Background Report Reference

AP-42 Section Number: 10.6.1

Background Report Section: 4

Reference Number: 83

Title: Source Emissions Survey of Louisiana Pacific Corporation, Press House RTO Stack (EPN-RTO3) and Press House Numbers 1 and 2 Vent Ducts, Silsbee Texas. TNRCC Permit 19695 Volumes I and II

METCO, Environmental

January 1996

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4-83)

SOURCE EMISSIONS SURVEY
OF
LOUISIANA-PACIFIC CORPORATION
PRESS HOUSE RTO STACK (EPN RTO3) AND
PRESS HOUSE NUMBERS 1 AND 2
VENT DUCTS

SILSBEE, TEXAS
TNRCC PERMIT 19695 1 of 2
FOR
ERM-SOUTHWEST, INC.
VOLUME I

JANUARY 1996

FILE NUMBER 96-11A

MET 9611A

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LOUISIANA-PACIFIC CORPORATION
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SILSBEE, TEXAS
TNRCC PERMIT 19695
FOR
ERM-SOUTHWEST, INC.
FILE NUMBER 96-11A

INTRODUCTION

METCO Environmental, Dallas, Texas, conducted a source emissions survey of Louisiana-Pacific Corporation, located in Silsbee, Texas, for ERM-Southwest, Inc., on January 18 and 19, 1996. The purpose of these tests was to determine the concentrations and quantities of particulate matter, sulfur dioxide, MDI, phenol, formaldehyde, oxides of nitrogen, carbon monoxide, and total hydrocarbons being emitted to the atmosphere via the Press House RTO Stack (EPN RTO3). The concentrations and quantities of particulate matter, formaldehyde, oxides of nitrogen, carbon monoxide, and total hydrocarbons were also determined at the Press House Numbers 1 and 2 Vent Ducts.

The test results are reported to demonstrate compliance in accordance with the special conditions of Texas Natural Resource Conservation Commission Permit No. 19695; and a performance objective of 95 percent total hydrocarbons control efficiency.

The sampling followed the procedures set forth in the Appendix to the Code of Federal Regulations, Title 40, Chapter I, Part 60, Methods 1, 2, 3B, 4, 5, 6, 7E, 10, 25A, and T08; in the "Sampling Procedures Manual, Texas Air Control Board, Revised July 1985"; in the "Test Methods for Evaluating Solid Waste, Volume II, November 1986," Method 0011; and NIOSH Method 5521.

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SUMMARY OF RESULTS

Press House RTO

Run Number	Number 1 Vent Duct Total Hydrocarbons to RTO as Propane (lbs/hr)	Number 2 Vent Duct Total Hydrocarbons to RTO as Propane (lbs/hr)	RTO Stack (EPN RTO3) Total Hydrocarbons Emissions as Propane (lbs/hr)	Destruction Removal Efficiency (%)
1	22.52	22.67	2.16	95.22
2	15.72	26.16	1.57	96.25
3	17.86	25.16	1.78	95.86
Average	18.70	24.66	1.84	95.78

43.36

Run Number	Number 1 Vent Duct Formaldehyde to RTO (lbs/hr)	Number 2 Vent Duct Formaldehyde to RTO (lbs/hr)	RTO Stack (EPN RTO3) Formaldehyde Emissions (lbs/hr)	Destruction Removal Efficiency (%)
1	1.12	1.31	0.41	83.13
2	1.57	2.54	0.47	88.56
3	1.29	1.93	0.40	87.58
Average	1.33	1.93	0.43	86.42

3.26

SUMMARY OF RESULTS

Press House RTO Stack (EPN RTO3)

Run Number	Date	Time	Particulate Matter Emissions (gr/dscf*)	Particulate Matter Emissions (lbs/hr)	Sulfur Dioxide Emissions (ppm)	Sulfur Dioxide Emissions (lbs/hr)	Oxides of Nitrogen Emissions (ppm)	Oxides of Nitrogen Emissions (lbs/hr)	Carbon Monoxide Emissions (ppm)	Carbon Monoxide Emissions (lbs/hr)	Total Hydrocarbons Emissions as Propane (ppm)	Total Hydrocarbons Emissions as Propane (lbs/hr)
1	01/18/96	1835-2015	0.0031	2.75	----	----	13.7	10.28	34.3	15.68	3.0	2.16
1	01/19/96	0820-0945	----	----	0.0	0.00	----	----	----	----	----	----
2	01/19/96	1038-1156	0.0012	1.07	0.0	0.00	14.2	10.57	46.1	20.90	2.2	1.57
3	01/19/96	1457-1740	0.0015	1.32	0.0	0.00	14.0	10.42	45.7	20.72	2.5	1.78
Average			0.0019	1.71	0.0	0.00	14.0	10.42	42.0	19.10	2.6	1.84
Allowable Emission Rate			----	3.86	----	0.01	----	8.56	----	18.23	----	1.00

Run Number	Date	Time	Formaldehyde Emissions (ppm)	Formaldehyde Emissions (lbs/hr)	Oxides of Nitrogen Emissions (ppm)	Oxides of Nitrogen Emissions (lbs/hr)	Carbon Monoxide Emissions (ppm)	Carbon Monoxide Emissions (lbs/hr)	Total Hydrocarbons Emissions as Propane (ppm)	Total Hydrocarbons Emissions as Propane (lbs/hr)
1	01/19/96	0820-0945	0.8	0.41	13.1	9.84	43.9	20.09	2.2	1.58
2	01/19/96	1300-1421	1.0	0.47	14.5	10.54	45.0	19.93	2.3	1.60
3	01/19/96	1817-1935	0.8	0.40	14.0	10.33	44.1	19.82	2.3	1.63
Average			0.9	0.43	13.9	10.24	44.3	19.95	2.3	1.60
Allowable Emission Rate			----	0.41	----	8.56	----	18.23	----	1.00

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

SUMMARY OF RESULTS

Press House RTO Stack (EPN RTO3)

Run Number	Date	Time	Phenol Emissions (ppm)	Phenol Emissions (lbs/hr)
1	01/18/96	1835-2015	0.02	0.031
2	01/19/96	1038-1156	0.02	0.038
3	01/19/96	1457-1741	0.03	0.039
Average			0.02	0.036
Allowable Emission Rate			----	0.14

Run Number	Date	Time	MDI Emissions (ppm)	MDI Emissions (lbs/hr)
1	01/18/96	1835-1935	< 0.01	< 0.003
2	01/19/96	1038-1138	< 0.01	< 0.003
3	01/19/96	1457-1716	< 0.01	< 0.003
Average			< 0.01	< 0.003
Allowable Emission Rate			----	0.01

SUMMARY OF RESULTS

Press House Number 1 Vent Duct

Run Number	Date	Time	Particulate Matter Emissions (gr/dscf*)	Particulate Matter Emissions (lbs/hr)	Oxides of Nitrogen Emissions (ppm)	Oxides of Nitrogen Emissions (lbs/hr)	Carbon Monoxide Emissions (ppm)	Carbon Monoxide Emissions (lbs/hr)	Total Hydrocarbons Emissions as Propane (ppm)	Total Hydrocarbons Emissions as Propane (lbs/hr)
1	01/18/96	1835-2023	0.0084	3.43	0.4	0.14	2.0	0.42	68.5	22.52
2	01/19/96	1038-1200	0.0060	2.46	0.7	0.24	3.2	0.67	47.6	15.72
3	01/19/96	1457-1735	0.0045	1.84	0.3	0.10	1.3	0.27	54.1	17.86
Average			0.0063	2.58	0.5	0.16	2.2	0.45	56.7	18.70

Run Number	Date	Time	Formaldehyde Emissions (ppm)	Formaldehyde Emissions (lbs/hr)	Oxides of Nitrogen Emissions (ppm)	Oxides of Nitrogen Emissions (lbs/hr)	Carbon Monoxide Emissions (ppm)	Carbon Monoxide Emissions (lbs/hr)	Total Hydrocarbons Emissions as Propane (ppm)	Total Hydrocarbons Emissions as Propane (lbs/hr)
1	01/19/96	0820-0946	4.9	1.12	0.2	0.07	2.7	0.58	51.3	17.25
2	01/19/96	1300-1422	6.9	1.57	0.6	0.21	2.7	0.57	49.9	16.62
3	01/19/96	1816-1938	5.7	1.29	0.4	0.14	1.2	0.26	52.9	17.72
Average			5.8	1.33	0.4	0.14	2.2	0.47	51.4	17.20

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

SUMMARY OF RESULTS

Press House Number 2 Vent Duct

Run Number	Date	Time	Particulate Matter Emissions (gr/dscf*)	Particulate Matter Emissions (lbs/hr)	Oxides of Nitrogen Emissions (ppm)	Oxides of Nitrogen Emissions (lbs/hr)	Carbon Monoxide Emissions (ppm)	Carbon Monoxide Emissions (lbs/hr)	Total Hydrocarbons Emissions as Propane (ppm)	Total Hydrocarbons Emissions as Propane (lbs/hr)
1	01/18/96	1835-2023	0.0064	2.40	0.6	0.19	2.2	0.42	75.3	22.67
2	01/19/96	1038-1200	0.0067	2.62	0.8	0.26	3.4	0.67	83.9	26.16
3	01/19/96	1457-1735	0.0052	2.00	0.7	0.22	1.7	0.33	82.2	25.16
Average			0.0061	2.34	0.7	0.22	2.4	0.47	80.5	24.66
			.0124	4.92	1.2	.38	4.6	.90	1370	4236

Run Number	Date	Time	Formaldehyde Emissions (ppm)	Formaldehyde Emissions (lbs/hr)	Oxides of Nitrogen Emissions (ppm)	Oxides of Nitrogen Emissions (lbs/hr)	Carbon Monoxide Emissions (ppm)	Carbon Monoxide Emissions (lbs/hr)	Total Hydrocarbons Emissions as Propane (ppm)	Total Hydrocarbons Emissions as Propane (lbs/hr)
1	01/19/96	0820-0946	7.6	1.31	0.4	0.11	2.5	0.40	75.7	19.21
2	01/19/96	1300-1422	12.4	2.54	0.9	0.28	3.0	0.57	82.8	24.95
3	01/19/96	1816-1938	8.8	1.93	0.6	0.20	1.6	0.33	78.9	25.42
Average			9.6	1.93	0.6	0.20	2.4	0.43	79.1	23.19
			7.7	1.63	.5	.17	2.3	.45	65.25	20.20

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

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SUMMARY OF RESULTS

Press House RTO Stack (EPN RTO3)
Particulate Matter/Sulfur Dioxide

Run Number	1	2	3
Date	01/18/96	01/19/96	01/19/96
Time	1835-2015	1038-1156	1457-1740
Stack Flow Rate - ACFM	139,247	137,236	138,239
Stack Flow Rate - DSCFM*	104,768	103,915	103,909
% Water Vapor - % Vol.	2.07	2.08	2.24
% CO_2 - % Vol.	0.4	0.4	0.4
% O_2 - % Vol.	20.1	20.1	20.1
Stack Temperature -°F	233	233	233
Stack Pressure - "Hg	30.06	30.24	30.08
Percent Isokinetic	101.0	101.2	99.0
Particulate Matter Emissions Probe & Filter Catch grains/dscf*	0.0007	0.0004	0.0005
grains/cf @ Stack Conditions	0.0005	0.0003	0.0004
lbs/hr	0.66	0.39	0.47
Total Catch grains/dscf*	0.0031	0.0012	0.0015
grains/cf @ Stack Conditions	0.0023	0.0009	0.0011
lbs/hr	2.75	1.07	1.32
Sulfur Dioxide Emissions - ppm	----	0.0	0.0
Sulfur Dioxide Emissions - lbs/hr	----	0.00	0.00

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)
Note: Run Number 1 was for particulate matter only.

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SUMMARY OF RESULTS

Press House RTO Stack (EPN RTO3)

Run Number	1	2	3
Date	01/18/96	01/19/96	01/19/96
Time	1835-2015	1038-1156	1457-1740
Oxides of Nitrogen Emissions - ppm	13.7	14.2	14.0
Oxides of Nitrogen Emissions - lbs/hr	10.28	10.57	10.42
Carbon Monoxide Emissions - ppm	34.3	46.1	45.7
Carbon Monoxide Emissions - lbs/hr	15.68	20.90	20.72
Total Hydrocarbons Emissions as Propane - wet ppm	2.9	2.2	2.4
Total Hydrocarbons Emissions as Propane - dry ppm	3.0	2.2	2.5
Total Hydrocarbons Emissions as Propane - lbs/hr	2.16	1.57	1.78

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SUMMARY OF RESULTS

Press House RTO Stack (EPN RTO3)
Sulfur Dioxide

Run Number	1		
Date	01/19/96		
Time	0820-0945		
Stack Flow Rate - ACFM	138,382		
Stack Flow Rate - DSCFM*	105,537		
% Water Vapor - % Vol.	1.90		
% CO_2 - % Vol.	0.4		
% O_2 - % Vol.	20.1		
Stack Temperature -°F	229		
Stack Pressure - "Hg	30.24		
Sulfur Dioxide Emissions - ppm	0.0		
Sulfur Dioxide Emissions - lbs/hr	0.00		

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

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SUMMARY OF RESULTS

Press House RTO Stack (EPN RTO3)
Formaldehyde

Run Number	1	2	3
Date	01/19/96	01/19/96	01/19/96
Time	0820-0945	1300-1421	1817-1935
Stack Flow Rate - ACFM	137,203	134,707	136,958
Stack Flow Rate - DSCFM*	104,850	101,484	103,004
% Water Vapor - % Vol.	1.99	1.84	1.60
% CO_2 - % Vol.	0.4	0.4	0.4
% O_2 - % Vol.	20.1	20.1	20.1
Stack Temperature -°F	227	235	237
Stack Pressure - "Hg	30.24	30.12	30.08
Percent Isokinetic	99.7	99.5	101.2
Volume Dry Gas Sampled - DSCF*	50.413	48.716	50.299
Formaldehyde - µg	1,487.3	1,691.2	1,461.0
Formaldehyde Emissions - ppm	0.8	1.0	0.8
Formaldehyde Emissions - lbs/hr	0.41	0.47	0.40

136 2
103 1/3

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

METCO ENVIRONMENTAL

SUMMARY OF RESULTS

Press House RTO Stack (EPN RTO3)

Run Number	1	2	3
Date	01/19/96	01/19/96	01/19/96
Time	0820-0945	1300-1421	1817-1935
Oxides of Nitrogen Emissions - ppm	13.1	14.5	14.0
Oxides of Nitrogen Emissions - lbs/hr	9.84	10.54	10.33
Carbon Monoxide Emissions - ppm	43.9	45.0	44.1
Carbon Monoxide Emissions - lbs/hr	20.09	19.93	19.82
Total Hydrocarbons Emissions as Propane - wet ppm	2.2	2.3	2.3
Total Hydrocarbons Emissions as Propane - dry ppm	2.2	2.3	2.3
Total Hydrocarbons Emissions as Propane - lbs/hr	1.58	1.60	1.63

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SUMMARY OF RESULTS

Press House RTO Stack (EPN RTO3)
Phenol

Run Number	1	2	3
Date	01/18/96	01/19/96	01/19/96
Time	1835-2015	1038-1156	1457-1741
Stack Flow Rate - ACFM	133,300	136,449	135,949
Stack Flow Rate - DSCFM*	100,534	104,165	101,519
% Water Vapor - % Vol.	2.25	1.94	2.31
% CO_2 - % Vol.	0.4	0.4	0.4
% O_2 - % Vol.	20.1	20.1	20.1
Stack Temperature -°F	230	228	237
Stack Pressure - "Hg	30.06	30.24	30.08
Percent Isokinetic	101.8	100.0	100.2
Volume Dry Gas Sampled - DSCF*	51.928	52.831	51.628
Phenol - µg	119.47	144.44	150.65
Phenol Emissions - ppm	0.02	0.02	0.03
Phenol Emissions - lbs/hr	0.031	0.038	0.039

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

SUMMARY OF RESULTS

Press House RTO Stack (EPN RTO3)
MDI

Run Number	1	2	3
Date	01/18/96	01/19/96	01/19/96
Time	1835-1935	1038-1138	1457-1716
Volume Dry Gas Sampled - DSCF*	2.119	2.119	2.119
MDI - µg	< 0.4	< 0.4	< 0.4
MDI Emissions - ppm	< 0.01	< 0.01	< 0.01
MDI Emissions - lbs/hr**	< 0.003	< 0.003	< 0.003

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

** Calculated using the flow rate from the corresponding particulate matter test.

SUMMARY OF RESULTS

Press House Number 1 Vent Duct
Particulate Matter

Run Number	1	2	3
Date	01/18/96	01/19/96	01/19/96
Time	1835-2023	1038-1200	1457-1735
Stack Flow Rate - ACFM	51,704	51,042	51,566
Stack Flow Rate - DSCFM*	47,849	48,060	48,064
% Water Vapor - % Vol.	2.06	1.52	1.25
% CO_2 - % Vol.	0.0	0.0	0.0
% O_2 - % Vol.	20.9	20.9	20.9
Stack Temperature -°F	101	98	103
Stack Pressure - "Hg	29.93	30.12	30.00
Percent Isokinetic	101.3	99.5	100.1
Particulate Matter Emissions Probe & Filter Catch grains/dscf*	0.0023	0.0027	0.0018
grains/cf @ Stack Conditions	0.0021	0.0026	0.0016
lbs/hr	0.92	1.13	0.72
Total Catch grains/dscf*	0.0084	0.0060	0.0045
grains/cf @ Stack Conditions	0.0077	0.0056	0.0042
lbs/hr	3.43	2.46	1.84

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

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SUMMARY OF RESULTS

Press House Number 1 Vent Duct

Run Number	1	2	3
Date	01/18/96	01/19/96	01/19/96
Time	1835-2023	1038-1200	1457-1735
Oxides of Nitrogen Emissions - ppm	0.4	0.7	0.3
Oxides of Nitrogen Emissions - lbs/hr	0.14	0.24	0.10
Carbon Monoxide Emissions - ppm	2.0	3.2	1.3
Carbon Monoxide Emissions - lbs/hr	0.42	0.67	0.27
Total Hydrocarbons Emissions as Propane - wet ppm	67.1	46.9	53.4
Total Hydrocarbons Emissions as Propane - dry ppm	68.5	47.6	54.1
Total Hydrocarbons Emissions as Propane - lbs/hr	22.52	15.72	17.86

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SUMMARY OF RESULTS

Press House Number 1 Vent Duct
Formaldehyde

Run Number	1	2	3	
Date	01/19/96	01/19/96	01/19/96	
Time	0820-0946	1300-1422	1816-1938	
Stack Flow Rate - ACFM	51,773	51,826	52,356	51,955
Stack Flow Rate - DSCFM*	48,957	48,473	48,745	48,725
% Water Vapor - % Vol.	1.55	1.12	1.05	
% CO_2 - % Vol.	0.0	0.0	0.0	
% O_2 - % Vol.	20.9	20.9	20.9	
Stack Temperature -°F	95	103	104	
Stack Pressure - "Hg	30.10	30.07	29.96	
Percent Isokinetic	100.2	100.9	99.2	
Volume Dry Gas Sampled - DSCF*	45.775	45.633	45.123	
Formaldehyde - µg	7,939.7	11,201.7	9,028.4	
Formaldehyde Emissions - ppm	4.9	6.9	5.7	
Formaldehyde Emissions - lbs/hr	1.12	1.57	1.29	

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

SUMMARY OF RESULTS

Press House Number 2 Vent Duct
Formaldehyde

Run Number	1	2	3	
Date	01/19/96	01/19/96	01/19/96	
Time	0820-0946	1300-1422	1816-1938	
Stack Flow Rate - ACFM	39,339	46,849	50,365	45.5
Stack Flow Rate - DSCFM*	36,934	43,866	46,902	42.56
% Water Vapor - % Vol.	2.26	0.68	0.84	
% CO_2 - % Vol.	0.0	0.0	0.0	
% O_2 - % Vol.	20.9	20.9	20.9	
Stack Temperature -°F	95	105	105	
Stack Pressure - "Hg	30.10	30.07	29.96	
Percent Isokinetic	100.5	99.4	99.7	
Volume Dry Gas Sampled - DSCF*	35.798	42.088	45.105	
Formaldehyde - µg	9,586.8	18,423.9	14,061.0	
Formaldehyde Emissions - ppm	7.6	12.4	8.8	
Formaldehyde Emissions - lbs/hr	1.31	2.54	1.93	

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

SUMMARY OF RESULTS

Press House Number 2 Vent Duct

Run Number	1	2	3
Date	01/19/96	01/19/96	01/19/96
Time	0820-0946	1300-1422	1816-1938
Oxides of Nitrogen Emissions - ppm	0.4	0.9	0.6
Oxides of Nitrogen Emissions - lbs/hr	0.11	0.28	0.20
Carbon Monoxide Emissions - ppm	2.5	3.0	1.6
Carbon Monoxide Emissions - lbs/hr	0.40	0.57	0.33
Total Hydrocarbons Emissions as Propane - wet ppm	74.0	82.2	78.2
Total Hydrocarbons Emissions as Propane - dry ppm	75.7	82.8	78.9
Total Hydrocarbons Emissions as Propane - lbs/hr	19.21	24.95	25.42

DISCUSSION OF RESULTS

Press House RTO Stack (EPN RTO3)

The three tests for particulate matter, sulfur dioxide, oxides of nitrogen, carbon monoxide, and total hydrocarbons appeared to be valid representations of the actual emissions during the tests. All leak checks performed on the sampling train, the pitot tubes, and the monitors sampling systems showed no leaks before or after each test. The zero and calibration drift tests of the monitors were stable with no variations greater than 3.0 percent. The calibration error check, sampling system bias check, and NO_2 to NO conversion efficiency check performed on the reference method monitors prior to testing were valid. The indicative parameters calculated from the field data were in close agreement. The moisture percentages for the three tests were within 5.2 percent of the mean value. The measured flow rates (Q_s) for the tests were within 0.5 percent of the mean value. The rates of sampling for the three tests were within the specified limits (90 to 110 percent isokinetic). The greatest deviation from 100 percent isokinetic was 1.2 percent.

The calculated emissions (pounds per hour) of particulate matter for the three tests showed a range of -37.5 percent to +60.5 percent variation from the mean value.

The concentrations of sulfur dioxide for the three tests were below the minimum detectable limit of the method.

The calculated emissions (pounds per hour) of oxides of nitrogen for the three tests showed a range of -1.4 percent to +1.4 percent variation from the mean value.

The calculated emissions (pounds per hour) of carbon monoxide for the three tests showed a range of -17.9 percent to +9.4 percent variation from the mean value.

The calculated emissions (pounds per hour) of total hydrocarbons for the three tests showed a range of -14.5 percent to +17.6 percent variation from the mean value.

The three tests for formaldehyde, oxides of nitrogen, carbon monoxide, and total hydrocarbons appeared to be valid representations of the actual emissions during the tests. All leak checks performed on the sampling train, the pitot tubes, and the monitors sampling systems showed no leaks before or after each test. The zero and calibration drift tests of the monitors were stable with no variations greater than 3.0 percent. The calibration error check, sampling system bias check, and NO_2 to NO conversion efficiency check performed on the reference method monitors prior to testing were valid. The indicative parameters calculated from the field data were in close agreement. The moisture percentages for the three tests were within 11.6 percent of the mean value. The measured flow rates (Q_s) for the tests were within 1.7 percent of the mean value. The rates of sampling for the three tests were within the specified limits (90 to 110 percent isokinetic). The greatest deviation from 100 percent isokinetic was 1.2 percent.

The calculated emissions (pounds per hour) of formaldehyde for the three tests showed a range of -6.3 percent to +10.2 percent variation from the mean value.

The calculated emissions (pounds per hour) of oxides of nitrogen for the three tests showed a range of -3.9 percent to +3.0 percent variation from the mean value.

The calculated emissions (pounds per hour) of carbon monoxide for the three tests showed a range of -0.6 percent to +0.7 percent variation from the mean value.

The calculated emissions (pounds per hour) of total hydrocarbons for the three tests showed a range of -1.5 percent to +1.7 percent variation from the mean value.

The three tests for phenol appeared to be valid representations of the actual emissions during the tests. All leak checks performed on the sampling train and the pitot tubes showed no leaks before or after each test. The indicative parameters calculated from the field data were in close agreement. The moisture percentages for the three tests were within 10.5 percent of the mean value. The measured flow rates (Q_s) for the tests were within 2.0 percent of the mean value. The rates of sampling for the three tests were within the specified limits (90 to 110 percent isokinetic). The greatest deviation from 100 percent isokinetic was 1.8 percent.

The calculated emissions (pounds per hour) of phenol for the three tests showed a range of -13.9 percent to +8.3 percent variation from the mean value.

The three tests for MDI appeared to be valid representations of the actual emissions during the tests. All leak checks performed on the sampling train showed no leaks before or after each test.

The concentrations of MDI for the three tests were below the minimum detectable limit of the method.

Press House Number 1 Vent Duct

The three tests for particulate matter, oxides of nitrogen, carbon monoxide, and total hydrocarbons appeared to be valid representations of the actual emissions during the tests. All leak checks performed on the sampling train, the pitot tubes, and the monitors sampling systems showed no leaks before or after each test. The zero and calibration drift tests of the monitors were stable with no variations greater than 3.0 percent. The calibration error check, sampling system bias check, and NO_2 to NO conversion efficiency check performed on the reference method monitors prior to testing were valid. The indicative parameters calculated from the field data were in close agreement. The moisture percentages for the three tests were within 28.0 percent of the mean value. The measured flow rates (Q_s) for the tests were within 0.3 percent of the mean value. The rates of sampling for the three tests were within the specified limits (90 to 110 percent isokinetic). The greatest deviation from 100 percent isokinetic was 1.3 percent.

The calculated emissions (pounds per hour) of particulate matter for the three tests showed a range of -28.6 percent to +33.1 percent variation from the mean value.

The calculated emissions (pounds per hour) of oxides of nitrogen for the three tests showed a range of -37.5 percent to +50.0 percent variation from the mean value.

The calculated emissions (pounds per hour) of carbon monoxide for the three tests showed a range of -40.4 percent to +47.8 percent variation from the mean value.

The calculated emissions (pounds per hour) of total hydrocarbons for the three tests showed a range of -15.9 percent to +20.4 percent variation from the mean value.

The three tests for formaldehyde, oxides of nitrogen, carbon monoxide, and total hydrocarbons appeared to be valid representations of the actual emissions during the tests. All leak checks performed on the sampling train, the pitot tubes, and the monitors sampling systems showed no leaks before or after each test. The zero and calibration drift tests of the monitors were stable with no variations greater than 3.0 percent. The calibration error check, sampling system bias check, and NO_2 to NO conversion efficiency check performed on the reference method monitors prior to testing were valid. The indicative parameters calculated from the field data were in close agreement. The moisture percentages for the three tests were within 25.0 percent of the mean value. The measured flow rates (Q_s) for the tests were within 0.5 percent of the mean value. The rates of sampling for the three tests were within the specified limits (90 to 110 percent isokinetic). The greatest deviation from 100 percent isokinetic was 0.9 percent.

The calculated emissions (pounds per hour) of formaldehyde for the three tests showed a range of -15.6 percent to +18.3 percent variation from the mean value.

The calculated emissions (pounds per hour) of oxides of nitrogen for the three tests showed a range of -50.0 percent to +50.0 percent variation from the mean value.

The calculated emissions (pounds per hour) of carbon monoxide for the three tests showed a range of -44.7 percent to +23.4 percent variation from the mean value.

The calculated emissions (pounds per hour) of total hydrocarbons for the three tests showed a range of -3.4 percent to +3.0 percent variation from the mean value.

Press House Number 2 Vent Duct

The three tests for particulate matter, oxides of nitrogen, carbon monoxide, and total hydrocarbons appeared to be valid representations of the actual emissions during the tests. All leak checks performed on the sampling train, the pitot tubes, and the monitors sampling systems showed no leaks before or after each test. The zero and calibration drift tests of the monitors were stable with no variations greater than 3.0 percent. The calibration error check, sampling system bias check, and NO_2 to NO conversion efficiency check performed on the reference method monitors prior to testing were valid. The indicative parameters calculated from the field data were in close agreement. The moisture percentages for the three tests were within 17.2 percent of the mean value. The measured flow rates (Q_s) for the tests were within 1.8 percent of the mean value. The rates of sampling for the three tests were within the specified limits (90 to 110 percent isokinetic). The greatest deviation from 100 percent isokinetic was 1.7 percent.

The calculated emissions (pounds per hour) of particulate matter for the three tests showed a range of -14.5 percent to +12.0 percent variation from the mean value.

The calculated emissions (pounds per hour) of oxides of nitrogen for the three tests showed a range of -14.9 percent to +16.4 percent variation from the mean value.

The calculated emissions (pounds per hour) of carbon monoxide for the three tests showed a range of -30.3 percent to +41.5 percent variation from the mean value.

The calculated emissions (pounds per hour) of total hydrocarbons for the three tests showed a range of -8.1 percent to +6.1 percent variation from the mean value.

The three tests for formaldehyde, oxides of nitrogen, carbon monoxide, and total hydrocarbons appeared to be valid representations of the actual emissions during the tests. All leak checks performed on the sampling train, the pitot tubes, and the monitors sampling systems showed no leaks before or after each test. The zero and calibration drift tests of the monitors were stable with no variations greater than 3.0 percent. The calibration error check, sampling system bias check, and NO_2 to NO conversion efficiency check performed on the reference method monitors prior to testing were valid. The indicative parameters calculated from the field data were in close agreement. The moisture percentages for the three tests were within 79.4 percent of the mean value. The large variation is due to the low moisture content measured. The measured flow rates (Q_s) for the tests were within 13.2 percent of the mean value. The rates of sampling for the three tests were within the specified limits (90 to 110 percent isokinetic). The greatest deviation from 100 percent isokinetic was 0.6 percent.

The calculated emissions (pounds per hour) of formaldehyde for the three tests showed a range of -32.0 percent to +31.8 percent variation from the mean value.

The calculated emissions (pounds per hour) of oxides of nitrogen for the three tests showed a range of -44.1 percent to +42.4 percent variation from the mean value.

The calculated emissions (pounds per hour) of carbon monoxide for the three tests showed a range of -23.8 percent to +31.5 percent variation from the mean value.

The calculated emissions (pounds per hour) of total hydrocarbons for the three tests showed a range of -17.2 percent to +9.6 percent variation from the mean value.

DESCRIPTION OF PROCESS

The Silsbee OSB Plant was operated at the maximum achievable operating rates during the source testing period. The production data for the testing periods are presented in summary in Appendix G.

The manufacture of OSB at Silsbee begins with southern pine logs trucked to the facility, off-loaded and stored or fed into a whole log (drum) debarker. The bark from the logs is collected and sold for bark and mulch. The debarked log proceeds to a whole log waferizer which slices the logs into thin wafers, cutting with the grain of the wood not across it.

The wafers are collected on conveyer belts that transport them to green wafer storage bins above the triple-pass rotary dryers, into which they are fed via gravity and rotary air locks. The inlet temperatures of these dryers may range from 1,400°F to 1,500°F. The wafers are moved through the dryers by air flows of approximately 45,000-55,000 acfm. A primary cyclone removes the wood material and a screen separates the usable wafers from small fines. These dry fines are collected and pneumatically transported to storage bins for use as fuel for the wafer dryer burners and thermal oil heater while the exhaust air stream passes through a fabric filter. The fine material is also shipped to the Silsbee Particleboard Plant to be used as a feedstock. The exhaust air from this process passes through a multicyclone then to the RTOs for thermal oxidation. Of the five rotary dryers, a maximum of four will be in operation at one time. Each dryer's exhaust, after passing through a multicyclone, is collected in a single manifold which discharges to both Dryer RTOs.

The dry wafers (approximately 2% to 7% moisture) are collected and transported to bins via enclosed rake conveyers. These dry wafer bins supply wafers to the blenders (core and face) where resin and was are added. The resinated wafers are fed out of the blenders to the forming line where four (4) mechanical formers lay down successive layers of wafers (bottom face-core-core-top face). This "mat" then passes via a caul system to the press loader where mats are stacked for loading into the press. The press is then loaded (12 mats) and closes with pressure and heat setting the resin. Thermal oil at approximately 420°F supplies the heat for this process. The thermal oil is heated in a wood fired thermal oil heater whose emissions are routed to each of the five (5) dryers and then the dryer RTOs. Emissions from the completely enclosed press area are collected via two exhaust fans and directed to the press RTO. The RTOs are operated between 1,400°F and 1,650°F.

OSB panels exit the press and are conveyed to finishing saws which cut them to the proper dimensions. The saw kerf and dust are collected and conveyed pneumatically to bag filters. The panels are then stacked and banded into a bundle with the KFI logo and edge seal applied. The bundles are finally stacked in the warehouse area for shipment via truck or rail.

DESCRIPTION OF SAMPLING LOCATIONS

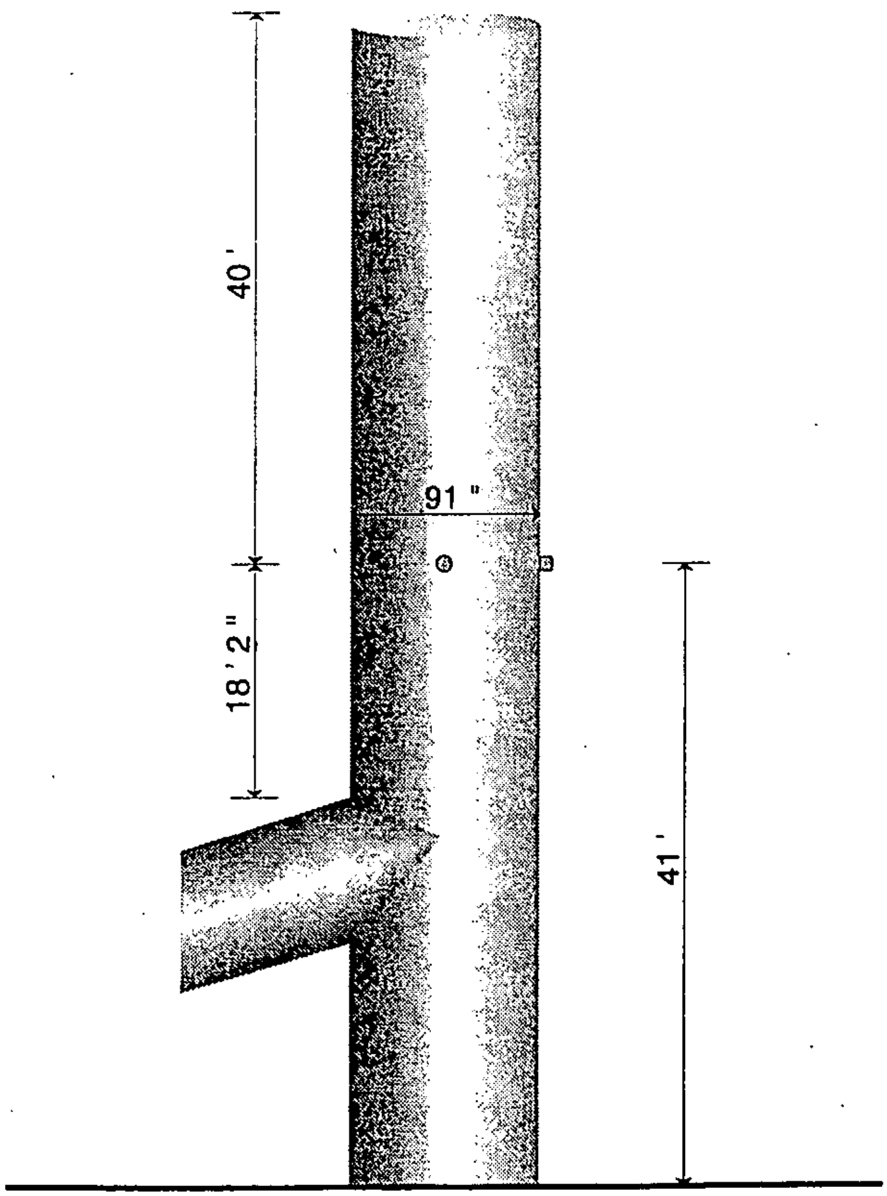
The sampling location on the Press House RTO Stack (EPN RTO3) is approximately 41 feet above the ground. The sampling ports are located 18 feet 2 inches (2.40 stack diameters) downstream from the inlet to the stack and 40 feet (5.27 stack diameters) upstream from the outlet of the stack.

The sampling location on the Press House Number 1 Vent Duct is approximately 11 feet above the ground. The sampling ports are located 26 feet 6 1/2 inches (7.35 equivalent duct diameters) downstream from a disturbance in the duct and 6 feet 1 1/2 inches (1.70 equivalent duct diameters) upstream from an expansion in the duct.

The sampling location on the Press House Number 2 Vent Duct is approximately 11 feet above the ground. The sampling ports are located 6 feet 5 inches (1.78 equivalent duct diameters) downstream from a disturbance in the duct and 6 feet 1 1/2 inches (1.70 equivalent duct diameters) upstream from an expansion in the duct.

