griffin, D. Doherty, A. Page Date: 6/16/99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	707.5	642.8	607.3	451.7	632.3	588.2	668.1	676.7
Initial Wt.	490.6	586.4	600.8	451.2	627.9	586.3	653.2	673.5
Net Wt.	216.9	56.4	6.5	0.5	4.4	1.9	14.9	3.2

[Total Condensate Collected: ~~301.5~~ 304.7

Description and/or color: clear clear clear clear purple purple 20 100
Recovery: → → → → → → → Impingers 1-3 ← ← ← ← → → 4th Impinger ← Impingers 5-6 ← % Blue

Sample Number:	8017	8018	8019	8020
Sample Bottle Tare Wt.	499.8	168.3	254.6	168.2
Sample Bottle Gross Wt.	958.4	170.8	473.9	Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$, then 8 N HCl	
Components Rinsed*: filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C		**4th impinger	***5th-6th impingers, U-connectors D-E	
Sample Bottle Final Wt.	1082.1	268.0	682.8	391.7 After Rinses
Net Sample Wt.	582.3	99.7	428.2	223.5

FRONT HALF RECOVERY

FILTER:
Sample Number: 8016 Description/Color: intact / offwhite

CYCLONE/FLASK ASSEMBLY:
Description/Color: NA

TRAIN RINSES:
Sample Number: 8015
Sample Bottle Tare Wt. 168.6
Rinse Solution: 0.1 N HNO_3
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front
Sample Bottle Final Wt. ~~260.1~~ 260
Net Sample Wt. 91.5

*. Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~150~~ 100 mLs ±2 mLs of 0.1 N HNO_3, plus an additional 100 mLs if a cyclone and flask are used, rinse components 3 times or more with brushing until perceivably clean.

COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 9 Date 7-17-99

Project No. 5587-04-01, 4951-08

Client USEPA / CAMP

Source WOODLAWN CEMETERY

Sampling Location SCRUBBER INLET

Operator D. NEAL

Record data every 10 minutes

Barometer No. X-4029

Barometric Pressure 30.00 in Hg

Elevation to Meter Boxes 0 ft

Meter Box P_{bar} 30.00 in Hg

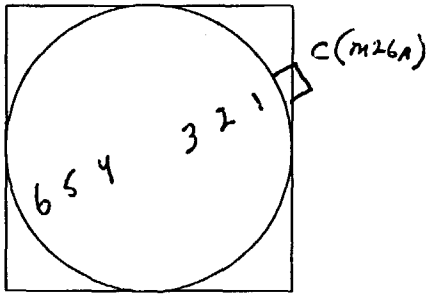
Elevation to Sampling Loc. 0 ft

Sampling Location P_{bar} 30.00 in Hg

Static Pressure -0.05 in H_2O Assumed Moisture 15.5 %

(GREEN)	(RED)
Train A Type/No. PART/HC.1-M26A-2	Train B Type/No. METALS-M29-1
Probe No. WC3-8 Length: 3 ft	Probe No. WC3-5 Length: 3 ft
Liner Type QUARTZ Heated? (Y) n	Liner Type QUARTZ Heated? y n
Nozzle No. M26A-1 Tip Dia. .708 in	Nozzle No. M29-2 Tip Dia. .708 in
Pitot Tube No. WC3-8 C_p .813	Pitot Tube No. WC3-5 C_p .813
Stack Thermocouple No. WC3-8	Stack Thermocouple No. WC3-5
Filter No. 17	Filter No. N/A
Sample Box No. 011192	Sample Box No. 12
Umbilical/Impinger Hookup UH2-17	Umbilical/Impinger Hookup UH39
Umbilical Nos. N-125-7	Umbilical Nos. N-125-2
Meter Box No. N11	Meter Box No. N12
DGM Correction (Y) 0.988	DGM Correction (Y) 1.001
Orifice Meter ΔH@ 1.960	Orifice Meter ΔH@ 1.846

FLOW IS AWAY FROM OBSERVER



Traverse Point Layout

Compass Direction > N

Assumed %CO_2 8.6 %O_2 8.1 Nozzles are quartz-glass.

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0817	1231									0834	1236								
Pass or Fail		PASS										PASS								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0821	1234								
Vacuum, in Hg	≥15" Hg.	≥3.5" Hg.								
Leak Rate, cfm	.012	.003								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0827	1239								
Vacuum, in Hg	≥15" Hg.	≥4.0" Hg.								
Leak Rate, cfm	.008	.002								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	378.425	68.516
Meter Volume at End of Run	429.406	134.235
Total Leak Check Volume	0	0
Adjusted Final Volume		

Run No. 9 Date 6-17-99 Sampling Location SCRUBBER INLET page 2 of 2

Project No. 5587-04-01, 4951-08 Train A Type/No. PART/HCl - M26A (GREEN) Operator O. NEAL

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 378.425 Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
C-1	10	1015	382.425	382.030	0.0075	0.46	0.41	1365	71	70	2.0	46	248	252	254	
1	20	1025	385.664	385.760	0.0075	0.45	0.45	1420	72	71	2.5	43	251	253	251	
2	30	1035	389.172	389.366	0.0075	0.44	0.41	1433	75	72	2.5	43	253	255	252	
2	40	1045	392.751	392.880	0.0075	0.45	0.39	1431	77	73	2.0	41	251	254	250	
3	50	1055	397.380	397.365	0.0125	0.75	0.70	1438	79	75	3.0	40	254	254	252	
3	60	1105	401.983	401.983	0.0125	0.75	0.72	1475	81	77	3.0	40	254	254	253	
		1118	401.983													
4	70	1128	406.958	406.935	0.015	0.86	0.82	1520	79	77	3.5	41	248	251	252	
4	80	1138	411.929	411.915	0.015	0.86	0.82	1534	81	78	3.5	41	251	252	254	
5	90	1148	416.507	416.695	0.0125	0.73	0.72	1506	82	79	3.0	41	253	254	253	
5	100	1158	421.142	421.370	0.0125	0.74	0.69	1462	83	79	3.0	41	252	254	252	
6	110	1208	425.296	425.530	0.010	0.60	0.56	1458	83	80	3.0	41	249	253	254	
6	120	1218	429.407	429.406	0.010	0.58	0.50	1498	83	80	3.0	41	252	254	255	
	0	1006	68.516		Train B Type/No. METALS - M29 (RED)											
J-6	10	1016	73.399	73.345	0.015	0.80	0.76	1494	72	71	3.0	51	251	252	268	
6	20	1026	78.621	78.590	0.0175	0.92	0.91	1544	74	72	3.0	46	252	254	259	
5	30	1036	84.207	84.160	0.020	1.04	1.00	1561	78	73	3.5	47	253	257	258	
5	40	1046	89.841	89.800	0.020	1.06	1.01	1549	82	75	3.5	48	255	257	257	
4	50	1056	95.460	95.455	0.020	1.05	1.05	1571	84	76	3.5	49	254	257	256	
4	60	1106	101.103	101.102	0.020	1.05	1.03	1566	86	78	3.5	49	256	257	255	
		1119	101.102													
3	70	1129	107.001	106.700	0.0225	1.16	1.12	1605	80	78	4.0	50	251	252	258	
3	80	1139	112.927	112.680	0.0225	1.16	1.15	1606	84	79	4.0	48	254	255	258	
2	90	1149	118.553	118.475	0.020	1.05	1.10	1594	86	79	4.0	50	254	256	256	
2	100	1159	124.277	124.380	0.020	1.08	1.15	1523	87	80	4.0	52	254	257	255	
1	110	1209	129.230	129.380	0.015	0.81	0.76	1533	88	81	3.5	54	255	257	254	
1	120	1219	134.234	134.235	0.015	0.82	0.76	1493	88	81	3.5	51	254	257	253	

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber ~~Outlet~~ Inlet Duct

Run No. 9 Sampling Train No. M26A-2 Sample Box No. 011192
Set-up person(s): J. McC Date: 6-16-99
Transfer to Sampler:
Relinquished By J. McCann Received By D. Neal Date/Time 6-17-99 0720

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M26A-1	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front			Filter Type: Whatman QM-A		
Filter Holder Back with Teflon® Filter Support			Filter Number: ~~18~~ 17		
Short 90° Connector					
1st Impinger (Mod-GBS)			50 mLs ±1 mL	462.6	511.3
U-Connector (A)			0.1 N H_2SO_4		
2nd Impinger (GBS)			100 mLs ±2 mLs	492.9	542.6
U-Connector (B)			0.1 N H_2SO_4		
3rd Impinger (GBS)			100 mLs ±2 mLs	476.1	575.6
U-Connector (C)			0.1 N H_2SO_4		
4th Impinger (Mod-GBS)			Empty	502.4	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs	489.8	588.6
U-Connector (E)			0.1 N NaOH		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs	467.8	568.7
U-Connector (F)			0.1 N NaOH		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		688.0
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		708.0
Impinger Outlet Connector	UH-7				

* Before and after sampling: Nozzle inlet opening covered with aluminum foil or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with aluminum foil, Teflon® tape or as described above.

Component Changes After Set-up And Before Recovery And Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 26A -
MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Location

Run No. 9 Sampling Train No. M26A-2 Sample Box No. 011192
Train Purge with Ascarite-filtered Air if condensate is observed:
Condensate in front-half? NO Purged By N/A Purge Rate: [ΔH= N/A in. H_2O]
Date/Start Time: N/A _____ Stop Time N/A Moisture Removed? N/A
Transfer for Recovery:
Relinquished By D. Neal Received By A. Carendi Date/Time 6/17/99 1305
Sample box recovery person(s): A. Carendi Date: 6/17/99
Probe/STL recovery person(s): D. Griffin, D. Alberty, A. Page Date: 6/17/99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	661.1	611.3	580.3	504.6	591.3	573.5	698.4	710.3
Initial Wt.	511.3	592.6	575.6	502.4	588.6	568.7	688.0	708.0
Net Wt.	149.8	18.7	4.7	2.2	2.7	4.8	10.4	2.3

Description and/or color: clear clear clear clear clear clear
[Total Condensate Collected: 195.6 grams]
Recovery: →→→→→ Impingers 1-3 ←←←←← →→→→→ Impingers 4-6 ←←←←← 40% 70% % Blue

Sample Number: 9003 9005
Sample Bottle Tare Wt. 498.9 498.9
Sample Bottle Gross Wt. 918.6 _____ Before Rinses
Components Rinsed*: filter support, filter holder back, 4th-6th impingers,
Short 90° connector, 1st-3rd impingers, U-connectors A-B U-connectors C-E
Sample Bottle Gross Wt. 1021.2 _____ After Rinses
Net Sample Wt. 522.3 for Mass Collected Calcs _____ (A) for Preliminary Calcs after SIE check
Sample mixed, then aliquot removed for Specific Ion Electrode check:
Sample Bottle Gross Wt. _____ After Aliquoting
Net Sample Wt. _____ After Aliquoting (B)
Sodium thiosulfate added**: _____ grams x 0.5 = _____ (C)
Sample Bottle Gross Wt. _____ after $Na_2S_2O_3 \cdot 5H_2O$ is added
Net Sample Wt. _____ (B + C) x A/B for Mass Collected
Calcs Sample mixed, then aliquot taken for HCl analysis for Cl_2 analysis
Aliquot Sample Number: →→→→→ 9004 →→→→→ 006 for Chloride Analysis
Sample Bottle Tare Wt. 102.6 _____
Sample Bottle Final Wt. 937.3 136.4 _____ _____ After Aliquoting N/A
Net Sample Wt. 438.7 83.8 _____ _____

FRONT HALF RECOVERY

RINSES: Sample Number: 9001
Sample Bottle Tare Wt. 254.6
Components Rinsed***: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front
Sample Bottle Gross Wt. 416.2 with Acetone Rinses
Net Acetone Sample Wt. 161.6
Sample Bottle Final Wt. 440.7 with added Water Rinses
Net Water Sample Wt. 24.5

FILTER: Sample Number: 9002
Description/color:

CYCLONE/FLASK ASSEMBLY:
Description/Color: intact / faint grayish with some specs

* Using a total of 100 mLs ±2 mLs ASTM Type I water per sample, rinse components twice. Thoroughly mix each sample before aliquoting.
** Add [25 mg of sodium thiosulfate per ppm Cl_2-dscm of gas sampled x (B/A)] to sample number XX005.
*** Acetone rinses with brushing 3 times or more until perceivably clean. If any residue remains in a component, follow with ASTM Type I water rinses with brushing until perceivably clean. Do not add any water rinses to the sample bottle until after the bottle is weighed with all of the acetone rinses.

COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. R 9 Sampling Train No. M29-1 Sample Box No. 12
Set-up person(s): A. Carender Date: 6/16/99
Transfer to Sampler:
Relinquished By A. Carender Received By J. Surman Date/Time 6/17/99 0725

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M29-2	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Cyclone		*			
Flask					
Filter Holder Front					
Filter Holder Back with Teflon® Filter Support			Filter Type: Whatman QM-A		
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	471.7	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	475.4	579.7
U-Connector (B)			5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)			100 mLs ±2 mLs	491.9	596.6
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	535.5	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	466.3	574.1
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	504.0	612.8
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		676.6
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		650.1
Impinger Outlet Connector	UH-39				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Inlet Duct

Run No. 9 Sampling Train No. M29-1 Sample Box No. 12
Transfer for Recovery:
Relinquished By J. Surman Received By A. Carender Date/Time 6/17/99 1310
Sample box recovery person(s): A. Carender Date: 6/17/99
Probe/STL recovery person(s): D. Griffin, D. Albury, A. Bige Date: 6/17/99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	634.3	631.6	605.0	536.1	575.8	613.9	690.8	652.9
Initial Wt.	471.7	579.7	596.6	535.5	574.1	612.8	676.6	650.1
Net Wt.	162.6	51.9	8.4	0.6	1.7	1.1	14.2	2.8

[Total Condensate Collected: 243.3]

Description and/or color:	clear	clear	clear	clear	purple	purple	1%	60%
Recovery:	→ → → → → → → Impingers 1-3 ← ← ← ←			→ → 4th Impinger		→ Impingers 5-8 ←		% Blue

Sample Number:	9017	9018	9019	9020
Sample Bottle Tare Wt.	500.4	168.5	254.2	168.7
Sample Bottle Gross Wt.	936.3		470.5	Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$,	then 8 N HCl

Components Rinsed*: filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C **4th impinger ***5th-6th impingers, U-connectors D-E

Sample Bottle Final Wt.	1033.0	273.3	678.8	390.9	After Rinses
Net Sample Wt.	532.6	104.8	424.6	222.2	

FRONT HALF RECOVERY

FILTER:
Sample Number: 9016 Description/Color: product / very faint gray with some specs

CYCLONE/FLASK ASSEMBLY:
Description/Color: N/A

TRAIN RINSES:
Sample Number: 9015
Sample Bottle Tare Wt. 168.7
Rinse Solution: 0.1 N HNO_3
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass or cyclone/flask assembly, filter holder front
Sample Bottle Final Wt. 262.1
Net Sample Wt. 93.4

*. Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~150~~ 100 mLs ±2 mLs of 0.1 N HNO_3, plus an additional 100 mLs if a cyclone and flask are used, rinse components 3 times or more with brushing until perceivably clean.

COMMENTS:

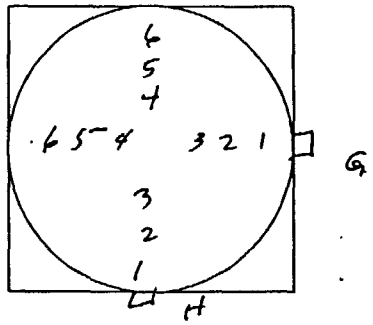
Section 3

EPA Method 26A for Particulate/HCl/Cl_2 and EPA Method 29 for Multiple Metals Sampling and Recovery at the Outlet

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 1 Date 6-11-99
Project No. 5587-04-01 4951-08
Client USEPA OAQPS SCGA & CANTA
Source Woodlawn Cemetery - Bronx NY
Sampling Location Scrubber Outlet
Operator Griffin
Record data every 10 minutes
Barometer No. X4029
Barometric Pressure 30.30 in Hg
Elevation to Meter Boxes 0 ft
Meter Box P_{bar} 30.30 in Hg
Elevation to Sampling Loc. 0 ft
Sampling Location P_{bar} 30.30 in Hg

	Train A	Train B
Type/No.	Metals 1 M29-2	Part/HCl 2 M26A
Probe No.	WC 3-2	WC 3-5
Length	3 ft	3 ft
Liner Type	Quartz	Quartz
Heated?	(Y) n	(Y) n
Nozzle No.	M29-2	M26a 2
Tip Dia.	.708 in	.708 in
Pitot Tube No.	WC 3-2	WC 3-5
C_p	0.787	0.787
Stack Thermocouple No.	WC 3-2	WC 3-5
Filter No.	NA	DG 6-11-99 2
Sample Box No.	DG 6-11-99 011190	011192
Umbilical/Impinger Hookup	UH3956 DG 6-11-99	UH7
Umbilical Nos.	N125-4	125-5
Meter Box No.	N10	N-5
DGM Correction (Y)	1.011	0.995
Orifice Meter ΔH@	1.890	1.969



Traverse Point Layout
Compass Direction > N

Static Pressure -0.017 in H_2O Assumed Moisture DG 6-11-99 22 % Assumed $\%CO_2$ 6 $\%O_2$ 10 Nozzles are quartz-glass.

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1220	1815									1227	1810								
Pass or Fail		pass										pass								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1222	1830								
Vacuum, in Hg	15	2								
Leak Rate, cfm	.005	.002								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1229	1814								
Vacuum, in Hg	15	3								
Leak Rate, cfm	.008	.003								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	883.264	481.321
Meter Volume at End of Run	907.295	512.625
Total Leak Check Volume	0	0
Adjusted Final Volume		

Run No. 1 Date 6-11-99 Sampling Location Scrubber Outlet page 1 of 1

Project No. 5587-04-01 4951-08 Train A Type/No. Metals M29 Operator Griffin

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 883.764 Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
G-6	10	1530	884.91	884.99	.001	0.09	0.09	464	73	72	1	68	245	240	250	NA
G-5	20	1540	886.48	886.54	.001	0.08	0.08	563	74	73	1	60	247	252	250	
G-4	30	1550	888.03	888.06	.001	0.08	0.08	589	75	74	1	56	247	252	250	
G-3	40	1600	890.31	890.10	.002	0.18	0.18	515	76	75	1	61	242	253	250	
G-2	50	1610	891.98	891.86	.001	0.09	0.09	461	78	76	1	60	241	253	250	
G-1	60	1620	893.67	893.677	.001	0.09	0.09	441	81	78	1	64	249	253	250	
Initial		1700														
H-1	70	1710	895.35	895.48	.001	0.09	0.09	447	80	79	1	68	240	251	250	
H-2	80	1720	897.75	897.82	.002	0.19	0.19	430	79	78	1	60	242	251	250	
H-3	90	1730	899.40	899.54	.001	0.09	0.09	492	81	79	1	65	239	253	250	
H-4	100	1740	901.05	901.14	.001	0.09	0.09	485	81	80	1	67	241	253	250	
H-5	110	1750	903.83	903.78	.003	~~0.26~~	0.26	545	82	80	2	61	244	252	250	
H-6	120	1800	907.32	907.295	.005	0.41	0.41	607	83	82	2	54	244	252	250	

Train B Type/No. Part/HCl M26A

	0	1522	481.321													
H-1	10	1532	482.99	483.13	.001	0.10	0.10	460	72	72	2	68	244	234	250	NA
H-2	20	1542	485.85	485.94	.003	0.29	0.29	495	73	72	2	68	247	247	250	
H-3	30	1552	489.13	489.15	.004	0.38	0.38	510	75	73	2	68	248	248	250	
H-4	40	1602	490.78	490.78	.001	0.09	0.09	502	76	74	2	67	248	248	250	
H-5	50	1612	492.35	492.31	.001	0.08	0.08	607	78	76	2	68	247	249	250	
H-6	60	1622	493.94	493.992	.001	0.08	0.08	583	78	77	2	68	247	247	250	
Initial		1702														
G-6	70	1712	495.56	495.74	.001	0.09	0.09	547	78	77	2	68	245	248	250	
G-5	80	1722	498.81	498.99	.004	0.37	0.37	537	79	77	2	68	247	248	250	
G-4	90	1732	502.79	502.89	.006	~~0.55~~	~~0.55~~	541	79	77	3	64	248	246	250	
G-3	100	1742	506.46	506.50	.006	0.47	0.47	530	81	78	3	64	247	248	250	
G-2	110	1752	509.37	509.29	.003	0.29	0.29	479	81	78	2.5	63	247	245	250	
G-1	120	1802	512.67	512.625	.004	0.38	0.38	521	81	79	3	63	247	246	250	

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 1 Sampling Train No. M29-2 Sample Box No. 011190
Set-up person(s): J. McCann Date: 6-10-99
Transfer to Sampler:
Relinquished By J. McCann Received By D. Griffin Date/Time 6-11-99 750

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M29-2	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front					
Filter Holder Back with			Filter Type: Whatman QM-A		
Teflon® Filter Support					
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	487.9	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	475.1	580.1
U-Connector (B)			5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)			100 mLs ±2 mLs		583.1
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	482.7	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	465.4	576.0
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	490.0	600.1
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		661.4
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		666.2
Impinger Outlet Connector	UH-6				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 1 Sampling Train No. M29-2 Sample Box No. 011190
Transfer for Recovery:
Relinquished By D. Griffin Received By J. McCann Date/Time 6-11-99 1845
Sample box recovery person(s): J. McCann Date: 6-11-99
Probe/STL recovery person(s): D. Alberty & D. Griffin Date: 6-11-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	613.7	594.6	585.5	483.2	576.9	599.8	667.7	667.8
Initial Wt.	487.9	580.1	583.1	482.7	576.0	600.1	661.4	666.2
Net Wt.	125.8	14.5	2.4	0.5	0.9	−0.3	6.3	1.6

[Total Condensate Collected: 151.7]

Description and/or color: clear clear clear clear purple purple 60 100
Recovery: → → → → → → → Impingers 1-3 ← ← ← ← → → 4th Impinger → Impingers 5-6 ← % Blue

Sample Number:	1041	1042	1043	1044
Sample Bottle Tare Wt.	498.3	167.5	254.8	168.2
Sample Bottle Gross Wt.		167.5	456.8	Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$,	then 8 N HCl
Components Rinsed*:	filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C	**4th impinger	***5th-6th impingers, U-connectors D-E	
Sample Bottle Final Wt.	925.5	263.8	682.2	392.5 After Rinses
Net Sample Wt.	427.2	96.3	427.4	224.3

FRONT HALF RECOVERY

FILTER:
Sample Number: 1040 Description/Color: intact / ghostly gray

TRAIN RINSES:
Sample Number: 1039
Sample Bottle Tare Wt. 168.2 ~~168.1~~ 168.1
Rinse Solution: 0.1 N HNO_3
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front
Sample Bottle Final Wt. 256.4
Net Sample Wt. 88.2

* Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~150~~ 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components 3 times or more with brushing until perceivably clean.
COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 26A -
MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 1 Sampling Train No. ØØ M26A-2 Sample Box No. Ø11192
Set-up person(s): A. Carender Date: 6/10/99
Transfer to Sampler:
Relinquished By A. Carender Received By D. Griffin Date/Time 6/11/99 7:50

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M26-2	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front			Filter Type: Whatman QM-A		
Filter Holder Back with Teflon® Filter Support			Filter Number: 2		
Short 90° Connector					
1st Impinger (Mod-GBS)			50 mLs ±1 mL	459.2	508.9
U-Connector (A)			0.1 N H_2SO_4		
2nd Impinger (GBS)			100 mLs ±2 mLs	488.8	589.3
U-Connector (B)			0.1 N H_2SO_4		
3rd Impinger (GBS)			100 mLs ±2 mLs	473.7	574.1
U-Connector (C)			0.1 N H_2SO_4		
4th Impinger (Mod-GBS)			Empty	498.5	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs	487.2	586.5
U-Connector (E)			0.1 N NaOH		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs	465.4	563.6
U-Connector (F)			0.1 N NaOH		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		646.5
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		676.1
Impinger Outlet Connector	UH-7				

* Before and after sampling: Nozzle inlet opening covered with aluminum foil or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with aluminum foil, Teflon® tape or as described above.

Component Changes After Set-up And Before Recovery And Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.02 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Location

Run No. 1 Sampling Train No. M26A-2 Sample Box No. Ø|1192
Train Purge with Ascarite-filtered Air if condensate is observed:
Condensate in front-half? NA Purged By NA Purge Rate: [ΔH= NA in. H_2O]
Date/Start Time: NA _____ Stop Time NA Moisture Removed? NA
Transfer for Recovery:
Relinquished By D. Griffin Received By A. Carender Date/Time 6-11-99 1845
Sample box recovery person(s): A. Carender Date: 6-11-99
Probe/STL recovery person(s): D. Griffin & D. Alburty Date: 6-11-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	689.9	606.6	575.1	498.8	586.7	563.9	652.5	676.8
Initial Wt.	508.9	589.3	574.1	498.5	586.5	563.6	646.5	676.1
Net Wt.	181.0	17.3	1.0	0.3	0.2	0.3	6.0	0.7
Description and/or color:	clear	clear	clear	clear	clear	clear	40	100

[Total Condensate Collected: 206.8 grams]
Recovery: →→→→→ Impingers 1-3 ←←←←← →→→→→ Impingers 4-6 ←←←←← % Blue

Sample Number: 1027 1029
Sample Bottle Tare Wt. 496.8 255.4
Sample Bottle Gross Wt. 937.9 _____ Before Rinses
Components Rinsed*: filter support, filter holder back, Short 90° connector, 1st-3rd impingers, U-connectors A-B; 4th-6th impingers, U-connectors C-E
Sample Bottle Gross Wt. 1115.3 447.5 After Rinses
Net Sample Wt. 618.5 for Mass Collected Calcs _____ (A) for Preliminary Calcs after SIE check
Sample mixed, then aliquot removed for Specific Ion Electrode check:
Sample Bottle Gross Wt. _____ After Aliquoting
Net Sample Wt. _____ After Aliquoting (B)
Sodium thiosulfate added**: _____ grams x 0.5 = _____ (C)
Sample Bottle Gross Wt. _____ after $Na_2S_2O_3 \cdot 5H_2O$ is added
Net Sample Wt. _____ (B + C) x A/B for Mass Collected

Calcs Sample mixed, then aliquot taken	for HCl analysis		for Cl_2 analysis	
Aliquot Sample Number:	→→→→→	1028	→→→→→ 1030	for Chloride Analysis
Sample Bottle Tare Wt.	1018.9	103.0	101.4	
Sample Bottle Final Wt.	~~1115.3~~	200.4	_____ _____	After Aliquoting
Net Sample Wt.	521.2	97.4	_____ _____	

FRONT HALF RECOVERY

RINSES: Sample Number: 1025
Sample Bottle Tare Wt. 168.3
Components Rinsed***: nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front
Sample Bottle Gross Wt. 259.5 with Acetone Rinses
Net Acetone Sample Wt. 91.2
Sample Bottle Final Wt. NA with added Water Rinses
Net Water Sample Wt. _____

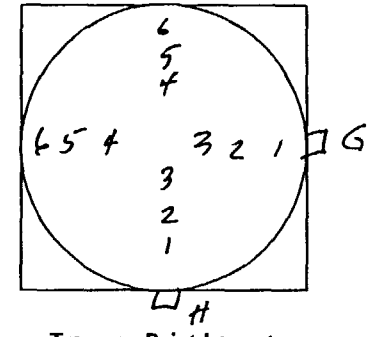
FILTER: Sample Number: 1026
Description/color: Intact / Greyish

* Using a total of 100 mLs ±2 mLs ASTM Type I water per sample, rinse components twice. Thoroughly mix each sample before aliquoting.
** Add [25 mg of sodium thiosulfate per ppm Cl_2-dscm of gas sampled x (B/A)] to sample number XX005.
*** Acetone rinses with brushing 3 times or more until perceivably clean. If any residue remains in a component, follow with ASTM Type I water rinses with brushing until perceivably clean. Do not add any water rinses to the sample bottle until after the bottle is weighed with all of the acetone rinses.

COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

	ORANGE	YELLOW
Run No. 2 Date 6-12-99	Train A Type/No. Metals M29-4	Train B Type/No. Part/HCl M26-4
Project No. 5587 4957-08	Probe No. WC 3-2 Length: 3 ft	Probe No. WC 3-5 Length: 3 ft
Client USEPA OAQPS SCGA JCAAVA	Liner Type Quartz Heated? (Y) n	Liner Type Quartz Heated? (Y) n
Source Woodburn Cemetery	Nozzle No. M29-2 Tip Dia. .708 in	Nozzle No. M26-4 Tip Dia. .708 in
Sampling Location Scrubber Outlet	Pitot Tube No. WC 3-2 C_p 0.787	Pitot Tube No. WC 3-5 C_p 0.787
Operator Griffin	Stack Thermocouple No. WC 3-2	Stack Thermocouple No. WC 3-5
Record data every 10 minutes	Filter No. NA	Filter No. 4
Barometer No. X4029	Sample Box No. 10286	Sample Box No. 011996
Barometric Pressure 30.23 in Hg	Umbilical/Impinger Hookup UH 8	Umbilical/Impinger Hookup UH 8
Elevation to Meter Boxes 0 ft	Umbilical Nos. N125-4	Umbilical Nos. 125-5
Meter Box P_{bar} 30.23 in Hg	Meter Box No. N10	Meter Box No. N-5
Elevation to Sampling Loc. 0 ft	DGM Correction (Y) 1.011	DGM Correction (Y) 0.995
Sampling Location P_{bar} 30.23 in Hg	Orifice Meter ΔH@ 1.890	Orifice Meter ΔH@ 1.969



Traverse Point Layout

Compass Direction ➢ N

Static Pressure −0.017 in H_2O Assumed Moisture 23.1 % Assumed %CO_2 6.1 %O_2 11.4 Nozzles are quartz-glass.

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0949	1430									1019	1418								
Pass or Fail		pass										pass								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0955	1432								
Vacuum, in Hg	16	3								
Leak Rate, cfm	.006	.007								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1022	1420								
Vacuum, in Hg	15	4.5								
Leak Rate, cfm	.006	.007								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	912.527	512.829
Meter Volume at End of Run	948.168	552.535
Total Leak Check Volume	0	0
Adjusted Final Volume		

Run No. 2 Date 6-12-99 Sampling Location Scrubber Outlet page 1 of 1

Project No. 5581 4951-08 Train A Type/No. M29-4 (metals) Operator Griffin

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 912.527 Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
0	0	1145														
G-6	10	1155	914.78	914.77	.002	0.17	0.17	513	74	73	2	61	239	249	250	NA
G-5	20	1205	917.00	917.00	.002	0.17	0.17	533	74	73	2	61	240	250	250	
G-4	30	1215	919.72	919.76	.003	0.25	0.25	539	75	74	2	58	241	252	250	
G-3	40	1225	921.96	921.96	.002	0.17	0.17	535	78	75	2	60	242	252	250	
G-2	50	1235	923.60	923.56	.001	0.09	0.09	472	79	76	1.5	63	242	253	250	
G-1	60	1245	925.24	925.27	.001	0.09	0.09	477	81	78	1.5	63	242	253	250	
Initial		1310														
H-1	70	1320	928.86	929.15	.005	0.45	0.45	504	82	80	2.5	57	238	248	250	
H-2	80	1330	932.47	932.73	.005	0.44	0.44	509	82	80	2.5	55	241	250	250	
H-3	90	1340	935.28	935.43	.003	0.27	0.27	508	85	81	2	59	241	253	250	
H-4	100	1350	938.96	938.84	.005	0.46	0.46	485	86	82	2.5	58	242	252	250	
H-5	110	1400	943.37	943.15	.008	0.66	0.66	597	87	83	3	56	242	251	250	
H-6	120	1410	948.216	948.168	.010	0.80	0.80	635	89	83	3	57	242	252	250	
	0	1147	512.829		Train B Type/No. M26a 4 (Part HCl)											
H-1	10	1157	516.82	516.78	.006	0.97	0.97	484	74	73	3.5	59	245	245	250	NA
H-2	20	1207	522.03	522.02	.010	0.98	0.98	458	73	72	4.5	52	250	247	250	
H-3	30	1217	527.17	527.15	.010	0.95	0.95	497	76	74	4.5	53	252	251	250	
H-4	40	1227	531.50	531.55	.007	0.67	0.67	488	80	75	4	55	249	250	250	
H-5	50	1237	535.99	536.04	.008	0.72	0.72	554	81	76	4	58	250	249	250	
H-6	60	1247	540.79	540.78	.009	0.82	0.82	545	83	79	4	60	250	249	250	
Initial		1312														
G-6	70	1322	542.41	542.57	.001	0.09	0.09	524	81	80	2.5	166	246	246	250	
G-5	80	1332	544.02	544.21	.001	0.09	0.09	523	80	80	2.5	60	247	247	250	
G-4	90	1342	546.28	546.26	.002	0.18	0.18	548	81	80	3	62	248	248	250	
G-3	100	1352	549.12	549.07	.003	0.28	0.28	499	82	81	3.5	61	248	249	250	
G-2	110	1402	550.75	550.84	.001	0.09	0.09	519	83	81	2.5	64	247	247	250	
G-1	120	1412	552.366	552.935	.001	0.09	0.09	530	83	82	2.5	68	248	247	250	

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 2 Sampling Train No. M29-4 Sample Box No. 10286
Set-up person(s): J. M. C. Date: 6-10-99
Transfer to Sampler:
Relinquished By J. M. C. Received By D. Griffin Date/Time 6-12-99 0855

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M29-2	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front					
Filter Holder Back with Teflon® Filter Support			Filter Type: Whatman QM-A		
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	484.1	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	~~[illegible]~~	596.4
U-Connector (B)			5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)			100 mLs ±2 mLs	474.0	~~[illegible]~~ 508.2
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	468.4	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	450.3	561.5
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	471.2	581.5
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		633.9
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		642.5
Impinger Outlet Connector	U1-4				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 2 Sampling Train No. M29-4 Sample Box No. 10286
Transfer for Recovery:
Relinquished By D. Griffin Received By J. McCann Date/Time 6-12-99 1445
Sample box recovery person(s): J. McC Date: 6-12-99
Probe/STL recovery person(s): D. Alberty & D. Griffin Date: 6-12-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	623.7	670.5	585.1	469.3	562.1	581.7	641.1	644.6
Initial Wt.	484.1	596.4	508.2	468.4	561.5	581.5	633.9	642.5
Net Wt.	139.6	74.1	76.9	0.9	0.6	0.2	7.2	2.1

[Total Condensate Collected: 301.6]

Description and/or color: clear clear clear clear purple purple 25 100
Recovery: → → → → → → → Impingers 1-3 ← ← ← ← ← → → 4th Impinger → Impingers 5-6 ← % Blue

Sample Number:	2041	2042	2043	2044
Sample Bottle Tare Wt.	500.0	168.3	254.1	168.4
Sample Bottle Gross Wt.	918.6	168.3		Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$, then 8 N HCl	
Components Rinsed*:	filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C	**4th impinger	***5th-6th impingers, U-connectors D-E	
Sample Bottle Final Wt.	1013.8	266.0	676.5	343.3 After Rinses
Net Sample Wt.	513.8	97.7	422.4	224.9

FRONT HALF RECOVERY

FILTER:
Sample Number: 2040 Description/Color: intact/ghostly white

TRAIN RINSES:
Sample Number: 2039 ~~2038~~
Sample Bottle Tare Wt. 168.9 ~~168.4~~
Rinse Solution: 0.1 N HNO_3
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front
Sample Bottle Final Wt. 259.2
Net Sample Wt. 90.3

* Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~150~~ 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components 3 times or more with brushing until perceivably clean.
COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 2 Sampling Train No. M26A-4 Sample Box No. 011996
Set-up person(s): A. Carendar Date: 6/10/99

Transfer to Sampler:
Relinquished By J. McC Received By D. Griffin Date/Time 6/12/99 0845

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M26-4	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front			Filter Type: Whatman QM-A		
Filter Holder Back with Teflon® Filter Support			Filter Number: 4		
Short 90° Connector					
1st Impinger (Mod-GBS)			50 mLs ±1 mL	479.9	529.8
U-Connector (A)			0.1 N H_2SO_4		
2nd Impinger (GBS)			100 mLs ±2 mLs	476.8	576.9
U-Connector (B)			0.1 N H_2SO_4		
3rd Impinger (GBS)			100 mLs ±2 mLs	485.1	586.1
U-Connector (C)			0.1 N H_2SO_4		
4th Impinger (Mod-GBS)			Empty	486.2	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs	582.6	682.7
U-Connector (E)			0.1 N NaOH		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs	473.4	573.3
U-Connector (F)			0.1 N NaOH		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		698.3
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		746.8
Impinger Outlet Connector	UH-8				

* Before and after sampling: Nozzle inlet opening covered with aluminum foil or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with aluminum foil, Teflon® tape or as described above.

Component Changes After Set-up And Before Recovery And Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.02 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Location

Run No. 2 Sampling Train No. M26A-4 Sample Box No. 011996
Train Purge with Ascarite-filtered Air if condensate is observed:
Condensate in front-half? No Purged By NA Purge Rate: [ΔH = NA in. H_2O]
Date/Start Time: NA _____ Stop Time NA Moisture Removed? NA
Transfer for Recovery:
Relinquished By D. Griffin Received By J. McCann Date/Time 6-12-99 1450
Sample box recovery person(s): J. McCann / A. Cavender Date: 6-12-99
Probe/STL recovery person(s): D. Alverity & D Griffin Date: 6-12-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	744.1	614.6	592.8	488.0	684.5	574.4	706.9	747.7
Initial Wt.	529.8	576.9	586.1	486.2	682.7	573.3	698.3	746.8
Net Wt.	214.3	37.7	6.7	1.8	1.8	1.1	8.6	0.9

Description and/or color: clear clear clear clear clear clear [Total Condensate Collected: 272.9 grams] 40 10
Recovery: → → → → → Impingers 1-3 ← ← ← ← ← → → → → → Impingers 4-6 ← ← ← ← ← % Blue

Sample Number: 2027 2029
Sample Bottle Tare Wt. 498.7 255.0
Sample Bottle Gross Wt. 1000.2 _____ Before Rinses
Components Rinsed*: filter support, filter holder back, 4th-6th impingers,
Short 90° connector, 1st-3rd impingers, U-connectors A-B U-connectors C-E
Sample Bottle Gross Wt. ~~1000.2~~ 1893.1 1137.7 _____ After Rinses
Net Sample Wt. 639.0 for Mass Collected Calcs _____ (A) for Preliminary Calcs after SIE check
Sample mixed, then aliquot removed for Specific Ion Electrode check:
Sample Bottle Gross Wt. _____ After Aliquoting
Net Sample Wt. _____ After Aliquoting (B)
Sodium thiosulfate added**: _____ grams x 0.5 = _____ (C)
Sample Bottle Gross Wt. _____ after $Na_2S_2O_3 \cdot 5H_2O$ is added
Net Sample Wt. _____ (B + C) x A/B for Mass Collected
CalcsSample mixed, then aliquot taken for HCl analysis for Cl_2 analysis
Aliquot Sample Number: → → → → → 2028 → → → → → 2030 for Chloride Analysis
Sample Bottle Tare Wt. 1047.5 102.6 101.6
Sample Bottle Final Wt. ~~1596.4~~ ~~1486.3~~ 193.2 _____ _____ After Aliquoting
Net Sample Wt. 548.8 90.6 _____ _____

FRONT HALF RECOVERY

RINSES: Sample Number: 2025
Sample Bottle Tare Wt. ~~966.2~~ 263.6
Components Rinsed***: nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front
Sample Bottle Gross Wt. 536.0 with Acetone Rinses
Net Acetone Sample Wt. 272.4
Sample Bottle Final Wt. NA with added Water Rinses
Net Water Sample Wt. _____

FILTER: Sample Number: 2026
Description/color: Intact / Light Greyish

* Using a total of 100 mLs ±2 mLs ASTM Type I water per sample, rinse components twice. Thoroughly mix each sample before aliquoting.
** Add [25 mg of sodium thiosulfate per ppm Cl_2-dscm of gas sampled x (B/A)] to sample number XX005.
*** Acetone rinses with brushing 3 times or more until perceivably clean. If any residue remains in a component, follow with ASTM Type I water rinses with brushing until perceivably clean. Do not add any water rinses to the sample bottle until after the bottle is weighed with all of the acetone rinses.

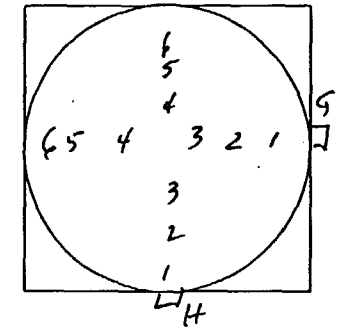
COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

6-3-99

page 1 of 2

	ORANGE	YELLOW
Run No. 3 Date 6/3/99	Train A Type/No. Met/s M29-2	Train B Type/No. Bat HCl M26a-2
Project No. 5581 4951-08	Probe No. WC-3-2 Length: 3 ft	Probe No. WC 3-5 Length: 3 ft
Client USEPA OAQPS SCGA + CAMP	Liner Type Quartz Heated? (Y) n	Liner Type Quartz Heated? (Y) n
Source Wood/sun Cemetery Unit 4	Nozzle No. M29-5 Tip Dia. .708 in	Nozzle No. M26a-6 Tip Dia. .708 in
Sampling Location Scrubber Outlet	Pitot Tube No. WC3-2 C_p .787	Pitot Tube No. WC3-5 C_p .787
Operator Griffin	Stack Thermocouple No. WC 3-2	Stack Thermocouple No. WC3-5
Record data every 10 minutes	Filter No. NA	Filter No. 6
Barometer No. X4029	Sample Box No. 011190	Sample Box No. 011192
Barometric Pressure 30.16 in Hg	Umbilical/Impinger Hookup WH6	Umbilical/Impinger Hookup WH7
Elevation to Meter Boxes 0 ft	Umbilical Nos. N125-54	Umbilical Nos. N125-45
Meter Box P_{bar} 30.16 in Hg	Meter Box No. N10	Meter Box No. N5
Elevation to Sampling Loc. 0 ft	DGM Correction (Y) 1.011	DGM Correction (Y) 0.995
Sampling Location P_{bar} 30.16 in Hg	Orifice Meter ΔH@ 1.890	Orifice Meter ΔH@ 1.969



Traverse Point Layout

Compass Direction > N

Static Pressure -.017 in H_2O Assumed Moisture 23.1 % Assumed %CO_2 6.1 %O_2 11.4 Nozzles are quartz-glass.

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0747	1139									0804	1143								
Pass or Fail		pass										pass								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0750	1142								
Vacuum, in Hg	15	2.5								
Leak Rate, cfm	.004	.003								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0800	1145								
Vacuum, in Hg	15	3.5								
Leak Rate, cfm	.010	.009								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	948.485	552.753
Meter Volume at End of Run	980.183	591.987
Total Leak Check Volume	0	0
Adjusted Final Volume		

Run No. 3 Date 6-12-99 Sampling Location Scrubber Outlet Unit 4 page 2 of 2

Project No. 5587 4951-08 Train A Type/No. Metals M29-2 Operator Griffin

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 948.485 Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
G-6	10	0916	950.10	950.16	.001	0.09	0.09	480	72	72	1	56	240	249	250	NA
G-5	20	0926	951.68	951.71	.001	0.08	0.08	530	73	72	1	55	242	250	250	
G-4	30	0936	953.26	953.24	.001	0.08	0.08	526	74	73	1	57	239	251	250	
G-3	40	0946	955.48	955.39	.002	0.17	0.17	540	76	74	1.5	55	241	252	250	
G-2	56	0956	957.11	957.11	.001	0.09	0.09	484	78	75	1	57	241	253	250	
G-1	60	1006	958.73	958.79	.001	0.09	0.09	498	80	77	1	55	241	253	250	
Initial		1029														
H-1	70	1039	961.05	961.28	.002	0.18	0.18	477	80	79	1.5	52	230	249	250	
H-2	80	1049	963.88	964.01	.003	0.27	0.27	480	80	78	2	50	234	251	250	
H-3	90	1059	967.55	967.52	.005	0.46	0.46	479	81	79	2	50	239	253	250	
H-4	100	1109	971.22	971.23	.005	0.46	0.46	482	84	80	2	51	232	253	250	
H-5	110	1119	975.69	975.68	.008	0.67	0.67	567	86	81	2.5	51	230	252	250	
H-6	120	1129	980.17	980.183	.008	0.68	0.68	562	88	82	2.5	49	251	253	250	

Train B Type/No. Part/Hcl M26a-2

	0	0908	552.753													
H-1	10	0918	555.162	555.72	.003	0.29	0.25	456	71	70	2.5	58	244	245	250	NA
H-2	20	0928	559.68	559.71	.006	0.58	0.58	460	72	71	3	56	247	246	250	
H-3	30	0938	563.99	564.03	.007	0.66	0.66	493	73	72	3	58	245	246	250	
H-4	40	0948	568.57	568.52	.008	0.74	0.74	516	76	72	3	60	249	247	250	
H-5	50	0958	573.09	573.08	.008	0.72	0.72	547	78	74	3	59	247	247	250	
H-6	60	1008	578.06	577.63	.010	0.87	0.87	585	80	76	3.5	60	248	247	250	
Initial		1031														
G-6	70	1041	579.64	579.39	.001	0.08	0.08	576	78	78	2	64	243	244	250	
G-5	80	1051	581.88	581.69	.002	0.17	0.17	570	77	77	2.5	62	246	246	250	
G-4	90	1101	585.09	584.99	.004	0.36	0.36	543	78	78	3	60	247	247	250	
G-3	100	1111	587.90	587.91	.003	0.27	0.27	525	79	78	3	61	248	248	250	
G-2	110	1121	590.23	590.29	.002	0.19	0.19	501	80	78	2.5	62	247	247	250	
G-1	120	1131	591.89	591.987	.001	0.09	0.09	482	80	79	2	64	244	247	250	

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber ~~Inlet~~ Outlet Duct

Run No. 3 Sampling Train No. M29-2 Sample Box No. 011190
Set-up person(s): J McC Date: 6-11-99
Transfer to Sampler:
Relinquished By J. McCann Received By D. Griffin Date/Time 6-13-99 0720

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA		
				Initial Weights (grams)**	
				Empty	Loaded
Sampling Nozzle (Quartz)	M29-5	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Cyclone		*			
Flask					
Filter Holder Front					
Filter Holder Back with			Filter Type: Whatman QM-A		
Teflon® Filter Support					
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	490.1	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	475.1	582.7
U-Connector (B)			5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)			100 mLs ±2 mLs		584.7
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	484.6	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	465.4	603.8
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	490.0	578.4
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		697.0
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		667.6
Impinger Outlet Connector	UH-6				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Cyclone/Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 3 Sampling Train No. M29-2 Sample Box No. 011190
Transfer for Recovery:
Relinquished By D. Griffin Received By J. McCann Date/Time 6-13-99 1205
Sample box recovery person(s): J. McC Date: 6-13-99
Probe/STL recovery person(s): D. Griffin & D. Alburty Date: 6-13-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	665.0	606.5	588.1	486.2	604.7	579.5	704.5	669.0
Initial Wt.	490.1	582.7	584.7	484.6	603.8	578.4	697.0	667.6
Net Wt.	174.4	23.8	3.4	1.6	0.9	1.1	7.5	1.4

[Total Condensate Collected: 214.6]

Description and/or color: clear clear clear clear purple purple 60 100
Recovery: → → → → → → → Impingers 1-3 ← ← ← ← → → 4th Impinger → Impingers 5-6 ← % Blue

Sample Number:	3041	3042	3043	3044
Sample Bottle Tare Wt.	497.4	168.2	255.3	168.1
Sample Bottle Gross Wt.	907.1	169.9	471.6	Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$, then 8 N HCl	
Components Rinsed*: filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C		**4th impinger	***5th-6th impingers, U-connectors D-E	
Sample Bottle Final Wt.	1025.4	269.1	681.2	392.8 After Rinses
Net Sample Wt.	528.0	100.9	425.9	224.7

FRONT HALF RECOVERY

FILTER:
Sample Number: 040 Description/Color: intact/faint yellow

TRAIN RINSES:
Sample Number: 3039
Sample Bottle Tare Wt. 168.2 ~~168.3~~ 3038
Rinse Solution: 0.1 N HNO_3
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front
Sample Bottle Final Wt. 246.1
Net Sample Wt. 77.9

* Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~150~~ 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components 3 times or more with brushing until perceivably clean.
COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 3 Sampling Train No. M26A-2 Sample Box No. 011192
Set-up person(s): A. Carender Date: 6/11/99
Transfer to Sampler:
Relinquished By A. Carender Received By D. Griffin Date/Time 6-13-99 0715

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M26A-6	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front			Filter Type: Whatman QM-A		
Filter Holder Back with Teflon® Filter Support			Filter Number: #6		
Short 90° Connector					
1st Impinger (Mod-GBS)			50 mLs ±1 mL	464.2	514.5
U-Connector (A)			0.1 N H_2SO_4		
2nd Impinger (GBS)			100 mLs ±2 mLs	493.2	593.1
U-Connector (B)			0.1 N H_2SO_4		
3rd Impinger (GBS)			100 mLs ±2 mLs	475.7	574.3
U-Connector (C)			0.1 N H_2SO_4		
4th Impinger (Mod-GBS)			Empty	501.6	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs	491.6	590.4
U-Connector (E)			0.1 N NaOH		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs	470.3	568.5
U-Connector (F)			0.1 N NaOH		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		654.6
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		676.6
Impinger Outlet Connector	UH-7				

* Before and after sampling: Nozzle inlet opening covered with aluminum foil or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with aluminum foil, Teflon® tape or as described above.

Component Changes After Set-up And Before Recovery And Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 26A -
MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.02 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Location

Run No. 3 Sampling Train No. M26A-2 Sample Box No. Ø1192
Train Purge with Ascarite-filtered Air if condensate is observed:
Condensate in front-half? NO Purged By N/A Purge Rate: [ΔH = N/A in. H_2O]
Date/Start Time: N/A _____ Stop Time N/A Moisture Removed? N/A
Transfer for Recovery:
Relinquished By D. Griffin Received By A. Carender Date/Time 6/13/99 12:30
Sample box recovery person(s): A. Carender Date: 6/13/99
Probe/STL recovery person(s): D. Albrity & D. Griffin Date: 6/13/99
Weights below are in grams.

686.3

BACK HALF RECOVERY

Impinger:	1st ~~746.3~~	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	617.0	617.0	578.3	501.8	593.4	570.8	663.8	677.1
Initial Wt.	~~445.5~~ 514.5	593.1	574.3	501.6	590.4	568.5	654.6	676.6
Net Wt.	171.8	23.9	4.0	0.2	3.0	2.3	9.2	0.5
Description and/or color:	clear	clear	clear	clear	clear	clear	10%	100%

[Total Condensate Collected: ~~214.9~~ ~~204.5~~ grams]
Recovery: → → → → → Impingers 1-3 ← ← ← ← ← → → → → → Impingers 4-6 ← ← ← ← ← % Blue

Sample Number: 3027 3029
Sample Bottle Tare Wt. 498.4 255.9
Sample Bottle Gross Wt. 1010.6 _____ Before Rinses
Components Rinsed*: filter support, filter holder back, 4th-6th impingers,
Short 90° connector, 1st-3rd impingers, U-connectors A-B U-connectors C-E
Sample Bottle Gross Wt. 1113.9 _____ After Rinses
Net Sample Wt. 615.4 for Mass Collected Calcs _____ (A) for Preliminary Calcs after SIE check
Sample mixed, then aliquot removed for Specific Ion Electrode check:
Sample Bottle Gross Wt. _____ After Aliquoting
Net Sample Wt. _____ After Aliquoting (B)
Sodium thiosulfate added**: _____ grams x 0.5 = _____ (C)
Sample Bottle Gross Wt. _____ after $Na_2S_2O_3 \cdot 5H_2O$ is added
Net Sample Wt. _____ (B + C) x A/B for Mass Collected
CalcsSample mixed, then aliquot taken for HCl analysis for Cl_2 analysis
Aliquot Sample Number: → → → → → 3028 → → → → → 3030 for Chloride Analysis
Sample Bottle Tare Wt. 102.7 101.9
Sample Bottle Final Wt. 1023.1 193.1 _____ _____ After Aliquoting
Net Sample Wt. 524.7 90.4 _____ _____

N/A

FRONT HALF RECOVERY

RINSES: Sample Number: 3025
Sample Bottle Tare Wt. ~~Not Tared~~ 263.6
Components Rinsed***: nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front
Sample Bottle Gross Wt. 433.7 with Acetone Rinses
Net Acetone Sample Wt. 170.1
Sample Bottle Final Wt. N/A with added Water Rinses
Net Water Sample Wt. _____

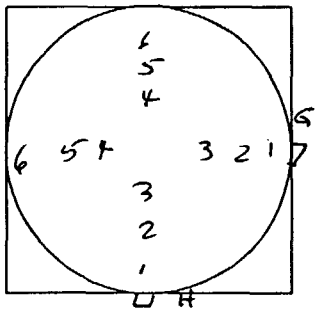
FILTER: Sample Number: 3026
Description/color: Intact / Grey

* Using a total of 100 mLs ±2 mLs ASTM Type I water per sample, rinse components twice. Thoroughly mix each sample before aliquoting.
** Add [25 mg of sodium thiosulfate per ppm Cl_2-dscm of gas sampled x (B/A)] to sample number XX005.
*** Acetone rinses with brushing 3 times or more until perceivably clean. If any residue remains in a component, follow with ASTM Type I water rinses with brushing until perceivably clean. Do not add any water rinses to the sample bottle until after the bottle is weighed with all of the acetone rinses.

COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

	ORANGE	YELLOW
Run No. 4 Date 6-13-99	Train A Type/No. M29-4 (metals)	Train B Type/No. M26a-4 (Part HCl)
Project No. 5587 4951-08	Probe No. WC 3-2 Length: 3 ft	Probe No. WC 3-5 Length: 3 ft
Client USEPA CANA	Liner Type Quartz Heated? (Y) n	Liner Type Quartz Heated? (Y) n
Source Woodburn Cemetery	Nozzle No. M-29-4 Tip Dia. .709 in	Nozzle No. M26a-4 Tip Dia. .708 in
Sampling Location Scrubber Outlet, Unit 4	Pitot Tube No. WC 3-2 C_p .787	Pitot Tube No. WC 3-5 C_p .787
Operator Griffin	Stack Thermocouple No. WC 3-2	Stack Thermocouple No. WC 3-5
Record data every 16 minutes	Filter No. NA	Filter No. 8
Barometer No. X4029	Sample Box No. ~~1~~ 10287	Sample Box No. 611996
Barometric Pressure 30.12 in Hg	Umbilical/Impinger Hookup UH 4	Umbilical/Impinger Hookup UH 8
Elevation to Meter Boxes 0 ft	Umbilical Nos. N125-4	Umbilical Nos. N125-5
Meter Box P_{bar} 30.12 in Hg	Meter Box No. N10	Meter Box No. N5
Elevation to Sampling Loc. 0 ft	DGM Correction (Y) 1.011	DGM Correction (Y) .995
Sampling Location P_{bar} 30.12 in Hg	Orifice Meter ΔH@ 1.890	Orifice Meter ΔH@ 1.969



Traverse Point Layout

Compass Direction ➢ N

Static Pressure -.017 in H_2O Assumed Moisture 23.1 % Assumed %CO_2 6.1 %O_2 11.4 Nozzles are quartz-glass.

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1531	1844									1529	1832								
Pass or Fail		pass										pass								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1533	1840								
Vacuum, in Hg	15	3								
Leak Rate, cfm	.013	.007								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1523	1833								
Vacuum, in Hg	15	4.5								
Leak Rate, cfm	.003	.002								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	982.564	592.239
Meter Volume at End of Run	1019.775	632.660
Total Leak Check Volume	0	0
Adjusted Final Volume		

Run No. 4 Date 6-13-99 Sampling Location Scrubber Outlet #4 page 2 of 2

Project No. 5587 4951-08 Train A Type/No. Metals M29-4 Operator Griff

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 982.504 Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
	0	1605														
G-6	10	1615	984.12	984.20	.001	0.08	0.08	503	76	75	2	57	235	248	250	NA
G-5	20	1625	985.67	985.86	.001	0.08	0.08	579	76	75	2	58	240	251	250	
G-4	30	1635	987.85	987.98	.002	0.16	0.16	587	77	76	2	59	250	252	250	
G-3	40	1645	989.40	989.87	.001	0.08	0.08	589	79	76	2	59	249	251	250	
G-2	50	1655	990.97	991.06	.001	0.08	0.08	564	81	78	2	60	248	250	250	
G-1	60	1705	992.55	992.56	.001	0.08	0.08	564	83	79	2	61	248	249	250	
Initials		1725														
H-1	70	1735	996.98	997.05	.007	0.67	0.67	454	83	82	3	57	243	248	250	
H-2	80	1745	1001.44	1001.47	.008	0.67	0.67	513	84	81	3	57	244	252	250	
H-3	90	1755	1005.60	1005.63	.007	0.58	0.58	583	86	82	3	56	245	253	250	
H-4	100	1805	1010.62	1010.54	.010	0.85	0.85	571	88	82	3	56	251	253	250	
H-5	110	1815	1015.21	1015.24	.009	0.71	0.71	654	90	84	3	58	252	253	250	
H-6	~~100~~	1825	1019.786	1019.775	.009	0.70	0.70	659	90	83	3	59	252	252	250	

Train B Type/No. M26a-4 (P2+ HCL)

	0	1607	592.239													
H-1	10	1617	594.85	594.94	.002	0.24	0.24	290	74	73	3	57	247	247	250	NA
H-2	20	1627	598.47	598.66	.004	0.46	0.46	323	77	75	3.5	55	249	248	250	
H-3	30	1637	603.61	603.71	.010	0.93	0.93	509	76	74	4.5	56	248	249	250	
H-4	40	1647	607.81	607.91	.007	0.62	0.62	566	79	76	4	57	249	249	250	
H-5	50	1657	611.57	611.73	.006	0.49	0.49	651	83	78	3.5	58	248	249	250	
H-6	60	1707	617.06	617.03	.013	1.05	1.05	675	84	80	5	59	250	248	250	
Initial		1727														
G-6	70	1737	618.62	618.78	.001	0.08	0.08	613	80	79	2.5	66	248	247	250	
G-5	80	1747	621.30	621.44	.003	0.25	0.25	632	81	79	3	65	248	248	250	
G-4	90	1757	624.76	624.83	.005	0.41	0.41	640	81	80	3-5	63	247	249	250	
G-3	100	1807	628.23	628.29	.005	0.42	0.42	619	83	80	3.5	64	248	249	250	
G-2	110	1817	630.48	630.52	.002	0.17	0.17	584	84	81	3	66	248	249	250	
G-1	120	1827	632.728	632.660	.002	0.17	0.17	582	83	81	3	68	247	248	250	

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 4 Sampling Train No. M29-4 Sample Box No. 10286
Set-up person(s): J. McCa Date: 6-12-99
Transfer to Sampler:
Relinquished By J. Mclem Received By D. Griffin Date/Time 6-13-99 1505

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M29-4 *				
Water-cooled Probe (Liner-Quartz)	*				
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL	*				
90° Bypass	*				
Filter Holder Front					
Filter Holder Back with			Filter Type: Whatman QM-A		
Teflon® Filter Support					
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	496.2	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	—	593.0
U-Connector (B)			5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)			100 mLs ±2 mLs	474.0	581.2
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	469.8	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	450.3	562.3
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	471.2	584.0
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		637.5
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		644.1
Impinger Outlet Connector	U H-4				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 4 Sampling Train No. M29-4 Sample Box No. 10286
Transfer for Recovery:
Relinquished By D. Griffin Received By J. McCann Date/Time 6-13-99 1900
Sample box recovery person(s): J. McCann Date: 6-13-99
Probe/STL recovery person(s): D. Griffin & D. Albury Date: 6-13-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	739.0	620.1	585.6	471.3	564.8	584.4	646.0	645.9
Initial Wt.	496.2	593.0	581.2	469.8	562.3	584.0	637.5	644.1
Net Wt.	242.8	27.1	4.4	1.5	2.5	0.4	8.5	1.8

[Total Condensate Collected: 289.0]

Description and/or color:	clear	clear	clear	clear	purple	purple	40	100
Recovery:	→→→→→→→ Impingers 1-3 ←←←←			→→ 4th Impinger	→ Impingers 5-6 ←		% Blue	

Sample Number:	4041	4042	4043	4044
Sample Bottle Tare Wt.	500.5	168.8	257.7	168.9
Sample Bottle Gross Wt.	982.7	169.7	473.8	Before Rinses

Rinse Solutions: 0.1 N HNO_3 0.1 N HNO_3 $KMnO_4/H_2O$, then 8 N HCl
Components Rinsed*: filter support, filter holder back, **4th impinger ***5th-6th impingers, U-connectors D-E
short 90° connector, 1st-3rd impingers, U-connectors A-C

Sample Bottle Final Wt.	1075.0	267.5	679.9	394.1 After Rinses
Net Sample Wt.	574.5	98.7	422.2	225.2

FRONT HALF RECOVERY

FILTER:
Sample Number: 4040 Description/Color: intact / offwhite

TRAIN RINSES:
Sample Number: 4039
Sample Bottle Tare Wt. 168.7
Rinse Solution: 0.1 N HNO_3
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front
Sample Bottle Final Wt. 267.0
Net Sample Wt. 98.3

~~4038~~ ~~168.41~~

* Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~150~~ mLs ±2 mLs of 0.1 N HNO_3, rinse components 3 times or more with brushing until perceivably clean.
COMMENTS: 100

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 4 Sampling Train No. M26A-4 Sample Box No. 011996
Set-up person(s): A. Cavender Date: 6-12-99
Transfer to Sampler:
Relinquished By A. Cavender Received By D. Griffin Date/Time 6-13-99 1500

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M26A-4	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front			Filter Type: Whatman QM-A		
Filter Holder Back with Teflon® Filter Support			Filter Number: 8		
Short 90° Connector					
1st Impinger (Mod-GBS)			50 mLs ±1 mL	483.2	531.9
U-Connector (A)			0.1 N H_2SO_4		
2nd Impinger (GBS)			100 mLs ±2 mLs	480.4	582.1
U-Connector (B)			0.1 N H_2SO_4		
3rd Impinger (GBS)			100 mLs ±2 mLs	488.7	588.9
U-Connector (C)			0.1 N H_2SO_4		
4th Impinger (Mod-GBS)			Empty	490.1	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs	587.1	686.1
U-Connector (E)			0.1 N NaOH		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs	477.0	574.7
U-Connector (F)			0.1 N NaOH		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		720.1
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		747.9
Impinger Outlet Connector	UH-8				

* Before and after sampling: Nozzle inlet opening covered with aluminum foil or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with aluminum foil, Teflon® tape or as described above.

Component Changes After Set-up And Before Recovery And Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 26A -
MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.02 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Location

Run No. 4 Sampling Train No. M26A-4 Sample Box No. 011996
Train Purge with Ascarite-filtered Air if condensate is observed:
Condensate in front-half? NO Purged By N/A Purge Rate: [ΔH= N/A in. H_2O]
Date/Start Time: N/A _____ Stop Time N/A Moisture Removed? N/A
Transfer for Recovery:
Relinquished By D Griffin Received By J. McCann Date/Time 6-13-99 1905
Sample box recovery person(s): J. McC Date: 6-15-99
Probe/STL recovery person(s): D. Albrity + D. Griffin Date: 6-13-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	815.2	609.6	594.2	491.8	688.2	576.3	729.0	747.8
Initial Wt.	531.9	582.1	588.9	490.1	686.1	574.7	720.1	747.9
Net Wt.	283.3	27.5	5.3	1.7	2.1	1.6	8.9	-0.1
Description and/or color:	clear	clear	clear	clear	clear	clear	[Total Condensate Collected: 330.3 grams] 50	100
Recovery:	→→→→→ Impingers 1-3 ←←←←←				→→→→→ Impingers 4-6 ←←←←←			% Blue

Sample Number: 4027 9029
Sample Bottle Tare Wt. 499.2 259.4
Sample Bottle Gross Wt. _____ _____ Before Rinses
Components Rinsed*: filter support, filter holder back, 4th-6th impingers,
Short 90° connector, 1st-3rd impingers, U-connectors A-B U-connectors C-E
Sample Bottle Gross Wt. 1163.0 _____ After Rinses
Net Sample Wt. 663.8 for Mass Collected Calcs _____ (A) for Preliminary Calcs after SIE check
Sample mixed, then aliquot removed for Specific Ion Electrode check:
Sample Bottle Gross Wt. _____ After Aliquoting
Net Sample Wt. _____ After Aliquoting (B)
Sodium thiosulfate added**: _____ grams x 0.5 = _____ (C)
Sample Bottle Gross Wt. _____ after $Na_2S_2O_3 \cdot 5H_2O$ is added
Net Sample Wt. _____ (B+C) x A/B for Mass Collected

CalcsSample mixed, then aliquot taken	for HCl analysis		for Cl_2 analysis	
Aliquot Sample Number:	→→→→→ 4028	→→→→→	4030	for Chloride Analysis
Sample Bottle Tare Wt.	101.3		102.2	
Sample Bottle Final Wt.	1070.7	193.8	_____	After Aliquoting
Net Sample Wt.	571.5	92.5	_____	

FRONT HALF RECOVERY

RINSES: Sample Number: 4025
Sample Bottle Tare Wt. ~~408.1~~ 263.0
Components Rinsed***: nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front
Sample Bottle Gross Wt. 438.8 with Acetone Rinses
Net Acetone Sample Wt. 175.8
Sample Bottle Final Wt. NA with added Water Rinses
Net Water Sample Wt. _____

FILTER: Sample Number: 4026
Description/color: intact/pale yellow
broken glass from 9 in filter removed by pincers

* Using a total of 100 mLs ±2 mLs ASTM Type I water per sample, rinse components twice. Thoroughly mix each sample before aliquoting.
** Add [25 mg of sodium thiosulfate per ppm Cl_2-dscm of gas sampled x (B/A)] to sample number XX005.
*** Acetone rinses with brushing 3 times or more until perceivably clean. If any residue remains in a component, follow with ASTM Type I water rinses with brushing until perceivably clean. Do not add any water rinses to the sample bottle until after the bottle is weighed with all of the acetone rinses.

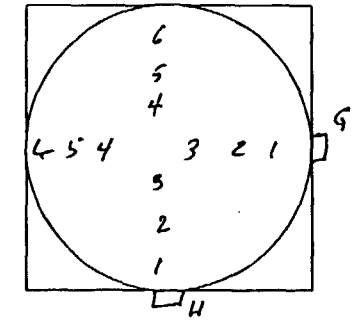
COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

ORANGE YELLOW

Run No. 5 Date 6-14-99
Project No. 5587 4951-08
Client USEPA CANA
Source Wood/Lawn Cemetery
Sampling Location Scrubber Outlet Unit 4
Operator Gath
Record data every 10 minutes
Barometer No. X 4028
Barometric Pressure 29.86 in Hg
Elevation to Meter Boxes 0 ft
Meter Box P_{bar} 29.86 in Hg
Elevation to Sampling Loc. 0 ft
Sampling Location P_{bar} 29.86 in Hg

Train A	Train B
Train A Type/No. M29-2 (metals)	Train B Type/No. M26a-2 (Part HCl)
Probe No. WC 3-2 Length: 3 ft	Probe No. WC 3-5 Length: 3 ft
Liner Type Quartz Heated? (Y) n	Liner Type Quartz Heated? (Y) n
Nozzle No. M29-5 Tip Dia. .708 in	Nozzle No. M26a4 Tip Dia. .708 in
Pitot Tube No. WC 3-2 C_p .787	Pitot Tube No. WC 3-5 C_p .787
Stack Thermocouple No. WC 3-2	Stack Thermocouple No. WC 3-5
Filter No. NA	Filter No. 10
Sample Box No. 011190	Sample Box No. 011192
Umbilical/Impinger Hookup UH6	Umbilical/Impinger Hookup UH7
Umbilical Nos. N 1254	Umbilical Nos. N 1255
Meter Box No. N 10	Meter Box No. N 5
DGM Correction (Y) 1.011	DGM Correction (Y) 0.995
Orifice Meter ΔH@ 1.890	Orifice Meter ΔH@ 1.969



Traverse Point Layout
Compass Direction > N

Static Pressure -0.017 in H_2O Assumed Moisture 23.1 % Assumed %CO_2 6.1 %O_2 11.4 Nozzles are quartz-glass.

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1355	1891									1402	1825								
Pass or Fail		pmo										pmo								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1358	1829								
Vacuum, in Hg	15	3								
Leak Rate, cfm	.009	.004								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1405	1827								
Vacuum, in Hg	15	4								
Leak Rate, cfm	.013	.014								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	22.056	633.335
Meter Volume at End of Run	58.781	679.010
Total Leak Check Volume	0	0
Adjusted Final Volume		

Run No. 5 Date 6-14-99 Sampling Location Scrubber Outlet - Unit 4 page 2 of 2

Project No. 5581 4951-08 Train A Type/No. M29-2 (metals) Operator Griffin

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 22.054 Desired	Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
	0	1550														
G-6	10	1600	24.25	24.27	.002	0.16	0.16	582	75	75	1.5	63	252	249	250	NA
G-5	20	1610	26.38	26.39	.002	0.15	0.15	653	76	76	1.5	60	252	252	250	
G-4	30	1620	29.72	29.66	.005	0.38	0.38	664	78	76	2	57	253	252	250	
G-3	40	1630	32.32	32.28	.003	0.22	0.22	669	79	77	2	59	253	252	250	
G-2	50	1640	33.86	33.83	.001	0.08	0.08	618	82	79	1.5	62	251	253	250	
G-1	60	1650	35.43	35.32	.001	0.08	0.08	571	83	79	1.5	65	248	253	250	
Initial		1720														
H-1	70	1730	39.36	39.33	.006	0.52	0.52	537	82	81	2.5	51	249	248	250	
H-2	80	1740	43.26	43.28	.006	0.51	0.51	550	82	81	2.5	51	253	251	250	
H-3	90	1750	47.13	47.24	.006	0.50	0.50	514	84	81	2.5	55	253	253	250	
H-4	100	1800	50.51	50.83	.005	0.38	0.38	586	86	81	2.5	51	248	250	250	
H-5	110	1810	54.53	54.46	.007	0.54	0.54	667	87	83	2.5	52	252	253	250	
H-6	120	1820	58.867	58.781	.008	0.63	0.63	642	87	82	3	52	253	252	250	

DB 6-14 | 0 | 1552 | 633.735 | Train B Type/No. M26-2 (Part HCl)

H-1	10	1602	637.29	637.37	.006	0.55	0.55	525	73	73	3	66	244	245	250	NA
H-2	20	1612	642.79	642.77	.012	1.06	1.06	564	75	74	4	64	247	249	250	
H-3	30	1622	648.53	648.51	.013	1.15	1.15	565	77	75	4	63	251	250	250	
H-4	40	1632	653.92	653.90	.012	1.01	1.01	616	80	76	4	62	250	251	250	
H-5	50	1642	659.08	659.14	.012	0.92	0.92	728	83	77	4	61	248	250	250	
H-6	60	1652	664.74	664.75	.015	1.11	1.11	779	85	78	4	61	247	251	250	
Initial		1722														
G-6	70	1732	666.88	667.04	.002	0.16	0.16	680	79	78	2.5	66	246	247	250	
G-5	80	1742	669.05	669.16	.002	0.16	0.16	658	79	78	2.5	61	247	249	250	
G-4	90	1752	672.45	672.64	.005	0.40	0.40	671	80	78	3	62	248	250	250	
G-3	100	1802	675.11	675.21	.003	0.24	0.24	656	81	79	2.5	63	248	249	250	
G-2	110	1812	677.39	677.46	.002	0.17	0.17	567	83	81	2.5	62	247	249	250	
G-1	120	1822	678.993	679.010	.001	0.08	0.08	565	82	80	2.5	65	229	250	250	
DB 6-14																

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 5 Sampling Train No. M29-2 Sample Box No. 011190
Set-up person(s): J. McCann Date: 6-13-99
Transfer to Sampler:
Relinquished By J. McCann Received By D. Griffin Date/Time 6/14/99 1330

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M29-5	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front					
Filter Holder Back with			Filter Type: Whatman QM-A		
Teflon® Filter Support					
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	489.9	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	475.1	584.1
U-Connector (B)			5% HNO_3/10% H_2O_2	479.3	
3rd Impinger (GBS)			100 mLs ±2 mLs	[illegible]	584.5
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	485.0	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	465.4	603.3
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	490.0	578.2
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		650.9
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		668.7
Impinger Outlet Connector	UH-6				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 5 Sampling Train No. M29-2 Sample Box No. 011190
Transfer for Recovery:
Relinquished By D. Griffin Received By A. Carendel Date/Time 6/14/99 1850
Sample box recovery person(s): J. McCann Date: 6-14-99
Probe/STL recovery person(s): D. Albutt & D. Griffin Date: 6-14-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	684.3	614.1	586.8	485.2	605.8	580.3	666.2	671.6
Initial Wt.	489.9	584.1	584.5	485.0	603.3	578.2	650.9	668.7
Net Wt.	194.4	30.0	2.3	0.2	2.5	2.1	15.3	2.9

[Total Condensate Collected: 249.7]

Description and/or color:	clear	clear	clear	clear	purple	purple	30	30
Recovery:	→ → → → → → → Impingers 1-3 ← ← ← ←			→ → 4th Impinger	→ Impingers 5-6		% Blue	

Sample Number:	5041	5042	5043	5044
Sample Bottle Tare Wt.	499.1	168.4	259.3	168.4
Sample Bottle Gross Wt.	933.3	169.3	479.8	Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$, then 8 N HCl	
Components Rinsed*:	filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C	**4th impinger	***5th-6th impingers, U-connectors D-E	
Sample Bottle Final Wt.	1031.2	264.8	690.3	394.8 After Rinses
Net Sample Wt.	532.1	96.4	431.0	226.4

FRONT HALF RECOVERY

FILTER:
Sample Number: 5040 Description/Color: faint grey

TRAIN RINSES:

Sample Number:	5039	5038
Sample Bottle Tare Wt.	168.3	168.4

Rinse Solution: 0.1 N HNO_3
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front
Sample Bottle Final Wt. 260.7
Net Sample Wt. 92.4

* Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~150~~ 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components 3 times or more with brushing until perceivably clean.
COMMENTS:

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 5 Sampling Train No. M26A-2 Sample Box No. 011192
Set-up person(s): A. Carender Date: 6/13/99
Transfer to Sampler:
Relinquished By S. McCann Received By D. Neal Date/Time 6/14/99 1300

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz) *	M26A			
Water-cooled Probe (Liner-Quartz) *				
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL *				
90° Bypass *				
Filter Holder Front		Filter Type: Whatman QM-A		
Filter Holder Back with Teflon® Filter Support		Filter Number: #10		
Short 90° Connector				
1st Impinger (Mod-GBS)		50 mLs ±1 mL	462.6	512.1
U-Connector (A)		0.1 N H_2SO_4		
2nd Impinger (GBS)		100 mLs ±2 mLs	475.5	575.7
U-Connector (B)		0.1 N H_2SO_4		
3rd Impinger (GBS)		100 mLs ±2 mLs	491.0	590.5
U-Connector (C)		0.1 N H_2SO_4		
4th Impinger (Mod-GBS)		Empty	502.3	
U-Connector (D)				
5th Impinger (Mod-GBS)		100 mLs ±2 mLs	492.4	590.5
U-Connector (E)		0.1 N NaOH		
6th Impinger (Mod-GBS)		100 mLs ±2 mLs	469.9	569.5
U-Connector (F)		0.1 N NaOH		
7th Impinger (Mod-GBS)		~200 g indicating silica gel		639.9
U-Connector (G)				
8th Impinger (Mod-GBS)		~200 g indicating silica gel		677.1
Impinger Outlet Connector	UH-7			

* Before and after sampling: Nozzle inlet opening covered with aluminum foil or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with aluminum foil, Teflon® tape or as described above.

Component Changes After Set-up And Before Recovery And Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 26A -
MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.02 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Location

Run No. 5 Sampling Train No. M26A-2 Sample Box No. 011192
Train Purge with Ascarite-filtered Air if condensate is observed:
Condensate in front-half? NO Purged By N/A Purge Rate: [ΔH= N/A in. H_2O]
Date/Start Time: N/A ____ Stop Time N/A Moisture Removed? N/A
Transfer for Recovery:
Relinquished By D. Griffin Received By A. Carender Date/Time 6/14/99 1900
Sample box recovery person(s): A. Carender Date: 6/14/99
Probe/STL recovery person(s): D. Alburty & D. Griffin Date: 6/14/99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	760.6	612.9	596.9	502.4	591.3	571.5	6494 C/C	678.2
Initial Wt.	512.1	575.7	590.5	502.3	590.5	569.5	639.9	677.1
Net Wt.	248.5	37.2	6.4	0.1	0.8	2.0	9.5	1.1
Description and/or color:	clear	clear	clear	clear	clear	clear	5	30

[Total Condensate Collected: 305.6 grams]
Recovery: →→→→→ Impingers 1-3 ←←←←← →→→→→ Impingers 4-6 ←←←←← % Blue

Sample Number: 5027 5029
Sample Bottle Tare Wt. 499.9 259.2
Sample Bottle Gross Wt. 1040.6 ____ Before Rinses
Components Rinsed*: filter support, filter holder back, 4th-6th impingers,
Short 90° connector, 1st-3rd impingers, U-connectors A-B U-connectors C-E
Sample Bottle Gross Wt. 1040.8 1133.9 ____ After Rinses
Net Sample Wt. 1634.0 for Mass Collected Calcs ____ (A) for Preliminary Calcs after SIE check
Sample mixed, then aliquot removed for Specific Ion Electrode check:
Sample Bottle Gross Wt. ____ After Aliquoting
Net Sample Wt. ____ After Aliquoting (B)
Sodium thiosulfate added**: ____ grams x 0.5 = ____ (C)
Sample Bottle Gross Wt. ____ after $Na_2S_2O_3 \cdot 5H_2O$ is added
Net Sample Wt. ____ (B+C) x A/B for Mass Collected
CalcsSample mixed, then aliquot taken for HCl analysis for Cl_2 analysis
Aliquot Sample Number: →→→→→ 5028 →→→→→ 5030 for Chloride Analysis
Sample Bottle Tare Wt. 101.7 101.4
Sample Bottle Final Wt. 1064.0 171.4 ____ ____ After Aliquoting
Net Sample Wt. 564.1 69.5 ____ ____

N/A

FRONT HALF RECOVERY

RINSES: Sample Number: 5025
Sample Bottle Tare Wt. 168.2
Components Rinsed***: nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front
Sample Bottle Gross Wt. 324.7 with Acetone Rinses
Net Acetone Sample Wt. 156.5
Sample Bottle Final Wt. N/A with added Water Rinses
Net Water Sample Wt. ~~156.5~~ N/A

FILTER: Sample Number: 5026
Description/color: intact / faint grey

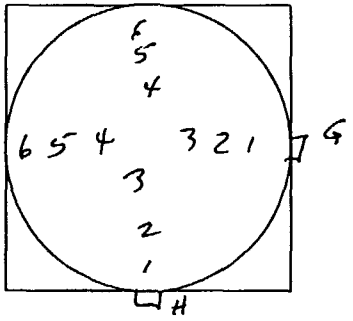
* Using a total of 100 mLs ±2 mLs ASTM Type I water per sample, rinse components twice. Thoroughly mix each sample before aliquoting.
** Add [25 mg of sodium thiosulfate per ppm Cl_2-dscm of gas sampled x (B/A)] to sample number XX005.
*** Acetone rinses with brushing 3 times or more until perceivably clean. If any residue remains in a component, follow with ASTM Type I water rinses with brushing until perceivably clean. Do not add any water rinses to the sample bottle until after the bottle is weighed with all of the acetone rinses.

COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 6 Date 6-15-99
Project No. 5587 4951-08
Client USEPA CANA
Source Woodlawn Cemetery
Sampling Location Scrubber Outlet Unit 4
Operator Griffin
Record data every 10 minutes
Barometer No. X4029
Barometric Pressure 29.92 in Hg
Elevation to Meter Boxes 0 ft
Meter Box P_{bar} 29.92 in Hg
Elevation to Sampling Loc. 0 ft
Sampling Location P_{bar} 29.92 in Hg
Static Pressure -0.017 in H_2O

Train A (Orange)	Train B (Yellow)
Train A Type/No. M29-4 (Metals)	Train B Type/No. M26a-4 (Cl+Hg)
Probe No. WC 3-2 Length: 3 ft	Probe No. WC 3-5 Length: 3 ft
Liner Type Quartz Heated? (Y) n	Liner Type Quartz Heated? (Y) n
Nozzle No. M29-4 Tip Dia. .709 in	Nozzle No. M26a-4 Tip Dia. .708 in
Pitot Tube No. WC 3-2 C_p .787	Pitot Tube No. WC 3-5 C_p .787
Stack Thermocouple No. WC 3-2	Stack Thermocouple No. WC 3-5
Filter No. NA	Filter No. 12
Sample Box No. 10286	Sample Box No. 011996
Umbilical/Impinger Hookup UH4	Umbilical/Impinger Hookup UH8
Umbilical Nos. N125-4	Umbilical Nos. N125-5
Meter Box No. N10	Meter Box No. N5
DGM Correction (Y) 1.011	DGM Correction (Y) .995
Orifice Meter ΔH@ 1.890	Orifice Meter ΔH@ 1.969



Traverse Point Layout
Compass Direction ➤ N

Assumed Moisture 23.1 % Assumed %CO_2 6.1 %O_2 11.4 Nozzles are quartz-glass.

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0757	1320									0801	1326								
Pass or Fail		pass										pass								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0759	1318								
Vacuum, in Hg	15	3.5								
Leak Rate, cfm	.008	.003								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0804	1329								
Vacuum, in Hg	15	4.5								
Leak Rate, cfm	.010	.003								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	12.337	619.241
Meter Volume at End of Run	96.886	719.042
Total Leak Check Volume	0	0
Adjusted Final Volume		

Run No. 6 Date 6-15-99 Sampling Location Scrubber Outlet Unit 4 page 2 of 2

Project No. 5587 4951-08 Train A Type/No. M-29-4 (metals) Operator Griffin

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 62.337 Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
G 6	10	1055	63.87	63.96	.001	0.08	0.08	603	73	72	1.5	68	248	248	250	NA
G 5	20	1105	66.01	66.09	.002	0.15	0.15	629	74	73	2	60	249	249	250	
G 4	30	1115	69.03	69.01	.004	0.31	0.31	637	75	73	2	59	251	251	250	
G 3	40	1125	72.03	72.03	.004	0.31	0.31	654	76	74	2	59	254	252	250	
G 2	50	1135	73.60	73.64	.001	0.08	0.08	573	80	77	1.5	60	252	253	250	
G 1	60	1145	75.19	75.17	.001	0.08	0.08	559	80	77	1.5	62	253	255	250	
Initial		1211	DGM 76.77													
H 1	70	1221	80.82	76.77	.001	0.08	0.08	559	82	80	1.5	63	250	249	250	
H 2	80	1231	78.37	78.55	.001	0.08	0.08	554	81	79	1.5	60	249	250	250	
H 3	90	1241	83.13	83.02	.009	0.77	0.77	559	81	80	3	61	247	249	250	
H 4	100	1251	87.56	87.63	.008	0.66	0.66	590	84	81	3	52	250	251	250	
H 5	110	1301	91.86	92.01	.008	0.62	0.62	608	87	81	3	54	251	253	250	
H 6	120	1311	96.888	96.886	.011	0.85	0.85	673	88	82	3.5	56	250	253	250	
	0	1047	679.241		Train B Type/No. M26a-4 (Part HCl)											
H 1	10	1057	682.41	682.47	.004	0.35	0.35	550	71	70	3	57	247	245	250	NA
H 2	20	1107	686.87	686.96	.008	0.70	0.70	562	72	71	4	53	249	247	250	
H 3	30	1117	691.86	691.93	.010	0.87	0.87	571	74	72	4.5	54	250	249	250	
H 4	40	1127	696.81	696.83	.010	0.86	0.86	591	77	73	4.5	59	251	250	250	
H 5	50	1137	701.71	701.71	.011	0.84	0.84	739	82	76	4.5	61	249	251	250	
H 6	60	1147	707.47	707.41	.015	1.15	1.15	729	83	77	5	53	251	248	250	
Initial		1213														
G-6	70	1223	709.01	709.08	.001	0.08	0.08	660	81	80	2	61	246	245	250	
G-5	80	1233	710.54	710.53	.001	0.08	0.08	660	79	79	2	57	247	248	250	
G-4	90	1243	713.19	713.28	.003	0.24	0.24	661	81	80	3	58	247	250	250	
G-3	100	1253	715.84	715.94	.003	0.24	0.24	676	83	81	3	54	250	249	250	
G-2	110	1303	717.44	717.51	.001	0.08	0.08	580	84	81	2.5	55	247	248	250	
G-1	120	1313	719.045	719.042	.001	0.09	0.09	562	83	81	2.5	59	248	248	250	

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 6 Sampling Train No. M29-4 Sample Box No. 10286
Set-up person(s): J. McC Date: 6/14/99
Transfer to Sampler:
Relinquished By J. Melzan Received By D. Griffin Date/Time 6-15-99 0720

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M29-4	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front					
Filter Holder Back with Teflon® Filter Support			Filter Type: Whatman QM-A		
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	486.9	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	494.0	599.2
U-Connector (B)			5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)			100 mLs ±2 mLs	474.0	579.8
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	470.6	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	450.3	563.9
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	471.2	583.7
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		647.2
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		644.9
Impinger Outlet Connector	M29-4				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 6 Sampling Train No. M29-4 Sample Box No. 10286
Transfer for Recovery:
Relinquished By C. Griffin Received By J. McLean Date/Time 6-15-99 1405
Sample box recovery person(s): J. McC Date: 6-15-99
Probe/STL recovery person(s): D. Blowdy & D. Griffin Date: 6-15-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	679.9	620.2	583.8	474.5	565.2	583.9	654.9	646.6
Initial Wt.	486.9	599.2	~~479.8~~	470.6	563.9	583.7	647.2	644.9
Net Wt.	193.0	21.0	~~300~~ 4.0	3.9	1.3	0.2	7.7	1.7

[Total Condensate Collected: 233.8]

Description and/or color: clear clear clear clear purple purple 80 90
Recovery: → → → → → → → Impingers 1-3 ← ← ← ← → → 4th Impinger* → Impingers 5-6 ← % Blue

Sample Number:	6041	6042	6043	6044
Sample Bottle Tare Wt.	499.6	168.3	258.7	169.0
Sample Bottle Gross Wt.		172.5	477.8	Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$,	then 8 N HCl
Components Rinsed*: filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C		**4th impinger	***5th-6th impingers, U-connectors D-E	
Sample Bottle Final Wt.	1012.6	265.6	680.5	391.9 After Rinses
Net Sample Wt.	513.0	97.3	421.8	222.9

FRONT HALF RECOVERY

FILTER:
Sample Number: 6040 Description/Color: intact / faint gray

TRAIN RINSES:

Sample Number:	6039	~~6038~~
Sample Bottle Tare Wt.	168.5	~~168.4~~
Rinse Solution:	0.1 N HNO_3	

Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front
Sample Bottle Final Wt. 243.1
Net Sample Wt. 74.6

* Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~150~~ mLs ±2 mLs of 0.1 N HNO_3, rinse components 3 times or more with brushing until perceivably clean.
COMMENTS: 100

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 6 Sampling Train No. M26A-4 Sample Box No. 011996
Set-up person(s): A. Carender Date: 6/14/99

Transfer to Sampler:
Relinquished By J McCann Received By D. Neal Date/Time 6/15/99 0800

TRAIN COMPONENT	COMPONENT NO.	LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M26A-4 *			
Water-cooled Probe (Liner-Quartz)	*			
Female Probe Outlet Blank-Off				
Heated Coupling & Teflon® STL	*			
90° Bypass	*			
Filter Holder Front		Filter Type: Whatman QM-A		
Filter Holder Back with Teflon® Filter Support		Filter Number: 12		
Short 90° Connector				
1st Impinger (Mod-GBS)		50 mLs ±1 mL	483.7	533.2
U-Connector (A)		0.1 N H_2SO_4		
2nd Impinger (GBS)		100 mLs ±2 mLs	480.4	581.4
U-Connector (B)		0.1 N H_2SO_4		
3rd Impinger (GBS)		100 mLs ±2 mLs	488.7	590.2
U-Connector (C)		0.1 N H_2SO_4		
4th Impinger (Mod-GBS)		Empty	490.8	
U-Connector (D)				
5th Impinger (Mod-GBS)		100 mLs ±2 mLs	587.1	686.1
U-Connector (E)		0.1 N NaOH		
6th Impinger (Mod-GBS)		100 mLs ±2 mLs	477.0	575.5
U-Connector (F)		0.1 N NaOH		
7th Impinger (Mod-GBS)		~200 g indicating silica gel		698.5
U-Connector (G)				
8th Impinger (Mod-GBS)		~200 g indicating silica gel		747.8
Impinger Outlet Connector	UH-8			

* Before and after sampling: Nozzle inlet opening covered with aluminum foil or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with aluminum foil, Teflon® tape or as described above.

Component Changes After Set-up And Before Recovery And Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 26A -
MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.02 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Location

Run No. 6 Sampling Train No. M26A-4 Sample Box No. 011996
Train Purge with Ascarite-filtered Air if condensate is observed:
Condensate in front-half? NO Purged By N/A Purge Rate: [ΔH = N/A in. H_2O]
Date/Start Time: N/A _____ Stop Time N/A Moisture Removed? N/A
Transfer for Recovery:
Relinquished By S. Surman Received By A. Caravello Date/Time 6/15/99 14:30
Sample box recovery person(s): A. Caravello Date: 6-15-99
Probe/STL recovery person(s): D. Albury & D. Griffin Date: 6-15-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	~~614.0~~	~~614.8~~	~~590.8~~	490.8	639.2	576.2	707.3	749.7
Initial Wt.	533.2	581.4	590.2	490.8	686.1	575.5	698.5	747.8
Net Wt.	~~80.8~~	~~+33.4~~	4.6	0.0	3.1	0.7	8.8	1.9
Description and/or color:	227.9 mL Clear	32.6 clear	clear	clear	clear	clear	2%	80%

[Total Condensate Collected: 279.6 grams]

Recovery: →→→→→ Impingers 1-3 ←←←←← →→→→→ Impingers 4-6 ←←←←← % Blue

Sample Number:	6027	6029
Sample Bottle Tare Wt.	498.9	257.6
Sample Bottle Gross Wt.	_____	_____ Before Rinses
Components Rinsed*:	filter support, filter holder back, Short 90° connector, 1st-3rd impingers, U-connectors A-B	4th-6th impingers, U-connectors C-E
Sample Bottle Gross Wt.	1114.9	_____ After Rinses
Net Sample Wt.	~~615.7~~ 616.0 for Mass Collected Calcs	_____ (A) for Preliminary Calcs after SIE check
Sample mixed, then aliquot removed for Specific Ion Electrode check:		
Sample Bottle Gross Wt.		_____ After Aliquoting
Net Sample Wt.		_____ After Aliquoting (B)
Sodium thiosulfate added**:		_____ grams x 0.5 = _____ (C)
Sample Bottle Gross Wt.		_____ after $Na_2S_2O_3 \cdot 5H_2O$ is added
Net Sample Wt.		_____ (B+C) x A/B for Mass Collected
Calcs Sample mixed, then aliquot taken	for HCl analysis	for Cl_2 analysis
Aliquot Sample Number:	→→→→→ 6028	→→→→→ 6030 for Chloride Analysis N/A
Sample Bottle Tare Wt.	101.2	101.7
Sample Bottle Final Wt.	1029.1 131.1	_____ _____ After Aliquoting
Net Sample Wt.	530.0	29.4

FRONT HALF RECOVERY

RINSES: Sample Number: 6025
Sample Bottle Tare Wt. 168.4
Components Rinsed***: nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front
Sample Bottle Gross Wt. 322.1 with Acetone Rinses
Net Acetone Sample Wt. 153.7
Sample Bottle Final Wt. NA with added Water Rinses
Net Water Sample Wt. _____

FILTER: Sample Number: 6026
Description/color: Intact / Greyish tan with black specs

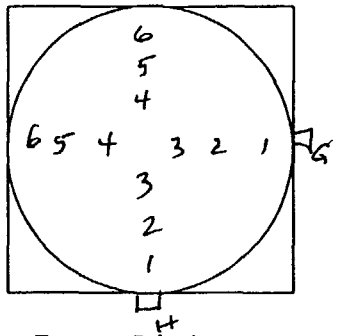
* Using a total of 100 mLs ±2 mLs ASTM Type I water per sample, rinse components twice. Thoroughly mix each sample before aliquoting.
** Add [25 mg of sodium thiosulfate per ppm Cl_2-dscm of gas sampled x (B/A)] to sample number XX005.
*** Acetone rinses with brushing 3 times or more until perceivably clean. If any residue remains in a component, follow with ASTM Type I water rinses with brushing until perceivably clean. Do not add any water rinses to the sample bottle until after the bottle is weighed with all of the acetone rinses.

COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 1 Date 6-15-99
Project No. 5587 4951-08
Client USEPA CANA
Source Woodlawn Cemetery
Sampling Location Scrubber Outlet Unit 4
Operator Griffin
Record data every 10 minutes
Barometer No. X4029
Barometric Pressure 29.89 in Hg
Elevation to Meter Boxes 0 ft
Meter Box P_{bar} 29.89 in Hg
Elevation to Sampling Loc. 0 ft
Sampling Location P_{bar} 29.89 in Hg
Static Pressure −0.01 in H_2O

	Train A	Train B
Type/No.	M26-2 (metals)	M26a-2 (Anl HCl)
Probe No.	WC 3-2	WC 3-5
Length	3 ft	3 ft
Liner Type	Quartz	Quartz
Heated?	(Y)n	(Y)n
Nozzle No.	M29-5	M26a-6
Tip Dia.	.708 in	.708 in
Pitot Tube No.	WC3-2	WC 3-5
C_p	.787	.757
Stack Thermocouple No.	WC 3-2	WC 3-5
Filter No.	NA	14
Sample Box No.	01 01/11/90	16288 11/92
Umbilical/Impinger Hookup	UH #6	UH 35/17
Umbilical Nos.	N25-4	N25-5
Meter Box No.	N10	N5
DGM Correction (Y)	1.011	.995
Orifice Meter ΔH@	1.890	1.969



Traverse Point Layout
Compass Direction ➢ N

Assumed Moisture 26.0 % Assumed %CO_2 6.1 %O_2 11.4 Nozzles are quartz-glass.

Train A Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1635	2629								
Pass or Fail		pass								

Train B Pitot Tube Pressure Measurement System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1644	2021								
Pass or Fail		pass								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1641	2028								
Vacuum, in Hg	15	2.5								
Leak Rate, cfm	.012	.002								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1646	2023								
Vacuum, in Hg	15	4								
Leak Rate, cfm	.013	.017								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	97.118	719.296
Meter Volume at End of Run	125.130	755.584
Total Leak Check Volume	0	0
Adjusted Final Volume		

Run No. 7 Date 6-15-99 Sampling Location Scrubber Outlet Unit 4 page 1 of 2

Project No. 5587 4951-08 Train A Type/No. M25-2 (metals) Operator GnPh

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 97.118 Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
G-6	10	1800	98.65	98.65	.001	0.08	0.08	545	76	76	1	58	294	248	250	NA
G-5	20	1810	100.13	100.10	.001	0.07	0.07	619	77	76	1	57	249	251	250	
G-4	30	1820	102.19	101.99	.002	0.14	0.14	652	78	77	1.5	57	254	252	250	
G-3	40	1830	104.25	104.03	.002	0.14	0.14	661	80	78	1.5	53	254	252	250	
G-2	50	1840	105.74	105.71	.001	0.07	0.07	615	81	79	1	54	250	253	250	
G-1	60	1850	107.25	107.256	.001	0.07	0.07	592	83	80	1	55	251	252	250	
Initial		1910														
H-1	70	1920	109.44	109.59	.002	0.16	0.16	547	83	82	1.5	49	253	251	250	
H-2	80	1930	112.50	112.57	.004	0.31	0.31	570	83	82	2	48	244	253	250	
H-3	90	1940	115.14	115.20	.003	0.23	0.23	578	84	82	2	51	237	253	250	
H-4	100	1950	117.26	117.37	.002	0.15	0.15	623	85	83	2	54	238	252	250	
H-5	110	2000	121.06	121.14	.007	0.48	0.48	718	86	84	2.5	50	233	251	250	
H-6	120	2010	125.110	125.130	.008	0.55	0.55	731	87	84	2.5	50	234	253	250	
	0	1752	719.296		Train B Type/No. M26-2 (Part/HCl)											
H-1	10	1802	721.53	721.55	.002	0.17	0.17	510	74	74	2	59	249	248	250	NA
H-2	20	1812	725.83	725.75	.008	0.65	0.65	581	75	74	3	55	249	250	247	
H-3	30	1822	730.16	729.90	.008	0.63	0.63	610	78	75	3	58	249	250	250	
H-4	40	1832	734.34	734.07	.008	0.62	0.62	632	81	77	3	59	256	250	250	
H-5	50	1842	738.88	738.69	.010	0.71	0.71	739	82	78	3.5	60	251	250	250	
H-6	60	1852	743.78	743.685	.012	0.83	0.83	783	85	80	4	61	250	251	250	
Initial		1902														
G-6	70	1912	745.22	745.16	.001	0.07	0.07	745	83	82	2	69	238	249	250	
G-5	80	1922	747.71	747.65	.003	0.21	0.21	738	82	82	3	63	247	249	250	
G-4	90	1942	750.59	750.55	.004	0.28	0.28	743	83	82	3	62	248	247	250	
G-3	100	1952	752.67	752.62	.002	0.14	0.14	694	84	82	2.5	64	248	249	250	
G-2	110	2002	754.26	754.24	.001	0.08	0.08	528	84	83	2	68	247	249	250	
G-1	120	2012	755.808	755.584	.001	0.08	0.08	585	84	83	2	68	248	249	250	

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 7 Sampling Train No. M29-2 Sample Box No. 011190
Set-up person(s): J. M-C Date: 6-15-99
Transfer to Sampler:
Relinquished By J McCann Received By D Griffin Date/Time 6/15/99 1610

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M29-5	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front					
Filter Holder Back with Teflon® Filter Support			Filter Type: Whatman QM-A		
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	490.4	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	475.1	582.3
U-Connector (B)			5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)			100 mLs ±2 mLs	479.3	583.9
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	485.6	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	465.4	601.1
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	490.0	576.6
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		666.9
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		678.4
Impinger Outlet Connector	UM-6				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 1 Sampling Train No. M29-2 Sample Box No. 011190
Transfer for Recovery:
Relinquished By D. Neal Received By A. Corcoran Date/Time 6/15/99 2045
Sample box recovery person(s): J. McCann Date: 6/15/99
Probe/STL recovery person(s): D. Alberty & D. Griffin Date: 6/15/99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	677.3	598.2	585.4	485.7	603.8	~~603.9~~ 578.4	674.6	680.9
Initial Wt.	490.4	582.3	583.9	485.6	601.1	576.6	666.9	678.4
Net Wt.	186.9	15.9	1.5	0.1	2.7	1.8	7.7	2.5

[Total Condensate Collected: 219.1]

Description and/or color: clear clear clear clear purple purple 50% 90%
Recovery: → → → → → → → Impingers 1-3 ← ← ← ← → → 4th Impinger → Impingers 5-6 → % Blue

Sample Number:	7041	7042	7043	7044
Sample Bottle Tare Wt.	501.0	168.6	254.6	168.9
Sample Bottle Gross Wt.	912.5	168.~~172.2~~	472.2	Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$, then 8 N HCl	
Components Rinsed*: filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C		**4th impinger	***5th-6th impingers, U-connectors D-E	
Sample Bottle Final Wt.	1005.5	271.6	678.0	394.2 After Rinses
Net Sample Wt.	504.5	103.0	423.4	225.3

FRONT HALF RECOVERY

FILTER:
Sample Number: 7040 Description/Color: intact/faint greyish

TRAIN RINSES:
Sample Number: 7039
Sample Bottle Tare Wt. 168.7
Rinse Solution: 0.1 N HNO_3
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front
Sample Bottle Final Wt. ~~230.8~~ 274.7
Net Sample Wt. 106.0

* Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~150~~ mLs ±2 mLs of 0.1 N HNO_3, rinse components 3 times or more with brushing until perceivably clean.
COMMENTS: 100

40 *CFR* 60, APPENDIX A, METHOD 26A - MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A) FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 7 Sampling Train No. M26A-2 Sample Box No. 011192
Set-up person(s): A. Corender Date: 6/15/99
Transfer to Sampler:
Relinquished By A. Corender Received By D. Griffin Date/Time 6-15-99 1605

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M26A-6	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front			Filter Type: Whatman QM-A		
Filter Holder Back with Teflon® Filter Support			Filter Number: 14		
Short 90° Connector					
1st Impinger (Mod-GBS)			50 mLs ±1 mL	462.6	512.3
U-Connector (A)			0.1 N H_2SO_4		
2nd Impinger (GBS)			100 mLs ±2 mLs	492.9	593.0
U-Connector (B)			0.1 N H_2SO_4		
3rd Impinger (GBS)			100 mLs ±2 mLs	476.1	576.3
U-Connector (C)			0.1 N H_2SO_4		
4th Impinger (Mod-GBS)			Empty	502.4	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs	489.8	589.1
U-Connector (E)			0.1 N NaOH		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs	467.8	568.1
U-Connector (F)			0.1 N NaOH		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		680.1
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		707.0
Impinger Outlet Connector	UH-7				

* Before and after sampling: Nozzle inlet opening covered with aluminum foil or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with aluminum foil, Teflon® tape or as described above.

Component Changes After Set-up And Before Recovery And Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 26A -
MODIFIED PARTICULATE MATTER, HCl, AND Cl_2 TRAIN (M26A)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.02 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Location

Run No. 7 Sampling Train No. M26A-2 Sample Box No. 011192
Train Purge with Ascarite-filtered Air if condensate is observed:
Condensate in front-half? No Purged By NA Purge Rate: [ΔH = NA in. H_2O]
Date/Start Time: NA _____ Stop Time NA Moisture Removed? NA
Transfer for Recovery:
Relinquished By D. Griffin Received By J. McCann Date/Time 6-15-99 2055
Sample box recovery person(s): J. McCann Date: 6-16-99
Probe/STL recovery person(s): D. Alberty & D. Griffin Date: 6-15-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	737.8	631.6	581.3	502.2	589.8	569.0	688.0	708.0
Initial Wt.	512.3	593.0	576.3	502.4	589.1	568.1	680.1	707.0
Net Wt.	225.5	38.6	5.0	(0.2)	0.7	0.9	7.9	1.0
Description and/or color:	clear	clear	Clear	clear	clear	clear	80	10

[Total Condensate Collected: 279.4 grams]
Recovery: →→→→→ Impingers 1-3 ←←←←← →→→→→ Impingers 4-6 ←←←←← % Blue

Sample Number: 7027 7029
Sample Bottle Tare Wt. 500.1 500.0
Sample Bottle Gross Wt. 1020.7 _____ Before Rinses
Components Rinsed*: filter support, filter holder back, 4th-6th impingers,
Short 90° connector, 1st-3rd impingers, U-connectors A-B U-connectors C-E
Sample Bottle Gross Wt. 1115.4 _____ After Rinses
Net Sample Wt. 615.3 for Mass Collected Calcs _____ (A) for Preliminary Calcs after SIE check
Sample mixed, then aliquot removed for Specific Ion Electrode check:
Sample Bottle Gross Wt. _____ After Aliquoting
Net Sample Wt. _____ After Aliquoting (B)
Sodium thiosulfate added**: _____ grams x 0.5 = _____ (C)
Sample Bottle Gross Wt. _____ after $Na_2S_2O_3 \cdot 5H_2O$ is added
Net Sample Wt. _____ (B + C) x A/B for Mass Collected
CalcsSample mixed, then aliquot taken for HCl analysis for Cl_2 analysis
Aliquot Sample Number: →→→→→ 7028 →→→→→ 030 for Chloride Analysis
Sample Bottle Tare Wt. 102.6 _____
Sample Bottle Final Wt. 991.7 225.9 _____ After Aliquoting
Net Sample Wt. 491.6 123.3 _____

NA

FRONT HALF RECOVERY

RINSES: Sample Number: 7025
Sample Bottle Tare Wt. 254.8
Components Rinsed***: nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front
Sample Bottle Gross Wt. 448.6 with Acetone Rinses
Net Acetone Sample Wt. 193.8
Sample Bottle Final Wt. 546.4 with added Water Rinses
Net Water Sample Wt. 97.8

FILTER: Sample Number: 7026
Description/color: intact / ghostly gray

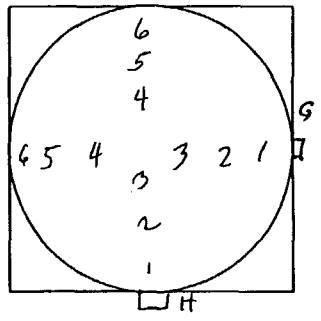
* Using a total of 100 mLs ±2 mLs ASTM Type I water per sample, rinse components twice. Thoroughly mix each sample before aliquoting.
** Add [25 mg of sodium thiosulfate per ppm Cl_2-dscm of gas sampled x (B/A)] to sample number XX005.
*** Acetone rinses with brushing 3 times or more until perceivably clean. If any residue remains in a component, follow with ASTM Type I water rinses with brushing until perceivably clean. Do not add any water rinses to the sample bottle until after the bottle is weighed with all of the acetone rinses.

COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Orange Yellow

Run No. 8 Date 6-16-99	Train A Type/No. M29-4 (metals)	Train B Type/No. M26a-4 (Part/HCL)
Project No. 5587 4951-08	Probe No. WC 3-2 Length: 3 ft	Probe No. WC 3-5 Length: 3 ft
Client USEPA CANA	Liner Type Quartz Heated? (Y) n	Liner Type Quartz Heated? (Y) n
Source Woodlawn Cemetery	Nozzle No. M29-4 Tip Dia. .708 in	Nozzle No. M26a-4 Tip Dia. .708 in
Sampling Location Scrubber Outlet Unit 4	Pitot Tube No. WC 3-2 C_p .787	Pitot Tube No. WC 3-5 C_p .787
Operator Griffin	Stack Thermocouple No. WC 3-2 0.820	Stack Thermocouple No. WC 3-5
Record data every 10 minutes	Filter No. 04-16 AK 16	Filter No. 16 used on metals Run 8
Barometer No. X 4029	Sample Box No. AK 10286	Sample Box No. 011996
Barometric Pressure 30.08 in Hg	Umbilical/Impinger Hookup UH58 4	Umbilical/Impinger Hookup UH8
Elevation to Meter Boxes 0 ft	Umbilical Nos. N125-4	Umbilical Nos. N125-5
Meter Box P_{bar} 30.08 in Hg	Meter Box No. N-10	Meter Box No. N5
Elevation to Sampling Loc. 0 ft	DGM Correction (Y) 1.011	DGM Correction (Y) 0.995
Sampling Location P_{bar} 30.08 in Hg	Orifice Meter ΔH@ 1.890	Orifice Meter ΔH@ 1.969



Traverse Point Layout

Compass Direction ➢ N

Static Pressure −0.017 in H_2O Assumed Moisture 26.0 % Assumed %CO_2 8.5 %O_2 8.5 Nozzles are quartz-glass.

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1300		1501	1831							[redacted]	[redacted]								
Pass or Fail				pass								[redacted]								

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1303		1510	1834						
Vacuum, in Hg	15		15	3						
Leak Rate, cfm	.006		.006	.006						
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	1306									
Vacuum, in Hg	15	[redacted]								
Leak Rate, cfm	.009									
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

Only new Metals train on run 8

Particulate/HCL train was not used

	TRAIN A	TRAIN B
Meter Volume at Start of Run	131,318.521	755.854
Meter Volume at End of Run	178.100	NOT USED
Total Leak Check Volume	0	
Adjusted Final Volume		

Run No. 8 Date 6-16-99 Sampling Location Scrubber Outlet Unit 4 page 2 of 3

Project No. 5587 4951-08 Train A Type/No. M-29-4 (metals) w/Part filter Operator Griffin

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 131.318.521 Desired	Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
G-6	10	1550	133.60	133.66	.002	0.15	0.15	604	73	72	2	68	229	252	250	NA
G-5	20	1600	135.60	135.70	.002	0.14	0.14	683	74	73	2	58	251	253	250	
G-4	30	1610	138.76	138.74	.005	0.34	0.34	695	75	74	2	58	251	251	250	
G-3	40	1620	140.76	140.76	.002	0.13	0.13	700	77	75	2	56	249	250	250	
G-2	50	1630	142.24	142.08	.001	0.07	0.07	618	79	76	1.5	61	238	253	250	
G-1	60	1640	143.72	143.66	.001	0.07	0.07	598	80	77	1.5	60	237	255	250	
Initial		1648														
H-1	70	1658	147.29	147.34	.006	0.43	0.43	652	81	79	2.5	54	245	253	250	
H-2	80	1708	149.84	150.01	.003	0.22	0.22	633	82	79	2	54	246	252	250	
H-3	90	1718	153.51	153.58	.006	0.44	0.44	651	83	79	2.5	57	245	254	250	
H-4	100	1728	157.29	157.47	.007	0.51	0.51	642	84	80	3	56	244	254	250	
H-5	110	1738	161.52	161.67	.009	0.61	0.61	741	86	81	3	51	246	248	250	
H-6	120	1748	165.94	166.06	.010	0.66	0.66	769	88	82	3	51	248	244	250	
* H-C	130	1758	170.01	170.15	.008	0.56	0.56	705	89	82	3	53	247	253	250	
* H-C	140	1808	174.06	174.23	.008	0.56	0.56	716	89	83	3	54	246	250	250	
	0		755.854		Train B Type/No. M26a-4 (Part/HCl)											
H-1	10															NA
H-2	20															
H-3	30															
H-4	40															
H-5	50															
H-6	60															
Initial																
G-6	70															
G-5	80															
G-4	90															
G-3	100															
G-2	110															
G-1	120															

Remarks and Notes: Ran metals train only during Run 8 No Part/HCl Particulate filter is being used in Metals train

* Running extra long until burn is complete HC = Center of traverse H

Run No. 8 Date 6-16-99 Sampling Location Scrubber Outlet Unit 4

Project No. 5581 4951-08 Train A Type/No. M 29-4 Metals Operator Grth

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial _____ Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
		1808														
* HC	150	1818	178.102	178.100	.008	0.55	0.55	717	89	83	3	58	246	247	250	NA

Train B Type/No. _____

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial _____ Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 8 Sampling Train No. M29-4 Sample Box No. 10256
Set-up person(s): J. McCann Date: 6-15-99
Transfer to Sampler:
Relinquished By J. McCann Received By D. Griffin Date/Time 6-16-99 1235

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA		
				Initial Weights (grams)**	
				Empty	Loaded
Sampling Nozzle (Quartz)	M29-4	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front					
Filter Holder Back with			Filter Type: Whatman QM-A	#1	6 For PM
Teflon® Filter Support					
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	487.0	
U-Connector (A)					
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	494.0	600.1
U-Connector (B)			5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)			100 mLs ±2 mLs	474.0	584.3
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	470.6	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	450.3	585.3
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	471.2	562.9
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		641.9
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		646.3
Impinger Outlet Connector	UH-4				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

[redacted]

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 8 Sampling Train No. M29-4 Sample Box No. 10286

Transfer for Recovery:
Relinquished By D. Griffin Received By A. Carender Date/Time 6/16/98 1920
Sample box recovery person(s): A. Carender Date: 6/16/99
Probe/STL recovery person(s): D. Albvrty + D. Brittin Date: 6/16/99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	805.6	626.9	589.2	473.7	588.0	565.0	651.8	647.9
Initial Wt.	487.0	600.1	584.3	470.6	585.3	562.9	641.9	646.3
Net Wt.	318.6	26.8	4.9	3.1	2.7	2.1	9.9	1.6

[Total Condensate Collected: 369.7]

Description and/or color:	Clear	Clear	Clear	Clear	purple	purple	30%	50%

Recovery: → → → → → → → Impingers 1-3 ← ← ← ← → → 4th Impinger → Impingers 5-6 ← % Blue

	Impingers 1-3	4th Impinger	Impingers 5-6		
Sample Number:	8041	8042	8043	8044	
Sample Bottle Tare Wt.	499.7	168.6	254.9	168.3	
Sample Bottle Gross Wt.	1061.5	170.1	476.9		Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$,	then 8 N HCl	
Components Rinsed*:	filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C	**4th impinger	***5th-6th impingers, U-connectors D-E		
Sample Bottle Final Wt.	1173.4	268.5	685.3	391.2	After Rinses
Net Sample Wt.	673.7	99.5	430.4	222.9	

FRONT HALF RECOVERY

FILTER:
Sample Number: 8 040 #16 Description/Color: intact/lt greyish, few black specs

8038 For PM

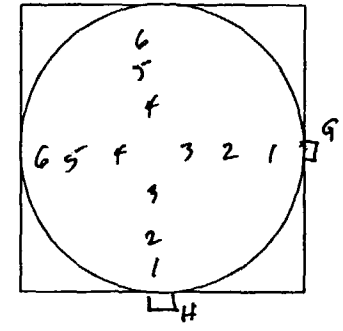
TRAIN RINSES:
Sample Number: 8039
Sample Bottle Tare Wt. 168.8 tare wt. 254.1
after acetone rinse 389.4 after water rinse 431.6
Rinse Solution: 0.1 N HNO_3 ~~after HNO3 rinse~~
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front
Sample Bottle Final Wt. 262.5 135.3 net acetone
Net Sample Wt. 93.7 42.2 net water

* Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~150~~ 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components 3 times or more with brushing until perceivably clean.