SAMPLING LOCATION

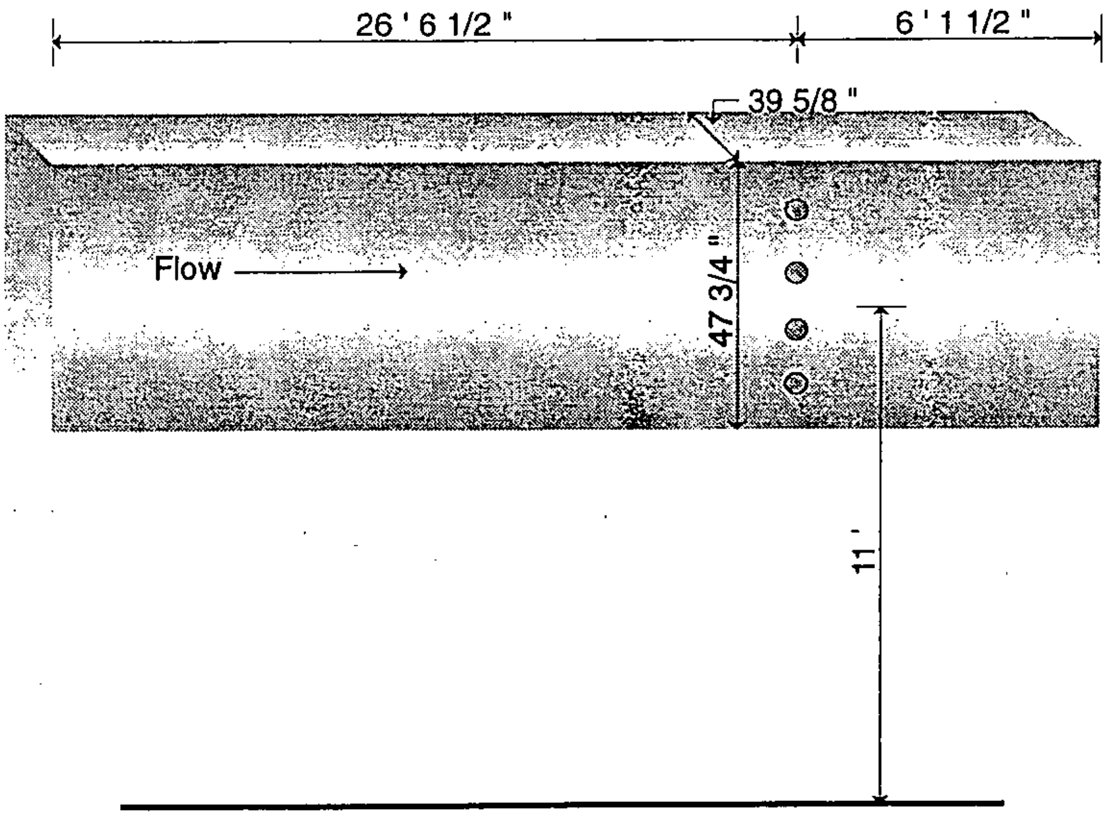
Press House RTO Stack (EPN RTO3)



Not to Scale

SAMPLING LOCATION

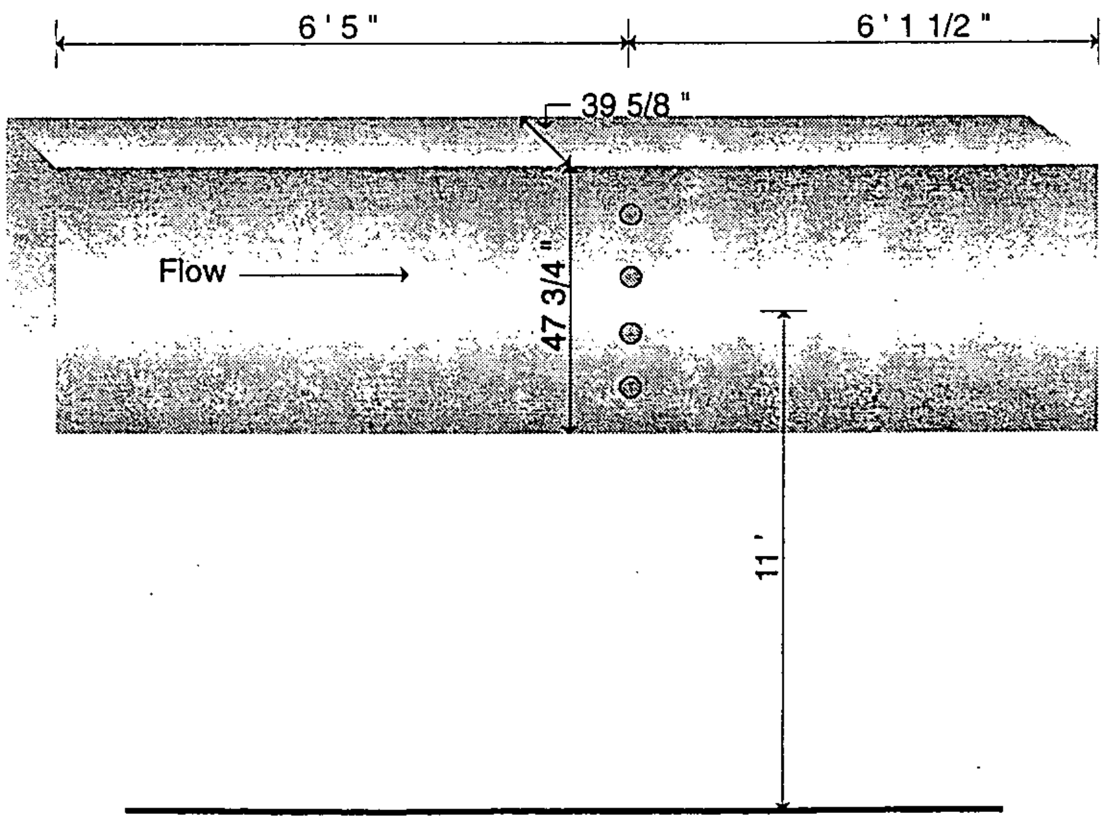
Press House Number 1 Vent Duct



Not to Scale

SAMPLING LOCATION

Press House Number 2 Vent Duct



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SAMPLING AND ANALYTICAL PROCEDURES

The sampling followed the procedures set forth in the Appendix to the Code of Federal Regulations, Title 40, Chapter I, Part 60, Methods 1, 2, 3B, 4, 5, 6, 7E, 10, 25A, and T08; in the "Sampling Procedures Manual, Texas Air Control Board, Revised July 1985"; in the "Test Methods for Evaluating Solid Waste, Volume II, November 1986," Method 0011; and NIOSH Method 5521.

A preliminary velocity traverse was made at each of the two ports on the Press House RTO Stack (EPN RTO3), in order to determine the uniformity and magnitude of the flow prior to testing. All traverse points were checked for cyclonic flow and the average angle of flow was equal to 10.4 degrees. Alternate procedures would be required if the angle of cyclonic flow was greater than 20 degrees. Twelve traverse points were sampled from each of the two ports for a total of twenty-four traverse points.

A preliminary velocity traverse was made at each of the four ports on the Press House Number 1 Vent Duct, in order to determine the uniformity and magnitude of the flow prior to testing. All traverse points were checked for cyclonic flow and the average angle of flow was equal to 1.0 degrees. Alternate procedures would be required if the angle of cyclonic flow was greater than 20 degrees. Six traverse points were sampled from each of the four ports for a total of twenty-four traverse points.

A preliminary velocity traverse was made at each of the four ports on the Press House Number 2 Vent Duct, in order to determine the uniformity and magnitude of the flow prior to testing. All traverse points were checked for cyclonic flow and the average angle of flow was equal to 4.2 degrees. Alternate procedures would be required if the angle of cyclonic flow was greater than 20 degrees. Six traverse points were sampled from each of the four ports for a total of twenty-four traverse points.

The sampling trains were leak-checked at the nozzle at 15 inches of mercury vacuum before each test, and again after each test at the highest vacuum reading recorded during the test. This was done to predetermine the possibility of a diluted sample.

The pitot tube lines were checked for leaks before and after each test under both a vacuum and a pressure. The lines were also checked for clearance and the manometer was zeroed before each test.

An integrated orsat sample was collected and analyzed according to EPA Method 3B during each test.

Particulate Matter/Sulfur Dioxide

Triplicate samples for particulate matter and sulfur dioxide were collected from the Press House RTO Stack (EPN RTO3). The samples were taken according to EPA Methods 1, 2, 3B, 4, 5, and 6; and the "Sampling Procedures Manual, Texas Air Control Board, Revised July 1985." Large impingers (500 ml), as specified in EPA Method 8, were used.

For Run Number 1 (particulate matter only) and Run Numbers 2 and 3 (particulate matter and sulfur dioxide), samples of three-minute duration were taken isokinetically at each of the twenty-four traverse points for a total sampling time of 72 minutes. For Run Number 1 (sulfur dioxide only), samples of three-minute duration were taken at each of the twenty-four traverse points for a total sampling time of 72 minutes. At the conclusion of each test for sulfur dioxide, the sampling train was purged for fifteen minutes with ambient air at the same rate at which the sample was taken. Reagent blanks were submitted.

The " front-half " of the sampling train contained the following components:

Stainless Steel Nozzle*
Heated Glass Probe @ 248°F ± 25°F
Heated Glass Fiber Filter and Glass Support @ 248°F ± 25°F

The " back-half " of the sampling train for Run Number 1 (particulate matter only) contained the following components:

Impinger Number	Contents	Amount	Parameter Collected
1	Deionized Water	100 ml	Particulate Matter and Moisture
2	Deionized Water	100 ml	Particulate Matter and Moisture
3	Empty	---------	Moisture
4	Silica Gel	200 g	Moisture

* Not used for Run Number 1 for sulfur dioxide only.

The " back-half " of the sampling train for Run Number 1 (sulfur dioxide only) and Run Numbers 2 and 3 (particulate matter and sulfur dioxide), contained the following components:

Impinger Number	Contents	Amount	Parameter Collected
1	80% Isopropyl Alcohol	200 ml	Particulate Matter and Sulfur Trioxide
2	6% Hydrogen Peroxide	200 ml	Sulfur Dioxide
3	6% Hydrogen Peroxide	200 ml	Sulfur Dioxide
4	Empty	--------	Moisture
5	Silica Gel	200 g	Moisture

Particulate matter emissions were calculated from gravimetric analysis using both the " front-half " and " back-half " collections of the sampling train.

The sulfur dioxide and sulfur trioxide samples were analyzed by barium perchlorate titration using thorin indicator.

Particulate Matter

Triplicate samples for particulate matter were collected from the Press House Numbers 1 and 2 Vent Ducts. The samples were taken according to EPA Methods 1, 2, 3B, 4, and 5; and the "Sampling Procedures Manual, Texas Air Control Board, Revised July 1985." For each run, samples of three-minute duration were taken isokinetically at each of the twenty-four traverse points for a total sampling time of 72 minutes. Reagent blanks were submitted.

The " front-half " of the sampling train contained the following components:

Stainless Steel Nozzle
Heated Glass Probe @ 248°F ± 25°F
Heated Glass Fiber Filter and Glass Support @ 248°F ± 25°F

The " back-half " of the sampling train contained the following components:

Impinger Number	Contents	Amount	Parameter Collected
1	Deionized Water	100 ml	Particulate Matter and Moisture
2	Deionized Water	100 ml	Particulate Matter and Moisture
3	Empty	--------	Moisture
4	Silica Gel	200 g	Moisture

Particulate matter emissions were calculated from gravimetric analysis using both the " front-half " and " back-half " collections of the sampling train.

Formaldehyde

Triplicate samples for formaldehyde were collected from each source. The samples were taken according to EPA Methods 1, 2, 3B, and 4; and Method 0011 of the "Test Methods for Evaluating Solid Waste, Volume II, November 1986." For each run, samples of three-minute duration were taken isokinetically at each of the twenty-four traverse points for a total sampling time of 72 minutes. One blank train was submitted.

The " front-half " of the sampling train contained the following components:

Glass Nozzle
Heated Glass Probe @ 248°F ± 25°F
Heated Glass Fiber Filter and Glass Support @ 248°F ± 25°F

The " back-half " of the sampling train contained the following components:

Impinger Number	Contents	Amount	Parameter Collected
1	DNPH	100 ml	Formaldehyde
2	DNPH	100 ml	Formaldehyde
3	Empty	--------	Moisture
4	Silica Gel	200 g	Moisture

The formaldehyde samples were analyzed by high performance liquid chromatography.

Phenol

Triplicate samples for phenol were collected from the Press House RTO Stack (EPN RTO3). The samples were taken according to EPA Methods 1, 2, 3B, 4, and T08; and the "Sampling Procedures Manual, Texas Air Control Board, Revised July 1985." For each run, samples of three-minute duration were taken isokinetically at each of the twenty-four traverse points for a total sampling time of 72 minutes. Reagent blanks were submitted.

The " front-half " of the sampling train contained the following components:

Stainless Steel Nozzle
Heated Glass Probe @ 248°F ± 25°F
Heated Glass Fiber Filter and Glass Support @ 248°F ± 25°F

The " back-half " of the sampling train contained the following components:

Impinger Number	Contents	Amount	Parameter Collected
1	0.1N NaOH	200 ml*	Phenol
2	0.1N NaOH	200 ml*	Phenol
3	Empty	--------	Moisture
4	Silica Gel	200 g	Moisture

Samples were preserved by the addition of copper sulfate. Phenol analysis was performed by ion chromatography.

* 100 ml was used during Run Number 1.

MDI

Triplicate samples for MDI were collected from the Press House RTO Stack (EPN RTO3). The samples were taken according to NIOSH Method 5521. For each run, samples of sixty-minute duration were taken from the midpoint of the stack. The rate of sampling was 1 l/min. The gas was drawn through three midget impingers, each containing 15 ml of 1-2-methoxyphenyl piperazine in toluene.

The MDI samples were analyzed by high performance liquid chromatography.

Oxides of Nitrogen

The oxides of nitrogen sampling was performed according to EPA Method 7E. Three Thermo Environmental Model 10S Oxides of Nitrogen Analyzers were used to monitor the concentrations of oxides of nitrogen during each run. The reference method analyzers were operated at a range of 0 to 100 parts per million. A multi-point calibration was performed on the reference method analyzers prior to testing. An analyzer calibration error check, a sampling system bias check, and a NO_2 to NO conversion efficiency check were also conducted prior to testing. After each run, the zero and calibration drift of the reference method monitors was checked. The calibration gases were as follows:

Zero Nitrogen
20.1 ppm NO in N_2 (BAL 1808)
46.2 ppm NO in N_2 (BAL 3110)
46.2 ppm NO in N_2 (BLM 3059)
50.0 ppm NO in N_2 (BLM 3007)
84.6 ppm NO in N_2 (BLM 2626)
85.4 ppm NO in N_2 (ALM 38783)
86.1 ppm NO in N_2 (BAL 4137)

The reference method sampling system on the stack consisted of a heated probe, a heated glass fiber filter, a chilled condenser, and a teflon sample line. The reference method sampling system on the ducts consisted of a stainless steel probe, a chilled condenser, and teflon sample line. The calibration gases for the bias and drift checks were introduced upstream of the chilled condenser.

Calibration gas certifications are included in Appendix C.

Carbon Monoxide

The carbon monoxide sampling was performed according to EPA Method 10 using the continuous sampling procedure. Three Thermo Environmental Model 48 Carbon Monoxide Analyzers were used to monitor the concentrations of carbon monoxide during each run. The reference method analyzers were operated at ranges of 0 to 100 parts per million and 0 to 500 parts per million. A multi-point calibration was performed on the reference method analyzers prior to testing. An analyzer calibration error check and a sampling system bias check were also conducted prior to testing. After each run, the zero and calibration drift of the reference method monitors was checked. The calibration gases were as follows:

Zero Nitrogen
17.3 ppm CO in N_2 (BLM 2326)
42.3 ppm CO in N_2 (BAL 3354)
42.8 ppm CO in N_2 (BAL 354)
84.7 ppm CO in N_2 (BLM 3062)
85.9 ppm CO in N_2 (2L 1113)
85.9 ppm CO in N_2 (BAL 4419)
247.1 ppm CO in N_2 (ALM 30956)
469.0 ppm CO in N_2 (BLM 3332)

The reference method sampling system on the stack consisted of a heated probe, a heated glass fiber filter, a chilled condenser, and a teflon sample line. The reference method sampling system on the ducts consisted of a stainless steel probe, a chilled condenser, and teflon sample line. The calibration gases for the bias and drift checks were introduced upstream of the chilled condenser.

Calibration gas certifications are included in Appendix C.

Total Hydrocarbons

The total hydrocarbons sampling was performed according to EPA Method 25A. Three J.U.M. Model VE-7 Total Hydrocarbon Analyzers were used to monitor the concentrations of total hydrocarbons during each run. The reference method analyzers were operated at ranges of 0 to 100 parts per million and 0 to 1,000 parts per million. A multi-point calibration was performed on the reference method analyzers prior to testing. An analyzer calibration error check and a sampling system bias check were also conducted prior to testing. After each run, the zero and calibration drift of the reference method monitors was checked. The calibration gases were as follows:

Zero Nitrogen
23.2 ppm C_3H_8 in N_2 (BLM 3402)
47.1 ppm C_3H_8 in N_2 (ALM 48174)
88.5 ppm C_3H_8 in N_2 (BLM 1578)
219.0 ppm C_3H_8 in N_2 (CAL 11070)
233.0 ppm C_3H_8 in N_2 (BAL 1761)
486.1 ppm C_3H_8 in N_2 (BLM 2201)
489.0 ppm C_3H_8 in N_2 (BAL 2652)
977.5 ppm C_3H_8 in N_2 (BLM 4065)
979.5 ppm C_3H_8 in N_2 (CAL 12366)

The reference method sampling system consisted of a heated probe and a heated teflon sample line. The calibration gases for the bias and drift checks were introduced upstream of the heated teflon sample line.

Calibration gas certifications are included in Appendix C.

METCO ENVIRONMENTAL

DESCRIPTION OF TESTS

Personnel from METCO Environmental arrived at the plant at 7:15 a.m. on Thursday, January 18, 1996. After meeting with plant personnel, the equipment was moved onto the Press House Numbers 1 and 2 Vent Ducts and the Press House RTO Stack (EPN RTO3). The first set of tests for particulate matter, oxides of nitrogen, carbon monoxide, and total hydrocarbons on the Press House Numbers 1 and 2 Vent Ducts; and the first set of tests for particulate matter, phenol, MDI, oxides of nitrogen, carbon monoxide, and total hydrocarbons on the Press House RTO Stack (EPN RTO3) began at 6:35 p.m. and was completed at 8:23 p.m. The equipment was secured for the night and all work was completed at 9:30 p.m.

On Friday, January 19, work began at 6:15 a.m. The monitors were calibrated and the equipment was prepared for testing. The first test for formaldehyde on the Press House Numbers 1 and 2 Vent Ducts and the Press House RTO Stack (EPN RTO3) began at 8:20 a.m. Testing continued until the completion of the third test at 7:38 p.m. The first test for sulfur dioxide on the Press House RTO Stack (EPN RTO3) began at 8:20 a.m. and was completed at 9:45 a.m. The second set of tests for particulate matter, oxides of nitrogen, carbon monoxide, and total hydrocarbons on the Press House Numbers 1 and 2 Vent Ducts; and the second set of tests for particulate matter, sulfur dioxide, phenol, MDI, oxides of nitrogen, carbon monoxide, and total hydrocarbons on the Press House RTO Stack (EPN RTO3) began at 10:38 a.m. Testing continued until the completion of the third set of tests at 5:41 p.m.

The monitors were calibrated and secured for transport. The equipment was moved off of the sampling locations and loaded into the sampling van. The samples were recovered and transported to METCO Environmental's laboratory in Dallas, Texas, for analysis and evaluation.

Operations at Louisiana-Pacific Corporation, Press House Numbers 1 and 2 Vent Ducts and Press House RTO Stack (EPN RTO3), located in Silsbee, Texas, for ERM-Southwest, Inc., were completed at 9:30 p.m. on Friday, January 19, 1996.

Billy J. Mullins, Jr.

Billy J. Mullins, Jr., P.E.
President

APPENDICES

A. Location of Sampling Points
B. Source Emissions Calculations
C. Calibration Data
D. Field Testing Data
E. Analytical Data
F. Reference Method Monitors Data
G. Plant Operational Data
H. TNRCC Permit
I. Chain of Custody
J. Resumes of Test Personnel

APPENDIX A

Location of Sampling Points
Press House RTO Stack (EPN RTO3)

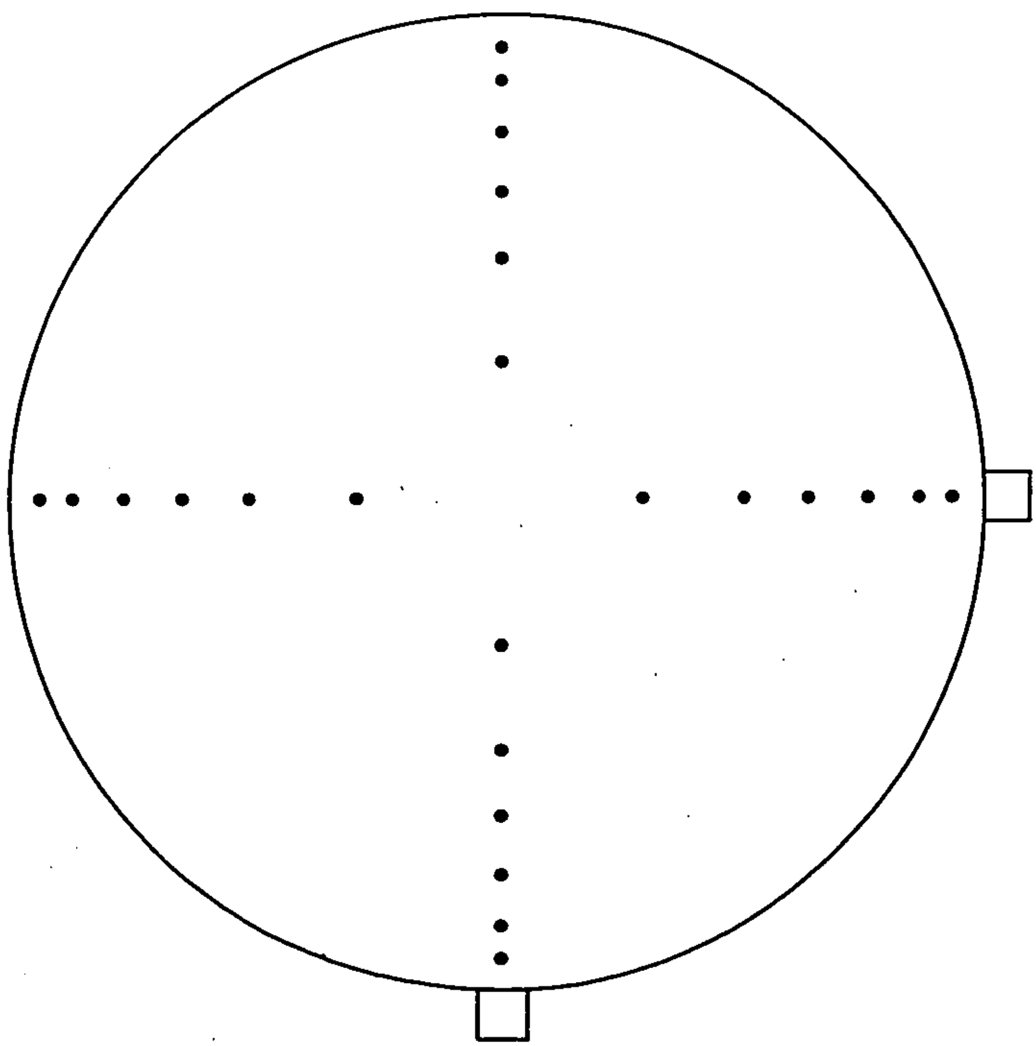
The sampling ports are located 18 feet 2 inches (2.40 stack diameters) downstream from the inlet to the stack and 40 feet (5.27 stack diameters) upstream from the outlet of the stack. The locations of the sampling points were calculated as follows:

Port and Wall Thickness = 5 inches
Inside Stack Diameter = 91 inches

Point Number	Percent of Diameter From Wall	Distance From Wall
1	2.1	1 15/16 "
2	6.7	6 1/8 "
3	11.8	10 3/4 "
4	17.7	16 1/8 "
5	25.0	22 3/4 "
6	35.6	32 3/8 "
7	64.4	58 5/8 "
8	75.0	68 1/4 "
9	82.3	74 7/8 "
10	88.2	80 1/4 "
11	93.3	84 7/8 "
12	97.9	89 1/16 "

APPENDIX A

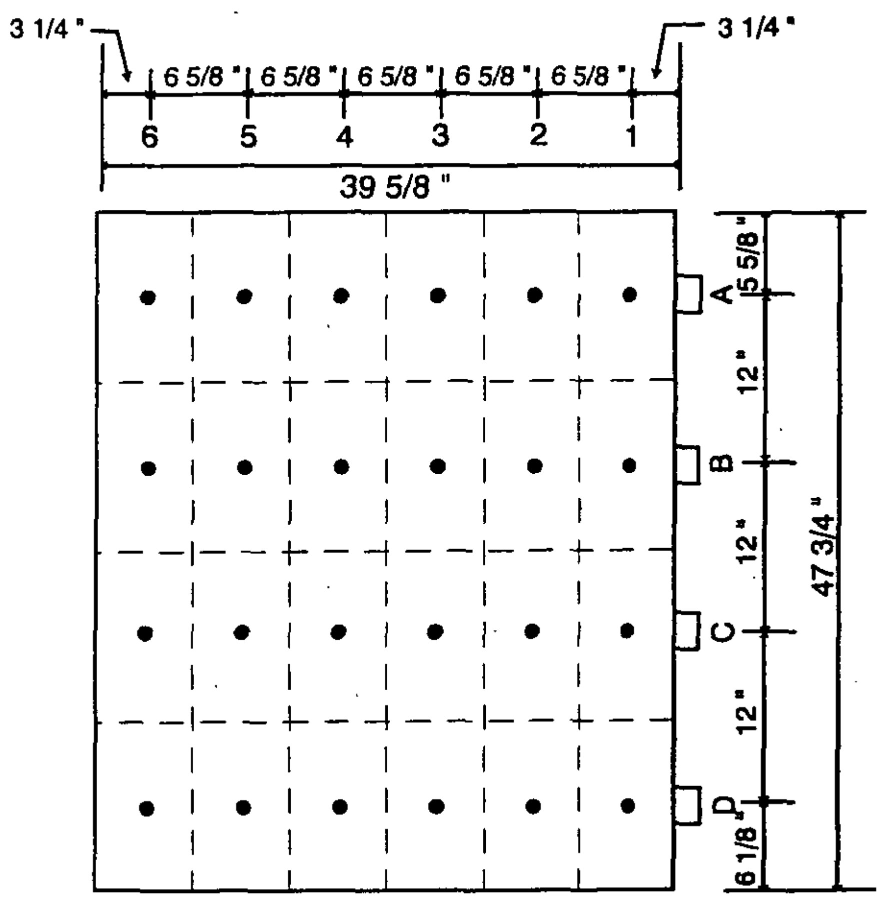
Location of Sampling Points
Press House RTO Stack (EPN RTO3)



APPENDIX A

Location of Sampling Points
Press House Number 1 Vent Duct

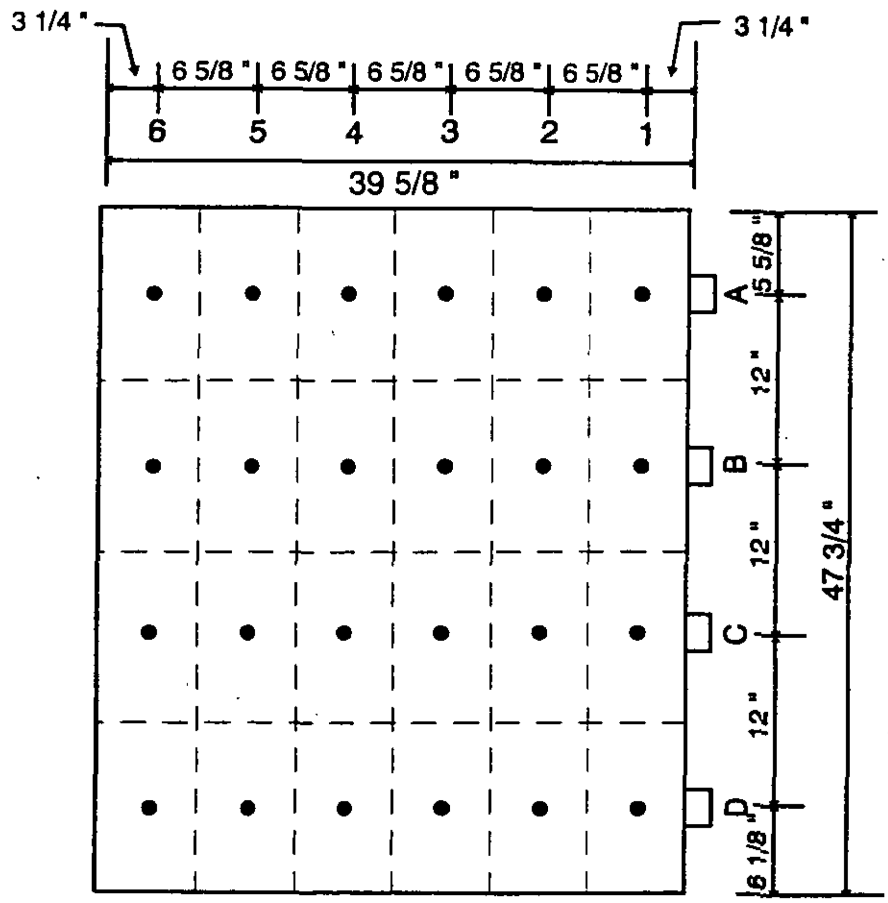
The sampling ports are located 26 feet 6 1/2 inches (7.35 equivalent duct diameters) downstream from a disturbance in the duct and 6 feet 1 1/2 inches (1.70 equivalent duct diameters) upstream from an expansion in the duct. The locations of the sampling points were calculated as follows:



APPENDIX A

Location of Sampling Points
Press House Number 2 Vent Duct

The sampling ports are located 6 feet 5 inches (1.78 equivalent duct diameters) downstream from a disturbance in the duct and 6 feet 1 1/2 inches (1.70 equivalent duct diameters) upstream from an expansion in the duct. The locations of the sampling points were calculated as follows:



APPENDIX B

Nomenclature and Equations
for
Calculation of Source Emissions

METCO ENVIRONMENTAL

NOMENCLATURE FOR CALCULATIONS

Symbol	English Units	Metric Units	Description
A_s	in.^{2}	m^2	Stack Area
C_{an}	gr/dscf*	g/dscm*	Particulate - probe, cyclone, and filter
C_{ao}	gr/dscf*	g/dscm*	Particulate - total
C_{at}	gr/CF @ stack conditions	g/m^3	Particulate - probe, cyclone, and filter
C_{au}	gr/CF @ stack conditions	g/m^3	Particulate - total
C_{aw}	lbs/hr	kg/hr	Particulate - probe, cyclone, and filter
C_{ax}	lbs/hr	kg/hr	Particulate - total
C_p			Pitot Tube Calibration Factor
D_n	in.	m	Sampling Nozzle Diameter
%EA			Percent Excess Air at sampling point
g	32.174 ft/sec^2		Acceleration of Gravity
%I			Percent Isokinetic
%M			Percent Moisture in the stack gas by volume
M_d			Mole fraction of dry gas
m_f	mg	mg	Particulate - probe, cyclone, and filter

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

Symbol	English Units	Metric Units	Description
M_{water}	18 lb/lb-mole		Molecular Weight of water
m_t	mg	mg	Particulate - total
MW	lb/lb-mole	g/g-mole	Molecular Weight of stack gas
MW_{air}	28.96 lb/ lb-mole		Molecular Weight of air
MW_d	lb/lb-mole	g/g-mole	Molecular Weight of dry stack gas
P_b	"Hg Absolute	mm Hg	Barometric Pressure
P_m	"H_2O	mm H_2O	Orifice Pressure drop
P_s	"Hg Absolute	mm Hg	Stack Pressure
ΔP	"H_2O	mm H_2O	Velocity Head of stack gas
P_{std}	29.92 "Hg	760 mm Hg	Standard Barometric Pressure
Q_a	ACFM	m^3/hr	Stack Gas Volume at actual stack conditions
Q_s	DSCFM*	dscm/hr*	Stack Gas Volume at 29.92 "Hg, 528°R, dry
R	21.83 "Hg-ft^3/lb-mole°R		Universal Gas Constant
T_m	°F	°C	Average Gas Meter Temperature

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

Symbol	English Units	Metric Units	Description
T_t	min	min	Net time of test
T_s	°F	°C	Stack Temperature
T_{std}	528°R	293°K	Standard Temperature
V_m	ft^3	m^3	Volume of dry gas sampled @ meter conditions
Vm_{std}	dscf*	dscm*	Volume of dry gas sampled @ standard conditions
V_s	fpm	m/sec	Stack velocity @ stack conditions
V_w	ml	ml	Total water collected in impingers and silica gel
Vw_{gas}	scf*	scm*	Volume of water vapor collected @ standard conditions
ρ_{air}	0.0752 lbs/ft^3		Density of Air
ρ_{water}	1 g/ml		Density of Water
ρ_{man}	62.32 lbs/ft^3		Density of Manometer Fluid

Standard Conditions: 29.92 "Hg, 68°F (760 mm Hg, 20°C)

*29.92 "Hg, 68°F (760 mm Hg, 20°C)

EXAMPLE CALCULATIONS

1. Volume of dry gas sampled at standard conditions.*

$$Vm_{std} = Vm \left(\frac{T_{std}}{T_m + 460} \right) \left[\frac{P_b + \frac{P_m}{13.6}}{P_{std}} \right]$$

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460} \right] = dscf$$

$$Vm_{std} = dscf \times 0.028317 = dscm$$

2. Volume of water vapor collected at standard conditions.*

$$Vw_{gas} = \frac{(V_w - gms\ SO_2 - gms\ H_2S)\ \rho_{water}\ R\ T_{std}}{P_{std}\ M_{water}\ 453.6}$$

$$Vw_{gas} = 0.0472\ (V_w - gms\ SO_2 - gms\ H_2S) = scf$$

$$Vw_{gas} = scf \times 0.028317 = scm$$

3. Percent moisture in stack gas.

$$\%M = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \%$$

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

4. Mole fraction of dry gas.

$$M_d = \frac{100 - \%M}{100}$$

5. Average molecular weight of dry stack gas.

$$MW_d = \left[\%CO_2 \ x \ \frac{44}{100}\right] + \left[\%O_2 \ x \ \frac{32}{100}\right] + \left[\%N_2 \ x \ \frac{28}{100}\right] + \left[\%CO \ x \ \frac{28}{100}\right] = lb/lb\text{-}mole$$

$$= g/g\text{-}mole$$

6. Molecular weight of stack gas.

$$MW = MW_d \ x \ M_d + 18 \ (1 - M_d) = lb/lb\text{-}mole = g/g\text{-}mole$$

7. Percent excess air at sampling point.

$$\%EA = \frac{100 \ (\%O_2 - 0.5\% \ CO)}{0.265 \ (\%N_2) - [(\%O_2) + 0.5 \ (\%CO)]}$$

8. Stack Pressure.

$$P_s = P_b + \frac{Stack \ Pressure \ {}^{*}H_2O}{13.6} = {}^{*}Hg \ Absolute$$

$$P_s = {}^{*}Hg \ Abs. \ x \ 25.4 + mm \ Hg$$

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

9. Stack velocity at stack conditions.

$$V_s = C_p\ 60 \left[\frac{2g \times \rho_{man} \times P_{std} \times MW_{air} \times (T_s + 460)}{12 \times \rho_{air} \times P_s \times MW \times T_{std}}\right]^{1/2} \sqrt{\Delta P}\ average = fpm$$

$$V_s = 5{,}123.8\ C_p \left[\frac{(T_s + 460)}{P_s \times MW}\right]^{1/2} \sqrt{\Delta P}\ average = fpm$$

$$V_s = fpm \times 0.00508 = m/\sec$$

10. Dry stack gas volume at standard conditions.*

$$Q_s = \frac{1}{144}\ V_s \times A_s \times M_d \times \frac{T_{std}}{T_s + 460} \times \frac{P_s}{P_{std}}$$

$$Q_s = \frac{0.123\ V_s \times A_s \times M_d \times P_s}{T_s + 460} = DSCFM$$

$$Q_s = DSCFM \times 1.6990 = dscm/hr$$

11. Actual stack gas volume at stack conditions.

$$Q_a = \frac{V_s \times A_s}{144} = ACFM$$

$$Q_a = ACFM \times 1.6990 = m^3/hr$$

*29.92 "Hg, 68°F (760 mm Hg, 20°C)

12. Percent isokinetic.

$$\%I = \frac{Vm_{std} \times (T_s + 460) \times P_{std} \times 100 \times 144}{M_d \times T_{std} \times P_s \times T_t \times V_s \left(\frac{\pi D_n^2}{4}\right)}$$

$$\%I = \frac{1039\ V_{std} \times (T_s + 460)}{M_d \times P_s \times T_t \times V_s \times D_n^2}$$

13. Particulate - probe, cyclone, and filter.

$$C_{an} = \frac{m_f}{Vm_{std}} \times \frac{1\ gr}{64.8\ mg}$$

$$C_{an} = 0.0154 \times \frac{m_f}{Vm_{std}} = gr/dscf^*$$

$$C_{an} = gr/dscf \times 2.290 = g/dscm^*$$

14. Particulate total.

$$C_{ao} = 0.0154 \times \frac{m_t}{Vm_{std}} = gr/dscf^*$$

$$C_{ao} = gr/dscf \times 2.290 = g/dscm^*$$

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

METCO ENVIRONMENTAL

15. Particulate - probe, cyclone, and filter at stack conditions.

$$C_{at} = C_{an} \times \frac{P_s}{P_{std}} \times \frac{(T_{std})}{(T_s + 460)} \times M_d$$

$$C_{at} = \frac{17.65 \times C_{an} \times P_s \times M_d}{T_s + 460} = gr/CF$$

$$C_{at} = gr/CF \times 2.290 = g/m^3$$

16. Particulate - total, at stack conditions.

$$C_{au} = \frac{17.65 \times C_{ao} \times P_s \times M_d}{T_s + 460} = gr/CF$$

$$C_{au} = gr/CF \times 2.290 = g/m^3$$

17. Particulate - probe, cyclone, and filter.

$$C_{aw} = C_{an} \times Q_s \times \frac{60\ min}{1\ hr} \times \frac{1\ lb}{7000\ gr}$$

$$C_{aw} = 0.00857 \times C_{an} \times Q_s = lbs/hr$$

$$C_{aw} = lbs/hr \times 0.4536 = kg/hr$$

18. Particulate - total.

$$C_{ax} = 0.00857 \times C_{ao} \times Q_s = lbs/hr$$

$$C_{ax} = lbs/hr \times 0.4536 = kg/hr$$

• 29.92 "Hg, 68°F (760 mm Hg, 20°C)

EXAMPLE CALCULATIONS

$$\text{lbs/hr} = \frac{\text{mg}}{Vm_{std}} \times 2.205 \times 10^{-6}\ \text{lbs/mg} \times \text{DSCFM*} \times 60\ \text{min/hr}$$

Vm_{std} = Volume of dry gas sampled (dscf*)

DSCFM* = Stack Flow Rate

$$\text{ppm} = \frac{\text{mg}}{Vm_{std}\ (m^3)} \times \frac{24.04}{MW}$$

24.04 = Ideal Gas Constant liters/g-mole

Vm_{std} = Volume of dry gas sampled (m^{3*})

MW = Molecular Weight

Compound	Molecular Weight
Phenol	94.11
Formaldehyde	30.03
MDI	250.26

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

EXAMPLE CALCULATIONS

lbs/hr = ppm x CF x 60 min/hr x DSCFM*

CF = Conversion Factor for ppm to lbs/scf*

Compound	Conversion Factor
NO_x	1.194×10^{-7}
CO	7.273×10^{-8}
THC as Propane	1.145×10^{-7}

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

EXAMPLE CALCULATIONS

Equation 6C-1

$$C_{gas} = (\overline{C} - C_o)\ \frac{C_{ma}}{C_m - C_o}$$

Where: C_{gas} = *Effluent gas concentration - dry basis (ppm)*

$\overline{C}$ = *Average gas concentration indicated by gas analyzer - dry basis (ppm)*

C_o = *Average of initial and final system calibration bias check responses for the zero gas (ppm)*

C_m = *Average of initial and final system calibration bias check responses for the upscale calibration gas (ppm)*

C_{ma} = *Actual concentration of the upscale calibration gas (ppm)*

METCO ENVIRONMENTAL

SOURCE EMISSION SURVEY

JOB NUMBER: 96-11
JOB NAME: ERM SOUTHWEST
LOCATION: SILSBEE, TEXAS
UNIT TESTED: PRESS HOUSE RTO STACK PART.

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1	2	3
DATE			1-18-96	1-19-96	1-19-96
BEGIN TIME			1835	1038	1457
END TIME			2015	1156	1740
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	30.10 (765)	30.28 (769)	30.12 (765)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	2.152 (54.7)	2.133 (54.2)	1.798 (45.7)
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	54.913 (1.555)	56.785 (1.608)	55.885 (1.582)
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	56 (13)	80 (27)	80 (27)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	56.835 (1.609)	56.492 (1.600)	55.259 (1.565)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	25.5	25.4	26.8
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	1.204 (0.034)	1.199 (0.034)	1.265 (0.036)
%M	MOISTURE IN STACK GAS BY VOLUME	%	2.07	2.08	2.24

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

ERM SOUTHWEST
SILSBEE, TEXAS
PRESS HOUSE RTO STACK PART.

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.9793	0.9792	0.9776
CO_2		%	0.4	0.4	0.4
O_2		%	20.1	20.1	20.1
CO		%	0.0	0.0	0.0
N_2		%	79.5	79.5	79.5
%EA	EXCESS AIR @ SAMPLING POINT	%	----	----	----
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.87 (28.87)	28.87 (28.87)	28.87 (28.87)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.64 (28.64)	28.64 (28.64)	28.62 (28.62)
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	0.703 (17.9)	0.690 (17.5)	0.695 (17.7)
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	233 (112)	233 (112)	233 (112)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	30.06 (764)	30.24 (768)	30.08 (764)
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	3,083 (15.66)	3,040 (15.44)	3,061 (15.55)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	6,504 (4.20)	6,504 (4.20)	6,504 (4.20)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	104,768 (178,001)	103,915 (176,552)	103,909 (176,541)
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	139,247 (236,581)	137,326 (233,317)	138,239 (234,868)

* *68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)*

SOURCE EMISSION CALCULATIONS

ERM SOUTHWEST
SILSBEE, TEXAS
PRESS HOUSE RTO STACK PART.

SYMBOL	DESCRIPTION	UNITS			
Tt	NET TIME OF TEST	MINUTES	72	72	72
Dn	SAMPLING NOZZLE DIAM.	IN. (m)	0.249 (0.006)	0.249 (0.006)	0.249 (0.006)
%I	PERCENT ISOKINETIC	%	101.0	101.2	99.0
Mf	PARTICULATE - PROBE, CYCLONE AND FILTER	mg	2.7	1.6	1.9
Mt	PARTICULATE - TOTAL	mg	11.3	4.4	5.3
Can	PARTICULATE - PROBE, CYCLONE AND FILTER	gr/DSCF* (g/DSCM)	0.0007 (0.0017)	0.0004 (0.0010)	0.0005 (0.0012)
Cao	PARTICULATE - TOTAL	gr/DSCF* (g/DSCM)	0.0031 (0.0070)	0.0012 (0.0027)	0.0015 (0.0034)
Cat	PARTIC.-PROBE, CYCLONE AND FILTER @ STACK COND.	gr/CF (g/m3)	0.0005 (0.0013)	0.0003 (0.0008)	0.0004 (0.0009)
Cau	PARTICULATE - TOTAL @ STACK CONDITIONS	gr/CF (g/m3)	0.0023 (0.0053)	0.0009 (0.0021)	0.0011 (0.0025)
Caw	PARTICULATE - PROBE, CYCLONE AND FILTER	LBS/HR (Kg/HR)	0.66 (0.30)	0.39 (0.18)	0.47 (0.21)
Cax	PARTICULATE - TOTAL	LBS/HR (Kg/HR)	2.75 (1.25)	1.07 (0.48)	1.32 (0.60)

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SULFUR DIOXIDE EMISSION DATA

JOB NUMBER: 96-11
JOB NAME: ERM SOUTHWEST
LOCATION: SILSBEE, TEXAS
UNIT TESTED: PRESS HOUSE RTO STACK PART.

RUN NUMBER	1	2	3
DATE	----	1-19-96	1-19-96
START TIME	----	1038	1457
END TIME	----	1156	1740
N - NORMALITY OF Ba(ClO4)2	----	0.0100	0.0100
ML(I)- ml IN IMPINGER 2	----	334.00	337.00
ML(I)- ml IN IMPINGER 3	----	285.00	287.00
ML(A)- ml IN ALIQUOT #2	----	10.00	10.00
ML(A)- ml IN ALIQUOT #3	----	10.00	10.00
ML(B) - ml OF Ba(ClO4)2 TO TITRATE #2	----	0.05	0.05
ML(B) - ml OF Ba(ClO4)2 TO TITRATE #3	----	0.05	0.05
ML(BB) - ml OF Ba(ClO4)2 TO TITRATE BLANK	----	0.05	0.05
Tm - AVERAGE GAS METER TEMPERATURE, DEG.F	----	80	80
Vm - VOLUME OF DRY GAS SAMPLED @ METER CONDITIONS, FT^3	----	56.785	55.885
Pb - BAROMETRIC PRESSURE, "Hg Abs.	----	30.28	30.12
Qs - STACK GAS VOLUME DRY @ STANDARD CONDITIONS, *SCFM	----	103,915	103,909
C(I) - SO2 IN IMPINGER #2 IN mgs	----	0.00	0.00
C(I) - SO2 IN IMPINGER #3 IN mgs	----	0.00	0.00
C(T) - TOTAL SO2 IN IMPINGERS, IN mgs	----	0.0	0.0
ppm SO2	----	0.0	0.0
C(SO2) - EMISSION RATE OF SO2, lbs/day	----	0.0	0.0
C(SO2) - EMISSION RATE OF SO2, lbs/hr	----	0.0	0.0
Cs - EMISSION RATE OF SULFUR, lbs/day	----	0.0	0.0

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

C(I) = ML(I) * [ML(B) - ML(BB)] * N * 32 / ML(A)
C(T) = C(I) #2 + C(I) #3
ppm SO2 = 0.7513 * C(T) * [Tm + 460] / Vm * Pb
C(SO2) = ppm SO2 * Qs * 0.0002392

SULFUR TRIOXIDE EMISSION DATA

JOB NUMBER:	96-11
JOB NAME:	ERM SOUTHWEST
LOCATION:	SILSBEE, TEXAS
UNIT TESTED:	PRESS HOUSE RTO STACK PART.

RUN NUMBER	1	2	3
DATE	----	1-19-96	1-19-96
START TIME	----	1038	1457
END TIME	----	1156	1740
N - NORMALITY OF Ba(ClO4)2	----	0.0100	0.0100
ML(I) - ml IN IMPINGER	----	176.00	178.00
ML(A) - ml IN ALIQUOT	----	10.00	10.00
ML(B) - ml OF Ba(ClO4)2 TO TITRATE	----	0.05	0.05
ML(BB) - ml OF Ba(ClO4)2 TO TITRATE BLANK	----	0.05	0.05
Tm - AVERAGE GAS METER TEMPERATURE, DEG.F	----	80	80
Vm - VOLUME OF DRY GAS SAMPLED @ METER CONDITIONS, FT^3	----	56.785	55.885
Pb - BAROMETRIC PRESSURE, "Hg Abs.	----	30.28	30.12
Qs - STACK GAS VOLUME DRY @ STANDARD CONDITIONS, *SCFM	----	103,915	103,909
C(I) - SO3 IN IMPINGERS IN mgs	----	0.0	0.0
ppm SO3	----	0.0	0.0
C(SO3) - EMISSION RATE OF SO3, lbs/day	----	0.0	0.0
Cs - EMISSION RATE OF SULFUR, lbs/day	----	0.0	0.0

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

C(I) = ML(I) * [ML(B) - ML(BB)] * N * 40 / ML(A)
ppm SO3 = 0.6021 * C(I) * [Tm + 460] / Vm * Pb
C(SO3) = ppm SO3 * Qs * 0.0002991
Cs = C(SO3) / 2.5

METCO ENVIRONMENTAL

SOURCE EMISSION SURVEY

JOB NUMBER: 96-11
JOB NAME: ERM SOUTHWEST
LOCATION: SILSBEE, TEXAS
UNIT TESTED: PRESS HOUSE RTO STACK SO2

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1		
DATE			1-19-96		
BEGIN TIME			0820		
END TIME			0945		
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	30.28 (769)		
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	1.500 (38.1)		
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	47.483 (1.345)		
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	71 (22)		
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	47.965 (1.358)		
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	19.7		
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	0.930 (0.026)		
%M	MOISTURE IN STACK GAS BY VOLUME	%	1.90		
Tt	NET TIME OF TEST	MINUTES	72		

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

ERM SOUTHWEST
SILSBEE, TEXAS
PRESS HOUSE RTO STACK SO2

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.9810		
CO2		%	0.4		
O2		%	20.1		
CO		%	0.0		
N2		%	79.5		
%EA	EXCESS AIR @ SAMPLING POINT	%	----		
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.87 (28.87)		
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.66 (28.66)		
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	0.706 (17.9)		
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	229 (109)		
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	30.24 (768)		
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	3,064 (15.57)		
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	6,504 (4.20)		
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	105,537 (179,307)		
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	138,382 (235,111)		

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SULFUR DIOXIDE EMISSION DATA

JOB NUMBER: 96-11
JOB NAME: ERM SOUTHWEST
LOCATION: SILSBEE, TEXAS
UNIT TESTED: PRESS HOUSE RTO STACK SO2

RUN NUMBER	1		
DATE	1-19-96		
START TIME	0820		
END TIME	0945		
N - NORMALITY OF Ba(ClO4)2	0.0100		
ML(I)- ml IN IMPINGER 2	310.00		
ML(I)- ml IN IMPINGER 3	270.00		
ML(A)- ml IN ALIQUOT #2	10.00		
ML(A)- ml IN ALIQUOT #3	10.00		
ML(B) - ml OF Ba(ClO4)2 TO TITRATE #2	0.05		
ML(B) - ml OF Ba(ClO4)2 TO TITRATE #3	0.05		
ML(BB) - ml OF Ba(ClO4)2 TO TITRATE BLANK	0.05		
Tm - AVERAGE GAS METER TEMPERATURE, DEG.F	71		
Vm - VOLUME OF DRY GAS SAMPLED @ METER CONDITIONS, FT^3	47.483		
Pb - BAROMETRIC PRESSURE, "Hg Abs.	30.28		
Qs - STACK GAS VOLUME DRY @ STANDARD CONDITIONS, *SCFM	105,537		
C(I) - SO2 IN IMPINGER #2 IN mgs	0.00		
C(I) - SO2 IN IMPINGER #3 IN mgs	0.00		
C(T) - TOTAL SO2 IN IMPINGERS, IN mgs	0.0		
ppm SO2	0.0		
C(SO2) - EMISSION RATE OF SO2, lbs/day	0.0		
C(SO2) - EMISSION RATE OF SO2, lbs/hr	0.0		
Cs - EMISSION RATE OF SULFUR, lbs/day	0.0		

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

C(I) = ML(I) * [ML(B) - ML(BB)] * N * 32 / ML(A)
C(T) = C(I) #2 + C(I) #3
ppm SO2 = 0.7513 * C(T) * [Tm + 460] / Vm * Pb
C(SO2) = ppm SO2 * Qs * 0.0002392

METCO ENVIRONMENTAL

SULFUR TRIOXIDE EMISSION DATA

JOB NUMBER: 96-11
JOB NAME: ERM SOUTHWEST
LOCATION: SILSBEE, TEXAS
UNIT TESTED: PRESS HOUSE RTO STACK SO2

RUN NUMBER	1			
DATE	1-19-96			
START TIME	0820			
END TIME	0945			
N - NORMALITY OF Ba(ClO4)2	0.0100			
ML(I) - ml IN IMPINGER	184.00			
ML(A) - ml IN ALIQUOT	10.00			
ML(B) - ml OF Ba(ClO4)2 TO TITRATE	0.05			
ML(BB) - ml OF Ba(ClO4)2 TO TITRATE BLANK	0.05			
Tm - AVERAGE GAS METER TEMPERATURE, DEG.F	71			
Vm - VOLUME OF DRY GAS SAMPLED @ METER CONDITIONS, FT^3	47.483			
Pb - BAROMETRIC PRESSURE, "Hg Abs.	30.28			
Qs - STACK GAS VOLUME DRY @ STANDARD CONDITIONS, *SCFM	105,537			
C(I) - SO3 IN IMPINGERS IN mgs	0.0			
ppm SO3	0.0			
C(SO3) - EMISSION RATE OF SO3, lbs/day	0.0			
Cs - EMISSION RATE OF SULFUR, lbs/day	0.0			

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

C(I) = ML(I) * [ML(B) - ML(BB)] * N * 40 / ML(A)
ppm SO3 = 0.6021 * C(I) * [Tm + 460] / Vm * Pb
C(SO3) = ppm SO3 * Qs * 0.0002991
Cs = C(SO3) / 2.5

METCO ENVIRONMENTAL

SOURCE EMISSION SURVEY

JOB NUMBER: 96-11
JOB NAME: ERM SOUTHWEST
LOCATION: SILSBEE, TEXAS
UNIT TESTED: PRESS HOUSE RTO STACK FORM.

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1	2	3
DATE			1-19-96	1-19-96	1-19-96
BEGIN TIME			0820	1300	1817
END TIME			0945	1421	1935
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	30.28 (769)	30.16 (766)	30.12 (765)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	1.515 (38.5)	1.428 (36.3)	1.535 (39.0)
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	50.187 (1.421)	49.247 (1.395)	51.278 (1.452)
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	74 (23)	80 (27)	84 (29)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	50.413 (1.428)	48.716 (1.379)	50.299 (1.424)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	21.7	19.3	17.3
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	1.024 (0.029)	0.911 (0.026)	0.817 (0.023)
%M	MOISTURE IN STACK GAS BY VOLUME	%	1.99	1.84	1.60

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

SOURCE EMISSION CALCULATIONS

ERM SOUTHWEST
SILSBEE, TEXAS
PRESS HOUSE RTO STACK FORM.

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.9801	0.9816	0.9840
CO2		%	0.4	0.4	0.4
O2		%	20.1	20.1	20.1
CO		%	0.0	0.0	0.0
N2		%	79.5	79.5	79.5
%EA	EXCESS AIR @ SAMPLING POINT	%	----	----	----
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.87 (28.87)	28.87 (28.87)	28.87 (28.87)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.65 (28.65)	28.67 (28.67)	28.69 (28.69)
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	0.696 (17.7)	0.658 (16.7)	0.677 (17.2)
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	227 (108)	235 (113)	237 (114)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	30.24 (768)	30.12 (765)	30.08 (764)
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	3,038 (15.43)	2,982 (15.15)	3,032 (15.40)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	6,504 (4.20)	6,504 (4.20)	6,504 (4.20)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	104,850 (178,140)	101,484 (172,421)	103,004 (175,004)
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	137,203 (233,108)	134,707 (228,867)	136,958 (232,692)

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

ERM SOUTHWEST
SILSBEE, TEXAS
PRESS HOUSE RTO STACK FORM.

SYMBOL	DESCRIPTION	UNITS			
Tt	NET TIME OF TEST	MINUTES	72	72	72
Dn	SAMPLING NOZZLE DIAM.	IN. (m)	0.236 (0.006)	0.236 (0.006)	0.236 (0.006)
%I	PERCENT ISOKINETIC	%	99.7	99.5	101.2
Mf	PARTICULATE - PROBE, CYCLONE AND FILTER	mg	----	----	----
Mt	PARTICULATE - TOTAL	mg	----	----	----
Can	PARTICULATE - PROBE, CYCLONE AND FILTER	gr/DSCF* (g/DSCM)	----	----	----
Cao	PARTICULATE - TOTAL	gr/DSCF* (g/DSCM)	----	----	----
Cat	PARTIC.-PROBE, CYCLONE AND FILTER @ STACK COND.	gr/CF (g/m3)	----	----	----
Cau	PARTICULATE - TOTAL @ STACK CONDITIONS	gr/CF (g/m3)	----	----	----
Caw	PARTICULATE - PROBE, CYCLONE AND FILTER	LBS/HR (Kg/HR)	----	----	----
Cax	PARTICULATE - TOTAL	LBS/HR (Kg/HR)	----	----	----

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION SURVEY

JOB NUMBER:	96-11
JOB NAME:	ERM SOUTHWEST
LOCATION:	SILSBEE, TEXAS
UNIT TESTED:	PRESS HOUSE RTO STACK PHENOL

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1	2	3
DATE			01-18-96	01-19-96	01-19-96
BEGIN TIME			1835	1038	1457
END TIME			2015	1156	1741
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	30.10 (765)	30.28 (769)	30.12 (765)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	1.595 (40.5)	1.668 (42.4)	1.716 (43.6)
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	52.285 (1.481)	53.067 (1.503)	52.223 (1.479)
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	77 (25)	79 (26)	80 (27)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	51.928 (1.470)	52.831 (1.496)	51.628 (1.462)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	25.3	22.1	25.9
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	1.194 (0.034)	1.043 (0.030)	1.222 (0.035)
%M	MOISTURE IN STACK GAS BY VOLUME	%	2.25	1.94	2.31

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

ERM SOUTHWEST
SILSBEE, TEXAS
PRESS HOUSE RTO STACK PHENOL

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.9775	0.9806	0.9769
CO2		%	0.4	0.4	0.4
O2		%	20.1	20.1	20.1
CO		%	0.0	0.0	0.0
N2		%	79.5	79.5	79.5
%EA	EXCESS AIR @ SAMPLING POINT	%	----	----	----
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.87 (28.87)	28.87 (28.87)	28.87 (28.87)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.62 (28.62)	28.66 (28.66)	28.62 (28.62)
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	0.650 (16.5)	0.683 (17.3)	0.669 (17.0)
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	230 (110)	228 (109)	237 (114)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	30.06 (764)	30.24 (768)	30.08 (764)
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	2,951 (14.99)	3,021 (15.35)	3,010 (15.29)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	6,504 (4.20)	6,504 (4.20)	6,504 (4.20)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	100,534 (170,807)	104,165 (176,976)	101,519 (172,481)
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	133,300 (226,477)	136,449 (231,827)	135,949 (230,977)

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

ERM SOUTHWEST
SILSBEE, TEXAS
PRESS HOUSE RTO STACK PHENOL

SYMBOL	DESCRIPTION	UNITS			
Tt	NET TIME OF TEST	MINUTES	72	72	72
Dn	SAMPLING NOZZLE DIAM.	IN. (m)	0.242 (0.006)	0.242 (0.006)	0.242 (0.006)
%I	PERCENT ISOKINETIC	%	101.8	100.0	100.2
Mf	PARTICULATE - PROBE, CYCLONE AND FILTER	mg	----	----	----
Mt	PARTICULATE - TOTAL	mg	----	----	----
Can	PARTICULATE - PROBE, CYCLONE AND FILTER	gr/DSCF* (g/DSCM)	----	----	----
Cao	PARTICULATE - TOTAL	gr/DSCF* (g/DSCM)	----	----	----
Cat	PARTIC.-PROBE, CYCLONE AND FILTER @ STACK COND.	gr/CF (g/m3)	----	----	----
Cau	PARTICULATE - TOTAL @ STACK CONDITIONS	gr/CF (g/m3)	----	----	----
Caw	PARTICULATE - PROBE, CYCLONE AND FILTER	LBS/HR (Kg/HR)	----	----	----
Cax	PARTICULATE - TOTAL	LBS/HR (Kg/HR)	----	----	----

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION SURVEY

JOB NUMBER: 96-11
JOB NAME: ERM SOUTHWEST
LOCATION: SILSBEE, TEXAS
UNIT TESTED: NUMBER 1 VENT DUCT PART.

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1	2	3
DATE			1-18-96	1-19-96	1-19-96
BEGIN TIME			1835	1038	1457
END TIME			2023	1200	1735
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	30.10 (765)	30.26 (769)	30.15 (766)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	1.445 (36.7)	1.393 (35.4)	1.421 (36.1)
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	48.325 (1.368)	47.786 (1.353)	48.529 (1.374)
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	79 (26)	83 (28)	86 (30)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	47.800 (1.354)	47.161 (1.335)	47.462 (1.344)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	21.3	15.4	12.7
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	1.005 (0.028)	0.727 (0.021)	0.599 (0.017)
%M	MOISTURE IN STACK GAS BY VOLUME	%	2.06	1.52	1.25

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

ERM SOUTHWEST
SILSBEE, TEXAS
NUMBER 1 VENT DUCT PART.

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.9794	0.9848	0.9875
CO2		%	0.0	0.0	0.0
O2		%	20.9	20.9	20.9
CO		%	0.0	0.0	0.0
N2		%	79.1	79.1	79.1
%EA	EXCESS AIR @ SAMPLING POINT	%	----	----	----
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.84 (28.84)	28.84 (28.84)	28.84 (28.84)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.61 (28.61)	28.67 (28.67)	28.70 (28.70)
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	1.380 (35.1)	1.361 (34.6)	1.371 (34.8)
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	101 (38)	98 (37)	103 (39)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	29.93 (760)	30.12 (765)	30.00 (762)
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	3,935 (19.99)	3,885 (19.74)	3,925 (19.94)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	1,892 (1.22)	1,892 (1.22)	1,892 (1.22)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	47,849 (81,295)	48,060 (81,654)	48,064 (81,661)
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	51,704 (87,845)	51,042 (86,720)	51,566 (87,611)

*68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

ERM SOUTHWEST
SILSBEE, TEXAS
NUMBER 1 VENT DUCT PART.

SYMBOL	DESCRIPTION	UNITS			
Tt	NET TIME OF TEST	MINUTES	72	72	72
Dn	SAMPLING NOZZLE DIAM.	IN. (m)	0.182 (0.005)	0.182 (0.005)	0.182 (0.005)
%I	PERCENT ISOKINETIC	%	101.3	99.5	100.1
Mf	PARTICULATE - PROBE, CYCLONE AND FILTER	mg	7.0	8.4	5.4
Mt	PARTICULATE - TOTAL	mg	26.0	18.3	13.8
Can	PARTICULATE - PROBE, CYCLONE AND FILTER	gr/DSCF* (g/DSCM)	0.0023 (0.0052)	0.0027 (0.0063)	0.0018 (0.0040)
Cao	PARTICULATE - TOTAL	gr/DSCF* (g/DSCM)	0.0084 (0.0192)	0.0060 (0.0137)	0.0045 (0.0103)
Cat	PARTIC.-PROBE, CYCLONE AND FILTER @ STACK COND.	gr/CF (g/m3)	0.0021 (0.0048)	0.0026 (0.0059)	0.0016 (0.0037)
Cau	PARTICULATE - TOTAL @ STACK CONDITIONS	gr/CF (g/m3)	0.0077 (0.0176)	0.0056 (0.0128)	0.0042 (0.0096)
Caw	PARTICULATE - PROBE, CYCLONE AND FILTER	LBS/HR (Kg/HR)	0.92 (0.42)	1.13 (0.51)	0.72 (0.33)
Cax	PARTICULATE - TOTAL	LBS/HR (Kg/HR)	3.43 (1.56)	2.46 (1.12)	1.84 (0.84)

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION SURVEY

JOB NUMBER: 96-11
JOB NAME: ERM SOUTHWEST
LOCATION: SILSBEE, TEXAS
UNIT TESTED: NUMBER 1 VENT DUCT FORM.

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1	2	3
DATE			1-19-96	1-19-96	1-19-96
BEGIN TIME			0820	1300	1816
END TIME			0946	1422	1938
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	30.28 (769)	30.22 (768)	30.11 (765)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	1.290 (32.8)	1.306 (33.2)	1.287 (32.7)
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	46.021 (1.303)	46.394 (1.314)	46.468 (1.316)
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	79 (26)	84 (29)	89 (32)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	45.775 (1.296)	45.633 (1.292)	45.123 (1.278)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	15.3	11.0	10.1
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	0.722 (0.020)	0.519 (0.015)	0.477 (0.014)
%M	MOISTURE IN STACK GAS BY VOLUME	%	1.55	1.12	1.05

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

ERM SOUTHWEST
SILSBEE, TEXAS
NUMBER 1 VENT DUCT FORM.

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.9845	0.9888	0.9895
CO2		%	0.0	0.0	0.0
O2		%	20.9	20.9	20.9
CO		%	0.0	0.0	0.0
N2		%	79.1	79.1	79.1
%EA	EXCESS AIR @ SAMPLING POINT	%	----	----	----
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.84 (28.84)	28.84 (28.84)	28.84 (28.84)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.67 (28.67)	28.71 (28.71)	28.72 (28.72)
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	1.400 (35.6)	1.383 (35.1)	1.406 (35.7)
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	95 (35)	103 (39)	104 (40)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	30.10 (765)	30.07 (764)	29.96 (761)
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	3,940 (20.02)	3,944 (20.04)	3,985 (20.24)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	1,892 (1.22)	1,892 (1.22)	1,892 (1.22)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	48,957 (83,178)	48,473 (82,356)	48,745 (82,818)
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	51,773 (87,962)	51,826 (88,052)	52,356 (88,953)

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

SOURCE EMISSION CALCULATIONS

ERM SOUTHWEST
SILSBEE, TEXAS
NUMBER 1 VENT DUCT FORM.

SYMBOL	DESCRIPTION	UNITS			
Tt	NET TIME OF TEST	MINUTES	72	72	72
Dn	SAMPLING NOZZLE DIAM.	IN. (m)	0.177 (0.004)	0.177 (0.004)	0.177 (0.004)
%I	PERCENT ISOKINETIC	%	100.2	100.9	99.2
Mf	PARTICULATE - PROBE, CYCLONE AND FILTER	mg	----	----	----
Mt	PARTICULATE - TOTAL	mg	----	----	----
Can	PARTICULATE - PROBE, CYCLONE AND FILTER	gr/DSCF* (g/DSCM)	----	----	----
Cao	PARTICULATE - TOTAL	gr/DSCF* (g/DSCM)	----	----	----
Cat	PARTIC.-PROBE, CYCLONE AND FILTER @ STACK COND.	gr/CF (g/m3)	----	----	----
Cau	PARTICULATE - TOTAL @ STACK CONDITIONS	gr/CF (g/m3)	----	----	----
Caw	PARTICULATE - PROBE, CYCLONE AND FILTER	LBS/HR (Kg/HR)	----	----	----
Cax	PARTICULATE - TOTAL	LBS/HR (Kg/HR)	----	----	----

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION SURVEY

JOB NUMBER: 96-11
JOB NAME: ERM SOUTHWEST
LOCATION: SILSBEE, TEXAS
UNIT TESTED: NUMBER 2 VENT DUCT PART.

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1	2	3
DATE			1-18-96	1-19-96	1-19-96
BEGIN TIME			1835	1038	1457
END TIME			2023	1200	1735
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	30.10 (765)	30.26 (769)	30.15 (766)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	1.053 (26.7)	1.123 (28.5)	1.101 (28.0)
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	40.566 (1.149)	41.504 (1.175)	41.388 (1.172)
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	76 (24)	80 (27)	81 (27)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	40.311 (1.141)	41.162 (1.166)	40.820 (1.156)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	18.7	14.1	15.4
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	0.883 (0.025)	0.666 (0.019)	0.727 (0.021)
%M	MOISTURE IN STACK GAS BY VOLUME	%	2.14	1.59	1.75

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

SOURCE EMISSION CALCULATIONS

ERM SOUTHWEST
SILSBEE, TEXAS
NUMBER 2 VENT DUCT PART.

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.9786	0.9841	0.9825
CO2		%	0.0	0.0	0.0
O2		%	20.9	20.9	20.9
CO		%	0.0	0.0	0.0
N2		%	79.1	79.1	79.1
%EA	EXCESS AIR @ SAMPLING POINT	%	----	----	----
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.84 (28.84)	28.84 (28.84)	28.84 (28.84)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.60 (28.60)	28.66 (28.66)	28.65 (28.65)
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	1.160 (29.5)	1.227 (31.2)	1.203 (30.6)
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	102 (39)	100 (38)	105 (41)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	30.09 (764)	30.11 (765)	30.00 (762)
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	3,594 (18.26)	3,686 (18.72)	3,670 (18.64)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	1,892 (1.22)	1,892 (1.22)	1,892 (1.22)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	43,822 (74,454)	45,388 (77,114)	44,555 (75,699)
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	47,225 (80,235)	48,436 (82,293)	48,220 (81,926)

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

ERM SOUTHWEST
SILSBEE, TEXAS
NUMBER 2 VENT DUCT PART.

SYMBOL	DESCRIPTION	UNITS			
Tt	NET TIME OF TEST	MINUTES	72	72	72
Dn	SAMPLING NOZZLE DIAM.	IN. (m)	0.176 (0.004)	0.176 (0.004)	0.176 (0.004)
%I	PERCENT ISOKINETIC	%	99.7	98.3	99.3
Mf	PARTICULATE - PROBE, CYCLONE AND FILTER	mg	5.7	9.0	5.2
Mt	PARTICULATE - TOTAL	mg	16.7	18.0	13.9
Can	PARTICULATE - PROBE, CYCLONE AND FILTER	gr/DSCF* (g/DSCM)	0.0022 (0.0050)	0.0034 (0.0077)	0.0020 (0.0045)
Cao	PARTICULATE - TOTAL	gr/DSCF* (g/DSCM)	0.0064 (0.0146)	0.0067 (0.0154)	0.0052 (0.0120)
Cat	PARTIC.-PROBE, CYCLONE AND FILTER @ STACK COND.	gr/CF (g/m3)	0.0020 (0.0046)	0.0031 (0.0072)	0.0018 (0.0041)
Cau	PARTICULATE - TOTAL @ STACK CONDITIONS	gr/CF (g/m3)	0.0059 (0.0135)	0.0063 (0.0144)	0.0048 (0.0110)
Caw	PARTICULATE - PROBE, CYCLONE AND FILTER	LBS/HR (Kg/HR)	0.82 (0.37)	1.31 (0.59)	0.75 (0.34)
Cax	PARTICULATE - TOTAL	LBS/HR (Kg/HR)	2.40 (1.09)	2.62 (1.19)	2.00 (0.91)

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION SURVEY

JOB NUMBER:	96-11
JOB NAME:	ERM SOUTHWEST
LOCATION:	SILSBEE, TEXAS
UNIT TESTED:	NUMBER 2 VENT DUCT FORM.

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1	2	3
DATE			1-19-96	1-19-96	1-19-96
BEGIN TIME			0820	1300	1816
END TIME			0946	1422	1938
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	30.28 (769)	30.22 (768)	30.11 (765)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	0.851 (21.6)	1.183 (30.0)	1.356 (34.4)
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	35.828 (1.015)	42.724 (1.210)	46.019 (1.303)
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	76 (24)	83 (28)	84 (29)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	35.798 (1.014)	42.088 (1.192)	45.105 (1.277)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	17.5	6.1	8.1
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	0.826 (0.023)	0.288 (0.008)	0.382 (0.011)
%M	MOISTURE IN STACK GAS BY VOLUME	%	2.26	0.68	0.84

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

ERM SOUTHWEST
SILSBEE, TEXAS
NUMBER 2 VENT DUCT FORM.

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.9774	0.9932	0.9916
CO2		%	0.0	0.0	0.0
O2		%	20.9	20.9	20.9
CO		%	0.0	0.0	0.0
N2		%	79.1	79.1	79.1
%EA	EXCESS AIR @ SAMPLING POINT	%	----	----	----
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.84 (28.84)	28.84 (28.84)	28.84 (28.84)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.59 (28.59)	28.76 (28.76)	28.74 (28.74)
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	0.830 (21.1)	1.136 (28.9)	1.302 (33.1)
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	95 (35)	105 (41)	105 (41)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	30.10 (765)	30.07 (764)	29.96 (761)
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	2,994 (15.21)	3,566 (18.12)	3,833 (19.47)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	1,892 (1.22)	1,892 (1.22)	1,892 (1.22)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	36,934 (62,751)	43,866 (74,528)	46,902 (79,686)
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	39,339 (66,837)	46,849 (79,596)	50,365 (85,570)

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

SOURCE EMISSION CALCULATIONS

ERM SOUTHWEST
SILSBEE, TEXAS
NUMBER 2 VENT DUCT FORM.

SYMBOL	DESCRIPTION	UNITS			
Tt	NET TIME OF TEST	MINUTES	72	72	72
Dn	SAMPLING NOZZLE DIAM.	IN. (m)	0.180 (0.005)	0.180 (0.005)	0.180 (0.005)
%I	PERCENT ISOKINETIC	%	100.5	99.4	99.7
Mf	PARTICULATE - PROBE, CYCLONE AND FILTER	mg	----	----	----
Mt	PARTICULATE - TOTAL	mg	----	----	----
Can	PARTICULATE - PROBE, CYCLONE AND FILTER	gr/DSCF* (g/DSCM)	----	----	----
Cao	PARTICULATE - TOTAL	gr/DSCF* (g/DSCM)	----	----	----
Cat	PARTIC.-PROBE, CYCLONE AND FILTER @ STACK COND.	gr/CF (g/m3)	----	----	----
Cau	PARTICULATE - TOTAL @ STACK CONDITIONS	gr/CF (g/m3)	----	----	----
Caw	PARTICULATE - PROBE, CYCLONE AND FILTER	LBS/HR (Kg/HR)	----	----	----
Cax	PARTICULATE - TOTAL	LBS/HR (Kg/HR)	----	----	----

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

APPENDIX C

Calibration Data

Equipment	Calibration Factor	Calibration Date
Pitot Tube #8-10-1 (50)	0.808	12/08/95
Pitot Tube #11-3-1	0.812	11/21/95
Pitot Tube #11-3-2	0.811	11/21/95
Pitot Tube #17-3-1 (47)	0.809	12/29/95
Pitot Tube #18-3-2	0.813 (low side)	11/22/95
Pitot Tube #18-10-2 (54)	0.807	11/22/95
Probe Tip #II-4	0.249	01/03/96
Probe Tip #III-2	0.182	01/18/96
Probe Tip #XII-6	0.176	01/08/96
Probe Tip #XII-8	0.242	01/08/96
Probe Tip #96-11-G1	0.180	01/18/96
Probe Tip #96-11-H2	0.177	01/18/96
Probe Tip #96-11-I1	0.236	01/19/96
Dry Gas Meter #11-2 (20)	0.995	11/27/95
Stack Unit Orifice #11-2 (20)		11/27/95
Digital Temperature Indicator #11-2 (20)		11/22/95

APPENDIX C

Calibration Data

Equipment	Calibration Factor	Calibration Date
Dry Gas Meter #17-1 (11)	0.981	12/29/95
Stack Unit Orifice #17-1 (11)		12/29/95
Digital Temperature Indicator #17-1 (11)		12/29/95
Dry Gas Meter #17-2 (17)	1.037	12/27/95
Stack Unit Orifice #17-2 (17)		12/28/95
Digital Temperature Indicator #17-2 (17)		12/27/95
Dry Gas Meter #18-1 (26)	0.972	01/03/96
Stack Unit Orifice #18-1 (26)		01/03/96
Digital Temperature Indicator #18-1 (26)		01/03/96
Barometer #11-2 (26)		11/21/95
Barometer #17-2 (10)		01/12/96
Personnel Pump #1105		08/10/95

PITOT TUBE CALIBRATION

Date: 12\8\95 Time: 0830

Pitot No.: 8-10-1 (50) T_s: 44°F °F

Pitot Dimensions: 10' x 1/4" C_{pstd}: 0.990

Motor Setting	fps mark	Calibration Standard Start	Calibration Standard End	$\sqrt{\text{Standard Average}}$	High	$\sqrt{\text{High}}$	Cal. Factor	Low	$\sqrt{\text{Low}}$	Cal. Factor
4	20	0.10	0.10	0.316	0.15	0.387	0.808	0.15	0.387	0.808
20	30	0.22	0.22	0.469	0.33	0.574	0.808	0.33	0.574	0.808
31	40	0.34	0.34	0.583	0.51	0.714	0.808	0.51	0.714	0.808
39	50	0.54	0.54	0.735	0.81	0.900	0.808	0.81	0.900	0.808
49	60	0.80	0.80	0.894	1.20	1.095	0.808	1.20	1.095	0.808
57	70	1.00	1.00	1.00	1.50	1.225	0.808	1.50	1.225	0.808
68	80	1.30	1.30	1.140	1.95	1.396	0.808	1.95	1.396	0.808
76	90	1.60	1.60	1.265	2.40	1.549	0.808	2.40	1.549	0.808
39	50	0.54	0.54	0.735	0.81	0.900	0.808	.80	0.894	0.813
39	50	0.54	0.54	0.735	0.80	0.894	0.813	.81	0.900	0.808
Average							0.808			0.808

Summary of Results:

Normal high side calibration factor 0.808

variation + 0.00

variation - 0.00

Normal low side calibration factor 0.808

variation + 0.00

variation - 0.00

Calibrator: John Lambert

Checked By: Jesse Rocha

PITOT TUBE CALIBRATION

Date: 11/21/95 — Time: 14/55

Pitot No.: 11-3-1 — T_s: 70 °F

Pitot Dimensions: 3'x14" — C_{pstd}: 0.990

Motor Setting	fps mark	Calibration Standard Start	Calibration Standard End	$\sqrt{\text{Standard Average}}$	High	$\sqrt{\text{High}}$	Cal. Factor	Low	$\sqrt{\text{Low}}$	Cal. Factor
4	20	0.100	0.100	0.316	0.150	0.387	0.808	0.150	0.387	0.808
20	30	0.220	0.210	0.464	0.320	0.566	0.811	0.320	0.464	0.811
31	40	0.340	0.330	0.579	0.490	0.700	0.819	0.500	0.707	0.810
39	50	0.540	0.540	0.735	0.790	0.889	0.818	0.800	0.894	0.813
49	60	0.800	0.800	0.894	1.20	1.095	0.808	1.20	1.095	0.808
57	70	1.00	1.00	1.000	1.50	1.225	0.808	1.50	1.225	0.808
68	80	1.30	1.30	1.140	1.95	1.396	0.808	2.00	1.414	0.798
76	90	1.60	1.60	1.265	2.35	1.533	0.817	2.40	1.549	0.808
39	50	0.540	0.540	0.735	0.800	0.894	0.813	0.800	0.894	0.813
39	50	0.540	0.530	0.731	0.790	0.889	0.815	0.790	0.889	0.815
Average							0.812			0.808

Summary of Results:

Normal high side calibration factor 0.812

variation + 0.86%

variation - 0.49%

Normal low side calibration factor 0.808

variation + 0.62%

variation - 1.24%

Calibrator: [signature]

Checked By: David S. Bailey

METCO ENVIRONMENTAL

Checked #98 [illegible]

NOZZLE CALIBRATION

Nozzle Set No. II

Date 3-Jan-96 Calibrator: James M Grubbs

	1	2	3	4	5	6
Reading 1	0.120	0.173	0.199	0.248	0.260	0.308
Reading 2	0.120	0.172	0.198	0.249	0.261	0.309
Reading 3	0.120	0.172	0.198	0.250	0.260	0.309
Reading 4	0.120	0.172	0.198	0.249	0.260	0.309
Reading 5	0.120	0.173	0.199	0.250	0.260	0.308
Reading 6	0.120	0.173	0.199	0.249	0.261	0.308
Reading 7	0.120	0.171	0.198	0.249	0.260	0.308
Reading 8	0.120	0.172	0.198	0.248	0.261	0.308
Reading 9	0.120	0.172	0.199	0.249	0.260	0.308
Reading 10	0.120	0.173	0.199	0.248	0.260	0.308
Average	0.120	0.172	0.199	0.249	0.260	0.308