COMMENTS:

FIELD SAMPLING DATA FOR METHOD 5 TYPE TRAINS

Run No. 9 Date 6-17-99	Train A Type/No. M29-2 (metals/Hg)	Train B Type/No.
Project No. 5587 4951-08	Probe No. WC3-2 Length: 3 ft	Probe No. Length: ft
Client USEPA CANA	Liner Type Quartz Heated? (Y) n	Liner Type Heated? y n
Source Woodburn Cemetery	Nozzle No. M29-5 Tip Dia. .308 in	Nozzle No. Tip Dia. in
Sampling Location Scrubber Outlet Unit-4	Pitot Tube No. WC3-2 C_p .821	Pitot Tube No. C_p
Operator Griffin	Stack Thermocouple No. WC3-2	Stack Thermocouple No.
Record data every 10 minutes	Filter No. 18 at 200°F 6-17	Filter No.
Barometer No. X 4029	Sample Box No. 11190	Sample Box No.
Barometric Pressure 30.00 in Hg	Umbilical/Impinger Hookup UH206	Umbilical/Impinger Hookup
Elevation to Meter Boxes 0 ft	Umbilical Nos. N125-4	Umbilical Nos.
Meter Box P_{bar} 30.00 in Hg	Meter Box No. N10	Meter Box No.
Elevation to Sampling Loc. 0 ft	DGM Correction (Y) 1.011	DGM Correction (Y)
Sampling Location P_{bar} 30.00 in Hg	Orifice Meter ΔH@ 1.890	Orifice Meter ΔH@



Traverse Point Layout

Compass Direction ➢

Static Pressure ~ 0.17 in H_2O Assumed Moisture 26.0 % Assumed %CO_2 8.5 %O_2 8.5 Nozzles are quartz-glass.

	Train A Pitot Tube Pressure Measurement System Leak Checks										Train B Pitot Tube Pressure Measurement System Leak Checks									
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0812	1222																		
Pass or Fail		pass																		

-2433

Train A Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)	0815	1224								
Vacuum, in Hg	15	3								
Leak Rate, cfm	.005	.003								
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Train B Sampling System Leak Checks

	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Time (24 Hr)										
Vacuum, in Hg										
Leak Rate, cfm										
Final Meter Volume										
Initial Meter Volume										
Leak Check Volume										

Remarks and Notes: List STL T/Cs, pyrometers, and any other equipment requiring calibration below.

	TRAIN A	TRAIN B
Meter Volume at Start of Run	181.306	
Meter Volume at End of Run	216.436	
Total Leak Check Volume	0	
Adjusted Final Volume		

Run No. 9 Date 6-17-99 Sampling Location Scrubber Outlet Unit 4 page 1 of 1

Project No. 5581 4952-08 Train A Type/No. M29-2 (Metals/Part) Operator Carter

Traverse Point	Sampling Time, min.	Clock Time (24-Hr)	Dry Gas Meter Reading (V_m), ft^3 Initial 181.306 Desired	Dry Gas Meter Reading (V_m), ft^3 Actual	Velocity Head (Δp), in. H_2O	Orifice Pressure Differential (ΔH), in. H_2O Desired	Orifice Pressure Differential (ΔH), in. H_2O Actual	Stack Temp. (t_s), °F	Dry Gas Meter Temperature (t_m), °F Inlet	Dry Gas Meter Temperature (t_m), °F Outlet	Pump Vacuum, in. Hg	Silica Gel Impinger Outlet Temp., °F	Probe Liner Outlet Temp., °F	Filter Holder Temp., °F	STL Outlet Temp., °F	XAD Inlet Temp., °F
	0	1005														
G-6	10	1015	183.97	184.04	.003	0.24	0.24	587	70	69	2	53	245	244	250	NA
G-5	20	1025	186.52	186.55	.003	0.22	0.22	686	71	70	2	50	246	246	250	
G-4	30	1035	189.79	189.77	.005	0.37	0.37	702	73	71	2	49	246	245	250	
G-3	40	1045	191.26	191.44	.001	0.07	0.07	706	74	72	1.5	45	247	245	250	
G-2	50	1055	192.77	192.81	.001	0.07	0.07	652	76	74	1.5	47	239	248	250	
G-1	60	1105	194.28	194.15	.001	0.08	0.08	639	77	75	1.5	51	230	247	250	
Init/Fin		1118														
H-6	70	1128	198.81	198.78	.010	0.70	0.70	783	78	77	3	53	249	246	250	
H-5	80	1138	203.16	203.05	.009	0.65	0.65	752	79	76	3	41	252	247	250	
H-4	90	1148	206.77	206.77	.006	0.44	0.44	723	82	78	2.5	42	253	248	250	
H-3	100	1158	210.13	210.13	.005	0.38	0.38	680	82	78	2.5	43	253	247	250	
H-2	110	1208	213.64	213.77	.005	0.42	0.42	590	83	79	2.5	44	252	247	250	
H-1	120	1218	216.412	216.436	.003	0.26	0.26	546	83	79	2	45	249	250	250	

Train B Type/No. _____

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY TRAIN SET-UP DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 9 Sampling Train No. M29-2 Sample Box No. 011190
Set-up person(s): J. McC Date: 6-16-99
Transfer to Sampler:
Relinquished By J. Melenn Received By D. Griffin Date/Time 6-17-99 0730

TRAIN COMPONENT	COMPONENT NO.		LOADING DATA	Initial Weights (grams)** Empty	Loaded
Sampling Nozzle (Quartz)	M29-5	*			
Water-cooled Probe (Liner-Quartz)		*			
Female Probe Outlet Blank-Off					
Heated Coupling & Teflon® STL		*			
90° Bypass		*			
Filter Holder Front					
Filter Holder Back with Teflon® Filter Support			Filter Type: Whatman QM-A	#18 For PM	
Short 90° Connector					
1st Impinger (Mod-GBS)			Empty	493.4	
U-Connector (A)					582.6
2nd Impinger (Mod-GBS)			100 mLs ±2 mLs	475.1	477.4
U-Connector (B)			5% HNO_3/10% H_2O_2		
3rd Impinger (GBS)			100 mLs ±2 mLs	479.3	582.7
U-Connector (C)			5% HNO_3/10% H_2O_2		
4th Impinger (Mod-GBS)			Empty	484.7	
U-Connector (D)					
5th Impinger (Mod-GBS)			100 mLs ±2 mLs***	465.4	601.2
U-Connector (E)			4% $KMnO_4$/10% H_2SO_4		
6th Impinger (Mod-GBS)			100 mLs ±2 mLs***	490.0	578.8
U-Connector (F)			4% $KMnO_4$/10% H_2SO_4		
7th Impinger (Mod-GBS)			~200 g indicating silica gel		673.8
U-Connector (G)					
8th Impinger (Mod-GBS)			~200 g indicating silica gel		680.3
Impinger Outlet Connector	UH-6				

* Before and after sampling: Nozzle inlet opening covered with Parafilm® or Teflon® tape. Probe liner outlet sealed with glass female blank-off. Sample transfer line (STL) openings joined with glass coupling/elbow used at probe liner outlet during sampling. Bypass inlet covered (not sealed) with aluminum foil.

** Initial weights of additional components exchanged during the run also entered here. All exchange component openings covered with Parafilm®, Teflon® tape, or as described above.

*** If the reagent was exhausted before the end of a previous run, use a larger volume (e.g., 200 mLs ±2 mLs) and document below. Prepare additional reagent blanks accordingly.

Component Changes after Set-up and before Recovery and Other Comments:

40 *CFR* 60, APPENDIX A, METHOD 29 - MODIFIED MULTIPLE METALS TRAIN (M29)
FIELD LABORATORY SAMPLE RECOVERY DATA

MRI Project No. 4951.08.04.01 and 5587.04.01
Client/Source: U.S. EPA OAQPS SCGA and CANA / Cremation Incinerator Unit
Source Location: The Woodlawn Cemetery, Bronx, New York
Sampling Location: Scrubber Outlet Duct

Run No. 9 Sampling Train No. M29-2 Sample Box No. 011190
Transfer for Recovery:
Relinquished By D. Griffin Received By J. McCann Date/Time 6-17-99 1245
Sample box recovery person(s): J. M. Cox Date: 6-17-99
Probe/STL recovery person(s): D. Griffin + D. Alberty Date: 6-17-99
Weights below are in grams.

BACK HALF RECOVERY

Impinger:

	1st	2nd	3rd	4th	5th	6th	7th	8th
Final Wt.	719.6	607.0	586.8	487.4	605.0	581.1	681.7	681.5
Initial Wt.	493.9	582.6	582.7	484.7	601.2	578.8	673.8	680.3
Net Wt.	225.7	24.4	4.1	2.7	3.8	2.3	7.9	1.2

[Total Condensate Collected: 272.1]

Description and/or color: clear clear clear pink purple purple 25 100
Recovery: → → → → → → → Impingers 1-3 ← ← ← ← ← → → 4th Impinger → Impingers 5-6 ← % Blue

Sample Number:	9041	9042	9043	9044
Sample Bottle Tare Wt.	500.7	168.4	254.8	168.4
Sample Bottle Gross Wt.	961.9	170.2	475.6	Before Rinses
Rinse Solutions:	0.1 N HNO_3	0.1 N HNO_3	$KMnO_4/H_2O$,	then 8 N HCl
Components Rinsed*: filter support, filter holder back, short 90° connector, 1st-3rd impingers, U-connectors A-C		**4th impinger	***5th-6th impingers, U-connectors D-E	
Sample Bottle Final Wt.	1052.4	267.4	675.6	393.7 After Rinses
Net Sample Wt.	552.0	96.0	420.8	225.3

FRONT HALF RECOVERY

FILTER:
Sample Number: 9040 Description/Color: intact/faint yellow

TRAIN RINSES:
Sample Number: 9039 9038 Acetone rinses for PM
Sample Bottle Tare Wt. 168.6 769.1
Rinse Solution: 0.1 N HNO_3 ~~150~~
Components Rinsed****: nozzle, probe liner, coupling/sample transfer line, bypass, filter holder front
Sample Bottle Final Wt. 265.1 336.3
Net Sample Wt. 96.5 167.2

* Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components twice.
** Using a total of 100 mLs ±2 mLs of 0.1 N HNO_3, rinse the impinger twice.
*** Using a total of 100 mLs ±2 mLs of 4% $KMnO_4$/10% H_2SO_4, rinse components 3 times; then, using a total of 100 mLs ±2 mLs of ASTM Type I water, rinse components 3 times to remove all purple color. Next, using a total of 25 mLs ±0.5 mLs of 8 N HCl, remove any residue from components; transfer these rinses to a separate bottle containing one half of 200 mLs ±2 mLs of ASTM Type I water; rinse components with the balance of the water and transfer to bottle.
**** Using a total of ~~150~~ 100 mLs ±2 mLs of 0.1 N HNO_3, rinse components 3 times or more with brushing until perceivably clean.
COMMENTS:

Section 4

Orsat Sampling and Analysis

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. QC Check Date 06/11/99
Project No. 4951.08/5587 Sample No. NA
Sampling Location Console Room
Analysis Start Time 0925
Sample Type (~~Bag~~, Grab) Grab
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 0.0 2 0.0 3	0.0	1 0.0 2 0.0 3	0.0	1 0.0 2 0.0 3	0.0	0.0
O_2 (Net is actual reading minus actual CO_2 reading)	1 20.9 2 20.9 3	20.9	1 20.9 2 20.9 3	20.9	1 20.9 2 20.9 3	20.9	20.9
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 1 Date 6-11-99 Client/Source USEPA OAQPS SCGA
Project No. 5587-09-01, 4951-08 Sampling Location SCRUBBER INLET
Sample Type (Multi-Point) Single-Point) DN 6-11-99 Operator D. NEGI
Flow Control Device (Valve) ~~Critical Orifice~~ C.E Bag Type TEDLAR Sample No. 1007
Method 5 Meter Box No. N11 Method 3B Train No. N/A
M3B Pump Type DIAPHRAGM M3B Flow Meter Type ROTOMETER
M3B Pump No. N11 M3B Flow Meter No. N11
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling PASS After Sampling PASS
Total Sampling Time 116 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 23 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1522	2.0	1515	1522			
1532	2.0				✓	
1542	2.0				✓	
1552	2.0				✓	
1602	2.0				✓	
1612	2.0				✓	
1619	2.0			✓		PORT CHANGE
1700	2.0		✓			RESUME SAMPLING AFTER PORT CHANGE
1710	2.0				✓	
1720	2.0				✓	
1730	2.0				✓	
1740	2.0				✓	
1750	2.0				✓	
1759	2.0			✓		END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 1 Date 06/11/99
Project No. 4951.08/5587 Sample No. 1007
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1900
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 6.9 2 6.9 3	6.9	1 6.9 2 6.9 3	6.9	1 6.9 2 6.9 3	6.9	6.9
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.9 2 16.9 3	10.0	1 16.9 2 16.9 3	10.0	1 16.9 2 16.9 3	10.0	10.0
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 1007
M26A ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 1 Date 6/11/99 Client/Source EPA/EMC and CANA

Project No. 4951-08 Sampling Location Incin #4 Inlet

Sample Type (Multi-Point) Single-Point) Operator A. Carender

Flow Control Device (Valve) Critical Orifice) Bag Type Tedlar Sample No. 1013

Method 5 Meter Box No. N13 Method 3B Train No. N/A

M3B Pump Type Diaphragm M3B Flow Meter Type Rotometer

M3B Pump No. N13 M3B Flow Meter No. N13

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling No Leak After Sampling No Leak

Total Sampling Time 114 min Average Flow Meter Reading 200

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 23 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1522	200	Prior	✓			Started purge 1521
1550	200				✓	
1610	200				✓	
1620				✓		Stop for port change
1704	200		✓			Resume
1715	200				✓	
1750	200				✓	
1800				✓		

M3BSAMP.WPD June 18, 1998

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 1 Date 06/11/99
Project No. 4951.08/5587 Sample No. 1013
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1925
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 6.9 2 6.9 3	6.9	1 6.9 2 6.9 3	6.9	1 6.9 2 6.9 3	6.9	6.9
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.9 2 16.9 3	10.0	1 16.9 2 16.9 3	10.0	1 16.9 2 16.9 3	10.0	10.0
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 1013
M23 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 1 Date 6-11-99 Client/Source USEPA ORDPS SCGA

Project No. 5587-04-01, 4951-08 Sampling Location SCRUBBER INLET

Sample Type (Multi-Point) Single-Point) Operator D. NEAL

Flow Control Device (Valve) Critical Orifice) Bag Type TEDLAR Sample No. 1021

Method 5 Meter Box No. N12 Method 3B Train No. N/A

M3B Pump Type DIAPHRAM M3B Flow Meter Type ROTOMETER

M3B Pump No. N12 M3B Flow Meter No. N12

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling PASS After Sampling PASS

Total Sampling Time 115 min Average Flow Meter Reading 2.0

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 23 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1523	2.0	1515	1523			
1533	2.0				✓	
1543	2.0				✓	
1553	2.0				✓	
1603	2.0				✓	
1613	2.0				✓	
1620	2.0			✓		PORT CHANGE!
1701	2.0		✓			RESUME SAMPLING AFTER PORT CHANGE.
1711	2.0	D.N 6-11-99	(E.S.) ✓		✓	
1721	2.0	D.N 6-11-99	E.S. ✓		✓	
1731	2.0				✓	
1741	2.0				✓	
1751	2.0				✓	
1759	2.0			✓		END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 1 Date 06/11/99
Project No. 4951.08/5587 Sample No. 1021
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1830
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 6.9 2 6.9 3	6.9	1 6.9 2 6.9 3	6.9	1 6.9 2 6.9 3	6.9	6.9
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.9 2 16.9 3	10.0	1 16.9 2 16.9 3	10.0	1 16.9 2 16.9 3	10.0	10.0
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v
O_2 ≥15% 0.2% v/v <15% 0.3% v/v
CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 1021
M29 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 1 Date 6/11/99 Client/Source EPA/EMC and CANA
Project No. 4951-08 Sampling Location Incin. #4 Outlet
Sample Type (Multi-Point, Single-Point) Operator A. Carendar
Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 1037
Method 5 Meter Box No. N9 Method 3B Train No. N/A
M3B Pump Type Diaphragm M3B Flow Meter Type Rotometer
M3B Pump No. N9 M3B Flow Meter No. N9
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling No Leak After Sampling No Leak
Total Sampling Time 114 min Average Flow Meter Reading 200
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 23 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1523	200	Purge	✓			Start rod purge 1522
1551	200				✓	
1611	200				✓	
1620				✓		Stop for port change
1705	200		✓		✓	Restart
1715	200				✓	
1750	200				✓	
1801				✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No: 1 Date 06/11/99
Project No. 4951.08/5587 Sample No. 1037
Sampling Location Scrubber Outlet Duct
Analysis Start Time 1950
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 6.1 2 6.1 3	6.1	1 6.1 2 6.1 3	6.1	1 6.1 2 6.1 3	6.1	6.1
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.1 2 17.5 3 17.5	11.4	1 17.5 2 17.5 3	11.4	1 17.5 2 17.5 3	11.4	11.4
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 1037
M23 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

Pat/HCL

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 1 Date 4-11-99 Client/Source USEPA OAQPS SCGA/Cremation Incinerator Un
Project No. 5587-04-09 4991-08 Sampling Location Sandoben Crematory
Sample Type (Multi-Point, Single-Point) Operator Griffin
Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 1031
Method 5 Meter Box No. N5 Method 3B Train No. NA
M3B Pump Type Thiphram M3B Flow Meter Type Rotameter
M3B Pump No. N5 M3B Flow Meter No. ~~5080~~ 5080 N5
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling 0 After Sampling 0
Total Sampling Time 116 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 24.0 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1522	2.0	✓				No Problems
1524	2.0		✓		✓	
1534	2.0				✓	
1544	2.0				✓	
1554	2.0				✓	
1604	2.0				✓	
1614	2.0				✓	
1620				✓		Port Change
1702	2.0	✓				
1704	2.0		✓		✓	
1714	2.0				✓	
1724	2.0				✓	
1734	2.0				✓	
1744	2.0				✓	
1800	2.0			✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 1 Date 06/11/99
Project No. 4951.08/5587 Sample No. 1031
Sampling Location Scrubber Outlet Duct
Analysis Start Time 2035
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 6.1 2 6.1 3	6.1	1 6.1 2 6.1 3	6.1	1 6.1 2 6.1 3	6.1	6.1
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.5 2 17.5 3	11.4	1 17.5 2 17.5 3	11.4	1 17.5 2 17.5 3	11.4	11.4
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 1031
M26A ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

Metals

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 1 Date 6-11-99 Client/Source USEPA OPPS SCGA/Cremation Incinerator Unit
Project No. 5587-04-01 4951-08 Sampling Location Scrubber Outlet
Sample Type (Multi-Point) Single-Point) Operator Griffin
Flow Control Device (Valve) Critical Orifice) Bag Type Tedlar Sample No. 1045
Method 5 Meter Box No. N-10 Method 3B Train No. NA
M3B Pump Type Diaphram M3B Flow Meter Type ~~AUTO~~METER
M3B Pump No. N-10 M3B Flow Meter No. VG Gilian NAL 6800 N-10
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling 0 After Sampling 0
Total Sampling Time 116 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 24.0 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1522	2.0	1520	1522 ✓		✓	No Problems
1530	2.0				✓	
1540	2.0				✓	
1550	2.0				✓	
1558	2.0				✓	
1508	2.0				✓	
1518	2.0			✓		Post Change
1700	2.0	✓				
1702	2.0		✓		✓	
1712	2.0				✓	
1722	2.0				✓	
1732	2.0				✓	
1742	2.0				✓	
1758	2.0			✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 1 Date 06/11/99
Project No. 4951.08/5587 Sample No. 1045
Sampling Location Scrubber Outlet Duct
Analysis Start Time 2015
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 6.1 2 6.1 3	6.1	1 6.1 2 6.1 3	6.1	1 6.1 2 6.1 3	6.1	6.1
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.5 2 17.5 3	11.4	1 17.5 2 17.5 3	11.4	1 17.5 2 17.5 3	11.4	11.4
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 1045
M29 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 2 Date 6-12-99 Client/Source USEPA OAQPS SCGA

Project No. 5587-04-01, 4951-08 Sampling Location SCRUBBER INLET

Sample Type (Multi-Point, Single-Point) Operator D. NEAL

Flow Control Device (Valve, Critical Orifice) Bag Type TEDLAR Sample No. 2007

Method 5 Meter Box No. N11 Method 3B Train No. N/A

M3B Pump Type DIAPHRAM M3B Flow Meter Type ROTOMETER

M3B Pump No. N11 M3B Flow Meter No. N11

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling PASS After Sampling PASS

Total Sampling Time 117 min Average Flow Meter Reading 2.0

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 23 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1145	2.0	✓				
1146	2.0		✓			
1156	2.0				✓	
1206	2.0				✓	
1216	2.0				✓	
1226	2.0				✓	
1236	2.0				✓	
1246	2.0			✓		POINT CHANGE
1311	2.0		✓			RESUME AFTER POINT CHANGE
1321	2.0				✓	
1331	2.0				✓	
1341	2.0				✓	
1351	2.0				✓	
1401	2.0				✓	
1409	2.0				✓	END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 2 Date 06/12/99
Project No. 4951.08/5587 Sample No. 2007
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1445
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 6.6 2 6.7 3	6.7	1 6.6 2 6.6 3	6.6	1 6.6 2 6.6 3	6.6	6.6
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.1 2 17.1 3	10.4	1 17.0 2 17.0 3	10.4	1 17.0 2 17.0 3	10.4	10.4
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 2007
M26A ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

(Blue)

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 2 Date 6/12/99 Client/Source EPA/EMC and CANA

Project No. ~~4610-08~~ 4951-08 Sampling Location Incin #4 Scrubber Inlet

Sample Type (Multi-Point, Single-Point) Operator A. Carendar

Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 2013

Method 5 Meter Box No. N13 Method 3B Train No. N/A

M3B Pump Type Diaphragm M3B Flow Meter Type Rotameter

M3B Pump No. N 13 M3B Flow Meter No. N13

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling Pass After Sampling Pass

Total Sampling Time 113 min Average Flow Meter Reading 200

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 23 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1145	200	✓				
1146	~~200~~		✓			
1156	200				✓	
1218	200				✓	
1238	200				✓	
1242				✓		Stop for Part Change
1312	~~200~~		✓			
1322	200				✓	
1332	200				✓	
1342	200				✓	
1354	200				✓	
1402	200				✓	
1408				✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 2 Date 06/12/99

Project No. 4951.08/5387 Sample No. 2013

Sampling Location Scrubber Inlet Duct

Analysis Start Time 1510

Sample Type (Bag, ~~Grab~~) Bag

Analyst J. Surman

Orsat Leak Check Before Analysis:

Burrete No Change in 4 Minutes

Pipettes No Change in 4 Minutes

Orsat Leak Check After Analysis:

Burrete No Change in 4 Minutes

Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 6.5 2 6.6 3	6.6	1 6.6 2 6.6 3	6.6	1 6.6 2 6.6 3	6.6	6.6
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.0 2 17.0 3	10.4	1 17.0 2 17.0 3	10.4	1 17.0 2 17.0 3	10.4	10.4
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v

O_2 ≥15% 0.2% v/v <15% 0.3% v/v

CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 2013
M23 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 2 Date 6-12-99 Client/Source USEPA OAQPS SCGA
Project No. 5587-04-01, 4951-08 Sampling Location SCRUBBER INLET
Sample Type (Multi-Point, Single-Point) Operator D. NEAL
Flow Control Device (Valve, Critical Orifice) Bag Type TEDLAR Sample No. 2021
Method 5 Meter Box No. N12 Method 3B Train No. N/A
M3B Pump Type DIAPHRAM M3B Flow Meter Type ROTOMETER
M3B Pump No. N12 M3B Flow Meter No. N12
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling PASS After Sampling PASS
Total Sampling Time 118 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 23 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1145	2.0	✓				
1146	2.0		✓			
1156	2.0				✓	
1206	2.0				✓	
1216	2.0				✓	
1226	2.0				✓	
1236	2.0				✓	
1245	2.0			✓		PORT CHANGE
1310	2.0		✓			RESUME AFTER PORT CHANGE
1320	2.0				✓	
1330	2.0				✓	
1340	2.0				✓	
1350	2.0				✓	
1400	2.0				✓	
1407	2.0			✓		END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 2 Date 06/12/99
Project No. 4951.08/5587 Sample No. 2021
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1420
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 6.6 2 6.6 3	6.6	1 6.5 2 6.6 3	6.6	1 6.6 2 6.6 3	6.6	6.6
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.0 2 17.0 3	10.4	1 17.0 2 17.0 3	10.4	1 17.0 2 17.0 3	10.4	10.4
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 2021
M29 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 2 Date 6-12-99 Client/Source USEPA OAQPS SCGA / Woodlawn
Project No. 5587 4951 -08 Sampling Location Scrubber Outlet
Sample Type (~~Multi-Point~~, Single-Point) Operator Griffin
Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 2031
Method 5 Meter Box No. N5 Method 3B Train No. NA
M3B Pump Type Diaphram M3B Flow Meter Type Rotometer
M3B Pump No. N5 M3B Flow Meter No. 5080 N5
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling 0 After Sampling 0
Total Sampling Time 116 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1147	2.0	✓				Sampling from Part/HCL
1149	2.0		✓		✓	
1159	2.0				✓	
1209	2.0				✓	
1219	2.0				✓	
1229	2.0				✓	
1239	2.0				✓	
1245	2.0			✓		Bag Change
1312	2.0	✓				
1322	2.0		✓		✓	
1332	2.0				✓	
1342	2.0				✓	
1352	2.0				✓	
1402	2.0				✓	
1410	2.0			✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 2 Date 06/12/99
Project No. 4951.08/5587 Sample No. 2031
Sampling Location Scrubber Outlet Duct
Analysis Start Time 1620
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 6.1 2 6.1 3	6.1	1 6.1 2 6.1 3	6.1	1 6.1 2 6.1 3	6.1	6.1
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.5 2 17.5 3	11.4	1 17.5 2 17.5 3	11.4	1 17.5 2 17.5 3	11.4	11.4
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 2031
M26A ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

(Pink)

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 2 Date 6/8/99 Client/Source EPA/EMC and CANA
Project No. 4951-08 Sampling Location Incin #4 Scrubber Outlet
Sample Type (Multi-Point, Single-Point) Operator A. Carender
Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 2037
Method 5 Meter Box No. N9 Method 3B Train No. N/A
M3B Pump Type Diaphragm M3B Flow Meter Type Rotameter
M3B Pump No. N9 M3B Flow Meter No. N9
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling Pass After Sampling Pass
Total Sampling Time 111 min Average Flow Meter Reading 200
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 22 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1146	200	✓				
1147	200		✓			
1157	200				✓	
1218	200				✓	
1238	200				✓	
1242				✓		Port change
1312	200		✓			
1322	200				✓	
1332	200				✓	
1342	200				✓	
1354	200				✓	
1402	200				✓	
1408				✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 2 Date 06/12/99
Project No. 4951.08/5587 Sample No. 2037
Sampling Location Scrubber Outlet Duct
Analysis Start Time 1535
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 6.0 2 6.0 3	6.0	1 6.0 2 6.0 3	6.0	1 6.0 2 6.0 3	6.0	6.0
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.5 2 17.5 3	11.5	1 17.5 2 17.5 3	11.5	1 17.5 2 17.5 3	11.5	11.5
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v
O_2 ≥15% 0.2% v/v <15% 0.3% v/v
CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 2037
M23 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 2 Date 6-12-99 Client/Source EPA OAQPS SCGA / Woodburn
Project No. 5587 4951-08 Sampling Location Scrubber Outlet
Sample Type (Multi-Point) Single-Point) Operator Griffin
Flow Control Device (Valve) Critical Orifice) Bag Type Tedlar Sample No. 2045
Method 5 Meter Box No. N10 Method 3B Train No. NA
M3B Pump Type Diaphram M3B Flow Meter Type Rotameter
M3B Pump No. N10 M3B Flow Meter No. 6800 N10
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling 0 After Sampling 0
Total Sampling Time 116 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1145	2.0	✓				Sampling from metals console
1147	2.0		✓		✓	No Problems
1157	2.0				✓	
1207	2.0				✓	
1217	2.0				✓	
1227	2.0				✓	
1237	2.0				✓	
1243	2.0			✓		Port Change
1310	2.0	✓				
1312	2.0		✓		✓	
1322	2.0				✓	
1332	2.0				✓	
1342	2.0				✓	
1352	2.0				✓	
1402	2.0				✓	
1408	2.0			✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 2 Date 06/12/99
Project No. 4951.08/5587 Sample No. 2045
Sampling Location Scrubber Outlet Duct
Analysis Start Time 1555
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 6.1 2 6.1 3	6.1	1 6.1 2 6.1 3	6.1	1 6.1 2 6.1 3	6.1	6.1
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.5 2 17.5 3	11.4	1 17.5 2 17.5 3	11.4	1 17.5 2 17.5 3	11.4	11.4
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v
≤4% 0.2% v/v

O_2 ≥15% 0.2% v/v
<15% 0.3% v/v

CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 2045
M29 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 3 Date 6-13-99 Client/Source WOODLAWN CEMETARY

Project No. 5587-04-01, 4951-08 Sampling Location SCRUBBER INLET ~~3007~~ ON 6-13-99 E.S.

Sample Type (~~Multi-Point~~, Single-Point) Operator D. NEAL

Flow Control Device (Valve, Critical Orifice) Bag Type TEDLAR Sample No. 3007

Method 5 Meter Box No. N11 Method 3B Train No. N/A

M3B Pump Type DIAPHRAGM M3B Flow Meter Type ROTOMETER

M3B Pump No. N11 M3B Flow Meter No. N11

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling PASS After Sampling PASS

Total Sampling Time 118 min Average Flow Meter Reading 2.0

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 23 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
0905	2.0	✓				
0906	2.0		✓			
0916	2.0				✓	
0926	2.0				✓	
0936	2.0				✓	
0946	2.0				✓	
0956	2.0				✓	
1006	2.0			✓		PORT CHANGE
1007	2.0				✓	RESUME AFTER PORT CHANGE
1017	2.0				✓	
1027	2.0				✓	
1037	2.0				✓	
1047	2.0				✓	
1057	2.0				✓	
1107	2.0				✓	
1117	2.0				✓	
1127	2.0			✓		END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 3 Date 06/13/99
Project No. 4951.08/5587 Sample No. 3007
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1205
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.5 2 7.5 3	7.5	1 7.5 2 7.5 3	7.5	1 7.5 2 7.5 3	7.5	7.5
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.8 2 16.8 3	9.3	1 16.8 2 16.8 3	9.3	1 16.8 2 16.8 3	9.3	9.3
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 3007
M26A ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J. SURMAN
MIDWEST RESEARCH INSTITUTE

Blue

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 3 Date 6/13/99 Client/Source EPA/EMC and CANA

Project No. 4951-08 Sampling Location Incin #4 Scrubber Inlet

Sample Type (Multi-Point, Single-Point) Operator A. Carender

Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 3013

Method 5 Meter Box No. N13 Method 3B Train No. N/A

M3B Pump Type Diaphragm M3B Flow Meter Type Rotameter

M3B Pump No. N13 M3B Flow Meter No. N13

Desired Sampling Rate 10 cc/min

Leak Check Before Sampling PASS After Sampling PASS

Total Sampling Time 104 min Average Flow Meter Reading 200

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 21 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
0913	200	✓	✓			
0914	200		✓			
0924	200				✓	
0934	200				✓	
0939	200				✓	
0951	200				✓	
0958	200				✓	
1003				✓		Port Change
1031	200		✓			
1041	200				✓	
1053	200				✓	
1103	200				✓	
1113	200				✓	
1123	200				✓	
1126				✓		End of Run

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 3 Date 06/13/99
Project No. 4951.08/5587 Sample No. 3013
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1420
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.5 2 7.5 3	7.5	1 7.5 2 7.5 3	7.5	1 7.5 2 7.5 3	7.5	7.5
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.8 2 16.8 3	9.3	1 16.8 2 16.8 3	9.3	1 16.8 2 16.8 3	9.3	9.3
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 3013
M23 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 3 Date 6-13-99 Client/Source WOODLAWN CEMETERY
Project No. 5587-04-01, 4951-08 Sampling Location SCRUBBER INLET
Sample Type (Multi-Point) Single-Point) Operator D. NEAL
Flow Control Device (Valve) Critical Orifice) Bag Type TEDLAR Sample No. 3021
Method 5 Meter Box No. N12 Method 3B Train No. N/A
M3B Pump Type DIAPHRAM M3B Flow Meter Type ROTOMETER
M3B Pump No. N12 M3B Flow Meter No. N12
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling PASS After Sampling PASS
Total Sampling Time 118 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 23 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
0905	2.0	✓				
0907	2.0		✓			
0917	2.0				✓	
0927	2.0				✓	
0937	2.0				✓	
0947	2.0				✓	
0957	2.0				✓	
1007	2.0			✓		PORT CHANGE
1030	2.0				✓	RESUME AFTER PORT CHANGES
1040	2.0				✓	
1050	2.0				✓	
1100	2.0				✓	
1110	2.0				✓	
1120	2.0				✓	
1130	2.0			✓		END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 3 Date 06/13/99
Project No. 4951.08/5587 Sample No. 3021
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1145
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.4 2 7.5 3	7.5	1 7.5 2 7.5 3	7.5	1 7.5 2 7.5 3	7.5	7.5
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.8 2 16.8 3	9.3	1 16.8 2 16.8 3	9.3	1 16.8 2 16.8 3	9.3	9.3
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v
O_2 ≥15% 0.2% v/v <15% 0.3% v/v
CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 3021
M29 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Bat/Hcl

Run No. 3 Date 6-13-99 Client/Source USEPA CANH

Project No. 5587 4951-08 Sampling Location Franklin Outlet

Sample Type (Multi-Point, Single-Point) Operator [signature]

Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 3031

Method 5 Meter Box No. N5 Method 3B Train No. NA

M3B Pump Type Diaphram M3B Flow Meter Type Rotameter

M3B Pump No. N5 M3B Flow Meter No. 5080 N5

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling 0 After Sampling 0

Total Sampling Time 112 min Average Flow Meter Reading 2.0

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 22 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
0908	2.0	✓				
0910	2.0		✓		✓	
0920	2.0				✓	
0930	2.0				✓	
0940	2.0				✓	
0950	2.0				✓	
1000	2.0				✓	
1006	2.0			✓		Bat Change
1031	2.0	✓				
1033	2.0		✓		✓	
1043	2.0				✓	
1053	2.0				✓	
1103	2.0				✓	
1113	2.0				✓	
1123	2.0				✓	
1129	2.0			✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 3 Date 4/13/99
Project No. 4951.08/5587 Sample No. 3031
Sampling Location Scrubber Outlet Duct
Analysis Start Time 1530
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.1 2 7.1 3	7.1	1 7.1 2 7.1 3	7.1	1 7.1 2 7.1 3	7.1	7.1
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.1 2 17.1 3	10.0	1 17.1 2 17.1 3	10.0	1 17.1 2 17.1 3	10.0	10.0
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 3031
M26A ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

Pink

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 3 Date 6/13/99 Client/Source EPA/EMC and CANA
Project No. 4951-08 Sampling Location Incin #4 Scrubber Outlet
Sample Type (Multi-Point) Single-Point) Operator A. Carender
Flow Control Device (Valve) Critical Orifice) Bag Type Tedlar Sample No. 3037
Method 5 Meter Box No. N9 Method 3B Train No. N/A
M3B Pump Type Diaphragm M3B Flow Meter Type Rotameter
M3B Pump No. N9 M3B Flow Meter No. N9
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling Pass After Sampling Pass
Total Sampling Time 105 min Average Flow Meter Reading 200
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 21 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
0913	200	✓	X09-			
0914	200		✓			
0924	200				✓	
0934	200				✓	
0939	200				✓	
0951	200				✓	
0958	200				✓	
1003				✓		Purge charge
1031	200	✓				
1041	200				✓	
1053	200				✓	
1103	200				✓	
1113	200				✓	
1123	200				✓	
1126				✓		End of Run

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 3 Date 06/13/99
Project No. 4951.08/5587 Sample No. 3037
Sampling Location Scrubber Outlet Duct
Analysis Start Time 1445
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.0 2 7.0 3	7.0	1 7.0 2 7.0 3	7.0	1 7.0 2 7.0 3	7.0	7.0
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.1 2 17.1 3	10.1	1 17.1 2 17.1 3	10.1	1 17.1 2 17.1 3	10.1	10.1
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 3037
M23 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Metals

Run No. 3 Date 6-13-99 Client/Source USEPA OAQPS SCGA

Project No. 5581 4951-08 Sampling Location Scrubber Outlet

Sample Type (Multi-Point) Single-Point) Operator GrnSh

Flow Control Device (Valve) Critical Orifice) Bag Type Tedlar Sample No. 3045

Method 5 Meter Box No. N10 Method 3B Train No. NA

M3B Pump Type Diaphragm M3B Flow Meter Type Rotometer

M3B Pump No. N10 M3B Flow Meter No. 6300

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling 0 After Sampling 0

Total Sampling Time 112 min Average Flow Meter Reading 2.0

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 22 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
0906	2.0	✓				
0908	2.0		✓		✓	
0918	2.0				✓	
0928	2.0				✓	
0938	2.0				✓	
0948	2.0				✓	
0958	2.0				✓	
1004	2.0			✓		Port Change
1029	2.0	✓				
1031	2.0		✓		✓	
1041	2.0				✓	
1051	2.0				✓	
1101	2.0				✓	
1111	2.0				✓	
1121	2.0				✓	
1127	2.0			✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 3 Date 06/13/99
Project No. 4951.08/5587 Sample No. 3045
Sampling Location Scrubber Outlet Duct
Analysis Start Time 1510
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.1 2 7.1 3	7.1	1 7.1 2 7.1 3	7.1	1 7.1 2 7.1 3	7.1	7.1
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.1 2 17.1 3	10.0	1 17.1 2 17.1 3	10.0	1 17.1 2 17.1 3	10.0	10.0
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 3045
M29 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

Blue

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 4 Date 6/13/99 Client/Source EPA/EMC ed CANA
Project No. 4951-08 Sampling Location Encin #4 Scrubber Inlet
Sample Type (Multi-Point, Single-Point) Operator A. Carender
Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 3013
Method 5 Meter Box No. N13 Method 3B Train No. N/A
M3B Pump Type Diaphragm M3B Flow Meter Type Rotometer
M3B Pump No. N13 M3B Flow Meter No. N13
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling Pass After Sampling Pass
Total Sampling Time 144 min Average Flow Meter Reading 200
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 29 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1605		✓	✓			
1606			✓		✓	
1620					✓	
1632					✓	
1640					✓	
1656					✓	
1720					✓	
1737					✓	
1750					✓	
1810					✓	
1830				✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 4 Date 06/13/99

Project No. 4951.08/5587 Sample No. 4013

Sampling Location Scrubber Inlet Duct

Analysis Start Time 1850

Sample Type (Bag, ~~Grab~~) Bag

Analyst J. Surman

Orsat Leak Check Before Analysis:

Burrete No Change in 4 Minutes

Pipettes No Change in 4 Minutes

Orsat Leak Check After Analysis:

Burrete No Change in 4 Minutes

Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.7 2 7.7 3	7.7	1 7.7 2 7.7 3	7.7	1 7.7 2 7.7 3	7.7	7.7
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.4 2 16.4 3	8.7	1 16.4 2 16.4 3	8.7	1 16.4 2 16.4 3	8.7	8.7
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v; ≤4% 0.2% v/v

O_2 ≥15% 0.2% v/v; <15% 0.3% v/v

CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 4013
M23 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 4 Date 6-13-99 Client/Source USEPA OAQPS SCGA
Project No. 5587-04-01, 4951-08 Sampling Location SCRUBBER INLET
Sample Type (Multi-Point, Single-Point) Operator D. NEAL
Flow Control Device (Valve, Critical Orifice) Bag Type TEDLAR Sample No. 4021
Method 5 Meter Box No. N12 Method 3B Train No. N/A
M3B Pump Type DIAPHRAM M3B Flow Meter Type ROTOMETER
M3B Pump No. N12 M3B Flow Meter No. N12
Desired Sampling Rate 2.00 cc/min
Leak Check Before Sampling PASS After Sampling PASS
Total Sampling Time 149 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 30 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1604	2.0	✓				
1605	2.0		✓		✓	ON 6-13-99 EE.
1617.5	2.0				✓	
1630	2.0				✓	
1642.5	2.0				✓	
1655	2.0				✓	
1707.5	2.0				✓	
1720	2.0				✓	
1732.5	2.0				✓	
1745	2.0				✓	
1757.5	2.0				✓	
1810	2.0				✓	
1822.5	2.0				✓	
1835	2.0			✓		END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 4 Date 06/13/99
Project No. 4951.08/5587 Sample No. 4021
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1915
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.7 2 7.7 3	7.7	1 7.7 2 7.7 3	7.7	1 7.7 2 7.7 3	7.7	7.7
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.4 2 16.4 3	8.7	1 16.4 2 16.4 3	8.7	1 16.4 2 16.4 3	8.7	8.7
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 4021
M29 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Part HCl

Run No. 4 Date 6-13-99 Client/Source USEPA CANA

Project No. 5587 4951-08 Sampling Location Scrubber Outlet #4

Sample Type (Multi-Point, Single-Point) Operator Griffin

Flow Control Device (Valve, Critical Orifice) Bag Type Teflar Sample No. 4031

Method 5 Meter Box No. NS Method 3B Train No. NA

M3B Pump Type Diaphram M3B Flow Meter Type Rotometer

M3B Pump No. NS M3B Flow Meter No. 5080 NS

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling 0 After Sampling 0

Total Sampling Time 116 min Average Flow Meter Reading 2.0

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1607	2.0	✓				
1609	2.0		✓		✓	
1619	2.0				✓	
1629	2.0				✓	
1639	2.0				✓	
1649	2.0				✓	
1659	2.0				✓	
1705	2.0		~~[illegible]~~	✓	✓	Port Change
1727	2.0	✓		~~[illegible]~~		↓
1729	2.0		✓		✓	
1739	2.0				✓	
1749	2.0				✓	
1759	2.0				✓	
1809	2.0				✓	
1819	2.0				✓	
1825	2.0			✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 4 Date 06/13/99
Project No. 4951.08/5587 Sample No. 4031
Sampling Location Scrubber Outlet Duct
Analysis Start Time 1935
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.3 2 7.4 3	7.4	1 7.4 2 7.4 3	7.4	1 7.4 2 7.4 3	7.4	7.4
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.8 2 16.7 3	9.3	1 16.7 2 16.7 3	9.3	1 16.7 2 16.8 3	9.3	9.3
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2	>4%	0.3% v/v	O_2	≥15%	0.2% v/v
	≤4%	0.2% v/v		<15%	0.3% v/v

CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 4031
M26A ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

Pink

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. Pink 092 4 Date 6/13/99 Client/Source EPA/EMC and CANA

Project No. 4951-08 Sampling Location Fncin #4 Scrubber Outlet

Sample Type (Multi-Point, Single-Point) Operator A. Carendes

Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. B037

Method 5 Meter Box No. N9 Method 3B Train No. N/A

M3B Pump Type Diaphragm M3B Flow Meter Type Rotameter

M3B Pump No. N9 M3B Flow Meter No. N9

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling Pass After Sampling pass

Total Sampling Time 111 min Average Flow Meter Reading 200

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 22 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1610	200	✓				
1611	200		✓			
1620	200				✓	
1632	200				✓	
1640	200				✓	
1650	200				✓	
1704				✓		Port change
1737	200		✓			
1750	200				✓	
1810	200				✓	
1824				✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 4 Date 06/13/99

Project No. 4951.08/5587 Sample No. 4037

Sampling Location Scrubber Outlet Duct

Analysis Start Time 2000

Sample Type (Bag, ~~Grab~~) Bag

Analyst J. Surman

Orsat Leak Check Before Analysis:

Burrete No Change in 4 Minutes

Pipettes No Change in 4 Minutes

Orsat Leak Check After Analysis:

Burrete No Change in 4 Minutes

Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.4 2 7.4 3	7.4	1 7.4 2 7.4 3	7.4	1 7.4 2 7.4 3	7.4	7.4
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.7 2 16.8 3	9.4	1 16.8 2 16.8 3	9.4	1 16.8 2 16.8 3	9.4	9.4
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v; ≤4% 0.2% v/v

O_2 ≥15% 0.2% v/v; <15% 0.3% v/v

CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 4037
M23 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J. SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Metals

Run No. 4 Date 6-13-99 Client/Source USEPA CAVA

Project No. 5587 4951-08 Sampling Location Enabled District #4

Sample Type (Multi-Point) Single-Point) Operator Griffin

Flow Control Device (Valve) Critical Orifice) Bag Type Tedlar Sample No. 4045

Method 5 Meter Box No. N10 Method 3B Train No. N/A

M3B Pump Type Diaphram M3B Flow Meter Type Rotometer

M3B Pump No. N10 M3B Flow Meter No. 6800 N10

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling 0 After Sampling 0

Total Sampling Time 116 min Average Flow Meter Reading 2.0

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1605	2.0	✓				
1607	2.0		✓		✓	
1617	2.0				✓	
1627	2.0				✓	
1637	2.0				✓	
1647	2.0				✓	
1657	2.0				✓	
1703	2.0			✓		Port Change
1725	2.0	✓				
1727	2.0		✓		✓	
1737	2.0				✓	
1747	2.0				✓	
1757	2.0				✓	
1807	2.0				✓	
1817	2.0				✓	
1823	2.0			✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 4 Date 06/13/99
Project No. 4951.08/5587 Sample No. 4045
Sampling Location Scrubber Outlet Duct
Analysis Start Time 2020
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.4 2 7.4 3	7.4	1 7.4 2 7.4 3	7.4	1 7.4 2 7.4 3	7.4	7.4
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.7 2 16.7 3	9.3	1 16.7 2 16.7 3	9.3	1 16.7 2 16.7 3	9.3	9.3
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v
O_2 ≥15% 0.2% v/v <15% 0.3% v/v
CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 4045
M29 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 5 Date 6-14-99 Client/Source USEPA / CANA
Project No. 5587-04-01, 4951-08 Sampling Location SCRUBBER INLET
Sample Type (Multi-Point) Single-Point) Operator D. NEAL
Flow Control Device (Valve) Critical Orifice) Bag Type TEDLAR Sample No. 5007
Method 5 Meter Box No. N11 Method 3B Train No. N/A
M3B Pump Type DIAPHRAGM M3B Flow Meter Type ROTOMETER
M3B Pump No. N11 M3B Flow Meter No. N11
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling PASS After Sampling PASS
Total Sampling Time 120 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1549	2.0	✓				
1550	2.0		✓			
1600	2.0				✓	
1610	2.0				✓	
1620	2.0				✓	
1630	2.0				✓	
1640	2.0				✓	
1650	2.0			✓		PORT CHANGE OUTLET ONLY
1720	2.0		✓			RESUMES AFTER PORT CHANGE
1730	2.0				✓	
1740	2.0				✓	
1750	2.0				✓	
1800	2.0				✓	
1810	2.0				✓	
1820	2.0			✓		END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 5 Date 06/14/99
Project No. 4951.08/5587 Sample No. 5007
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1845
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 ~~9.0~~ 9.0 2 ~~9.0~~ 9.0 3	9.0	1 9.0 2 9.0 3	9.0	1 9.0 2 9.0 3	9.0	9.0
O_2 (Net is actual reading minus actual CO_2 reading)	1 ~~8.1~~ 17.1 2 17.1 3	8.1	1 17.1 2 17.1 3	8.1	1 17.1 2 17.1 3	8.1	8.1
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 5007
M26A ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J. SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 5 Date 6/14/99 Client/Source EPA/EMC and CANA
Project No. 4951-08 Sampling Location Scrubber Inlet
Sample Type (Multi-Point, Single-Point) Operator A. Carender
Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 5013
Method 5 Meter Box No. N13 Method 3B Train No. N/A
M3B Pump Type Diaphragm M3B Flow Meter Type Rotometer
M3B Pump No. N13 M3B Flow Meter No. N13
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling Pass After Sampling Pass
Total Sampling Time 111 min Average Flow Meter Reading 200
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 22 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1550	200	✓				
1551	200		✓			
1603	200				✓	
1612	200				✓	
1623	200				✓	
1636	200				✓	
1644	200				✓	
1647				✓		
1722	200		✓			
1741	200				✓	
1753	200				✓	
1603	200				✓	
1615	200				✓	
1617				✓		End of Run

BLUE

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 5 Date 06/14/99
Project No. 4951.08/5587 Sample No. 5013
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1910
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 9.0 2 9.0 3	9.0	1 9.0 2 9.0 3	9.0	1 9.0 2 9.0 3	9.0	9.0
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.1 2 17.1 3	8.1	1 17.1 2 17.1 3	8.1	1 17.1 2 17.1 3	8.1	8.1
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v
≤4% 0.2% v/v

O_2 ≥15% 0.2% v/v
<15% 0.3% v/v

CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 5013
M23 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 5 Date 6-14-99 Client/Source USEPA / CANA

Project No. 5587-04-01, 4951-08 Sampling Location SCRUBBER INLET

Sample Type (Multi-Point) Single-Point) Operator D. NEAL

Flow Control Device (Valve) Critical Orifice) Bag Type TEDLAR Sample No. 5021

Method 5 Meter Box No. N12 Method 3B Train No. N/A

M3B Pump Type DIAPHRAM M3B Flow Meter Type ROTOMETER

M3B Pump No. N12 M3B Flow Meter No. N12

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling PASS After Sampling PASS

Total Sampling Time 120 min Average Flow Meter Reading 2.0

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1549	2.0	✓				
1551	2.0		✓			
1601	2.0				✓	
1611	2.0				✓	
1621	2.0				✓	
1631	2.0				✓	
1641	2.0				✓	
1651	2.0			✓		PORT CHANGE OUTLET ONLY
1721	2.0		✓			RESUME AFTER PORT CHANGE
1731	2.0				✓	
1741	2.0				✓	
1751	2.0				✓	
1801	2.0				✓	
1811	2.0				✓	
1821	2.0			✓		END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 5 Date 06/14/99
Project No. 4951.08/5587 Sample No. 5021
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1925
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 9.0 2 9.0 3	9.0	1 9.0 2 9.0 3	9.0	1 9.0 2 9.0 3	9.0	9.0
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.1 2 17.1 3	8.1	1 17.1 2 17.1 3	8.1	1 17.1 2 17.1 3	8.1	8.1
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v
≤4% 0.2% v/v

O_2 ≥15% 0.2% v/v
<15% 0.3% v/v

CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 5021
M29 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 5 Date 6-4-99 Client/Source USEPA CANA
Project No. 5587 4951-08 Sampling Location Woodlawn (Unit 4)
Sample Type (Multi-Point, Single-Point) Operator Griffin
Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 5031
Method 5 Meter Box No. N5 (Part HCl) Method 3B Train No. NA
M3B Pump Type Diaphram M3B Flow Meter Type Rotrometer
M3B Pump No. N5 M3B Flow Meter No. 5080 N5
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling 0 After Sampling 0
Total Sampling Time 116 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1552	2.0	✓				
1554	2.0		✓		✓	
1604	2.0				✓	
1614	2.0				✓	
1624	2.0				✓	
1634	2.0				✓	
1644	2.0				✓	
1650	2.0			✓		Port Change
1722	2.0	✓				
1724	2.0		✓		✓	
1734	2.0				✓	
1744	2.0				✓	
1754	2.0				✓	
1804	2.0				✓	
1814	2.0				✓	
1820	2.0			✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 5 Date 06/14/99
Project No. 4951.08/5587 Sample No. 5031
Sampling Location Scrubber Outlet Duct
Analysis Start Time 1950
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.9 2 7.9 3	7.9	1 7.9 2 7.9 3	7.9	1 7.9 2 7.9 3	7.9	7.9
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.6 2 17.6 3	9.7	1 17.6 2 17.6 3	9.7	1 17.6 2 17.6 3	9.7	9.7
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 5031
M26A ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 5 Date 6/14/99 Client/Source EPA/EMC and CANA

Project No. 4951-08 Sampling Location Scrubber Outlet

Sample Type (Multi-Point) Single-Point) Operator A. Carender

Flow Control Device (Valve) Critical Orifice) Bag Type Tedlar Sample No. 5037

Method 5 Meter Box No. N9 Method 3B Train No. N/A

M3B Pump Type Diaphragm M3B Flow Meter Type Rotometer

M3B Pump No. N9 M3B Flow Meter No. N9

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling Pass After Sampling Pass

Total Sampling Time _____ min Average Flow Meter Reading _____

Flow Rate, cc/min: Average _____ Highest _____ Lowest _____

Estimated Total Sample Volume _____ liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1551	200	✓				
1552	200		✓			
1603	200				✓	
1612	200				✓	
1623	200				✓	
1636	200				✓	
1644	200				✓	
1647				✓		
1722	200		✓			
1741	200				✓	
1753	200				✓	
1603	200				✓	
1615	200				✓	
1617				✓		End of Run

PINK

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 5 Date 6-1-99 Client/Source USEPA CANA

Project No. 5587 4951-08 Sampling Location Woodlawn Unit 4

Sample Type (Multi-Point) Single-Point) Operator Griffin

Flow Control Device (Valve) Critical Orifice) Bag Type Tedlar Sample No. 5045

Method 5 Meter Box No. N10 (metals) Method 3B Train No. NA

M3B Pump Type Diaphram M3B Flow Meter Type Rotameter

M3B Pump No. N10 M3B Flow Meter No. 6800 N10

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling 0 After Sampling 0

Total Sampling Time 116 min Average Flow Meter Reading 2.0

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1550	2.0	✓				
1552	2.0		✓		✓	
1602	2.0				✓	
1612	2.0				✓	
1622	2.0				✓	
1632	2.0				✓	
1642	2.0				✓	
1648	2.0			✓		Bit Change
1720	2.0	✓				
1722	2.0		✓		✓	
1732	2.0				✓	
1742	2.0				✓	
1752	2.0				✓	
1802	2.0				✓	
1812	2.0				✓	
1818	2.0			✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 5 Date 06/14/99
Project No. 4951.08/5587 Sample No. 5045
Sampling Location Scrubber Outlet Duct
Analysis Start Time 2020
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.9 2 7.9 3	7.9	1 7.9 2 7.9 3	7.9	1 7.9 2 7.9 3	7.9	7.9
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.6 2 17.6 3	9.7	1 17.6 2 17.6 3	9.7	1 17.6 2 17.6 3	9.7	9.7
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 5045
M29 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

(ERGEN)

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 6 Date 6-15-99 Client/Source USEPA / CANA

Project No. 5587-04-01, 4951-08 Sampling Location SCRUBBER INLET

Sample Type (Multi-Point) Single-Point) Operator D. NERL

Flow Control Device (Valve) Critical Orifice) Bag Type TEDLAR Sample No. 6007

Method 5 Meter Box No. N11 Method 3B Train No. N/A

M3B Pump Type DIAPHRAGM M3B Flow Meter Type ROTOMETER

M3B Pump No. N11 M3B Flow Meter No. N11

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling PASS After Sampling PASS

Total Sampling Time 120 min Average Flow Meter Reading 2.0

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1044	2.0	✓				
1045	2.0		✓			
1055	2.0				✓	
1105	2.0				✓	
1115	2.0				✓	
1125	2.0				✓	
1135	2.0				✓	
1145	2.0			✓		PORT CHANGE OUTLET ONLY
1211	2.0		✓			RESUME AFTER POINT CHANGE
1221	2.0				✓	
1231	2.0				✓	
1241	2.0				✓	
1251	2.0				✓	
1301	2.0				✓	
1311	2.0			✓		END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 6 Date 06/15/99
Project No. 4951.08/5587 Sample No. 6007
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1410
Sample Type (Bag ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 8.1 2 8.1 3	8.1	1 8.1 2 8.1 3	8.1	1 8.1 2 8.1 3	8.1	8.1
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.1 2 17.1 3	9.0	1 17.1 2 17.1 3	9.0	1 17.1 2 17.1 3	9.0	9.0
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v
O_2 ≥15% 0.2% v/v <15% 0.3% v/v
CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 6007
M26A ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 4951-08 Date 6/15/99 Client/Source EPA/EMC and CANA
Project No. 4951-08 Sampling Location Scrubber Inlet. Incin #4
Sample Type (Multi-Point, Single-Point) Operator A. Carender
Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 6013
Method 5 Meter Box No. N13 Method 3B Train No. N/A
M3B Pump Type Diaphragm M3B Flow Meter Type Rotameter
M3B Pump No. N13 M3B Flow Meter No. N13
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling pass After Sampling pass
Total Sampling Time 115 min Average Flow Meter Reading 200
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 23 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1046	200	✓	✓			
1047	200		✓		✓	
1053	200				✓	
1057	200				✓	
1109	200				✓	
1117	200				✓	
1133	200				✓	
1138	200				✓	
1144				✓		Port change
1212	200		✓			
1223	200				✓	
1233	200				✓	
1243	200				✓	
1253	200				✓	
1303	200			✓	✓	
1309				✓		

BLUE

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 6 Date 06/15/99
Project No. 4951.08/5587 Sample No. 6013
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1430
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.9 2 7.9 3	7.9	1 7.9 2 7.9 3	7.9	1 7.9 2 7.9 3	7.9	7.9
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.8 2 16.8 3	8.9	1 16.8 2 16.8 3	8.9	1 16.8 2 16.8 3	8.9	8.9
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v
O_2 ≥15% 0.2% v/v <15% 0.3% v/v
CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 6013
M23 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

(RED)