	7	8	9	10	11	12
Reading 1	0.320	0.361	0.423	0.481	0.635	
Reading 2	0.323	0.359	0.423	0.480	0.634	
Reading 3	0.323	0.361	0.424	0.480	0.635	
Reading 4	0.320	0.360	0.423	0.480	0.634	
Reading 5	0.321	0.361	0.424	0.480	0.635	
Reading 6	0.320	0.359	0.423	0.480	0.635	
Reading 7	0.320	0.359	0.424	0.480	0.636	
Reading 8	0.322	0.360	0.423	0.481	0.635	
Reading 9	0.321	0.359	0.423	0.480	0.636	
Reading 10	0.320	0.361	0.423	0.481	0.635	
Average	0.321	0.360	0.423	0.480	0.635	

METCO ENVIRONMENTAL

NOZZLE CALIBRATION

Nozzle Set No. _____

Date: 1/18/96 Calibrator: Lance Hudson

	[illegible]-III-12	96-011-H 2	3	4	5
Reading 1	0.181	0.176			
Reading 2	0.181	0.176			
Reading 3	0.181	0.178			
Reading 4	0.182	0.178			
Reading 5	0.181	0.177			
Reading 6	0.183	0.178			
Reading 7	0.182	0.178			
Reading 8	0.182	0.177			
Reading 9	0.182	0.178			
Reading 10	0.182	0.177			
Average	0.182 ✓	0.177 ✓			

	6	7	8	9	10
Reading 1					
Reading 2					
Reading 3					
Reading 4					
Reading 5					
Reading 6					
Reading 7					
Reading 8					
Reading 9					
Reading 10					
Average					

METCO ENVIRONMENTAL

√MG54

NOZZLE CALIBRATION

Nozzle Set No. XII

Date: January 8, 1996 Calibrator: Matthew Lindquist

	1 16	2 20	3 18	4 14	5 12
Reading 1	0.489	0.616	0.565	0.435	0.363
Reading 2	0.490	0.617	0.564	0.435	0.366
Reading 3	0.490	0.617	0.565	0.435	0.365
Reading 4	0.491	0.616	0.565	0.435	0.366
Reading 5	0.490	0.617	0.565	0.436	0.365
Reading 6	0.491	0.616	0.564	0.435	0.365
Reading 7	0.490	0.616	0.565	0.434	0.366
Reading 8	0.491	0.616	0.565	0.435	0.367
Reading 9	0.490	0.617	0.565	0.435	0.366
Reading 10	0.490	0.617	0.565	0.435	0.365
Average	0.490 √	0.617 √	0.565 √	0.435 √	0.365 √

	6 10	7 11	8 8	9 4	10 6
Reading 1	0.309	0.311	0.242	0.112	0.175
Reading 2	0.310	0.312	0.242	0.112	0.175
Reading 3	0.310	0.312	0.241	0.113	0.176
Reading 4	0.311	0.311	0.241	0.112	0.176
Reading 5	0.310	0.311	0.243	0.112	0.175
Reading 6	0.311	0.311	0.242	0.113	0.175
Reading 7	0.310	0.312	0.243	0.113	0.175
Reading 8	0.310	0.312	0.243	0.112	0.176
Reading 9	0.310	0.312	0.243	0.112	0.176
Reading 10	0.310	0.311	0.241	0.112	0.176
Average	0.310 √	0.312 √	0.242 √	0.112 √	0.176 √

√ by RTT

METCO ENVIRONMENTAL

NOZZLE CALIBRATION

Nozzle Set No. Pyrex 4

Date 18 Jan 96 Calibrator: James M Grubbs

	96-11-61	2	3	4	5	6
Reading 1	0.180					
Reading 2	0.180					
Reading 3	0.181					
Reading 4	0.180					
Reading 5	0.180					
Reading 6	0.180					
Reading 7	0.180					
Reading 8	0.181					
Reading 9	0.180					
Reading 10	0.180					
Average	0.180 √					

	7	8	9	10	11	12
Reading 1						
Reading 2						
Reading 3						
Reading 4						
Reading 5						
Reading 6						
Reading 7						
Reading 8						
Reading 9						
Reading 10						
Average						

nozzle 17-1

96-11-I1

1	0.236
2	0.237
3	0.236
4	0.236
5	0.235
6	0.236
7	0.236
8	0.236
9	0.236
10	0.236
AVG.	0.236

METCO ENVIRONMENTAL

Dry Gas Meter Calibration

Dry Gas Meter Number 11-2(20)

Date: 11/27/95

ΔH ("H_2O)	C_{DG}
0.5	0.988
1.0	0.990
1.5	0.993
2.0	0.995
3.0	0.999
4.0	1.002
Average	0.995

Variation: + 0.70%
- 0.70%

Calibrator: Robert Theuerkauf

Checked by: Mark Glica

C_{DG} @ 2 liters/min. = 0.989

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 11-2 (20)

Date: November 22, 1995

Calibrator: Matt Lindquist

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } V_{m_{std}}}{\text{Dry Gas Meter } V_{m_{std}}}$$

Run No.: 2 @ 0.50" H_2O

P_b: 30.12 "Hg

Control Module Vacuum 5.0 "Hg

WET TEST METER (No. 2) — DRY GAS METER

	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1412	5.162 cf	73 °F	-0.95 "H_2O	764.013 cf	81 °F	79 °F	0.50 "H_2O
Start	1359	0.000 cf	73 °F	-0.95 "H_2O	758.775 cf	80 °F	79 °F	0.50 "H_2O
	13	5.162 cf	73 °F	-0.95 "H_2O	5.238 cf	80 °F		0.50 "H_2O

$$\text{Wet Test Meter } V_{m_{std}} = 17.65 \times 5.162 \left(\frac{30.12 + \frac{-0.95}{13.6}}{73 + 460} \right) \times 0.993\ (C_f) = 5.101 \text{ dscf}$$

$$\text{Dry Gas Meter } V_{m_{std}} = 17.65 \times 5.238 \left(\frac{30.12 + \frac{0.50}{13.6}}{80 + 460} \right) = 5.163 \text{ dscf}$$

$$C_{DG} = \frac{5.101}{5.163} = \boxed{0.988}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 11-2(20)

Date: November 22, 1995

Calibrator: Matt Lindquist

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } V_{m_{std}}}{\text{Dry Gas Meter } V_{m_{std}}}$$

Run No.: 2 @ 1.00" H_2O

P_b: 30.11 "Hg

Control Module Vacuum 5.0 "Hg

WET TEST METER (No. 2) — DRY GAS METER

	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1424	5.031 cf	73 °F	-1.50 "H_2O	769.667 cf	85 °F	79 °F	1.00 "H_2O
Start	1415	0.000 cf	73 °F	-1.45 "H_2O	764.578 cf	81 °F	79 °F	1.00 "H_2O
	9	5.031 cf	73 °F	-1.475 "H_2O	5.089 cf	81 °F		1.00 "H_2O

$$\text{Wet Test Meter } V_{m_{std}} = 17.65 \times 5.031 \left(\frac{30.11 + \frac{-1.475}{13.6}}{73 + 460} \right) \times \underset{(C_f)}{0.993} = 4.963 \text{ dscf}$$

$$\text{Dry Gas Meter } V_{m_{std}} = 17.65 \times 5.089 \left(\frac{30.11 + \frac{1.000}{13.6}}{81 + 460} \right) = 5.011 \text{ dscf}$$

$$C_{DG} = \frac{4.963}{5.011} = \boxed{0.990}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 11-2(20)

Date: November 22, 1995

Calibrator: Matt Lindquist

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } V_{m_{std}}}{\text{Dry Gas Meter } V_{m_{std}}}$$

Run No.: 2 @ 1.50" H_2O

P_b: 30.10 "Hg

Control Module Vacuum 5.0 "Hg

WET TEST METER (No. 2) — DRY GAS METER

	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1447	10.082 cf	73 °F	-2.00 "H_2O	780.246 cf	89 °F	80 °F	1.50 "H_2O
Start	1432	0.000 cf	73 °F	-2.00 "H_2O	770.067 cf	83 °F	80 °F	1.50 "H_2O
	15	10.082 cf	73 °F	-2.00 "H_2O	10.179 cf	83 °F		1.50 "H_2O

$$\text{Wet Test Meter } V_{m_{std}} = 17.65 \times 10.082 \left(\frac{30.10 + \frac{-2.000}{13.6}}{73 + 460} \right) \times \underset{(C_f)}{0.993} = 9.930 \text{ dscf}$$

$$\text{Dry Gas Meter } V_{m_{std}} = 17.65 \times 10.179 \left(\frac{30.10 + \frac{1.500}{13.6}}{83 + 460} \right) = 9.996 \text{ dscf}$$

$$C_{DG} = \frac{9.930}{9.996} = \boxed{0.993}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 11-2(20)

Date: November 27, 1995

Calibrator: Matt Lindquist

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } V_{m_{std}}}{\text{Dry Gas Meter } V_{m_{std}}}$$

Run No.: 2 @ 2.00" H_2O

P_b: 29.81 "Hg

Control Module Vacuum 5.0 "Hg

WET TEST METER (No. 2) DRY GAS METER

	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	0840	10.178 cf	72 °F	-2.90 "H_2O	807.316 cf	86 °F	76 °F	2.00 "H_2O
Start	0827	0.000 cf	72 °F	-2.90 "H_2O	797.153 cf	80 °F	75 °F	2.00 "H_2O
	13	10.178 cf	72 °F	-2.90 "H_2O	10.163 cf	79 °F		2.00 "H_2O

$$\text{Wet Test Meter } V_{m_{std}} = 17.65 \times 10.178 \left(\frac{29.81 \; \frac{-2.90}{+\,13.6}}{72 + 460} \right) \times 0.993 \; (C_f) = 9.924 \text{ dscf}$$

$$\text{Dry Gas Meter } V_{m_{std}} = 17.65 \times 10.163 \left(\frac{29.81 \; \frac{2.00}{+\,13.6}}{79 + 460} \right) = 9.970 \text{ dscf}$$

$$C_{DG} = \frac{9.924}{9.970} = \boxed{0.995}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 11-2 (20)

Date: November 27, 1995

Calibrator: Matt Lindquist

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } V_{m_{std}}}{\text{Dry Gas Meter } V_{m_{std}}}$$

Run No.: 2 @ 3.00" H_2O

P_b: 29.82 "Hg

Control Module Vacuum 5.0 "Hg

WET TEST METER (No. 2) — DRY GAS METER

	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	0907	10.705 cf	72 °F	-4.00 "H_2O	818.624 cf	88 °F	78 °F	3.00 "H_2O
Start	0856	0.000 cf	72 °F	-4.00 "H_2O	807.985 cf	82 °F	77 °F	3.00 "H_2O
	11	10.705 cf	72 °F	-4.00 "H_2O	10.639 cf	81 °F		3.00 "H_2O

$$\text{Wet Test Meter } V_{m_{std}} = 17.65 \times 10.705 \left(\frac{29.82 + \frac{-4.000}{13.6}}{72 + 460}\right) \times \underset{(C_f)}{0.993} = 10.413 \text{ dscf}$$

$$\text{Dry Gas Meter } V_{m_{std}} = 17.65 \times 10.639 \left(\frac{29.82 + \frac{3.000}{13.6}}{81 + 460}\right) = 10.427 \text{ dscf}$$

$$C_{DG} = \frac{10.413}{10.427} = \boxed{0.999}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 11-2 (20)

Date: 11/27/95

Calibrator: Robert Theuerkauf

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } V_{m_{std}}}{\text{Dry Gas Meter } V_{m_{std}}}$$

Run No.: 2@ 4.00 "H_2O

P_b: 29.82 "Hg

Control Module Vacuum 5.0 "Hg

WET TEST METER (No. 2) — DRY GAS METER

	Wet Test Meter: Time	Meter Reading	Temp.	P_m	Dry Gas Meter: Meter Reading	Temp. In	Temp. Out	P_m
End	0932	11.220 cf	72 °F	-4.90 "H_2O	830.189 cf	88 °F	79 °F	4.00 "H_2O
Start	0922	0.000 cf	72 °F	-4.90 "H_2O	819.106 cf	82 °F	78 °F	4.00 "H_2O
	10	11.220 cf	72 °F	-4.90 "H_2O	11.083 cf	82 °F		4.00 "H_2O

$$\text{Wet Test Meter } V_{m_{std}} = 17.65 \times 11.220 \left(\frac{29.82 + \frac{-4.900}{13.6}}{72 + 460} \right) \times \underset{(C_f)}{0.993} = 10.889 \text{ dscf}$$

$$\text{Dry Gas Meter } V_{m_{std}} = 17.65 \times 11.083 \left(\frac{29.82 + \frac{4.00}{13.6}}{82 + 460} \right) = 10.869 \text{ dscf}$$

$$C_{DG} = \frac{10.889}{10.869} = \boxed{1.002}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 11-2(20)

Date: 11/27/95

Calibrator: Robert Theuerkauf

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } V_{m_{std}}}{\text{Dry Gas Meter } V_{m_{std}}}$$

Run No.: 1 @ 2 4/min

P_b: 29.82 "Hg

Control Module Vacuum 570 "Hg

WET TEST METER (No. 2) DRY GAS METER

	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1019	2.142 cf	72 °F	-0.40 "H_2O	833.215 cf	90 °F	80 °F	0.01 "H_2O
Start	0946	0.000 cf	72 °F	-0.40 "H_2O	831.021 cf	82 °F	79 °F	0.01 "H_2O
	33	2.142 cf	72 °F	-0.40 "H_2O	2.194 cf	83 °F		0.01 "H_2O

$$\text{Wet Test Meter } V_{m_{std}} = 17.65 \times 2.142 \left(\frac{29.82 + \frac{-0.400}{13.6}}{72 + 460} \right) \times \underset{(C_f)}{0.993} = 2.102 \text{ dscf}$$

$$\text{Dry Gas Meter } V_{m_{std}} = 17.65 \times 2.194 \left(\frac{29.82 + \frac{0.010}{13.6}}{83 + 460} \right) = 2.127 \text{ dscf}$$

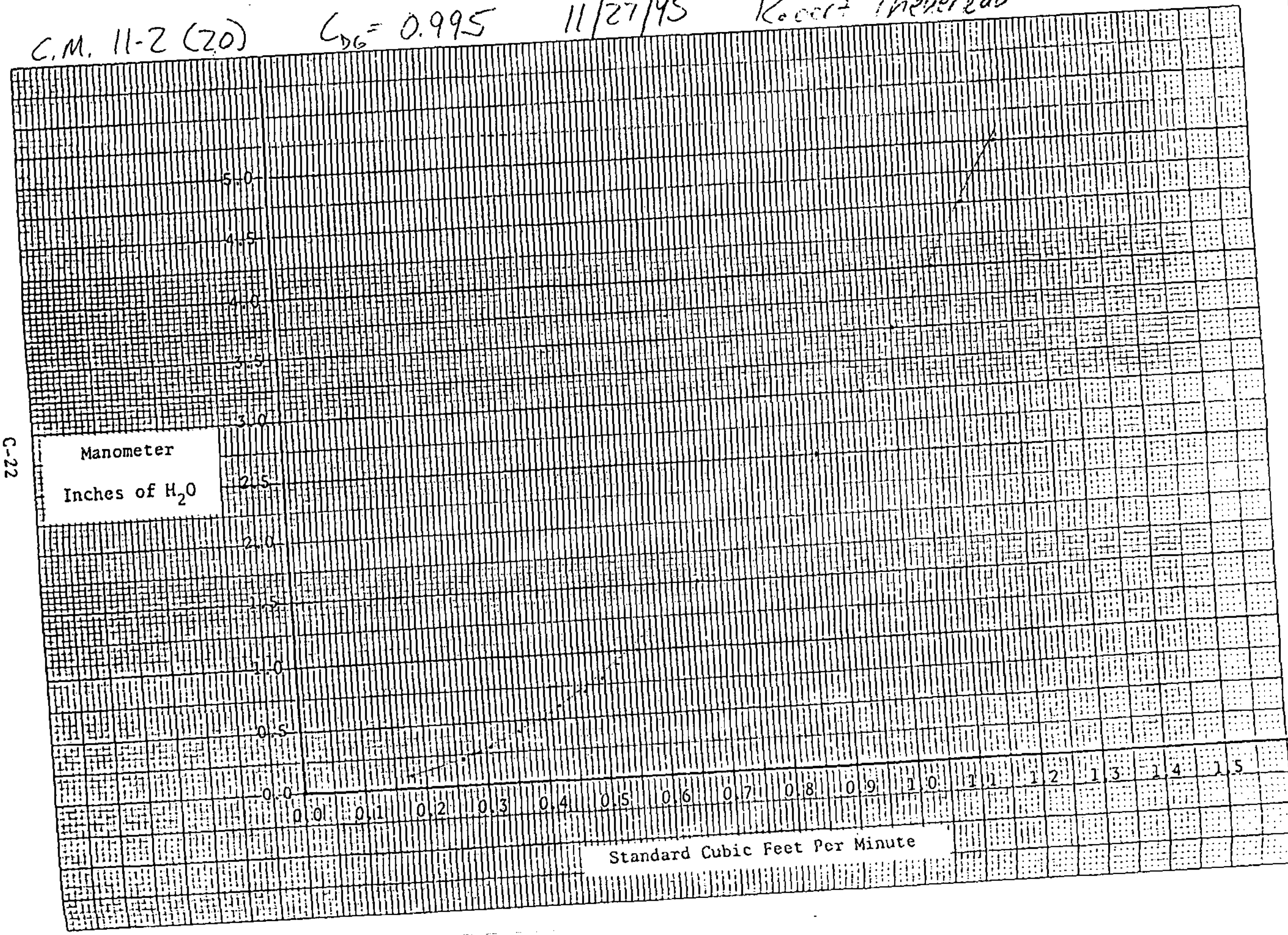
$$C_{DG} = \frac{2.102}{2.127} = \boxed{0.989}$$

K+E 10 X 10 TO ½ INCH 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.

46 1320

√58

C.M. 11-2 (20) C_{DG} = 0.995 11/27/95 Robert Theuerkauf



METCO ENVIRONMENTAL

JMG

DIGITAL TEMPERATURE INDICATOR NO. 11-2(20)

CALIBRATION DATA

Date: November 22, 1995

Media	Time	Mercury Thermometer (°F)	DTI (°F)
Ice Bath	1400	32	33
Ambient Air	0846	73	74
Boiling Water	0852	212	212
Oven	0914	250	251
Oven	0937	302	303
Oven	1006	351	351
Oven	1010	375	375

Meter Adjusted? Yes____ No ✓

Signature of Calibrator

METCO ENVIRONMENTAL

Dry Gas Meter Calibration

Dry Gas Meter Number 17-1

Date: 12/29/95

ΔH ("H_2O)	C_{DG}
0.5	0.976
1.0	0.978
1.5	0.982
2.0	0.982
3.0	0.983
4.0	0.983
Average	0.981

Variation: + 0.20 %

\- 0.51 %

Calibrator: Paul W. Smith

Checked by: Jesse Rocha

C_{DG} @ 2 liters/min. = 1.000

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 17-1 Calibrator: Paul Smith

Date: 12-28-95

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 0.50" H_2O

P_b: 29.69 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1414	5.227 cf	71 °F	-0.80 "H_2O
Start	1401	0.000 cf	71 °F	-0.80 "H_2O
Avg.	13	5.227 cf	71 °F	-0.80 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	454.788 cf	76 °F	75 °F	0.50 "H_2O
Start	449.447 cf	76 °F	75 °F	0.50 "H_2O
Avg.	5.341 cf	76	°F	0.50 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.227 \left[\frac{29.69 + \frac{-0.80}{13.6}}{71 + 460}\right] \times 0.991 \ (C_t) = 5.102 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.341 \left[\frac{29.69 + \frac{0.50}{13.6}}{76 + 460}\right] = 5.228 \text{ dcsf}$$

$$C_{DG} = \frac{5.102}{5.228} = \boxed{0.976}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 17-1

Date: 12-28-95

Calibrator: Paul Smith

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 1.00" H_2O

P_b: 29.69 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3) — Dry Gas Meter

	Wet Test Meter Time	Meter Reading	Temp.	P_m	Dry Gas Meter Meter Reading	Temp. In	Temp. Out	P_m
End	1216	5.050 cf	71 °F	-1.20 "H_2O	467.114 cf	77 °F	74 °F	1.00 "H_2O
Start	1207	0.000 cf	71 °F	-1.20 "H_2O	461.988 cf	75 °F	74 °F	1.00 "H_2O
Avg.	9	5.050 cf	71 °F	-1.20 "H_2O	5.126 cf	75 °F		1.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.050 \left[\frac{29.69 + \frac{-1.20}{13.6}}{71 + 460}\right] \times 0.991\ (C_t) = 4.924 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.126 \left[\frac{29.69 + \frac{1.00}{13.6}}{75 + 460}\right] = 5.033 \text{ dcsf}$$

$$C_{DG} = \frac{4.924}{5.033} = \boxed{0.978}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 17-1

Date: 12/28/95

Calibrator: Paul Smith

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 2.00" H_2O

P_b: 29.69 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3) | Dry Gas Meter

	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1302	10.123 cf	71 °F	-2.00 "H_2O	490.679 cf	80 °F	75 °F	2.00 "H_2O
Start	1249	0.000 cf	71 °F	-2.00 "H_2O	480.434 cf	80 °F	75 °F	2.00 "H_2O
Avg.	13	10.123 cf	71 °F	-2.00 "H_2O	10.245 cf	78 °F		2.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.123 \left[\frac{29.69 + \frac{-2.00}{13.6}}{71 + 460}\right] \times 0.991\,(C_t) = 9.851\text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.245 \left[\frac{29.69 + \frac{2.00}{13.6}}{78 + 460}\right] = 10.028\text{ dcsf}$$

$$C_{DG} = \frac{9.851}{10.028} = \boxed{0.982}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 17-1

Date: 12/28/95

Calibrator: Paul Smith

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 3.00" H_2O

P_b: 29.69 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1325	10.518 cf	71 °F	-3.70 "H_2O
Start	1314	0.000 cf	71 °F	-3.70 "H_2O
Avg.	11	10.518 cf	71 °F	-3.70 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	502.771 cf	85 °F	76 °F	3.00 "H_2O
Start	492.187 cf	80 °F	75 °F	3.00 "H_2O
Avg.	10.584 cf	79 °F		3.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.518 \left[\frac{29.69 + \frac{-3.70}{13.6}}{71 + 460}\right] \times 0.991\ (C_t) = 10.192 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.584 \left[\frac{29.69 + \frac{3.00}{13.6}}{79 + 460}\right] = 10.366 \text{ dcsf}$$

$$C_{DG} = \frac{10.192}{10.366} = \boxed{0.983}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 17-1 Calibrator: Paul Smith

Date: 12/29/95

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: @ 4.0" H2O

P_b: 29.66 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3) — Dry Gas Meter

	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1037	10.235 cf	72 °F	-3.80 "H_2O	573.751 cf	85 °F	77 °F	4.0 "H_2O
Start	1028	0.000 cf	72 °F	-3.80 "H_2O	563.502 cf	77 °F	76 °F	4.0 "H_2O
Avg.		10.235 cf	72 °F	-3.80 "H_2O	10.249 cf	79	°F	4.0 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.235 \left[\frac{29.66 + \frac{-3.80}{13.6}}{72 + 460}\right] \times 0.991\ (C_t) = 9.887 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.249 \left[\frac{29.66 + \frac{4.00}{13.6}}{79 + 460}\right] = 10.053 \text{ dcsf}$$

$$C_{DG} = \frac{9.887}{10.053} = \boxed{0.983}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 17-1 Calibrator: Paul Smith

Date: 12-29-95

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 2L/min. P_b: 29.66 "Hg

Control Module Vacuum: 1.0 "Hg

Wet Test Meter (No. 1) | **Dry Gas Meter**

	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1020	2.056 cf	72 °F	-1.20 "H_2O	562.802 cf	76 °F	76 °F	0.01 "H_2O
Start	0951	0.000 cf	72 °F	-1.20 "H_2O	560.730 cf	76 °F	76 °F	0.01 "H_2O
Avg.	29	2.056 cf	72 °F	-1.20 "H_2O	2.072 cf	76	°F	0.01 "H_2O

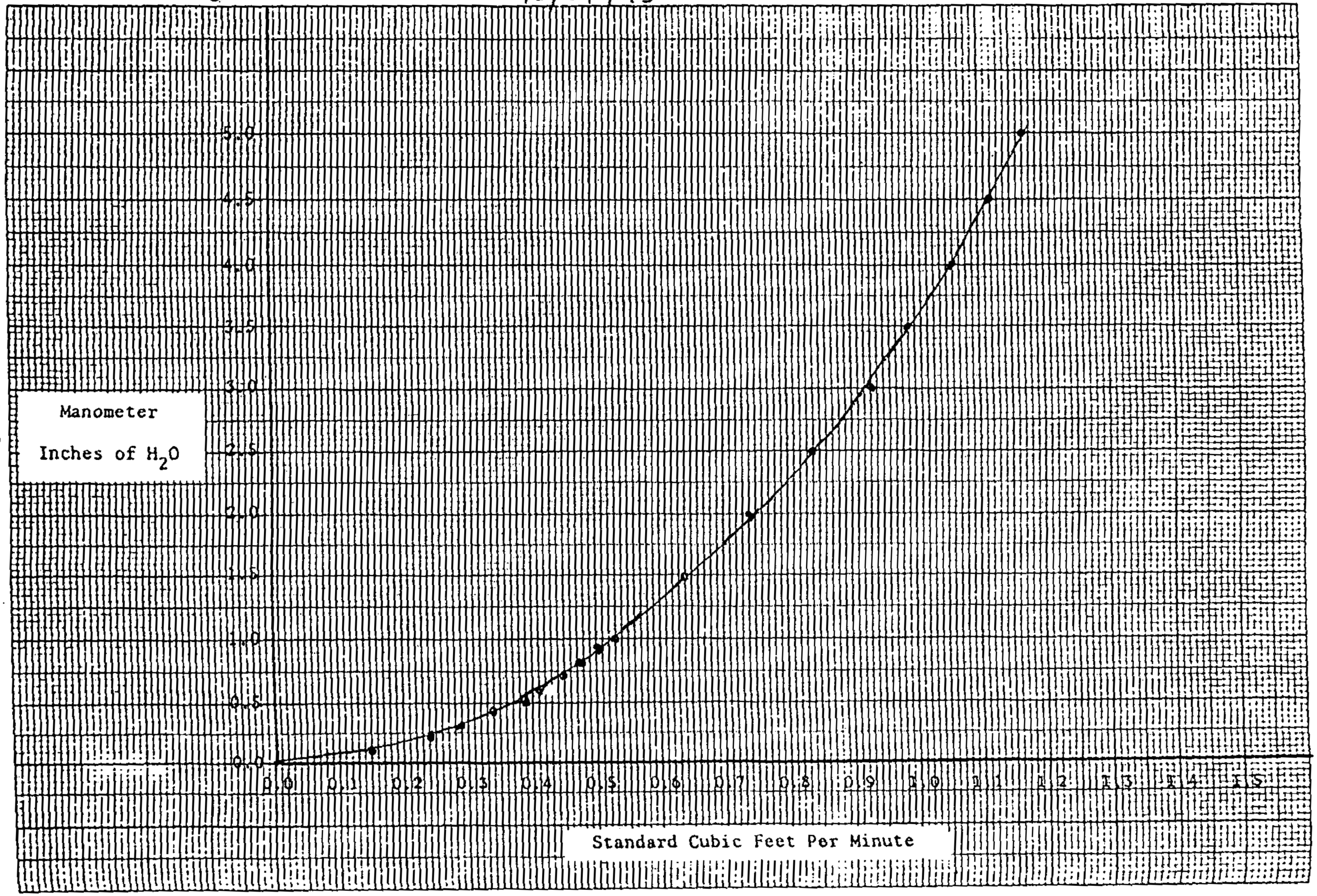
$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 2.056 \left[\frac{29.66 + \frac{-1.20}{13.6}}{72 + 460}\right] \times 1.003\ (C_t) = 2.023 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 2.072 \left[\frac{29.66 + \frac{0.01}{13.6}}{76 + 460}\right] = 2.024 \text{ dcsf}$$

$$C_{DG} = \frac{2.023}{2.024} = \boxed{1.000}$$

K•E 10 X 10 TO 1/2 INCH 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A. C_F: 0.981 46 1320

CM # 17-1 12/29/95 ✓ JR #102 Paul Smith



METCO ENVIRONMENTAL

DIGITAL TEMPERATURE INDICATOR NO. 17-1
CALIBRATION DATA

Date: 12-29-95

Media	Time	Mercury Temperature (°F)	DTI (°F)
Ambient Air	1324	74	74
Ice Bath	1051	32	34
Boiling Water	1101	212	214
Oven	1132	252	254
Oven	1142	300	299
Oven	1151	354	350
Oven	1159	376	375

Meter Adjusted? Yes ______ No ✓

Calibrator: Paul Smith

Checked By: ______

METCO ENVIRONMENTAL

Dry Gas Meter Calibration

Dry Gas Meter Number 172

Date: 12\27\95

ΔH ("H_2O)	C_{DG}
0.5	1.034
1.0	1.036
1.5	1.034
2.0	1.036
3.0	1.037
4.0	1.042
Average	1.037 ✓

Variation: + 0.48%
- 0.29%

Calibrator: John Lemberto

Checked by: Jesse Roche

C_{DG} @ 2 liters/min. = 0.987

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 17-2

Date: 12\27\95

Calibrator: John Pembert

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 0.50 in H2O

P_b: 29.61 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	13:42	5.495 cf	71 °F	-0.90 "H_2O
Start	13:30	0.00 cf	71 °F	-0.90 "H_2O
Avg.	0:12	5.495 cf	71 °F	-0.90 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	424.708 cf	81 °F	74 °F	0.50 "H_2O
Start	419.401 cf	79 °F	74 °F	0.50 "H_2O
Avg.	5.307 cf	77 °F		0.50 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.495 \left[\frac{29.61 + \frac{-0.900}{13.6}}{71 + 460}\right] \times 0.991\ (C_t) = 5.348 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.307 \left[\frac{29.61 + \frac{0.500}{13.6}}{77 + 460}\right] = 5.171 \text{ dcsf}$$

$$C_{DG} = \frac{5.348}{5.171} = \boxed{1.034}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 17-2 Calibrator: John Rembert

Date: 12\27\95

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 1.0 in H2O P_b: 29.61 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3) | Dry Gas Meter

	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	14:55	5.321 cf	72 °F	-1.30 "H_2O	448.284 cf	85 °F	76 °F	1.00 "H_2O
Start	14:46	0.00 cf	72 °F	-1.30 "H_2O	443.148 cf	82 °F	76 °F	1.00 "H_2O
Avg.	0:09	5.321 cf	72 °F	-1.30 "H_2O	5.136 cf	80 °F		1.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.321 \left[\frac{29.61 + \frac{-1.300}{13.6}}{72 + 460}\right] \times 0.991\ (C_t) = 5.163 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.136 \left[\frac{29.61 + \frac{1.000}{13.6}}{80 + 460}\right] = 4.983 \text{ dcsf}$$

$$C_{DG} = \frac{5.163}{4.983} = \boxed{1.036}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 17-3

Date: 12\27\95

Calibrator: John Lambert

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 1.5 in H_2O

P_b: 29.61 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	14:36	10.779 cf	72 °F	-1.90 "H_2O
Start	14:20	0.00 cf	72 °F	-1.90 "H_2O
Avg.	0:16	10.779 cf	72 °F	-1.90 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	442.276 cf	90 °F	76 °F	1.50 "H_2O
Start	431.879 cf	79 °F	75 °F	1.50 "H_2O
Avg.	10.397 cf	80 °F		1.50 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.779 \left[\frac{29.61 + \frac{-1.900}{13.6}}{72 + 460}\right] \times 0.991\ (C_t) = 10.444 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.397 \left[\frac{29.61 + \frac{1.500}{13.6}}{80 + 460}\right] = 10.100 \text{ dcsf}$$

$$C_{DG} = \frac{10.444}{10.100} = \boxed{1.034}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 17-2

Date: 12/27/95

Calibrator: John Lambert

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 2.0 in H_2O

P_b: 29.61 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)

Dry Gas Meter

	Wet Test Meter: Time	Wet Test Meter: Meter Reading	Wet Test Meter: Temp.	Wet Test Meter: P_m	Dry Gas Meter: Meter Reading	Dry Gas Meter: Temp. In	Dry Gas Meter: Temp. Out	Dry Gas Meter: P_m
End	15:14	10.540 cf	72 °F	-2.10 "H_2O	458,992 cf	95 °F	76 °F	2.00 "H_2O
Start	15:02	0.00 cf	72 °F	-2.00 "H_2O	448,819 cf	80 °F	76 °F	2.00 "H_2O
Avg.	0:12	10.540 cf	72 °F	-2.050 "H_2O	10,173 cf	82	°F	2.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.540 \left[\frac{29.61 + \frac{-2.050}{13.6}}{72 + 460}\right] \times 0.991 (C_f) = 10.209 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.173 \left[\frac{29.61 + \frac{2.000}{13.6}}{82 + 460}\right] = 9.858 \text{ dcsf}$$

$$C_{DG} = \frac{10.209}{9.858} = \boxed{1.036}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 17-2

Date: 12\27\95

Calibrator: John Lembrito

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 3.0 in H_2O

P_b: 29.61 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)

Dry Gas Meter

	Time	Wet Test Meter Reading	Temp.	P_m	Dry Gas Meter Reading	Temp. In	Temp. Out	P_m
End	15:59	10.968 cf	72 °F	-3.00 "H_2O	482.782 cf	98 °F	79 °F	3.0 "H_2O
Start	15:48	0.00 cf	72 °F	-3.00 "H_2O	472.199 cf	86 °F	78 °F	3.0 "H_2O
Avg.	0:11	10.968 cf	72 °F	-3.0 "H_2O	10.583 cf	85	°F	3.0 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.968 \left[\frac{29.61 + \frac{-3.00}{13.6}}{72 + 460}\right] \times 0.991\ (C_t) = 10.598 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.583 \left[\frac{29.61 + \frac{3.0}{13.6}}{85 + 460}\right] = 10.224 \text{ dcsf}$$

$$C_{DG} = \frac{10.598}{10.224} = \boxed{1.037}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 17-2

Date: 12\27\95

Calibrator: John Rembert

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 4.0 in H_2O

P_b: 29.61 "Hg

Control Module Vacuum: 5.2 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	16:17	11.501 cf	72 °F	-3.80 "H_2O
Start	16:09	00.00 cf	72 °F	-3.80 "H_2O
Avg.	0.08	11.501 cf	72 °F	-3.80 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	496.994 cf	103 °F	80 °F	4.0 "H_2O
Start	485.925 cf	93 °F	79 °F	4.0 "H_2O
Avg.	11.069 cf	89 °F		4.0 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 11.501 \left[\frac{29.61 + \frac{-3.80}{13.6}}{72 + 460}\right] \times 0.991\ (C_t) = 11.091 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 11.069 \left[\frac{29.61 + \frac{4.0}{13.6}}{89 + 460}\right] = 10.642 \text{ dcsf}$$

$$C_{DG} = \frac{11.091}{10.642} = \boxed{1.042}$$

METCO
ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 17-2

Date: 12\28\95

Calibrator: John [signature]

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 2L/min

P_b: 29.77 "Hg

Control Module Vacuum: 1 "Hg

Wet Test Meter (No. 1) | **Dry Gas Meter**

	Wet Test Meter: Time	Wet Test Meter: Meter Reading	Wet Test Meter: Temp.	Wet Test Meter: P_m	Dry Gas Meter: Meter Reading	Dry Gas Meter: Temp. In	Dry Gas Meter: Temp. Out	Dry Gas Meter: P_m
End	9:14	2.033 cf	73° °F	-1.30 "H_2O	501.328 cf	73 °F	73 °F	0.01 "H_2O
Start	8:42	0.00 cf	73° °F	-1.30 "H_2O	499.269 cf	72 °F	72 °F	0.01 "H_2O
Avg.	32	2.033 cf	73° °F	-1.30 "H_2O	2.059 cf	73° °F		0.01 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 2.033 \left[\frac{29.77 + \frac{-1.30}{13.6}}{73° + 460}\right] \times 1.003 \; (C_t) = 2.004 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 2.059 \left[\frac{29.77 + \frac{0.01}{13.6}}{73° + 460}\right] = 2.030 \text{ dcsf}$$

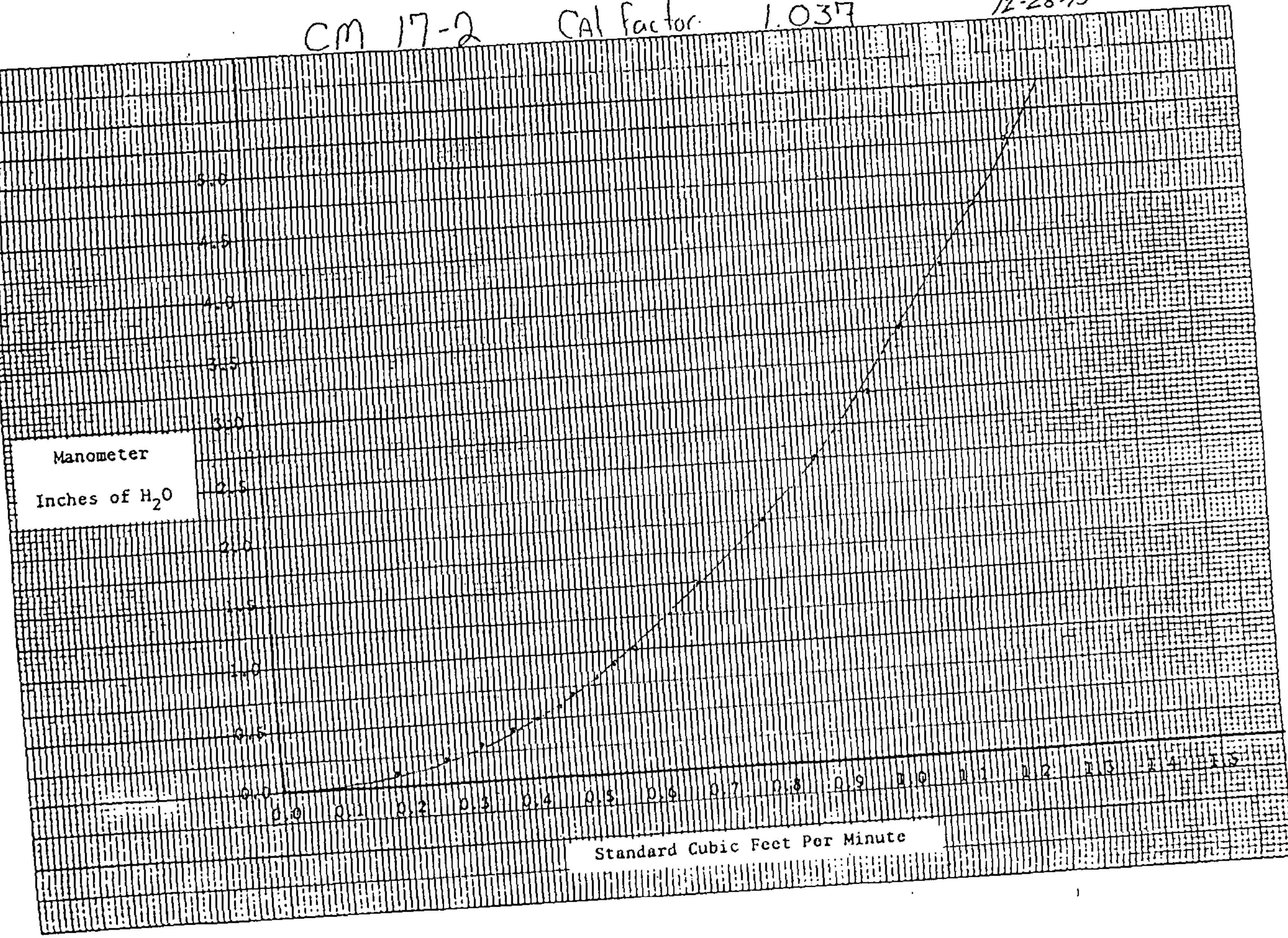
$$C_{DG} = \frac{2.004}{2.030} = \boxed{0.987}$$

K•Σ 10 X 10 TO ½ INCH 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.

46 1320 ✓TID 181 John [illegible]

12-28-95

CM 17-2 Cal factor 1.037



MEICO ENVIRONMENTAL

DIGITAL TEMPERATURE INDICATOR NO. 17-2

CALIBRATION DATA

Date: 12\27\95

Media	Time	Mercury Temperature (°F)	DTI (°F)
Ambient Air	1030	69°F	69°F
Ice Bath	1020	32°F	32°F
Boiling Water	1045	212°F	213°F
Oven	1155	250°F	252°F
Oven	1315	300°F	302°F
Oven	1415	374°F	376°F
Oven	1436	354°F	355°F

Meter Adjusted? Yes ______ No X

Calibrator: John Lambert

Checked By: Jesse Rock

Dry Gas Meter Calibration

Dry Gas Meter Number 18-1(26)

Date: January 3, 1996

ΔH ("H_2O)	C_{DG}
0.5	0.966
1.0	0.973
1.5	0.974
2.0	0.977
3.0	0.974
4.0	0.969
Average	0.972

Variation: + 0.51%
- 0.62%

Calibrator: Matt Lindquist

Checked by: Mark Glicer

C_{DG} @ 2 liters/min. = 0.958

METCO ENVIRONMENTAL

VMG

DRY GAS METER CALIBRATION

Meter Number: 18-1(26)

Date: January 3, 1996

Calibrator: Matt Lindquist #172

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } V_{m_{std}}}{\text{Dry Gas Meter } V_{m_{std}}}$$

Run No.: 1 @ 0.50" H_2O

P_b: 30.16 "Hg

Control Module Vacuum 5.0 "Hg

WET TEST METER (No. 2)　　　DRY GAS METER

	Wet Test Meter: Time	Wet Test Meter: Meter Reading	Wet Test Meter: Temp.	Wet Test Meter: P_m	Dry Gas Meter: Meter Reading	Dry Gas Meter: Temp. In	Dry Gas Meter: Temp. Out	Dry Gas Meter: P_m
End	0931	5.022 cf	68 °F	-1.20 "H_2O	704.499 cf	76 °F	72 °F	0.50 "H_2O
Start	0918	0.000 cf	68 °F	-1.25 "H_2O	699.312 cf	74 °F	71 °F	0.50 "H_2O
		5.022 cf	68 °F	-1.225 "H_2O	5.187 cf	73 °F		0.50 "H_2O

$$\text{Wet Test Meter } V_{m_{std}} = 17.65 \times 5.022 \left(\frac{30.16 + \frac{-1.225}{13.6}}{68 + 460} \right) \times \underset{(C_f)}{0.993} = 5.013 \text{ dscf}$$

$$\text{Dry Gas Meter } V_{m_{std}} = 17.65 \times 5.187 \left(\frac{30.16 + \frac{0.500}{13.6}}{73 + 460} \right) = 5.187 \text{ dscf}$$

$$C_{DG} = \frac{5.013}{5.187} = \boxed{0.966}$$

METCO ENVIRONMENTAL

JMG

DRY GAS METER CALIBRATION

Meter Number: 18-1(26)

Date: January 3, 1996

Calibrator: Matt Lindquist

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } V_{m_{std}}}{\text{Dry Gas Meter } V_{m_{std}}}$$

Run No.: 1 @ 1.00" H_2O

P_b: 30.16 "Hg

Control Module Vacuum 5.0 "Hg

WET TEST METER (No. 2) — DRY GAS METER

	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	0946	5.394 cf	68 °F	−1.80 "H_2O	710.585 cf	84 °F	73 °F	1.00 "H_2O
Start	0936	0.000 cf	68 °F	−1.80 "H_2O	705.023 cf	77 °F	72 °F	1.00 "H_2O
		5.394 cf	68 °F	−1.800 "H_2O	5.562 cf	77 °F		1.000 "H_2O

$$\text{Wet Test Meter } V_{m_{std}} = 17.65 \times 5.394 \left(\frac{30.16 + \frac{-1.800}{13.6}}{68 + 460} \right) \times \underset{(C_f)}{0.993} = 5.376 \text{ dscf}$$

$$\text{Dry Gas Meter } V_{m_{std}} = 17.65 \times 5.562 \left(\frac{30.16 + \frac{1.000}{13.6}}{77 + 460} \right) = 5.527 \text{ dscf}$$

$$C_{DG} = \frac{5.376}{5.527} = \boxed{0.973}$$

METCO ENVIRONMENTAL

JMG

DRY GAS METER CALIBRATION

Meter Number: 18-1(26)

Calibrator: Matt Lindquist

Date: January 3, 1996

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } V_{m_{std}}}{\text{Dry Gas Meter } V_{m_{std}}}$$

Run No.: 1 @ 1.50" H_2O

P_b: 30.15 "Hg

Control Module Vacuum 5.0 "Hg

WET TEST METER (No. 2) DRY GAS METER

	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1014	10.335 cf	69 °F	-2.15 "H_2O	721.627 cf	85 °F	75 °F	1.50 "H_2O
Start	0958	0.000 cf	69 °F	-2.15 "H_2O	711.009 cf	79 °F	74 °F	1.50 "H_2O
		10.335 cf	69 °F	-2.150 "H_2O	10.618 cf	78 °F		1.500 "H_2O

$$\text{Wet Test Meter } V_{m_{std}} = 17.65 \times 10.335 \left(\frac{30.15 + \frac{-2.150}{13.6}}{69 + 460} \right) \times \underset{(C_f)}{0.993} = 10.270 \text{ dscf}$$

$$\text{Dry Gas Meter } V_{m_{std}} = 17.65 \times 10.618 \left(\frac{30.15 + \frac{1.500}{13.6}}{78 + 460} \right) = 10.541 \text{ dscf}$$

$$C_{DG} = \frac{10.270}{10.541} = \boxed{0.974}$$

METCO ENVIRONMENTAL

JMG

DRY GAS METER CALIBRATION

Meter Number: 18-1(26)

Date: January 3, 1996

Calibrator: Matt Lindquist

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } V_{m_{std}}}{\text{Dry Gas Meter } V_{m_{std}}}$$

Run No.: 1 @ 2.00" H_2O

P_b: 30.15 "Hg

Control Module Vacuum 5.0 "Hg

WET TEST METER (No. 2) | DRY GAS METER

	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1032	10.469 cf	69 °F	-2.55 "H_2O	733.159 cf	89 °F	76 °F	2.00 "H_2O
Start	1018	0.000 cf	69 °F	-2.55 "H_2O	722.398 cf	83 °F	75 °F	2.00 "H_2O
		10.469 cf	69 °F	-2.550 "H_2O	10.761 cf	81 °F		2.00 "H_2O

$$\text{Wet Test Meter } V_{m_{std}} = 17.65 \times 10.469 \left(\frac{30.15 + \frac{-2.550}{13.6}}{69 + 460} \right) \times \underset{(C_f)}{0.993} = 10.393 \text{ dscf}$$

$$\text{Dry Gas Meter } V_{m_{std}} = 17.65 \times 10.761 \left(\frac{30.15 + \frac{2.000}{13.6}}{81 + 460} \right) = 10.637 \text{ dscf}$$

$$C_{DG} = \frac{10.393}{10.637} = \boxed{0.977}$$

METCO ENVIRONMENTAL

JMG

DRY GAS METER CALIBRATION

Meter Number: 18-1 (26)

Calibrator: Matt Lindquist

Date: January 3, 1996

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } V_{m_{std}}}{\text{Dry Gas Meter } V_{m_{std}}}$$

Run No.: 1 @ 3.00" H_2O

P_b: 30.15 "Hg

Control Module Vacuum 5.0 "Hg

WET TEST METER (No. 2) DRY GAS METER

	Wet Test Meter: Time	Meter Reading	Temp.	P_m	Dry Gas Meter: Meter Reading	Temp. In	Temp. Out	P_m
End	1058	10.141 cf	69 °F	-3.35 "H_2O	751.709 cf	88 °F	78 °F	3.00 "H_2O
Start	1047	0.000 cf	69 °F	-3.35 "H_2O	741.262 cf	87 °F	77 °F	3.00 "H_2O
		10.141 cf	69 °F	-3.350 "H_2O	10.447 cf	83 °F		3.000 "H_2O

$$\text{Wet Test Meter } V_{m_{std}} = 17.65 \times 10.141 \left(\frac{30.15 + \frac{-3.350}{13.6}}{69 + 460} \right) \times \underset{(C_f)}{0.993} = 10.047 \text{ dscf}$$

$$\text{Dry Gas Meter } V_{m_{std}} = 17.65 \times 10.447 \left(\frac{30.15 + \frac{3.000}{13.6}}{83 + 460} \right) = 10.313 \text{ dscf}$$

$$C_{DG} = \frac{10.047}{10.313} = \boxed{0.974}$$

METCO ENVIRONMENTAL

VMG

DRY GAS METER CALIBRATION

Meter Number: 18-1 (26)

Date: January 3, 1996

Calibrator: Matt Lindquist

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } V_{m_{std}}}{\text{Dry Gas Meter } V_{m_{std}}}$$

Run No.: 1 @ 4.00" H_2O

P_b: 30.15 "Hg

Control Module Vacuum 5.0 "Hg

WET TEST METER (No. 2) — DRY GAS METER

	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1113	10.585 cf	69 °F	-4.25 "H_2O	764.351 cf	87 °F	78 °F	4.00 "H_2O
Start	1103	0.000 cf	69 °F	-4.30 "H_2O	753.464 cf	85 °F	78 °F	4.00 "H_2O
		10.585 cf	69 °F	-4.275 "H_2O	10.887 cf	82 °F		4.000 "H_2O

$$\text{Wet Test Meter } V_{m_{std}} = 17.65 \times 10.585 \left(\frac{30.15 + \frac{-4.275}{13.6}}{69 + 460} \right) \times \underset{(C_f)}{0.993} = 10.463 \text{ dscf}$$

$$\text{Dry Gas Meter } V_{m_{std}} = 17.65 \times 10.887 \left(\frac{30.15 + \frac{4.000}{13.6}}{82 + 460} \right) = 10.793 \text{ dscf}$$

$$C_{DG} = \frac{10.463}{10.793} = \boxed{0.969}$$

METCO ENVIRONMENTAL

JMG

DRY GAS METER CALIBRATION

Meter Number: 18-1(26)

Date: January 3, 1996

Calibrator: Matt Lindquist

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } V_{m_{std}}}{\text{Dry Gas Meter } V_{m_{std}}}$$

Run No.: 1 @ 2 liters/min.

P_b: 30.15 "Hg

Control Module Vacuum 5.0 "Hg

WET TEST METER (No. 2) — DRY GAS METER

	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1158	2.050 cf	69 °F	-0.35 "H_2O	767.243 cf	82 °F	79 °F	0.01 "H_2O
Start	1128	0.000 cf	69 °F	-0.35 "H_2O	765.075 cf	81 °F	78 °F	0.01 "H_2O
		2.050 cf	69 °F	-0.350 "H_2O	2.168 cf	80 °F		0.01 "H_2O

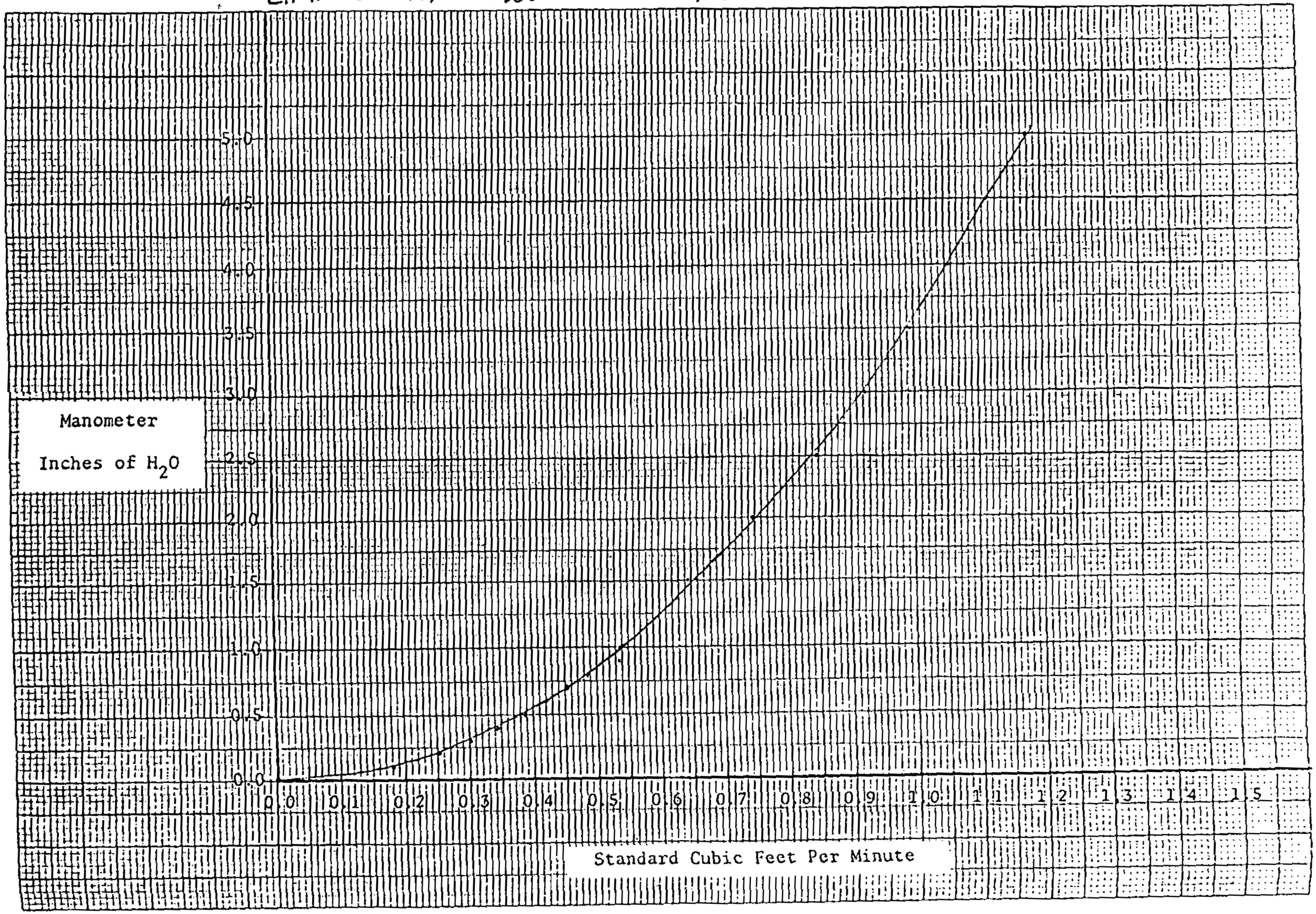
$$\text{Wet Test Meter } V_{m_{std}} = 17.65 \times 2.050 \left(\frac{30.15 + \frac{-0.350}{13.6}}{69 + 460} \right) \times \underset{(C_f)}{0.993} = 2.046 \text{ dscf}$$

$$\text{Dry Gas Meter } V_{m_{std}} = 17.65 \times 2.168 \left(\frac{30.15 + \frac{0.010}{13.6}}{80 + 460} \right) = 2.137 \text{ dscf}$$

$$C_{DG} = \frac{2.046}{2.137} = \boxed{0.958}$$

46 1320

C.M. 18-1(26) C_{26}: 0.972 1/3/96 MATT LINDQUIST



METCO ENVIRONMENTAL

JMG

DIGITAL TEMPERATURE INDICATOR NO. 18-1(26)

CALIBRATION DATA

Date: January 3, 1996

Media	Time	Mercury Thermometer (°F)	DTI (°F)
Ice Bath	0915	32	32 ✓
Ambient Air	0925	76	75 ✓
Boiling Water	0938	212	212 ✓
Oven	1053	250	252 ✓
Oven	1110	300	300 ✓
Oven	1130	350	350 ✓
Oven	1145	375	375 ✓

Meter Adjusted? Yes_____ No ✓

Matt Colquist
Signature of Calibrator

METCO ENVIRONMENTAL

MG54

BAROMETER CALIBRATION

Barometer No. 11-2

Date: November 21, 1995

Time: 1340

Barometric Pressure @ Hobby Airport @ 45 ft.	=	30.240 ✓
	-	0.045 ✓
Absolute Pressure @ Hobby Airport	=	30.195 ✓
	+	0.018 ✓
Absolute Pressure @ METCO @ 27 ft.	=	30.213 ✓
Barometer Reading	=	30.140 ✓
Variation	=	0.073 ✓

Barometer Adjusted? Yes ✓ No ____

Matt [signature] #172

Signature of Calibrator

METCO ENVIRONMENTAL

BAROMETER CALIBRATION

Barometer No. 172

Date: 1-12-96

Time: 0900

Barometric Pressure @ Addison Field @ 719 ft.	=	30.230
	-	0.719
Absolute Pressure at Addison Field	=	29.511
	+	0.083
Absolute Pressure @ METCO @ 636 ft.	=	$\boxed{29.594}$
Barometer Reading	=	29.580
Variation	=	-0.014

Barometer Adjusted? Yes ✓ No ____

#137

Signature of Calibrator

METCO ENVIRONMENTAL

jp #47 ✓

Personnel Pump Calibration

Calibrator: Jesse Rosler

Personnel Pump Number: 1105

Date: 8/10/95

P_b "Hg: 29.32

Mid-Ball Flow Meter Setting	Time (min.)	P_mWTM ("H_2O)	T_mWTM (°F)	V_mWTM (cf)	Flow Rate* (l/min.)
2.0	—	—	—	—	0.735
4.0	—	—	—	—	1.461
5.0	—	—	—	—	1.872
6.0	—	—	—	—	2.271
7.0	—	—	—	—	2.713

$$\text{Flow Rate* (l/min.)} = 17.95\,(V_m\text{WTM})\left[\frac{P_b + \frac{P_m\text{WTM}}{13.6}}{T_m\text{WTM} + 460}\right](C_f\text{WTM})\ \frac{28.317\ \text{l/cf}}{\text{Time (min.)}}$$

Flow Rate*		Flow Meter Setting
2 l/min.	=	5.25

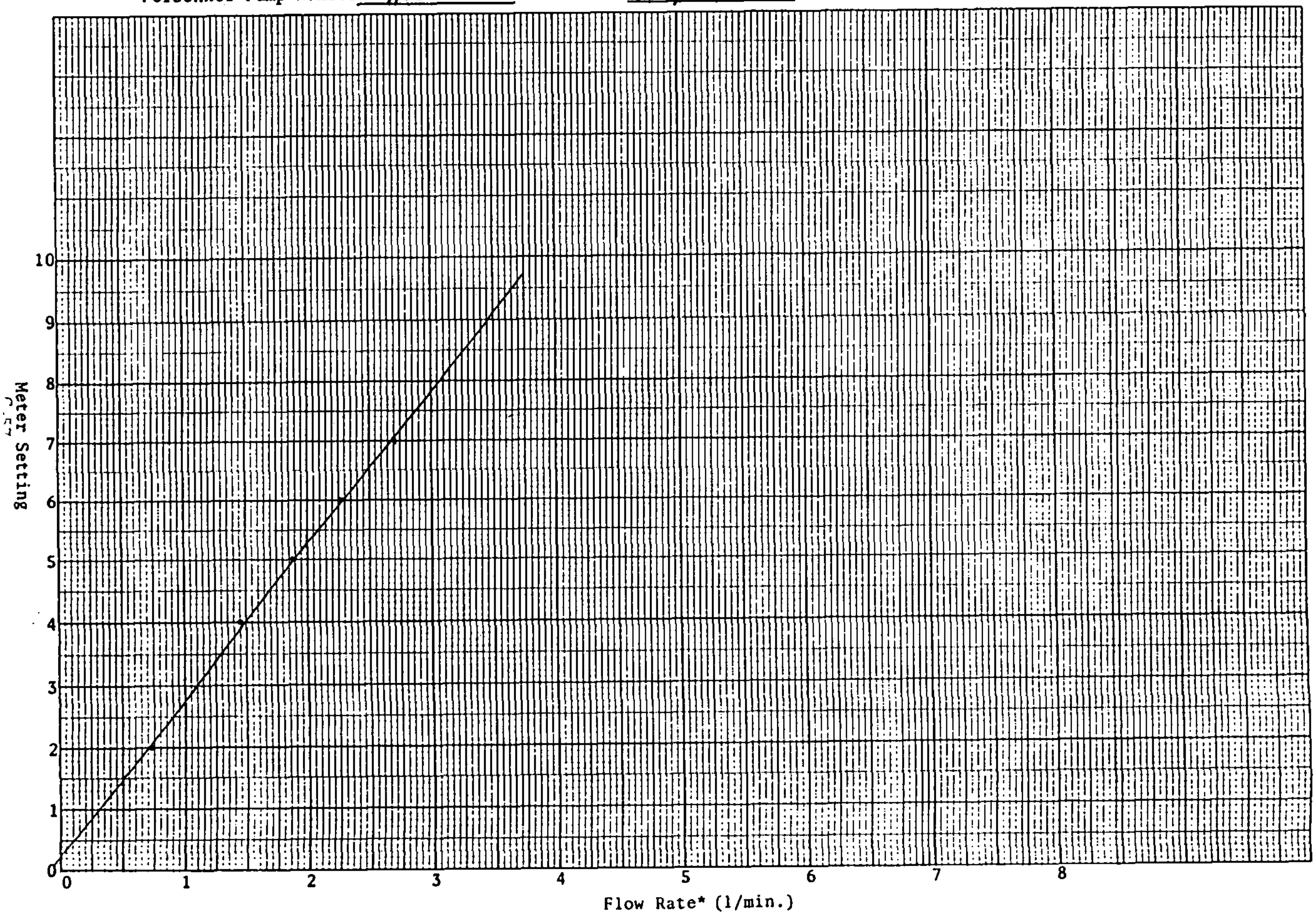
* 29.92 "Hg, 77°F (760 mm Hg, 25°C)

Calibrated w/ Gilibrator Gilian Inst. Corp.
SN 3784-P

K•E 20 X 20 TO THE INCH • 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.

46 1240

Personnel Pump Number 1105 Date: 8/10/95 Calibrator: [illegible]



LIBRATOR VERSION 3.0 DATE 8/10/95
JMP S/N.. .... ID 1105...........

FLOW	AVERAGE	# SAMPLES
733.6	733.6	01
737.9	735.8	02
733.1	734.9	03

ILIBRATOR VERSION 3.0 DATE.........
UMP S/N...........ID...............

FLOW	AVERAGE	# SAMPLES
1461	1461	01
1461	1461	02
1462	1461	03

ILIBRATOR VERSION 3.0 DATE.........
UMP S/N...........ID...............

FLOW	AVERAGE	# SAMPLES
1873	1873	01
1866	1869	02
1864	1872	04

GILIBRATOR VERSION 3.0 DATE.........
PUMP S/N...........ID..............

FLOW	AVERAGE	# SAMPLES
2268	2268	01
2267	2268	02
2273	2271	04

GILIBRATOR VERSION 3.0 DATE.........
PUMP S/N...........ID..............

FLOW	AVERAGE	# SAMPLES
2715	2715	01

Scott Specialty Gases, Inc.

2600 CAJON BOULEVARD, SAN BERNARDINO, CA 92411 (909) 887-2571 FAX: (909) 887-0549

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer	Assay Laboratory		
METRO ENVIRONMENTAL	Scott Specialty Gases	Purchase Order	3384
PO BOX 598	2600 Cajon Boulevard	*Project #*	39098.01C
ADDISON, TX 75001	San Bernardino, CA 92411		

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September 1993.

Cylinder Number	BAL1808	Certification Date	06/26/95	Exp. Date	06/26/97
Cylinder Pressure+	1925 PSIG				

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
(NITRIC OXIDE)	20.10 PPM	±1% NIST TRACEABLE
TOTAL OXIDES OF NITROGEN	20.31 PPM	REFERENCE VALUE ONLY
(Nitrogen)	Balance Gas	

+Do not use when cylinder pressure is below 150 psig.

*Analytical uncertainty is inclusive of usual known error sources which at least includes reference standard error & precision of the measurement processes.

REFERENCE STANDARD

Type/SRM Sample No.	Expiration Date	Cylinder Number	Concentration
NTRM 2629	11/21/96	ALM008353	19.86 PPM NO/N2

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
FTIR/8220A/AAB9400261	06/08/95	INFRARED SPECTRA LINEAR CURVE

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
NITRIC OXIDE	Date: 06/19/95 Response Units: mv Z1= 0.00 R1= 19.86 T1= 20.09 R2= 19.84 Z2= 0.00 T2= 20.22 Z3= 0.00 T3= 20.22 R3= 19.83 Avg. Conc. of Cust Cyl. 20.18 PPM	Date:06/26/95 Response Units: mv Z1= 0.01 R1= 19.86 T1= 19.99 R2= 19.86 Z2= 0.00 T2= 20.03 Z3= 0.00 T3= 20.03 R3= 19.90 Avg. Conc. of Cust Cyl. 20.02 PPM	Concentration= $Ax^4+Bx^3+Cx^2+Dx+E$ A =-8.411 B =7.127 C =-2.604 D =3.272 E =-1.254
	Date: Response Units: mv Z1= R1= T1= R2= Z2= T2= Z3= T3= R3= Avg. Conc. of Cust Cyl.	Date: Response Units: mv Z1= R1= T1= R2= Z2= T2= Z3= T3= R3= Avg. Conc. of Cust Cyl.	Concentration=
	Date: Response Units:mv Z1= R1= T1= R2= Z2= T2= Z3= T3= R3= Avg. Conc. of Cust Cyl.	Date: Response Units:mv Z1= R1= T1= R2= Z2= T2= Z3= T3= R3= Avg. Conc. of Cust Cyl.	Concentration=

Analyst: Diana Hardin

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer	Assay Laboratory	
METCO ENVIRONMENTAL	Scott Specialty Gases, Inc	**Purchase Order :** 2972
16115 DOOLEY ROAD	1290 Combermere	**Scott Project # :** 569139
DALLAS, TX 75244	Troy, MI 48083	

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : BAL3110 **Certificate Date :** 8/9/94 **Expiration Date :** 8/9/96

Cylinder Pressure + : 1900 psig **Previous Certificate Date :** None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Nitric Oxide	**46.20 ppm**	**±1% NIST Directly Traceable**
Total Oxides of Nitrogen	**46.50 ppm**	**Reference Value Only**

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.

*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
NTRM 1684	4/1/96	ALM-024582	95.2 ppm Nitric Oxide in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
NO : Horiba/OPE-235/483814	7/15/94	Chemiluminesence

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: Nitric Oxide

First Triad Analysis

Date: 8/2/94	Response Units: mv	
Z1=0.00	R1=95.20	T1=46.10
R2=95.20	Z2=0.00	T2=46.10
Z3=0.00	T3=46.10	R3=95.20
Avg. Conc. of Cust. Cyl. 46.10 ppm		

Second Triad Analysis

Date: 8/9/94	Response Units: mv	
Z1=0.00	R1=95.20	T1=46.30
R2=95.20	Z2=0.00	T2=46.30
Z3=0.00	T3=46.30	R3=95.20
Avg. Conc. of Cust. Cyt 46.30 ppm		

Calibration Curve

Concentration=A+Bx+Cx^2+Dx^3+Ex^4	
r=0.99999	NTRM 1684
Constants:	A=0.000000000
B=1.000000000	C=0.000000000
D=0.000000000	E=0.000000000

Special Notes

Don Eichler Jr

Analyst

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer	Assay Laboratory	
METCO ENVIRONMENTAL	Scott Specialty Gases, Inc	**Purchase Order :** 3254
ATTN : SCOTT JACKSON	1290 Combermere	**Scott Project # :** 578278
PO BOX 598	Troy, MI 48083	
ADDISON, TX 75001		

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : BLM003059 **Certificate Date :** 3/17/95 **Expiration Date :** 3/17/97
Cylinder Pressure + : 1900 psig **Previous Certificate Date :** None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Nitric Oxide	46.22 ppm	±1% NIST Directly Traceable
Total Oxides of Nitrogen	46.60 ppm	Reference Value Only

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
NTRM 1684	4/1/96	ALM-024582	95.2 ppm Nitric Oxide in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
NO : Horiba/OPE-235/483814	3/10/95	Chemiluminescence

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: Nitric Oxide

First Triad Analysis

Date: 3/10/95	Response Units: mv	
Z1=0.00	R1=95.20	T1=46.20
R2=95.20	Z2=0.00	T2=46.20
Z3=0.00	T3=46.20	R3=95.20
Avg. Conc. of Cust. Cyl. 46.20 ppm		

Second Triad Analysis

Date: 3/17/95	Response Units: mv	
Z1=0.00	R1=95.20	T1=46.20
R2=95.20	Z2=0.00	T2=46.30
Z3=0.00	T3=46.20	R3=95.20
Avg. Conc. of Cust. Cyl. 46.23 ppm		

Calibration Curve

Concentration=A+Bx+Cx^2+Dx^3+Ex^4	
r=0.99999	NTRM 1684
Constants:	A=0.000000000
B=1.000000000	C=0.000000000
D=0.000000000	E=0.000000000

Special Notes
ITEM #810

Mail

Rohit Patel
Analyst

MSP/P-1

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer	Assay Laboratory	
METCO ENVIRONMENTAL	Scott Specialty Gases, Inc	Purchase Order : 2880
16115 DOOLEY ROAD	1290 Combermere	Scott Project # : 566456
DALLAS, TX 75244	Troy, MI 48083	

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : BLM003007 **Certificate Date :** 6/17/94 **Expiration Date :** 6/17/96

Cylinder Pressure + : 1900 psig **Previous Certificate Date :** None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Nitric Oxide	**50.00 ppm**	**±1% NIST Directly Traceable**
Total Oxides of Nitrogen	**50.10 ppm**	**Reference Value Only**

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
NTRM 1684	4/1/96	ALM-024582	95.2 ppm Nitric Oxide in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
NO : Horiba/OPE-235/483814	*6/27/94*	*Chemiluminesence*

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: Nitric Oxide

First Triad Analysis

Date: 6/6/94	Response Units: mv	
Z1=0.00	R1=95.20	T1=50.00
R2=95.20	Z2=0.00	T2=50.00
Z3=0.00	T3=50.00	R3=95.20
Avg. Conc. of Cust. Cyl. 50.00 ppm		

Second Triad Analysis

Date: 6/17/94	Response Units: mv	
Z1=0.00	R1=95.20	T1=50.00
R2=95.20	Z2=0.00	T2=50.00
Z3=0.00	T3=50.00	R3=95.20
Avg. Conc. of Cust. Cyl: 50.00 ppm		

Calibration Curve

Concentration=A+Bx+Cx^2+Dx^3+Ex^4	
r=0.99999	NTRM 1684
Constants:	A=0.000000000
B=1.000000000	C=0.000000000
D=0.000000000	E=0.000000000

Special Notes

Rhonda Lundy

Analyst Rhonda Lundy

Scott Specialty Gases, Inc.

2600 CAJON BOULEVARD, SAN BERNARDINO, CA 92411 (909) 887-2571 FAX: (909) 887-0549

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer	Assay Laboratory		
METCO ENVIRONMENTAL	Scott Specialty Gases	Purchase Order	1988 LARRY-(43944)
C/O SCOTT SPECIALTY GASES	2600 Cajon Boulevard	Project #	39101.001
3714 LAPAS DR.	San Bernardino, CA 92411		
HOUSTON, TX 77023			

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards: Procedure G1; September 1993.

Cylinder Number	BLM002636	Certification Date	06/30/95	Exp. Date	06/30/97
Cylinder Pressure+	2000 PSIG				

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
NITRIC OXIDE	84.61 PPM	±1% NIST TRACEABLE
TOTAL OXIDES OF NITROGEN	85.49 PPM	REFERENCE VALUE ONLY
(Nitrogen)	Balance Gas	

+Do not use when cylinder pressure is below 150 psig.

*Analytical uncertainty is inclusive of usual known error sources which at least include reference standard error & precision of the measurement processes.

REFERENCE STANDARD

Type/SRM Sample No.	Expiration Date	Cylinder Number	Concentration
SRM/1684B	06/99	CLM008433	96.8 PPM NO/N2

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
TECO / 10AR / 14853-150	06/09/95	Chemi-Luminescent

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: NITRIC OXIDE

First Triad Analysis

Date 06/23/95

Z1= 0.00	R1= 92.5	T1= 80.7
R2= 92.5	Z2= 0.00	T2= 80.7
Z3= 0.00	T3= 80.7	R3= 92.6
Avg. Conc. of Cust Cyl.		84.54 PPM

Second Triad Analysis

Date: 06/30/95 Response Units: mv

Z1= 0.00	R1= 92.5	T1= 80.8
R2= 92.5	Z2= 0.00	T2= 80.9
Z3= 0.00	T3= 80.8	R3= 92.5
Avg. Conc. of Cust Cyl.		84.68 PPM

Calibration Curve

Concentration= Ax + B
A = 1.047
B = 0.008968

Date: Response Units: mv

Z1=	R1=	T1=
R2=	Z2=	T2=
Z3=	T3=	R3=
Avg. Conc. of Cust Cyl.		

Date: Response Units: mv

Z1=	R1=	T1=
R2=	Z2=	T2=
Z3=	T3=	R3=
Avg. Conc. of Cust Cyl.		

Concentration=

Date: Response Units: mv

Z1=	R1=	T1=
R2=	Z2=	T2=
Z3=	T3=	R3=
Avg. Conc. of Cust Cyl.		

Date: Response Units: mv

Z1=	R1=	T1=
R2=	Z2=	T2=
Z3=	T3=	R3=
Avg. Conc. of Cust Cyl.		

Concentration=

Special Notes:

Analyst: Diana Hardin

TOTAL P.02

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer	Assay Laboratory	
METCO ENVIRONMENTAL	Scott Specialty Gases, Inc	**Purchase Order :** 3067
Attn : Jim Monfries	1290 Combermere	**Scott Project # :** 572186
16115 Dooley Road	Troy, MI 48083	
Dallas, TX 75244		

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : ALM038783 ***Certificate Date :*** 10/26/94 **Expiration Date :** 10/26/96

Cylinder Pressure + : 1900 psig **Previous Certificate Date :** None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Nitric Oxide	85.40 ppm	±1% NIST Directly Traceable
Total Oxides of Nitrogen	86.10 ppm	Reference Value Only

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
NTRM 1684	4/1/96	ALM-024582	95.2 ppm Nitric Oxide in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
NO : Horiba/OPE-235/483814	*10/25/94*	*Chemiluminescence*

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: Nitric Oxide

First Triad Analysis

Date: 10/19/94	Response Units: mv	
Z1=0.00	R1=95.20	T1=85.50
R2=95.20	Z2=0.00	T2=85.10
Z3=0.00	T3=85.00	R3=95.20
Avg. Conc. of Cust. Cyl. 85.20 ppm		

Second Triad Analysis

Date: 10/26/94	Response Units: mv	
Z1=0.00	R1=95.20	T1=85.60
R2=95.20	Z2=0.00	T2=85.60
Z3=0.00	T3=85.60	R3=95.20
Avg. Conc. of Cust. Cyt 85.60 ppm		

Calibration Curve

Concentration=$A+Bx+Cx^2+Dx^3+Ex^4$	
r=0.99999	NTRM 1684
Constants:	A=0.000000000
B=1.000000000	C=0.000000000
D=0.000000000	E=0.000000000

Special Notes

Customer

Analyst

MISP/P-1

Scott Specialty Gases, Inc.

2600 CAJON BOULEVARD, SAN BERNARDINO, CA 92411 (909) 887-2571 FAX: (909) 887-0549

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
SCOTT/METCO
****INVENTORY****
3714 LAPAS DRIVE
HOUSTON, TX 77023

PROJECT # 40851.002
P.O. # 1613-LARRY

Assay Laboratory
Scott Specialty Gases
2600 Cajon Boulevard
San Bernardino, CA 92411

ANALYTICAL INFORMATION

This Certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September 1993.

Cylinder Number BAL4137 Certification Date 09/12/95 Exp. Date 09/12/97
Cylinder Pressure 2000 PSIG

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
(NITRIC OXIDE)	86.13 PPM	±1% NIST TRACEABLE
TOTAL OXIDES OF NITROGEN	87.26 PPM	REFERENCE VALUE ONLY
(Nitrogen)	Balance Gas	

Do not use when cylinder pressure is below 150 psig.
*Analytical uncertainty is inclusive of usual known error sources which at least includes reference standard error & precision of the measurement processes.

REFERENCE STANDARD

Type/SRM Sample No.	Expiration Date	Cylinder Number	Concentration
NTRM 1684	06/07/97	ALM047610	94.4 PPM NO/N2

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
TECO/42C/52245/291	08/16/95	CHEMI-LUMINESCENT

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
NITRIC OXIDE	Date: 09/05/95 Response Units: mv Z1= 85.652 R1= 111855 T1= 102434 R2= 111758 Z2= 91.3 T2= 102390 Z3= 116.4 T3= 102478 R3= 11840 Avg. Conc. of Cust Cyl. 86.44 PPM	Date: 09/12/95 Response Units: mv Z1= 54.8 R1= 111567 T1= 101594 R2= 111626 Z2= 97.4 T2= 101543 Z3= 77.6 T3= 101947 R3= 111767 Avg. Conc. of Cust Cyl. 85.82 PPM	Concentration= Ax + B A =0.0005438J B =-0.005575
	Date: Response Units: mv Z1= R1= T1= R2= Z2= T2= Z3= T3= R3= Avg. Conc. of Cust Cyl.	Date: Response Units: mv Z1= R1= T1= R2= Z2= T2= Z3= T3= R3= Avg. Conc. of Cust Cyl.	Concentration=
	Date: Response Units: mv Z1= R1= T1= R2= Z2= T2= Z3= T3= R3= Avg. Conc. of Cust Cyl.	Date: Response Units: mv Z1= R1= T1= R2= Z2= T2= Z3= T3= R3= Avg. Conc. of Cust Cyl.	Concentration=

Special Notes: ITEM #815

Analyst: Diana Harding

Scott Specialty Gases

PO #3338

500 WEAVER PARK ROAD, LONGMONT, CO 80501 (303) 442-4700, (303) 651-3094 FAX: (303) 772-7673

CERTIFICATE OF ANALYSIS: EPA Protocol Gas

Customer
METCO ENVIRONMENTAL
C/O SCOTT SPECIALTY GASES
3714 LAPAS DR
HOUSTON TX 77023-4744

Assay Laboratory
Scott Specialty Gases, Inc.
500 Weaver Park Road
Longmont, CO 80501

Purchase Order	3338
Scott Project #	0819082
CGA Fitting	350
QC Number	15129506
File Number	19082-02

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number	BLM-002326	Certification Date	05/12/95	Expiration Date	05/12/98
Cylinder Pressure	1875 psig	Previous Certification Dates	None		

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
(Carbon Monoxide)	17.3 ppm	±1% Directly NIST Traceable
(Nitrogen)	Balance	

*Analytical uncertainty is inclusive of usual known error sources which at least includes precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
NTRM 1678	07/31/96	ALM-050109	45.7 ppm CO / N2

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Nicolet FTIR / 8220 / AAB9400251	05/03/95	Scott Enhanced FTIR TM

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: (Carbon Monoxide)

First Triad Analysis

Date 05/05/95	Response Units: ppm	
Z1 = -0.344	R1 = 45.700	T1 = 17.277
R2 = 45.739	Z2 = 0.082	T2 = 17.328
Z3 = 0.097	T3 = 17.303	R3 = 45.820
Avg. Conc. of Cyl. = 17.30 ppm		

Second Triad Analysis

Date 05/12/95	Response Units: ppm	
Z1 = 0.373	R1 = 45.734	T1 = 17.274
R2 = 45.559	Z2 = 0.198	T2 = 17.307
Z3 = 0.059	T3 = 17.257	R3 = 45.559
Avg. Conc. of Cyl. = 17.28 ppm		

Calibration Curve

Concentration =	A+Bx+Cx2+Dx3+Ex4
r = 0.9999901	
Constants:	A = -0.334625
B = 0.23567	C = 0.000327832
D = 3.21963E-06	E = -2.61506E-09

Special Notes Do not use when cylinder pressure is below 150 psig.