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 6 Date 6-15-99 Client/Source USEPA / CANA
Project No. 5587-04-01, 4951-08 Sampling Location SCRUBBER INLET
Sample Type (Multi-Point, Single-Point) Operator D. NEAL
Flow Control Device (Valve, Critical Orifice) Bag Type TEDLAR Sample No. 6021
Method 5 Meter Box No. N12 Method 3B Train No. N/A
M3B Pump Type DIAPHRAM M3B Flow Meter Type ROTOMETER
M3B Pump No. N12 M3B Flow Meter No. N12
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling PASS After Sampling PASS
Total Sampling Time 120 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1044	2.0	✓				
1046	2.0		✓			
1056	2.0				✓	
1106	2.0				✓	
1116	2.0				✓	
1126	2.0				✓	
1136	2.0				✓	
1146	2.0			✓		PORT CHANGE OUTLET ONLY
1217	2.0		✓			RESUME AFTER POINT CHANGE
1222	2.0				✓	
1232	2.0				✓	
1242	2.0				✓	
1252	2.0				✓	
1302	2.0				✓	
1312	2.0			✓		END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 6 Date 06/15/99
Project No. 4951.08/5587 Sample No. 6021
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1450
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 8.1 2 8.1 3	8.1	1 8.1 2 8.1 3	8.1	1 8.1 2 8.1 3	8.1	8.1
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.1 2 17.1 3	9.0	1 17.1 2 17.1 3	9.0	1 17.1 2 17.1 3	9.0	9.0
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 6021
M29 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 6 Date 6-15-99 Client/Source USEPA CANA Woodlawn Cemetery
Project No. 5587 4951-08 Sampling Location Scrubber outlet - Unit 4
Sample Type (Multi-Point) Single-Point) Operator Groff
Flow Control Device (Valve) Critical Orifice) Bag Type Tedlar Sample No. 6031
Method 5 Meter Box No. N5 (Part HCl) Method 3B Train No. NA
M3B Pump Type Diaphram M3B Flow Meter Type Rotometer
M3B Pump No. N5 M3B Flow Meter No. 5080 N5
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling 0 After Sampling 0
Total Sampling Time 116 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1047	2.0	✓				
1049	2.0		✓		✓	
1059	2.0				✓	
1109	2.0				✓	
1119	2.0				✓	
1129	2.0				✓	
1139	2.0				✓	
1145	2.0			✓		Port Change
1213	2.0	✓				
1223	2.0		✓		✓	
1233	2.0				✓	
1243	2.0				✓	
1253	2.0				✓	
1303	2.0				✓	
1311	2.0			✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 6 Date 06/15/99
Project No. 4951.08/5587 Sample No. 6031
Sampling Location Scrubber Outlet Duct
Analysis Start Time 1510
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.0 2 7.0 3	7.0	1 7.0 2 7.0 3	7.0	1 7.0 2 7.0 3	7.0	7.0
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.6 2 17.6 3	10.6	1 17.6 2 17.6 3	10.6	1 17.6 2 17.6 3	10.6	10.6
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v
O_2 ≥15% 0.2% v/v <15% 0.3% v/v
CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 6031
M26A ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 4951-08 Date 6/15/99 Client/Source EPA/EMC and CANA
Project No. 4951-08 Sampling Location Incin #4 Scrubber Outlet
Sample Type (Multi-Point) Single-Point) Operator A. Carender
Flow Control Device (Valve) Critical Orifice) Bag Type Tedlar Sample No. 6037
Method 5 Meter Box No. N9 Method 3B Train No. N/A
M3B Pump Type Diaphragm M3B Flow Meter Type Rotameter
M3B Pump No. N9 M3B Flow Meter No. N9
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling pass After Sampling pass
Total Sampling Time 116 min Average Flow Meter Reading 200
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 23 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1046	200	✓	✓		✓	
1047	200		✓		✓	
1053	200				✓	
1057	200				✓	
1109	200				✓	
1117	200				✓	
1133	200				✓	
1138	200				✓	
1144				✓		Port change
1212	200		✓			
1223	200				✓	
1233	200				✓	
1243	200				✓	
1253	200				✓	
1303	200				✓	
1310				✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 6 Date 06/15/99
Project No. 4951.08/5587 Sample No. 6037
Sampling Location Scrubber Outlet Duct
Analysis Start Time 1530
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.0 2 7.0 3	7.0	1 7.0 2 7.0 3	7.0	1 7.0 2 7.0 3	7.0	7.0
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.6 2 17.6 3	10.6	1 17.6 2 17.6 3	10.6	1 17.6 2 17.6 3	10.6	10.6
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 6037
M23 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 6 Date 6-15-99 Client/Source USEPA CANA Woodlawn Cemetery
Project No. 5587 4951-08 Sampling Location Scrubber Outlet Unit 4
Sample Type (Multi-Point, Single-Point) Operator Graft
Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 6045
Method 5 Meter Box No. N10 (Metals) Method 3B Train No. NA
M3B Pump Type Diaphram M3B Flow Meter Type Rotameter
M3B Pump No. N10 M3B Flow Meter No. 6800 N10
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling 0 After Sampling 0
Total Sampling Time 116 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1045	2.0	✓				
1047	2.0		✓		✓	
1057	2.0				✓	
1107	2.0				✓	
1117	2.0				✓	
1127	2.0				✓	
1137	2.0				✓	
1143	2.0			✓		Port Change
1211	2.0	✓				
1213	2.0		✓		✓	
1223	2.0				✓	
1233	2.0				✓	
1243	2.0				✓	
1253	2.0				✓	
1303	2.0				✓	
1309	2.0			✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 6 Date 06/15/99
Project No. 4951.08/5587 Sample No. 6045
Sampling Location Scrubber Outlet Duct
Analysis Start Time 1550
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.0 2 7.0 3	7.0	1 7.0 2 7.0 3	7.0	1 7.0 2 7.0 3	7.0	7.0
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.6 2 17.6 3	10.6	1 17.6 2 17.6 3	10.6	1 17.6 2 17.6 3	10.6	10.6
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v
≤4% 0.2% v/v

O_2 ≥15% 0.2% v/v
<15% 0.3% v/v

CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 6045
M29 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

(GREEN)

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 7 Date 6-15-99 Client/Source USEPA / CANA

Project No. 5587-04-01, 4951-08 Sampling Location SCRUBBER INLET

Sample Type (Multi-Point, Single-Point) Operator D. NEAL

Flow Control Device (Valve, Critical Orifice) Bag Type TEDLAR Sample No. 7007

Method 5 Meter Box No. N11 Method 3B Train No. N/A

M3B Pump Type DIAPHRAM M3B Flow Meter Type ROTOMETER

M3B Pump No. N11 M3B Flow Meter No. N11

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling PASS After Sampling PASS

Total Sampling Time 120 min Average Flow Meter Reading 2.0

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1749	2.0	✓				
1750	2.0		✓			
1800	2.0				✓	
1810	2.0				✓	
1820	2.0				✓	
1830	2.0				✓	
1840	2.0				✓	
1850	2.0			✓		PORT CHANGE OUTLET ONLY
1910	2.0		✓			RESUME AFTER PORT CHANGE
1920	2.0				✓	
1930	2.0				✓	
1940	2.0				✓	
1950	2.0				✓	
2000	2.0				✓	
2010	2.0			✓		END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 7 Date 06/15/99
Project No. 4951.08/5587 Sample No. 7007
Sampling Location Scrubber Inlet Duct
Analysis Start Time 2040
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 9.8 2 9.8 3	9.8	1 9.8 2 9.8 3	9.8	1 9.8 2 9.8 3	9.8	9.8
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.9 2 16.9 3	7.1	1 16.9 2 16.9 3	7.1	1 16.9 2 16.9 3	7.1	7.1
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 7007
M26A ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 7 Date 6/15/99 Client/Source EPA/EMC and CANA

Project No. 4951-08 Sampling Location Incin #4 Inlet ~~and Outlet~~ IC

Sample Type (Multi-Point, Single-Point) Operator A. Cavender

Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 7013

Method 5 Meter Box No. N13 Method 3B Train No. N1A

M3B Pump Type Diaphragm M3B Flow Meter Type Rotameter

M3B Pump No. N13 M3B Flow Meter No. N13

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling pass After Sampling Pass

Total Sampling Time 110 min Average Flow Meter Reading 200

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 22 liters

BLUE

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1752	200	✓				
1753	200		✓			
1811	200				✓	
1823	200				✓	
1835	200				✓	
1844	200				✓	
1848				✓		Post Charge
1913	200		✓			
1922	200				✓	
1934	200				✓	
1944	200				✓	
1952	200				✓	
2007				✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 1 Date 06/15/99
Project No. 4951.08/5587 Sample No. 7013
Sampling Location Scrubber Inlet Duct
Analysis Start Time 0900
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 9.8 2 9.8 3	9.8	1 9.8 2 9.8 3	9.8	1 9.8 2 9.8 3	9.8	9.8
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.9 2 16.9 3	7.1	1 16.9 2 16.9 3	7.1	1 16.9 2 16.9 3	7.1	7.1
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v; ≤4% 0.2% v/v
O_2 ≥15% 0.2% v/v; <15% 0.3% v/v
CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 7013
M23 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

(RED)

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 7 Date 6-15-99 Client/Source USEPA / CANA

Project No. 5587-04-01, 4951-08 Sampling Location SCRUBBER INLET

Sample Type (Multi-Point, Single-Point) Operator D. NEAL

Flow Control Device (Valve, Critical Orifice) Bag Type TEDLAR Sample No. 7021

Method 5 Meter Box No. N17 Method 3B Train No. N/A

M3B Pump Type DIAPHRAM M3B Flow Meter Type ROTOMETER

M3B Pump No. N17 M3B Flow Meter No. N17

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling PASS After Sampling PASS

Total Sampling Time 120 min Average Flow Meter Reading 2.0

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1749	2.0	✓				
1751	2.0		✓			
1801	2.0				✓	
1811	2.0				✓	
1821	2.0				✓	
1831	2.0				✓	
1841	2.0				✓	
1851	2.0			✓		PORT CHANGE OUTLET ONLY
1911	2.0		✓			RESUME AFTER PORT CHANGE
1921	2.0				✓	
1931	2.0				✓	
1941	2.0				✓	
1951	2.0				✓	
2001	2.0				✓	
2011	2.0			✓		END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 7 Date 06/15/99
Project No. 4951.08/5587 Sample No. 7021
Sampling Location Scrubber Inlet Duct
Analysis Start Time 2120
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 9.8 2 9.8 3	9.8	1 9.8 2 9.8 3	9.8	1 9.8 2 9.8 3	9.8	9.8
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.9 2 16.9 3	7.1	1 16.9 2 16.9 3	7.1	1 16.9 2 16.9 3	7.1	7.1
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 7021
M29 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 7 Date 6-15-99 Client/Source USEPA CAAA Woodlawn Cemetery

Project No. 5587 4951-08 Sampling Location Scrubber Outlet - Unit 4

Sample Type (Multi-Point, Single-Point) Operator Gulf

Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 7031

Method 5 Meter Box No. N5 (Bot HCl) Method 3B Train No. NA

M3B Pump Type Diaphram M3B Flow Meter Type Rotometer

M3B Pump No. N5 M3B Flow Meter No. 5080 N5

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling 0 After Sampling 0

Total Sampling Time 116 min Average Flow Meter Reading 2.0

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 23 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1752	2.0	✓				
1754	2.0		✓		✓	
1804	2.0				✓	
1814	2.0				✓	
1824	2.0				✓	
1834	2.0				✓	
1844	2.0				✓	
1850	2.0			✓		Port Change
1912	2.0	✓				
1914	2.0		✓		✓	
1924	2.0				✓	
1934	2.0				✓	
1944	2.0				✓	
1954	2.0				✓	
2004	2.0				✓	
2010	2.0			✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 7 Date 06/15/99
Project No. 4951.08/5587 Sample No. 7031
Sampling Location Scrubber Outlet Duct
Analysis Start Time 2140
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 8.6 2 8.6 3	8.6	1 8.6 2 8.6 3	8.6	1 8.6 2 8.6 3	8.6	8.6
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.0 2 17.0 3	8.4	1 17.0 2 17.0 3	8.4	1 17.0 2 17.0 3	8.4	8.4
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v; ≤4% 0.2% v/v
O_2 ≥15% 0.2% v/v; <15% 0.3% v/v
CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 7031
M26A ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 7 Date 6/15/99 Client/Source EPA/EMC and CANA

Project No. 4951-08 Sampling Location Incin #4 Scrubber Outlet

Sample Type (Multi-Point, Single-Point) Operator A. Corendo

Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 7037

Method 5 Meter Box No. N9 Method 3B Train No. N/A

M3B Pump Type Diaphragm M3B Flow Meter Type Rotameter

M3B Pump No. N9 M3B Flow Meter No. N9

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling pass After Sampling pass

Total Sampling Time 110 min Average Flow Meter Reading 200

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 22 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1752	200	✓				
1753	200		✓			
1811	200				✓	
1823	200				✓	
1835	200				✓	
1844	200				✓	
1848				✓		Pure Gage
1913	200		✓			
1922	200				✓	
1934	200				✓	
1944	200				✓	
1952	200				✓	
2007				✓		

PINK

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 7 Date 06/15/99
Project No. 4951.08/5587 Sample No. 7037
Sampling Location Scrubber Outlet Duct
Analysis Start Time 2200
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 8.6 2 8.6 3	8.6	1 8.6 2 8.6 3	8.6	1 8.6 2 8.6 3	8.6	8.6
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.0 2 17.0 3	8.4	1 17.0 2 17.0 3	8.4	1 17.0 2 17.0 3	8.4	8.4
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 7037
M23 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J. SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 7 Date 6-15-99 Client/Source USEPA CANA Headburn Cemetery
Project No. 5587 4951-08 Sampling Location Scrubber Outlet Unit 4
Sample Type (Multi-Point, Single-Point) Operator Griffin
Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 7045
Method 5 Meter Box No. N10 (metals) Method 3B Train No. NA
M3B Pump Type Diaphram M3B Flow Meter Type Rotameter
M3B Pump No. N10 M3B Flow Meter No. 6800 N10
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling 0 After Sampling 0
Total Sampling Time 112 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 22 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1750	2.0	✓				
1752	2.0		✓		✓	
1802	2.0				✓	
1812	2.0				✓	
1822	2.0				✓	
1832	2.0				✓	
1842	2.0				✓	
1848	2.0			✓		Port Change
1910	2.0	✓				
1912	2.0		✓		✓	
1922	2.0				✓	
1932	2.0				✓	
1942	2.0				✓	
1952	2.0				✓	
2002	2.0				✓	
2008	2.0			✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 7 Date 06/15/99
Project No. 4951.08/5587 Sample No. 7045
Sampling Location Scrubber Outlet Duct
Analysis Start Time 2220
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 8.6 2 8.6 3	8.6	1 8.6 2 8.6 3	8.6	1 8.6 2 8.6 3	8.6	8.6
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.0 2 17.0 3	8.4	1 17.0 2 17.0 3	8.4	1 17.0 2 17.0 3	8.4	8.4
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v
O_2 ≥15% 0.2% v/v <15% 0.3% v/v
CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 7045
M29 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J. SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 8 Date 6-15-99 Client/Source USEPA / CANA

Project No. 5587-04-01, 4951-08 Sampling Location SCRUBBER INLET

Sample Type (Multi-Point, Single-Point) Operator D. NEAL

Flow Control Device (Valve, Critical Orifice) Bag Type TEDLAR Sample No. 8007

Method 5 Meter Box No. N11 Method 3B Train No. N/A

M3B Pump Type DIAPHRAM M3B Flow Meter Type ROTOMETER

M3B Pump No. N11 M3B Flow Meter No. N11

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling PASS After Sampling PASS

Total Sampling Time 150 min Average Flow Meter Reading 2.0

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 30 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1539	2.0	✓				
1540	2.0		✓			
1550	2.0				✓	
1600	2.0				✓	
1610	2.0				✓	
1620	2.0				✓	
1630	2.0				✓	
1640	2.0			✓		POST CHANGE OUTLET ONLY
1648	2.0		✓			AFTER POST CHANGE
1658	2.0				✓	
1708	2.0				✓	
1718	2.0				✓	
1728	2.0				✓	
1738	2.0				✓	
1748	2.0				✓	
1758	2.0				✓	
1808	2.0				✓	
1818	2.0			✓		END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 8 Date 06/16/99
Project No. 4951.08/5587 Sample No. 8007
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1830
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 8.2 2 8.2 3	8.2	1 8.2 2 8.2 3	8.2	1 8.2 2 8.2 3	8.2	8.2
O_2 (Net is actual reading minus actual CO_2 reading)	1 15.8 2 15.8 3	7.6	1 15.8 2 15.8 3	7.6	1 15.8 2 15.8 3	7.6	7.6
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v
≤4% 0.2% v/v

O_2 ≥15% 0.2% v/v
<15% 0.3% v/v

CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 8007
M26A ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 8 Date 6/16/99 Client/Source EPA/EMC and CANA
Project No. 4951-08 Sampling Location Encin #4 Scrubber Inlet
Sample Type (Multi-Point) Single-Point) Operator A - Carender
Flow Control Device (Valve) Critical Orifice) Bag Type Tedlar Sample No. 8013
Method 5 Meter Box No. N13 Method 3B Train No. N/A
M3B Pump Type Diaphragm M3B Flow Meter Type Rotometer
M3B Pump No. N13 M3B Flow Meter No. N13
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling pass After Sampling pass
Total Sampling Time 144 min Average Flow Meter Reading 200
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 29 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1541	200	✓				
1542	200		✓			
1555	200				✓	
1603	200				✓	
1613	200				✓	
1623	200				✓	
1633	200				✓	
1649	200		✓			
1657				✓		
1700	200				✓	
1722	200				✓	
1741	200				✓	
1753	200				✓	
1815	200			X Leak	✓	
1817				✓		

Blue

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 8 Date 06/16/99
Project No. 4951.08/5587 Sample No. 8013
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1850
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 8.2 2 8.2 3	8.2	1 8.2 2 8.2 3	8.2	1 8.2 2 8.2 3	8.2	8.2
O_2 (Net is actual reading minus actual CO_2 reading)	1 15.8 2 15.8 3	7.6	1 15.8 2 15.8 3	7.6	1 15.8 2 15.8 3	7.6	7.6
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v
O_2 ≥15% 0.2% v/v <15% 0.3% v/v
CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 8013
M23 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 8 Date 6-15-99 Client/Source USEPA / CANA

Project No. 5587-04-01, 4951-08 Sampling Location SCRUBBER INLET

Sample Type (Multi-Point, Single-Point) Operator D. NEAL

Flow Control Device (Valve, Critical Orifice) Bag Type TEDLAR Sample No. 8021

Method 5 Meter Box No. N12 Method 3B Train No. N/A

M3B Pump Type DIAPHRAM M3B Flow Meter Type 1.001

M3B Pump No. N12 M3B Flow Meter No. 1.846

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling PASS After Sampling PASS

Total Sampling Time 150 min Average Flow Meter Reading 2.0

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 30 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1539	2.0	✓				
1541	2.0		✓			
1551	2.0				✓	
1601	2.0				✓	
1611	2.0				✓	
1621	2.0				✓	
1631	2.0				✓	
1641	2.0			✓		PORT CHANGE OUTLET ONLY
1649	2.0		✓			AFTER PORT CHANGE
1659	2.0				✓	
1709	2.0				✓	
1719	2.0				✓	
1729	2.0				✓	
1739	2.0				✓	
1749	2.0				✓	
1759	2.0				✓	
1809	2.0				✓	
1819	2.0			✓		END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 8 Date 06/16/99
Project No. 4951.08/5587 Sample No. 8021
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1915
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete NO Change in 4 Minutes
Pipettes NO Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete NO Change in 4 Minutes
Pipettes NO Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 8.2 2 8.2 3	8.2	1 8.2 2 8.2 3	8.2	1 8.2 2 8.2 3	8.2	8.2
O_2 (Net is actual reading minus actual CO_2 reading)	1 15.8 2 15.8 3	7.6	1 15.9 2 15.8 3	7.6	1 15.8 2 15.8 3	7.6	7.6
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v
O_2 ≥15% 0.2% v/v <15% 0.3% v/v
CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 8021
M29 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 8 Date 6/16/99 Client/Source EPA/EMC and CANA
Project No. 4951-08 Sampling Location Incin #4 Scrubber Outlet
Sample Type (Multi-Point) Single-Point) Operator A. Cavender
Flow Control Device (Valve) Critical Orifice) Bag Type Tedlar Sample No. 8037
Method 5 Meter Box No. N9 Method 3B Train No. N/A
M3B Pump Type Diaphragm M3B Flow Meter Type Rotometer
M3B Pump No. N9 M3B Flow Meter No. N9
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling Pass After Sampling Pass
Total Sampling Time 143 min Average Flow Meter Reading 200
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 29 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1541	200	✓				
1542	200		✓			
1555	200				✓	
1603	200				✓	
1613	200				✓	
1623	200				✓	
1633	200				✓	
1649	200		✓			
1657				✓		
1700	200				✓	
1722	200				✓	
1741	200				✓	
1753	200				✓	
1815	200				✓	
1817				✓		

Pink

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 8 Date 06/16/99
Project No. 4951.08/5587 Sample No. 8037
Sampling Location Scrubber Outlet Duct
Analysis Start Time 1935
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.3 2 7.3 3	7.3	1 7.3 2 7.3 3	7.3	1 7.3 2 7.3 3	7.3	7.3
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.2 2 16.2 3	8.9	1 16.2 2 16.2 3	8.9	1 16.2 2 16.2 3	8.9	8.9
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 8037
M23 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 8 Date 6-16-99 Client/Source USEPA CAA Woodlawn Landfill

Project No. 5581 4951-08 Sampling Location Scrubber Unit 4 Outlet

Sample Type (Multi-Point) Single-Point) Operator G.H.

Flow Control Device (Valve) Critical Orifice) Bag Type Tedlar Sample No. 5045

Method 5 Meter Box No. N-10 Method 3B Train No. #4

M3B Pump Type Diaphram M3B Flow Meter Type Rotometer

M3B Pump No. N10 M3B Flow Meter No. G800 N10

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling 0 After Sampling 0

Total Sampling Time 134 min Average Flow Meter Reading 2.0

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 27 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1540	2.0	✓				
1542	2.0		✓		✓	
1552	2.0				✓	
1602	2.0				✓	
1612	2.0				✓	
1622	2.0				✓	
1632	2.0				✓	
1638	2.0			✓		Post Change
1648	2.0	✓				
1658	2.0		✓		✓	
1708	2.0				✓	
1718	2.0				✓	
1728	2.0				✓	
1738	2.0				✓	
1748	2.0				✓	
1758	2.0				✓	
1808	2.0				✓	
1816	2.0			✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 8 Date 06/16/99
Project No. 4951.08/5587 Sample No. 8045
Sampling Location Scrubber Outlet Duct
Analysis Start Time 2000
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.4 2 7.4 3	7.4	1 7.4 2 7.4 3	7.4	1 7.4 2 7.4 3	7.4	7.4
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.3 2 16.3 3	8.9	1 16.3 2 16.3 3	8.9	1 16.3 2 16.3 3	8.9	8.9
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v; ≤4% 0.2% v/v
O_2 ≥15% 0.2% v/v; <15% 0.3% v/v
CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 8045
M29 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 9 Date 6-17-99 Client/Source USEPA/CANA
Project No. 5587-04-01, 4951-08 Sampling Location SCRUBBER INLET
Sample Type (Multi-Point) Single-Point) Operator D. NEOL
Flow Control Device (Valve) Critical Orifice) Bag Type TEDLAR Sample No. 9007
Method 5 Meter Box No. N11 Method 3B Train No. N/A
M3B Pump Type DIAPHRAM M3B Flow Meter Type ROTAMETER
M3B Pump No. N11 M3B Flow Meter No. N11
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling PASS After Sampling PASS
Total Sampling Time 120 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1004	2.0	✓				
1005	2.0		✓			
1015	2.0				✓	
1025	2.0				✓	
1035	2.0				✓	
1045	2.0				✓	
1055	2.0				✓	
1105	2.0			✓		FILT CHANGE OUTLET ONLY
1118	2.0		✓			RESUME AFTER PORT CHANGES
1128	2.0				✓	
1138	2.0				✓	
1148	2.0				✓	
1158	2.0				✓	
1208	2.0				✓	
1218	2.0			✓		END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 9 Date 06/17/99
Project No. 4951.08/5587 Sample No. 9007
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1250
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 8.2 2 8.2 3	8.2	1 8.2 2 8.2 3	8.2	1 ~~8.2~~ 2 ~~8.2~~ 3	8.2	8.2
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.0 2 16.0 3	7.8	1 16.0 2 16.0 3	7.8	1 16.0 2 16.0 3	7.8	7.8
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 9007
M26A ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J. SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 9 Date 6/17/99 Client/Source EPA/EMC and CANA

Project No. 4951-08 Sampling Location Incin #4 Scrubber Inlet

Sample Type (Multi-Point, Single-Point) Operator A. Carender

Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 9013

Method 5 Meter Box No. N13 Method 3B Train No. N/A

M3B Pump Type Diaphragm M3B Flow Meter Type Rotameter

M3B Pump No. N13 M3B Flow Meter No. N13

Desired Sampling Rate 200 cc/min

Leak Check Before Sampling Pass After Sampling Pass

Total Sampling Time 116 min Average Flow Meter Reading 200

Flow Rate, cc/min: Average 200 Highest 200 Lowest 200

Estimated Total Sample Volume 23 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1005	200	✓				
1006	200		✓			
1013	200				✓	
1025	200				✓	
1036	200				✓	
1046	200				✓	
1056	200				✓	
~~1057~~ 1104				✓		Part change
1118	200		✓			
1121	200				✓	
1131	200				✓	
1141	200				✓	
1152	200				✓	
1201	200				✓	
1211	200				✓	
1216				✓		

Blue

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 9 Date 06/17/99
Project No. 4951.08/5587 Sample No. 9013
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1315
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 8.2 2 8.2 3	8.2	1 8.2 2 8.2 3	8.2	1 8.2 2 8.2 3	8.2	8.2
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.0 2 16.0 3	7.8	1 16.0 2 16.0 3	7.8	1 16.0 2 16.0 3	7.8	7.8
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v
O_2 ≥15% 0.2% v/v <15% 0.3% v/v
CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 9013
M23 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 9 Date 6-17-99 Client/Source USEPA/CANA
Project No. 5587-04-01, 4951-08 Sampling Location SCRUBBER INLET
Sample Type (Multi-Point, Single-Point) Operator D. NEAL
Flow Control Device (Valve, Critical Orifice) Bag Type TEDLAR Sample No. ~~9007~~ 9021 DN 6-17-99 EE.
Method 5 Meter Box No. N12 Method 3B Train No. N/A
M3B Pump Type DIAPHRAM M3B Flow Meter Type ROTOMETER
M3B Pump No. N12 M3B Flow Meter No. N12
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling PASS After Sampling PASS
Total Sampling Time 120 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1004	2.0	✓				
1006	2.0		✓			
1016	2.0				✓	
1026	2.0				✓	
1036	2.0				✓	
1046	2.0				✓	
1056	2.0				✓	
1106	2.0			✓		PORT CHANGE OUTLET ONLY
1119	2.0		✓			RESUME AFTER PORT CHANGE
1129	2.0				✓	
1139	2.0				✓	
1149	2.0				✓	
1159	2.0				✓	
1209	2.0				✓	
1219	2.0			✓		END OF RUN

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 9 Date 06/12/99
Project No. 4951.08/5587 Sample No. 9021
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1335
Sample Type.(Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 8.2 2 8.2 3	8.2	1 8.2 2 8.2 3	8.2	1 8.2 2 8.2 3	8.2	8.2
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.0 2 16.0 3	7.8	1 16.0 2 16.0 3	7.8	1 16.0 2 16.0 3	7.8	7.8
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v
O_2 ≥15% 0.2% v/v <15% 0.3% v/v
CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 9021
M29 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 9 Date 6/17/99 Client/Source EPA/EMC and CANA
Project No. 4951-08 Sampling Location Incin. #4 Scrubber Outlet
Sample Type (Multi-Point) Single-Point) Operator A. Carender
Flow Control Device (Valve) Critical Orifice) Bag Type Tedlar Sample No. 9037
Method 5 Meter Box No. N9 Method 3B Train No. N1A
M3B Pump Type Diaphragm M3B Flow Meter Type Rotameter
M3B Pump No. N9 M3B Flow Meter No. N9
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling pass After Sampling pass
Total Sampling Time 112 min Average Flow Meter Reading 200
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 22 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1006	200	✓				
1007	200		✓			
1018	200				✓	
1028	200				✓	
1036	200				✓	
1046	200				✓	
1056	200				✓	
1104	~~1057~~ ✓			✓		Port change
1121	200		✓			
1131	200				✓	
1141	200				✓	
1152	200				✓	
1201	200				✓	
1211	200				✓	
1216				✓		End of Run

Pink

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 9 Date 06/17/99
Project No. 4951.08/5587 Sample No. 9037
Sampling Location Scrubber Outlet Duct
Analysis Start Time 1355
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.3 2 7.3 3	7.3	1 7.3 2 7.3 3	7.3	1 7.3 2 7.3 3	7.3	7.3
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.5 2 16.5 3	9.2	1 16.5 2 16.5 3	9.2	1 16.5 2 16.5 3	9.2	9.2
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 9037
M23 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 9 Date 6-17-99 Client/Source USEPA CANA Woodlawn Cemetery
Project No. 5587 4951-08 Sampling Location Scrubber Outlet-Unit 4
Sample Type (~~Multi-Point~~, Single-Point) Operator Griffin
Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 9045
Method 5 Meter Box No. N10 Method 3B Train No. NA
M3B Pump Type Diaphram M3B Flow Meter Type Rotometer
M3B Pump No. N10 M3B Flow Meter No. 6800 N10
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling 0 After Sampling 0
Total Sampling Time 116 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1005	2.0	✓				
1007	2.0		✓		✓	
1017	2.0				✓	
1027	2.0				✓	
1037	2.0				✓	
1047	2.0				✓	
1057	2.0				✓	
1103	2.0			✓		Bot Change
1118	2.0	✓				
1128	2.0		✓		✓	
1138	2.0				✓	
1148	2.0				✓	
1158	2.0				✓	
1208	2.0				✓	
1216	2.0			✓		

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 9 Date 06/17/99
Project No. 4951.08/5587 Sample No. 9045
Sampling Location Scrubber Outlet Duct
Analysis Start Time 1420
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 7.3 2 7.3 3	7.3	1 7.3 2 7.3 3	7.3	1 7.3 2 7.3 3	7.3	7.3
O_2 (Net is actual reading minus actual CO_2 reading)	1 16.5 2 16.5 3	9.2	1 16.5 2 16.5 3	9.2	1 16.5 2 16.5 3	9.2	9.2
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0.2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 9045
M29 ORSAT BAG
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 10 Date 6/17/99 Client/Source EPA/EMC
Project No. 4951-08 Sampling Location Incin #4 Scrubber Inlet
Sample Type (Multi-Point, Single-Point) Operator A. Carenbar
Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 10013
Method 5 Meter Box No. N13 Method 3B Train No. N/A
M3B Pump Type Diaphragm M3B Flow Meter Type Rotometer
M3B Pump No. N13 M3B Flow Meter No. N 9
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling pass After Sampling pass
Total Sampling Time 115 min Average Flow Meter Reading 200
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 23 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1602	200	✓				
1603	200		✓			
1613	200				✓	
1623	200				✓	
1633	200				✓	
1643	200				✓	
1653	200				✓	
1706				✓		Port change
1719	200				✓	
1728	200				✓	
1738	200				✓	
1748	200				✓	
1758	200				✓	
1804				✓		

Blue

40 *CFR* 60, APPENDIX A, METHOD 3B, GAS ANALYSIS BY ORSAT

Run No. 10 Date 06/17/99
Project No. 4951.08/5587 Sample No. 10013
Sampling Location Scrubber Inlet Duct
Analysis Start Time 1845
Sample Type (Bag, ~~Grab~~) Bag
Analyst J. Surman

Orsat Leak Check Before Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes
Orsat Leak Check After Analysis:
Burrete No Change in 4 Minutes
Pipettes No Change in 4 Minutes

Analysis	1		2		3		Average Net Value (% v/v)
Gas	Actual Reading	Net Value	Actual Reading	Net Value	Actual Reading	Net Value	
CO_2	1 6.9 2 6.9 3	6.9	1 6.9 2 6.9 3	6.9	1 6.9 2 6.9 3	6.9	6.9
O_2 (Net is actual reading minus actual CO_2 reading)	1 17.4 2 17.4 3	10.5	1 17.4 2 17.4 3	10.5	1 17.4 2 17.4 3	10.5	10.5
CO (Net is actual reading minus actual O_2 reading)	1 2 3		1 2 3		1 2 3		

Acceptance Criteria per Method 3B

CO_2 >4% 0.3% v/v ≤4% 0.2% v/v O_2 ≥15% 0:2% v/v <15% 0.3% v/v CO 0.3% v/v

Remarks and Notes:

4951.08 & 5587 10013
M23 ORSAT BAG
SCRUBBER INLET SAMPLE
For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

40 *CFR* 60, APPENDIX A, METHOD 3B
INTEGRATED GAS SAMPLING DATA

Run No. 10 Date 6-17-99 Client/Source USEPA CAMA Woodlawn Cemetery
Project No. 5581 4951-08 Sampling Location Scrubber outlet Unit-4
Sample Type (Multi-Point, Single-Point) Operator GP
Flow Control Device (Valve, Critical Orifice) Bag Type Tedlar Sample No. 10037
Method 5 Meter Box No. N9 Method 3B Train No. NA
M3B Pump Type Diaphram M3B Flow Meter Type Rotameter
M3B Pump No. N-9 M3B Flow Meter No. S-42 D
Desired Sampling Rate 200 cc/min
Leak Check Before Sampling 0 After Sampling 0
Total Sampling Time 116 min Average Flow Meter Reading 2.0
Flow Rate, cc/min: Average 200 Highest 200 Lowest 200
Estimated Total Sample Volume 24 liters

Time (24-Hr)	Flow Meter Reading	Start Purge	Start Sampling	Stop Sampling	Sampling	Remarks and Notes
1602	2.0	✓				
1604	2.0		✓		✓	
1614	2.0				✓	
1624	2.0				✓	
1634	2.0				✓	
1644	2.0				✓	
1654	2.0					
1700	2.0			✓		Art Thorsen
1706	2.0	✓				
1708	2.0		✓		✓	
1718	2.0					
1728	2.0					
1738	2.0					
1748	2.0					
1758	2.0					
1804	2.0			✓		

Section 5

Sample Traceability

JUN 2 8 1999

C-5863-20

SAMPLE CONDITION AT RECEIVING LABORATORY

MRI Project No. 5587.04.01

Sample Type: Sample components recovered from M26A sampling trains and field reagent blank samples.

Target Analytes: Chloride by 40 *CFR* 60, Appendix A, Method 26A.
See analysis request memo from J. Surman.

Field Sample Condition Information Documented By J. McC Date: 6-16-99

Sample No.	Field Weight, grams, or Condition	Lab Weight, grams, or Condition	Comments	Received and Checked By	Date
1004	207.7	207.647	intact	JC	6-28-99
1028	200.4	200.427			
1052	171.2	171.174			
1071	intact				
1072	intact				
~~1073~~	No sample				
2004	189.8	189.859			
2028	193.2	192.987			
3004	204.2	204.060			
3028	193.1	193.104g			
4004	—				
4028	193.8	193.773			
5004	179.8	180.050			
5028	171.4	171.480			
6004	217.4	217.434			
6028	187.1	187.191			
7004	195.9	195.986g			
7028	225.9	225.935			
8004	~~201.2~~ 202.3	202.362	2nd 202.363		
8028	—				
9004	186.4	186.519			
9028	—				

The purpose of this form is to document the condition and to verify the integrity of samples received by the analytical laboratory. The Field Laboratory Leader completes the first two columns with sample numbers and final gross field sample weights of liquid samples or the condition of other samples as applicable. The analytical laboratory sample custodian, the analytical coordinator, the analyst, or a designee observes all samples received, reweighs liquid samples that do not have contents level marks or that are suspect, notes the condition of other samples, and documents all observations on this form.

SAMPLE CONDITION AT RECEIVING LABORATORY

MRI Project No. 5587.04.01

Sample Type: Sample components recovered from M26A sampling trains and field reagent blank samples.

Target Analytes: Front half particulate matter by 40 *CFR* 60, Appendix A, Method 5. See analysis request memo from J. Surman.

Field Sample Condition Information Documented By J. McC Date: 6-16-99

Sample No.	Field Weight, grams, or Condition	Lab Weight, grams, or Condition	Comments	Received and Checked By	Date
1001	362.2	362.2			
1002	✓	intact			
1025	259.5	259.4			
1026	✓	intact			
1049	317.8	317.7			
1050	✓	intact			
1051	363.9	363.9			
2001	501.7	501.6			
2002	✓	intact			
2025	536.0	535.4			
2026	✓	intact			
3001	515.0	514.9			
3002	✓	intact			
3025	433.7	433.6			
3026	✓	intact			
4001	sample not taken				
4002	sample not taken				
4025	438.8	438.5			
4026	✓	intact			
5001	~~173.4~~ 341.7	341.7			
5002	✓	intact			
5025	324.7	324.7			
5026	✓	intact			
6001	291.5	291.4			
6002	✓	intact			
6025	322.1	322.1			
6026	✓	intact			
				J Surman	06/21/99

The purpose of this form is to document the condition and to verify the integrity of samples received by the analytical laboratory. The Field Laboratory Leader completes the first two columns with sample numbers and final gross field sample weights of liquid samples or the condition of other samples as applicable. The analytical laboratory sample custodian, the analytical coordinator, the analyst, or a designee observes all samples received, reweighs liquid samples that do not have contents level marks or that are suspect, notes the condition of other samples, and documents all observations on this form.

SAMPLE CONDITION AT RECEIVING LABORATORY

MRI Project No. 5587.04.01
Sample Type: Sample components recovered from M26A sampling trains and field reagent blank samples.
Target Analytes: Front half particulate matter by 40 *CFR* 60, Appendix A, Method 5. See analysis request memo from J. Surman.

Field Sample Condition Information Documented By [signature] Date: 6-16-99

Sample No.	Field Weight, grams, or Condition	Lab Weight, grams, or Condition	Comments	Received and Checked By	Date
7001	460.8	460.5			
7002	✓	intact			
7025	546.4	546.3			
7026	✓	intact			
8001	483.1	482.9			
8002	✓	intact			
8025	sample not taken				
8026	sample not taken				
9001	470.7	440.5			
9002	✓	intact			
9025	sample not taken				
9026	sample not taken				
				[signature]	06/21/99

The purpose of this form is to document the condition and to verify the integrity of samples received by the analytical laboratory. The Field Laboratory Leader completes the first two columns with sample numbers and final gross field sample weights of liquid samples or the condition of other samples as applicable. The analytical laboratory sample custodian, the analytical coordinator, the analyst, or a designee observes all samples received, reweighs liquid samples that do not have contents level marks or that are suspect, notes the condition of other samples, and documents all observations on this form.

SAMPLE CONDITION AT RECEIVING LABORATORY

MRI Project No. 4951.08.04.02

Sample Type: Sample components recovered from M23 sampling trains and field reagent blank samples.

Target Analytes: PCDDs/PCDFs by SW-846, Method 8290.
See analysis request memo from J. Surman

Field Sample Condition Information Documented By Pam Murowchick Date: 6/16/99

Sample No.	Field Weight, grams, or Condition	Lab Weight, grams, or Condition	Comments	Received and Checked By	Date
3008	954.3	953.7			
3009	intact	intact			
3010	912.9	912.7			
3011	intact	intact			
3012	818.4	818.4			
3032	808.2	808.2			
3033	intact	intact			
3034	931.1	930.7			
3035	intact	intact			
3036	753.7	753.5			
4008	839.6	839.7			
4009	intact	intact			
4010	8253	825.4			
4011	intact	intact			
4012	781.4	781.4			
4032	890.2	890.0			
4033	intact	intact			
4034	938.1	937.2	contains toluen		
4035	intact	intact			
4036	641.0	640.8			
5008	~~447.8~~ 1027.4	1027.4			
5009	intact	intact			
5010	~~499.6~~ 899.5	899.8			
5011	intact	intact			
5012	~~500.9~~ 792.6	792.6			
5032	~~496.1~~ PSM		not collected		
5033	~~intact~~ PSM		not collected		
5034	~~500.7~~ PSM		not collected		
5035	intact	intact	XAD from unrecovered train		
5036	~~501.1~~ PSM		not collected		
				[signature]	06/21/99

The purpose of this form is to document the condition and to verify the integrity of samples received by the analytical laboratory. The Field Laboratory Leader completes the first two columns with sample numbers and final gross field sample weights of liquid samples or the condition of other samples as applicable. The analytical laboratory sample custodian, the analytical coordinator, the analyst, or a designee observes all samples received, reweighs liquid samples that do not have contents level marks or that are suspect, notes the condition of other samples, and documents all observations on this form.

SAMPLE CONDITION AT RECEIVING LABORATORY

MRI Project No. 4951.08.04.02

Sample Type: Sample components recovered from M23 sampling trains and field reagent blank samples.

Target Analytes: PCDDs/PCDFs by SW-846, Method 8290.
See analysis request memo from J. Surman

Field Sample Condition Information Documented By Pam Murowchick Date: 6/16/99

Sample No.	Field Weight, grams, or Condition	Lab Weight, grams, or Condition	Comments	Received and Checked By	Date
6008	936.0	936.0			
6009	intact	intact			
6010	1227.2	1227.5			
6011	intact	intact			
6012	842.9	842.9			
6032	920.0	920.0			
6033	intact	intact			
6034	937.7	937.6			
6035	intact	intact			
6036	797.8	797.7			
10008	782.4	783.2			
10009	intact	intact			
10010	812.0	812.9			
10011	intact	intact			
10012	738.5	738.5			
				C. Surman	06/21/99

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SAMPLE CONDITION AT RECEIVING LABORATORY

MRI Project No. 4951.08.04.02

Sample Type: Sample components recovered from M23 sampling trains and field reagent blank samples.

Target Analytes: PCDDs/PCDFs by SW-846, Method 8290.
See analysis request memo from J. Surman

Field Sample Condition Information Documented By Pam Murowchick Date: 6/16/99

Sample No.	Field Weight, grams, or Condition	Lab Weight, grams, or Condition	Comments	Received and Checked By	Date
1008	990.6	990.4			
1009	intact	intact			
1010	832.5	832.3			
1011	intact	intact			
1012	835.5	835.3			
1032	754.2	753.3			
1033	intact	intact			
1034	879.8	878.4			
1035	intact	intact			
1036	731.4	730.8			
1054	1198.4	1198.5			
1055	1225.5	1225.7			
1056	1087.2	1091.1			
1057	intact	intact			
1058	intact	intact			
1059	1176.4	1176.7			
2008	962.8	962.9			
2009	intact	intact			
2010	901.7	901.8			
2011	intact	intact			
2012	766.3	766.3			
2032	920.7	920.9			
2033	intact	intact			
2034	978.5	978.6			
2035	intact	intact			
2036	805.9	805.8			
1022		609.4	inlet transfer and nozzle rinse (Acetone + $MeCl_2$)		
1023		342.6	inlet transfer an nozzle rinse (toluene)		
				JJ Surman	06/21/99

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SAMPLE CONDITION AT RECEIVING LABORATORY

MRI Project No. 5587.04.02

Sample Type: Sample components recovered from M23 sampling trains and field reagent blank samples.

Target Analytes: PCDDs/PCDFs by SW-846, Method 8290.
See analysis request memo from J. Surman

Field Sample Condition Information Documented By Pam Murowchick Date: 6/16/99

Sample No.	Field Weight, grams, or Condition	Lab Weight, grams, or Condition	Comments	Received and Checked By	Date
7008	958.3	958.4			
7009	intact	intact			
7010	982.1	981.9			
7011	intact	intact			
7012	776.1	776.2			
7032	858.6	858.6			
7033	intact	intact			
7034	980.7	980.5			
7035	intact	intact			
7036	768.9	769.0			
8008	930.4	930.5			
8009	intact	intact			
8010	894.3	893.7			
8011	intact	intact			
8012	865.9	866.0			
8032	858.3	858.4			
8033	intact	intact			
8034	887.8	887.3			
8035	intact	intact			
8036	PSR 759.6	759.7			
9008	~~PSR 997.0~~ 997.4	995.6			
9009	intact	intact			
9010	854.9	854.9			
9011	intact	intact			
9012	752.9	753.1			
9032	848.7	848.8			
9033	intact	intact			
9034	916.9	917.0			
9035	intact	intact			
9036	759.4	757.4			
				[signature]	06/21/99

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SAMPLE CONDITION AT RECEIVING LABORATORY

MRI Project No. 5587.04.03

Sample Type: Sample components recovered from M29 sampling trains and field reagent blank samples.

Target Analytes: Multiple metals (Cd, Hg, and Pb) by 40 *CFR* 60, Appendix A, Method 29.
See analysis request memo from J. Surman

Field Sample Condition Information Documented By J Mc C Date: 6-16-99

Sample No.	Field Weight, grams, or Condition	Lab Weight, grams, or Condition	Comments	Received and Checked By	Date
1014	— not taken	—			
1015	260.3	260.3			
1016	✓	intact			
1017	944.0	943.9			
1018	263.6	263.7			
1019	687.3	685.1			
1020	389.2	389.1			
1038	— not taken				
1039	256.4	256.2			
1040	✓	intact			
1041	925.5	925.2			
1042	263.8	263.7			
1043	682.2	681.1			
1044	392.5	392.4			
1060	320.9	320.9			
1061	1117.6	1117.7			
1062	✓	intact			
1063	377.4	377.5			
1064	278.5	278.6			
1065	266.8	266.9			
1066	392.9	393.0			
2014	— not taken				
2015	259.8	259.8			
2016	✓	intact			
2017	995.3	994.8			
2018	266.1	266.1			
2019	682.0	680.4			
2020	389.9	389.8			
				[signature]	6-21-99

The purpose of this form is to document the condition and to verify the integrity of samples received by the analytical laboratory. The Field Laboratory Leader completes the first two columns with sample numbers and final gross field sample weights of liquid samples or the condition of other samples as applicable. The analytical laboratory sample custodian, the analytical coordinator, the analyst, or a designee observes all samples received, reweighs liquid samples that do not have contents level marks or that are suspect, notes the condition of other samples, and documents all observations on this form.

SAMPLE CONDITION AT RECEIVING LABORATORY

MRI Project No. 5587.04.03

Sample Type: Sample components recovered from M29 sampling trains and field reagent blank samples.

Target Analytes: Multiple metals (Cd, Hg, and Pb) by 40 *CFR* 60, Appendix A, Method 29.
See analysis request memo from J. Surman

Field Sample Condition Information Documented By J. M. C Date: 6-16-99

Sample No.	Field Weight, grams, or Condition	Lab Weight, grams, or Condition	Comments	Received and Checked By	Date
2038	not taken				
2039	259.2	259.2			
2040	✓	intact			
2041	1013.8	1013.3			
2042	266.0	266.0			
2043	676.5	676.4			
2044	393.3	393.2			
3014	not taken				
3015	250.1	249.8			
3016	✓	intact			
3017	984.3	983.8			
3018	270.3	270.1			
3019	687.1	686.6			
3020	394.4	394.3			
3038	not taken				
3039	246.1	245.8			
3040	✓	intact			
3041	1025.4	1024.4			
3042	269.1	268.9			
3043	681.2	680.6			
3044	392.8	392.9			
4014	280.1	280.5			
4015	256.0	258.0			
4016	✓	intact			
4017	1070.1	1069.9			
4018	261.0	261.1			
4019	689.5	690.2			
4020	386.3	388.1			

6-21-99

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SAMPLE CONDITION AT RECEIVING LABORATORY

MRI Project No. 5587.04.03

Sample Type: Sample components recovered from M29 sampling trains and field reagent blank samples.

Target Analytes: Multiple metals (Cd, Hg, and Pb) by 40 *CFR* 60, Appendix A, Method 29.
See analysis request memo from J. Surman

Field Sample Condition Information Documented By J. McC Date: 6-16-99

Sample No.	Field Weight, grams, or Condition	Lab Weight, grams, or Condition	Comments	Received and Checked By	Date
4038	— not taken				
4039	267.0	269.1			
4040	✓	intact			
4041	1075.6	1074.1			
4042	267.5	267.4			
4043	679.9 ~~680 267.5~~	679.2			
4044	~~344.4~~ 394.1	394.1			
5014	— not taken				
5015	260.7	260.6			
5016	✓	intact			
5017	1023.3	1021.9			
5018	269.0	268.7			
5019	710.6	709.6			
5020	391.1	390.9			
5038	— not taken				
5039	260.7	260.5			
5040	✓	intact			
5041	1031.2	1030.4			
5042	264.8	265.0			
5043	690.3	689.8			
5044	394.8	394.8			
6014	— not taken				
6015	271.9	271.7			
6016	✓	intact			
6017	1002.6	1002.2			
6018	265.8	265.7			
6019	685.1	684.8			
6020	387.0	386.7			

6-21-99

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SAMPLE CONDITION AT RECEIVING LABORATORY

MRI Project No. 5587.04.03

Sample Type: Sample components recovered from M29 sampling trains and field reagent blank samples.

Target Analytes: Multiple metals (Cd, Hg, and Pb) by 40 *CFR* 60, Appendix A, Method 29.
See analysis request memo from J. Surman

Field Sample Condition Information Documented By J. M. C Date: 6-16-99

Sample No.	Field Weight, grams, or Condition	Lab Weight, grams, or Condition	Comments	Received and Checked By	Date
6038	— not taken				
6039	243.1	242.9			
6040	✓	Intact			
6041	1012.6	1012.3			
6042	265.6	265.3			
6043	680.5	680.0			
6044	391.9	391.7			
7014	— not taken				
7015	246.6	246.5			
7016	✓	intact			
7017	998.2	997.9			
7018	270.2	270.1			
7019	686.0	684.8			
7020	392.4	392.3			
7038	— not taken				
7039	274.7	274.8			
7040	✓	intact			
7041	1005.3	1005.2			
7042	271.6	271.5			
7043	678.0	677.4			
7044	394.0	394.2			
8014	— not taken				
8015	260.1	259.9			
8016	✓	Intact			
8017	1082.1	1081.7			
8018	268.0	267.8			
8019	682.8	682.4			
8020	391.7	391.6			
				[signature]	6-21-99

The purpose of this form is to document the condition and to verify the integrity of samples received by the analytical laboratory. The Field Laboratory Leader completes the first two columns with sample numbers and final gross field sample weights of liquid samples or the condition of other samples as applicable. The analytical laboratory sample custodian, the analytical coordinator, the analyst, or a designee observes all samples received, reweighs liquid samples that do not have contents level marks or that are suspect, notes the condition of other samples, and documents all observations on this form.

SAMPLE CONDITION AT RECEIVING LABORATORY

MRI Project No. 5587.04.03

Sample Type: Sample components recovered from M29 sampling trains and field reagent blank samples.

Target Analytes: Multiple metals (Cd, Hg, and Pb) by 40 *CFR* 60, Appendix A, Method 29.
See analysis request memo from J. Surman

Field Sample Condition Information Documented By J. M. C Date: 6-16-99

Sample No.	Field Weight, grams, or Condition	Lab Weight, grams, or Condition	Comments	Received and Checked By	Date
8038	431.6	431.3			
8039	262.5	262.3			
8040	✓	intact			
8041	1173.4	1173.1			
8042	268.1	268.7			
8043	685.3	684.9			
8044	391.2	391.2			
9014	not taken				
9015	262.1	262.2			
9016	✓	intact			
9017	1033.0	1032.8			
9018	273.3	273.3			
9019	678.8	678.3			
9020	390.9	390.7			
9038	336.3	336.1			
9039	265.1	265.0			
9040	✓	intact			
9041	1052.4	1052.0			
9042	264.4	264.3			
9043	675.6	675.0			
9044	393.7	393.7			
				[signature]	6-21-99

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☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____

Field Sample Custodian: J. McC

Storage Requirements:
- ☐ Ice water, ≤ 4°C
- ☐ Dry ice
- ☒ Room Temp., ≤ 26°C
- ☐ Other: _____

	Transfer No.	1	2	3			
	Checked by (Initials)/Date	DA 6-21-99	6-21-99	6-25-99			
	Lock or Seal Intact (Yes or No)/Time						
4951.08 & 5587 1028 M26A ALIQUOT OF XX027 (HCl) SCRUBBER OUTLET SAMPLE		✓	✓	✓			
	Remarks:						
4951.08 & 5587 2028 M26A ALIQUOT OF XX027 (HCl) SCRUBBER OUTLET SAMPLE		✓	✓	✓			
	Remarks:						
4951.08 & 5587 3028 M26A ALIQUOT OF XX027 (HCl) SCRUBBER OUTLET SAMPLE		✓	✓	✓			
	Remarks:						
4951.08 & 5587 4028 M26A ALIQUOT OF XX027 (HCl) SCRUBBER OUTLET SAMPLE		✓	✓	✓			
	Remarks:						
4951.08 & 5587 5028 M26A ALIQUOT OF XX027 (HCl) SCRUBBER OUTLET SAMPLE		✓	✓	✓			
	Remarks:						
4951.08 & 5587 6028 M26A ALIQUOT OF XX027 (HCl) SCRUBBER OUTLET SAMPLE		✓	✓	✓			
	Remarks:						
4951.08 & 5587 7028 M26A ALIQUOT OF XX027 (HCl) SCRUBBER OUTLET SAMPLE		✓	✓	✓			
	Remarks:						
4951.08 & 5587 8028 M26A ALIQUOT OF XX027 (HCl) SCRUBBER OUTLET SAMPLE							
	Remarks: Sample 8028 not taken						
4951.08 & 5587 9028 M26A ALIQUOT OF XX027 (HCl) SCRUBBER OUTLET SAMPLE							
	Remarks: Sample 9028 not taken						
4951.08 & 5587 1071 0.1N H2SO4 FOR CHLORIDE PERFORMANCE SAMPLE		✓	✓	✓			
	Remarks:						
4951.08 & 5587 1072 0.1N H2SO4 FOR CHLORIDE PERFORMANCE SAMPLE		✓	✓	✓			
	Remarks:						

For disposal call: J. SURMAN
MIDWEST RESEARCH INSTITUTE

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. McC	D. Griffin	6-18-99	10 00	1	Shipping
D. Griffin	J. Surman	06/21/99	1100	2	Custody Till Shipment
J. Surman	Fed Ex	06/25/99	1500	3	To Fed Ex
Fed Ex				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page _____ of _____

Field Sample Custodian: J. McCan

Storage Requirements:
- ☐ Ice water, ≤ 4°C
- ☐ Dry ice
- ☒ Room Temp., ≤ 26°C
- ☐ Other: _____

	Transfer No.	1	2	3			
	Checked by (Initials)/Date	DM 6-21-99	DM 6-21-99	DM 6-25-99			
	Lock or Seal Intact (Yes or No)/Time						
4951.08 & 5587 1004 M26A ALIQUOT OF XX003 (HCl) SCRUBBER INLET SAMPLE		✓	✓	✓			
	Remarks:						
4951.08 & 5587 2004 M26A ALIQUOT OF XX003 (HCl) SCRUBBER INLET SAMPLE		✓	✓	✓			
	Remarks:						
4951.08 & 5587 3004 M26A ALIQUOT OF XX003 (HCl) SCRUBBER INLET SAMPLE		✓	✓	✓			
	Remarks:						
4951.08 & 5587 4004 M26A ALIQUOT OF XX003 (HCl) SCRUBBER INLET SAMPLE							
	Remarks:	Sample 4004 Not Taken					
4951.08 & 5587 5004 M26A ALIQUOT OF XX003 (HCl) SCRUBBER INLET SAMPLE		✓	✓	✓			
	Remarks:						
4951.08 & 5587 6004 M26A ALIQUOT OF XX003 (HCl) SCRUBBER INLET SAMPLE		✓	✓	✓			
	Remarks:						
4951.08 & 5587 7004 M26A ALIQUOT OF XX003 (HCl) SCRUBBER INLET SAMPLE		✓	✓	✓			
	Remarks:						
4951.08 & 5587 8004 M26A ALIQUOT OF XX003 (HCl) SCRUBBER INLET SAMPLE		✓	✓	✓			
	Remarks:						
4951.08 & 5587 9004 M26A ALIQUOT OF XX003 (HCl) SCRUBBER INLET SAMPLE		✓	✓	✓			
	Remarks:						
4951.08 & 5587 1052 M26A 0.1N H2SO4 FIELD REAGENT SAMPLE For disposal call: J. SURMAN MIDWEST RESEARCH INSTITUTE		✓	✓	✓			
	Remarks:						

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. McCan	Dennis Miller	6-18-99	100	1	Shipping
Dennis Miller	J. Surman	06/21/99	1100	2	Custody Xfer shipment
J. Surman	Fed Ex	06/25/99	1500	3	To Fed Ex
Fed Ex				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____ Transfer No.

Checked by (Initials)/Date

Lock or Seal Intact (Yes or No)/Time

Field Sample Custodian: P Murawchick

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

Transfer No.	1					
Checked by (Initials)/Date	DSL 6-21-99					
Lock or Seal Intact (Yes or No)/Time						
✓						

4951.08 & 5587 1008 M23 TRAIN FRONT RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 1009 M23 FILTER SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 1010 M23 TRAIN BACK RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 1012 M23 TOLUENE QA RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 2008 M23 TRAIN FRONT RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 2009 M23 FILTER SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 2010 M23 TRAIN BACK RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 2012 M23 TOLUENE QA RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 1057 M23 FILTER FIELD REAGENT SAMPLE	✓					
	Remarks:					
4951.08 & 5587 1059 M23 ASTM TYPE II WATER FIELD REAGENT SAMPLE	✓					
	Remarks:					
4951.08 & 5587 1023 Inlet Probe QA Rinses SCRUBBER INLET SAMPLE For disposal call: J.SURMAN MIDWEST RESEARCH INSTITUTE	✓					
	Remarks:					

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
P Murawchick		6/18/99		1	Shipping
	Tracy L. S	6/21/99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____ Transfer No.