Analyst Mary Grehl

Scott Specialty Gases, Inc.

2600 CAJON BOULEVARD, SAN BERNARDINO, CA 92411 (909) 887-2571 FAX: (909) 887-0549

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
METCO ENVIRONMENTAL
SCOT JACKSON
P O BOX 598
ADDISON TX 75001

PROJECT # 40132.002
P.O. # 3438

Assay Laboratory
Scott Specialty Gases
2600 Cajon Boulevard
San Bernardino, CA 92411

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September 1993.

Cylinder Number BAL3354 Certification Date 08/08/95 Exp. Date 08/08/98
Cylinder Pressure 2000 PSIG

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
CARBON MONOXIDE	42.30 PPM	±1% NIST TRACEABLE
(Nitrogen)	Balance Gas	

+Do not use when cylinder pressure is below 150 psig.
*Analytical uncertainty is inclusive of usual known error sources which at least includes reference standard error & precision of the measurement processes.

REFERENCE STANDARD

Type/SRM Sample No.	Expiration Date	Cylinder Number	Concentration
NTRM 1679	08/96	ALM041520	97.10 PPM CO IN N2

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Horiba / OPE-135D / 56565502	08/96	NDIR

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
CARBON MONOXIDE	Date: 08/01/95 Response Units: mv Z1= 0.00 R1= 98.0 T1= 44.0 R2= 98.0 Z2= 0.00 T2= 43.9 Z3= 0.00 T3= 43.9 R3= 98.0 Avg. Conc. of Cust Cyl. 42.36 PPM	Date: 08/08/95 Response Units: mv Z1= 0.00 R1= 98.0 T1= 43.8 R2= 98.0 Z2= 0.00 T2= 43.8 Z3= 0.00 T3= 43.8 R3= 98.0 Avg. Conc. of Cust Cyl. 42.23 PPM	Concentration= Ax^2+Bx+C A =0.0005613 B =0.9398 C =-0.01058
	Date: Response Units: mv Z1= R1= T1= R2= Z2= T2= Z3= T3= R3= Avg. Conc. of Cust Cyl.	Date: Response Units: mv Z1= R1= T1= R2= Z2= T2= Z3= T3= R3= Avg. Conc. of Cust Cyl.	Concentration=
	Date: Response Units:mv Z1= R1= T1= R2= Z2= T2= Z3= T3= R3= Avg. Conc. of Cust Cyl.	Date: Response Units:mv Z1= R1= T1= R2= Z2= T2= Z3= T3= R3= Avg. Conc. of Cust Cyl.	Concentration=

Special Notes:

Analyst: Diana Hardin

Scott Specialty Gases, Inc.
2600 CAJON BOULEVARD, SAN BERNARDINO, CA 92411 (909) 887-2571 FAX: (909) 887-0549

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

STOCK CODE #210

Customer			Assay Laboratory
SCOTT/METCO	PROJECT #	39920.01B	Scott Specialty Gases
CSR/SCOT JACKSON	P.O. #	1603LARRY	2600 Cajon Boulevard
INVENTORY			San Bernardino, CA 92411
3714 LAPAS DRIVE			
HOUSTON, TX 77023			

PO 3651

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September 1993.

Cylinder Number BAL354 ✓ Certification Date 08/07/95 Exp. Date 08/07/98
Cylinder Pressure 1900 PSIG ✓

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
CARBON MONOXIDE	42.79 PPM	±1% NIST TRACEABLE
(Nitrogen)	Balance Gas	

+Do not use when cylinder pressure is below 150 psig.

*Analytical uncertainty is inclusive of usual known error sources which at least includes reference standard error & precision of the measurement processes.

REFERENCE STANDARD

Type/SRM Sample No.	Expiration Date	Cylinder Number	Concentration
NTRM/1679	08/96	ALM041520	97.10 PPM CO IN N2

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Horiba / OPE-135D / 56565502	07/11/95	NDIR

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
CARBON MONOXIDE	Date: 07/31/95 Response Units: mv Z1= 0.00 R1= 98.0 T1= 44.5 R2= 98.0 Z2= 0.00 T2= 44.5 Z3= 0.00 T3= 44.5 R3= 98.0 Avg. Conc. of Cust Cyl. 42.92 PPM	Date: 08/07/95 Response Units: mv Z1= 0.00 R1= 98.0 T1= 44.2 R2= 98.0 Z2= 0.00 T2= 44.2 Z3= 0.00 T3= 44.3 R3= 98.0 Avg. Conc. of Cust Cyl. 42.65 PPM	Concentration= Ax^2+Bx+C A = 0.0005613 B = 0.9398 C = -0.01058
	Date: Response Units: mv Z1= R1= T1= R2= Z2= T2= Z3= T3= R3= Avg. Conc. of Cust Cyl.	Date: Response Units: mv Z1= R1= T1= R2= Z2= T2= Z3= T3= R3= Avg. Conc. of Cust Cyl.	Concentration=
	Date: Response Units:mv Z1= R1= T1= R2= Z2= T2= Z3= T3= R3= Avg. Conc. of Cust Cyl.	Date: Response Units:mv Z1= R1= T1= R2= Z2= T2= Z3= T3= R3= Avg. Conc. of Cust Cyl.	Concentration=

Special Notes:

Analyst: [signature]

Scott Specialty Gases, Inc.

PO # 3384

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
SCOTT SPECIALTY GASES
3714 LAPAS DRIVE
ATTN NORA
HOUSTON, TX 77023-3203

Assay Laboratory
Scott Specialty Gases, Inc
1290 Combermere
Troy, MI 48083

Purchase Order : 1460 RENEE
Scott Project # : 572793

215

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : ALM003062 **Certificate Date :** 11/12/94 **Expiration Date :** 11/12/97
Cylinder Pressure + : 1900 psig **Previous Certificate Date :** None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Carbon Monoxide	84.70 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
NTRM 1679	8/11/96	ALM037782	97.10 ppm Carbon Monoxide in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
CO:Horiba/OPE-135/565607092	11/11/94	Non-Dispersive Infared

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: Carbon Monoxide

First Triad Analysis

Date: 11/3/94	Response Units: mv	
Z1=0.00	R1=80.00	T1=70.40
R2=80.00	Z2=0.00	T2=70.40
Z3=0.00	T3=70.40	R3=80.00
Avg. Conc. of Cust. Cyl. 84.63 ppm		

Second Triad Analysis

Date: 11/12/94	Response Units: mv	
Z1=0.00	R1=80.00	T1=70.50
R2=80.00	Z2=0.00	T2=70.50
Z3=0.00	T3=70.50	R3=80.00
Avg. Conc. of Cust. Cyl. 84.76 ppm		

Calibration Curve

Concentration=$A+Bx+Cx^2+Dx^3+Ex^4$	
r=1.00000	70.4
Constants:	A=0.059415000
B=1.202500000	C=-0.001100400
D=0.000015397	E=0.000000000

Special Notes

Cylinder

Tim Sanderson
Analyst

MISP/P-1

Scott Specialty Gases, Inc.

Item 215

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

METCO ENVIRONMENTAL PROJ.#0438565 PO.#3145

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer	Assay Laboratory	
SCOTT SPECIALTY GASES 3714 LAPAS DRIVE HOUSTON, TX 77023	Scott Specialty Gases, Inc 1290 Combermere Troy, MI 48083	**Purchase Order :** 1390 - DEBBIE **Scott Project # :** 569669

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : 2L1113 BL **Certificate Date :** 8/20/94 **Expiration Date :** 8/20/97

Cylinder Pressure + : 1900 psig **Previous Certificate Date :** None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Carbon Monoxide	85.86 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder pressure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM 1679A	6/22/97	ALM-024840	96.21 ppm Carbon Monoxide in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
CO : Beckman/864/102528	7/28/94	Non-Dispersive Infrared

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: Carbon Monoxide

First Triad Analysis

Date 8/13/94	Response Units: mv	
Z1=0.00	R1=80.00	T1=71.80
R2=80.00	Z2=0.00	T2=71.20
Z3=0.00	T3=71.20	R3=80.00
Avg. Conc. of Cust. Cyl 85.62 ppm		

Second Triad Analysis

Date 8/20/94	Response Units mv	
Z1=0.00	R1=80.00	T1=71.60
R2=80.00	Z2=0.00	T2=71.60
Z3=0.00	T3=71.80	R3=80.00
Avg. Conc. of Cust. Cyl 86.10 ppm		

Calibration Curve

Concentration=A+Bx+Cx²+Dx³+Ex⁴	
r=1.00000	SRM 1679A
Constants	A=-0.008029000
B=1.203500000	C=0.000000000
D=0.000000000	E=0.000000000

Special Notes

Analyst

MGR/P-1

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
SCOTT SPECIALTY GASES
3714 LAPAS DRIVE
HOUSTON, TX 77023

Assay Laboratory
Scott Specialty Gases, Inc
1290 Combermere
Troy, MI 48083

Purchase Order : 1390 - DEBBIE
Scott Project # : 569669

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : BAL4419 **Certificate Date :** 8/20/94 **Expiration Date :** 8/20/97
Cylinder Pressure + : 1900 psig **Previous Certificate Date :** None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Carbon Monoxide	85.86 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM 1679A	6/22/97	ALM-024840	96.21 ppm Carbon Monoxide in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
CO : Beckman/864/102528	7/28/94	Non-Dispersive Infrared

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: Carbon Monoxide

First Triad Analysis

Date: 8/13/94	Response Units: mv	
Z1=0.00	R1=80.00	T1=71.20
R2=80.00	Z2=0.00	T2=71.20
Z3=0.00	T3=71.20	R3=80.00
Avg. Conc. of Cust. Cyl. 85.62 ppm		

Second Triad Analysis

Date: 8/20/94	Response Units: mv	
Z1=0.00	R1=80.00	T1=71.60
R2=80.00	Z2=0.00	T2=71.60
Z3=0.00	T3=71.60	R3=80.00
Avg. Conc. of Cust. Cyl. 86.10 ppm		

Calibration Curve

Concentration=$A+Bx+Cx^2+Dx^3+Ex^4$	
r=1.00000	SRM 1679A
Constants:	A=-0.069029000
B=1.203500000	C=0.000000000
D=0.000000000	E=0.000000000

Special Notes

Cylinder

Julia Shapiro
Analyst

MISP/P-1

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (313) 589-2950 FAX: (313) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer	Assay Laboratory	
METCO ENVIROMENTAL	Scott Specialty Gases, Inc.	Purchase Order 2657
16115 DOOLEY ROAD	1290 Combermere	Scott Project # 559051
DALLAS TX 75244	Troy, MI 48083	

ANALYTICAL INFORMATION

Certified to exceed the minimum specifications of EPA Protocol 1 Procedure #G1, Section Number 3.0.4

Cylinder Number ALM030956 **Certification Date** 12-13-93 **Expiration Date** 12-13-96

Cylinder Pressure 1900 psig **Previous Certification Dates** None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Carbon Monoxide	247.1 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

*Analytical uncertainty is inclusive of usual known error sources which at least includes reference standard error & precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
CRM 1680	2-11-94	ALM013311	475 PPM CO IN N_2

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
BECKMAN/867/100157	10-4-93	Non-Dispersive Infrared

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
Carbon Monoxide	Date: 12-6-93 Response Units: mv Z1=0.00 R1=96.00 T1=55.80 R2=96.00 Z2=0.00 T2=55.80 Z3=0.00 T3=55.80 R3=96.00 Avg. Conc. of Cust. Cyl. 247.1 ppm	Date: 12-13-93 Response Units: mv Z1=0.00 R1=96.00 T1=55.80 R2=96.00 Z2=0.00 T2=55.80 Z3=0.00 T3=55.80 R3=96.00 Avg. Conc. of Cust. Cyl. 247.1 ppm	Concentration=A+Bx+Cx^2+Dx^3+Ex^4 r=0.99999 CRM 1680 Constants: A=0.5385984 B=3.69229 C=0.01302101 D=0 E=0
			Concentration=A+Bx+Cx^2+Dx^3+Ex^4
			Concentration=A+Bx+Cx^2+Dx^3+Ex^4

Special Notes

Analyst Frank P. Doran

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer	Assay Laboratory	
METCO ENVIRONMENTAL ATTN : SCOTT JACKSON 16115 DOOLEY ROAD DALLAS, TX 75244-1012	Scott Specialty Gases, Inc 1290 Combermere Troy, MI 48083	Purchase Order : 3228 Scott Project # : 576921

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : BLM003332 Certificate Date : 2/20/95 Expiration Date : 2/20/98

Cylinder Pressure + : 1900 psig Previous Certificate Date : None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Carbon Monoxide	469.0 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
NTRM 1681	4/21/96	ALM-024826	966.0 ppm Carbon Monoxide in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
CO : Beckman/864/102528	1/30/95	Non-Dispersive Infrared

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: Carbon Monoxide

First Triad Analysis

Date: 2/13/95	Response Units: mv	
Z1=0.00	R1=100.00	T1=53.00
R2=100.00	Z2=0.00	T2=53.00
Z3=0.00	T3=53.00	R3=100.00
Avg. Conc. of Cust. Cyl. 468.5 ppm		

Second Triad Analysis

Date: 2/20/95	Response Units: mv	
Z1=0.00	R1=100.00	T1=53.10
R2=100.00	Z2=0.00	T2=53.10
Z3=0.00	T3=53.10	R3=100.00
Avg. Conc. of Cust. Cyl. 469.5 ppm		

Calibration Curve

Concentration=A+Bx+Cx^2+Dx^3+Ex^4	
r=1.00000	NTRM 1681
Constants:	A=-0.162760000
B=7.918200000	C=0.017444000
D=0.000000000	E=0.000000000

Special Notes
ITEM #225

Cylinder

Analyst

MSP/P-1

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer	Assay Laboratory		
METCO ENVIRONMENTAL	Scott Specialty Gases, Inc	Purchase Order :	3040
Attn : Jim Monfries	1290 Combermere	Scott Project # :	570449
16115 Dooley Road	Troy, MI 48083		
Dallas, TX 75244			

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : BLM003402 **Certificate Date :** 9/6/94 **Expiration Date :** 9/6/97

Cylinder Pressure + : 1900 psig **Previous Certificate Date :** None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Propane	23.23 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM 2643A	3/23/98	SX20290	99.1 ppm Propane in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Propane : Varian 6000 08963016	9/6/94	Flame Ionization Detector

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: Propane

First Triad Analysis

Date: 9/6/94	Response Units: Area	
Z1=0.00	R1=399.34	T1=93.51
R2=399.82	Z2=0.00	T2=93.82
Z3=0.00	T3=93.65	R3=399.25
Avg. Conc. of Cust. Cyl. 23.23 ppm		

Second Triad Analysis

Calibration Curve

Concentration=A+Bx+Cx²+Dx³+Ex⁴	
r=1.00000	SRM 2643A
Constants:	A=0.011456110
B=0.248093500	C=0.000000000
D=0.000000000	E=0.000000000

Special Notes

Analyst

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer	Assay Laboratory	
METCO ENVIRONMENTAL	Scott Specialty Gases, Inc	**Purchase Order :** 3067
Attn : Jim Monfries	1290 Combermere	**Scott Project # :** 572186
16115 Dooley Road	Troy, MI 48083	
Dallas, TX 75244		

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : ALM048174 **Certificate Date :** 10/14/94 **Expiration Date :** 10/14/97
Cylinder Pressure + : 1900 psig **Previous Certificate Date :** None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Propane	47.09 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM 2643A	3/28/98	SX-20290	99.12 ppm Propane in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Propane : Beckman/400/1002059	9/22/94	Flame Ionization Detector

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: Propane

First Triad Analysis

Date: 10/14/94	Response Units: mv	
Z1=0.00	R1=99.10	T1=47.10
R2=99.10	Z2=0.00	T2=47.10
Z3=0.00	T3=47.10	R3=99.10

Avg. Conc. of Cust. Cyl. 47.09 ppm

Second Triad Analysis

Calibration Curve

$Concentration=A+Bx+Cx^2+Dx^3+Ex^4$

r=1.00000	SRM 2643A
Constants:	A=-0.034421000
B=1.000500000	C=0.000000000
D=0.000000000	E=0.000000000

Special Notes

Customer

Analyst

UISP/RL1

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
METCO ENVIRONMENTAL
ATTN : JIM MONFRIES
16115 DOOLEY ROAD
DALLAS, TX 75244-1012

Assay Laboratory
Scott Specialty Gases, Inc
1290 Combermere
Troy, MI 48083

Purchase Order : 3092
Scott Project # : 572936

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : BLM001578 ***Certificate Date :*** 11/10/94 **Expiration Date :** 11/10/97
Cylinder Pressure + : 1900 psig **Previous Certificate Date :** None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Propane	88.51 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM 2643A	3/28/98	SX-20290	99.12 ppm Propane in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Propane : Beckman/400/1002059	11/4/94	Flame Ionization Detector

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
Propane	Date: 11/10/94 Response Units: mv Z1=0.00 R1=99.10 T1=88.50 R2=99.10 Z2=0.00 T2=88.50 Z3=0.00 T3=88.50 R3=99.10 Avg. Conc. of Cust. Cyl. 88.51 ppm		$Concentration=A+Bx+Cx^2+Dx^3+Ex^4$ r=1.00000 SRM 2643A Constants: A=-0.034421000 B=1.000500000 C=0.000000000 D=0.000000000 E=0.000000000

Special Notes

Cylinder

Analyst

MISP/P-1

Scott Specialty Gases, Inc.
1290 COMBERMERE STREET, TROY, MI 48083 (313) 589-2950 FAX: (313) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS RECERTIFICATION

Customer	Assay Laboratory	
SCOTT SPECIALTY GASES	Scott Specialty Gases, Inc.	Purchase Order 2924
3714 LAPAS	1290 Combermere	Scott Project # 567804
HOUSTN, TX, 77023	Troy, MI 48083	

ANALYTICAL INFORMATION

Certified to exceed the minimum specifications of EPA Protocol 1 Procedure #G1, Section Number 3.0.4

Cylinder Number	CAL11070	Certification Date	6-29-94	Expiration Date	6-29-97
Cylinder Pressure	2000 psig	Previous Certification Dates	11-17-92		

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Propane	219.0 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

*Analytical uncertainty is inclusive of usual known error sources which at least includes reference standard error & precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM 2648A	1-3-98	FF-27147	4901 ppm Propane in N_2

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Prop:/400/1002059	6-29-94	Flame Ionization Detector

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	Previous Certification	Third Triad Analysis	Calibration Curve
Propane	Date: 5-17-94 Concentration: 219.0 ppm	Date: 6-29-94 Z1=0.00 R1=130.0 T1=5.800 R2=130.0 Z2=0.00 T2=5.800 Z3=0.00 T3=5.800 R3=130.0 Avg. Conc. of Cust. Cyl. 218.9 ppm	Concentration=A+Bx+Cx^2+Dx^3+Ex^4 r=0.99999 SRM 2648A Constants: A=0.277799 B=37.69786 C=0 D=0 E=0
			Concentration=A+Bx+Cx^2+Dx^3+Ex^4
			Concentration=A+Bx+Cx^2+Dx^3+Ex^4

Special Notes

Tim Sanderson

Analyst Tim Sanderson

MISP/P-1

Scott Specialty Gases

500 WEAVER PARK ROAD, LONGMONT, CO 80501 (303) 442-4700, (303) 651-3094 FAX: (303) 772-7673

PO# 3378
ITEM# 935

CERTIFICATE OF ANALYSIS: EPA Protocol Gas

Customer
METCO ENVIRONMENTAL
C/O SCOTT SPECIALTY GASES
3714 LAPAS DRIVE
HOUSTON, TX 77023

Assay Laboratory
Scott Specialty Gases, Inc.
500 Weaver Park Road
Longmont, CO 80501

Purchase Order	1587 / LARRY
Scott Project #	0819993
CGA Fitting	350
QC Number	16079515
File Number	19993-03

ANALYTICAL INFORMATION

This certification was performed according to *EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards;* Procedure G1; September, 1993.

Cylinder Number BAL-1761 Certification Date 06/07/95 Expiration Date 06/07/98
Cylinder Pressure 2000 psig Previous Certification Dates None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
(Propane)	233 ppm	±1% Directly NIST Traceable
(Nitrogen)	Balance	

*Analytical uncertainty is inclusive of usual known error sources which at least includes precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM 2645A	01/05/96	FF-27139	497.7 ppm C3H8 / Air

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Hewlett Packard 5890A 3115A34623	06/07/95	Flame Ionization

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components
(Propane)

First Triad Analysis

Date 06/07/95	Response Units: V	
Z1 = 0.000	R1 = 501.500	T1 = 232.000
R2 = 501.000	Z2 = 0.000	T2 = 233.500
Z3 = 0.000	T3 = 233.600	R3 = 505.200
Avg. Conc. of Cyl. = 233.03 ppm		

Second Triad Analysis

Calibration Curve

Concentration =	A+Bx+Cx2+Dx3+Ex4
r = 1	
Constants:	A = 0.416
B = 0.000939	C = 9.16E-12
D = 0	E = 0

Special Notes Do not use when cylinder pressure is below 150 psig.
STOCK #935

Tanya Bayha
Analyst Tanya Bayha

Scott Specialty Gases, Inc.

P.O. #3189
ITEM #940

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
SCOTT SPECIALTY GASES
ATTN: NORA
3714 LAPAS DRIVE
HOUSTON, TX 77023-3203

Assay Laboratory
Scott Specialty Gases, Inc
1290 Combermere
Troy, MI 48083

Purchase Order : 1527 RENEE
Scott Project # : 576094

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : BLM002201 **Certificate Date :** 1/27/95 **Expiration Date :** 1/27/98
Cylinder Pressure + : 1900 psig **Previous Certificate Date :** None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Propane	486.1 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
NTRM 2646	10/14/95	AAL18426	973.2 ppm Propane in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Propane : Beckman/400/1002059	1/19/95	Flame Ionization Detection

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: Propane

First Triad Analysis

Date: 1/27/95	Response Units: [illegible]	
Z1=0.00	R1=97.30	T1=48.60
R2=97.30	Z2=0.00	T2=48.60
Z3=0.00	T3=48.60	R3=97.30
Avg. Conc. of Cust. Cyl. 486.1 ppm		

Second Triad Analysis

Calibration Curve

Concentration=A+Bx+Cx²+Dx³+Ex⁴	
r=1.00000	NTRM 2646
Constants:	A=0.049241000
B=10.002000000	C=0.000000000
D=0.000000000	E=0.000000000

Special Notes

Cylinder

Analyst

Scott Specialty Gases

500 WEAVER PARK ROAD, LONGMONT, CO 80501 (303) 442-4700, (303) 651-3094 FAX: (303) 772-7673

PO# 3378
ITEM#940

CERTIFICATE OF ANALYSIS: EPA Protocol Gas

Customer	Assay Laboratory		
METCO ENVIRONMENTAL	Scott Specialty Gases, Inc.	Purchase Order	1587 / LARRY
C/O SCOTT SPECIALTY GASES	500 Weaver Park Road	Scott Project #	0819993
3714 LAPAS DRIVE	Longmont, CO 80501	CGA Fitting	350
HOUSTON, TX 77023		QC Number	16079514
		File Number	19993-04

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number BAL-2652 | Certification Date 06/07/95 | Expiration Date 06/07/98
Cylinder Pressure 2000 psig | Previous Certification Dates None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
(Propane)	489 ppm	±1% Directly NIST Traceable
(Nitrogen)	Balance	

*Analytical uncertainty is inclusive of usual known error sources which at least includes precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM 2645A	01/05/96	FF-27139	497.7 ppm C3H8 / Air

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Hewlett Packard 5890A 3115A34623	06/07/95	*Flame Ionization*

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
(Propane)	Date 06/07/95 Response Units: V Z1 = 0.000 R1 = 501.500 T1 = 487.200 R2 = 501.000 Z2 = 0.000 T2 = 491.400 Z3 = 0.000 T3 = 489.600 R3 = 505.200 Avg. Conc. of Cyl. = 489.40 ppm		Concentration = A+Bx+Cx2+Dx3+Ex4 r = 1 Constants: A = 0.416 B = 0.000939 C = 9.16E-12 D = 0 E = 0

Special Notes: Do not use when cylinder pressure is below 150 psig.
STATE #940

Analyst Tanya Bayha

ITEM 945

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer	Assay Laboratory	
METCO C/O SCOTT	Scott Specialty Gases, Inc	Purchase Order : 3242
HWY 3 & ELDORADO	1290 Combermere	Scott Project # : 577406
WEBSTER, TX 77598	Troy, MI 48083	

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : BLM004065 **Certificate Date :** 3/2/95 **Expiration Date :** 3/2/98

Cylinder Pressure + : 1900 psig **Previous Certificate Date :** None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Propane	977.5 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM 2648A	1/4/99	FF27121	4892 ppm Propane in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Propane : Varian 6000 08963016	3/2/95	Flame Ionization Detector

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
Propane	Date: 3/2/95 Response Units: mv Z1=0.00 R1=179.50 T1=35.80 R2=179.70 Z2=0.00 T2=35.97 Z3=0.00 T3=35.94 R3=179.70 Avg. Conc. of Cust. Cyl. 977.5 ppm		Concentration=A+Bx+Cx^2+Dx^3+Ex^4 r=1.00000 SRM 2648A Constants: A=-0.573608700 B=27.241500000 C=0.000000000 D=0.000000000 E=0.000000000

Special Notes

Cylinder

Analyst

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer	Assay Laboratory	
METCO ENVIRONMENTAL	Scott Specialty Gases, Inc	Purchase Order : 2835
16115 DOOLEY ROAD	1290 Combermere	Scott Project # : 565362
DALLAS, TX 75244	Troy, MI 48083	

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : CAL12366 Certificate Date : 5/11/94 Expiration Date : 5/11/97

Cylinder Pressure + : 1900 psig Previous Certificate Date : None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Propane	979.5 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM 2647A	2/25/95	FF-27109	2450 ppm Propane in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Propane : Beckman/400/1002059	4/23/94	Flame Ionization Detector

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
Propane	Date: 5/11/94 Response Units: mv Z1=0.00 R1=120.00 T1=48.00 R2=120.00 Z2=0.00 T2=48.00 Z3=0.00 T3=48.00 R3=120.00 Avg. Conc. of Cust. Cyl. 979.5 ppm		Concentration=A+Bx+Cx^2+Dx^3+Ex^4 r=1.00000 SRM 2647A Constants: A=-0.811650000 B=20.423000000 C=0.000000000 D=0.000000000 E=0.000000000

Special Notes

Analyst Don Eichler, Jr

APPENDIX D

Field Testing Data

METCO ENVIRONMENTAL

Particulate Field Data

Job Number 96-11 ERM Southwest
Job Name ERM Southwest
Run Number 1
Unit Press RTO Stack
Date 1/18/96
Operator T. Staley, J. Pemberton
Sample Box No. 17-3 Meter Box No. 17-1

Read and record at the start of each test point.

Purge to:
Purge time:
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 55
Assumed Moisture % 2.0
Probe Length 10
C Factor 1.30 → 31 to reference
Initial Leak @ 15 "Hg = 0.000 cfm
Final Leak @ 15 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H₂O (ΔP_s)	Orifice ΔH "H₂O Desired	Orifice ΔH "H₂O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Remarks
A6	1835	652.950	0.89	2.70	2.70	5.0	233	245	272	58	54	56	
6	1838	654.920	0.74	2.25	2.25	5.0	227	251	270	56	54	56	
5	1841	656.820	0.96	2.90	2.90	7.0	228	253	256	55	54	56	
5	1844	659.530	0.96	2.90	2.90	7.0	227	254	251	54	55	56	
4	1847	662.835	0.89	2.70	2.70	7.0	230	248	256	59	55	55	
4	1850	665.723	0.89	2.70	2.70	7.0	230	246	250	54	56	55	
3	1853	668.120	0.79	2.40	2.40	7.0	232	250	252	53	56	55	
3	1856	670.630	0.45	1.40	1.40	7.0	230	251	252	53	56	55	
2	1857	672.520	0.38	1.15	1.15	5.0	232	249	251	64	56	54	
2	1900	674.460	0.36	1.10	1.10	4.0	235	251	254	65	57	57	
1	1903	676.325	0.42	1.30	1.30	5.0	232	254	254	60	58	55	
1	1906	678.130	0.42	1.30	1.30	5.0	230	255	253	59	58	55	
END	1909	680.045	—	—	—	—	—	—	—	—	—	—	
B6	1921	680.045	0.56	1.70	1.70	3.0	236	257	254	52	58	55	
6	1924	682.430	0.55	1.70	1.70	3.0	235	256	256	52	59	55	
5	1927	684.740	0.75	2.30	2.30	5.0	240	260	254	59	59	55	
5	1930	686.830	0.82	2.50	2.50	6.0	236	252	253	61	58	53	
4	1933	689.730	0.75	2.30	2.30	5.0	234	251	256	61	59	54	

Pitot Tube Calibration Factor C_p 0.808
Volume Collected V_m 54.913 ft³
Water Collected V_w 25.5 ml
Time of Test T_t 72 min.
Stack Pressure P_s -0.56 "H₂O

Pitot Tube No. 8-10-1
Baro. Press. P_b 30.10 "Hg
Probe Tip Dia. D_n 0.249 in.
% CO_2 0.40 % CO 0.0
% O_2 20.10 % N_2 79.5
Area Stack A_s 650 in²

Barometer No. 17-2
Probe Tip No. II-4
Total Volume of Leak Checks After Start: — ft³
V_m = Dry Gas Meter Calibration Factor 55.777 X 0.9851
[Dry Gas Meter Reading ____ ft³ - (T_t ____ min. X Leak Rate ____ cfm)]

Impinger Box No. ~~17-2~~ 17-3

			Water Weight Gain	
Impinger 1	Final Weight	669.9	Impinger 1	-6.1
	Initial Weight	676.0		
	Increase	-6.1	Impinger 2	11.3
Impinger 2	Final Weight	727.5	Impinger 3	2.9
	Initial Weight	716.2		
	Increase	11.3	Impinger 4	17.4
Impinger 3	Final Weight	496.5	Impinger 5	
	Initial Weight	493.6		
	Increase	2.9	Impinger 6	
Impinger 4	Final Weight	860.5	Impinger 7	
	Initial Weight	843.1		
	Increase	17.4	Total	25.5 = V_w
Impinger 5	Final Weight			
	Initial Weight			
	Increase			
Impinger 6	Final Weight			
	Initial Weight			
	Increase			
Impinger 7	Final Weight			
	Initial Weight			
	Increase			

V_w =
g SO_2 =
V_w =

P_b = 30.10		$\%CO_2$ = 0.40	
V_m = 54.913		$\%O_2$ = 20.10	
V_w = 25.5		$\%CO$ = 0.0	
P_m = 2.152		$\%N_2$ = 79.5	
Avg ΔP = 0.703		A_s = 6504	
		D_n = 0.249	
Avg$\sqrt{\Delta P}$ = 0.836		T_t = 72	
C_p = 0.808			
P_s = -0.56	"H_2O	30.06	"Hg
T_m = 56	°F	516	°R
T_s = 233	°F	693	°R

Moisture Content %M = ~~0.9793~~ 2.074 M_d = 0.9793 MW_d = 28.868 MW = 28.64

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 54.913 \left[\frac{30.10 + \frac{2.152}{13.6}}{56 + 460}\right] = \frac{56.835 \text{ sft}^3}{0.789 \text{ scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 25.5 = 1.204 sft³

$$\% \text{ Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{1.204}{56.835 + 1.204} \times 100 = 2.074\ \%$$

$$V_s = 5123.8 \times 0.808 \sqrt{\frac{693}{28.64 \times 30.06}} \times 0.530 = 3083 \text{ fpm}$$

ACFM: 139247

SCFM: 104,768

$$\%I = \frac{1{,}039 \times 56.835 \times 693}{0.9793 \times 72 \times 30.06 \times 3083 \times (.249)^2} = 101.0\ \%$$

%EA:

Run Number 1 Particulate
Unit Press RTO Stack
Date 1/18/96

Particulate/~~[illegible]~~ FIELD DATA

			ΔP_s		P_m		T_s				T_m		
Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
4	1936	692.130	0.75	2.30	2.30	6.0	240	252	246	61	59	53	
3	1939	694.620	0.81	2.50	2.50	6.0	234	254	251	60	59	54	
3	1942	697.310	0.79	2.50	2.50	6.0	234	254	251	66	59	52	
2	1945	699.230	0.74	2.25	2.25	6.0	235	255	256	61	60	54	
2	1948	701.325	0.84	2.60	2.60	7.0	234	256	256	62	60	54	
1	2009 1951	704.996	0.62	1.90	1.90	5.0	235	256	255	62	58	54	[illegible] @ 1951 704.996
1	2012	706.560	0.74	2.30	2.30	7.0	237	254	279	62	58	52	
END	2015	708.927	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

Part./SO_2 Field Data

Read and record at the start of each test point.

Job Number 96-11
Job Name ERM
Run Number 2
Unit Press House ~~Vent~~ RTO Stack
Date 1/19/96
Operator G. Smith / P. Smith
Sample Box No. 17-3 Meter Box No. 17-1

Purge to: 838.305
Purge time: 1200-1215
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 50
Assumed Moisture % 2-4
Probe Length 10'
C Factor 10-30.5 To reference
Initial Leak @ 15.0 "Hg = 0.000 cfm
Final Leak @ 12.0 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Remarks
A 1	1038	768.670	0.78	2.40	2.40	6.0	227	235	226	64	76	75	INT. DESAT
2	1041	771.010	0.89	2.70	2.70	6.0	222	236	229	51	76	75	
3	1044	773.44	1.00	3.00	3.00	9.0	240	238	228	49	78	75	
4	1047	776.34	0.95	2.80	2.80	9.0	231	238	245	49	79	75	
5	1050	779.31	0.90	2.70	2.70	9.0	228	239	263	52	81	75	
6	1053	782.60	0.95	2.80	2.80	9.0	239	231	264	53	82	76	
7	1056	784.69	0.55	1.65	1.65	6.5	223	238	271	55	83	76	
8	1059	787.20	0.40	1.20	1.20	5.0	228	243	264	56	83	76	
9	1102	789.05	0.35	1.05	1.05	5.0	226	248	259	57	83	76	
10	1105	790.90	0.35	1.05	1.05	5.0	228	252	254	58	83	76	
11	1108	792.65	0.40	1.20	1.20	5.0	237	255	253	59	83	77	
12	1111	794.51	0.40	1.20	1.20	5.0	230	257	250	59	84	77	
END	1114	796.160	-	-	-	-	-	-	-	-	-	-	
B 12	1120	796.160	0.60	1.90	1.90	7.0	230	261	247	84	81	77	
11	1123	798.55	0.80	2.55	2.55	~~234~~ 9.0	234	265	245	60	82	77	
10	1126	801.04	0.60	1.90	1.90	8.0	237	266	247	58	84	77	
9	1129	803.43	0.70	2.20	2.20	8.0	220	267	246	59	85	77	
8	1132	805.80	0.80	2.55	2.55	9.0	242	267	245	60	86	78	

Pitot Tube Calibration Factor C_p 0.808 ✓
Volume Collected V_m 56.785 ✓ ft^3
Water Collected V_w 25.4 ✓ ml
Time of Test T_t 72 ✓ min.
Stack Pressure P_s -0.50 ✓ "H_2O

Pitot Tube No. 8-10-1 ✓
Baro. Press. P_b 30.28 ✓ "Hg
Probe Tip Dia. D_n 0.249 ✓ in.
% CO_2 0.4 ✓ % CO 0.0 ✓
% O_2 20.1 ✓ % N_2 79.5 ✓
Area Stack A_s 6504 ✓ in^2

Barometer No. 17-2 ✓ Probe Tip No. ~~XII-8~~ II-4
Total Volume of Leak Checks After Start: ✓ ft^3
V_m = Dry Gas Meter Calibration Factor 0.981 ✓ X 57.885
[Dry Gas Meter Reading — ft^3 - (T_t — min. X Leak Rate — cfm)]

Impinger Box No. 17-3

			Water Weight Gain	
Impinger 1	Final Weight	599.6	Impinger 1	-64.0
	Initial Weight	663.6		
	Increase	-64.0	Impinger 2	48.7
Impinger 2	Final Weight	768.3	Impinger 3	19.1
	Initial Weight	719.6		
	Increase	48.7	Impinger 4	1.5
Impinger 3	Final Weight	707.4	Impinger 5	20.1
	Initial Weight	688.3		
	Increase	19.1	Impinger 6	
Impinger 4	Final Weight	496.7	Impinger 7	
	Initial Weight	495.2		
	Increase	1.5	Total	25.4 ✓ = V_w
Impinger 5	Final Weight	882.2		
	Initial Weight	862.1		
	Increase	20.1		
Impinger 6	Final Weight			
	Initial Weight			
	Increase			
Impinger 7	Final Weight			
	Initial Weight			
	Increase			

V_w =

g SO_2 =

V_w =

P_b = 30.28 ✓		$\%CO_2$ =	0.4 ✓
V_m = 56.785 ✓		$\%O_2$ =	20.1 ✓
V_w = 25.4 ✓		%CO =	0.0 ✓
P_m = 2.133 ✓		$\%N_2$ =	79.5 ✓
Avg ΔP = 0.690 ✓		A_s =	6504 ✓
		D_n =	0.249 ✓
Avg$\sqrt{\Delta P}$ = 0.821 ✓		T_t =	72 ✓
C_p = 0.808 ✓			
P_s = -0.50 ✓ "H_2O	30.24 ✓ "Hg		
T_m = 80 ✓ °F	540 ✓ °R		
T_s = 233 ✓ °F	693 ✓ °R		

Moisture Content %M = 2.08 ✓ M_d = 0.9792 ✓ MW_d = 28.868 ✓ MW = 28.64 ✓

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 56.785 \left[\frac{30.28 + \frac{2.133}{13.6}}{80 + 460}\right] = \frac{56.492 ✓ \text{ sft}^3}{0.785 ✓ \text{ scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 25.4 = ~~1.200~~ 1.199 ✓ sft³

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{1.199/~~1.200~~}{56.492 + ~~1.200~~ 1.199}$ x 100 = 2.08 ✓ %

V_s = 5123.8 x 0.808 $\sqrt{\frac{693}{30.24 \times 28.64}}$ x 0.821 = 3040 ✓ fpm

ACFM: 137326 ✓

SCFM: 103915 ✓

%I = $\frac{1{,}039 \times 56.492 \times 693}{3040 \times 0.9792 \times 30.24 \times 72 \times (0.249)^2}$ = 101.2 ✓ %

%EA: –

Run Number 2
Unit PRESS RTO STK.
Date 1/19/96

PART / SO_2 FIELD DATA

			ΔP_s		P_m		T_s				T_m		
Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
B 7	1135	808.50	0.75	2.40	2.40	9.0	226	268	246	61	87	78	
6	1138	811.22	0.80	2.55	2.55	9.0	243	269	246	62	87	78	
5	1141	813.71	0.63	2.00	2.00	8.0	234	249	243	63	88	78	
4	1144	816.30	0.65	2.10	2.10	8.0	234	240	244	64	88	79	
3	1147	818.79	0.70	2.20	2.20	8.0	243	233	244	64	88	79	
2	1150	821.80	0.80	2.55	2.55	9.0	233	230	243	64	89	79	
1	1153	823.80	0.80	2.55	2.55	9.0	245	228	243	65	90	80	
END ALL	1156	826.555	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

Batch SO2 Field Data

Job Number 96-11
Job Name ERM Southwest
Run Number 3
Unit Press RTO Stack
Date 1/19/96
Operator T. Staley, J. Pemberton
Sample Box No. 17-1 Meter Box No. 17-2

Read and record at the start of each test point.

Purge to: 254.825
Purge time: 1745-1800
Pitot Leak Check Initial ✓ Final ____

Ambient Temp. °F 45
Assumed Moisture % 2
Probe Length 10
C Factor @10 → 20.65 to reference
Initial Leak @ 15 "Hg = 0.000 cfm
Final Leak @ 7 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet (T_m)	Remarks
B 12	1457	189.929	0.40	1.08	1.10	3.0	239	249	253	65	77	76	init onset
11	1500	191.570	0.51	1.35	1.35	3.0	231	244	248	57	78	77	
10	1503	193.360	0.69	1.85	1.85	3.0	242	248	253	55	80	77	
9	1506	195.690	0.52	1.35	1.35	3.0	238	252	254	53	85	77	
8	1509	197.750	0.76	2.00	2.00	4.0	229	255	254	56	84	77	
7	1512	199.850	0.79	2.10	2.10	4.0	235	256	249	57	85	77	
6	1515	202.630	0.79	2.10	2.10	4.0	236	254	250	58	85	77	Pump down @ 1515
5	1638	205.290	0.82	2.20	2.20	4.0	236	254	250	64	77	76	1635 pump on
4	1641	207.660	0.79	2.10	2.10	4.0	230	252	256	63	77	76	
3	1644	209.930	0.71	1.90	1.90	5.0	231	256	254	63	79	76	
2	1647	212.312	0.59	1.60	1.60	5.0	231	258	254	64	82	77	
1	1650	214.880	0.64	1.70	1.70	5.0	240	252	254	65	83	73	
END	1653	217.108	~~1.00~~	~~2.65~~	~~2.65~~	—	~~224~~	~~259~~	~~256~~	—	~~80~~	~~77~~	
A 1	1705	217.108	1.00	2.65	2.65	5.0	224	259	256	66	80	77	ΔP16 → 20.50
2	1708	219.790	1.10	2.75	2.75	5.0	237	252	250	64	82	77	
3	1711	222.490	1.00	2.65	2.65	5.0	224	256	254	64	82	77	
4	1714	224.930	0.97	2.40	2.40	5.0	235	254	255	63	84	77	
5	1717	227.890	0.89	2.25	2.25	6.0	226	245	275	62	87	77	

Pitot Tube Calibration Factor C_p 0.807
Volume Collected V_m 55.885 ft³
Water Collected V_w 26.8 ml
Time of Test T_t 72 min.
Stack Pressure P_s -0.50 "H_2O

Pitot Tube No. 15-10-2
Baro. Press. P_b 30.12 "Hg
Probe Tip Dia. D_n 0.249 in.
% CO_2 0.4 % CO 0.0
% O_2 20.1 % N_2 79.5
Area Stack A_s 650 in²

Barometer No. 17-2
Probe Tip No. #-4
Total Volume of Leak Checks After Start: — ft³
V_m = Dry Gas Meter Calibration Factor 53891 X 1.037
[Dry Gas Meter Reading ____ ft³ - (T_t ____ min. X Leak Rate ____ cfm)]

Impinger Box No. 17-1

			Water Weight Gain	
Impinger 1	Final Weight	602.0	Impinger 1	-68.0
	Initial Weight	670.0		
	Increase	-68.0	Impinger 2	56.6
Impinger 2	Final Weight	768.4		
	Initial Weight	711.8	Impinger 3	19.9
	Increase	56.6	Impinger 4	1.7
Impinger 3	Final Weight	744.1	Impinger 5	16.6
	Initial Weight	724.2		
	Increase	19.9	Impinger 6	
Impinger 4	Final Weight	496.0	Impinger 7	
	Initial Weight	494.3		
	Increase	1.7	Total	26.8 = V_w
Impinger 5	Final Weight	903.1		
	Initial Weight	886.5		
	Increase	16.6		
Impinger 6	Final Weight			
	Initial Weight			
	Increase			
Impinger 7	Final Weight			
	Initial Weight			
	Increase			

V_w =
g SO_2 =
V_w =

P_b =	30.12			$\%CO_2$ =	0.40
V_m =	55.885			$\%O_2$ =	20.1
V_w =	26.8			%CO =	0.0
P_m =	~~1.800~~ 1.798			$\%N_2$ =	79.5
Avg ΔP =	0.695			A_s =	6504
				D_n =	0.249
Avg$\sqrt{\Delta P}$ =	0.825			T_t =	72
C_p =	0.807				
P_s =	-0.50	"H_2O	30.08	"Hg	
T_m =	80	°F	540	°R	
T_s =	233	°F	693	°R	

Moisture Content %M = 2.24 M_d = 0.9776 MW_d = 28.868 MW = ~~28.61~~ 28.62

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 55.885 \left[\frac{30.12 + \frac{\cancel{1.800}\ 1.798}{13.6}}{80 + 460}\right] = \frac{55.259 \text{ sft}^3}{0.7677 \text{ scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 26.8 = 1.265 sft³

$$\% \text{ Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{1.265}{55.259 + 1.265} \times 100 = 2.24\ \%$$

$$V_s = 5123.8 \times 0.807 \sqrt{\frac{693}{\cancel{28.61}\ 28.62 \times 30.08}} \times 0.825 = \cancel{3057}\ 3061 \text{ fpm}$$

ACFM: ~~138,096~~ ~~138,263~~ 138,239

SCFM: ~~103,774~~ 103,959

$$\%I = \frac{1{,}039 \times 693 \times 55.259}{0.9776 \times 72 \times 30.08 \times \cancel{3057}\ 3061 \times (0.249)^2} = \cancel{99.1}\ 99.0\ \%$$

%EA: —

Particulate/SO2 FIELD DATA

Run Number ~~96~~-# 3
Unit Press RTO Stack
Date 1/19/96

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Remarks
6	1720	230.190	0.76	1.90	1.90	5.0	220	247	256	64	88	77	
7	1723	232.656	0.57	1.40	1.40	5.0	243	257	243	65	88	78	
8	1726	234.730	0.50	1.23	1.20	5.0	235	256	261	64	89	78	
9	1729	236.640	0.51	1.25	1.25	5.0	227	255	262	64	88	78	
10	1731	238.740	0.50	1.23	1.20	5.0	232	254	260	63	89	78	
11	1734	240.500	0.42	1.05	1.05	5.0	245	250	266	66	89	79	
12	1737	242.260	0.44	1.10	1.10	5.0	224	251	265	64	89	79	
END	1740	243.820	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

SO_2 Field Data

Job Number 96-11
Job Name ECM
Run Number 1 (SO_2)
Unit PRESS RTO STK.
Date 1/19/96
Operator G. SMITH / P. SMITH
Sample Box No. 17-1 Meter Box No. 17-1

Read and record at the start of each test point.

Purge to: 768.52
Purge time: 0949-1004
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 50
Assumed Moisture % 2-4
Probe Length 10'
C Factor — to reference
Initial Leak @ 15 "Hg = 0.000 cfm
Final Leak @ 5.0 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Remarks
B12	0820	709.552	0.62	1.50	1.50	4.0	221	261	236	66	65	61	INT. ORSAT
11	0823	711.65	0.45	1.50	1.50	4.0	225	260	236	51	67	61	
10	0826	714.44	0.70	1.50	1.50	4.0	243	260	234	50	68	62	
9	0829	715.78	0.66	1.50	1.50	4.0	220	260	232	51	69	62	
8	0832	717.80	0.75	1.50	1.50	4.0	238	260	230	52	69	62	
7	0835	719.84	0.82	1.50	1.50	4.0	229	261	242	53	72	63	
6	0838	721.77	0.73	1.50	1.50	4.0	217	260	251	54	73	63	
5	0841	723.77	0.65	1.50	1.50	4.0	232	261	261	54	74	64	
4	0844	725.76	0.70	1.50	1.50	4.0	225	261	269	55	76	65	
3	0847	727.81	0.72	1.50	1.50	4.0	233	262	264	55	77	65	
2	0850	729.76	0.82	1.50	1.50	4.0	218	262	254	56	77	66	
1	0853	731.80	0.84	1.50	1.50	4.0	227	262	249	56	78	66	
END	0856	733.711	–	–	–	–	–	–	–	–	–	–	
A12	0905	733.711	0.50	1.50	1.50	4.0	235	267	240	77	75	68	
11	0908	735.60	0.45	1.50	1.50	4.0	230	265	241	58	75	68	
10	0911	737.62	0.40	1.50	1.50	4.0	228	264	242	52	77	68	
9	0914	739.82	0.37	1.50	1.50	4.0	222	264	240	50	78	69	
8	0917	741.85	0.42	1.50	1.50	4.0	230	263	240	49	79	69	

Pitot Tube Calibration Factor C_p 0.808
Volume Collected V_m ~~50.??~~ 47.483 ft³
Water Collected V_w 19.7 ml
Time of Test T_t 72 min.
Stack Pressure P_s -0.50 "H_2O

Pitot Tube No. 8-10-1
Baro. Press. P_b 30.28 "Hg
Probe Tip Dia. D_n ~~0.236~~ in.
% CO_2 0.4 % CO 0.0
% O_2 20.11 % N_2 79.5
Area Stack A_s 6504 in²

Barometer No. 17-2
Probe Tip No. ~~17-1~~
Total Volume of Leak Checks After Start: — ft³
V_m = Dry Gas Meter Calibration Factor ~~1.037~~ 0.981 X 48.403
[Dry Gas Meter Reading — ft³ - (T_t — min. X Leak Rate — cfm)]

Impinger Box No. 17-1

Impinger 1	Final Weight	623.6
	Initial Weight	668.5
	Increase	-44.9
Impinger 2	Final Weight	755.0
	Initial Weight	711.8
	Increase	43.2
Impinger 3	Final Weight	734.5
	Initial Weight	725.1
	Increase	9.4
Impinger 4	Final Weight	492.0
	Initial Weight	491.6
	Increase	0.4
Impinger 5	Final Weight	884.3
	Initial Weight	872.7
	Increase	11.6
Impinger 6	Final Weight	
	Initial Weight	
	Increase	
Impinger 7	Final Weight	
	Initial Weight	
	Increase	

Water Weight Gain

Impinger 1	-44.9
Impinger 2	43.2
Impinger 3	9.4
Impinger 4	0.4
Impinger 5	11.6
Impinger 6	
Impinger 7	
Total	19.7 = V_w

V_w =
$g\ SO_2$ = -
V_w =

P_b =	30.28	$\%CO_2$ =	0.4
V_m =	~~50.194~~ 47.483	$\%O_2$ =	20.1
V_w =	19.7	$\%CO$ =	0.0
P_m =	1.500	$\%N_2$ =	79.5
Avg ΔP =	0.706	A_s =	6504
		D_n =	—
Avg$\sqrt{\Delta P}$ =	0.830	T_t =	72
C_p =	0.808		
P_s =	-0.50 "H_2O		30.24 "Hg
T_m =	71 °F		531 °R
T_s =	229 °F		689 °R

Moisture Content: %M = ~~1.80~~ 1.90 M_d = ~~0.9820~~ 0.9810 MW_d = 28.868 MW = ~~28.67~~ 28.66

$$Vm_{std} = 17.65\ Vm\left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times \cancel{50.194}\ 47.483 \left[\frac{30.28 + \frac{1.500}{13.6}}{71 + 460}\right] = \cancel{50.703}\ 47.965 \text{ sft}^3 \quad \cancel{0.704}\ 0.666 \text{ scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 19.7 = 0.930 sft³

$$\% \text{ Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{0.930}{\cancel{50.703} + 0.930} \times 100 = \cancel{1.80}\ 1.90\ \%$$

$$V_s = 5123.8 \times 0.808 \sqrt{\frac{689}{30.24 \times \cancel{28.67}\ 28.66}} \times 0.830 = \cancel{3063}\ 3064 \text{ fpm}$$

ACFM: ~~138558~~ 138382

SCFM: ~~105610~~ 105537

%I = 1,039 x ___ x ___ / x ___ x ___ x ___ x(___)² = — %

%EA: —

Run Number 1 (SO_2)
Unit PRESS RTO STK.
Date 1/19/96

SO_2 FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	P_m Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
7	0920	744.15	0.50	1.50	1.50	4.0	248	263	238	49	80	70	
6	0923	745.90	0.75	1.50	1.50	4.0	228	263	239	49	81	70	
5	0926	747.90	0.99	1.50	1.50	4.0	240	262	238	50	82	71	
4	0929	750.06	0.95	1.50	1.50	4.0	222	262	238	50	83	71	
3	0932	751.93	1.00	1.50	1.50	4.0	220	263	238	49	83	71	
2	0935	753.95	1.10	1.50	1.50	4.0	232	266	238	59	81	72	Down 0935 - 0939
1	0942	756.11	1.05	1.50	1.50	4.0	237	265	239	50	82	73	
END ALL	0945	757.955	-	-	-	-	-	-	-	-	-	-	

METCO ENVIRONMENTAL

Formaldehyde Field Data

Job Number 96-11
Job Name ERM Southwest
Run Number 1
Unit Pros RTO stack
Date 1/19/96
Operator T. Staley, J. Pemberton
Sample Box No. M-1 Meter Box No. 17-2

Read and record at the start of each test point.

Purge to: —
Purge time: —
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 45
Assumed Moisture % 2
Probe Length 10
C Factor ΔP 10 → 20.15 to reference
Initial Leak @ 15 "Hg = 0.00 cfm
Final Leak @ 10 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H2O	Orifice ΔH "H2O Desired	P_m Orifice ΔH "H2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	T_m Dry Gas Temp. °F Outlet	Remarks
A 1	0820	42.271	~~2.05~~ 0.97	2.05	2.05	6.0	222	254	253	66	68	68	int orsat
2	0823	44.520	0.95	2.05	2.05	6.0	220	256	255	64	68	68	
3	0826	47.120	1.00	2.20	2.20	6.0	229	254	257	64	70	68	
4	0829	49.360	0.99	2.15	2.15	6.0	224	259	257	60	71	68	
5	0832	51.870	0.93	2.00	2.00	6.0	223	260	259	58	72	68	
6	0835	54.195	0.89	1.95	1.95	6.0	231	260	258	56	74	68	
7	0838	56.430	0.54	1.15	1.15	6.0	220	261	258	57	76	69	
8	0841	58.350	0.40	0.87	0.87	5.0	239	263	259	59	78	69	
9	0844	59.920	0.43	0.94	0.94	4.0	230	251	260	60	77	69	
10	0847	61.620	0.39	0.85	0.85	4.0	229	256	261	60	77	69	
11	0850	63.050	0.35	0.76	0.76	3.0	229	256	266	61	78	70	
12	0853	64.440	0.37	0.80	0.80	3.0	231	257	261	61	78	70	
END	0856	65.960	—	—	—	—	—	—	—	—	—	—	
B 1	0905	65.960	0.84	1.80	1.80	5.0	229	260	261	65	75	70	
2	0908	68.120	0.76	1.65	1.65	5.0	221	259	262	59	76	70	
3	0911	70.125	0.71	1.55	1.55	5.0	232	260	259	60	78	71	
4	0914	72.430	0.60	1.30	1.30	5.0	235	260	258	59	79	71	
5	0917	74.250	0.72	1.55	1.55	5.0	220	260	260	59	81	71	

Pitot Tube Calibration Factor C_p 0.807
Volume Collected V_m 50.187 ft³
Water Collected V_w 21.7 ml
Time of Test T_t 72 min.
Stack Pressure P_s - 0.50 "H2O

Pitot Tube No. 18-10-2
Baro. Press. P_b 30.28 "Hg
Probe Tip Dia. D_n 0.236 in.
% CO_2 0.40 % CO ~~20.1~~ 0.0
% O_2 20.1 % N_2 79.5
Area Stack A_s 650 in²

Barometer No. 17-2
Probe Tip No. 17-1 (96-11-I1)
Total Volume of Leak Checks After Start: ____ ft³
V_m = Dry Gas Meter Calibration Factor 48.396 X 1.037
[Dry Gas Meter Reading ____ ft³ - (T_t ____ min. X Leak Rate ____ cfm)]

Impinger Box No. M 1

			Water Weight Gain	
Impinger 1	Final Weight	725.7 ~~706.2~~	Impinger 1	11.4
	Initial Weight	714.3		
	Increase	11.4	Impinger 2	1.40
Impinger 2	Final Weight	727.3	Impinger 3	0.2
	Initial Weight	725.9		
	Increase	1.40	Impinger 4	8.7
Impinger 3	Final Weight	491.4 ~~487.9~~	Impinger 5	
	Initial Weight	491.2		
	Increase	0.2	Impinger 6	
Impinger 4	Final Weight	880.0	Impinger 7	
	Initial Weight	871.3		
	Increase	8.7	Total	21.7 ✓ = V_w
Impinger 5	Final Weight			
	Initial Weight			
	Increase			
Impinger 6	Final Weight			
	Initial Weight			
	Increase			
Impinger 7	Final Weight			
	Initial Weight			
	Increase			

V_w =

g SO_2 =

V_w =

P_b = 30.28 ✓		%CO_2 = 0.40 ✓	
V_m = 50.187 ✓		%O_2 = 20.1 ✓	
V_w = 21.7 ✓		%CO = 0.0 ✓	
P_m = 1.515 ✓		%N_2 = 79.5 ✓	
Avg ΔP = 0.696 ✓		A_s = 6504 ✓	
		D_n = 0.236 ✓	
Avg$\sqrt{\Delta P}$ = 0.825 ✓		T_t = 72 ✓	
C_p = 0.807 ✓			
P_s = −0.50 ✓ "H_2O		~~29.91~~ 30.24 ✓ "Hg	
T_m = ~~28~~ 74 ✓ °F		~~538~~ 534 ✓ °R	
T_s = 227 ✓ °F		687 ✓ °R	

Moisture Content %M = ~~2.01~~ 1.99 ✓ M_d = 0.9801 ✓ MW_d = 28.868 ✓ MW = 28.65 ✓

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 50.187 \left[\frac{30.28 + \frac{1.515}{13.6}}{\cancel{28}\ 74 + 460}\right] = \frac{\cancel{49.994}\ 50.413 ✓ \text{ sft}^3}{\cancel{0.694}\ 0.700 ✓ \text{ scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 21.7 = 1.024 ✓ sft³

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{1.024}{1.024 + \cancel{49.994}\ 50.413}$ x 100 = ~~2.01~~ 1.99 ✓ %

V_s = 5123.8 x 0.807 $\sqrt{\frac{687}{28.65 \times \cancel{29.91}\ 30.24}}$ x 0.825 = ~~3054~~ 3,038 ✓ fpm

ACFM: ~~137,558~~ 137,203 ✓

SCFM: ~~104,244~~ 104,850

%I = $\frac{1{,}039 \times 687 \times \cancel{49.994}\ 50.413}{\cancel{3054}\ 3{,}038 \times \cancel{0.980}\ 0.9801 \times \cancel{29.91}\ 30.24 \times 72 \times \cancel{3054}\ 72 \times (0.236)^2}$ = ~~99.4~~ 99.7 ✓ %

%EA: —

Run Number 96-11
Unit Press RTO Stack
Date 1/19/96

Formaldehyde FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	P_m Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
6	0920	76.690	0.75	1.65	1.65	5.0	235	263	260	62	81	72	
7	0923	78.590	0.84	1.85	1.85	5.0	250	250	262	64	82	72	
8	0926	80.650	0.74	1.65	1.65	5.0	225	251	263	64	82	72	
9	0929	82.930	0.72	1.55	1.55	5.0	231	251	260	64	80	72	
10	0932	84.810	0.68	1.50	1.50	5.0	226	259	259	63	84	73	Pump down @ 0933 86.892 - Pump on @ 0939
11	0939 ~~0935~~	86.892	0.64	1.40	1.40	5.0	224	251	258	64	80	73	
12	0942	88.920	0.53	1.15	1.15	5.0	229	254	260	65	81	73	
END	0945	90.670											

METCO ENVIRONMENTAL

Formaldehyde Field Data

Read and record at the start of each test point.

Job Number 96-11
Job Name ERM Southwest
Run Number 2
Unit Press RTO Stack
Date 1/19/96
Operator T. Staley, J. Pemberton
Sample Box No. M1 Meter Box No. 17-2

Purge to: ______
Purge time: ~~1945~~
Pitot Leak Check Initial ✓ Final ______

Ambient Temp. °F 45
Assumed Moisture % 2
Probe Length 10
C Factor 1.0 → 20.15 to reference
Initial Leak @ 15 "Hg = 0.00 cfm
Final Leak @ 10 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	P_m Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
A 12	1300	142.085	0.51	1.1	1.10	4.0	229	247	244	64	75	76	
11	1303	143.710	0.43	0.94	0.94	4.0	240	257	248	62	75	75	
10	1306	145.130	0.47	1.00	1.00	4.0	233	254	256	60	76	75	
9	1309	146.750	0.45	0.97	0.97	4.0	231	252	256	60	77	75	
8	1312	148.530	0.42	0.94	0.94	4.0	228	252	257	60	78	75	
7	1315	149.953	0.46	1.00	1.00	4.0	248	250	258	58	79	76	
6	1318	151.960	0.63	1.40	1.40	4.0	240	250	258	59	79	76	
5	1321	153.550	0.92	1.99	2.0	4.0	228	251	256	56	83	76	
4	1324	155.830	0.93	2.0	2.0	5.0	232	250	254	57	84	76	
3	1327	157.936	0.93	2.0	2.0	5.0	243	251	256	59	86	78	
2	1330	160.820	0.99	2.1	2.1	6.0	241	251	256	61	87	75	
1	1333	162.590	0.86	1.85	1.85	6.0	241	250	254	62	86	75	
END	1336	165.567	—	—	—	—	—	—	—	—	—	—	
B 12	1345	165.567	0.53	1.15	1.15	6.0	241	256	254	66	86	75	
11	1348	167.322	0.59	1.30	1.30	6.0	240	256	254	63	86	75	
10	1351	169.350	0.42	0.92	0.92	6.0	233	254	256	60	86	75	
9	1354	170.730	0.61	1.45	1.45	6.0	227	254	257	60	86	75	
8	1357	173.220	0.74	1.60	1.60	6.0	237	256	254	61	85	76	

Pitot Tube Calibration Factor C_p 0.807 ✓
Volume Collected V_m 49.247 ✓ ft³
Water Collected V_w ~~19~~ 19.3 ✓ ml
Time of Test T_t 72 ✓ min.
Stack Pressure P_s -0.50 ✓ "H_2O

Pitot Tube No. 18-16.2 ✓
Baro. Press. P_b 30.16 ✓ "Hg
Probe Tip Dia. D_n 0.236 ✓ in.
% CO_2 0.40 ✓ % CO 0.0 ✓
% O_2 20.1 ✓ % N_2 79.5 ✓
Area Stack A_s 0.504 ✓ in²

Barometer No. 17-2 ✓
Total Volume of Leak Checks After Start: —— ft³
V_m = Dry Gas Meter Calibration Factor 47.490 X ~~0.1~~ 1.037 ✓
[Dry Gas Meter Reading — ft³ - (T_t — min. X Leak Rate — cfm)]

Probe Tip No. ~~17-1~~ (96-11-I) ✓

Impinger Box No. M1

			Water Weight Gain	
Impinger 1	Final Weight	714.1	Impinger 1	6.6
	Initial Weight	707.5		
	Increase	6.6		
			Impinger 2	-0.10
Impinger 2	Final Weight	720.9	Impinger 3	0.10
	Initial Weight	721.0		
	Increase	-0.1	Impinger 4	12.7
Impinger 3	Final Weight	488.9	Impinger 5	
	Initial Weight	488.8		
	Increase	0.1	Impinger 6	
Impinger 4	Final Weight	847.8	Impinger 7	
	Initial Weight	835.1		
	Increase		Total	19.3 ~~19.1~~ = V_w
Impinger 5	Final Weight			
	Initial Weight			
	Increase			
Impinger 6	Final Weight			
	Initial Weight			
	Increase			
Impinger 7	Final Weight			
	Initial Weight			
	Increase			

V_w =

g SO_2 = -

V_w =

P_b =	30.16		$\%CO_2$ =	0.40	
V_m =	49.247		$\%O_2$ =	20.1	
V_w =	~~19.1~~ 19.3		%CO =	0.0	
P_m =	1.428		$\%N_2$ =	79.5	
Avg ΔP =	0.658		A_s =	6504	
			D_n =	0.236	
Avg$\sqrt{\Delta P}$ =	0.804		T_t =	72	
C_p =	0.807				
P_s =	-0.50	"H_2O		30.12	"Hg
T_m =	~~79~~ 80	°F		~~539~~ 540	°R
T_s =	235	°F		695	°R

Moisture Content %M = ~~1.81~~ 1.84 M_d = ~~0.9817~~ 0.9816 MW_d = 28.868 MW = 28.67

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 49.247 \left[\frac{30.16 + \frac{1.428}{13.6}}{\cancel{79}80 + 460}\right] = \frac{\cancel{48.806}\ 48.716}{\cancel{0.678}\ 0.677}\ \begin{matrix}\text{sft}^3\\ \text{scfm}\end{matrix}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x ~~19.1~~ 19.3 = ~~0.902~~ 0.911 sft³

$$\%\ Moisture = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{\cancel{0.902}\ 0.911}{48.716\ \cancel{48.806} + \cancel{0.902}\ 0.911} \times 100 = \cancel{1.81}\ 1.84\%$$

$$V_s = 5123.8 \times 0.807 \sqrt{\frac{695}{28.67 \times 30.12}} \times 0.804 = 2982\ \text{fpm}$$

ACFM: 134,707

SCFM: ~~101,515~~ 101,48

$$\%I = \frac{1{,}039 \times 695 \times \cancel{48.806}\ 48.716}{\cancel{0.9819}\ 0.9816 \times 72 \times 30.12 \times 2982 \times (0.236)^2} = \cancel{99.7}\ 99.5\ \%$$

%EA: –

Run Number 2
Unit Press RTO Stack
Date 1/19/96

Formaldehyde FIELD DATA

			ΔP_s		P_m		T_s				T_m		
Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
7	1400	175.290	0.76	1.65	1.65	5.0	234	256	254	62	86	77	
6	1403	177.530	0.79	1.65	1.65	5.0	236	254	256	62	87	77	
5	1406	179.130	0.75	1.65	1.65	5.0	232	254	257	63	87	77	
4	1409	181.523	0.63	1.35	1.35	5.0	230	256	256	64	88	77	
3	1412	183.560	0.62	1.35	1.35	5.0	239	254	254	61	88	77	
2	1415	185.550	0.60	1.30	1.30	5.0	231	256	249	63	88	77	
1	1418	187.550	0.73	1.60	1.60	5.0	236	254	250	62	88	77	
END	1421	189.575	–	–	–	–	–	–	–	–	–	–	

METCO ENVIRONMENTAL

Formaldehyde Field Data

Job Number 96-11
Job Name ERM Southwest
Run Number 3 Formaldehyde
Unit Press R10 Stack
Date 1/19/96
Operator L. Skela
Sample Box No. M1 Meter Box No. 17-1

Read and record at the start of each test point.

Purge to:
Purge time:
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 45
Assumed Moisture % 2
Probe Length 10'
C Factor 10→20.3 to reference
Initial Leak @ 15 "Hg = 0.000 cfm
Final Leak @ 10 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Remarks
B12	1817	892.392	0.59	1.40	1.40	4.0	231	227	245	66	80	81	
11	1820	893.990	0.52	1.20	1.20	4.0	247	251	246	56	81	80	
10	1823	896.230	0.62	1.45	1.45	4.0	242	251	256	56	81	80	
9	1826	897.920	0.69	1.65	1.65	4.0	240	256	250	57	83	81	
8	1829	900.090	0.73	1.70	1.70	5.0	234	226	250	58	83	81	
7	1832	902.025	0.73	1.70	1.70	5.0	235	246	250	59	84	81	
6	1835	904.220	0.86	2.00	2.00	5.0	235	251	236	56	84	81	
5	1838	907.120	0.80	1.85	1.85	5.0	248	250	247	56	87	81	
4	1841	909.131	0.63	1.45	1.45	5.0	238	256	248	56	88	81	
3	1844	911.220	0.62	1.45	1.45	5.0	235	256	246	55	88	81	
2	1847	913.320	0.71	1.65	1.65	5.0	224	256	252	55	88	81	
1	1850	915.430	0.84	2.00	2.00	5.0	244	264	274	58	89	82	
END	1853	918.164	—	—	—	—	—	—	—	—	—	—	
A12	1856	918.164	0.67	1.55	1.55	5.0	231	247	256	66	88	82	
11	1859	919.873	0.54	1.25	1.25	4.0	231	246	260	64	89	92	
10	1902	922.370	0.42	0.99	0.99	4.0	239	250	242	55	87	81	
9	1905	924.430	0.42	0.99	0.99	4.0	228	250	250	55	87	82	
8	1908	926.435	0.44	1.05	1.05	4.0	241	250	251	55	88	82	

Pitot Tube Calibration Factor C_p 0.807 ✓
Volume Collected V_m 51.278 ✓ ft^3
Water Collected V_w 17.3 ✓ ml
Time of Test T_t 72 ✓ min.
Stack Pressure P_s − 0.50 ✓ "H_2O

Pitot Tube No. 14-10-2 ✓
Baro. Press. P_b 30.12 ✓ "Hg
Probe Tip Dia. D_n 0.236 ✓ in.
% CO_2 <1% ✓ % CO 0.0 ✓
% O_2 20.1 ✓ % N_2 79.5 ✓
Area Stack A_s 6504 ✓ in^2

Barometer No. 17-2 ✓
Probe Tip No. 17-1(96-11-I1)
Total Volume of Leak Checks After Start: — ft^3
V_m = Dry Gas Meter Calibration Factor 49.446 X 1.037 ✓
[Dry Gas Meter Reading ___ ft^3 - (T_t ___ min. X Leak Rate ___ cfm)]

Impinger Box No. ~~45~~ M1

			Water Weight Gain	
Impinger 1	Final Weight	708.6	Impinger 1	3.5
	Initial Weight	705.1		
	Increase	3.5	Impinger 2	1.6
Impinger 2	Final Weight	724.9	Impinger 3	5.6
	Initial Weight	723.3		
	Increase	1.6	Impinger 4	6.6
Impinger 3	Final Weight	493.5	Impinger 5	
	Initial Weight	487.9		
	Increase	5.6	Impinger 6	
Impinger 4	Final Weight	854.5	Impinger 7	
	Initial Weight	847.9		
	Increase	6.6	Total	17.3 ✓ = V_w
Impinger 5	Final Weight			
	Initial Weight			
	Increase			
Impinger 6	Final Weight			
	Initial Weight			
	Increase			
Impinger 7	Final Weight			
	Initial Weight			
	Increase			

V_w =
g SO_2 = -
V_w =

P_b =	30.12 ✓	$\%CO_2$ =	0.40 ✓
V_m =	51.278 ✓	$\%O_2$ =	20.1 ✓
V_w =	17.3 ✓	%CO =	0.0 ✓
P_m =	1.535 ✓	$\%N_2$ =	79.5 ✓
Avg ΔP =	0.677 ✓	A_s =	6504 ✓
		D_n =	0.236 ✓
Avg$\sqrt{\Delta P}$ =	0.816 ✓	T_t =	72 ✓
C_p =	0.807 ✓		
P_s =	-0.50 ✓ "H_2O	30.08 ✓	"Hg
T_m =	84 ✓ °F	544 ✓	°R
T_s =	237 ✓ °F	697 ✓	°R

Moisture Content %M = 1.~~597~~ 60 ✓ M_d = 0.9840 ✓ MW_d = 28.868 ✓ MW = 28.69 ✓

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 51.278 \left[\frac{30.12 + \frac{1.535}{13.6}}{84 + 460}\right] = \frac{50.299 \checkmark \text{ sft}^3}{0.699 \checkmark \text{ scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 17.3 = 0.817 ✓ sft³

$$\%\ \text{Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{0.817}{50.299 + 0.817} \times 100 = 1.~~597~~\ 60 \checkmark\ \%$$

$$V_s = 5123.8 \times 0.807 \sqrt{\frac{697}{28.69 \times 30.08}} \times 0.816 = 3032 \checkmark \text{ fpm}$$

ACFM: 136,958 ✓

SCFM: 103,004 ✓

$$\%I = \frac{1{,}039 \times 697 \times 50.299}{3032 \times 30.08 \times 0.984 \times 72 \times (0.236)^2} = 101.2\ \%$$

%EA: —

Run Number 3
Unit Press RTO Stack
Date 1/19/96

Formaldehyde FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	ΔP$_s$ "Pitot" "H_2O	Orifice ΔH "H_2O Desired	P$_m$ Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T$_s$ Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T$_m$ Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
7	1911	927.420	0.45	1.05	1.05	4.0	235	250	239	56	88	82	ΔP 10 → 21
6	1914	929.430	0.46	0.96	0.96	4.0	237	250	240	56	88	82	
5	1917	930.320	0.75	1.60	1.60	4.0	231	251	242	56	89	82	
4	1920	932.470	0.95	2.00	2.00	4.0	243	251	251	58	89	82	
3	1923	934.930	1.00	2.100	2.100	5.0	248	250	239	55	88	82	
2	1926	938.010	0.89	1.89	1.90	5.0	232	251	240	55	88	82	Pump down @ 1828 939.140
1	1831/1829	940.030	0.91	1.90	1.90	5.0	230	251	240	56	88	82	Resume @ 1831
END	1835	441.840	-	-	-	-	-	-	-	-		-	

D-22

METCO ENVIRONMENTAL

PHENOL Field Data

Job Number 96-11
Job Name ERM
Run Number 1
Unit PRESS RTO STACK
Date 1/18/96
Operator G. SMITH / P. SMITH
Sample Box No. 17-1 Meter Box No. 17-2

Read and record at the start of each test point.

Purge to: –
Purge time: –
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 50°
Assumed Moisture % 2-4%
Probe Length 10'
C Factor 10-25 to reference
Initial Leak @ 15.0 "Hg = 0.000 cfm
Final Leak @ 10.0 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Remarks
B 12	1835	990.650	0.35	0.88	0.88	3.0	~~235~~ 266	271	271	78	73	68	INT. ORSAT
11	1838	992.38	0.50	1.25	1.25	3.0	226	264	262	67	71	66	
10	1841	993.94	0.55	1.35	1.35	3.5	221	263	260	64	72	66	
9	1844	995.85	0.80	2.00	2.00	4.5	226	259	258	63	75	66	
8	1847	998.21	0.73	1.80	1.80	4.0	233	261	255	62	78	67	
7	1850	1000.71	0.70	1.75	1.75	4.0	230	250	253	64	80	67	
6	1853	1002.72	0.83	2.05	2.05	4.0	228	249	252	67	82	67	
5	1856	1004.94	0.60	1.50	1.50	4.0	223	249	250	68	83	68	
4	1859	1007.01	0.70	1.75	1.75	4.0	231	249	251	73	85	68	
3	1902	1009.21	0.70	1.75	1.75	4.0	234	248	253	67	86	69	
2	1905	1011.46	0.75	1.90	1.90	4.0	223	248	254	~~76~~ 67	87	69	
1	1908	1013.71	0.65	1.65	1.65	4.0	238	248	253	66	88	70	
END	1911	1016.050	–	–	–	–	–	–	–	–	–	–	
A 1	1921	1016.050	0.45	1.15	1.15	4.0	226	241	260	83	80	71	
2	1924	1017.84	0.45	1.15	1.15	4.0	236	242	259	66	82	71	
3	1927	1019.98	0.37	0.94	0.94	3.5	230	241	258	63	83	72	
4	1930	1021.56	0.45	1.15	1.15	4.0	221	243	258	61	84	72	
5	1933	1023.50	0.40	1.00	1.00	3.5	225	247	259	60	86	73	

Pitot Tube Calibration Factor C_p 0.808 ✓
Volume Collected V_m 52.285 ✓ ft³
Water Collected V_w 25.3 ✓ ml
Time of Test T_t 72 ✓ min.
Stack Pressure P_s -0.50 ✓ "H_2O

Pitot Tube No. 8-10-1 ✓
Baro. Press. P_b 30.10 ✓ "Hg
Probe Tip Dia. D_n 0.242 ✓ in.
% CO_2 0.4 ✓ % CO 0.0 ✓
% O_2 20.1 ✓ % N_2 79.5 ✓
Area Stack A_s 6504 ✓ in²

Barometer No. 17-2 ✓ Probe Tip No. XII-8
Total Volume of Leak Checks After Start: – ft³
V_m = Dry Gas Meter Calibration Factor 1.037 X 50.419

[Dry Gas Meter Reading – ft³ - (T_t – min. X Leak Rate – cfm)]

Impinger Box No. 17-1

			Water Weight Gain	
Impinger 1	Final Weight	599.0	Impinger 1	1.0
	Initial Weight	598.0		
	Increase	1.0	Impinger 2	11.2
Impinger 2	Final Weight	615.8	Impinger 3	2.5
	Initial Weight	604.6		
	Increase	11.2	Impinger 4	10.6
Impinger 3	Final Weight	521.0	Impinger 5	
	Initial Weight	518.5		
	Increase	2.5	Impinger 6	
Impinger 4	Final Weight	873.2	Impinger 7	
	Initial Weight	862.6		
	Increase	10.6	Total	25.3 = V_w
Impinger 5	Final Weight			
	Initial Weight			
	Increase			
Impinger 6	Final Weight			
	Initial Weight			
	Increase			
Impinger 7	Final Weight			
	Initial Weight			
	Increase			

V_w =
g SO_2 =
V_w =

P_b = 30.10	$\%CO_2$ = 0.4		
V_m = 52.285	$\%O_2$ = 20.1		
V_w = 25.3	$\%CO$ = 0.0		
P_m = 1.595	$\%N_2$ = 79.5		
Avg ΔP = 0.650	A_s = 6504		
	D_n = 0.242		
Avg$\sqrt{\Delta P}$ = 0.796	T_t = 72		
C_p = 0.808			
P_s = -0.50 "H_2O	30.06 "Hg		
T_m = 77 °F	537 °R		
T_s = 230 °F	690 °R		

Moisture Content %M = 2.25 M_d = 0.9775 MW_d = 28.868 MW = 28.62

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 52.285 \left[\frac{30.10 + \frac{1.595}{13.6}}{77 + 460}\right] = \frac{51.928\ \text{sft}^3}{0.721\ \text{scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 25.3 = 1.194 sft³

$$\%\ \text{Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{1.194}{51.928 + 1.194} \times 100 = 2.25\ \%$$

$$V_s = 5123.8 \times 0.808 \sqrt{\frac{690}{30.06 \times 28.62}} \times 0.796 = 2951\ \text{fpm}$$

$$\%I = \frac{1{,}039 \times 51.928 \times 690}{2951 \times 0.9775 \times 30.06 \times 72 \times (0.242)^2} = 101.8\ \%$$

ACFM: ~~13329~~ 133300

SCFM: 100534

%EA: —

Run Number 1
Unit PRESS RTO STACK
Date 1/18/96

PHENOL FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	P_m Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
6	1936	1025.01	0.40	1.00	1.00	3.5	237	247	260	60	86	73	
7	1939	1026.76	0.50	1.15	1.15	3.5	240	246	260	60	87	74	
8	1942	1028.30	0.82	1.90	1.90	4.0	228	245	261	59	89	74	
9	1945	1030.51	0.95	2.25	2.25	4.0	225	246	263	58	92	74	
10	1948	1032.98	1.00	2.35	2.35	4.5	235	246	263	58	93	75	DOWN 1951-2009
11 RS	~~1951~~	1036.34	1.00	2.35	2.35	4.0	235	256	268	74	82	77	
2012 12	~~1954~~	1038.99	0.95	2.25	2.25	4.0	230	248	267	60	84	77	
2015 END AL	~~1957~~	1041.069	–	–	–	–	–	–	–	–	–	–	

METCO ENVIRONMENTAL

Job Number 96-11
Job Name ERM Southwest
Run Number 2
Unit Press RTO Stack
Date 1-19-96
Operator 1. Staley / J. Pemberton
Sample Box No. 17-2 Meter Box No. 17-2

Phenols Field Data

Read and record at the start of each test point.