Checked by (Initials)/Date

Lock or Seal Intact (Yes or No)/Time

Field Sample Custodian: P Murowchick

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

4951.08 & 5587 1022 Inlet Probe Rinses SCRUBBER INLET SAMPLE	1					
4951.08 & 5587 3012 M23 TOLUENE QA RINSES SCRUBBER INLET SAMPLE	DA 6-21-99					
4951.08 & 5587 3010 M23 TRAIN BACK RINSES SCRUBBER INLET SAMPLE	✓					
4951.08 & 5587 3009 M23 FILTER SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 3008 M23 TRAIN FRONT RINSES SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 4010 M23 TRAIN BACK RINSES SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 4012 M23 TOLUENE QA RINSES SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 4009 M23 FILTER SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 4008 M23 TRAIN FRONT RINSES SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 5008 M23 TRAIN FRONT RINSES SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 5009 M23 FILTER SCRUBBER INLET SAMPLE	✓ Remarks:					

For disposal call: J. SURMAN
MIDWEST RESEARCH INSTITUTE

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
P Murowchick		6/18/99		1	Shipping
		6/21/99	1.30	2	
				3	
				4	

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☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____ Transfer No.

Checked by (Initials)/Date

Lock or Seal Intact (Yes or No)/Time

Field Sample Custodian: P Murowchick

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

4951.08 & 5587 5010 M23 TRAIN BACK RINSES SCRUBBER INLET SAMPLE	1					
	6-21-99					
	✓					
	Remarks:					
4951.08 & 5587 5012 M23 TOLUENE QA RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 6008 M23 TRAIN FRONT RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 6009 M23 FILTER SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 6010 M23 TRAIN BACK RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 6012 M23 TOLUENE QA RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 7008 M23 TRAIN FRONT RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 7009 M23 FILTER SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 7010 M23 TRAIN BACK RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 7012 M23 TOLUENE QA RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 8008 M23 TRAIN FRONT RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					

For disposal call: J. SURMAN
MIDWEST RESEARCH INSTITUTE

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
P Murowchick		6/18/99		1	Shipping
		6/24/99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page _____ of _____

Field Sample Custodian: P Murowchick

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

	Transfer No.					
	1					
Checked by (Initials)/Date	PM 6-21-99					
Lock or Seal Intact (Yes or No)/Time						

4951.08 & 5587 8009 M23 FILTER SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 8010 M23 TRAIN BACK RINSES SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 8012 M23 TOLUENE QA RINSES SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 9008 M23 TRAIN FRONT RINSES SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 9009 M23 FILTER SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 9010 M23 TRAIN BACK RINSES SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 9012 M23 TOLUENE QA RINSES SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 10008 M23 TRAIN FRONT RINSES SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 10009 M23 FILTER SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 10010 M23 TRAIN BACK RINSES SCRUBBER INLET SAMPLE	✓ Remarks:					
4951.08 & 5587 10012 M23 TOLUENE QA RINSES SCRUBBER INLET SAMPLE	✓ Remarks:					

For disposal call: J. SURMAN
MIDWEST RESEARCH INSTITUTE

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
P Murowchick	Paul Lafler	6/18/99		1	Shipping
Paul Lafler	Tracy L. S	6/21/99	1:30	2	
				3	
				4	

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☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____

Field Sample Custodian: P Murowchick

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

Transfer No.	1					
Checked by (Initials)/Date	DSL 6-21-99					
Lock or Seal Intact (Yes or No)/Time						

4951.08 & 5587 1032 M23 TRAIN FRONT RINSES SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 1033 M23 FILTER SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 1034 M23 TRAIN BACK RINSES SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 1036 M23 TOLUENE QA RINSES SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 2032 M23 TRAIN FRONT RINSES SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 2033 M23 FILTER SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 2034 M23 TRAIN BACK RINSES SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 2036 M23 TOLUENE QA RINSES SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 1054 M23 ACETONE FIELD REAGENT SAMPLE	✓					
	Remarks:					
4951.08 & 5587 1055 M23 METHYLENE CHLORIDE FIELD REAGENT SAMPLE	✓					
	Remarks:					
4951.08 & 5587 1056 M23 TOLUENE FIELD REAGENT SAMPLE For disposal call: J.SURMAN MIDWEST RESEARCH INSTITUTE	✓					
	Remarks:					

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
P Murowchick	Dave Lyon	6/18/99		1	Shipping
Dave Lyon	Tracy D. Lee	6/21/99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____ Transfer No.

Checked by (Initials)/Date

Lock or Seal Intact (Yes or No)/Time

Field Sample Custodian: P Murowchick

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

	1					
	DM 6-24-99					
4951.08 & 5587 3032 M23 TRAIN FRONT RINSES SCRUBBER OUTLET SAMPLE	✓ Remarks:					
4951.08 & 5587 3033 M23 FILTER SCRUBBER OUTLET SAMPLE	✓ Remarks:					
4951.08 & 5587 3034 M23 TRAIN BACK RINSES SCRUBBER OUTLET SAMPLE	✓ emarks:					
4951.08 & 5587 3036 M23 TOLUENE QA RINSES SCRUBBER OUTLET SAMPLE	✓ emarks:					
4951.08 & 5587 4032 M23 TRAIN FRONT RINSES SCRUBBER OUTLET SAMPLE	✓ Remarks:					
4951.08 & 5587 4033 M23 FILTER SCRUBBER OUTLET SAMPLE	✓ Remarks:					
4951.08 & 5587 4034 M23 TRAIN BACK RINSES SCRUBBER OUTLET SAMPLE	✓ Remarks:					
4951.08 & 5587 4036 M23 TOLUENE QA RINSES SCRUBBER OUTLET SAMPLE	✓ Remarks:					
4951.08 & 5587 6032 M23 TRAIN FRONT RINSES SCRUBBER OUTLET SAMPLE	✓ Remarks:					
4951.08 & 5587 6033 M23 FILTER SCRUBBER OUTLET SAMPLE	✓ Remarks:					
4951.08 & 5587 6034 M23 TRAIN BACK RINSES SCRUBBER OUTLET SAMPLE For disposal call: J. SURMAN MIDWEST RESEARCH INSTITUTE	✓ Remarks:					

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
P Murowchick		6/18/99		1	Shipping
		6/21/99	1:30	2	
				3	
				4	

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☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____ Transfer No.

Checked by (Initials)/Date

Lock or Seal Intact (Yes or No)/Time

Field Sample Custodian: P Murowchick

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

1						
DG 6-21-99						
✓						

4951.08 & 5587 6036
M23 TOLUENE QA RINSES
SCRUBBER OUTLET SAMPLE
Remarks:

4951.08 & 5587 7032
M23 TRAIN FRONT RINSES
SCRUBBER OUTLET SAMPLE
✓ Remarks:

4951.08 & 5587 7033
M23 FILTER
SCRUBBER OUTLET SAMPLE
✓ Remarks:

4951.08 & 5587 7034
M23 TRAIN BACK RINSES
SCRUBBER OUTLET SAMPLE
✓ Remarks:

4951.08 & 5587 7036
M23 TOLUENE QA RINSES
SCRUBBER OUTLET SAMPLE
✓ Remarks:

4951.08 & 5587 8032
M23 TRAIN FRONT RINSES
SCRUBBER OUTLET SAMPLE
✓ Remarks:

4951.08 & 5587 8033
M23 FILTER
SCRUBBER OUTLET SAMPLE
✓ Remarks:

4951.08 & 5587 8034
M23 TRAIN BACK RINSES
SCRUBBER OUTLET SAMPLE
✓ Remarks:

4951.08 & 5587 8036
M23 TOLUENE QA RINSES
SCRUBBER OUTLET SAMPLE
✓ Remarks:

4951.08 & 5587 9032
M23 TRAIN FRONT RINSES
SCRUBBER OUTLET SAMPLE
✓ Remarks:

4951.08 & 5587 9033
M23 FILTER
SCRUBBER OUTLET SAMPLE
✓ Remarks:

For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
P Murowchick	[illegible]	6/18/99		1	Shipping
[illegible]	[illegible]	6/21/99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____ Transfer No.

Checked by (Initials)/Date

Lock or Seal Intact (Yes or No)/Time

Field Sample Custodian: PMurowchick

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

1						
DA 6-2-99						
✓						

Remarks:

/4951.08 & 5587 9034
M23 TRAIN BACK RINSES
SCRUBBER OUTLET SAMPLE

/4951.08 & 5587 9036
M23 TOLUENE QA RINSES
SCRUBBER OUTLET SAMPLE
For disposal call: J.SURMAN
MIDWES [illegible]

✓						

Remarks:

Remarks:

Remarks:

Remarks:

Remarks:

Remarks:

Remarks:

Remarks:

Remarks:

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
PMurowchick	[signature]	6/18/99		1	Shipping
[signature]	[signature]	6/21/99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____ Transfer No.

Checked by (Initials)/Date

Lock or Seal Intact (Yes or No)/Time

Field Sample Custodian: P Murowchick

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

	Transfer No.	Checked by (Initials)/Date	Lock or Seal Intact (Yes or No)/Time			
4951.08 & 5587 1011 M23 XAD CARTRIDGE SCRUBBER INLET SAMPLE	1	DA 6-21-99	✓			
4951.08 & 5587 2011 M23 XAD CARTRIDGE SCRUBBER INLET SAMPLE	✓					
4951.08 & 5587 1035 M23 XAD CARTRIDGE SCRUBBER OUTLET SAMPLE	✓					
4951.08 & 5587 2035 M23 XAD CARTRIDGE SCRUBBER OUTLET SAMPLE	✓					
4951.08 & 5587 1058 M23 XAD CARTRIDGE FIELD REAGENT SAMPLE	✓					
4951.08 & 5587 3011 M23 XAD CARTRIDGE SCRUBBER INLET SAMPLE	✓					
4951.08 & 5587 4011 M23 XAD CARTRIDGE SCRUBBER INLET SAMPLE	✓					
4951.08 & 5587 5011 M23 XAD CARTRIDGE SCRUBBER INLET SAMPLE	✓					
4951.08 & 5587 3035 M23 XAD CARTRIDGE SCRUBBER OUTLET SAMPLE	✓					
4951.08 & 5587 4035 M23 XAD CARTRIDGE SCRUBBER OUTLET SAMPLE	✓					
4951.08 & 5587 5035 M23 XAD CARTRIDGE SCRUBBER OUTLET SAMPLE	✓					

Remarks:

For disposal call: J. SURMAN
MIDWEST RESEARCH INSTITUTE

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
P Murowchick	David Griffin	6/18/99		1	Shipping
David Griffin	Tracy L. Ley	6/21/99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____

Field Sample Custodian: P Mrrowchick

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

Transfer No.						
Checked by (Initials)/Date	1					
Lock or Seal Intact (Yes or No)/Time	DH 6-21-99					
	✓					

4951.08 & 5587 7011 M23 XAD CARTRIDGE SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 6011 M23 XAD CARTRIDGE SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 8011 M23 XAD CARTRIDGE SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 9011 M23 XAD CARTRIDGE SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 6035 M23 XAD CARTRIDGE SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 7035 M23 XAD CARTRIDGE SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 8035 M23 XAD CARTRIDGE SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 9035 M23 XAD CARTRIDGE SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 10011 M23 XAD CARTRIDGE SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 10035 M23 XAD CARTRIDGE SCRUBBER OUTLET SAMPLE For disposal call: J. SURMAN MIDWEST RESEARCH INSTITUTE						
	Remarks:					
	Remarks:					

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
P Mrrowchick	Daniel Hahn	6/18/99		1	Shipping
Daniel Hahn	Tracy L Long	6/21/99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____ Transfer No.

Checked by (Initials)/Date

Lock or Seal Intact (Yes or No)/Time

Field Sample Custodian: J McC

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

1						
DM 6-21-99						
✓						

4951.08 & 5587 1015 M29 FRONT-HALF 0.1N HNO3 SCRUBBER INLET SAMPLE	✓						
	Remarks:						
4951.08 & 5587 2015 M29 FRONT-HALF 0.1N HNO3 SCRUBBER INLET SAMPLE	✓						
	Remarks:						
4951.08 & 5587 3015 M29 FRONT-HALF 0.1N HNO3 SCRUBBER INLET SAMPLE	✓						
	Remarks:						
4951.08 & 5587 4015 M29 FRONT-HALF 0.1N HNO3 SCRUBBER INLET SAMPLE	✓						
	Remarks:						
4951.08 & 5587 5015 M29 FRONT-HALF 0.1N HNO3 SCRUBBER INLET SAMPLE	✓						
	Remarks:						
4951.08 & 5587 6015 M29 FRONT-HALF 0.1N HNO3 SCRUBBER INLET SAMPLE	✓						
	Remarks:						
4951.08 & 5587 7015 M29 FRONT-HALF 0.1N HNO3 SCRUBBER INLET SAMPLE	✓						
	Remarks:						
4951.08 & 5587 8015 M29 FRONT-HALF 0.1N HNO3 SCRUBBER INLET SAMPLE	✓						
	Remarks:						
4951.08 & 5587 9015 M29 FRONT-HALF 0.1N HNO3 SCRUBBER INLET SAMPLE	✓						
	Remarks:						
4951.08 & 5587 1061 M29 0.1N HNO3 FIELD REAGENT SAMPLE	✓						
	Remarks:						
4951.08 & 5587 2061 M29 0.1N HNO3 FIELD REAGENT SAMPLE For disposal call: J. SURMAN MIDWEST RESEARCH INSTITUTE	✓						
	Remarks:						

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J McC	[signature]	6-18-99	10:00	1	Shipping
[signature]	Tracy L. B	6-21-99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____ Transfer No.

Checked by (Initials)/Date

Lock or Seal Intact (Yes or No)/Time

Field Sample Custodian: J. McC

Storage Requirements:
☐ Ice water, ≤ 4°C
☐ Dry ice
☒ Room Temp., ≤ 26°C
☐ Other: _____

1						
DH 6-21-99						
✓						

✓						

4951.08 & 5587 1016
M29 FILTER
SCRUBBER INLET SAMPLE

Remarks:

✓						

4951.08 & 5587 2016
M29 FILTER
SCRUBBER INLET SAMPLE

Remarks:

✓						

4951.08 & 5587 3016
M29 FILTER
SCRUBBER INLET SAMPLE

Remarks:

✓						

4951.08 & 5587 4016
M29 FILTER
SCRUBBER INLET SAMPLE

Remarks: Sample 4016 retained for PM analysis.

✓						

4951.08 & 5587 5016
M29 FILTER
SCRUBBER INLET SAMPLE

Remarks:

✓						

4951.08 & 5587 6016
M29 FILTER
SCRUBBER INLET SAMPLE

Remarks:

✓						

4951.08 & 5587 7016
M29 FILTER
SCRUBBER INLET SAMPLE

Remarks:

✓						

4951.08 & 5587 8016
M29 FILTER
SCRUBBER INLET SAMPLE

Remarks:

✓						

4951.08 & 5587 9016
M29 FILTER
SCRUBBER INLET SAMPLE

Remarks:

✓						

4951.08 & 5587 1062
M29 FILTER
FIELD REAGENT SAMPLE
For disposal call: J. SURMAN
MIDWEST RESEARCH INSTITUTE

Remarks:

Remarks:

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. McC	Dan Coffman	6-18-99	10:00	1	Shipping
Dan Coffman	Tracy L. G	6-21-99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____

Field Sample Custodian: J. McL

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

Transfer No.	1					
Checked by (Initials)/Date	DH 6-21-99					
Lock or Seal Intact (Yes or No)/Time						

✓ 4951.08 & 5587 1017 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 2017 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 3017 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 4017 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 5017 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 6017 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 7017 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 8017 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 9017 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 1063 M29 5% HNO3/10% H2O2 FIELD REAGENT SAMPLE For disposal call: J. SURMAN MIDWEST RESEARCH INSTITUTE	✓					
	Remarks:					
	Remarks:					

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
[signature]	[signature]	6-18-99	10:00	1	Shipping
[signature]	[signature]	6-21-99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____ Transfer No.

Checked by (Initials)/Date

Lock or Seal Intact (Yes or No)/Time

Field Sample Custodian: J. McCan

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

	1					
	DM 6-21-99					
4951.08 & 5587 1018 M29 IMPINGER 4 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 2018 M29 IMPINGER 4 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 3018 M29 IMPINGER 4 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 4018 M29 IMPINGER 4 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 5018 M29 IMPINGER 4 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 6018 M29 IMPINGER 4 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 7018 M29 IMPINGER 4 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 8018 M29 IMPINGER 4 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 9018 M29 IMPINGER 4 SCRUBBER INLET SAMPLE For disposal call: J. SURMAN MIDWEST RESEARCH INSTITUTE	✓					
	Remarks:					
	Remarks:					

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
		6-18-99	10:00	1	Shipping
	Tracy L. Gay	6-21-99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____

Field Sample Custodian: J. McCa

Storage Requirements:
☒ Ice water, ≤ 4°C
☐ Dry ice
☐ Room Temp., ≤ 26°C
☐ Other: _____

Transfer No.	1					
Checked by (Initials)/Date	DA 6-21-99					
Lock or Seal Intact (Yes or No)/Time						

4951.08 & 5587 1019 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER INLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 2019 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER INLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 3019 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER INLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 4019 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER INLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 5019 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER INLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 6019 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER INLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 7019 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER INLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 8019 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER INLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 9019 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER INLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 1064 M29 4% KMnO4/10% H2SO4 FIELD REAGENT SAMPLE For disposal call: J.SURMAN MIDWEST RESEARCH INSTITUTE	✓					
Remarks:						
Remarks:						

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
		6-18-99	10:00	1	Shipping
		6-21-99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD
☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. ______

Page ____ of ____

Field Sample Custodian: J. McC[illegible]

Storage Requirements:
☒ Ice water, ≤ 4°C
☐ Dry ice
☐ Room Temp., ≤ 26°C
☐ Other: ______

Sample	Transfer No.					
Transfer No.	1					
Checked by (Initials)/Date	[illegible] 6-21-99					
Lock or Seal Intact (Yes or No)/Time						
4951.08 & 5587 1020 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 2020 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 3020 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 4020 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 5020 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 6020 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 7020 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 8020 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 9020 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 1066 M29 8N HCl IN WATER FIELD REAGENT SAMPLE	✓					
	Remarks:					
4951.08 & 5587 1065 M29 ASTM TYPE I WATER FIELD REAGENT SAMPLE	✓					
	Remarks:					

For disposal call: J. SURMAN
MIDWEST RESEARCH INSTITUTE

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. McC[illegible]	[signature]	6-18-99	10:00	1	Shipping
[signature]	[signature]	6-21-99	1:30	2	
				3	
				4	

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☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____ Transfer No.

Checked by (Initials)/Date

Lock or Seal Intact (Yes or No)/Time

Field Sample Custodian: J. M. C

Storage Requirements:
- ☐ Ice water, ≤ 4°C
- ☐ Dry ice
- ☒ Room Temp., ≤ 26°C
- ☐ Other: _____

4951.08 & 5587 4038 M29 FRONT-HALF ACETONE SCRUBBER OUTLET SAMPLE						
						Remarks: Sample 4038 not taken
4951.08 & 5587 8038 M29 FRONT-HALF ACETONE SCRUBBER OUTLET SAMPLE						✓
						Remarks: Retained for Post analysis
4951.08 & 5587 9038 M29 FRONT-HALF ACETONE SCRUBBER OUTLET SAMPLE For disposal call: J. SURMAN MIDWEST RESEARCH INSTITUTE						✓
						Remarks:
						Remarks:
						Remarks:
						Remarks:
						Remarks:
						Remarks:
						Remarks:
						Remarks:
						Remarks:

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. M. C	[illegible]	6-18-99	1800	1	Shipping
[illegible]	Tracy D. G	6.21.99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____

Field Sample Custodian: J. McCarn

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

	Transfer No.					
	Checked by (Initials)/Date	DA 6-21-99				
	Lock or Seal Intact (Yes or No)/Time					
4951.08 & 5587 1039 M29 FRONT-HALF 0.1N HNO3 SCRUBBER OUTLET SAMPLE		✓					
	Remarks:						
4951.08 & 5587 2039 M29 FRONT-HALF 0.1N HNO3 SCRUBBER OUTLET SAMPLE		✓					
	Remarks:						
4951.08 & 5587 3039 M29 FRONT-HALF 0.1N HNO3 SCRUBBER OUTLET SAMPLE		✓					
	Remarks:						
4951.08 & 5587 4039 M29 FRONT-HALF 0.1N HNO3 SCRUBBER OUTLET SAMPLE		✓					
	Remarks:						
4951.08 & 5587 5039 M29 FRONT-HALF 0.1N HNO3 SCRUBBER OUTLET SAMPLE		✓					
	Remarks:						
4951.08 & 5587 6039 M29 FRONT-HALF 0.1N HNO3 SCRUBBER OUTLET SAMPLE		✓					
	Remarks:						
4951.08 & 5587 7039 M29 FRONT-HALF 0.1N HNO3 SCRUBBER OUTLET SAMPLE		✓					
	Remarks:						
4951.08 & 5587 8039 M29 FRONT-HALF 0.1N HNO3 SCRUBBER OUTLET SAMPLE		✓					
	Remarks:						
4951.08 & 5587 9039 M29 FRONT-HALF 0.1N HNO3 SCRUBBER OUTLET SAMPLE For disposal call: J.SURMAN MIDWEST RESEARCH INSTITUTE		✓					
	Remarks:						
	Remarks:						

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
		6-18-99	1000	1	Shipping
		6-21-99	1:30	2	
				3	
				4	

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☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____ Transfer No.

Checked by (Initials)/Date

Lock or Seal Intact (Yes or No)/Time

Field Sample Custodian: J. McC

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

1						
DH 6-21-99						
✓						

4951.08 & 5587 1040
M29 FILTER
SCRUBBER OUTLET SAMPLE
Remarks:

4951.08 & 5587 2040
M29 FILTER
SCRUBBER OUTLET SAMPLE
✓
Remarks:

4951.08 & 5587 3040
M29 FILTER
SCRUBBER OUTLET SAMPLE
✓
Remarks:

4951.08 & 5587 4040
M29 FILTER
SCRUBBER OUTLET SAMPLE
✓
Remarks:

4951.08 & 5587 5040
M29 FILTER
SCRUBBER OUTLET SAMPLE
✓
Remarks:

4951.08 & 5587 6040
M29 FILTER
SCRUBBER OUTLET SAMPLE
✓
Remarks:

4951.08 & 5587 7040
M29 FILTER
SCRUBBER OUTLET SAMPLE
✓
Remarks:

4951.08 & 5587 8040
M29 FILTER
SCRUBBER OUTLET SAMPLE
✓
Remarks: Sample 8040 retained for PM analysis ~~not collected~~

4951.08 & 5587 9040
M29 FILTER
SCRUBBER OUTLET SAMPLE
✓
Remarks: Sample 9040 retained for PM analysis ~~not collected~~

For disposal call: J. SURMAN

4951.08 & 5587 4014
M29 FRONT-HALF ACETONE
SCRUBBER INLET SAMPLE
For disposal call: J. SURMAN
MIDWEST RESEARCH INSTITUTE
✓
Remarks: Retained for PM analysis in lieu of Sample 4014

Remarks:

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. McC	Dan Hoffer	6-18-99	1600	1	Shipping
Dan Hoffer	Tracy L. Bz	6-21-99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____

Field Sample Custodian: J. McCann

Storage Requirements:
☒ Ice water, ≤ 4°C
☐ Dry ice
☐ Room Temp., ≤ 26°C
☐ Other: _____

	Transfer No.					
	1					
Checked by (Initials)/Date	DH 6-21-99					
Lock or Seal Intact (Yes or No)/Time						
4951.08 & 5587 1041 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 2041 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 3041 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 4041 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 5041 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 6041 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 7041 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 8041 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 9041 M29 HNO3/H2O2 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
For disposal call: J. SURMAN MIDWEST RESEARCH INSTITUTE						
	Remarks:					
	Remarks:					

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. McCann	[illegible]	6-18-99	1000	1	Shipping
[illegible]	Tracy A. [illegible]	6-21-99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____

Field Sample Custodian: J. McCarn

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

Transfer No.	1					
Checked by (Initials)/Date	DS 6-21-99					
Lock or Seal Intact (Yes or No)/Time						

✓ 4951.08 & 5587 1042 M29 IMPINGER 4 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 2042 M29 IMPINGER 4 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 3042 M29 IMPINGER 4 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 4042 M29 IMPINGER 4 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 5042 M29 IMPINGER 4 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 6042 M29 IMPINGER 4 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 7042 M29 IMPINGER 4 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 8042 M29 IMPINGER 4 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
✓ 4951.08 & 5587 9042 M29 IMPINGER 4 SCRUBBER OUTLET SAMPLE For disposal call: J.SURMAN MIDWEST RESEARCH INSTITUTE	✓					
	Remarks:					
	Remarks:					

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. McCarn	Dan Hoffman	6-18-99	1000	1	Shipping
Dan Hoffman	Tracy L. Gay	6-21-99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____

Field Sample Custodian: J. M. C

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☐ Room Temp., ≤ 26°C
- ☐ Other: _____

Transfer No.	1					
Checked by (Initials)/Date	DK 6-21-99					
Lock or Seal Intact (Yes or No)/Time						

4951.08 & 5587 1043 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER OUTLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 2043 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER OUTLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 3043 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER OUTLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 4043 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER OUTLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 5043 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER OUTLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 6043 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER OUTLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 7043 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER OUTLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 8043 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER OUTLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 9043 M29 KMnO4/H2SO4 IMPINGRS 5-6 SCRUBBER OUTLET SAMPLE For disposal call: J. SURMAN MIDWEST RESEARCH INSTITUTE	✓					
Remarks:						
Remarks:						
Remarks:						

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. M. C	Paul Hyden	6-18-99	1000	1	Shipping
Paul Hyden	Tracy d'Vy	6-21-99	1:30	2	
				3	
				4	

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☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____

Field Sample Custodian: J. McC

Storage Requirements:
☒ Ice water, ≤ 4°C
☐ Dry ice
☐ Room Temp., ≤ 26°C
☐ Other: _____

Transfer No.					
1					
Checked by (Initials)/Date	DM 6-21-99				
Lock or Seal Intact (Yes or No)/Time					

4951.08 & 5587 1044 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 2044 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 3044 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 4044 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 5044 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 6044 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 7044 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 8044 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 9044 M29 HCl RINSES IMPINGERS 5-6 SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
For disposal call: J. SURMAN MIDWEST RESEARCH INSTITUTE						
	Remarks:					
	Remarks:					

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. McC		6-18-99	1000	1	Shipping
	Tracy L. L.	6-21-99	1:30	2	
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____ Transfer No.

Checked by (Initials)/Date

Lock or Seal Intact (Yes or No)/Time

Field Sample Custodian: J. McC

Storage Requirements:
- ☐ Ice water, ≤ 4°C
- ☐ Dry ice
- ☒ Room Temp., ≤ 26°C
- ☐ Other: _____

4951.08 & 5587 1049 M26A ACETONE FIELD REAGENT SAMPLE	1					
	DL 6-21-99					
	✓					
	Remarks:					
4951.08 & 5587 ~~1054~~ M23 ACETONE FIELD REAGENT SAMPLE						
	Remarks: Duplicate entry DL 6/21/99					
4951.08 & 5587 1051 M26A ASTM TYPE I WATER FIELD REAGENT SAMPLE	✓					
	Remarks:					
4951.08 & 5587 1001 M26A FRONT-HALF RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 2001 M26A FRONT-HALF RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 3001 M26A FRONT-HALF RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 4001 M26A FRONT-HALF RINSES SCRUBBER INLET SAMPLE						
	Remarks: Sample 4001 Not taken					
4951.08 & 5587 5001 M26A FRONT-HALF RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 6001 M26A FRONT-HALF RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 7001 M26A FRONT-HALF RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 8001 M26A FRONT-HALF RINSES SCRUBBER INLET SAMPLE	✓					
	Remarks:					

For disposal call: J.SURMAN
MIDWEST RESEARCH INSTITUTE

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. McC	Dan Hoff	6-18-99	1000	1	Shipping
Dan Hoff	J. Surman	6-21-99	1050	2	for analysis
				3	
				4	

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☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

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Field Sample Custodian: J. McCain

Storage Requirements:
- ☐ Ice water, ≤ 4°C
- ☐ Dry ice
- ☒ Room Temp., ≤ 26°C
- ☐ Other: _____

Transfer No.	1					
Checked by (Initials)/Date	DH 6-21-99					
Lock or Seal Intact (Yes or No)/Time						
4951.08 & 5587 9001 M26A FRONT-HALF RINSES SCRUBBER INLET SAMPLE For disposal call: J.SURMAN MIDWEST RESEARCH INSTITUTE	✓					
	Remarks:					
	Remarks:					

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. McCain	Daniel Griffin	6-18-99	1000	1	Shipping
Daniel Griffin	Jim Surman	6-21-99	1035	2	for analysis
				3	
				4	

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☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____ Transfer No.

Checked by (Initials)/Date

Lock or Seal Intact (Yes or No)/Time

Field Sample Custodian: J. M. Co

Storage Requirements:
- ☐ Ice water, ≤ 4°C
- ☐ Dry ice
- ☒ Room Temp., ≤ 26°C
- ☐ Other: _____

4951.08 & 5587 M26A FILTER # 0025 FIELD REAGENT SAMPLE	1050	1	DH 6-21-99	✓		Remarks:
4951.08 & 5587 M26A FILTER # _____ SCRUBBER INLET SAMPLE	1002			✓		Remarks:
4951.08 & 5587 M26A FILTER # _____ SCRUBBER INLET SAMPLE	2002			✓		Remarks:
4951.08 & 5587 M26A FILTER # _____ SCRUBBER INLET SAMPLE	3002			✓		Remarks:
4951.08 & 5587 M26A FILTER # _____ SCRUBBER INLET SAMPLE	4002					Remarks: Sample 4002 Not Collected
4951.08 & 5587 M26A FILTER # _____ SCRUBBER INLET SAMPLE	5002			✓		Remarks:
4951.08 & 5587 M26A FILTER # _____ SCRUBBER INLET SAMPLE	6002			✓		Remarks:
4951.08 & 5587 M26A FILTER # _____ SCRUBBER INLET SAMPLE	7002			✓		Remarks:
4951.08 & 5587 M26A FILTER # _____ SCRUBBER INLET SAMPLE	8002			✓		Remarks:
4951.08 & 5587 M26A FILTER # _____ SCRUBBER INLET SAMPLE	9002			✓		Remarks:

For disposal call: J. SURMAN
MIDWEST RESEARCH INSTITUTE

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. M. Co		6-18-99	1000	1	Shipping
	L. Surman	6-21-99	1045	2	For analysis
				3	
				4	

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☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

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Field Sample Custodian: J. McCan

Storage Requirements:
- ☒ Ice water, ≤ 4°C
- ☐ Dry ice
- ☒ Room Temp., ≤ 26°C
- ☐ Other: _____

	Transfer No.					
	Checked by (Initials)/Date	DM 6-21-99				
	Lock or Seal Intact (Yes or No)/Time					
4951.08 & 5587 1025 M26A FRONT-HALF RINSES SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 2025 M26A FRONT-HALF RINSES SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 3025 M26A FRONT-HALF RINSES SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 4025 M26A FRONT-HALF RINSES SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 5025 M26A FRONT-HALF RINSES SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 6025 M26A FRONT-HALF RINSES SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 7025 M26A FRONT-HALF RINSES SCRUBBER OUTLET SAMPLE	✓					
	Remarks:					
4951.08 & 5587 8025 M26A FRONT-HALF RINSES SCRUBBER OUTLET SAMPLE						
	Remarks: Sample 8025 not taken					
4951.08 & 5587 9025 M26A FRONT-HALF RINSES SCRUBBER OUTLET SAMPLE						
	Remarks: Sample 9025 not taken					
4951.08 & 5587 1060 M29 ACETONE FIELD REAGENT SAMPLE For disposal call: J. SURMAN MIDWEST RESEARCH INSTITUTE	✓					
	Remarks:					
	Remarks:					

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. McCan	David Miller	6-18-99	1000	1	Shipping
David Miller	J. Surman	6-21-99	1035	2	For analysis
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____

Field Sample Custodian: J. M. C

Storage Requirements:
☐ Ice water, ≤ 4°C
☐ Dry ice
☒ Room Temp., ≤ 26°C
☐ Other: _____

Transfer No.	1					
Checked by (Initials)/Date	DM 6-21-99					
Lock or Seal Intact (Yes or No)/Time						

4951.08 & 5587 1026 M26A FILTER # _____ SCRUBBER OUTLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 2026 M26A FILTER # _____ SCRUBBER OUTLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 3026 M26A FILTER # 10 SCRUBBER OUTLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 4026 M26A FILTER # _____ SCRUBBER OUTLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 5026 M26A FILTER # _____ SCRUBBER OUTLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 6026 M26A FILTER # _____ SCRUBBER OUTLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 7026 M26A FILTER # _____ SCRUBBER OUTLET SAMPLE	✓					
Remarks:						
4951.08 & 5587 8026 M26A FILTER # _____ SCRUBBER OUTLET SAMPLE	Sample not taken					
Remarks:						
4951.08 & 5587 9026 M26A FILTER # _____ SCRUBBER OUTLET SAMPLE	Sample not taken					
Remarks:						
4951.08 & 5587 2050 M26A FILTER # _____ FIELD REAGENT SAMPLE For disposal call: J. SURMAN MIDWEST RESEARCH INSTITUTE	✓					
Remarks: extra blank filter						
Remarks:						

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. M. C	David Griffin	6-18-99	1000	1	Shipping
David Griffin	J. Surman	6-21-99	1045	2	For analysis
				3	
				4	

93-4 SEV surm wksht 020293

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____ Transfer No.

Checked by (Initials)/Date

Lock or Seal Intact (Yes or No)/Time

Field Sample Custodian: J. McCain

Storage Requirements:
- ☐ Ice water, ≤ 4°C
- ☐ Dry ice
- ☒ Room Temp., ≤ 26°C
- ☐ Other: _____

4951.08 & 5587 M26A 0.1N H2SO4 FIELD REAGENT SAMPLE	1052	1					
		WS 6-21-99					
		✓					
		Remarks: duplicate entry					
4951.08 & 5587 M26A H2SO4 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	1003	✓					
		Remarks:					
4951.08 & 5587 M26A H2SO4 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	2003	✓					
		Remarks:					
4951.08 & 5587 M26A H2SO4 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	3003	✓					
		Remarks:					
4951.08 & 5587 M26A H2SO4 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	4003						
		Remarks: 4003 Sample not taken					
4951.08 & 5587 M26A H2SO4 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	5003	✓					
		Remarks:					
4951.08 & 5587 M26A H2SO4 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	6003	✓					
		Remarks:					
4951.08 & 5587 M26A H2SO4 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	7003	✓					
		Remarks:					
4951.08 & 5587 M26A H2SO4 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	8003	✓					
		Remarks:					
4951.08 & 5587 M26A H2SO4 IMPINGERS 1-3 SCRUBBER INLET SAMPLE	9003	✓					
		Remarks:					
For disposal call: J. SURMAN MIDWEST RESEARCH INSTITUTE							
		Remarks:					

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. McCain	David Griffin	6-18-99	1000	1	Shipping
David Griffin	J. Surman	6-21-99	1030	2	for archiving
				3	
				4	

☐ CHAIN OF CUSTODY RECORD

☒ SAMPLE TRACEABILITY RECORD

Container (Cooler) No. _____

Page ____ of ____ Transfer No.

Checked by (Initials)/Date

Lock or Seal Intact (Yes or No)/Time

Field Sample Custodian: J. M. C

Storage Requirements:
- ☐ Ice water, ≤ 4°C
- ☐ Dry ice
- ☒ Room Temp., ≤ 26°C
- ☐ Other: _____

4951.08 & 5587 1027 M26A H2SO4 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	1					
4951.08 & 5587 2027 M26A H2SO4 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	6-21-99					
4951.08 & 5587 3027 M26A H2SO4 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	✓					
4951.08 & 5587 4027 M26A H2SO4 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	✓					
4951.08 & 5587 5027 M26A H2SO4 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	✓					
4951.08 & 5587 6027 M26A H2SO4 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	✓					
4951.08 & 5587 7027 M26A H2SO4 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	✓					
4951.08 & 5587 8027 M26A H2SO4 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	✓					
4951.08 & 5587 9027 M26A H2SO4 IMPINGERS 1-3 SCRUBBER OUTLET SAMPLE	✓					
4951.08 & 5587 2052 M26A 0.1N H2SO4 FIELD REAGENT SAMPLE	✓					
4951.08 & 5587 2051 M26A ASTM TYPE I WATER FIELD REAGENT SAMPLE	✓					

Remarks:
- 8027 not taken
- 9027 not taken
- Samples not taken
- Samples not taken

For disposal call: J. SURMAN
MIDWEST RESEARCH INSTITUTE

Sample Transfers:

Relinquished By:	Received By:	Date	Time	No.	Reason for Transfer:
J. M. C		6-18-99	1000	1	Shipping
	J. Surman	6-21-99	1055	2	for archiving
				3	
				4	

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Appendix D

Modified Method 5 Calculations

Contents

Section 1

MM5-PHCL Computer-Generated Calculations

FILE NAME - M26AIN1 PROG.=VER 06/27/89
RUN # - 1 Method 26A Train for PM and HCl 07-06-1999 14:42:15
LOCATION - Scrubber Inlet Duct
DATE - 06/11/99 Time: 1520-1620/1700-1800
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	989.258
Final Meter Volume (Cubic Feet)=	1048.621
Meter Factor=	0.988
Final Leak Rate (cu ft/min)=	0.001
Net Meter Volume (Cubic Feet)=	58.651
Gas Volume (Dry Standard Cubic Feet)=	58.330
Barometric Pressure (in Hg)=	30.30
Static Pressure (Inches H20)=	-0.05
Percent Oxygen=	10.0
Percent Carbon Dioxide=	6.9
Moisture Collected (ml)=	194.9
Percent Water=	13.6
Average Meter Temperature (F)=	79
Average Delta H (in H20)=	0.82
Average Delta P (in H20)=	0.013
Average Stack Temperature (F)=	1272
Dry Molecular Weight=	29.50
Wet Molecular Weight=	27.94
Average Square Root of Delta P (in H20)=	0.1149
% Isokinetic=	102.7
Pitot Coefficient=	0.77
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	21.2
Stack Axis #2 (Inches)=	21.2
Circular Stack	
Stack Area (Square Feet)=	2.45
Stack Velocity (Actual, Feet/min)=	649
Flow Rate (Actual, Cubic ft/min)=	1,589
Flow rate (Standard, Wet, Cubic ft/min)=	490
Flow Rate (Standard, Dry, Cubic ft/min)=	424

Particulate Loading - Front Half

Particulate Weight (g)=	0.0469	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0124	0.0158 0.0215
Particulate Loading, Actual (gr/cu ft)=	0.0033	
Emission Rate (lb/hr)=	0.04	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M26AIN1 PROG.=VER 06/27/89
RUN # - 1 Method 26A Train for PM and HCl 07-06-1999 14:42:15
LOCATION - Scrubber Inlet Duct
DATE - 06/11/99 Time: 1520-1620/1700-1800
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	28.012
Final Meter Volume (Cubic Meters)=	29.693
Meter Factor=	0.988
Final Leak Rate (cu m/min)=	0.0000
Net Meter Volume (Cubic Meters)=	1.661
Gas Volume (Dry Standard Cubic Meters)=	1.652
Barometric Pressure (mm Hg)=	770
Static Pressure (mm H20)=	-1
Percent Oxygen=	10.0
Percent Carbon Dioxide=	6.9
Moisture Collected (ml)=	194.9
Percent Water=	13.6
Average Meter Temperature (C)=	26
Average Delta H (mm H20)=	20.8
Average Delta P (mm H20)=	0.3
Average Stack Temperature (C)=	689
Dry Molecular Weight=	29.50
Wet Molecular Weight=	27.94
Average Square Root of Delta P (mm H20)=	0.5789
% Isokinetic=	102.7
Pitot Coefficient=	0.77
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	198
Flow rate (Actual, Cubic m/min)=	45
Flow rate (Standard, Wet, Cubic m/min)=	14
Flow rate (Standard, Dry, Cubic m/min)=	12

Particulate Loading - Front Half

Particulate Weight (g)=	0.0469	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	28.4	36.1 49.4
Particulate Loading, Actual (mg/cu m)=	7.6	
Emission Rate (kg/hr)=	0.02	

No Back Half Analysis

FILE NAME - M26AIN1
RUN # - 1 Method 26A Train for PM and HCl
LOCATION - Scrubber Inlet Duct
DATE - 06/11/99 Time: 1520-1620/1700-1800
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:42:15

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.010	0.65	1234	73	73
2	0.018	1.00	1279	76	73
3	0.018	1.10	1309	77	75
4	0.018	1.00	1311	79	76
5	0.013	0.80	1304	82	77
6	0.015	0.93	1345	82	78
7	0.010	0.65	1258	79	78
8	0.013	0.80	1244	79	78
9	0.013	0.78	1247	81	79
10	0.013	0.72	1249	82	79
11	0.013	0.75	1272	83	80
12	0.010	0.66	1207	84	81

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.0457	1.0211	0.0000	0.0246

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	68.5727	68.5504	258.4	0.0223
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M26AOT1 PROG.=VER 06/27/89
RUN # - 1 - Method 26A Train for PM and HCl 07-06-1999 14:44:24
LOCATION - Scrubber Outlet Duct
DATE - 06/11/99 Time: 1522-1622/1702-1802
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	481.321	
Final Meter Volume (Cubic Feet)=	512.625	
Meter Factor=	0.995	
Final Leak Rate (cu ft/min)=	0.003	
Net Meter Volume (Cubic Feet)=	31.147	
Gas Volume (Dry Standard Cubic Feet)=	31.039	
Barometric Pressure (in Hg)=	30.30	
Static Pressure (Inches H20)=	-0.02	
Percent Oxygen=	11.4	
Percent Carbon Dioxide=	6.1	
Moisture Collected (ml)=	206.8	
Percent Water=	23.9	
Average Meter Temperature (F)=	77	
Average Delta H (in H20)=	0.26	
Average Delta P (in H20)=	0.003	
Average Stack Temperature (F)=	526	
Dry Molecular Weight=	29.43	
Wet Molecular Weight=	26.70	
Average Square Root of Delta P (in H20)=	0.0510	
% Isokinetic=	100.8	
Pitot Coefficient=	0.79	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	28.8	
Stack Axis #2 (Inches)=	28.8	
Circular Stack		
Stack Area (Square Feet)=	4.51	
Stack Velocity (Actual, Feet/min)=	227	
Flow Rate (Actual, Cubic ft/min)=	1,025	
Flow rate (Standard, Wet, Cubic ft/min)=	556	
Flow Rate (Standard, Dry, Cubic ft/min)=	423	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0264	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0131	0.0191 0.0258
Particulate Loading, Actual (gr/cu ft)=	0.0054	
Emission Rate (lb/hr)=	0.05	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M26AOT1 PROG.=VER 06/27/89
RUN # - 1 - Method 26A Train for PM and HCl 07-06-1999 14:44:24
LOCATION - Scrubber Outlet Duct
DATE - 06/11/99 Time: 1522-1622/1702-1802
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	13.629	
Final Meter Volume (Cubic Meters)=	14.515	
Meter Factor=	0.995	
Final Leak Rate (cu m/min)=	0.0001	
Net Meter Volume (Cubic Meters)=	0.882	
Gas Volume (Dry Standard Cubic Meters)=	0.879	
Barometric Pressure (mm Hg)=	770	
Static Pressure (mm H20)=	-0	
Percent Oxygen=	11.4	
Percent Carbon Dioxide=	6.1	
Moisture Collected (ml)=	206.8	
Percent Water=	23.9	
Average Meter Temperature (C)=	25	
Average Delta H (mm H20)=	6.7	
Average Delta P (mm H20)=	0.1	
Average Stack Temperature (C)=	274	
Dry Molecular Weight=	29.43	
Wet Molecular Weight=	26.70	
Average Square Root of Delta P (mm H20)=	0.2572	
% Isokinetic=	100.8	
Pitot Coefficient=	0.79	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (mm)=	17.98	
Stack Axis #1 (Meters)=	0.730	
Stack Axis #2 (Meters)=	0.730	
Circular Stack		
Stack Area (Square Meters)=	0.419	
Stack Velocity (Actual, m/min)=	69	
Flow rate (Actual, Cubic m/min)=	29	
Flow rate (Standard, Wet, Cubic m/min)=	16	
Flow rate (Standard, Dry, Cubic m/min)=	12	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0264	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	30.0	43.8 59.1
Particulate Loading, Actual (mg/cu m)=	12.4	
Emission Rate (kg/hr)=	0.02	

No Back Half Analysis

FILE NAME - M26AOT1 PROG.=VER 06/27/89
RUN # - 1 - Method 26A Train for PM and HCl 07-06-1999 14:44:25
LOCATION - Scrubber Outlet Duct
DATE - 06/11/99 Time: 1522-1622/1702-1802
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.001	0.10	460	72	72
2	0.003	0.29	495	73	72
3	0.004	0.38	510	75	73
4	0.001	0.09	502	76	74
5	0.001	0.08	607	78	76
6	0.001	0.08	583	78	77
7	0.001	0.09	547	78	77
8	0.004	0.37	537	79	77
9	0.006	0.56	541	79	77
10	0.006	0.47	530	81	78
11	0.003	0.29	479	81	78
12	0.004	0.38	521	81	79

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.0586	1.0443	0.0000	0.0143

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	63.7017	63.6896	126.6	0.0121
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M26AIN2 PROG.=VER 06/27/89
RUN # - 2 - Method 26A Train for PM and HCl 07-06-1999 14:47:13
LOCATION - Scrubber Inlet Duct
DATE - 06/12/99 Time: 1145-1245/1310-1410
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	49.844
Final Meter Volume (Cubic Feet)=	103.254
Meter Factor=	0.988
Final Leak Rate (cu ft/min)=	0.004
Net Meter Volume (Cubic Feet)=	52.769
Gas Volume (Dry Standard Cubic Feet)=	52.208
Barometric Pressure (in Hg)=	30.23
Static Pressure (Inches H20)=	-0.05
Percent Oxygen=	10.4
Percent Carbon Dioxide=	6.6
Moisture Collected (ml)=	199.7
Percent Water=	15.3
Average Meter Temperature (F)=	80
Average Delta H (in H20)=	0.67
Average Delta P (in H20)=	0.012
Average Stack Temperature (F)=	1253
Dry Molecular Weight=	29.47
Wet Molecular Weight=	27.72
Average Square Root of Delta P (in H20)=	0.1064
% Isokinetic=	100.4
Pitot Coefficient=	0.77
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	21.2
Stack Axis #2 (Inches)=	21.2
Circular Stack	
Stack Area (Square Feet)=	2.45
Stack Velocity (Actual, Feet/min)=	601
Flow Rate (Actual, Cubic ft/min)=	1,472
Flow rate (Standard, Wet, Cubic ft/min)=	458
Flow Rate (Standard, Dry, Cubic ft/min)=	388

Particulate Loading - Front Half

Particulate Weight (g)=	0.0356	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0105	0.0139 0.0191
Particulate Loading, Actual (gr/cu ft)=	0.0028	
Emission Rate (lb/hr)=	0.03	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M26AIN2 PROG.=VER 06/27/89
RUN # - 2 - Method 26A Train for PM and HCl 07-06-1999 14:47:13
LOCATION - Scrubber Inlet Duct
DATE - 06/12/99 Time: 1145-1245/1310-1410
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	1.411
Final Meter Volume (Cubic Meters)=	2.924
Meter Factor=	0.988
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.494
Gas Volume (Dry Standard Cubic Meters)=	1.478
Barometric Pressure (mm Hg)=	768
Static Pressure (mm H20)=	-1
Percent Oxygen=	10.4
Percent Carbon Dioxide=	6.6
Moisture Collected (ml)=	199.7
Percent Water=	15.3
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	17.1
Average Delta P (mm H20)=	0.3
Average Stack Temperature (C)=	679
Dry Molecular Weight=	29.47
Wet Molecular Weight=	27.72
Average Square Root of Delta P (mm H20)=	0.5363
% Isokinetic=	100.4
Pitot Coefficient=	0.77
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	183
Flow rate (Actual, Cubic m/min)=	42
Flow rate (Standard, Wet, Cubic m/min)=	13
Flow rate (Standard, Dry, Cubic m/min)=	11

Particulate Loading - Front Half

Particulate Weight (g)=	0.0356	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	24.1	31.8 43.8
Particulate Loading, Actual (mg/cu m)=	6.3	
Emission Rate (kg/hr)=	0.02	

No Back Half Analysis

FILE NAME - M26AIN2
RUN # - 2 - Method 26A Train for PM and HCl
LOCATION - Scrubber Inlet Duct
DATE - 06/12/99 Time: 1145-1245/1310-1410
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:47:13

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.005	0.32	1125	74	73
2	0.008	0.45	1136	75	74
3	0.018	1.00	1291	77	75
4	0.015	0.92	1240	79	76
5	0.010	0.55	1303	81	77
6	0.015	0.80	1297	83	79
7	0.008	0.45	1255	81	80
8	0.010	0.55	1286	82	80
9	0.010	0.58	1303	84	81
10	0.013	0.70	1264	85	83
11	0.018	1.00	1268	86	82
12	0.013	0.76	1272	87	83

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.0377	1.0256	0.0000	0.0121

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	65.6864	65.6624	296.9	0.0235
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0017
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M26AOT2
RUN # - 2 - Method 26A Train for PM and HCl
LOCATION - Scrubber Outlet Duct
DATE - 06/12/99 Time: 1147-1247/1312-1412
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:49:12

Initial Meter Volume (Cubic Feet)=	512.829
Final Meter Volume (Cubic Feet)=	552.535
Meter Factor=	0.995
Final Leak Rate (cu ft/min)=	0.007
Net Meter Volume (Cubic Feet)=	39.507
Gas Volume (Dry Standard Cubic Feet)=	39.148
Barometric Pressure (in Hg)=	30.23
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	11.4
Percent Carbon Dioxide=	6.1
Moisture Collected (ml)=	272.9
Percent Water=	24.7
Average Meter Temperature (F)=	79
Average Delta H (in H20)=	0.46
Average Delta P (in H20)=	0.005
Average Stack Temperature (F)=	514
Dry Molecular Weight=	29.43
Wet Molecular Weight=	26.61
Average Square Root of Delta P (in H20)=	0.0643
% Isokinetic=	101.4
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	286
Flow Rate (Actual, Cubic ft/min)=	1,287
Flow rate (Standard, Wet, Cubic ft/min)=	705
Flow Rate (Standard, Dry, Cubic ft/min)=	531

Particulate Loading - Front Half

Particulate Weight (g)=	0.0205	Corr. to 7% O2 & 12% CO2	
Particulate Loading, Dry Std. (gr/scf)=	0.0081	0.0118	0.0159
Particulate Loading, Actual (gr/cu ft)=	0.0033		
Emission Rate (lb/hr)=	0.04		

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M26AOT2 PROG.=VER 06/27/89
RUN # - 2 - Method 26A Train for PM and HCl 07-06-1999 14:49:12
LOCATION - Scrubber Outlet Duct
DATE - 06/12/99 Time: 1147-1247/1312-1412
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	14.521
Final Meter Volume (Cubic Meters)=	15.646
Meter Factor=	0.995
Final Leak Rate (cu m/min)=	0.0002
Net Meter Volume (Cubic Meters)=	1.119
Gas Volume (Dry Standard Cubic Meters)=	1.109
Barometric Pressure (mm Hg)=	768
Static Pressure (mm H20)=	-0
Percent Oxygen=	11.4
Percent Carbon Dioxide=	6.1
Moisture Collected (ml)=	272.9
Percent Water=	24.7
Average Meter Temperature (C)=	26
Average Delta H (mm H20)=	11.7
Average Delta P (mm H20)=	0.1
Average Stack Temperature (C)=	268
Dry Molecular Weight=	29.43
Wet Molecular Weight=	26.61
Average Square Root of Delta P (mm H20)=	0.3240
% Isokinetic=	101.4
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	87
Flow rate (Actual, Cubic m/min)=	36
Flow rate (Standard, Wet, Cubic m/min)=	20
Flow rate (Standard, Dry, Cubic m/min)=	15

Particulate Loading - Front Half

Particulate Weight (g)=	0.0205	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	18.5	27.0 36.4
Particulate Loading, Actual (mg/cu m)=	7.6	
Emission Rate (kg/hr)=	0.02	

No Back Half Analysis

FILE NAME - M26AOT2 PROG.=VER 06/27/89
RUN # - 2 - Method 26A Train for PM and HCl 07-06-1999 14:49:12
LOCATION - Scrubber Outlet Duct
DATE - 06/12/99 Time: 1147-1247/1312-1412
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.006	0.57	484	74	73
2	0.010	0.98	458	73	72
3	0.010	0.95	497	76	74
4	0.007	0.67	488	80	75
5	0.008	0.72	554	81	76
6	0.009	0.82	545	83	79
7	0.001	0.09	524	81	80
8	0.001	0.09	523	80	80
9	0.002	0.18	548	81	80
10	0.003	0.28	499	82	81
11	0.001	0.09	519	83	81
12	0.001	0.09	530	83	82

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.0551	1.0458	0.0000	0.0093

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	67.0484	67.0372	355.6	0.0112
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M26AIN3
RUN # - 3 - M26A Train for PM and HCl
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 0906-1006/1029-1129
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:51:31

Initial Meter Volume (Cubic Feet)=	104.041	
Final Meter Volume (Cubic Feet)=	154.006	
Meter Factor=	0.988	
Final Leak Rate (cu ft/min)=	0.001	
Net Meter Volume (Cubic Feet)=	49.365	
Gas Volume (Dry Standard Cubic Feet)=	48.839	
Barometric Pressure (in Hg)=	30.16	
Static Pressure (Inches H20)=	-0.05	
Percent Oxygen=	9.3	
Percent Carbon Dioxide=	7.5	
Moisture Collected (ml)=	188.5	
Percent Water=	15.4	
Average Meter Temperature (F)=	79	
Average Delta H (in H20)=	0.57	
Average Delta P (in H20)=	0.010	
Average Stack Temperature (F)=	1225	
Dry Molecular Weight=	29.57	
Wet Molecular Weight=	27.79	
Average Square Root of Delta P (in H20)=	0.0988	
% Isokinetic=	100.7	
Pitot Coefficient=	0.77	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	21.2	
Stack Axis #2 (Inches)=	21.2	
Circular Stack		
Stack Area (Square Feet)=	2.45	
Stack Velocity (Actual, Feet/min)=	553	
Flow Rate (Actual, Cubic ft/min)=	1,354	
Flow rate (Standard, Wet, Cubic ft/min)=	428	
Flow Rate (Standard, Dry, Cubic ft/min)=	362	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0386	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0122	0.0146 0.0195
Particulate Loading, Actual (gr/cu ft)=	0.0033	
Emission Rate (lb/hr)=	0.04	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M26AIN3 PROG.=VER 06/27/89
RUN # - 3 - M26A Train for PM and HCl 07-06-1999 14:51:31
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 0906-1006/1029-1129
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	2.946
Final Meter Volume (Cubic Meters)=	4.361
Meter Factor=	0.988
Final Leak Rate (cu m/min)=	0.0000
Net Meter Volume (Cubic Meters)=	1.398
Gas Volume (Dry Standard Cubic Meters)=	1.383
Barometric Pressure (mm Hg)=	766
Static Pressure (mm H20)=	-1
Percent Oxygen=	9.3
Percent Carbon Dioxide=	7.5
Moisture Collected (ml)=	188.5
Percent Water=	15.4
Average Meter Temperature (C)=	26
Average Delta H (mm H20)=	14.4
Average Delta P (mm H20)=	0.2
Average Stack Temperature (C)=	663
Dry Molecular Weight=	29.57
Wet Molecular Weight=	27.79
Average Square Root of Delta P (mm H20)=	0.4977
% Isokinetic=	100.7
Pitot Coefficient=	0.77
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	169
Flow rate (Actual, Cubic m/min)=	38
Flow rate (Standard, Wet, Cubic m/min)=	12
Flow rate (Standard, Dry, Cubic m/min)=	10

Particulate Loading - Front Half

Particulate Weight (g)=	0.0386	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	27.9	33.4 44.7
Particulate Loading, Actual (mg/cu m)=	7.5	
Emission Rate (kg/hr)=	0.02	

No Back Half Analysis

FILE NAME - M26AIN3
RUN # - 3 - M26A Train for PM and HCl
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 0906-1006/1029-1129
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:51:32

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.008	0.50	1065	73	72
2	0.010	0.65	1124	75	73
3	0.010	0.58	1218	77	74
4	0.010	0.55	1277	79	75
5	0.010	0.55	1231	80	76
6	0.013	0.72	1283	81	78
7	0.010	0.60	1248	80	78
8	0.010	0.58	1227	81	79
9	0.010	0.55	1270	82	79
10	0.010	0.55	1247	83	80
11	0.010	0.55	1261	84	80
12	0.008	0.40	1244	84	81

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.0563	1.0363	0.0000	0.0200

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	67.2300	67.2114	328.6	0.0186
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M26AOT3 PROG.=VER 06/27/89
RUN # - 3 - Method 26A Train for PM and HCl 07-06-1999 14:54:17
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 0908-1008/1031-1131
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	552.753
Final Meter Volume (Cubic Feet)=	591.987
Meter Factor=	0.995
Final Leak Rate (cu ft/min)=	0.009
Net Meter Volume (Cubic Feet)=	39.038
Gas Volume (Dry Standard Cubic Feet)=	38.785
Barometric Pressure (in Hg)=	30.16
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	10.0
Percent Carbon Dioxide=	7.1
Moisture Collected (ml)=	214.9
Percent Water=	20.7
Average Meter Temperature (F)=	76
Average Delta H (in H20)=	0.42
Average Delta P (in H20)=	0.005
Average Stack Temperature (F)=	521
Dry Molecular Weight=	29.54
Wet Molecular Weight=	27.15
Average Square Root of Delta P (in H20)=	0.0638
% Isokinetic=	97.5
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	282
Flow Rate (Actual, Cubic ft/min)=	1,271
Flow rate (Standard, Wet, Cubic ft/min)=	689
Flow Rate (Standard, Dry, Cubic ft/min)=	547

Particulate Loading - Front Half

Particulate Weight (g)=	0.0328	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0130	0.0166 0.0220
Particulate Loading, Actual (gr/cu ft)=	0.0056	
Emission Rate (lb/hr)=	0.06	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M26AOT3 PROG.=VER 06/27/89
RUN # - 3 - Method 26A Train for PM and HCl 07-06-1999 14:54:18
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 0908-1008/1031-1131
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	15.652
Final Meter Volume (Cubic Meters)=	16.763
Meter Factor=	0.995
Final Leak Rate (cu m/min)=	0.0003
Net Meter Volume (Cubic Meters)=	1.105
Gas Volume (Dry Standard Cubic Meters)=	1.098
Barometric Pressure (mm Hg)=	766
Static Pressure (mm H20)=	-0
Percent Oxygen=	10.0
Percent Carbon Dioxide=	7.1
Moisture Collected (ml)=	214.9
Percent Water=	20.7
Average Meter Temperature (C)=	24
Average Delta H (mm H20)=	10.6
Average Delta P (mm H20)=	0.1
Average Stack Temperature (C)=	272
Dry Molecular Weight=	29.54
Wet Molecular Weight=	27.15
Average Square Root of Delta P (mm H20)=	0.3215
% Isokinetic=	97.5
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	86
Flow rate (Actual, Cubic m/min)=	36
Flow rate (Standard, Wet, Cubic m/min)=	20
Flow rate (Standard, Dry, Cubic m/min)=	15

Particulate Loading - Front Half

Particulate Weight (g)=	0.0328	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	29.9	38.0 50.5
Particulate Loading, Actual (mg/cu m)=	12.8	
Emission Rate (kg/hr)=	0.03	

No Back Half Analysis

FILE NAME - M26AOT3 PROG.=VER 06/27/89
RUN # - 3 - Method 26A Train for PM and HCl 07-06-1999 14:54:18
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 0908-1008/1031-1131
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.003	0.29	456	71	70
2	0.006	0.58	460	72	71
3	0.007	0.66	493	73	72
4	0.008	0.74	516	76	72
5	0.008	0.72	547	78	74
6	0.010	0.87	585	80	76
7	0.001	0.08	576	78	78
8	0.002	0.17	570	77	77
9	0.004	0.36	543	78	78
10	0.003	0.27	525	79	78
11	0.002	0.19	501	80	78
12	0.001	0.09	482	80	79

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.0608	1.0402	0.0000	0.0206

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	67.6330	67.6208	228.5	0.0122
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29IN4PM
RUN # - 4 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 1605-1835
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:22:46

Initial Meter Volume (Cubic Feet)=	733.893	
Final Meter Volume (Cubic Feet)=	800.432	
Meter Factor=	1.001	
Final Leak Rate (cu ft/min)=	0.006	
Net Meter Volume (Cubic Feet)=	66.606	
Gas Volume (Dry Standard Cubic Feet)=	65.139	
Barometric Pressure (in Hg)=	30.12	
Static Pressure (Inches H20)=	-0.05	
Percent Oxygen=	8.7	
Percent Carbon Dioxide=	7.7	
Moisture Collected (ml)=	288.3	
Percent Water=	17.3	
Average Meter Temperature (F)=	84	
Average Delta H (in H20)=	0.64	
Average Delta P (in H20)=	0.011	
Average Stack Temperature (F)=	1432	
Dry Molecular Weight=	29.58	
Wet Molecular Weight=	27.58	
Average Square Root of Delta P (in H20)=	0.1059	
% Isokinetic=	102.6	
Pitot Coefficient=	0.81	
Sampling Time (Minutes)=	150.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	21.2	
Stack Axis #2 (Inches)=	21.2	
Circular Stack		
Stack Area (Square Feet)=	2.45	
Stack Velocity (Actual, Feet/min)=	666	
Flow Rate (Actual, Cubic ft/min)=	1,631	
Flow rate (Standard, Wet, Cubic ft/min)=	458	
Flow Rate (Standard, Dry, Cubic ft/min)=	379	

Particulate Loading - Front Half

Particulate Weight (g)=	0.1191	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0281	0.0320 0.0439
Particulate Loading, Actual (gr/cu ft)=	0.0065	
Emission Rate (lb/hr)=	0.09	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29IN4PM
RUN # - 4 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 1605-1835
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:22:46

Initial Meter Volume (Cubic Meters)=	20.781	
Final Meter Volume (Cubic Meters)=	22.665	
Meter Factor=	1.001	
Final Leak Rate (cu m/min)=	0.0002	
Net Meter Volume (Cubic Meters)=	1.886	
Gas Volume (Dry Standard Cubic Meters)=	1.844	
Barometric Pressure (mm Hg)=	765	
Static Pressure (mm H20)=	-1	
Percent Oxygen=	8.7	
Percent Carbon Dioxide=	7.7	
Moisture Collected (ml)=	288.3	
Percent Water=	17.3	
Average Meter Temperature (C)=	29	
Average Delta H (mm H20)=	16.3	
Average Delta P (mm H20)=	0.3	
Average Stack Temperature (C)=	778	
Dry Molecular Weight=	29.58	
Wet Molecular Weight=	27.58	
Average Square Root of Delta P (mm H20)=	0.5336	
% Isokinetic=	102.6	
Pitot Coefficient=	0.81	
Sampling Time (Minutes)=	150.0	
Nozzle Diameter (mm)=	17.98	
Stack Axis #1 (Meters)=	0.538	
Stack Axis #2 (Meters)=	0.538	
Circular Stack		
Stack Area (Square Meters)=	0.227	
Stack Velocity (Actual, m/min)=	203	
Flow rate (Actual, Cubic m/min)=	46	
Flow rate (Standard, Wet, Cubic m/min)=	13	
Flow rate (Standard, Dry, Cubic m/min)=	11	

Particulate Loading - Front Half

Particulate Weight (g)=	0.1191	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	64.5	73.5 100.6
Particulate Loading, Actual (mg/cu m)=	15.0	
Emission Rate (kg/hr)=	0.04	

No Back Half Analysis

FILE NAME - M29IN4PM
RUN # - 4 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 1605-1835
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:22:47

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.008	0.42	1373	76	75
2	0.013	0.72	1360	79	76
3	0.018	0.96	1470	84	78
4	0.018	0.99	1448	87	79
5	0.015	0.86	1440	88	80
6	0.013	0.70	1446	90	82
7	0.010	0.55	1492	90	83
8	0.010	0.53	1454	90	84
9	0.010	0.53	1442	90	84
10	0.010	0.57	1452	90	84
11	0.008	0.43	1399	90	85
12	0.008	0.42	1402	90	85

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.0909	1.0329	0.0000	0.0580

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	75.5027	75.4414	146.5	0.0611
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0017
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M26AOT4
RUN # - 4 - Method 26A Train for PM and HCl
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 1607-1707/1727-1827
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:57:50

Initial Meter Volume (Cubic Feet)=	592.239
Final Meter Volume (Cubic Feet)=	632.660
Meter Factor=	0.995
Final Leak Rate (cu ft/min)=	0.002
Net Meter Volume (Cubic Feet)=	40.219
Gas Volume (Dry Standard Cubic Feet)=	39.673
Barometric Pressure (in Hg)=	30.12
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	9.3
Percent Carbon Dioxide=	7.4
Moisture Collected (ml)=	330.3
Percent Water=	28.2
Average Meter Temperature (F)=	79
Average Delta H (in H20)=	0.44
Average Delta P (in H20)=	0.005
Average Stack Temperature (F)=	557
Dry Molecular Weight=	29.56
Wet Molecular Weight=	26.30
Average Square Root of Delta P (in H20)=	0.0667
% Isokinetic=	105.6
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	305
Flow Rate (Actual, Cubic ft/min)=	1,375
Flow rate (Standard, Wet, Cubic ft/min)=	719
Flow Rate (Standard, Dry, Cubic ft/min)=	516

Particulate Loading - Front Half

Particulate Weight (g)=	0.0684	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0265	0.0318 0.0431
Particulate Loading, Actual (gr/cu ft)=	0.0100	
Emission Rate (lb/hr)=	0.12	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M26AOT4 PROG.=VER 06/27/89
RUN # - 4 - Method 26A Train for PM and HCl 07-06-1999 14:57:50
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 1607-1707/1727-1827
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	16.770	
Final Meter Volume (Cubic Meters)=	17.914	
Meter Factor=	0.995	
Final Leak Rate (cu m/min)=	0.0001	
Net Meter Volume (Cubic Meters)=	1.139	
Gas Volume (Dry Standard Cubic Meters)=	1.123	
Barometric Pressure (mm Hg)=	765	
Static Pressure (mm H20)=	-0	
Percent Oxygen=	9.3	
Percent Carbon Dioxide=	7.4	
Moisture Collected (ml)=	330.3	
Percent Water=	28.2	
Average Meter Temperature (C)=	26	
Average Delta H (mm H20)=	11.2	
Average Delta P (mm H20)=	0.1	
Average Stack Temperature (C)=	292	
Dry Molecular Weight=	29.56	
Wet Molecular Weight=	26.30	
Average Square Root of Delta P (mm H20)=	0.3361	
% Isokinetic=	105.6	
Pitot Coefficient=	0.79	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (mm)=	17.98	
Stack Axis #1 (Meters)=	0.730	
Stack Axis #2 (Meters)=	0.730	
Circular Stack		
Stack Area (Square Meters)=	0.419	
Stack Velocity (Actual, m/min)=	93	
Flow rate (Actual, Cubic m/min)=	39	
Flow rate (Standard, Wet, Cubic m/min)=	20	
Flow rate (Standard, Dry, Cubic m/min)=	15	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0684	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	60.9	72.9 98.7
Particulate Loading, Actual (mg/cu m)=	22.8	
Emission Rate (kg/hr)=	0.05	

No Back Half Analysis

FILE NAME - M26AOT4
RUN # - 4 - Method 26A Train for PM and HCl
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 1607-1707/1727-1827
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:57:50

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.002	0.24	290	74	73
2	0.004	0.46	323	77	75
3	0.010	0.93	509	76	74
4	0.007	0.62	566	79	76
5	0.006	0.49	651	83	78
6	0.013	1.05	675	84	80
7	0.001	0.08	613	80	79
8	0.003	0.25	632	81	79
9	0.005	0.41	640	81	80
10	0.005	0.42	619	83	80
11	0.002	0.17	584	84	81
12	0.002	0.17	582	83	81

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.0841	1.0329	0.0000	0.0512

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	65.7910	65.7738	237.8	0.0172
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M26AIN5
RUN # - 5 - Method 26A Train for PM and HCl
LOCATION - Scrubber Inlet Duct
DATE - 06/14/99 Time: 1550-1650/1720-1820
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:00:02

Initial Meter Volume (Cubic Feet)=	154.253
Final Meter Volume (Cubic Feet)=	207.272
Meter Factor=	0.988
Final Leak Rate (cu ft/min)=	0.003
Net Meter Volume (Cubic Feet)=	52.383
Gas Volume (Dry Standard Cubic Feet)=	51.120
Barometric Pressure (in Hg)=	29.86
Static Pressure (Inches H20)=	-0.05
Percent Oxygen=	8.1
Percent Carbon Dioxide=	9.0
Moisture Collected (ml)=	195.6
Percent Water=	15.3
Average Meter Temperature (F)=	81
Average Delta H (in H20)=	0.63
Average Delta P (in H20)=	0.010
Average Stack Temperature (F)=	1308
Dry Molecular Weight=	29.76
Wet Molecular Weight=	27.97
Average Square Root of Delta P (in H20)=	0.1012
% Isokinetic=	100.5
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	21.2
Stack Axis #2 (Inches)=	21.2
Circular Stack	
Stack Area (Square Feet)=	2.45
Stack Velocity (Actual, Feet/min)=	614
Flow Rate (Actual, Cubic ft/min)=	1,504
Flow rate (Standard, Wet, Cubic ft/min)=	448
Flow Rate (Standard, Dry, Cubic ft/min)=	380

Particulate Loading - Front Half

Particulate Weight (g)=	0.0893	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0269	0.0292 0.0359
Particulate Loading, Actual (gr/cu ft)=	0.0068	
Emission Rate (lb/hr)=	0.09	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M26AIN5 PROG.=VER 06/27/89
RUN # - 5 - Method 26A Train for PM and HCl 07-06-1999 15:00:03
LOCATION - Scrubber Inlet Duct
DATE - 06/14/99 Time: 1550-1650/1720-1820
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	4.368
Final Meter Volume (Cubic Meters)=	5.869
Meter Factor=	0.988
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.483
Gas Volume (Dry Standard Cubic Meters)=	1.448
Barometric Pressure (mm Hg)=	758
Static Pressure (mm H20)=	-1
Percent Oxygen=	8.1
Percent Carbon Dioxide=	9.0
Moisture Collected (ml)=	195.6
Percent Water=	15.3
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	16.0
Average Delta P (mm H20)=	0.3
Average Stack Temperature (C)=	709
Dry Molecular Weight=	29.76
Wet Molecular Weight=	27.97
Average Square Root of Delta P (mm H20)=	0.5103
% Isokinetic=	100.5
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	187
Flow rate (Actual, Cubic m/min)=	43
Flow rate (Standard, Wet, Cubic m/min)=	13
Flow rate (Standard, Dry, Cubic m/min)=	11

Particulate Loading - Front Half

Particulate Weight (g)=	0.0893	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	61.7	66.9 82.3
Particulate Loading, Actual (mg/cu m)=	15.6	
Emission Rate (kg/hr)=	0.04	

No Back Half Analysis

FILE NAME - M26AIN5 PROG.=VER 06/27/89
RUN # - 5 - Method 26A Train for PM and HCl 07-06-1999 15:00:03
LOCATION - Scrubber Inlet Duct
DATE - 06/14/99 Time: 1550-1650/1720-1820
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.008	0.50	1177	76	75
2	0.008	0.49	1221	77	75
3	0.008	0.45	1316	79	76
4	0.010	0.60	1301	80	77
5	0.010	0.60	1291	82	78
6	0.008	0.43	1340	84	80
7	0.015	0.93	1346	81	80
8	0.015	0.90	1343	82	81
9	0.013	0.78	1340	83	81
10	0.013	0.74	1337	86	82
11	0.010	0.58	1360	86	83
12	0.010	0.58	1325	87	83

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.0901	1.0397	0.0000	0.0504

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	76.3809	76.3420	234.2	0.0389
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M26AOT5 PROG.=VER 06/27/89
RUN # - 5 - Method 26A Train for PM and HCl 07-06-1999 15:02:18
LOCATION - Scrubber Outlet Duct
DATE - 06/14/99 Time: 1552-1652/1722-1822
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	633.335
Final Meter Volume (Cubic Feet)=	679.010
Meter Factor=	0.995
Final Leak Rate (cu ft/min)=	0.014
Net Meter Volume (Cubic Feet)=	45.447
Gas Volume (Dry Standard Cubic Feet)=	44.517
Barometric Pressure (in Hg)=	29.86
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	9.7
Percent Carbon Dioxide=	7.9
Moisture Collected (ml)=	305.6
Percent Water=	24.4
Average Meter Temperature (F)=	79
Average Delta H (in H20)=	0.58
Average Delta P (in H20)=	0.007
Average Stack Temperature (F)=	631
Dry Molecular Weight=	29.65
Wet Molecular Weight=	26.81
Average Square Root of Delta P (in H20)=	0.0778
% Isokinetic=	101.4
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	367
Flow Rate (Actual, Cubic ft/min)=	1,653
Flow rate (Standard, Wet, Cubic ft/min)=	798
Flow Rate (Standard, Dry, Cubic ft/min)=	603

Particulate Loading - Front Half

Particulate Weight (g)=	0.0681	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0236	0.0292 0.0358
Particulate Loading, Actual (gr/cu ft)=	0.0086	
Emission Rate (lb/hr)=	0.12	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M26AOT5 PROG.=VER 06/27/89
RUN # - 5 - Method 26A Train for PM and HCl 07-06-1999 15:02:18
LOCATION - Scrubber Outlet Duct
DATE - 06/14/99 Time: 1552-1652/1722-1822
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	17.934	
Final Meter Volume (Cubic Meters)=	19.227	
Meter Factor=	0.995	
Final Leak Rate (cu m/min)=	0.0004	
Net Meter Volume (Cubic Meters)=	1.287	
Gas Volume (Dry Standard Cubic Meters)=	1.261	
Barometric Pressure (mm Hg)=	758	
Static Pressure (mm H20)=	-0	
Percent Oxygen=	9.7	
Percent Carbon Dioxide=	7.9	
Moisture Collected (ml)=	305.6	
Percent Water=	24.4	
Average Meter Temperature (C)=	26	
Average Delta H (mm H20)=	14.8	
Average Delta P (mm H20)=	0.2	
Average Stack Temperature (C)=	333	
Dry Molecular Weight=	29.65	
Wet Molecular Weight=	26.81	
Average Square Root of Delta P (mm H20)=	0.3922	
% Isokinetic=	101.4	
Pitot Coefficient=	0.79	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (mm)=	17.98	
Stack Axis #1 (Meters)=	0.730	
Stack Axis #2 (Meters)=	0.730	
Circular Stack		
Stack Area (Square Meters)=	0.419	
Stack Velocity (Actual, m/min)=	112	
Flow rate (Actual, Cubic m/min)=	47	
Flow rate (Standard, Wet, Cubic m/min)=	23	
Flow rate (Standard, Dry, Cubic m/min)=	17	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0681	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	54.0	66.9 82.1
Particulate Loading, Actual (mg/cu m)=	19.7	
Emission Rate (kg/hr)=	0.06	

No Back Half Analysis

FILE NAME - M26AOT5
RUN # - 5 - Method 26A Train for PM and HCl
LOCATION - Scrubber Outlet Duct
DATE - 06/14/99 Time: 1552-1652/1722-1822
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:02:18

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.006	0.55	525	73	73
2	0.012	1.06	564	75	74
3	0.013	1.15	565	77	75
4	0.012	1.01	616	80	76
5	0.012	0.92	728	83	77
6	0.015	1.11	779	85	78
7	0.002	0.16	680	79	78
8	0.002	0.16	658	79	78
9	0.005	0.40	671	80	78
10	0.003	0.24	656	81	79
11	0.002	0.17	567	83	81
12	0.001	0.08	565	82	80

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.0882	1.0404	0.0000	0.0478

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	67.4605	67.4402	209.6	0.0203
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M26AIN6
RUN # - 6 - Method 26A Train for PM and HCl
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1045-1145/1211-1311
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:04:23

Initial Meter Volume (Cubic Feet)=	207.596
Final Meter Volume (Cubic Feet)=	260.477
Meter Factor=	0.988
Final Leak Rate (cu ft/min)=	0.010
Net Meter Volume (Cubic Feet)=	52.246
Gas Volume (Dry Standard Cubic Feet)=	51.243
Barometric Pressure (in Hg)=	29.92
Static Pressure (Inches H20)=	-0.05
Percent Oxygen=	9.0
Percent Carbon Dioxide=	8.1
Moisture Collected (ml)=	199.9
Percent Water=	15.5
Average Meter Temperature (F)=	79
Average Delta H (in H20)=	0.63
Average Delta P (in H20)=	0.010
Average Stack Temperature (F)=	1241
Dry Molecular Weight=	29.66
Wet Molecular Weight=	27.85
Average Square Root of Delta P (in H20)=	0.1001
% Isokinetic=	99.8
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	21.2
Stack Axis #2 (Inches)=	21.2
Circular Stack	
Stack Area (Square Feet)=	2.45
Stack Velocity (Actual, Feet/min)=	597
Flow Rate (Actual, Cubic ft/min)=	1,461
Flow rate (Standard, Wet, Cubic ft/min)=	453
Flow Rate (Standard, Dry, Cubic ft/min)=	383

Particulate Loading - Front Half

Particulate Weight (g)=	0.1073	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0322	0.0376 0.0478
Particulate Loading, Actual (gr/cu ft)=	0.0085	
Emission Rate (lb/hr)=	0.11	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M26AIN6 PROG.=VER 06/27/89
RUN # - 6 - Method 26A Train for PM and HCl 07-06-1999 15:04:23
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1045-1145/1211-1311
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	5.878	
Final Meter Volume (Cubic Meters)=	7.376	
Meter Factor=	0.988	
Final Leak Rate (cu m/min)=	0.0003	
Net Meter Volume (Cubic Meters)=	1.479	
Gas Volume (Dry Standard Cubic Meters)=	1.451	
Barometric Pressure (mm Hg)=	760	
Static Pressure (mm H20)=	-1	
Percent Oxygen=	9.0	
Percent Carbon Dioxide=	8.1	
Moisture Collected (ml)=	199.9	
Percent Water=	15.5	
Average Meter Temperature (C)=	26	
Average Delta H (mm H20)=	16.0	
Average Delta P (mm H20)=	0.3	
Average Stack Temperature (C)=	671	
Dry Molecular Weight=	29.66	
Wet Molecular Weight=	27.85	
Average Square Root of Delta P (mm H20)=	0.5046	
% Isokinetic=	99.8	
Pitot Coefficient=	0.81	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (mm)=	17.98	
Stack Axis #1 (Meters)=	0.538	
Stack Axis #2 (Meters)=	0.538	
Circular Stack		
Stack Area (Square Meters)=	0.227	
Stack Velocity (Actual, m/min)=	182	
Flow rate (Actual, Cubic m/min)=	41	
Flow rate (Standard, Wet, Cubic m/min)=	13	
Flow rate (Standard, Dry, Cubic m/min)=	11	

Particulate Loading - Front Half

Particulate Weight (g)=	0.1073	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	73.9	86.3 109.6
Particulate Loading, Actual (mg/cu m)=	19.4	
Emission Rate (kg/hr)=	0.05	

No Back Half Analysis

FILE NAME - M26AIN6
RUN # - 6 - Method 26A Train for PM and HCl
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1045-1145/1211-1311
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:04:23

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.008	0.48	1160	73	72
2	0.008	0.46	1179	75	73
3	0.008	0.49	1205	76	74
4	0.008	0.47	1160	79	76
5	0.008	0.47	1105	81	77
6	0.010	0.65	1249	82	78
7	0.013	0.78	1325	80	79
8	0.015	0.94	1295	81	79
9	0.015	0.92	1300	83	79
10	0.013	0.77	1298	84	80
11	0.010	0.58	1315	85	81
12	0.010	0.55	1295	86	82

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.0854	1.0294	0.0000	0.0560

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	67.7150	67.6637	170.6	0.0513
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M26AOT6 PROG.=VER 06/27/89
RUN # - 6 - Method 26A Train for PM and HCl 07-06-1999 15:06:26
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1047-1147/1213-1313
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	679.241
Final Meter Volume (Cubic Feet)=	719.042
Meter Factor=	0.995
Final Leak Rate (cu ft/min)=	0.003
Net Meter Volume (Cubic Feet)=	39.602
Gas Volume (Dry Standard Cubic Feet)=	38.898
Barometric Pressure (in Hg)=	29.92
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	10.6
Percent Carbon Dioxide=	7.0
Moisture Collected (ml)=	279.6
Percent Water=	25.3
Average Meter Temperature (F)=	78
Average Delta H (in H20)=	0.46
Average Delta P (in H20)=	0.006
Average Stack Temperature (F)=	628
Dry Molecular Weight=	29.54
Wet Molecular Weight=	26.62
Average Square Root of Delta P (in H20)=	0.0680
% Isokinetic=	101.9
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	321
Flow Rate (Actual, Cubic ft/min)=	1,446
Flow rate (Standard, Wet, Cubic ft/min)=	702
Flow Rate (Standard, Dry, Cubic ft/min)=	524

Particulate Loading - Front Half

Particulate Weight (g)=	0.0753	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0298	0.0401 0.0511
Particulate Loading, Actual (gr/cu ft)=	0.0108	
Emission Rate (lb/hr)=	0.13	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M26AOT6 PROG.=VER 06/27/89
RUN # - 6 - Method 26A Train for PM and HCl 07-06-1999 15:06:26
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1047-1147/1213-1313
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	19.233
Final Meter Volume (Cubic Meters)=	20.360
Meter Factor=	0.995
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.121
Gas Volume (Dry Standard Cubic Meters)=	1.101
Barometric Pressure (mm Hg)=	760
Static Pressure (mm H20)=	-0
Percent Oxygen=	10.6
Percent Carbon Dioxide=	7.0
Moisture Collected (ml)=	279.6
Percent Water=	25.3
Average Meter Temperature (C)=	26
Average Delta H (mm H20)=	11.8
Average Delta P (mm H20)=	0.1
Average Stack Temperature (C)=	331
Dry Molecular Weight=	29.54
Wet Molecular Weight=	26.62
Average Square Root of Delta P (mm H20)=	0.3427
% Isokinetic=	101.9
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	98
Flow rate (Actual, Cubic m/min)=	41
Flow rate (Standard, Wet, Cubic m/min)=	20
Flow rate (Standard, Dry, Cubic m/min)=	15

Particulate Loading - Front Half

Particulate Weight (g)=	0.0753	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	68.4	92.0 117.2
Particulate Loading, Actual (mg/cu m)=	24.8	
Emission Rate (kg/hr)=	0.06	

No Back Half Analysis

FILE NAME - M26AOT6
RUN # - 6 - Method 26A Train for PM and HCl
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1047-1147/1213-1313
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:06:26

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.004	0.35	550	71	70
2	0.008	0.70	562	72	71
3	0.010	0.87	571	74	72
4	0.010	0.86	591	77	73
5	0.011	0.84	739	82	76
6	0.015	1.15	729	83	77
7	0.001	0.08	650	81	80
8	0.001	0.08	660	79	79
9	0.003	0.24	661	81	80
10	0.003	0.24	676	83	81
11	0.001	0.08	580	84	81
12	0.001	0.09	562	83	81

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.0914	1.0373	0.0000	0.0541

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	67.6921	67.6709	205.2	0.0212
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M26AIN7
RUN # - 7 - Method 26A Train for PM and HCl
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1750-1850/1910-2010
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:09:17

Initial Meter Volume (Cubic Feet)=	261.068
Final Meter Volume (Cubic Feet)=	314.355
Meter Factor=	0.988
Final Leak Rate (cu ft/min)=	0.009
Net Meter Volume (Cubic Feet)=	52.648
Gas Volume (Dry Standard Cubic Feet)=	51.487
Barometric Pressure (in Hg)=	29.89
Static Pressure (Inches H20)=	-0.05
Percent Oxygen=	7.1
Percent Carbon Dioxide=	9.8
Moisture Collected (ml)=	197.6
Percent Water=	15.3
Average Meter Temperature (F)=	80
Average Delta H (in H20)=	0.68
Average Delta P (in H20)=	0.012
Average Stack Temperature (F)=	1496
Dry Molecular Weight=	29.85
Wet Molecular Weight=	28.04
Average Square Root of Delta P (in H20)=	0.1079
% Isokinetic=	100.0
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	21.2
Stack Axis #2 (Inches)=	21.2
Circular Stack	
Stack Area (Square Feet)=	2.45
Stack Velocity (Actual, Feet/min)=	687
Flow Rate (Actual, Cubic ft/min)=	1,682
Flow rate (Standard, Wet, Cubic ft/min)=	454
Flow Rate (Standard, Dry, Cubic ft/min)=	384

Particulate Loading - Front Half

Particulate Weight (g)=	0.3727	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.1115	0.1123 0.1365
Particulate Loading, Actual (gr/cu ft)=	0.0255	
Emission Rate (lb/hr)=	0.37	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M26AIN7 PROG.=VER 06/27/89
RUN # - 7 - Method 26A Train for PM and HCl 07-06-1999 15:09:17
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1750-1850/1910-2010
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	7.392
Final Meter Volume (Cubic Meters)=	8.901
Meter Factor=	0.988
Final Leak Rate (cu m/min)=	0.0003
Net Meter Volume (Cubic Meters)=	1.491
Gas Volume (Dry Standard Cubic Meters)=	1.458
Barometric Pressure (mm Hg)=	759
Static Pressure (mm H20)=	-1
Percent Oxygen=	7.1
Percent Carbon Dioxide=	9.8
Moisture Collected (ml)=	197.6
Percent Water=	15.3
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	17.1
Average Delta P (mm H20)=	0.3
Average Stack Temperature (C)=	813
Dry Molecular Weight=	29.85
Wet Molecular Weight=	28.04
Average Square Root of Delta P (mm H20)=	0.5436
% Isokinetic=	100.0
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	209
Flow rate (Actual, Cubic m/min)=	48
Flow rate (Standard, Wet, Cubic m/min)=	13
Flow rate (Standard, Dry, Cubic m/min)=	11

Particulate Loading - Front Half

Particulate Weight (g)=	0.3727	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	255.6	257.5 313.0
Particulate Loading, Actual (mg/cu m)=	58.4	
Emission Rate (kg/hr)=	0.17	

No Back Half Analysis

FILE NAME - M26AIN7
RUN # - 7 - Method 26A Train for PM and HCl
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1750-1850/1910-2010
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:09:17

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.005	0.28	1349	74	74
2	0.005	0.27	1486	76	74
3	0.013	0.70	1458	78	76
4	0.008	0.42	1503	80	77
5	0.010	0.55	1489	82	78
6	0.010	0.59	1517	83	79
7	0.018	0.97	1521	80	80
8	0.018	0.98	1550	82	80
9	0.015	0.83	1540	84	81
10	0.015	0.83	1505	85	81
11	0.015	0.83	1539	86	82
12	0.015	0.85	1489	86	83

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.2076	1.0363	0.0000	0.1713

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	63.3610	63.1593	265.4	0.2014
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0012
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M26AOT7 PROG.=VER 06/27/89
RUN # - 7 - Method 26A Train for PM and HCl 07-06-1999 15:11:14
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1752-1852/1912-2012
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	719.296	
Final Meter Volume (Cubic Feet)=	755.584	
Meter Factor=	0.995	
Final Leak Rate (cu ft/min)=	0.017	Leak Correction= 0.5885
Net Meter Volume (Cubic Feet)=	35.521	
Gas Volume (Dry Standard Cubic Feet)=	34.696	
Barometric Pressure (in Hg)=	29.89	
Static Pressure (Inches H20)=	-0.02	
Percent Oxygen=	8.4	
Percent Carbon Dioxide=	8.6	
Moisture Collected (ml)=	279.4	
Percent Water=	27.5	
Average Meter Temperature (F)=	80	
Average Delta H (in H20)=	0.37	
Average Delta P (in H20)=	0.005	
Average Stack Temperature (F)=	657	
Dry Molecular Weight=	29.71	
Wet Molecular Weight=	26.49	
Average Square Root of Delta P (in H20)=	0.0650	
% Isokinetic=	99.1	
Pitot Coefficient=	0.79	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	28.8	
Stack Axis #2 (Inches)=	28.8	
Circular Stack		
Stack Area (Square Feet)=	4.51	
Stack Velocity (Actual, Feet/min)=	312	
Flow Rate (Actual, Cubic ft/min)=	1,405	
Flow rate (Standard, Wet, Cubic ft/min)=	663	
Flow Rate (Standard, Dry, Cubic ft/min)=	481	

Particulate Loading - Front Half

Particulate Weight (g)=	0.2352	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.1044	0.1160 0.1457
Particulate Loading, Actual (gr/cu ft)=	0.0357	
Emission Rate (lb/hr)=	0.43	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M26AOT7 PROG.=VER 06/27/89
RUN # - 7 - Method 26A Train for PM and HCl 07-06-1999 15:11:14
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1752-1852/1912-2012
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	20.368	
Final Meter Volume (Cubic Meters)=	21.395	
Meter Factor=	0.995	
Final Leak Rate (cu m/min)=	0.0005	Leak Correction= 0.0167
Net Meter Volume (Cubic Meters)=	1.006	
Gas Volume (Dry Standard Cubic Meters)=	0.982	
Barometric Pressure (mm Hg)=	759	
Static Pressure (mm H20)=	-0	
Percent Oxygen=	8.4	
Percent Carbon Dioxide=	8.6	
Moisture Collected (ml)=	279.4	
Percent Water=	27.5	
Average Meter Temperature (C)=	27	
Average Delta H (mm H20)=	9.5	
Average Delta P (mm H20)=	0.1	
Average Stack Temperature (C)=	347	
Dry Molecular Weight=	29.71	
Wet Molecular Weight=	26.49	
Average Square Root of Delta P (mm H20)=	0.3277	
% Isokinetic=	99.1	
Pitot Coefficient=	0.79	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (mm)=	17.98	
Stack Axis #1 (Meters)=	0.730	
Stack Axis #2 (Meters)=	0.730	
Circular Stack		
Stack Area (Square Meters)=	0.419	
Stack Velocity (Actual, m/min)=	95	
Flow rate (Actual, Cubic m/min)=	40	
Flow rate (Standard, Wet, Cubic m/min)=	19	
Flow rate (Standard, Dry, Cubic m/min)=	14	

Particulate Loading - Front Half

Particulate Weight (g)=	0.2352	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	239.4	266.0 334.1
Particulate Loading, Actual (mg/cu m)=	81.9	
Emission Rate (kg/hr)=	0.20	

No Back Half Analysis

FILE NAME - M26AOT7
RUN # - 7 - Method 26A Train for PM and HCl
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1752-1852/1912-2012
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:11:14

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.002	0.17	510	74	74
2	0.008	0.65	581	75	74
3	0.008	0.63	610	78	75
4	0.008	0.62	632	81	77
5	0.010	0.71	739	82	78
6	0.012	0.83	783	85	80
7	0.001	0.07	745	83	82
8	0.003	0.21	738	82	82
9	0.004	0.28	743	83	82
10	0.002	0.14	694	84	82
11	0.001	0.08	528	84	83
12	0.001	0.08	585	84	83

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.2181	1.0388	0.0000	0.1793

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	68.5005	68.4437	356.5	0.0559
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0025
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M26AIN8 PROG.=VER 06/27/89
RUN # - 8 - Method 26A Train for PM and HCl 07-06-1999 15:13:36
LOCATION - Scrubber Inlet Duct
DATE - 06/16/99 Time: 1540-1640/1648-1818
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	317.060
Final Meter Volume (Cubic Feet)=	378.135
Meter Factor=	0.988
Final Leak Rate (cu ft/min)=	0.002
Net Meter Volume (Cubic Feet)=	60.342
Gas Volume (Dry Standard Cubic Feet)=	59.368
Barometric Pressure (in Hg)=	30.08
Static Pressure (Inches H20)=	-0.05
Percent Oxygen=	7.6
Percent Carbon Dioxide=	8.2
Moisture Collected (ml)=	262.0
Percent Water=	17.2
Average Meter Temperature (F)=	80
Average Delta H (in H20)=	0.54
Average Delta P (in H20)=	0.010
Average Stack Temperature (F)=	1542
Dry Molecular Weight=	29.62
Wet Molecular Weight=	27.62
Average Square Root of Delta P (in H20)=	0.1008
% Isokinetic=	101.1
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	150.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	21.2
Stack Axis #2 (Inches)=	21.2
Circular Stack	
Stack Area (Square Feet)=	2.45
Stack Velocity (Actual, Feet/min)=	653
Flow Rate (Actual, Cubic ft/min)=	1,598
Flow rate (Standard, Wet, Cubic ft/min)=	424
Flow Rate (Standard, Dry, Cubic ft/min)=	351

Particulate Loading - Front Half

Particulate Weight (g)=	0.1902	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0493	0.0515 0.0722
Particulate Loading, Actual (gr/cu ft)=	0.0108	
Emission Rate (lb/hr)=	0.15	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M26AIN8 PROG.=VER 06/27/89
RUN # - 8 - Method 26A Train for PM and HCl 07-06-1999 15:13:36
LOCATION - Scrubber Inlet Duct
DATE - 06/16/99 Time: 1540-1640/1648-1818
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	8.978
Final Meter Volume (Cubic Meters)=	10.707
Meter Factor=	0.988
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.709
Gas Volume (Dry Standard Cubic Meters)=	1.681
Barometric Pressure (mm Hg)=	764
Static Pressure (mm H20)=	-1
Percent Oxygen=	7.6
Percent Carbon Dioxide=	8.2
Moisture Collected (ml)=	262.0
Percent Water=	17.2
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	13.7
Average Delta P (mm H20)=	0.3
Average Stack Temperature (C)=	839
Dry Molecular Weight=	29.62
Wet Molecular Weight=	27.62
Average Square Root of Delta P (mm H20)=	0.5081
% Isokinetic=	101.1
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	150.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	199
Flow rate (Actual, Cubic m/min)=	45
Flow rate (Standard, Wet, Cubic m/min)=	12
Flow rate (Standard, Dry, Cubic m/min)=	10

Particulate Loading - Front Half

Particulate Weight (g)=	0.1902	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	113.1	118.2 165.6
Particulate Loading, Actual (mg/cu m)=	24.8	
Emission Rate (kg/hr)=	0.07	

No Back Half Analysis

FILE NAME - M26AIN8
RUN # - 8 - Method 26A Train for PM and HCl
LOCATION - Scrubber Inlet Duct
DATE - 06/16/99 Time: 1540-1640/1648-1818
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:13:36

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.008	0.41	1488	73	73
2	0.008	0.38	1498	76	74
3	0.008	0.39	1465	77	75
4	0.010	0.53	1549	79	76
5	0.008	0.38	1537	80	77
6	0.008	0.38	1550	81	78
7	0.015	0.80	1573	80	78
8	0.013	0.67	1534	82	80
9	0.010	0.52	1562	83	80
10	0.010	0.50	1543	84	81
11	0.010	0.55	1559	84	81
12	0.010	0.50	1561	85	82
13	0.010	0.53	1553	85	82
14	0.015	0.78	1565	85	82
15	0.015	0.79	1598	86	82

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.1133	1.0356	0.0000	0.0777

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	83.1824	83.0696	292.7	0.1125
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0010
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29OT8PM
RUN # - 8 - Method 29 Train for Metals
LOCATION - Scrubber Outlet Duct
DATE - 06/16/99 Time: 1540-1640/1648-1818
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:25:12

Initial Meter Volume (Cubic Feet)=	131.521	
Final Meter Volume (Cubic Feet)=	178.100	
Meter Factor=	1.011	
Final Leak Rate (cu ft/min)=	0.006	
Net Meter Volume (Cubic Feet)=	47.091	
Gas Volume (Dry Standard Cubic Feet)=	46.302	
Barometric Pressure (in Hg)=	30.08	
Static Pressure (Inches H20)=	-0.02	
Percent Oxygen=	8.9	
Percent Carbon Dioxide=	7.4	
Moisture Collected (ml)=	369.7	
Percent Water=	27.3	
Average Meter Temperature (F)=	80	
Average Delta H (in H20)=	0.36	
Average Delta P (in H20)=	0.005	
Average Stack Temperature (F)=	675	
Dry Molecular Weight=	29.54	
Wet Molecular Weight=	26.39	
Average Square Root of Delta P (in H20)=	0.0683	
% Isokinetic=	96.6	
Pitot Coefficient=	0.82	
Sampling Time (Minutes)=	150.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	28.8	
Stack Axis #2 (Inches)=	28.8	
Circular Stack		
Stack Area (Square Feet)=	4.51	
Stack Velocity (Actual, Feet/min)=	344	
Flow Rate (Actual, Cubic ft/min)=	1,551	
Flow rate (Standard, Wet, Cubic ft/min)=	725	
Flow Rate (Standard, Dry, Cubic ft/min)=	527	

Particulate Loading - Front Half

Particulate Weight (g)=	0.1369	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0455	0.0527 0.0738
Particulate Loading, Actual (gr/cu ft)=	0.0155	
Emission Rate (lb/hr)=	0.21	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29OT8PM
RUN # - 8 - Method 29 Train for Metals
LOCATION - Scrubber Outlet Duct
DATE - 06/16/99 Time: 1540-1640/1648-1818
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:25:12

Initial Meter Volume (Cubic Meters)=	3.724	
Final Meter Volume (Cubic Meters)=	5.043	
Meter Factor=	1.011	
Final Leak Rate (cu m/min)=	0.0002	
Net Meter Volume (Cubic Meters)=	1.333	
Gas Volume (Dry Standard Cubic Meters)=	1.311	
Barometric Pressure (mm Hg)=	764	
Static Pressure (mm H20)=	-0	
Percent Oxygen=	8.9	
Percent Carbon Dioxide=	7.4	
Moisture Collected (ml)=	369.7	
Percent Water=	27.3	
Average Meter Temperature (C)=	27	
Average Delta H (mm H20)=	9.2	
Average Delta P (mm H20)=	0.1	
Average Stack Temperature (C)=	357	
Dry Molecular Weight=	29.54	
Wet Molecular Weight=	26.39	
Average Square Root of Delta P (mm H20)=	0.3443	
% Isokinetic=	96.6	
Pitot Coefficient=	0.82	
Sampling Time (Minutes)=	150.0	
Nozzle Diameter (mm)=	17.98	
Stack Axis #1 (Meters)=	0.730	
Stack Axis #2 (Meters)=	0.730	
Circular Stack		
Stack Area (Square Meters)=	0.419	
Stack Velocity (Actual, m/min)=	105	
Flow rate (Actual, Cubic m/min)=	44	
Flow rate (Standard, Wet, Cubic m/min)=	21	
Flow rate (Standard, Dry, Cubic m/min)=	15	

Particulate Loading - Front Half

Particulate Weight (g)=	0.1369	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	104.4	120.8 169.4
Particulate Loading, Actual (mg/cu m)=	35.5	
Emission Rate (kg/hr)=	0.09	

No Back Half Analysis

FILE NAME - M29OT8PM
RUN # - 8 - Method 29 Train for Metals
LOCATION - Scrubber Outlet Duct
DATE - 06/16/99 Time: 1540-1640/1648-1818
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:25:12

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.002	0.15	604	73	72
2	0.002	0.14	683	74	73
3	0.005	0.34	695	75	74
4	0.002	0.13	700	77	75
5	0.001	0.07	618	79	76
6	0.001	0.07	598	80	77
7	0.006	0.43	652	81	79
8	0.003	0.22	633	82	79
9	0.006	0.44	651	83	79
10	0.007	0.51	642	84	80
11	0.009	0.61	741	86	81
12	0.010	0.66	769	88	82
13	0.008	0.56	705	89	82
14	0.008	0.56	716	89	83
15	0.008	0.55	717	89	83

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.1295	1.0361	0.0000	0.0934

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	68.5396	68.4957	234.7	0.0435
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0016
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M26AIN9 PROG.=VER 06/27/89
RUN # - 9 - Method 26A Train for PM and HCl 07-06-1999 15:15:51
LOCATION - Scrubber Inlet Duct
DATE - 06/17/99 Time: 1005-1105/1118-1218
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	378.425
Final Meter Volume (Cubic Feet)=	429.406
Meter Factor=	0.988
Final Leak Rate (cu ft/min)=	0.003
Net Meter Volume (Cubic Feet)=	50.369
Gas Volume (Dry Standard Cubic Feet)=	49.676
Barometric Pressure (in Hg)=	30.00
Static Pressure (Inches H20)=	-0.05
Percent Oxygen=	7.8
Percent Carbon Dioxide=	8.2
Moisture Collected (ml)=	195.6
Percent Water=	15.6
Average Meter Temperature (F)=	77
Average Delta H (in H20)=	0.60
Average Delta P (in H20)=	0.011
Average Stack Temperature (F)=	1462
Dry Molecular Weight=	29.62
Wet Molecular Weight=	27.81
Average Square Root of Delta P (in H20)=	0.1032
% Isokinetic=	99.8
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	21.2
Stack Axis #2 (Inches)=	21.2
Circular Stack	
Stack Area (Square Feet)=	2.45
Stack Velocity (Actual, Feet/min)=	653
Flow Rate (Actual, Cubic ft/min)=	1,600
Flow rate (Standard, Wet, Cubic ft/min)=	441
Flow Rate (Standard, Dry, Cubic ft/min)=	372

Particulate Loading - Front Half

Particulate Weight (g)=	0.1210	Corr. to 7% O2 & 12% CO2	
Particulate Loading, Dry Std. (gr/scf)=	0.0375	0.0398	0.0549
Particulate Loading, Actual (gr/cu ft)=	0.0087		
Emission Rate (lb/hr)=	0.12		

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M26AIN9 PROG.=VER 06/27/89
RUN # - 9 - Method 26A Train for PM and HCl 07-06-1999 15:15:51
LOCATION - Scrubber Inlet Duct
DATE - 06/17/99 Time: 1005-1105/1118-1218
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	10.715
Final Meter Volume (Cubic Meters)=	12.159
Meter Factor=	0.988
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.426
Gas Volume (Dry Standard Cubic Meters)=	1.407
Barometric Pressure (mm Hg)=	762
Static Pressure (mm H20)=	-1
Percent Oxygen=	7.8
Percent Carbon Dioxide=	8.2
Moisture Collected (ml)=	195.6
Percent Water=	15.6
Average Meter Temperature (C)=	25
Average Delta H (mm H20)=	15.2
Average Delta P (mm H20)=	0.3
Average Stack Temperature (C)=	794
Dry Molecular Weight=	29.62
Wet Molecular Weight=	27.81
Average Square Root of Delta P (mm H20)=	0.5202
% Isokinetic=	99.8
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	199
Flow rate (Actual, Cubic m/min)=	45
Flow rate (Standard, Wet, Cubic m/min)=	12
Flow rate (Standard, Dry, Cubic m/min)=	11

Particulate Loading - Front Half

Particulate Weight (g)=	0.1210	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	86.0	91.2 125.9
Particulate Loading, Actual (mg/cu m)=	20.0	
Emission Rate (kg/hr)=	0.05	

No Back Half Analysis

FILE NAME - M26AIN9
RUN # - 9 - Method 26A Train for PM and HCl
LOCATION - Scrubber Inlet Duct
DATE - 06/17/99 Time: 1005-1105/1118-1218
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:15:51

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.008	0.41	1365	71	70
2	0.008	0.45	1420	72	71
3	0.008	0.41	1433	75	72
4	0.008	0.39	1431	77	73
5	0.013	0.70	1438	79	75
6	0.013	0.72	1475	81	77
7	0.015	0.82	1520	79	77
8	0.015	0.82	1534	81	78
9	0.013	0.72	1506	82	79
10	0.013	0.69	1462	83	79
11	0.010	0.56	1458	83	80
12	0.010	0.50	1498	83	80

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.0849	1.0390	0.0000	0.0459

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	68.1692	68.0939	244.4	0.0751
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0009
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29OT9PM
RUN # - 9 - Method 29 Train for Metals
LOCATION - Scrubber Outlet Duct
DATE - 06/17/99 Time: 1005-1105/1118-1218
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:28:10

Initial Meter Volume (Cubic Feet)=	181.306	
Final Meter Volume (Cubic Feet)=	216.436	
Meter Factor=	1.011	
Final Leak Rate (cu ft/min)=	0.003	
Net Meter Volume (Cubic Feet)=	35.516	
Gas Volume (Dry Standard Cubic Feet)=	35.088	
Barometric Pressure (in Hg)=	30.00	
Static Pressure (Inches H20)=	-0.02	
Percent Oxygen=	9.2	
Percent Carbon Dioxide=	7.3	
Moisture Collected (ml)=	272.1	
Percent Water=	26.8	
Average Meter Temperature (F)=	76	
Average Delta H (in H20)=	0.33	
Average Delta P (in H20)=	0.004	
Average Stack Temperature (F)=	671	
Dry Molecular Weight=	29.54	
Wet Molecular Weight=	26.45	
Average Square Root of Delta P (in H20)=	0.0620	
% Isokinetic=	100.1	
Pitot Coefficient=	0.82	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	28.8	
Stack Axis #2 (Inches)=	28.8	
Circular Stack		
Stack Area (Square Feet)=	4.51	
Stack Velocity (Actual, Feet/min)=	311	
Flow Rate (Actual, Cubic ft/min)=	1,404	
Flow rate (Standard, Wet, Cubic ft/min)=	658	
Flow Rate (Standard, Dry, Cubic ft/min)=	482	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0705	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0309	0.0367 0.0509
Particulate Loading, Actual (gr/cu ft)=	0.0106	
Emission Rate (lb/hr)=	0.13	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29OT9PM
RUN # - 9 - Method 29 Train for Metals
LOCATION - Scrubber Outlet Duct
DATE - 06/17/99 Time: 1005-1105/1118-1218
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:28:10

Initial Meter Volume (Cubic Meters)=	5.134	
Final Meter Volume (Cubic Meters)=	6.129	
Meter Factor=	1.011	
Final Leak Rate (cu m/min)=	0.0001	
Net Meter Volume (Cubic Meters)=	1.006	
Gas Volume (Dry Standard Cubic Meters)=	0.994	
Barometric Pressure (mm Hg)=	762	
Static Pressure (mm H20)=	-0	
Percent Oxygen=	9.2	
Percent Carbon Dioxide=	7.3	
Moisture Collected (ml)=	272.1	
Percent Water=	26.8	
Average Meter Temperature (C)=	24	
Average Delta H (mm H20)=	8.3	
Average Delta P (mm H20)=	0.1	
Average Stack Temperature (C)=	355	
Dry Molecular Weight=	29.54	
Wet Molecular Weight=	26.45	
Average Square Root of Delta P (mm H20)=	0.3123	
% Isokinetic=	100.1	
Pitot Coefficient=	0.82	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (mm)=	17.98	
Stack Axis #1 (Meters)=	0.730	
Stack Axis #2 (Meters)=	0.730	
Circular Stack		
Stack Area (Square Meters)=	0.419	
Stack Velocity (Actual, m/min)=	95	
Flow rate (Actual, Cubic m/min)=	40	
Flow rate (Standard, Wet, Cubic m/min)=	19	
Flow rate (Standard, Dry, Cubic m/min)=	14	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0705	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	71.0	84.2 116.6
Particulate Loading, Actual (mg/cu m)=	24.3	
Emission Rate (kg/hr)=	0.06	

No Back Half Analysis

FILE NAME - M29OT9PM
RUN # - 9 - Method 29 Train for Metals
LOCATION - Scrubber Outlet Duct
DATE - 06/17/99 Time: 1005-1105/1118-1218
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 15:28:10

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.003	0.24	587	70	69
2	0.003	0.22	686	71	70
3	0.005	0.37	702	73	71
4	0.001	0.07	706	74	72
5	0.001	0.07	652	76	74
6	0.001	0.08	639	77	75
7	0.010	0.70	783	78	77
8	0.009	0.65	752	79	76
9	0.006	0.44	723	82	78
10	0.005	0.38	680	82	78
11	0.005	0.42	590	83	79
12	0.003	0.26	546	83	79

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	1.0870	1.0368	0.0000	0.0502

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	60.8818	60.8615	227.7	0.0203
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

Section 2

MM5-SV Computer-Generated Calculations

FILE NAME - M23IN1 PROG.=VER 06/27/89
RUN # - 1 - Method 23 Train for PCDDs and PCDFs 07-01-1999 11:40:07
LOCATION - Scrubber Inlet Duct
DATE - 06/11/99 Time: 1520-1620/1700-1800
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	567.191	
Final Meter Volume (Cubic Feet)=	635.384	
Meter Factor=	0.985	
Final Leak Rate (cu ft/min)=	0.002	
Net Meter Volume (Cubic Feet)=	67.170	
Gas Volume (Dry Standard Cubic Feet)=	66.523	
Barometric Pressure (in Hg)=	30.30	
Static Pressure (Inches H20)=	-0.05	
Percent Oxygen=	10.0	
Percent Carbon Dioxide=	6.9	
Moisture Collected (ml)=	219.2	
Percent Water=	13.4	
Average Meter Temperature (F)=	81	
Average Delta H (in H20)=	1.22	
Average Delta P (in H20)=	0.019	
Average Stack Temperature (F)=	1310	
Dry Molecular Weight=	29.50	
Wet Molecular Weight=	27.96	
Average Square Root of Delta P (in H20)=	0.1334	
% Isokinetic=	96.4	
Pitot Coefficient=	0.81	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	21.2	
Stack Axis #2 (Inches)=	21.2	
Circular Stack		
Stack Area (Square Feet)=	2.45	
Stack Velocity (Actual, Feet/min)=	804	
Flow Rate (Actual, Cubic ft/min)=	1,969	
Flow rate (Standard, Wet, Cubic ft/min)=	595	
Flow Rate (Standard, Dry, Cubic ft/min)=	515	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23IN1 PROG.=VER 06/27/89
RUN # - 1 - Method 23 Train for PCDDs and PCDFs 07-01-1999 11:40:07
LOCATION - Scrubber Inlet Duct
DATE - 06/11/99 Time: 1520-1620/1700-1800
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	16.061
Final Meter Volume (Cubic Meters)=	17.992
Meter Factor=	0.985
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.902
Gas Volume (Dry Standard Cubic Meters)=	1.884
Barometric Pressure (mm Hg)=	770
Static Pressure (mm H20)=	-1
Percent Oxygen=	10.0
Percent Carbon Dioxide=	6.9
Moisture Collected (ml)=	219.2
Percent Water=	13.4
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	31.1
Average Delta P (mm H20)=	0.5
Average Stack Temperature (C)=	710
Dry Molecular Weight=	29.50
Wet Molecular Weight=	27.96
Average Square Root of Delta P (mm H20)=	0.6725
% Isokinetic=	96.4
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	245
Flow rate (Actual, Cubic m/min)=	56
Flow rate (Standard, Wet, Cubic m/min)=	17
Flow rate (Standard, Dry, Cubic m/min)=	15

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23IN1 PROG.=VER 06/27/89
RUN # - 1 - Method 23 Train for PCDDs and PCDFs 07-01-1999 11:40:07
LOCATION - Scrubber Inlet Duct
DATE - 06/11/99 Time: 1520-1620/1700-1800
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.010	1.20	635	73	73
2	0.020	1.10	1365	77	74
3	0.020	1.30	1369	81	75
4	0.015	0.93	1373	85	77
5	0.025	0.98	1371	87	78
6	0.022	1.50	1457	88	79
7	0.025	1.60	1351	81	79
8	0.025	1.60	1359	82	79
9	0.030	2.00	1378	87	79
10	0.010	0.68	1358	91	81
11	0.010	0.90	1359	89	82
12	0.010	0.90	1344	91	83

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23OT1 PROG.=VER 06/27/89
RUN # - 1 - Method 23 Train for PCDDs and PCDDs 07-01-1999 11:48:37
LOCATION - Scrubber Outlet Duct
DATE - 06/11/99 Time: 1521-1620/1701/1801
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	958.630
Final Meter Volume (Cubic Feet)=	1006.008
Meter Factor=	0.990
Final Leak Rate (cu ft/min)=	0.004
Net Meter Volume (Cubic Feet)=	46.904
Gas Volume (Dry Standard Cubic Feet)=	46.485
Barometric Pressure (in Hg)=	30.30
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	11.4
Percent Carbon Dioxide=	6.1
Moisture Collected (ml)=	296.8
Percent Water=	23.1
Average Meter Temperature (F)=	80
Average Delta H (in H20)=	0.65
Average Delta P (in H20)=	0.006
Average Stack Temperature (F)=	530
Dry Molecular Weight=	29.43
Wet Molecular Weight=	26.79
Average Square Root of Delta P (in H20)=	0.0708
% Isokinetic=	104.6
Pitot Coefficient=	0.82
Sampling Time (Minutes)=	119.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	329
Flow Rate (Actual, Cubic ft/min)=	1,484
Flow rate (Standard, Wet, Cubic ft/min)=	801
Flow Rate (Standard, Dry, Cubic ft/min)=	616

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2	
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000	0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000		
Emission Rate (lb/hr)=	0.00		

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23OT1 PROG.=VER 06/27/89
RUN # - 1 - Method 23 Train for PCDDs and PCDDs 07-01-1999 11:48:37
LOCATION - Scrubber Outlet Duct
DATE - 06/11/99 Time: 1521-1620/1701/1801
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	27.145
Final Meter Volume (Cubic Meters)=	28.486
Meter Factor=	0.990
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.328
Gas Volume (Dry Standard Cubic Meters)=	1.316
Barometric Pressure (mm Hg)=	770
Static Pressure (mm H20)=	-0
Percent Oxygen=	11.4
Percent Carbon Dioxide=	6.1
Moisture Collected (ml)=	296.8
Percent Water=	23.1
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	16.6
Average Delta P (mm H20)=	0.2
Average Stack Temperature (C)=	277
Dry Molecular Weight=	29.43
Wet Molecular Weight=	26.79
Average Square Root of Delta P (mm H20)=	0.3566
% Isokinetic=	104.6
Pitot Coefficient=	0.82
Sampling Time (Minutes)=	119.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	100
Flow rate (Actual, Cubic m/min)=	42
Flow rate (Standard, Wet, Cubic m/min)=	23
Flow rate (Standard, Dry, Cubic m/min)=	17

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23OT1 PROG.=VER 06/27/89
RUN # - 1 - Method 23 Train for PCDDs and PCDDs 07-01-1999 11:48:37
LOCATION - Scrubber Outlet Duct
DATE - 06/11/99 Time: 1521-1620/1701/1801
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.001	0.48	199	73	72
2	0.001	0.15	554	75	73
3	0.001	0.10	597	76	74
4	0.020	1.89	626	79	76
5	0.001	0.09	607	84	77
6	0.001	0.09	586	81	86
7	0.008	0.09	457	80	79
8	0.010	1.15	435	82	79
9	0.010	1.12	463	86	79
10	0.010	0.98	595	88	80
11	0.008	0.98	615	90	82
12	0.005	0.70	627	90	83

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23IN2
RUN # - 2 - Method 23 Train for PCDDs and PCDFs
LOCATION - Scrubber Inlet Duct
DATE - 06/12/99 Time: 1145-1245/1310-1410
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-01-1999 11:49:49

Initial Meter Volume (Cubic Feet)=	635.681	
Final Meter Volume (Cubic Feet)=	698.990	
Meter Factor=	0.985	
Final Leak Rate (cu ft/min)=	0.004	
Net Meter Volume (Cubic Feet)=	62.359	
Gas Volume (Dry Standard Cubic Feet)=	61.423	
Barometric Pressure (in Hg)=	30.23	
Static Pressure (Inches H20)=	-0.05	
Percent Oxygen=	10.4	
Percent Carbon Dioxide=	6.6	
Moisture Collected (ml)=	231.6	
Percent Water=	15.1	
Average Meter Temperature (F)=	83	
Average Delta H (in H20)=	1.01	
Average Delta P (in H20)=	0.016	
Average Stack Temperature (F)=	1238	
Dry Molecular Weight=	29.47	
Wet Molecular Weight=	27.74	
Average Square Root of Delta P (in H20)=	0.1200	
% Isokinetic=	98.6	
Pitot Coefficient=	0.81	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	21.2	
Stack Axis #2 (Inches)=	21.2	
Circular Stack		
Stack Area (Square Feet)=	2.45	
Stack Velocity (Actual, Feet/min)=	712	
Flow Rate (Actual, Cubic ft/min)=	1,743	
Flow rate (Standard, Wet, Cubic ft/min)=	548	
Flow Rate (Standard, Dry, Cubic ft/min)=	465	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23IN2 PROG.=VER 06/27/89
RUN # - 2 - Method 23 Train for PCDDs and PCDFs 07-01-1999 11:49:50
LOCATION - Scrubber Inlet Duct
DATE - 06/12/99 Time: 1145-1245/1310-1410
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	18.000
Final Meter Volume (Cubic Meters)=	19.793
Meter Factor=	0.985
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.766
Gas Volume (Dry Standard Cubic Meters)=	1.739
Barometric Pressure (mm Hg)=	768
Static Pressure (mm H20)=	-1
Percent Oxygen=	10.4
Percent Carbon Dioxide=	6.6
Moisture Collected (ml)=	231.6
Percent Water=	15.1
Average Meter Temperature (C)=	28
Average Delta H (mm H20)=	25.6
Average Delta P (mm H20)=	0.4
Average Stack Temperature (C)=	670
Dry Molecular Weight=	29.47
Wet Molecular Weight=	27.74
Average Square Root of Delta P (mm H20)=	0.6047
% Isokinetic=	98.6
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	217
Flow rate (Actual, Cubic m/min)=	49
Flow rate (Standard, Wet, Cubic m/min)=	16
Flow rate (Standard, Dry, Cubic m/min)=	13

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23IN2 PROG.=VER 06/27/89
RUN # - 2 - Method 23 Train for PCDDs and PCDFs 07-01-1999 11:49:50
LOCATION - Scrubber Inlet Duct
DATE - 06/12/99 Time: 1145-1245/1310-1410
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.001	0.10	634	74	73
2	0.001	0.01	761	75	73
3	0.020	1.20	1350	77	74
4	0.015	0.96	1332	83	76
5	0.022	1.38	1340	86	78
6	0.020	1.30	1288	90	80
7	0.027	1.70	1298	83	82
8	0.025	1.50	1419	89	82
9	0.020	1.23	1400	92	83
10	0.015	0.92	1396	93	84
11	0.015	0.96	1320	93	85
12	0.013	0.83	1321	94	86

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23OT2 PROG.=VER 06/27/89
RUN # - 2 - Method 23 Train for PCDDs and PCDFs 07-01-1999 11:53:08
LOCATION - Scrubber Outlet Duct
DATE - 06/12/99 Time: 1146-1246/1311-1411
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	6.811
Final Meter Volume (Cubic Feet)=	56.861
Meter Factor=	0.990
Final Leak Rate (cu ft/min)=	0.006
Net Meter Volume (Cubic Feet)=	49.550
Gas Volume (Dry Standard Cubic Feet)=	48.902
Barometric Pressure (in Hg)=	30.23
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	11.5
Percent Carbon Dioxide=	6.0
Moisture Collected (ml)=	348.4
Percent Water=	25.1
Average Meter Temperature (F)=	81
Average Delta H (in H20)=	0.71
Average Delta P (in H20)=	0.007
Average Stack Temperature (F)=	528
Dry Molecular Weight=	29.42
Wet Molecular Weight=	26.55
Average Square Root of Delta P (in H20)=	0.0775
% Isokinetic=	101.8
Pitot Coefficient=	0.82
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	362
Flow Rate (Actual, Cubic ft/min)=	1,633
Flow rate (Standard, Wet, Cubic ft/min)=	882
Flow Rate (Standard, Dry, Cubic ft/min)=	660

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2	
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000	0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000		
Emission Rate (lb/hr)=	0.00		

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23OT2 PROG.=VER 06/27/89
RUN # - 2 - Method 23 Train for PCDDs and PCDFs 07-01-1999 11:53:08
LOCATION - Scrubber Outlet Duct
DATE - 06/12/99 Time: 1146-1246/1311-1411
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	0.193
Final Meter Volume (Cubic Meters)=	1.610
Meter Factor=	0.990
Final Leak Rate (cu m/min)=	0.0002
Net Meter Volume (Cubic Meters)=	1.403
Gas Volume (Dry Standard Cubic Meters)=	1.385
Barometric Pressure (mm Hg)=	768
Static Pressure (mm H20)=	-0
Percent Oxygen=	11.5
Percent Carbon Dioxide=	6.0
Moisture Collected (ml)=	348.4
Percent Water=	25.1
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	18.0
Average Delta P (mm H20)=	0.2
Average Stack Temperature (C)=	275
Dry Molecular Weight=	29.42
Wet Molecular Weight=	26.55
Average Square Root of Delta P (mm H20)=	0.3907
% Isokinetic=	101.8
Pitot Coefficient=	0.82
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	110
Flow rate (Actual, Cubic m/min)=	46
Flow rate (Standard, Wet, Cubic m/min)=	25
Flow rate (Standard, Dry, Cubic m/min)=	19

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23OT2 PROG.=VER 06/27/89
RUN # - 2 - Method 23 Train for PCDDs and PCDFs 07-01-1999 11:53:08
LOCATION - Scrubber Outlet Duct
DATE - 06/12/99 Time: 1146-1246/1311-1411
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.001	0.10	537	73	73
2	0.001	0.09	577	75	74
3	0.010	0.90	627	77	75
4	0.008	0.84	497	82	76
5	0.001	0.10	516	85	78
6	0.001	0.10	400	83	79
7	0.010	0.94	613	81	80
8	0.012	1.13	616	85	80
9	0.011	1.00	620	89	81
10	0.010	1.00	483	90	82
11	0.010	1.15	422	92	83
12	0.010	1.15	424	93	84

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23IN3 PROG.=VER 06/27/89
RUN # - 3 - Method 23 Train for PCDDs and PCDFs 07-01-1999 11:54:59
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 0906-1006/1029-1129
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	700.995	
Final Meter Volume (Cubic Feet)=	773.244	
Meter Factor=	0.985	
Final Leak Rate (cu ft/min)=	0.006	
Net Meter Volume (Cubic Feet)=	71.165	
Gas Volume (Dry Standard Cubic Feet)=	70.040	
Barometric Pressure (in Hg)=	30.16	
Static Pressure (Inches H20)=	-0.05	
Percent Oxygen=	9.3	
Percent Carbon Dioxide=	7.5	
Moisture Collected (ml)=	260.9	
Percent Water=	14.9	
Average Meter Temperature (F)=	82	
Average Delta H (in H20)=	1.21	
Average Delta P (in H20)=	0.019	
Average Stack Temperature (F)=	1238	
Dry Molecular Weight=	29.57	
Wet Molecular Weight=	27.84	
Average Square Root of Delta P (in H20)=	0.1337	
% Isokinetic=	101.0	
Pitot Coefficient=	0.81	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	21.2	
Stack Axis #2 (Inches)=	21.2	
Circular Stack		
Stack Area (Square Feet)=	2.45	
Stack Velocity (Actual, Feet/min)=	793	
Flow Rate (Actual, Cubic ft/min)=	1,942	
Flow rate (Standard, Wet, Cubic ft/min)=	609	
Flow Rate (Standard, Dry, Cubic ft/min)=	518	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23IN3 PROG.=VER 06/27/89
RUN # - 3 - Method 23 Train for PCDDs and PCDFs 07-01-1999 11:54:59
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 0906-1006/1029-1129
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	19.849
Final Meter Volume (Cubic Meters)=	21.895
Meter Factor=	0.985
Final Leak Rate (cu m/min)=	0.0002
Net Meter Volume (Cubic Meters)=	2.015
Gas Volume (Dry Standard Cubic Meters)=	1.983
Barometric Pressure (mm Hg)=	766
Static Pressure (mm H20)=	-1
Percent Oxygen=	9.3
Percent Carbon Dioxide=	7.5
Moisture Collected (ml)=	260.9
Percent Water=	14.9
Average Meter Temperature (C)=	28
Average Delta H (mm H20)=	30.7
Average Delta P (mm H20)=	0.5
Average Stack Temperature (C)=	670
Dry Molecular Weight=	29.57
Wet Molecular Weight=	27.84
Average Square Root of Delta P (mm H20)=	0.6740
% Isokinetic=	101.0
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	242
Flow rate (Actual, Cubic m/min)=	55
Flow rate (Standard, Wet, Cubic m/min)=	17
Flow rate (Standard, Dry, Cubic m/min)=	15

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23IN3 PROG.=VER 06/27/89
RUN # - 3 - Method 23 Train for PCDDs and PCDFs 07-01-1999 11:54:59
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 0906-1006/1029-1129
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.005	0.50	643	73	73
2	0.015	1.10	934	76	73
3	0.020	1.26	1315	81	75
4	0.017	1.00	1355	85	76
5	0.017	1.10	1311	86	78
6	0.024	1.54	1300	88	79
7	0.020	1.23	1371	82	81
8	0.032	2.00	1331	86	80
9	0.028	1.70	1324	92	81
10	0.017	1.10	1333	93	82
11	0.015	1.15	1319	92	83
12	0.013	0.83	1319	93	84

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23OT3 PROG.=VER 06/27/89
RUN # - 3 - Method 23 Train for PCDDs and PCDFs 07-01-1999 11:57:33
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 0907-1007/1030-1130
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	57.194
Final Meter Volume (Cubic Feet)=	114.755
Meter Factor=	0.990
Final Leak Rate (cu ft/min)=	0.011
Net Meter Volume (Cubic Feet)=	56.985
Gas Volume (Dry Standard Cubic Feet)=	56.215
Barometric Pressure (in Hg)=	30.16
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	10.1
Percent Carbon Dioxide=	7.0
Moisture Collected (ml)=	399.7
Percent Water=	25.1
Average Meter Temperature (F)=	81
Average Delta H (in H20)=	0.90
Average Delta P (in H20)=	0.009
Average Stack Temperature (F)=	516
Dry Molecular Weight=	29.52
Wet Molecular Weight=	26.63
Average Square Root of Delta P (in H20)=	0.0887
% Isokinetic=	102.1
Pitot Coefficient=	0.82
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.707
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	412
Flow Rate (Actual, Cubic ft/min)=	1,857
Flow rate (Standard, Wet, Cubic ft/min)=	1,012
Flow Rate (Standard, Dry, Cubic ft/min)=	758

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23OT3 PROG.=VER 06/27/89
RUN # - 3 - Method 23 Train for PCDDs and PCDFs 07-01-1999 11:57:33
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 0907-1007/1030-1130
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	1.620
Final Meter Volume (Cubic Meters)=	3.249
Meter Factor=	0.990
Final Leak Rate (cu m/min)=	0.0003
Net Meter Volume (Cubic Meters)=	1.614
Gas Volume (Dry Standard Cubic Meters)=	1.592
Barometric Pressure (mm Hg)=	766
Static Pressure (mm H20)=	-0
Percent Oxygen=	10.1
Percent Carbon Dioxide=	7.0
Moisture Collected (ml)=	399.7
Percent Water=	25.1
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	22.8
Average Delta P (mm H20)=	0.2
Average Stack Temperature (C)=	269
Dry Molecular Weight=	29.52
Wet Molecular Weight=	26.63
Average Square Root of Delta P (mm H20)=	0.4472
% Isokinetic=	102.1
Pitot Coefficient=	0.82
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.96
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	126
Flow rate (Actual, Cubic m/min)=	53
Flow rate (Standard, Wet, Cubic m/min)=	29
Flow rate (Standard, Dry, Cubic m/min)=	21

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23OT3
RUN # - 3 - Method 23 Train for PCDDs and PCDFs
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 0907-1007/1030-1130
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-01-1999 11:57:33

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.001	0.10	521	73	72
2	0.002	0.19	555	73	72
3	0.010	0.95	584	75	73
4	0.010	1.00	510	83	74
5	0.005	0.50	510	85	77
6	0.002	0.20	388	84	78
7	0.015	1.36	642	81	80
8	0.013	1.24	594	84	79
9	0.015	1.45	593	88	80
10	0.010	1.10	454	91	81
11	0.013	1.50	435	91	82
12	0.010	1.20	407	93	83

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23IN4 PROG.=VER 06/27/89
RUN # - 4 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:14:09
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 1605-1835
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	773.539		
Final Meter Volume (Cubic Feet)=	874.028		
Meter Factor=	0.985		
Final Leak Rate (cu ft/min)=	0.005		
Net Meter Volume (Cubic Feet)=	98.982		
Gas Volume (Dry Standard Cubic Feet)=	96.399		
Barometric Pressure (in Hg)=	30.12		
Static Pressure (Inches H20)=	-0.05		
Percent Oxygen=	8.7		
Percent Carbon Dioxide=	7.7		
Moisture Collected (ml)=	434.8		
Percent Water=	17.5		
Average Meter Temperature (F)=	88		
Average Delta H (in H20)=	1.52		
Average Delta P (in H20)=	0.026		
Average Stack Temperature (F)=	1509		
Dry Molecular Weight=	29.58		
Wet Molecular Weight=	27.55		
Average Square Root of Delta P (in H20)=	0.1588		
% Isokinetic=	103.5		
Pitot Coefficient=	0.81		
Sampling Time (Minutes)=	150.0		
Nozzle Diameter (Inches)=	0.708		
Stack Axis #1 (Inches)=	21.2		
Stack Axis #2 (Inches)=	21.2		
Circular Stack			
Stack Area (Square Feet)=	2.45		
Stack Velocity (Actual, Feet/min)=	1,020		
Flow Rate (Actual, Cubic ft/min)=	2,498		
Flow rate (Standard, Wet, Cubic ft/min)=	674		
Flow Rate (Standard, Dry, Cubic ft/min)=	556		
Particulate Loading - Front Half			
Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2	
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000	0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000		
Emission Rate (lb/hr)=	0.00		

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23IN4 PROG.=VER 06/27/89
RUN # - 4 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:14:09
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 1605-1835
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	21.904
Final Meter Volume (Cubic Meters)=	24.749
Meter Factor=	0.985
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	2.803
Gas Volume (Dry Standard Cubic Meters)=	2.730
Barometric Pressure (mm Hg)=	765
Static Pressure (mm H20)=	-1
Percent Oxygen=	8.7
Percent Carbon Dioxide=	7.7
Moisture Collected (ml)=	434.8
Percent Water=	17.5
Average Meter Temperature (C)=	31
Average Delta H (mm H20)=	38.7
Average Delta P (mm H20)=	0.7
Average Stack Temperature (C)=	821
Dry Molecular Weight=	29.58
Wet Molecular Weight=	27.55
Average Square Root of Delta P (mm H20)=	0.8003
% Isokinetic=	103.5
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	150.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	311
Flow rate (Actual, Cubic m/min)=	71
Flow rate (Standard, Wet, Cubic m/min)=	19
Flow rate (Standard, Dry, Cubic m/min)=	16

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23IN4 PROG.=VER 06/27/89
RUN # - 4 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:14:09
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 1605-1835
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.025	1.47	1430	76	75
2	0.033	1.92	1473	80	76
3	0.036	2.10	1478	88	78
4	0.043	2.55	1505	92	81
5	0.038	2.15	1583	95	83
6	0.037	2.20	1513	98	85
7	0.020	1.15	1510	98	86
8	0.017	1.00	1538	96	87
9	0.017	1.00	1525	96	87
10	0.018	1.05	1504	95	87
11	0.015	0.85	1536	95	87
12	0.015	0.85	1516	94	87

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23OT4 PROG.=VER 06/27/89
RUN # - 4 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:15:17
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 1606-1706/1726-1826
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	115.102	
Final Meter Volume (Cubic Feet)=	168.785	
Meter Factor=	0.990	
Final Leak Rate (cu ft/min)=	0.005	
Net Meter Volume (Cubic Feet)=	53.146	
Gas Volume (Dry Standard Cubic Feet)=	52.111	
Barometric Pressure (in Hg)=	30.12	
Static Pressure (Inches H20)=	-0.02	
Percent Oxygen=	9.4	
Percent Carbon Dioxide=	7.4	
Moisture Collected (ml)=	435.3	
Percent Water=	28.2	
Average Meter Temperature (F)=	83	
Average Delta H (in H20)=	0.79	
Average Delta P (in H20)=	0.009	
Average Stack Temperature (F)=	619	
Dry Molecular Weight=	29.56	
Wet Molecular Weight=	26.30	
Average Square Root of Delta P (in H20)=	0.0866	
% Isokinetic=	105.8	
Pitot Coefficient=	0.82	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.707	
Stack Axis #1 (Inches)=	28.8	
Stack Axis #2 (Inches)=	28.8	
Circular Stack		
Stack Area (Square Feet)=	4.51	
Stack Velocity (Actual, Feet/min)=	426	
Flow Rate (Actual, Cubic ft/min)=	1,919	
Flow rate (Standard, Wet, Cubic ft/min)=	946	
Flow Rate (Standard, Dry, Cubic ft/min)=	679	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23OT4 PROG.=VER 06/27/89
RUN # - 4 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:15:17
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 1606-1706/1726-1826
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	3.259	
Final Meter Volume (Cubic Meters)=	4.779	
Meter Factor=	0.990	
Final Leak Rate (cu m/min)=	0.0001	
Net Meter Volume (Cubic Meters)=	1.505	
Gas Volume (Dry Standard Cubic Meters)=	1.476	
Barometric Pressure (mm Hg)=	765	
Static Pressure (mm H20)=	-0	
Percent Oxygen=	9.4	
Percent Carbon Dioxide=	7.4	
Moisture Collected (ml)=	435.3	
Percent Water=	28.2	
Average Meter Temperature (C)=	28	
Average Delta H (mm H20)=	20.2	
Average Delta P (mm H20)=	0.2	
Average Stack Temperature (C)=	326	
Dry Molecular Weight=	29.56	
Wet Molecular Weight=	26.30	
Average Square Root of Delta P (mm H20)=	0.4366	
% Isokinetic=	105.8	
Pitot Coefficient=	0.82	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (mm)=	17.96	
Stack Axis #1 (Meters)=	0.730	
Stack Axis #2 (Meters)=	0.730	
Circular Stack		
Stack Area (Square Meters)=	0.419	
Stack Velocity (Actual, m/min)=	130	
Flow rate (Actual, Cubic m/min)=	54	
Flow rate (Standard, Wet, Cubic m/min)=	27	
Flow rate (Standard, Dry, Cubic m/min)=	19	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23OT4 PROG.=VER 06/27/89
RUN # - 4 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:15:17
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 1606-1706/1726-1826
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.002	0.20	554	75	75
2	0.001	0.08	651	76	75
3	0.014	1.20	675	78	76
4	0.010	0.95	611	89	77
5	0.001	0.09	599	87	79
6	0.005	0.50	533	85	80
7	0.015	1.30	709	83	82
8	0.010	0.95	711	87	82
9	0.015	1.30	700	89	83
10	0.013	1.15	685	92	84
11	0.010	1.04	519	93	85
12	0.007	0.76	477	93	85

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23IN5 PROG.=VER 06/27/89
RUN # - 5 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:16:02
LOCATION - Scrubber Inlet Duct
DATE - 06/14/99 Time: 1550-1650/1720-1820
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	874.749	
Final Meter Volume (Cubic Feet)=	958.288	
Meter Factor=	0.985	
Final Leak Rate (cu ft/min)=	0.002	
Net Meter Volume (Cubic Feet)=	82.286	
Gas Volume (Dry Standard Cubic Feet)=	79.919	
Barometric Pressure (in Hg)=	29.86	
Static Pressure (Inches H20)=	-0.05	
Percent Oxygen=	8.1	
Percent Carbon Dioxide=	9.0	
Moisture Collected (ml)=	321.9	
Percent Water=	15.9	
Average Meter Temperature (F)=	85	
Average Delta H (in H20)=	1.69	
Average Delta P (in H20)=	0.029	
Average Stack Temperature (F)=	1480	
Dry Molecular Weight=	29.76	
Wet Molecular Weight=	27.89	
Average Square Root of Delta P (in H20)=	0.1646	
% Isokinetic=	101.8	
Pitot Coefficient=	0.81	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	21.2	
Stack Axis #2 (Inches)=	21.2	
Circular Stack		
Stack Area (Square Feet)=	2.45	
Stack Velocity (Actual, Feet/min)=	1,048	
Flow Rate (Actual, Cubic ft/min)=	2,565	
Flow rate (Standard, Wet, Cubic ft/min)=	697	
Flow Rate (Standard, Dry, Cubic ft/min)=	586	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23IN5 PROG.=VER 06/27/89
RUN # - 5 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:16:02
LOCATION - Scrubber Inlet Duct
DATE - 06/14/99 Time: 1550-1650/1720-1820
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	24.769
Final Meter Volume (Cubic Meters)=	27.135
Meter Factor=	0.985
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	2.330
Gas Volume (Dry Standard Cubic Meters)=	2.263
Barometric Pressure (mm Hg)=	758
Static Pressure (mm H20)=	-1
Percent Oxygen=	8.1
Percent Carbon Dioxide=	9.0
Moisture Collected (ml)=	321.9
Percent Water=	15.9
Average Meter Temperature (C)=	29
Average Delta H (mm H20)=	42.9
Average Delta P (mm H20)=	0.7
Average Stack Temperature (C)=	804
Dry Molecular Weight=	29.76
Wet Molecular Weight=	27.89
Average Square Root of Delta P (mm H20)=	0.8297
% Isokinetic=	101.8
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	319
Flow rate (Actual, Cubic m/min)=	73
Flow rate (Standard, Wet, Cubic m/min)=	20
Flow rate (Standard, Dry, Cubic m/min)=	17

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23IN5 PROG.=VER 06/27/89
RUN # - 5 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:16:02
LOCATION - Scrubber Inlet Duct
DATE - 06/14/99 Time: 1550-1650/1720-1820
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.033	2.12	1359	75	74
2	0.042	2.50	1448	79	75
3	0.048	2.70	1500	87	77
4	0.045	2.54	1527	91	79
5	0.042	2.46	1544	93	81
6	0.040	2.35	1482	95	83
7	0.017	0.98	1479	85	83
8	0.020	1.14	1510	87	82
9	0.017	0.97	1516	91	83
10	0.013	0.88	1450	92	84
11	0.013	0.76	1460	92	85
12	0.015	0.87	1480	92	85

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23IN6 PROG.=VER 06/27/89
RUN # - 6 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:17:09
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1045-1145/1211-1311
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	959.646
Final Meter Volume (Cubic Feet)=	1037.702
Meter Factor=	0.985
Final Leak Rate (cu ft/min)=	0.006
Net Meter Volume (Cubic Feet)=	76.885
Gas Volume (Dry Standard Cubic Feet)=	75.088
Barometric Pressure (in Hg)=	29.92
Static Pressure (Inches H20)=	-0.05
Percent Oxygen=	8.9
Percent Carbon Dioxide=	7.9
Moisture Collected (ml)=	289.7
Percent Water=	15.4
Average Meter Temperature (F)=	82
Average Delta H (in H20)=	1.41
Average Delta P (in H20)=	0.026
Average Stack Temperature (F)=	1498
Dry Molecular Weight=	29.62
Wet Molecular Weight=	27.83
Average Square Root of Delta P (in H20)=	0.1566
% Isokinetic=	100.2
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	21.2
Stack Axis #2 (Inches)=	21.2
Circular Stack	
Stack Area (Square Feet)=	2.45
Stack Velocity (Actual, Feet/min)=	1,001
Flow Rate (Actual, Cubic ft/min)=	2,451
Flow rate (Standard, Wet, Cubic ft/min)=	661
Flow Rate (Standard, Dry, Cubic ft/min)=	559

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23IN6 PROG.=VER 06/27/89
RUN # - 6 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:17:09
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1045-1145/1211-1311
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	27.173
Final Meter Volume (Cubic Meters)=	29.384
Meter Factor=	0.985
Final Leak Rate (cu m/min)=	0.0002
Net Meter Volume (Cubic Meters)=	2.177
Gas Volume (Dry Standard Cubic Meters)=	2.126
Barometric Pressure (mm Hg)=	760
Static Pressure (mm H20)=	-1
Percent Oxygen=	8.9
Percent Carbon Dioxide=	7.9
Moisture Collected (ml)=	289.7
Percent Water=	15.4
Average Meter Temperature (C)=	28
Average Delta H (mm H20)=	35.8
Average Delta P (mm H20)=	0.7
Average Stack Temperature (C)=	815
Dry Molecular Weight=	29.62
Wet Molecular Weight=	27.83
Average Square Root of Delta P (mm H20)=	0.7890
% Isokinetic=	100.2
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	305
Flow rate (Actual, Cubic m/min)=	69
Flow rate (Standard, Wet, Cubic m/min)=	19
Flow rate (Standard, Dry, Cubic m/min)=	16

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23IN6 PROG.=VER 06/27/89
RUN # - 6 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:17:09
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1045-1145/1211-1311
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.027	1.50	1476	73	72
2	0.040	2.30	1470	77	73
3	0.040	2.20	1538	83	75
4	0.030	1.66	1537	87	76
5	0.040	2.30	1545	89	78
6	0.041	2.50	1520	92	80
7	0.015	0.08	1492	82	81
8	0.017	0.98	1492	85	80
9	0.015	0.86	1465	89	81
10	0.015	0.86	1472	90	82
11	0.015	0.85	1512	91	83
12	0.014	0.80	1459	92	84

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23OT6 PROG.=VER 06/27/89
RUN # - 6 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:17:31
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1046-1146/1212-1312
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	234.308	
Final Meter Volume (Cubic Feet)=	299.511	
Meter Factor=	0.990	
Final Leak Rate (cu ft/min)=	0.006	
Net Meter Volume (Cubic Feet)=	64.551	
Gas Volume (Dry Standard Cubic Feet)=	63.090	
Barometric Pressure (in Hg)=	29.92	
Static Pressure (Inches H20)=	-0.02	
Percent Oxygen=	10.6	
Percent Carbon Dioxide=	7.0	
Moisture Collected (ml)=	443.1	
Percent Water=	24.9	
Average Meter Temperature (F)=	82	
Average Delta H (in H20)=	1.12	
Average Delta P (in H20)=	0.013	
Average Stack Temperature (F)=	634	
Dry Molecular Weight=	29.54	
Wet Molecular Weight=	26.67	
Average Square Root of Delta P (in H20)=	0.1086	
% Isokinetic=	99.4	
Pitot Coefficient=	0.82	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.707	
Stack Axis #1 (Inches)=	28.8	
Stack Axis #2 (Inches)=	28.8	
Circular Stack		
Stack Area (Square Feet)=	4.51	
Stack Velocity (Actual, Feet/min)=	535	
Flow Rate (Actual, Cubic ft/min)=	2,413	
Flow rate (Standard, Wet, Cubic ft/min)=	1,164	
Flow Rate (Standard, Dry, Cubic ft/min)=	875	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23OT6 PROG.=VER 06/27/89
RUN # - 6 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:17:31
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1046-1146/1212-1312
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	6.635
Final Meter Volume (Cubic Meters)=	8.481
Meter Factor=	0.990
Final Leak Rate (cu m/min)=	0.0002
Net Meter Volume (Cubic Meters)=	1.828
Gas Volume (Dry Standard Cubic Meters)=	1.786
Barometric Pressure (mm Hg)=	760
Static Pressure (mm H20)=	-0
Percent Oxygen=	10.6
Percent Carbon Dioxide=	7.0
Moisture Collected (ml)=	443.1
Percent Water=	24.9
Average Meter Temperature (C)=	28
Average Delta H (mm H20)=	28.5
Average Delta P (mm H20)=	0.3
Average Stack Temperature (C)=	334
Dry Molecular Weight=	29.54
Wet Molecular Weight=	26.67
Average Square Root of Delta P (mm H20)=	0.5471
% Isokinetic=	99.4
Pitot Coefficient=	0.82
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.96
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	163
Flow rate (Actual, Cubic m/min)=	68
Flow rate (Standard, Wet, Cubic m/min)=	33
Flow rate (Standard, Dry, Cubic m/min)=	25

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23OT6 PROG.=VER 06/27/89
RUN # - 6 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:17:31
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1046-1146/1212-1312
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.005	0.44	613	72	71
2	0.005	0.40	683	73	72
3	0.020	1.63	709	78	74
4	0.013	1.10	663	84	75
5	0.004	0.34	662	87	77
6	0.005	0.45	599	86	79
7	0.020	1.60	748	82	81
8	0.020	1.60	721	86	81
9	0.018	1.50	742	90	81
10	0.015	1.50	553	92	82
11	0.013	1.40	450	93	83
12	0.014	1.50	466	93	84

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23IN7 PROG.=VER 06/27/89
RUN # - 7 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:17:56
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1750-1850/1910-2010
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	38.203	
Final Meter Volume (Cubic Feet)=	109.212	
Meter Factor=	0.985	
Final Leak Rate (cu ft/min)=	0.017	
Net Meter Volume (Cubic Feet)=	69.944	
Gas Volume (Dry Standard Cubic Feet)=	68.007	
Barometric Pressure (in Hg)=	29.89	
Static Pressure (Inches H20)=	-0.05	
Percent Oxygen=	7.1	
Percent Carbon Dioxide=	9.8	
Moisture Collected (ml)=	288.2	
Percent Water=	16.6	
Average Meter Temperature (F)=	84	
Average Delta H (in H20)=	1.20	
Average Delta P (in H20)=	0.023	
Average Stack Temperature (F)=	1647	
Dry Molecular Weight=	29.85	
Wet Molecular Weight=	27.88	
Average Square Root of Delta P (in H20)=	0.1468	
% Isokinetic=	102.1	
Pitot Coefficient=	0.81	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	21.2	
Stack Axis #2 (Inches)=	21.2	
Circular Stack		
Stack Area (Square Feet)=	2.45	
Stack Velocity (Actual, Feet/min)=	973	
Flow Rate (Actual, Cubic ft/min)=	2,384	
Flow rate (Standard, Wet, Cubic ft/min)=	597	
Flow Rate (Standard, Dry, Cubic ft/min)=	497	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23IN7 PROG.=VER 06/27/89
RUN # - 7 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:17:56
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1750-1850/1910-2010
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	1.082	
Final Meter Volume (Cubic Meters)=	3.092	
Meter Factor=	0.985	
Final Leak Rate (cu m/min)=	0.0005	
Net Meter Volume (Cubic Meters)=	1.981	
Gas Volume (Dry Standard Cubic Meters)=	1.926	
Barometric Pressure (mm Hg)=	759	
Static Pressure (mm H20)=	-1	
Percent Oxygen=	7.1	
Percent Carbon Dioxide=	9.8	
Moisture Collected (ml)=	288.2	
Percent Water=	16.6	
Average Meter Temperature (C)=	29	
Average Delta H (mm H20)=	30.5	
Average Delta P (mm H20)=	0.6	
Average Stack Temperature (C)=	897	
Dry Molecular Weight=	29.85	
Wet Molecular Weight=	27.88	
Average Square Root of Delta P (mm H20)=	0.7399	
% Isokinetic=	102.1	
Pitot Coefficient=	0.81	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (mm)=	17.98	
Stack Axis #1 (Meters)=	0.538	
Stack Axis #2 (Meters)=	0.538	
Circular Stack		
Stack Area (Square Meters)=	0.227	
Stack Velocity (Actual, m/min)=	297	
Flow rate (Actual, Cubic m/min)=	67	
Flow rate (Standard, Wet, Cubic m/min)=	17	
Flow rate (Standard, Dry, Cubic m/min)=	14	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23IN7 PROG.=VER 06/27/89
RUN # - 7 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:17:56
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1750-1850/1910-2010
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.027	1.20	1553	76	75
2	0.032	1.70	1605	81	76
3	0.032	1.50	1638	85	77
4	0.035	1.80	1662	88	79
5	0.035	1.80	1704	91	80
6	0.035	1.80	1701	93	82
7	0.015	0.79	1629	85	82
8	0.014	1.30	1668	86	82
9	0.010	0.53	1640	91	83
10	0.013	0.68	1664	89	83
11	0.012	0.64	1632	90	84
12	0.013	0.65	1671	91	84

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23OT7 PROG.=VER 06/27/89
RUN # - 7 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:18:18
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1751-1851/1911-2011
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	299.956	
Final Meter Volume (Cubic Feet)=	354.057	
Meter Factor=	0.990	
Final Leak Rate (cu ft/min)=	0.003	
Net Meter Volume (Cubic Feet)=	53.560	
Gas Volume (Dry Standard Cubic Feet)=	52.010	
Barometric Pressure (in Hg)=	29.89	
Static Pressure (Inches H20)=	-0.02	
Percent Oxygen=	8.4	
Percent Carbon Dioxide=	8.6	
Moisture Collected (ml)=	431.8	
Percent Water=	28.1	
Average Meter Temperature (F)=	84	
Average Delta H (in H20)=	0.83	
Average Delta P (in H20)=	0.010	
Average Stack Temperature (F)=	677	
Dry Molecular Weight=	29.71	
Wet Molecular Weight=	26.42	
Average Square Root of Delta P (in H20)=	0.0909	
% Isokinetic=	103.4	
Pitot Coefficient=	0.82	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	28.8	
Stack Axis #2 (Inches)=	28.8	
Circular Stack		
Stack Area (Square Feet)=	4.51	
Stack Velocity (Actual, Feet/min)=	460	
Flow Rate (Actual, Cubic ft/min)=	2,072	
Flow rate (Standard, Wet, Cubic ft/min)=	961	
Flow Rate (Standard, Dry, Cubic ft/min)=	691	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23OT7 PROG.=VER 06/27/89
RUN # - 7 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:18:18
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1751-1851/1911-2011
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	8.494
Final Meter Volume (Cubic Meters)=	10.025
Meter Factor=	0.990
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.517
Gas Volume (Dry Standard Cubic Meters)=	1.473
Barometric Pressure (mm Hg)=	759
Static Pressure (mm H20)=	-0
Percent Oxygen=	8.4
Percent Carbon Dioxide=	8.6
Moisture Collected (ml)=	431.8
Percent Water=	28.1
Average Meter Temperature (C)=	29
Average Delta H (mm H20)=	21.1
Average Delta P (mm H20)=	0.2
Average Stack Temperature (C)=	358
Dry Molecular Weight=	29.71
Wet Molecular Weight=	26.42
Average Square Root of Delta P (mm H20)=	0.4584
% Isokinetic=	103.4
Pitot Coefficient=	0.82
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	140
Flow rate (Actual, Cubic m/min)=	59
Flow rate (Standard, Wet, Cubic m/min)=	27
Flow rate (Standard, Dry, Cubic m/min)=	20

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23OT7 PROG.=VER 06/27/89
RUN # - 7 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:18:18
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1751-1851/1911-2011
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.001	0.08	612	75	75
2	0.005	0.40	701	77	76
3	0.015	1.20	735	80	77
4	0.010	0.80	712	86	79
5	0.001	0.08	713	90	81
6	0.001	0.09	583	87	82
7	0.016	1.24	798	85	83
8	0.014	1.17	788	87	83
9	0.015	1.18	788	91	84
10	0.016	1.26	786	93	85
11	0.012	1.35	416	94	86
12	0.010	1.10	492	95	87

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23IN8 PROG.=VER 06/27/89
RUN # - 8 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:22:17
LOCATION - Scrubber Inlet Duct
DATE - 06/16/99 Time: 1540-1640/1648-1818
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	110.358
Final Meter Volume (Cubic Feet)=	197.761
Meter Factor=	0.985
Final Leak Rate (cu ft/min)=	0.008
Net Meter Volume (Cubic Feet)=	86.092
Gas Volume (Dry Standard Cubic Feet)=	84.278
Barometric Pressure (in Hg)=	30.08
Static Pressure (Inches H20)=	-0.05
Percent Oxygen=	7.6
Percent Carbon Dioxide=	8.2
Moisture Collected (ml)=	361.0
Percent Water=	16.8
Average Meter Temperature (F)=	84
Average Delta H (in H20)=	1.13
Average Delta P (in H20)=	0.022
Average Stack Temperature (F)=	1694
Dry Molecular Weight=	29.62
Wet Molecular Weight=	27.67
Average Square Root of Delta P (in H20)=	0.1473
% Isokinetic=	101.4
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	150.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	21.2
Stack Axis #2 (Inches)=	21.2
Circular Stack	
Stack Area (Square Feet)=	2.45
Stack Velocity (Actual, Feet/min)=	988
Flow Rate (Actual, Cubic ft/min)=	2,420
Flow rate (Standard, Wet, Cubic ft/min)=	596
Flow Rate (Standard, Dry, Cubic ft/min)=	496

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2	
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000	0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000		
Emission Rate (lb/hr)=	0.00		

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23IN8 PROG.=VER 06/27/89
RUN # - 8 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:22:17
LOCATION - Scrubber Inlet Duct
DATE - 06/16/99 Time: 1540-1640/1648-1818
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	3.125	
Final Meter Volume (Cubic Meters)=	5.600	
Meter Factor=	0.985	
Final Leak Rate (cu m/min)=	0.0002	
Net Meter Volume (Cubic Meters)=	2.438	
Gas Volume (Dry Standard Cubic Meters)=	2.386	
Barometric Pressure (mm Hg)=	764	
Static Pressure (mm H20)=	-1	
Percent Oxygen=	7.6	
Percent Carbon Dioxide=	8.2	
Moisture Collected (ml)=	361.0	
Percent Water=	16.8	
Average Meter Temperature (C)=	29	
Average Delta H (mm H20)=	28.8	
Average Delta P (mm H20)=	0.6	
Average Stack Temperature (C)=	923	
Dry Molecular Weight=	29.62	
Wet Molecular Weight=	27.67	
Average Square Root of Delta P (mm H20)=	0.7425	
% Isokinetic=	101.4	
Pitot Coefficient=	0.81	
Sampling Time (Minutes)=	150.0	
Nozzle Diameter (mm)=	17.98	
Stack Axis #1 (Meters)=	0.538	
Stack Axis #2 (Meters)=	0.538	
Circular Stack		
Stack Area (Square Meters)=	0.227	
Stack Velocity (Actual, m/min)=	301	
Flow rate (Actual, Cubic m/min)=	69	
Flow rate (Standard, Wet, Cubic m/min)=	17	
Flow rate (Standard, Dry, Cubic m/min)=	14	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23IN8
RUN # - 8 - Method 23 Train for PCDDs and PCDFs
LOCATION - Scrubber Inlet Duct
DATE - 06/16/99 Time: 1540-1640/1648-1818
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-01-1999 12:22:17

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.020	1.00	1650	73	72
2	0.028	1.45	1637	75	72
3	0.035	1.78	1703	82	74
4	0.033	1.70	1695	86	76
5	0.025	1.30	1674	89	78
6	0.035	1.80	1727	90	79
7	0.015	0.77	1684	84	82
8	0.015	0.77	1701	88	81
9	0.015	0.77	1654	89	82
10	0.013	0.65	1685	90	83
11	0.015	0.70	1705	90	83
12	0.017	0.82	1718	91	84
13	0.017	0.82	1713	92	84
14	0.025	1.28	1722	92	85
15	0.027	1.38	1742	95	85

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23OT8 PROG.=VER 06/27/89
RUN # - 8 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:22:38
LOCATION - Scrubber Outlet Duct
DATE - 06/16/99 Time: 1541-1641/1649-1819
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	354.307
Final Meter Volume (Cubic Feet)=	420.821
Meter Factor=	0.990
Final Leak Rate (cu ft/min)=	0.005
Net Meter Volume (Cubic Feet)=	65.849
Gas Volume (Dry Standard Cubic Feet)=	64.500
Barometric Pressure (in Hg)=	30.08
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	8.9
Percent Carbon Dioxide=	7.3
Moisture Collected (ml)=	507.0
Percent Water=	27.0
Average Meter Temperature (F)=	83
Average Delta H (in H20)=	0.78
Average Delta P (in H20)=	0.009
Average Stack Temperature (F)=	703
Dry Molecular Weight=	29.52
Wet Molecular Weight=	26.41
Average Square Root of Delta P (in H20)=	0.0916
% Isokinetic=	101.4
Pitot Coefficient=	0.82
Sampling Time (Minutes)=	150.0
Nozzle Diameter (Inches)=	0.707
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	467
Flow Rate (Actual, Cubic ft/min)=	2,105
Flow rate (Standard, Wet, Cubic ft/min)=	961
Flow Rate (Standard, Dry, Cubic ft/min)=	701

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23OT8 PROG.=VER 06/27/89
RUN # - 8 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:22:38
LOCATION - Scrubber Outlet Duct
DATE - 06/16/99 Time: 1541-1641/1649-1819
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	10.033	
Final Meter Volume (Cubic Meters)=	11.916	
Meter Factor=	0.990	
Final Leak Rate (cu m/min)=	0.0001	
Net Meter Volume (Cubic Meters)=	1.865	
Gas Volume (Dry Standard Cubic Meters)=	1.826	
Barometric Pressure (mm Hg)=	764	
Static Pressure (mm H20)=	-0	
Percent Oxygen=	8.9	
Percent Carbon Dioxide=	7.3	
Moisture Collected (ml)=	507.0	
Percent Water=	27.0	
Average Meter Temperature (C)=	28	
Average Delta H (mm H20)=	19.7	
Average Delta P (mm H20)=	0.2	
Average Stack Temperature (C)=	373	
Dry Molecular Weight=	29.52	
Wet Molecular Weight=	26.41	
Average Square Root of Delta P (mm H20)=	0.4619	
% Isokinetic=	101.4	
Pitot Coefficient=	0.82	
Sampling Time (Minutes)=	150.0	
Nozzle Diameter (mm)=	17.96	
Stack Axis #1 (Meters)=	0.730	
Stack Axis #2 (Meters)=	0.730	
Circular Stack		
Stack Area (Square Meters)=	0.419	
Stack Velocity (Actual, m/min)=	142	
Flow rate (Actual, Cubic m/min)=	60	
Flow rate (Standard, Wet, Cubic m/min)=	27	
Flow rate (Standard, Dry, Cubic m/min)=	20	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23OT8 PROG.=VER 06/27/89
RUN # - 8 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:22:38
LOCATION - Scrubber Outlet Duct
DATE - 06/16/99 Time: 1541-1641/1649-1819
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.001	0.08	655	72	72
2	0.002	0.14	736	74	72
3	0.015	1.16	774	76	74
4	0.007	0.56	725	82	75
5	0.003	0.25	668	84	77
6	0.003	0.27	606	84	79
7	0.015	1.14	810	82	81
8	0.014	1.10	803	86	81
9	0.013	1.10	794	90	82
10	0.012	0.94	776	91	83
11	0.013	1.15	643	91	84
12	0.003	0.32	448	92	84
13	0.012	1.02	687	89	84
14	0.017	1.42	706	93	85
15	0.012	1.00	714	95	88

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23IN9 PROG.=VER 06/27/89
RUN # - 9 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:23:00
LOCATION - Scrubber Inlet Duct
DATE - 06/17/99 Time: 1005-1105/1118-1218
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	200.261
Final Meter Volume (Cubic Feet)=	271.536
Meter Factor=	0.985
Final Leak Rate (cu ft/min)=	0.006
Net Meter Volume (Cubic Feet)=	70.206
Gas Volume (Dry Standard Cubic Feet)=	68.613
Barometric Pressure (in Hg)=	30.00
Static Pressure (Inches H20)=	-0.05
Percent Oxygen=	7.8
Percent Carbon Dioxide=	8.2
Moisture Collected (ml)=	290.0
Percent Water=	16.6
Average Meter Temperature (F)=	83
Average Delta H (in H20)=	1.23
Average Delta P (in H20)=	0.023
Average Stack Temperature (F)=	1629
Dry Molecular Weight=	29.62
Wet Molecular Weight=	27.69
Average Square Root of Delta P (in H20)=	0.1482
% Isokinetic=	101.0
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	21.2
Stack Axis #2 (Inches)=	21.2
Circular Stack	
Stack Area (Square Feet)=	2.45
Stack Velocity (Actual, Feet/min)=	980
Flow Rate (Actual, Cubic ft/min)=	2,400
Flow rate (Standard, Wet, Cubic ft/min)=	608
Flow Rate (Standard, Dry, Cubic ft/min)=	507

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2	
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000	0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000		
Emission Rate (lb/hr)=	0.00		

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23IN9 PROG.=VER 06/27/89
RUN # - 9 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:23:00
LOCATION - Scrubber Inlet Duct
DATE - 06/17/99 Time: 1005-1105/1118-1218
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	5.671	
Final Meter Volume (Cubic Meters)=	7.689	
Meter Factor=	0.985	
Final Leak Rate (cu m/min)=	0.0002	
Net Meter Volume (Cubic Meters)=	1.988	
Gas Volume (Dry Standard Cubic Meters)=	1.943	
Barometric Pressure (mm Hg)=	762	
Static Pressure (mm H20)=	-1	
Percent Oxygen=	7.8	
Percent Carbon Dioxide=	8.2	
Moisture Collected (ml)=	290.0	
Percent Water=	16.6	
Average Meter Temperature (C)=	28	
Average Delta H (mm H20)=	31.3	
Average Delta P (mm H20)=	0.6	
Average Stack Temperature (C)=	887	
Dry Molecular Weight=	29.62	
Wet Molecular Weight=	27.69	
Average Square Root of Delta P (mm H20)=	0.7471	
% Isokinetic=	101.0	
Pitot Coefficient=	0.81	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (mm)=	17.98	
Stack Axis #1 (Meters)=	0.538	
Stack Axis #2 (Meters)=	0.538	
Circular Stack		
Stack Area (Square Meters)=	0.227	
Stack Velocity (Actual, m/min)=	299	
Flow rate (Actual, Cubic m/min)=	68	
Flow rate (Standard, Wet, Cubic m/min)=	17	
Flow rate (Standard, Dry, Cubic m/min)=	14	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23IN9 PROG.=VER 06/27/89
RUN # - 9 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:23:00
LOCATION - Scrubber Inlet Duct
DATE - 06/17/99 Time: 1005-1105/1118-1218
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.021	1.15	1527	73	73
2	0.028	1.51	1574	79	74
3	0.040	2.10	1648	85	76
4	0.040	2.11	1640	89	77
5	0.036	1.88	1674	92	79
6	0.035	1.87	1630	92	80
7	0.015	0.79	1650	84	82
8	0.018	0.95	1674	86	82
9	0.012	0.65	1646	89	82
10	0.013	0.65	1630	90	83
11	0.012	0.64	1616	90	83
12	0.010	0.50	1637	91	84

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23OT9 PROG.=VER 06/27/89
RUN # - 9 - Method 23 for PCDDs and PCDFs 07-01-1999 12:25:23
LOCATION - Scrubber Outlet Duct
DATE - 06/17/99 Time: 1006-1106/1119-1219
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	421.538	
Final Meter Volume (Cubic Feet)=	472.331	
Meter Factor=	0.990	
Final Leak Rate (cu ft/min)=	0.004	
Net Meter Volume (Cubic Feet)=	50.285	
Gas Volume (Dry Standard Cubic Feet)=	49.496	
Barometric Pressure (in Hg)=	30.00	
Static Pressure (Inches H20)=	-0.02	
Percent Oxygen=	9.2	
Percent Carbon Dioxide=	7.3	
Moisture Collected (ml)=	423.2	
Percent Water=	28.7	
Average Meter Temperature (F)=	79	
Average Delta H (in H20)=	0.78	
Average Delta P (in H20)=	0.008	
Average Stack Temperature (F)=	667	
Dry Molecular Weight=	29.54	
Wet Molecular Weight=	26.22	
Average Square Root of Delta P (in H20)=	0.0821	
% Isokinetic=	108.8	
Pitot Coefficient=	0.82	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	28.8	
Stack Axis #2 (Inches)=	28.8	
Circular Stack		
Stack Area (Square Feet)=	4.51	
Stack Velocity (Actual, Feet/min)=	414	
Flow Rate (Actual, Cubic ft/min)=	1,867	
Flow rate (Standard, Wet, Cubic ft/min)=	877	
Flow Rate (Standard, Dry, Cubic ft/min)=	625	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23OT9 PROG.=VER 06/27/89
RUN # - 9 - Method 23 for PCDDs and PCDFs 07-01-1999 12:25:23
LOCATION - Scrubber Outlet Duct
DATE - 06/17/99 Time: 1006-1106/1119-1219
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	11.936
Final Meter Volume (Cubic Meters)=	13.375
Meter Factor=	0.990
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.424
Gas Volume (Dry Standard Cubic Meters)=	1.402
Barometric Pressure (mm Hg)=	762
Static Pressure (mm H20)=	-0
Percent Oxygen=	9.2
Percent Carbon Dioxide=	7.3
Moisture Collected (ml)=	423.2
Percent Water=	28.7
Average Meter Temperature (C)=	26
Average Delta H (mm H20)=	19.8
Average Delta P (mm H20)=	0.2
Average Stack Temperature (C)=	353
Dry Molecular Weight=	29.54
Wet Molecular Weight=	26.22
Average Square Root of Delta P (mm H20)=	0.4140
% Isokinetic=	108.8
Pitot Coefficient=	0.82
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	126
Flow rate (Actual, Cubic m/min)=	53
Flow rate (Standard, Wet, Cubic m/min)=	25
Flow rate (Standard, Dry, Cubic m/min)=	18

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23OT9 PROG.=VER 06/27/89
RUN # - 9 - Method 23 for PCDDs and PCDFs 07-01-1999 12:25:23
LOCATION - Scrubber Outlet Duct
DATE - 06/17/99 Time: 1006-1106/1119-1219
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.005	0.49	675	71	70
2	0.010	0.95	729	73	70
3	0.015	1.41	738	73	70
4	0.002	0.19	708	82	74
5	0.001	0.09	706	81	75
6	0.004	0.40	660	79	76
7	0.014	1.27	797	79	78
8	0.013	1.25	766	84	78
9	0.010	0.98	741	87	79
10	0.014	1.61	540	88	80
11	0.005	0.60	495	90	81
12	0.001	0.12	452	88	82

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M23IN10 PROG.=VER 06/27/89
RUN # - 10 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:26:38
LOCATION - Scrubber Inlet Duct
DATE - 06/17/99 Time: 1602-1702/1706/1806
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	271.878	
Final Meter Volume (Cubic Feet)=	336.366	
Meter Factor=	0.985	
Final Leak Rate (cu ft/min)=	0.006	
Net Meter Volume (Cubic Feet)=	63.521	
Gas Volume (Dry Standard Cubic Feet)=	62.354	
Barometric Pressure (in Hg)=	30.00	
Static Pressure (Inches H20)=	-0.05	
Percent Oxygen=	10.5	
Percent Carbon Dioxide=	6.9	
Moisture Collected (ml)=	215.6	
Percent Water=	14.0	
Average Meter Temperature (F)=	80	
Average Delta H (in H20)=	0.96	
Average Delta P (in H20)=	0.015	
Average Stack Temperature (F)=	1199	
Dry Molecular Weight=	29.52	
Wet Molecular Weight=	27.91	
Average Square Root of Delta P (in H20)=	0.1188	
% Isokinetic=	99.3	
Pitot Coefficient=	0.81	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	21.2	
Stack Axis #2 (Inches)=	21.2	
Circular Stack		
Stack Area (Square Feet)=	2.45	
Stack Velocity (Actual, Feet/min)=	698	
Flow Rate (Actual, Cubic ft/min)=	1,708	
Flow rate (Standard, Wet, Cubic ft/min)=	545	
Flow Rate (Standard, Dry, Cubic ft/min)=	469	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M23IN10 PROG.=VER 06/27/89
RUN # - 10 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:26:39
LOCATION - Scrubber Inlet Duct
DATE - 06/17/99 Time: 1602-1702/1706/1806
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	7.698
Final Meter Volume (Cubic Meters)=	9.525
Meter Factor=	0.985
Final Leak Rate (cu m/min)=	0.0002
Net Meter Volume (Cubic Meters)=	1.799
Gas Volume (Dry Standard Cubic Meters)=	1.766
Barometric Pressure (mm Hg)=	762
Static Pressure (mm H20)=	-1
Percent Oxygen=	10.5
Percent Carbon Dioxide=	6.9
Moisture Collected (ml)=	215.6
Percent Water=	14.0
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	24.4
Average Delta P (mm H20)=	0.4
Average Stack Temperature (C)=	648
Dry Molecular Weight=	29.52
Wet Molecular Weight=	27.91
Average Square Root of Delta P (mm H20)=	0.5990
% Isokinetic=	99.3
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	213
Flow rate (Actual, Cubic m/min)=	48
Flow rate (Standard, Wet, Cubic m/min)=	15
Flow rate (Standard, Dry, Cubic m/min)=	13

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M23IN10 PROG.=VER 06/27/89
RUN # - 10 - Method 23 Train for PCDDs and PCDFs 07-01-1999 12:26:39
LOCATION - Scrubber Inlet Duct
DATE - 06/17/99 Time: 1602-1702/1706/1806
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.013	0.87	1180	73	72
2	0.018	1.22	1161	75	72
3	0.029	1.93	1202	80	75
4	0.017	1.12	1224	85	75
5	0.014	0.92	1231	86	76
6	0.015	0.97	1240	86	77
7	0.010	0.67	1203	86	79
8	0.010	0.64	1207	84	79
9	0.015	1.00	1213	85	79
10	0.013	0.88	1200	87	80
11	0.010	0.67	1165	88	81
12	0.010	0.65	1160	88	81

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

Section 3

MM5-MM Computer-Generated Calculations

FILE NAME - M29IN1
RUN # - 1 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/11/99 Time: 1521-1621/1701-1801
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:14:24

Initial Meter Volume (Cubic Feet)=	576.338	
Final Meter Volume (Cubic Feet)=	621.424	
Meter Factor=	1.001	
Final Leak Rate (cu ft/min)=	0.002	
Net Meter Volume (Cubic Feet)=	45.131	
Gas Volume (Dry Standard Cubic Feet)=	44.818	
Barometric Pressure (in Hg)=	30.30	
Static Pressure (Inches H20)=	-0.05	
Percent Oxygen=	10.0	
Percent Carbon Dioxide=	6.9	
Moisture Collected (ml)=	148.3	
Percent Water=	13.5	
Average Meter Temperature (F)=	79	
Average Delta H (in H20)=	0.47	
Average Delta P (in H20)=	0.009	
Average Stack Temperature (F)=	1294	
Dry Molecular Weight=	29.50	
Wet Molecular Weight=	27.95	
Average Square Root of Delta P (in H20)=	0.0889	
% Isokinetic=	102.3	
Pitot Coefficient=	0.77	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.709	
Stack Axis #1 (Inches)=	21.2	
Stack Axis #2 (Inches)=	21.2	
Circular Stack		
Stack Area (Square Feet)=	2.45	
Stack Velocity (Actual, Feet/min)=	505	
Flow Rate (Actual, Cubic ft/min)=	1,236	
Flow rate (Standard, Wet, Cubic ft/min)=	377	
Flow Rate (Standard, Dry, Cubic ft/min)=	326	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29IN1 PROG.=VER 06/27/89
RUN # - 1 - Method 29 Train for Metals 07-06-1999 14:14:24
LOCATION - Scrubber Inlet Duct
DATE - 06/11/99 Time: 1521-1621/1701-1801
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	16.320
Final Meter Volume (Cubic Meters)=	17.596
Meter Factor=	1.001
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.278
Gas Volume (Dry Standard Cubic Meters)=	1.269
Barometric Pressure (mm Hg)=	770
Static Pressure (mm H20)=	-1
Percent Oxygen=	10.0
Percent Carbon Dioxide=	6.9
Moisture Collected (ml)=	148.3
Percent Water=	13.5
Average Meter Temperature (C)=	26
Average Delta H (mm H20)=	11.9
Average Delta P (mm H20)=	0.2
Average Stack Temperature (C)=	701
Dry Molecular Weight=	29.50
Wet Molecular Weight=	27.95
Average Square Root of Delta P (mm H20)=	0.4479
% Isokinetic=	102.3
Pitot Coefficient=	0.77
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	18.01
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	154
Flow rate (Actual, Cubic m/min)=	35
Flow rate (Standard, Wet, Cubic m/min)=	11
Flow rate (Standard, Dry, Cubic m/min)=	9

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M29IN1
RUN # - 1 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/11/99 Time: 1521-1621/1701-1801
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:14:24

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.005	0.30	1217	73	73
2	0.008	0.43	1275	76	74
3	0.008	0.43	1283	78	75
4	0.008	0.40	1290	80	76
5	0.018	1.00	1313	82	77
6	0.023	1.30	1321	85	78
7	0.005	0.29	1286	79	78
8	0.005	0.29	1292	80	78
9	0.005	0.27	1339	82	79
10	0.005	0.25	1281	83	79
11	0.005	0.21	1312	83	80
12	0.010	0.46	1314	84	80

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29OT1 PROG.=VER 06/27/89
RUN # - 1 - Method 29 Train for Metals 07-06-1999 14:15:13
LOCATION - Scrubber Outlet Duct
DATE - 06/11/99 Time: 1520-1620/1700-1800
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	883.264	
Final Meter Volume (Cubic Feet)=	907.295	
Meter Factor=	1.011	
Final Leak Rate (cu ft/min)=	0.002	
Net Meter Volume (Cubic Feet)=	24.295	
Gas Volume (Dry Standard Cubic Feet)=	24.151	
Barometric Pressure (in Hg)=	30.30	
Static Pressure (Inches H20)=	-0.02	
Percent Oxygen=	11.4	
Percent Carbon Dioxide=	6.1	
Moisture Collected (ml)=	151.7	
Percent Water=	22.8	
Average Meter Temperature (F)=	78	
Average Delta H (in H20)=	0.15	
Average Delta P (in H20)=	0.002	
Average Stack Temperature (F)=	503	
Dry Molecular Weight=	29.43	
Wet Molecular Weight=	26.82	
Average Square Root of Delta P (in H20)=	0.0390	
% Isokinetic=	100.3	
Pitot Coefficient=	0.79	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	28.8	
Stack Axis #2 (Inches)=	28.8	
Circular Stack		
Stack Area (Square Feet)=	4.51	
Stack Velocity (Actual, Feet/min)=	171	
Flow Rate (Actual, Cubic ft/min)=	772	
Flow rate (Standard, Wet, Cubic ft/min)=	429	
Flow Rate (Standard, Dry, Cubic ft/min)=	331	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29OT1 PROG.=VER 06/27/89
RUN # - 1 - Method 29 Train for Metals 07-06-1999 14:15:13
LOCATION - Scrubber Outlet Duct
DATE - 06/11/99 Time: 1520-1620/1700-1800
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	25.011
Final Meter Volume (Cubic Meters)=	25.691
Meter Factor=	1.011
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	0.688
Gas Volume (Dry Standard Cubic Meters)=	0.684
Barometric Pressure (mm Hg)=	770
Static Pressure (mm H20)=	-0
Percent Oxygen=	11.4
Percent Carbon Dioxide=	6.1
Moisture Collected (ml)=	151.7
Percent Water=	22.8
Average Meter Temperature (C)=	25
Average Delta H (mm H20)=	3.7
Average Delta P (mm H20)=	0.0
Average Stack Temperature (C)=	262
Dry Molecular Weight=	29.43
Wet Molecular Weight=	26.82
Average Square Root of Delta P (mm H20)=	0.1965
% Isokinetic=	100.3
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	52
Flow rate (Actual, Cubic m/min)=	22
Flow rate (Standard, Wet, Cubic m/min)=	12
Flow rate (Standard, Dry, Cubic m/min)=	9

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M29OT1 PROG.=VER 06/27/89
RUN # - 1 - Method 29 Train for Metals 07-06-1999 14:15:13
LOCATION - Scrubber Outlet Duct
DATE - 06/11/99 Time: 1520-1620/1700-1800
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.001	0.09	464	73	72
2	0.001	0.08	563	74	73
3	0.001	0.08	589	75	74
4	0.002	0.18	515	76	75
5	0.001	0.09	461	78	76
6	0.001	0.09	441	81	78
7	0.001	0.09	447	80	79
8	0.002	0.19	430	79	78
9	0.001	0.09	492	81	79
10	0.001	0.09	485	81	80
11	0.003	0.26	545	82	80
12	0.005	0.41	607	83	82

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29IN2 PROG.=VER 06/27/89
RUN # - 2 - Method 29 Train for Metals 07-06-1999 14:16:38
LOCATION - Scrubber Inlet Duct
DATE - 06/12/99 Time: 1146-1246/1311-1411
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	621.702
Final Meter Volume (Cubic Feet)=	679.843
Meter Factor=	1.001
Final Leak Rate (cu ft/min)=	0.001
Net Meter Volume (Cubic Feet)=	58.199
Gas Volume (Dry Standard Cubic Feet)=	57.496
Barometric Pressure (in Hg)=	30.23
Static Pressure (Inches H20)=	-0.05
Percent Oxygen=	10.4
Percent Carbon Dioxide=	6.6
Moisture Collected (ml)=	214.4
Percent Water=	14.9
Average Meter Temperature (F)=	81
Average Delta H (in H20)=	0.77
Average Delta P (in H20)=	0.013
Average Stack Temperature (F)=	1234
Dry Molecular Weight=	29.47
Wet Molecular Weight=	27.76
Average Square Root of Delta P (in H20)=	0.1126
% Isokinetic=	103.6
Pitot Coefficient=	0.77
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	21.2
Stack Axis #2 (Inches)=	21.2
Circular Stack	
Stack Area (Square Feet)=	2.45
Stack Velocity (Actual, Feet/min)=	632
Flow Rate (Actual, Cubic ft/min)=	1,547
Flow rate (Standard, Wet, Cubic ft/min)=	487
Flow Rate (Standard, Dry, Cubic ft/min)=	414

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2	
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000	0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000		
Emission Rate (lb/hr)=	0.00		

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29IN2 PROG.=VER 06/27/89
RUN # - 2 - Method 29 Train for Metals 07-06-1999 14:16:38
LOCATION - Scrubber Inlet Duct
DATE - 06/12/99 Time: 1146-1246/1311-1411
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	17.604
Final Meter Volume (Cubic Meters)=	19.250
Meter Factor=	1.001
Final Leak Rate (cu m/min)=	0.0000
Net Meter Volume (Cubic Meters)=	1.648
Gas Volume (Dry Standard Cubic Meters)=	1.628
Barometric Pressure (mm Hg)=	768
Static Pressure (mm H20)=	-1
Percent Oxygen=	10.4
Percent Carbon Dioxide=	6.6
Moisture Collected (ml)=	214.4
Percent Water=	14.9
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	19.6
Average Delta P (mm H20)=	0.3
Average Stack Temperature (C)=	668
Dry Molecular Weight=	29.47
Wet Molecular Weight=	27.76
Average Square Root of Delta P (mm H20)=	0.5674
% Isokinetic=	103.6
Pitot Coefficient=	0.77
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	193
Flow rate (Actual, Cubic m/min)=	44
Flow rate (Standard, Wet, Cubic m/min)=	14
Flow rate (Standard, Dry, Cubic m/min)=	12

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M29IN2
RUN # - 2 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/12/99 Time: 1146-1246/1311-1411
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:16:38

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.008	0.47	1174	74	73
2	0.010	0.61	1172	75	74
3	0.013	0.74	1219	79	75
4	0.013	0.74	1218	82	76
5	0.020	1.10	1302	84	77
6	0.015	1.10	1097	87	79
7	0.008	0.45	1270	81	80
8	0.013	0.73	1267	82	80
9	0.013	0.71	1303	86	81
10	0.013	0.71	1249	88	82
11	0.018	1.00	1261	89	82
12	0.015	0.91	1273	90	83

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29OT2 PROG.=VER 06/27/89
RUN # - 2 - Method 29 Train for Metals 07-06-1999 14:17:06
LOCATION - Scrubber Outlet Duct
DATE - 06/12/99 Time:1145-1245/1310-1410
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	912.527
Final Meter Volume (Cubic Feet)=	948.168
Meter Factor=	1.011
Final Leak Rate (cu ft/min)=	0.007
Net Meter Volume (Cubic Feet)=	36.033
Gas Volume (Dry Standard Cubic Feet)=	35.640
Barometric Pressure (in Hg)=	30.23
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	11.4
Percent Carbon Dioxide=	6.1
Moisture Collected (ml)=	301.6
Percent Water=	28.5
Average Meter Temperature (F)=	80
Average Delta H (in H20)=	0.34
Average Delta P (in H20)=	0.004
Average Stack Temperature (F)=	526
Dry Molecular Weight=	29.43
Wet Molecular Weight=	26.17
Average Square Root of Delta P (in H20)=	0.0590
% Isokinetic=	105.5
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	266
Flow Rate (Actual, Cubic ft/min)=	1,199
Flow rate (Standard, Wet, Cubic ft/min)=	649
Flow Rate (Standard, Dry, Cubic ft/min)=	464

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2	
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000	0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000		
Emission Rate (lb/hr)=	0.00		

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29OT2 PROG.=VER 06/27/89
RUN # - 2 - Method 29 Train for Metals 07-06-1999 14:17:06
LOCATION - Scrubber Outlet Duct
DATE - 06/12/99 Time:1145-1245/1310-1410
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	25.839
Final Meter Volume (Cubic Meters)=	26.848
Meter Factor=	1.011
Final Leak Rate (cu m/min)=	0.0002
Net Meter Volume (Cubic Meters)=	1.020
Gas Volume (Dry Standard Cubic Meters)=	1.009
Barometric Pressure (mm Hg)=	768
Static Pressure (mm H20)=	-0
Percent Oxygen=	11.4
Percent Carbon Dioxide=	6.1
Moisture Collected (ml)=	301.6
Percent Water=	28.5
Average Meter Temperature (C)=	26
Average Delta H (mm H20)=	8.5
Average Delta P (mm H20)=	0.1
Average Stack Temperature (C)=	274
Dry Molecular Weight=	29.43
Wet Molecular Weight=	26.17
Average Square Root of Delta P (mm H20)=	0.2976
% Isokinetic=	105.5
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	81
Flow rate (Actual, Cubic m/min)=	34
Flow rate (Standard, Wet, Cubic m/min)=	18
Flow rate (Standard, Dry, Cubic m/min)=	13

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M29OT2 PROG.=VER 06/27/89
RUN # - 2 - Method 29 Train for Metals 07-06-1999 14:17:06
LOCATION - Scrubber Outlet Duct
DATE - 06/12/99 Time:1145-1245/1310-1410
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.002	0.17	513	74	73
2	0.002	0.17	533	74	73
3	0.003	0.25	539	75	74
4	0.002	0.17	535	78	75
5	0.001	0.09	472	79	76
6	0.001	0.09	477	81	78
7	0.005	0.45	504	82	80
8	0.005	0.44	509	82	80
9	0.003	0.27	508	85	81
10	0.005	0.46	485	86	82
11	0.008	0.66	597	87	83
12	0.010	0.80	635	89	83

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29IN3 PROG.=VER 06/27/89
RUN # - 3 - Method 29 Train for Metals 07-06-1999 14:21:49
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 0907-1007/1030-1130
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	681.542
Final Meter Volume (Cubic Feet)=	733.529
Meter Factor=	1.001
Final Leak Rate (cu ft/min)=	0.003
Net Meter Volume (Cubic Feet)=	52.039
Gas Volume (Dry Standard Cubic Feet)=	51.415
Barometric Pressure (in Hg)=	30.16
Static Pressure (Inches H20)=	-0.05
Percent Oxygen=	9.3
Percent Carbon Dioxide=	7.5
Moisture Collected (ml)=	200.9
Percent Water=	15.5
Average Meter Temperature (F)=	79
Average Delta H (in H20)=	0.62
Average Delta P (in H20)=	0.011
Average Stack Temperature (F)=	1261
Dry Molecular Weight=	29.57
Wet Molecular Weight=	27.77
Average Square Root of Delta P (in H20)=	0.1048
% Isokinetic=	100.8
Pitot Coefficient=	0.77
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.709
Stack Axis #1 (Inches)=	21.2
Stack Axis #2 (Inches)=	21.2
Circular Stack	
Stack Area (Square Feet)=	2.45
Stack Velocity (Actual, Feet/min)=	593
Flow Rate (Actual, Cubic ft/min)=	1,453
Flow rate (Standard, Wet, Cubic ft/min)=	449
Flow Rate (Standard, Dry, Cubic ft/min)=	379

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29IN3 PROG.=VER 06/27/89
RUN # - 3 - Method 29 Train for Metals 07-06-1999 14:21:49
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 0907-1007/1030-1130
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	19.299
Final Meter Volume (Cubic Meters)=	20.771
Meter Factor=	1.001
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.474
Gas Volume (Dry Standard Cubic Meters)=	1.456
Barometric Pressure (mm Hg)=	766
Static Pressure (mm H20)=	-1
Percent Oxygen=	9.3
Percent Carbon Dioxide=	7.5
Moisture Collected (ml)=	200.9
Percent Water=	15.5
Average Meter Temperature (C)=	26
Average Delta H (mm H20)=	15.7
Average Delta P (mm H20)=	0.3
Average Stack Temperature (C)=	683
Dry Molecular Weight=	29.57
Wet Molecular Weight=	27.77
Average Square Root of Delta P (mm H20)=	0.5283
% Isokinetic=	100.8
Pitot Coefficient=	0.77
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	18.01
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	181
Flow rate (Actual, Cubic m/min)=	41
Flow rate (Standard, Wet, Cubic m/min)=	13
Flow rate (Standard, Dry, Cubic m/min)=	11

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M29IN3
RUN # - 3 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 0907-1007/1030-1130
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:21:49

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.008	0.43	1191	73	72
2	0.008	0.43	1225	75	73
3	0.010	0.54	1256	78	74
4	0.015	0.82	1296	80	75
5	0.020	1.10	1275	83	76
6	0.015	0.83	1307	86	78
7	0.008	0.44	1156	80	79
8	0.010	0.54	1266	81	79
9	0.010	0.51	1300	83	79
10	0.010	0.56	1284	85	80
11	0.013	0.70	1285	86	80
12	0.010	0.51	1292	87	81

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29OT3
RUN # - 3 - Method 29 Train for Metals
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 0906-1006/1029-1129
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:22:13

Initial Meter Volume (Cubic Feet)=	948.485
Final Meter Volume (Cubic Feet)=	980.183
Meter Factor=	1.011
Final Leak Rate (cu ft/min)=	0.003
Net Meter Volume (Cubic Feet)=	32.047
Gas Volume (Dry Standard Cubic Feet)=	31.707
Barometric Pressure (in Hg)=	30.16
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	10.0
Percent Carbon Dioxide=	7.1
Moisture Collected (ml)=	214.6
Percent Water=	24.2
Average Meter Temperature (F)=	78
Average Delta H (in H20)=	0.28
Average Delta P (in H20)=	0.003
Average Stack Temperature (F)=	509
Dry Molecular Weight=	29.54
Wet Molecular Weight=	26.75
Average Square Root of Delta P (in H20)=	0.0519
% Isokinetic=	101.1
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	230
Flow Rate (Actual, Cubic ft/min)=	1,035
Flow rate (Standard, Wet, Cubic ft/min)=	568
Flow Rate (Standard, Dry, Cubic ft/min)=	431

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29OT3 PROG.=VER 06/27/89
RUN # - 3 - Method 29 Train for Metals 07-06-1999 14:22:13
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 0906-1006/1029-1129
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	26.857
Final Meter Volume (Cubic Meters)=	27.755
Meter Factor=	1.011
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	0.907
Gas Volume (Dry Standard Cubic Meters)=	0.898
Barometric Pressure (mm Hg)=	766
Static Pressure (mm H20)=	-0
Percent Oxygen=	10.0
Percent Carbon Dioxide=	7.1
Moisture Collected (ml)=	214.6
Percent Water=	24.2
Average Meter Temperature (C)=	26
Average Delta H (mm H20)=	7.0
Average Delta P (mm H20)=	0.1
Average Stack Temperature (C)=	265
Dry Molecular Weight=	29.54
Wet Molecular Weight=	26.75
Average Square Root of Delta P (mm H20)=	0.2615
% Isokinetic=	101.1
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	70
Flow rate (Actual, Cubic m/min)=	29
Flow rate (Standard, Wet, Cubic m/min)=	16
Flow rate (Standard, Dry, Cubic m/min)=	12

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2	
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0	0.0
Particulate Loading, Actual (mg/cu m)=	0.0		
Emission Rate (kg/hr)=	0.00		

No Back Half Analysis

FILE NAME - M29OT3 PROG.=VER 06/27/89
RUN # - 3 - Method 29 Train for Metals 07-06-1999 14:22:13
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 0906-1006/1029-1129
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.001	0.09	480	72	72
2	0.001	0.08	530	73	72
3	0.001	0.08	526	74	73
4	0.002	0.17	540	76	74
5	0.001	0.09	484	78	75
6	0.001	0.09	498	80	77
7	0.002	0.18	477	80	79
8	0.003	0.27	480	80	78
9	0.005	0.46	479	81	79
10	0.005	0.46	482	84	80
11	0.008	0.67	567	86	81
12	0.008	0.68	562	88	82

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29IN4
RUN # - 4 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 1605-1835
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:23:16

Initial Meter Volume (Cubic Feet)=	733.893	
Final Meter Volume (Cubic Feet)=	800.432	
Meter Factor=	1.001	
Final Leak Rate (cu ft/min)=	0.006	
Net Meter Volume (Cubic Feet)=	66.606	
Gas Volume (Dry Standard Cubic Feet)=	65.139	
Barometric Pressure (in Hg)=	30.12	
Static Pressure (Inches H20)=	-0.05	
Percent Oxygen=	8.7	
Percent Carbon Dioxide=	7.7	
Moisture Collected (ml)=	288.3	
Percent Water=	17.3	
Average Meter Temperature (F)=	84	
Average Delta H (in H20)=	0.64	
Average Delta P (in H20)=	0.011	
Average Stack Temperature (F)=	1432	
Dry Molecular Weight=	29.58	
Wet Molecular Weight=	27.58	
Average Square Root of Delta P (in H20)=	0.1059	
% Isokinetic=	102.6	
Pitot Coefficient=	0.81	
Sampling Time (Minutes)=	150.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	21.2	
Stack Axis #2 (Inches)=	21.2	
Circular Stack		
Stack Area (Square Feet)=	2.45	
Stack Velocity (Actual, Feet/min)=	666	
Flow Rate (Actual, Cubic ft/min)=	1,631	
Flow rate (Standard, Wet, Cubic ft/min)=	458	
Flow Rate (Standard, Dry, Cubic ft/min)=	379	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29IN4 PROG.=VER 06/27/89
RUN # - 4 - Method 29 Train for Metals 07-06-1999 14:23:16
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 1605-1835
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	20.781
Final Meter Volume (Cubic Meters)=	22.665
Meter Factor=	1.001
Final Leak Rate (cu m/min)=	0.0002
Net Meter Volume (Cubic Meters)=	1.886
Gas Volume (Dry Standard Cubic Meters)=	1.844
Barometric Pressure (mm Hg)=	765
Static Pressure (mm H20)=	-1
Percent Oxygen=	8.7
Percent Carbon Dioxide=	7.7
Moisture Collected (ml)=	288.3
Percent Water=	17.3
Average Meter Temperature (C)=	29
Average Delta H (mm H20)=	16.3
Average Delta P (mm H20)=	0.3
Average Stack Temperature (C)=	778
Dry Molecular Weight=	29.58
Wet Molecular Weight=	27.58
Average Square Root of Delta P (mm H20)=	0.5336
% Isokinetic=	102.6
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	150.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	203
Flow rate (Actual, Cubic m/min)=	46
Flow rate (Standard, Wet, Cubic m/min)=	13
Flow rate (Standard, Dry, Cubic m/min)=	11

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M29IN4
RUN # - 4 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/13/99 Time: 1605-1835
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:23:16

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.008	0.42	1373	76	75
2	0.013	0.72	1360	79	76
3	0.018	0.96	1470	84	78
4	0.018	0.99	1448	87	79
5	0.015	0.86	1440	88	80
6	0.013	0.70	1446	90	82
7	0.010	0.55	1492	90	83
8	0.010	0.53	1454	90	84
9	0.010	0.53	1442	90	84
10	0.010	0.57	1452	90	84
11	0.008	0.43	1399	90	85
12	0.008	0.42	1402	90	85

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29OT4
RUN # - 4 - Method 29 Train for Metals
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 1605-1705/1725-1825
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:24:49

Initial Meter Volume (Cubic Feet)=	982.504
Final Meter Volume (Cubic Feet)=	1019.775
Meter Factor=	1.011
Final Leak Rate (cu ft/min)=	0.007
Net Meter Volume (Cubic Feet)=	37.681
Gas Volume (Dry Standard Cubic Feet)=	37.037
Barometric Pressure (in Hg)=	30.12
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	9.3
Percent Carbon Dioxide=	7.4
Moisture Collected (ml)=	289.0
Percent Water=	26.9
Average Meter Temperature (F)=	81
Average Delta H (in H20)=	0.39
Average Delta P (in H20)=	0.005
Average Stack Temperature (F)=	574
Dry Molecular Weight=	29.56
Wet Molecular Weight=	26.45
Average Square Root of Delta P (in H20)=	0.0624
% Isokinetic=	104.3
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.709
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	287
Flow Rate (Actual, Cubic ft/min)=	1,295
Flow rate (Standard, Wet, Cubic ft/min)=	665
Flow Rate (Standard, Dry, Cubic ft/min)=	487

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29OT4 PROG.=VER 06/27/89
RUN # - 4 - Method 29 Train for Metals 07-06-1999 14:24:49
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 1605-1705/1725-1825
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	27.821
Final Meter Volume (Cubic Meters)=	28.876
Meter Factor=	1.011
Final Leak Rate (cu m/min)=	0.0002
Net Meter Volume (Cubic Meters)=	1.067
Gas Volume (Dry Standard Cubic Meters)=	1.049
Barometric Pressure (mm Hg)=	765
Static Pressure (mm H20)=	-0
Percent Oxygen=	9.3
Percent Carbon Dioxide=	7.4
Moisture Collected (ml)=	289.0
Percent Water=	26.9
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	10.0
Average Delta P (mm H20)=	0.1
Average Stack Temperature (C)=	301
Dry Molecular Weight=	29.56
Wet Molecular Weight=	26.45
Average Square Root of Delta P (mm H20)=	0.3147
% Isokinetic=	104.3
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	18.01
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	88
Flow rate (Actual, Cubic m/min)=	37
Flow rate (Standard, Wet, Cubic m/min)=	19
Flow rate (Standard, Dry, Cubic m/min)=	14

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M29OT4 PROG.=VER 06/27/89
RUN # - 4 - Method 29 Train for Metals 07-06-1999 14:24:49
LOCATION - Scrubber Outlet Duct
DATE - 06/13/99 Time: 1605-1705/1725-1825
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.001	0.08	503	76	75
2	0.001	0.08	579	76	75
3	0.002	0.16	597	77	76
4	0.001	0.08	589	79	76
5	0.001	0.08	564	81	78
6	0.001	0.08	564	83	79
7	0.007	0.67	454	83	82
8	0.008	0.67	573	84	81
9	0.007	0.58	583	86	82
10	0.010	0.85	571	88	82
11	0.009	0.71	654	90	84
12	0.009	0.70	659	90	83

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29IN5
RUN # - 5 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/14/99 Time: 1551-1651/1721-1821
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:25:08

Initial Meter Volume (Cubic Feet)=	800.704
Final Meter Volume (Cubic Feet)=	866.485
Meter Factor=	1.001
Final Leak Rate (cu ft/min)=	0.004
Net Meter Volume (Cubic Feet)=	65.847
Gas Volume (Dry Standard Cubic Feet)=	64.044
Barometric Pressure (in Hg)=	29.86
Static Pressure (Inches H20)=	-0.05
Percent Oxygen=	8.1
Percent Carbon Dioxide=	9.0
Moisture Collected (ml)=	245.0
Percent Water=	15.3
Average Meter Temperature (F)=	83
Average Delta H (in H20)=	0.99
Average Delta P (in H20)=	0.017
Average Stack Temperature (F)=	1409
Dry Molecular Weight=	29.76
Wet Molecular Weight=	27.97
Average Square Root of Delta P (in H20)=	0.1308
% Isokinetic=	100.2
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	21.2
Stack Axis #2 (Inches)=	21.2
Circular Stack	
Stack Area (Square Feet)=	2.45
Stack Velocity (Actual, Feet/min)=	816
Flow Rate (Actual, Cubic ft/min)=	1,998
Flow rate (Standard, Wet, Cubic ft/min)=	563
Flow Rate (Standard, Dry, Cubic ft/min)=	477

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29IN5 PROG.=VER 06/27/89
RUN # - 5 - Method 29 Train for Metals 07-06-1999 14:25:08
LOCATION - Scrubber Inlet Duct
DATE - 06/14/99 Time: 1551-1651/1721-1821
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	22.673
Final Meter Volume (Cubic Meters)=	24.535
Meter Factor=	1.001
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.865
Gas Volume (Dry Standard Cubic Meters)=	1.813
Barometric Pressure (mm Hg)=	758
Static Pressure (mm H20)=	-1
Percent Oxygen=	8.1
Percent Carbon Dioxide=	9.0
Moisture Collected (ml)=	245.0
Percent Water=	15.3
Average Meter Temperature (C)=	28
Average Delta H (mm H20)=	25.1
Average Delta P (mm H20)=	0.4
Average Stack Temperature (C)=	765
Dry Molecular Weight=	29.76
Wet Molecular Weight=	27.97
Average Square Root of Delta P (mm H20)=	0.6592
% Isokinetic=	100.2
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	249
Flow rate (Actual, Cubic m/min)=	57
Flow rate (Standard, Wet, Cubic m/min)=	16
Flow rate (Standard, Dry, Cubic m/min)=	14

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M29IN5
RUN # - 5 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/14/99 Time: 1551-1651/1721-1821
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:25:08

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.015	0.89	1318	76	75
2	0.025	1.40	1406	78	76
3	0.020	1.20	1449	83	77
4	0.020	1.20	1451	86	79
5	0.018	0.98	1423	88	80
6	0.015	0.84	1417	89	81
7	0.020	1.00	1436	82	81
8	0.020	1.20	1398	86	81
9	0.015	0.93	1377	89	82
10	0.015	0.80	1429	90	83
11	0.013	0.70	1411	90	83
12	0.013	0.71	1395	90	84

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29OT5
RUN # - 5 - Method 29 Train for Metals
LOCATION - Scrubber Outlet Duct
DATE - 06/14/99 Time: 1550-1650/1720-1820
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:25:34

Initial Meter Volume (Cubic Feet)=	22.056
Final Meter Volume (Cubic Feet)=	58.781
Meter Factor=	1.011
Final Leak Rate (cu ft/min)=	0.004
Net Meter Volume (Cubic Feet)=	37.129
Gas Volume (Dry Standard Cubic Feet)=	36.214
Barometric Pressure (in Hg)=	29.86
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	9.7
Percent Carbon Dioxide=	7.9
Moisture Collected (ml)=	249.7
Percent Water=	24.5
Average Meter Temperature (F)=	81
Average Delta H (in H20)=	0.35
Average Delta P (in H20)=	0.004
Average Stack Temperature (F)=	610
Dry Molecular Weight=	29.65
Wet Molecular Weight=	26.80
Average Square Root of Delta P (in H20)=	0.0629
% Isokinetic=	101.2
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	293
Flow Rate (Actual, Cubic ft/min)=	1,323
Flow rate (Standard, Wet, Cubic ft/min)=	651
Flow Rate (Standard, Dry, Cubic ft/min)=	492

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29OT5 PROG.=VER 06/27/89
RUN # - 5 - Method 29 Train for Metals 07-06-1999 14:25:34
LOCATION - Scrubber Outlet Duct
DATE - 06/14/99 Time: 1550-1650/1720-1820
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	0.625
Final Meter Volume (Cubic Meters)=	1.664
Meter Factor=	1.011
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.051
Gas Volume (Dry Standard Cubic Meters)=	1.025
Barometric Pressure (mm Hg)=	758
Static Pressure (mm H20)=	-0
Percent Oxygen=	9.7
Percent Carbon Dioxide=	7.9
Moisture Collected (ml)=	249.7
Percent Water=	24.5
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	8.8
Average Delta P (mm H20)=	0.1
Average Stack Temperature (C)=	321
Dry Molecular Weight=	29.65
Wet Molecular Weight=	26.80
Average Square Root of Delta P (mm H20)=	0.3168
% Isokinetic=	101.2
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	89
Flow rate (Actual, Cubic m/min)=	37
Flow rate (Standard, Wet, Cubic m/min)=	18
Flow rate (Standard, Dry, Cubic m/min)=	14

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2	
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0	0.0
Particulate Loading, Actual (mg/cu m)=	0.0		
Emission Rate (kg/hr)=	0.00		

No Back Half Analysis

FILE NAME - M29OT5
RUN # - 5 - Method 29 Train for Metals
LOCATION - Scrubber Outlet Duct
DATE - 06/14/99 Time: 1550-1650/1720-1820
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:25:34

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.002	0.16	582	75	75
2	0.002	0.15	653	76	76
3	0.005	0.38	664	78	76
4	0.003	0.22	669	79	77
5	0.001	0.08	618	82	79
6	0.001	0.08	577	83	79
7	0.006	0.52	537	82	81
8	0.006	0.51	550	82	81
9	0.006	0.50	574	84	81
10	0.005	0.38	586	86	81
11	0.007	0.54	667	87	83
12	0.008	0.63	642	87	82

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29IN6
RUN # - 6 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1046-1146/1212-1312
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:28:17

Initial Meter Volume (Cubic Feet)=	866.761	
Final Meter Volume (Cubic Feet)=	932.438	
Meter Factor=	1.001	
Final Leak Rate (cu ft/min)=	0.003	
Net Meter Volume (Cubic Feet)=	65.743	
Gas Volume (Dry Standard Cubic Feet)=	64.351	
Barometric Pressure (in Hg)=	29.92	
Static Pressure (Inches H20)=	-0.05	
Percent Oxygen=	9.0	
Percent Carbon Dioxide=	8.1	
Moisture Collected (ml)=	238.0	
Percent Water=	14.8	
Average Meter Temperature (F)=	81	
Average Delta H (in H20)=	0.98	
Average Delta P (in H20)=	0.018	
Average Stack Temperature (F)=	1443	
Dry Molecular Weight=	29.66	
Wet Molecular Weight=	27.93	
Average Square Root of Delta P (in H20)=	0.1328	
% Isokinetic=	99.4	
Pitot Coefficient=	0.81	
Sampling Time (Minutes)=	120.0	
Nozzle Diameter (Inches)=	0.708	
Stack Axis #1 (Inches)=	21.2	
Stack Axis #2 (Inches)=	21.2	
Circular Stack		
Stack Area (Square Feet)=	2.45	
Stack Velocity (Actual, Feet/min)=	835	
Flow Rate (Actual, Cubic ft/min)=	2,046	
Flow rate (Standard, Wet, Cubic ft/min)=	567	
Flow Rate (Standard, Dry, Cubic ft/min)=	483	

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29IN6 PROG.=VER 06/27/89
RUN # - 6 - Method 29 Train for Metals 07-06-1999 14:28:17
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1046-1146/1212-1312
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	24.543
Final Meter Volume (Cubic Meters)=	26.403
Meter Factor=	1.001
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.862
Gas Volume (Dry Standard Cubic Meters)=	1.822
Barometric Pressure (mm Hg)=	760
Static Pressure (mm H20)=	-1
Percent Oxygen=	9.0
Percent Carbon Dioxide=	8.1
Moisture Collected (ml)=	238.0
Percent Water=	14.8
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	24.9
Average Delta P (mm H20)=	0.4
Average Stack Temperature (C)=	784
Dry Molecular Weight=	29.66
Wet Molecular Weight=	27.93
Average Square Root of Delta P (mm H20)=	0.6690
% Isokinetic=	99.4
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	255
Flow rate (Actual, Cubic m/min)=	58
Flow rate (Standard, Wet, Cubic m/min)=	16
Flow rate (Standard, Dry, Cubic m/min)=	14

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M29IN6
RUN # - 6 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1046-1146/1212-1312
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:28:18

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.013	0.68	1413	73	72
2	0.020	1.05	1456	76	73
3	0.018	0.97	1434	80	74
4	0.018	0.96	1465	83	76
5	0.018	0.95	1454	85	77
6	0.018	0.94	1442	86	78
7	0.020	1.05	1464	81	79
8	0.020	1.10	1476	83	79
9	0.020	1.25	1404	86	80
10	0.020	1.10	1454	89	80
11	0.015	0.87	1460	90	81
12	0.015	0.83	1394	89	82

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29OT6 PROG.=VER 06/27/89
RUN # - 6 - Method 29 Train for Metals 07-06-1999 14:28:38
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1045-1145/1211-1311
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	62.337
Final Meter Volume (Cubic Feet)=	96.886
Meter Factor=	1.011
Final Leak Rate (cu ft/min)=	0.003
Net Meter Volume (Cubic Feet)=	34.929
Gas Volume (Dry Standard Cubic Feet)=	34.247
Barometric Pressure (in Hg)=	29.92
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	10.6
Percent Carbon Dioxide=	7.0
Moisture Collected (ml)=	232.8
Percent Water=	24.3
Average Meter Temperature (F)=	79
Average Delta H (in H20)=	0.34
Average Delta P (in H20)=	0.004
Average Stack Temperature (F)=	605
Dry Molecular Weight=	29.54
Wet Molecular Weight=	26.74
Average Square Root of Delta P (in H20)=	0.0590
% Isokinetic=	100.9
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.709
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	275
Flow Rate (Actual, Cubic ft/min)=	1,238
Flow rate (Standard, Wet, Cubic ft/min)=	614
Flow Rate (Standard, Dry, Cubic ft/min)=	465

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29OT6 PROG.=VER 06/27/89
RUN # - 6 - Method 29 Train for Metals 07-06-1999 14:28:38
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1045-1145/1211-1311
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	1.765
Final Meter Volume (Cubic Meters)=	2.743
Meter Factor=	1.011
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	0.989
Gas Volume (Dry Standard Cubic Meters)=	0.970
Barometric Pressure (mm Hg)=	760
Static Pressure (mm H20)=	-0
Percent Oxygen=	10.6
Percent Carbon Dioxide=	7.0
Moisture Collected (ml)=	232.8
Percent Water=	24.3
Average Meter Temperature (C)=	26
Average Delta H (mm H20)=	8.6
Average Delta P (mm H20)=	0.1
Average Stack Temperature (C)=	318
Dry Molecular Weight=	29.54
Wet Molecular Weight=	26.74
Average Square Root of Delta P (mm H20)=	0.2973
% Isokinetic=	100.9
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	18.01
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	84
Flow rate (Actual, Cubic m/min)=	35
Flow rate (Standard, Wet, Cubic m/min)=	17
Flow rate (Standard, Dry, Cubic m/min)=	13

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M29OT6
RUN # - 6 - Method 29 Train for Metals
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1045-1145/1211-1311
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:28:39

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.001	0.08	603	73	72
2	0.002	0.15	629	74	73
3	0.004	0.31	637	75	73
4	0.004	0.31	654	76	74
5	0.001	0.08	573	80	77
6	0.001	0.08	559	80	77
7	0.001	0.08	559	82	80
8	0.001	0.08	554	81	79
9	0.009	0.77	559	81	80
10	0.008	0.66	590	84	81
11	0.008	0.62	668	87	81
12	0.011	0.85	673	88	82

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29IN7
RUN # - 7 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1751-1851/1911-2011
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:29:02

Initial Meter Volume (Cubic Feet)=	932.702
Final Meter Volume (Cubic Feet)=	991.479
Meter Factor=	1.001
Final Leak Rate (cu ft/min)=	0.002
Net Meter Volume (Cubic Feet)=	58.836
Gas Volume (Dry Standard Cubic Feet)=	57.420
Barometric Pressure (in Hg)=	29.89
Static Pressure (Inches H20)=	-0.05
Percent Oxygen=	7.1
Percent Carbon Dioxide=	9.8
Moisture Collected (ml)=	219.3
Percent Water=	15.2
Average Meter Temperature (F)=	81
Average Delta H (in H20)=	0.78
Average Delta P (in H20)=	0.015
Average Stack Temperature (F)=	1572
Dry Molecular Weight=	29.85
Wet Molecular Weight=	28.05
Average Square Root of Delta P (in H20)=	0.1225
% Isokinetic=	100.0
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	21.2
Stack Axis #2 (Inches)=	21.2
Circular Stack	
Stack Area (Square Feet)=	2.45
Stack Velocity (Actual, Feet/min)=	795
Flow Rate (Actual, Cubic ft/min)=	1,948
Flow rate (Standard, Wet, Cubic ft/min)=	506
Flow Rate (Standard, Dry, Cubic ft/min)=	428

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29IN7 PROG.=VER 06/27/89
RUN # - 7 - Method 29 Train for Metals 07-06-1999 14:29:02
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1751-1851/1911-2011
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	26.410
Final Meter Volume (Cubic Meters)=	28.075
Meter Factor=	1.001
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.666
Gas Volume (Dry Standard Cubic Meters)=	1.626
Barometric Pressure (mm Hg)=	759
Static Pressure (mm H20)=	-1
Percent Oxygen=	7.1
Percent Carbon Dioxide=	9.8
Moisture Collected (ml)=	219.3
Percent Water=	15.2
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	19.8
Average Delta P (mm H20)=	0.4
Average Stack Temperature (C)=	855
Dry Molecular Weight=	29.85
Wet Molecular Weight=	28.05
Average Square Root of Delta P (mm H20)=	0.6175
% Isokinetic=	100.0
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	242
Flow rate (Actual, Cubic m/min)=	55
Flow rate (Standard, Wet, Cubic m/min)=	14
Flow rate (Standard, Dry, Cubic m/min)=	12

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M29IN7
RUN # - 7 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/15/99 Time: 1751-1851/1911-2011
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:29:02

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.008	0.38	1464	75	74
2	0.010	0.51	1540	77	75
3	0.015	0.76	1578	80	76
4	0.015	0.76	1602	83	77
5	0.015	0.75	1601	85	78
6	0.015	0.80	1615	87	79
7	0.018	0.89	1560	82	80
8	0.018	0.90	1612	84	80
9	0.018	0.90	1602	87	81
10	0.018	0.90	1555	88	81
11	0.018	0.90	1579	89	82
12	0.018	0.90	1552	89	82

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29OT7 PROG.=VER 06/27/89
RUN # - 7 - Method 29 Train for Metals 07-06-1999 14:29:32
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1750-1850/1910-2010
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	97.118
Final Meter Volume (Cubic Feet)=	125.130
Meter Factor=	1.011
Final Leak Rate (cu ft/min)=	0.002
Net Meter Volume (Cubic Feet)=	28.320
Gas Volume (Dry Standard Cubic Feet)=	27.610
Barometric Pressure (in Hg)=	29.89
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	8.4
Percent Carbon Dioxide=	8.6
Moisture Collected (ml)=	219.1
Percent Water=	27.2
Average Meter Temperature (F)=	81
Average Delta H (in H20)=	0.20
Average Delta P (in H20)=	0.003
Average Stack Temperature (F)=	621
Dry Molecular Weight=	29.71
Wet Molecular Weight=	26.53
Average Square Root of Delta P (in H20)=	0.0497
% Isokinetic=	101.1
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	234
Flow Rate (Actual, Cubic ft/min)=	1,056
Flow rate (Standard, Wet, Cubic ft/min)=	515
Flow Rate (Standard, Dry, Cubic ft/min)=	375

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29OT7 PROG.=VER 06/27/89
RUN # - 7 - Method 29 Train for Metals 07-06-1999 14:29:32
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1750-1850/1910-2010
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	2.750
Final Meter Volume (Cubic Meters)=	3.543
Meter Factor=	1.011
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	0.802
Gas Volume (Dry Standard Cubic Meters)=	0.782
Barometric Pressure (mm Hg)=	759
Static Pressure (mm H20)=	-0
Percent Oxygen=	8.4
Percent Carbon Dioxide=	8.6
Moisture Collected (ml)=	219.1
Percent Water=	27.2
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	5.2
Average Delta P (mm H20)=	0.1
Average Stack Temperature (C)=	327
Dry Molecular Weight=	29.71
Wet Molecular Weight=	26.53
Average Square Root of Delta P (mm H20)=	0.2505
% Isokinetic=	101.1
Pitot Coefficient=	0.79
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	71
Flow rate (Actual, Cubic m/min)=	30
Flow rate (Standard, Wet, Cubic m/min)=	15
Flow rate (Standard, Dry, Cubic m/min)=	11

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M29OT7 PROG.=VER 06/27/89
RUN # - 7 - Method 29 Train for Metals 07-06-1999 14:29:33
LOCATION - Scrubber Outlet Duct
DATE - 06/15/99 Time: 1750-1850/1910-2010
PROJECT # - 4951.08 and 5587

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.001	0.08	545	76	76
2	0.001	0.07	619	77	76
3	0.002	0.14	652	78	77
4	0.002	0.14	661	80	78
5	0.001	0.07	615	81	79
6	0.001	0.07	592	83	80
7	0.002	0.16	547	83	82
8	0.004	0.31	570	83	82
9	0.003	0.23	578	84	82
10	0.002	0.15	623	85	83
11	0.007	0.48	718	86	84
12	0.008	0.55	731	87	84

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29IN8
RUN # - 8 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/16/99 Time: 1541-1641/1649-1819
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:31:35

Initial Meter Volume (Cubic Feet)=	992.615
Final Meter Volume (Cubic Feet)=	1068.190
Meter Factor=	1.001
Final Leak Rate (cu ft/min)=	0.002
Net Meter Volume (Cubic Feet)=	75.651
Gas Volume (Dry Standard Cubic Feet)=	74.297
Barometric Pressure (in Hg)=	30.08
Static Pressure (Inches H20)=	-0.05
Percent Oxygen=	7.6
Percent Carbon Dioxide=	8.2
Moisture Collected (ml)=	304.7
Percent Water=	16.2
Average Meter Temperature (F)=	81
Average Delta H (in H20)=	0.82
Average Delta P (in H20)=	0.017
Average Stack Temperature (F)=	1626
Dry Molecular Weight=	29.62
Wet Molecular Weight=	27.74
Average Square Root of Delta P (in H20)=	0.1286
% Isokinetic=	100.2
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	150.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	21.2
Stack Axis #2 (Inches)=	21.2
Circular Stack	
Stack Area (Square Feet)=	2.45
Stack Velocity (Actual, Feet/min)=	848
Flow Rate (Actual, Cubic ft/min)=	2,077
Flow rate (Standard, Wet, Cubic ft/min)=	528
Flow Rate (Standard, Dry, Cubic ft/min)=	443

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2	
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000	0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000		
Emission Rate (lb/hr)=	0.00		

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29IN8
RUN # - 8 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/16/99 Time: 1541-1641/1649-1819
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:31:35

Initial Meter Volume (Cubic Meters)=	28.107
Final Meter Volume (Cubic Meters)=	30.247
Meter Factor=	1.001
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	2.142
Gas Volume (Dry Standard Cubic Meters)=	2.104
Barometric Pressure (mm Hg)=	764
Static Pressure (mm H20)=	-1
Percent Oxygen=	7.6
Percent Carbon Dioxide=	8.2
Moisture Collected (ml)=	304.7
Percent Water=	16.2
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	20.9
Average Delta P (mm H20)=	0.4
Average Stack Temperature (C)=	886
Dry Molecular Weight=	29.62
Wet Molecular Weight=	27.74
Average Square Root of Delta P (mm H20)=	0.6483
% Isokinetic=	100.2
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	150.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	259
Flow rate (Actual, Cubic m/min)=	59
Flow rate (Standard, Wet, Cubic m/min)=	15
Flow rate (Standard, Dry, Cubic m/min)=	13

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M29IN8
RUN # - 8 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/16/99 Time: 1541-1641/1649-1819
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:31:35

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.018	0.84	1632	73	72
2	0.010	0.48	1620	75	73
3	0.015	0.72	1608	78	74
4	0.018	0.87	1637	81	75
5	0.013	0.63	1623	84	77
6	0.018	0.87	1650	85	78
7	0.020	0.98	1639	81	79
8	0.018	0.88	1614	85	80
9	0.015	0.73	1618	87	80
10	0.015	0.75	1593	88	81
11	0.018	0.88	1621	88	81
12	0.018	0.88	1626	89	82
13	0.018	0.88	1618	89	82
14	0.020	0.98	1637	90	82
15	0.020	0.98	1653	90	82

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29OT8 PROG.=VER 06/27/89
RUN # - 8 - Method 29 Train for Metals 07-06-1999 14:31:59
LOCATION - Scrubber Outlet Duct
DATE - 06/16/99 Time: 1540-1640/1648-1818
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Feet)=	131.521
Final Meter Volume (Cubic Feet)=	178.100
Meter Factor=	1.011
Final Leak Rate (cu ft/min)=	0.006
Net Meter Volume (Cubic Feet)=	47.091
Gas Volume (Dry Standard Cubic Feet)=	46.302
Barometric Pressure (in Hg)=	30.08
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	8.9
Percent Carbon Dioxide=	7.4
Moisture Collected (ml)=	369.7
Percent Water=	27.3
Average Meter Temperature (F)=	80
Average Delta H (in H20)=	0.36
Average Delta P (in H20)=	0.005
Average Stack Temperature (F)=	675
Dry Molecular Weight=	29.54
Wet Molecular Weight=	26.39
Average Square Root of Delta P (in H20)=	0.0683
% Isokinetic=	96.6
Pitot Coefficient=	0.82
Sampling Time (Minutes)=	150.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	344
Flow Rate (Actual, Cubic ft/min)=	1,551
Flow rate (Standard, Wet, Cubic ft/min)=	725
Flow Rate (Standard, Dry, Cubic ft/min)=	527

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29OT8 PROG.=VER 06/27/89
RUN # - 8 - Method 29 Train for Metals 07-06-1999 14:31:59
LOCATION - Scrubber Outlet Duct
DATE - 06/16/99 Time: 1540-1640/1648-1818
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	3.724
Final Meter Volume (Cubic Meters)=	5.043
Meter Factor=	1.011
Final Leak Rate (cu m/min)=	0.0002
Net Meter Volume (Cubic Meters)=	1.333
Gas Volume (Dry Standard Cubic Meters)=	1.311
Barometric Pressure (mm Hg)=	764
Static Pressure (mm H20)=	-0
Percent Oxygen=	8.9
Percent Carbon Dioxide=	7.4
Moisture Collected (ml)=	369.7
Percent Water=	27.3
Average Meter Temperature (C)=	27
Average Delta H (mm H20)=	9.2
Average Delta P (mm H20)=	0.1
Average Stack Temperature (C)=	357
Dry Molecular Weight=	29.54
Wet Molecular Weight=	26.39
Average Square Root of Delta P (mm H20)=	0.3443
% Isokinetic=	96.6
Pitot Coefficient=	0.82
Sampling Time (Minutes)=	150.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	105
Flow rate (Actual, Cubic m/min)=	44
Flow rate (Standard, Wet, Cubic m/min)=	21
Flow rate (Standard, Dry, Cubic m/min)=	15

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2	
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0	0.0
Particulate Loading, Actual (mg/cu m)=	0.0		
Emission Rate (kg/hr)=	0.00		

No Back Half Analysis

FILE NAME - M29OT8
RUN # - 8 - Method 29 Train for Metals
LOCATION - Scrubber Outlet Duct
DATE - 06/16/99 Time: 1540-1640/1648-1818
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:31:59

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.002	0.15	604	73	72
2	0.002	0.14	683	74	73
3	0.005	0.34	695	75	74
4	0.002	0.13	700	77	75
5	0.001	0.07	618	79	76
6	0.001	0.07	598	80	77
7	0.006	0.43	652	81	79
8	0.003	0.22	633	82	79
9	0.006	0.44	651	83	79
10	0.007	0.51	642	84	80
11	0.009	0.61	741	86	81
12	0.010	0.66	769	88	82
13	0.008	0.56	705	89	82
14	0.008	0.56	716	89	83
15	0.008	0.55	717	89	83

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29IN9
RUN # - 9 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/17/99 Time: 1006-1106/1119-1219
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:33:05

Initial Meter Volume (Cubic Feet)=	68.516
Final Meter Volume (Cubic Feet)=	134.235
Meter Factor=	1.001
Final Leak Rate (cu ft/min)=	0.002
Net Meter Volume (Cubic Feet)=	65.785
Gas Volume (Dry Standard Cubic Feet)=	64.664
Barometric Pressure (in Hg)=	30.00
Static Pressure (Inches H20)=	-0.05
Percent Oxygen=	7.8
Percent Carbon Dioxide=	8.2
Moisture Collected (ml)=	243.3
Percent Water=	15.1
Average Meter Temperature (F)=	80
Average Delta H (in H20)=	0.98
Average Delta P (in H20)=	0.019
Average Stack Temperature (F)=	1553
Dry Molecular Weight=	29.62
Wet Molecular Weight=	27.87
Average Square Root of Delta P (in H20)=	0.1374
% Isokinetic=	99.3
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	21.2
Stack Axis #2 (Inches)=	21.2
Circular Stack	
Stack Area (Square Feet)=	2.45
Stack Velocity (Actual, Feet/min)=	889
Flow Rate (Actual, Cubic ft/min)=	2,176
Flow rate (Standard, Wet, Cubic ft/min)=	572
Flow Rate (Standard, Dry, Cubic ft/min)=	486

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2	
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000	0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000		
Emission Rate (lb/hr)=	0.00		

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29IN9
RUN # - 9 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/17/99 Time: 1006-1106/1119-1219
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:33:05

Initial Meter Volume (Cubic Meters)=	1.940
Final Meter Volume (Cubic Meters)=	3.801
Meter Factor=	1.001
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.863
Gas Volume (Dry Standard Cubic Meters)=	1.831
Barometric Pressure (mm Hg)=	762
Static Pressure (mm H20)=	-1
Percent Oxygen=	7.8
Percent Carbon Dioxide=	8.2
Moisture Collected (ml)=	243.3
Percent Water=	15.1
Average Meter Temperature (C)=	26
Average Delta H (mm H20)=	25.0
Average Delta P (mm H20)=	0.5
Average Stack Temperature (C)=	845
Dry Molecular Weight=	29.62
Wet Molecular Weight=	27.87
Average Square Root of Delta P (mm H20)=	0.6922
% Isokinetic=	99.3
Pitot Coefficient=	0.81
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.538
Stack Axis #2 (Meters)=	0.538
Circular Stack	
Stack Area (Square Meters)=	0.227
Stack Velocity (Actual, m/min)=	271
Flow rate (Actual, Cubic m/min)=	62
Flow rate (Standard, Wet, Cubic m/min)=	16
Flow rate (Standard, Dry, Cubic m/min)=	14

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0 0.0
Particulate Loading, Actual (mg/cu m)=	0.0	
Emission Rate (kg/hr)=	0.00	

No Back Half Analysis

FILE NAME - M29IN9
RUN # - 9 - Method 29 Train for Metals
LOCATION - Scrubber Inlet Duct
DATE - 06/17/99 Time: 1006-1106/1119-1219
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:33:05

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.015	0.76	1494	72	71
2	0.018	0.91	1544	74	72
3	0.020	1.00	1561	78	73
4	0.020	1.01	1549	82	75
5	0.020	1.05	1571	84	76
6	0.020	1.03	1568	86	78
7	0.023	1.12	1605	80	78
8	0.023	1.15	1606	84	79
9	0.020	1.10	1584	86	79
10	0.020	1.15	1523	87	80
11	0.015	0.76	1533	88	81
12	0.015	0.76	1493	88	81

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000

FILE NAME - M29OT9
RUN # - 9 - Method 29 Train for Metals
LOCATION - Scrubber Outlet Duct
DATE - 06/17/99 Time: 1005-1105/1118-1218
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:34:19

Initial Meter Volume (Cubic Feet)=	181.306
Final Meter Volume (Cubic Feet)=	216.436
Meter Factor=	1.011
Final Leak Rate (cu ft/min)=	0.003
Net Meter Volume (Cubic Feet)=	35.516
Gas Volume (Dry Standard Cubic Feet)=	35.088
Barometric Pressure (in Hg)=	30.00
Static Pressure (Inches H20)=	-0.02
Percent Oxygen=	9.2
Percent Carbon Dioxide=	7.3
Moisture Collected (ml)=	272.1
Percent Water=	26.8
Average Meter Temperature (F)=	76
Average Delta H (in H20)=	0.33
Average Delta P (in H20)=	0.004
Average Stack Temperature (F)=	671
Dry Molecular Weight=	29.54
Wet Molecular Weight=	26.45
Average Square Root of Delta P (in H20)=	0.0620
% Isokinetic=	100.1
Pitot Coefficient=	0.82
Sampling Time (Minutes)=	120.0
Nozzle Diameter (Inches)=	0.708
Stack Axis #1 (Inches)=	28.8
Stack Axis #2 (Inches)=	28.8
Circular Stack	
Stack Area (Square Feet)=	4.51
Stack Velocity (Actual, Feet/min)=	311
Flow Rate (Actual, Cubic ft/min)=	1,404
Flow rate (Standard, Wet, Cubic ft/min)=	658
Flow Rate (Standard, Dry, Cubic ft/min)=	482

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2
Particulate Loading, Dry Std. (gr/scf)=	0.0000	0.0000 0.0000
Particulate Loading, Actual (gr/cu ft)=	0.0000	
Emission Rate (lb/hr)=	0.00	

No Back Half Analysis

* * METRIC UNITS * *

FILE NAME - M29OT9 PROG.=VER 06/27/89
RUN # - 9 - Method 29 Train for Metals 07-06-1999 14:34:19
LOCATION - Scrubber Outlet Duct
DATE - 06/17/99 Time: 1005-1105/1118-1218
PROJECT # - 4951.08 and 5587

Initial Meter Volume (Cubic Meters)=	5.134
Final Meter Volume (Cubic Meters)=	6.129
Meter Factor=	1.011
Final Leak Rate (cu m/min)=	0.0001
Net Meter Volume (Cubic Meters)=	1.006
Gas Volume (Dry Standard Cubic Meters)=	0.994
Barometric Pressure (mm Hg)=	762
Static Pressure (mm H20)=	-0
Percent Oxygen=	9.2
Percent Carbon Dioxide=	7.3
Moisture Collected (ml)=	272.1
Percent Water=	26.8
Average Meter Temperature (C)=	24
Average Delta H (mm H20)=	8.3
Average Delta P (mm H20)=	0.1
Average Stack Temperature (C)=	355
Dry Molecular Weight=	29.54
Wet Molecular Weight=	26.45
Average Square Root of Delta P (mm H20)=	0.3123
% Isokinetic=	100.1
Pitot Coefficient=	0.82
Sampling Time (Minutes)=	120.0
Nozzle Diameter (mm)=	17.98
Stack Axis #1 (Meters)=	0.730
Stack Axis #2 (Meters)=	0.730
Circular Stack	
Stack Area (Square Meters)=	0.419
Stack Velocity (Actual, m/min)=	95
Flow rate (Actual, Cubic m/min)=	40
Flow rate (Standard, Wet, Cubic m/min)=	19
Flow rate (Standard, Dry, Cubic m/min)=	14

Particulate Loading - Front Half

Particulate Weight (g)=	0.0000	Corr. to 7% O2 & 12% CO2	
Particulate Loading, Dry Std. (mg/cu m)=	0.0	0.0	0.0
Particulate Loading, Actual (mg/cu m)=	0.0		
Emission Rate (kg/hr)=	0.00		

No Back Half Analysis

FILE NAME - M29OT9
RUN # - 9 - Method 29 Train for Metals
LOCATION - Scrubber Outlet Duct
DATE - 06/17/99 Time: 1005-1105/1118-1218
PROJECT # - 4951.08 and 5587

PROG.=VER 06/27/89
07-06-1999 14:34:19

Point #	Delta P (in. H20)	Delta H (in. H20)	Stack T (F)	Meter T In(F)	Meter T Out(F)
1	0.003	0.24	587	70	69
2	0.003	0.22	686	71	70
3	0.005	0.37	702	73	71
4	0.001	0.07	706	74	72
5	0.001	0.07	652	76	74
6	0.001	0.08	639	77	75
7	0.010	0.70	783	78	77
8	0.009	0.65	752	79	76
9	0.006	0.44	723	82	78
10	0.005	0.38	680	82	78
11	0.005	0.42	590	83	79
12	0.003	0.26	546	83	79

Fraction	Final Wt. (g)	Tare Wt. (g)	Blank Wt. (g)	Net Wt. (g)
DRY CATCH	0.0000	0.0000	0.0000	0.0000
FILTER	0.0000	0.0000	0.0000	0.0000

Fraction	Final Wt. (g)	Tare Wt. (g)	Vol. (ml)	Net Wt. (g)
PROBE RINSE	0.0000	0.0000	0.0	0.0000
IMPINGERS	0.0000	0.0000	0.0	0.0000

Probe Rinse Blank (mg/ml)= 0.0000
Impinger Blank (mg/ml)= 0.0000