Purge to: —
Purge time: —
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 45
Assumed Moisture % 2
Probe Length 10'
C Factor 10 → 20.15 to reference
Initial Leak @ 15 "Hg = 0.000 cfm
Final Leak @ 7 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Remarks
B 12	1038	90.827	0.43	0.94	0.94	2.0	219	291	236	64	73	73	init w/ start
11	1041	92.030	0.54	1.15	1.15	3.0	229	256	241	62	73	73	
10	1044	93.220	0.66	1.45	1.45	3.0	232	267	243	61	73	73	
9	1047	95.280	0.70	1.50	1.50	3.0	219	292	215	60	73	73	
8	1050	97.235	0.71	1.75	1.75	4.0	217	270	245	58	77	73	ΔP 10 → 20.45
7	1053	99.970	0.71	1.75	1.75	4.0	226	256	243	59	79	73	
6	1056	101.630	0.82	2.00	2.00	4.5	232	250	246	61	81	73	
5	1059	104.020	0.63	1.55	1.55	4.0	221	242	244	62	82	74	
4	1102	106.250	0.620	1.55	1.55	4.0	219	265	245	62	83	74	
3	1105	108.325	0.70	1.75	1.75	4.0	232	267	261	64	84	74	
2	1108	110.630	0.76	1.90	1.90	4.5	227	252	267	66	86	75	
1	1111	112.790	0.81	2.00	2.00	4.5	219	254	264	66	86	75	
END	1114	115.205	—	—	—	—	—	—	—	—	—	—	
A 1	1120	115.205	0.74	1.85	1.85	4.0	233	261	267	66	86	75	
2	1123	117.480	0.95	2.35	2.35	4.5	220	245	262	65	85	75	
3	1126	119.970	0.96	2.35	2.35	4.5	231	246	259	60	84	76	
4	1129	122.620	0.90	2.20	2.20	4.5	221	246	254	53	85	76	
5	1132	126.060	0.84	2.10	2.10	5.0	238	256	252	53	87	76	

Pitot Tube Calibration Factor C_p 0.808 ✓
Volume Collected V_m 53.067 ✓ ft³
Water Collected V_w 22.1 ✓ ml
Time of Test T_t 72 ✓ min.
Stack Pressure P_s -0.50 ✓ "H_2O

Pitot Tube No. 8-10-1 ✓
Baro. Press. P_b 30.26 ✓ "Hg
Probe Tip Dia. D_n 0.242 ✓ in.
% CO_2 0.40 ✓ % CO 0.0 ✓
% O_2 20.1 ✓ % N_2 79.5 ✓
Area Stack A_s 6504 ✓ in²

Barometer No. 17-2
Probe Tip No. ~~II~~-8
Total Volume of Leak Checks After Start: — ft³
V_m = Dry Gas Meter Calibration Factor 51.174 ✓ X 1.037 ✓
[Dry Gas Meter Reading — ft³ - (T_t — min. X Leak Rate — cfm)]

Impinger Box No. 17-2

				Water Weight Gain	
Impinger 1	Final Weight	726.8		Impinger 1	0.8
	Initial Weight	726.0			
	Increase	0.80		Impinger 2	10.9
Impinger 2	Final Weight	712.3		Impinger 3	0.30
	Initial Weight	701.4			
	Increase	10.9		Impinger 4	10.1
			V_w =		
Impinger 3	Final Weight	496.5	g SO_2 =	Impinger 5	
	Initial Weight	496.2	V_w =		
	Increase	0.30		Impinger 6	
Impinger 4	Final Weight	829.0		Impinger 7	
	Initial Weight	818.9			
	Increase	10.1		Total	22.1 = V_w

Impinger 5	Final Weight		P_b = 30.28	%CO_2 = 0.10	
	Initial Weight		V_m = 53.067	%O_2 = 20.1	
	Increase		V_w = 22.1	%CO = 0.0	
			P_m = 1.668	%N_2 = 79.5	
Impinger 6	Final Weight		Avg ΔP = 0.683	A_s = 6504	
	Initial Weight			D_n = 0.212	
	Increase		Avg$\sqrt{\Delta P}$ = 0.819	T_t = 72	
			C_p = 0.808		
Impinger 7	Final Weight		P_s = -0.50 "H_2O	30.24 "Hg	
	Initial Weight		T_m = 79 °F	539 °R	
	Increase		T_s = 228 °F	688 °R	

Moisture Content %M = 1.94 M_d = 0.9806 MW_d = 28.868 MW = 28.~~67~~ 66

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 53.067 \left[\frac{30.28 + \frac{1.668}{13.6}}{79 + 460}\right] = \frac{52.831 \text{ sft}^3}{0.754 \text{ scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 22.1 = 1.043 sft^3

$$\% \text{ Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{1.043}{52.831 + 1.043} \times 100 = 1.94\ \%$$

$$V_s = 5123.8 \times 0.808 \sqrt{\frac{688}{\cancel{28.67}\ 28.66 \times 30.24}} \times 0.819 = \cancel{3020}\ 3021 \text{ fpm}$$

ACFM: ~~136,435~~ 136,449

SCFM: ~~104,173~~ 104,165

$$\%I = \frac{1.039 \times 688 \times 52.831}{0.9806 \times \cancel{30.24}\ 72 \times 30.24 \times \cancel{3020}\ 3021 \times (0.212)^2} = 100.0\ \%$$

%EA: -

Run Number 2
Unit Press RTO Stack
Date 1/19/96

Phenols FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	ΔP "Pitot" "H_2O	Orifice ΔH "H_2O Desired	P_m Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
A/6	1135	127.40	0.82	2.05	2.05	5.0	236	249	250	52	87	76	
~~3~~7	1138	129.769	0.94	2.30	2.30	5.0	231	248	250	52	88	77	
~~2~~8	1141	132.250	0.42	1.10	1.10	4.0	231	249	247	52	88	76	
9	1144	134.260	0.42	1.10	1.10	4.0	238	247	248	53	88	76	
10	1147	136.230	0.41	1.10	1.10	4.0	236	249	247	54	87	77	
11	1150	138.240	0.43	1.10	1.10	4.0	225	250	255	55	88	77	
12	1153	139.580	0.46	1.15	1.15	4.0	237	251	256	54	89	77	
END	1156	142.001											

D-28

1312

METCO ENVIRONMENTAL

PHENOL Field Data

Job Number 96-11
Job Name ERM SOUTHWEST
Run Number 3
Unit PRESS RTO STACK
Date 1/19/96
Operator G. SMITH/P. SMITH
Sample Box No. 17-2 Meter Box No. 17-1

Read and record at the start of each test point.

Purge to: —
Purge time: —
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 60
Assumed Moisture % 2
Probe Length 10'
C Factor 10-28 to reference
Initial Leak @ 15.0 "Hg = 0.008 cfm
Final Leak @ 7.0 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	P_m Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
A1	1457	838.680	1.05	3.00	3.00	5.5	226	239	272	87	77	77	INT. ORSAT
2	1500	841.50	1.05	3.00	3.00	5.5	231	238	270	61	77	77	
3	1503	844.40	0.95	2.70	2.70	5.0	244	238	262	60	78	77	
4	1506	847.36	0.90	2.60	2.60	5.0	225	239	248	61	80	77	
5	1509	850.11	0.95	2.70	2.70	5.0	239	240	239	63	81	77	
6	1512	853.15	0.85	2.40	2.40	5.0	239	239	231	64	82	78	
7	1515	856.39	0.50	1.45	1.45	4.0	231	241	236	86	79	80	OFF 1515-1635
8	1638	858.50	0.48	1.40	1.40	4.0	242	239	241	68	79	79	
9	1641	860.41	0.40	1.15	1.15	4.0	249	238	229	66	79	78	
10	1644	862.21	0.35	1.00	1.00	3.0	242	237	243	62	79	78	
11	1647	863.99	0.40	1.15	1.15	4.0	238	237	261	60	80	78	
12	1650	866.95	0.45	1.30	1.30	4.0	237	238	271	59	81	78	
END	1653	867.853	—	—	—	—	—	—	—	—	—	—	
B12	1705	867.853	0.50	1.00	1.00	4.0	234	242	269	77	80	78	Δ10-22
B11	1708	869.50	0.56	1.25	1.25	4.0	235	241	266	67	80	78	
10	1711	871.24	0.43	0.98	0.98	4.0	237	241	272	64	87	78	
9	1714	872.99	0.60	1.35	1.35	4.0	244	241	260	64	82	78	
8	1717	875.10	0.60	1.35	1.35	4.0	249	241	247	63	83	79	

Pitot Tube Calibration Factor C_p 0.808 ✓
Volume Collected V_m 52.223 ✓ ft³
Water Collected V_w 25.9 ✓ ml
Time of Test T_t 72 ✓ min.
Stack Pressure P_s -0.50 ✓ "H_2O

Pitot Tube No. 8-10-1 ✓
Baro. Press. P_b 30.12 ✓ "Hg
Probe Tip Dia. D_p 0.242 ✓ in.
% CO_2 0.4 ✓ % CO 0.0 ✓
% O_2 20.1 ✓ % N_2 79.5 ✓
Area Stack A_s 6504 ✓ in²

Barometer No. 17-2
Probe Tip No. KH-8
Total Volume of Leak Checks After Start: — ft³
V_m = Dry Gas Meter Calibration Factor 0.981 ✓ X 53.234
[Dry Gas Meter Reading — ft³ - (T_t — min. X Leak Rate — cfm)]

Impinger Box No. 17-2

			Water Weight Gain	
Impinger 1	Final Weight	729.8	Impinger 1	7.0
	Initial Weight	722.8		
	Increase	7.0	Impinger 2	6.2
Impinger 2	Final Weight	710.0	Impinger 3	0.9
	Initial Weight	703.8		
	Increase	6.2	Impinger 4	11.8
Impinger 3	Final Weight	494.5	Impinger 5	
	Initial Weight	493.6		
	Increase	0.9	Impinger 6	
Impinger 4	Final Weight	817.0	Impinger 7	
	Initial Weight	805.2		
	Increase	11.8	Total	25.9 = V_w
Impinger 5	Final Weight			
	Initial Weight			
	Increase			
Impinger 6	Final Weight			
	Initial Weight			
	Increase			
Impinger 7	Final Weight			
	Initial Weight			
	Increase			

V_w =

g SO_2 =

V_m =

P_b = 30.12		%CO_2 =	0.4
V_m = 52.223		%O_2 =	20.1
V_w = 25.9		%CO =	0.0
P_m = 1.716		%N_2 =	79.5
Avg ΔP = 0.669		A_s =	6504
Avg$\sqrt{\Delta P}$ = ~~0.807~~ 0.808		D_n =	0.242
C_p = 0.808		T_t =	72
P_s = -0.50 "H_2O		30.08 "Hg	
T_m = 80 °F		540 °R	
T_s = 237 °F		697 °R	

Moisture Content %M = 2.31 M_d = 0.9769 MW_d = 28.868 MW = 28.62

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 52.223 \left[\frac{30.12 + \frac{1.716}{13.6}}{80 + 460}\right] = \frac{51.628 \text{ sft}^3}{0.717 \text{ scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 25.9 = 1.222 sft³

$$\text{\% Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{1.222}{51.628 + 1.222} \times 100 = 2.31\ \%$$

$$V_s = 5123.8 \times 0.808 \sqrt{\frac{697}{30.08 \times 28.62}} \times \frac{0.807}{0.[illegible]} = \cancel{3006}\ 3010 \text{ fpm}$$

ACFM: ~~135781~~ 135949

SCFM: ~~101384~~ 101519

$$\%I = \frac{1{,}039 \times 51.628 \times 697}{\cancel{3006}\ 3010 \times 0.9769 \times 72 \times 30.08 \times (0.242)^2} = \cancel{100.4}\ 100.2\ \%$$

%EA: -

Run Number 3
Unit PRESS RTO STK.
Date 1/19/96

PHENOL FIELD DATA

			ΔP_s		P_m		T_s				T_m		
Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
7	1720	876.98	0.80	1.80	1.80	4.5	237	240	236	63	84	78	
6	1723	879.10	0.80	1.80	1.80	4.5	232	239	228	62	85	79	
5	1726	881.40	0.65	1.50	1.50	4.5	252	239	220	62	86	79	
4	1729	883.60	0.60	1.35	1.35	4.5	230	238	229	63	87	79	
3	1732	885.75	0.65	1.50	1.50	4.5	242	238	236	63	87	80	
2	1735	887.71	0.70	1.55	1.55	4.5	233	238	238	62	88	80	
1	1738	889.80	0.85	1.90	1.90	4.5	224	238	241	62	89	80	
END	1741	891.914	–	–	–	–	–	–	–	–	–	–	

96-11
ERM Southwest
Silsbee, TX

1/18/96
Press House Stack
Run 1
Jesse Roelen

MDI Data

Method 5521

PERSONNEL PUMP#: 1105

	CLOCK TIME	BALL HEIGHT	COMMENTS
START:	1835	2.7	Pulling @ 1 l/min
	1840	2.7	
	1845	2.7	
	1850	2.7	
	1855	2.7	
	1900	2.7	
	1905	2.7	
	1910	2.7	
	1915	2.7	
	1920	2.7	
	1925	2.7	
	1930	2.7	
	1935	—	End Test

Total Volume: 60 liters
Time of Test: 60 minutes

96-11
ERM Southwest
Silsbee, TX

1/19/96
Press House Stack
Run 2

MDI Data
Jesse Roche

Method 5521

PERSONNEL PUMP#: 1105

	CLOCK TIME	BALL HEIGHT	COMMENTS
START:	1038	2.7	Pulling @ 1l/min
	1043	2.7	
	1048	2.7	
	1053	2.7	
	1058	2.7	
	1103	2.7	
	1108	2.7	
	1113	2.7	
	1118	2.7	
	1123	2.7	
	1128	2.7	
	1133	2.7	
	1138	—	End test

Total Sample Volume: 60 liters
Time of Test: 60 minutes

96-11
ERM Southwest
Silsbee, TX

1/19/96
Press House Stack
Run 3
Jesse Rochen

MDI Data
Method 5521

PERSONNEL PUMP#: 1105

	CLOCK TIME	BALL HEIGHT	COMMENTS
START:	1457	2.7	Pulling @ 1l/min
	1502	2.7	
	1507	2.7	
	1512	2.7	Pump off@ 1516 (Unit Down); Pump on @ 1635
	~~1517~~ 1636	2.7	
	~~1522~~ 1641	2.7	
	~~1527~~ 1646	2.7	
	~~1532~~ 1651	2.7	
	~~1537~~ 1656	2.7	
	~~1542~~ 1701	2.7	
	~~1547~~ 1706	2.7	
	~~1552~~ 1711	2.7	
	~~1557~~ 1716	—	End Test

Total Volume: 60 l
~~To~~ Time of Test: 60 minutes

METCO ENVIRONMENTAL

Particulate Field Data

Job Number 96-011-
Job Name ERm Southwest
Run Number 1 #1
Unit Press House Vent (South Inlet Duct)
Date 1/18/96
Operator Hudson/Wood
Sample Box No. 34 Meter Box No. 11-2

Read and record at the start of each test point.
Purge to: –
Purge time: –
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 52
Assumed Moisture % 2.05
Probe Length 3'
C Factor 2.1 → ΔP 2.0 to reference
Initial Leak @ 15.0 "Hg = 0.012 cfm
Final Leak @ 8.0 "Hg = 0.02 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Remarks
D 6	1835	882.339	1.40	1.50	1.50	4.5	101	233	246	52	73	69	int orsat
5	1838	884.76	1.40	1.50	1.50	4.5	102	235	249	51	74	69	
4	1841	886.32	1.50	1.60	1.60	4.5	103	240	249	50	76	69	
3	1844	888.45	1.40	1.50	1.50	5.0	100	242	251	52	78	69	
2	1847	890.51	1.40	1.50	1.50	5.0	101	256	254	54	81	70	
1	1850	892.90	1.20	1.25	1.25	5.0	102	262	256	56	82	70	
End D	1853	894.513	–	–	–	–	–	–	–	–	–	–	
C 1	1905	894.513	0.92	0.96	0.96	3.5	101	270	270	65	79	71	
2	1908	896.48	1.40	1.50	1.50	4.5	100	271	264	62	80	71	
3	1911	898.31	1.60	1.65	1.65	5.0	101	270	264	62	84	72	
4	1914	900.51	1.60	1.65	1.65	5.0	102	262	259	64	85	72	
5	1917	902.49	1.70	1.80	1.80	5.0	101	257	253	67	88	72	
6	1920	904.79	1.50	1.55	1.55	5.0	104	254	256	68	89	73	
End C	1923	906.932	–	–	–	–	–	–	–	–	–	–	
B 1	1927	906.932	1.30	1.35	1.35	4.0	101	264	263	67	87	74	
2	1930	908.90	1.60	1.65	1.65	5.0	99	258	251	64	90	75	
3	1933	910.99	1.60	1.65	1.65	5.0	101	254	259	67	91	74	
4	1936	913.19	1.80	1.90	1.90	5.5	102	253	258	68	93	76	

Pitot Tube Calibration Factor C_p 0.811 ✓
Volume Collected V_m 48.325 ✓ ft^3
Water Collected V_w 21.30 ✓ ml
Time of Test T_t 72 ✓ min.
Stack Pressure P_s -2.3 ✓ "H_2O

Pitot Tube No. 11-3-2 ✓
Baro. Press. P_b 30.10 ✓ "Hg
Probe Tip Dia. D_n 0.182 ✓ in.
% CO_2 0.0 ✓ % CO 0.0 ✓
% O_2 20.9 ✓ % N_2 79.1 ✓
Area Stack A_s 1892 ✓ in^2

Barometer No. 26 ✓
Probe Tip No. ~~96-011~~ - III - 7 - 2 ✓
Total Volume of Leak Checks After Start: – ft^3
V_m = Dry Gas Meter Calibration Factor 48.568 X 0.995 ✓
[Dry Gas Meter Reading – ft^3 - (T_t – min. X Leak Rate – cfm)]

Impinger Box No. 34

Impinger 1	Final Weight	596.6	
	Initial Weight	596.2	
	Increase	0.4	
Impinger 2	Final Weight	607.6	
	Initial Weight	602.3	
	Increase	5.3	
Impinger 3	Final Weight	537.9	
	Initial Weight	536.4	
	Increase	1.5	
Impinger 4	Final Weight	789.1	
	Initial Weight	775.0	
	Increase	14.1	
Impinger 5	Final Weight		
	Initial Weight		
	Increase		
Impinger 6	Final Weight		
	Initial Weight		
	Increase		
Impinger 7	Final Weight		
	Initial Weight		
	Increase		

Water Weight Gain

Impinger 1	0.4
Impinger 2	5.3
Impinger 3	1.5
Impinger 4	14.1
Impinger 5	
Impinger 6	
Impinger 7	
Total	21.3 ✓ = V_w

V_w =
g SO_2 =
V_w =

P_b = 30.10 ✓		$\%CO_2$ =	0.0 ✓
V_m = 43.325 ✓		$\%O_2$ =	20.9 ✓
V_w = 21.3 ✓		$\%CO$ =	0.0 ✓
P_m = ~~1.450~~ 1.445 ✓		$\%N_2$ =	79.1 ✓
Avg ΔP = 1.380 ✓		A_s =	1392 ✓
		D_n =	0.182 ✓
Avg$\sqrt{\Delta P}$ = ~~1.161~~ 1.170 ✓		T_t =	72 ✓
C_p = 0.811 ✓			
P_s = -2.3 "H_2O		29.93 ✓	"Hg
T_m = 79 ✓ °F		539 ✓	°R
T_s = 101 ✓ °F		561 ✓	°R

Moisture Content %M = 2.06 ✓ M_d = 0.9794 ✓ MW_d = 28.836 ✓ MW = 28.61 ✓

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 43.325 \left[\frac{30.10 + \frac{1.450 \; \cancel{1.380}}{13.6}}{79 + 460}\right] = \frac{47.800 \checkmark \text{ sft}^3}{0.664 \checkmark \text{ scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 21.3 = 1.005 ✓ sft^3

$$\% \text{ Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{1.005}{47.800 + 1.005} \times 100 = 2.06 \checkmark \%$$

$$V_s = 5123.8 \times 0.811 \sqrt{\frac{561}{29.93 \times 28.61}} \times 1.170 = 3935 \checkmark \text{ fpm}$$

ACFM: 51,704 ✓

SCFM: 47,849 ✓

$$\%I = \frac{1{,}039 \times 47.800 \times 561}{0.9794 \times 72 \times 3935 \times 29.93 \times (0.182)^2} = 101.3 \checkmark \%$$

%EA: ~~33.934~~

Particulate FIELD DATA

Run Number 1
Unit PHU (South Inlet Duct) #1
Date 1/18/96

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	P_m Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
5	1939	915.46	1.60	1.65	1.65	5.0	102	252	259	67	94	75	
6	1942	917.69	1.30	1.35	1.35	5.0	101	250	261	67	95	76	
End B	1945	919.798	–	–	–	–	–	–	–	–	–	–	
A 1	1948	919.798	0.85	0.89	0.89	5.0	101	259	260	63	91	77	Pump 921813 Pump off @1952 on @200
2	1951	921.39	0.85	0.89	0.89	3.5	101	258	263	64	89	78	
3	2011	922.94	1.20	1.25	1.25	4.0	101	270	270	56	85	78	
4	2014	924.79	1.40	1.45	1.45	4.0	101	265	264	55	86	78	
5	2017	926.88	1.30	1.35	1.35	4.5	101	255	270	54	89	78	
6	2020	929.19	1.30	1.35	1.35	4.0	101	256	270	54	90	78	
End All	2023	930.907	–	–	–	–	–	–	–	–	–	–	

METCO ENVIRONMENTAL

Particulate Field Data

Read and record at the start of each test point.

Job Number 96-011
Job Name ERm Southwest
Run Number 2
Unit Press House Vent Inlet Duct (South) #1
Date 1/19/96
Operator Hudson/Wood
Sample Box No. 34 Meter Box No. 11-2

Purge to: -
Purge time: -
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 54
Assumed Moisture % 2.05
Probe Length 10'
C Factor ΔH 1.42 → ΔP 1.40 to reference
Initial Leak @ 15.0 "Hg = 0.000 cfm
Final Leak @ 16.0 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	P_m Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
D 1	1038	996.856	0.81	0.83	0.83	3.5	97	231	240	55	78	76	
2	1041	998.36	~~0.~~1.20	1.20	1.20	4.5	96	245	241	55	79	76	
3	1044	1000.18	1.40	1.45	1.45	5.0	98	260	241	54	80	76	
4	1047	1002.29	1.50	1.55	1.55	5.0	98	270	240	55	83	76	
5	1050	1004.33	1.50	1.55	1.55	5.0	99	259	239	56	85	76	
6	1053	1006.81	1.20	1.20	1.20	5.0	99	256	257	58	86	76	
End D	1056	1008.357	-	-	-	-	-	-	-	-	-	-	
C 1	1100	1008.357	1.30	1.30	1.30	5.0	98	266	266	68	84	76	
2	1103	1010.28	1.40	1.45	1.45	5.0	98	260	270	64	85	76	
3	1106	1012.20	1.50	1.55	1.55	5.0	98	257	263	64	87	76	
4	1109	1014.34	1.60	1.60	1.60	5.0	98	254	255	65	89	77	
5	1112	1016.60	1.70	1.75	1.75	5.5	97	254	251	66	89	77	
6	1115	1018.81	1.40	1.45	1.45	5.5	97	250	246	68	91	77	
End C	1118	1020.906	-	-	-	-	-	-	-	-	-	-	
B 1	1121	1020.906	1.30	1.30	1.30	4.5	99	262	241	66	88	77	
2	1124	1023.07	1.40	1.45	1.45	5.0	98	261	240	65	89	78	
3	1127	1024.80	1.40	1.45	1.45	5.0	99	255	240	64	90	78	
4	1130	1026.80	1.60	1.65	1.65	5.5	100	253	237	65	92	78	

Pitot Tube Calibration Factor C_p 0.811 ✓
Volume Collected V_m 47.786 ✓ ft^3
Water Collected V_w 15.4 ✓ ml
Time of Test T_t 72 ✓ min.
Stack Pressure P_s -1.90 ✓ "H_2O

Pitot Tube No. 11-3-2 ✓
Baro. Press. P_b 30.26 ✓ "Hg
Probe Tip Dia. D_n 0.182 ✓ in.
% CO_2 0.0 ✓ % CO 0.0 ✓
% O_2 20.9 ✓ % N_2 79.1 ✓
Area Stack A_s 1992 ✓ in^2

Barometer No. #26 ✓
Probe Tip No. ~~95-011~~-III-#2
Total Volume of Leak Checks After Start: - ft^3
V_m = Dry Gas Meter Calibration Factor 0.995 ✓ X 48.026

[Dry Gas Meter Reading - ft^3 - (T_t - min. X Leak Rate - cfm)]

Impinger Box No. 34

			Water Weight Gain	
Impinger 1	Final Weight	604.0	Impinger 1	1.1
	Initial Weight	602.9		
	Increase	1.1	Impinger 2	3.0
Impinger 2	Final Weight	600.5	Impinger 3	1.8
	Initial Weight	597.5		
	Increase	3.0	Impinger 4	9.5
Impinger 3	Final Weight	538.5	Impinger 5	
	Initial Weight	536.7		
	Increase	1.8	Impinger 6	
Impinger 4	Final Weight	798.5	Impinger 7	
	Initial Weight	789.0		
	Increase	9.5	Total	15.4 ✓ = V_w
Impinger 5	Final Weight			
	Initial Weight			
	Increase			
Impinger 6	Final Weight			
	Initial Weight			
	Increase			
Impinger 7	Final Weight			
	Initial Weight			
	Increase			

V_w =
g SO_2 =
V_w =

P_b = 30.26 ✓		%CO_2 = 0.0 ✓	
V_m = 47.786 ✓		%O_2 = 20.9 ✓	
V_w = 15.4 ✓		%CO = 0.0 ✓	
P_m = 1.393 ✓		%N_2 = 79.1 ✓	
Avg ΔP = 1.361 ✓		A_s = 1892 ✓	
		D_n = 0.182 ✓	
Avg$\sqrt{\Delta P}$ = 1.163 ✓		T_t = 72 ✓	
C_p = 0.811 ✓			
P_s = -01.9 ✓	"H_2O	30.12 ✓	"Hg
T_m = 83 ✓	°F	543 ✓	°R
T_s = 98 ✓	°F	558 ✓	°R

Moisture Content: %M = 1.52 ✓ M_d = 0.9848 ✓ MW_d = 28.836 ✓ MW = 28.67 ✓

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 47.786 \left[\frac{30.26 + \frac{1.393}{13.6}}{83 + 460}\right] = \frac{47.161 ✓ \text{ sft}^3}{0.655 ✓ \text{ scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 15.4 = 0.7269 ✓ sft³

$$\%\ Moisture = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{0.7269}{47.161 + 0.7269} \times 100 = 1.52 ✓ \%$$

$$V_s = 5123.8 \times 0.811 \sqrt{\frac{558}{30.12 \times 28.67}} \times 1.163 = 3885 ✓ \text{ fpm}$$

ACFM: 51,042 ✓

SCFM: 49,060 ✓

$$\%I = \frac{1{,}039 \times 47.161 \times 558}{3885 \times 72 \times \cancel{3855}\ 0.9848 \times 30.12 \times (.182)^2} = 99.5 ✓ \%$$

%EA: —

Run Number 96-011
Unit PHU (Inlet Duct South) #1
Date ~~#~~1/19/96

Particulate FIELD DATA

			ΔP_s		P_m		T_s				T_m		
Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
5	1708	125.85	1.60	1.60	1.60	5.5	104	251	235	68	94	82	
6	1711	127.81	1.50	1.50	1.50	5.5	103	252	237	67	95	82	
End B	1714	130.090	–	–	–	–	–	–	–	–	–	–	
A 1	1717	130.090	1.00	1.00	1.00	4.5	103	251	269	61	91	82	
2	1720	131.79	1.10	1.10	1.10	4.5	103	263	241	65	93	83	
3	1723	133.58	1.30	1.30	1.30	4.5	105	261	240	64	93	83	
4	1726	135.20	1.30	1.30	1.30	5.0	103	260	241	63	95	83	
5	1729	137.39	1.30	1.30	1.30	5.0	103	260	242	63	96	83	
6	1732	139.34	1.10	1.10	1.10	5.0	104	245	241	62	97	83	
End A1	1735	141.333	–	–	–	–	–	–	–	–	–	–	

METCO ENVIRONMENTAL

Job Number 96-011
Job Name ERM Southwest
Run Number 1
Unit PHU (Inlet Duct South) #1
Date 1/19/96
Operator Hudson / Wood
Sample Box No. 21 Meter Box No. 11-2

Formaldehyde Field Data

Read and record at the start of each test point.

Purge to: –
Purge time: –
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 40
Assumed Moisture % 2.05
Probe Length 3'
C Factor ΔH 1.4 ΔP 1.5 to reference
Initial Leak @ 15.0 "Hg = 0.013 cfm
Final Leak @ 5.0 "Hg = 0.008 cfm

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	P_m Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
A 1	0820	947.228	1.20	1.10	1.10	3.5	92	259	271	54	74	72	Init orsat
2	0823	948.99	1.10	1.00	1.00	3.5	92	237	270	56	75	72	
3	0826	950.89	1.20	1.10	1.10	3.5	98	240	271	60	76	72	
4	0829	952.51	1.40	1.30	1.30	4.0	93	241	270	58	78	72	
5	0832	954.42	1.20	1.10	1.10	4.0	94	238	259	56	79	72	
6	0835	956.25	1.40	1.30	1.30	4.0	92	240	250	55	81	72	
End A	0838	958.220	–	–	–	–	–	–	–	–	–	–	
B 1	0842	958.220	1.40	1.30	1.30	4.0	93	246	243	58	80	72	
2	0845	960.29	1.60	1.50	1.50	4.0	95	240	239	53	83	73	
3	0848	962.15	1.60	1.50	1.50	4.0	95	244	236	52	84	74	
4	0851	964.26	1.60	1.50	1.50	4.0	94	241	238	52	85	73	
5	0854	966.51	1.60	1.50	1.50	4.0	93	240	235	53	85	73	
6	0857	968.51	1.30	1.20	1.20	3.0	94	241	241	57	86	74	
End B	0900	970.293	–	–	–	–	–	–	–	–	–	–	
C 1	0903	970.293	1.30	1.20	1.20	3.5	94	240	245	56	84	74	
2	0906	972.09	1.50	1.40	1.40	3.5	93	242	246	55	85	74	
3	0909	974.19	1.60	1.50	1.50	4.0	96	248	250	55	86	74	
4	0912	976.49	1.60	1.45	1.45	4.0	95	246	250	56	80	74	

Pitot Tube Calibration Factor C_p 0.812
Volume Collected V_m 46.021 ft³
Water Collected V_w 15.3 ml
Time of Test T_t 72 min.
Stack Pressure P_s -2.5 "H_2O

Pitot Tube No. 11-3-1
Baro. Press. P_b 30.28 "Hg
Probe Tip Dia. D_n 0.177 in.
% CO_2 0.0 % CO 0.0
% O_2 20.9 % N_2 79.1
Area Stack A_s 1892 in²

Barometer No. #26
Probe Tip No. 96-011 #2
Total Volume of Leak Checks After Start: — ft³
V_m = Dry Gas Meter Calibration Factor 46.252 X 0.995
[Dry Gas Meter Reading – ft³ - (T_t – min. X Leak Rate – cfm)]

Impinger Box No. 21

			Water Weight Gain	
Impinger 1	Final Weight	699.6	Impinger 1	3.9
	Initial Weight	695.7		
	Increase	3.9	Impinger 2	1.3
Impinger 2	Final Weight	730.0	Impinger 3	0.1
	Initial Weight	728.7		
	Increase		Impinger 4	10.0
Impinger 3	Final Weight	487.1	Impinger 5	
	Initial Weight	487.0		
	Increase		Impinger 6	
Impinger 4	Final Weight	868.8	Impinger 7	
	Initial Weight	858.8		
	Increase		Total	15.3 = V_w
Impinger 5	Final Weight			
	Initial Weight			
	Increase			
Impinger 6	Final Weight			
	Initial Weight			
	Increase			
Impinger 7	Final Weight			
	Initial Weight			
	Increase			

V_w =

g SO_2 = -

V_w =

P_b = 30.28		$\%CO_2$ = 0.0	
V_m = 46.021		$\%O_2$ = 20.9	
V_w = 15.30		%CO = 0.0	
P_m = 1.290		$\%N_2$ = 79.1	
Avg ΔP = 1.400		A_s = 1892	
		D_n = 0.177	
Avg$\sqrt{\Delta P}$ = 1.181		T_t = 72	
C_p = 0.812			
P_s = -2.5	"H_2O	30.10	"Hg
T_m = 79	°F	539	°R
T_s = 95	°F	555	°R

Moisture Content %M = ~~0.9845~~ 1.55 M_d = 0.9845 MW_d = 28.836 MW = 28.67

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 46.021 \left[\frac{30.28 \frac{+1.290}{13.6}}{79 + 460}\right] = \frac{45.775 \text{ sft}^3}{0.636 \text{ scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 15.3 = 0.722 sft^3

$$\%\ Moisture = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{0.722}{45.775 + 0.722} \times 100 = 1.55\ \%$$

$$V_s = 5123.8 \times 0.812 \sqrt{\frac{555}{30.10 \times 28.67}} \times 1.181 = 3940 \text{ fpm}$$

ACFM: 51,773

SCFM: 48,957

$$\%I = \frac{1.039 \times 45.775 \times 555}{3940 \times 72 \times 0.9845 \times 30.10 \times (0.177)^2} = 100.2\ \%$$

%EA: -

Run Number 1

Unit PHU (Inlet Duct South) # 1

Date 1/19/96

Formaldehyde FIELD DATA

			ΔP_s		P_m		T_s				T_m		
Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
5	0915	978.23	1.60	1.45	1.45	4.0	94	242	253	56	89	74	
6	0918	980.26	1.40	1.25	1.25	4.0	95	248	253	57	89	75	
End C	0921	982.180	-	-	-	-	-	-	-	-	-	-	
D 1	0924	982.180	1.20	1.10	1.10	4.0	95	260	257	62	86	75	
2	0927	983.92	1.30	1.15	1.15	3.5	96	255	257	60	87	75	
3	0930	985.77	1.40	1.30	1.30	4.0	96	251	257	61	88	75	
4	0933	987.71	1.40	1.30	1.30	4.0	99	257	254	61	89	75	Pump off @0935 989249 Pump on @[illegible]
5	0940	989.70	1.40	1.30	1.30	4.0	95	248	263	63	86	76	
6	0943	991.59	1.30	1.15	1.15	4.0	96	241	249	62	87	76	
End D	0946	993.480	-	-	-	-	-	-	-	-	-	-	

METCO ENVIRONMENTAL
Formaldehyde ~~Particulate~~ Field Data

Job Number 96-011
Job Name ERM Southwest
Run Number 2
Unit PHU (Inlet Duct Stk South)
Date 1/19/96
Operator Hudson/Wood
Sample Box No. 21 Meter Box No. 11-2

Read and record at the start of each test point.

Purge to: –
Purge time: –
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 45
Assumed Moisture % 1.50
Probe Length 3'
C Factor ΔH 9.9 → ΔP 10.0 to reference
Initial Leak @ 15.0 "Hg = 0.002 cfm
Final Leak @ 10.20 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Remarks
A1	1300	45.486	1.10	1.10	1.10	4.5	100	244	232	68	80	78	Int. Orsat
2	1303	47.34	1.30	1.30	1.30	4.5	103	246	241	61	81	79	
3	1306	49.31	1.20	1.20	1.20	4.5	102	241	246	60	82	79	
4	1309	51.20	1.30	1.30	1.30	4.5	101	240	241	66	83	79	
5	1312	53.06	1.20	1.20	1.20	4.5	103	240	240	62	85	79	
6	1315	54.95	1.30	1.30	1.30	4.5	101	242	252	62	86	79	
End A	1318	56.909	–	–	–	–	–	–	–	–	–	–	
B1	1321	56.909	1.50	1.50	1.50	4.5	100	260	261	68	86	79	
2	1324	59.00	1.50	1.50	1.50	5.0	101	246	271	61	88	79	
3	1327	61.69	1.70	1.60	1.60	5.0	103	244	261	59	89	79	
4	1330	63.18	1.70	1.70	1.70	5.0	101	241	258	59	89	79	
5	1333	65.44	1.60	1.60	1.60	5.0	103	242	259	58	90	79	
6	1336	67.65	1.50	1.50	1.50	5.0	103	244	261	59	92	80	
End B	1339	69.780	–	–	–	–	–	–	–	–	–	–	
C1	1343	69.780	1.30	1.30	1.30	5.0	101	246	257	67	89	80	ΔH 9.2 → ΔP 10.0
2	1346	71.59	1.40	1.30	1.30	5.0	101	249	256	60	90	80	
3	1349	73.74	1.50	1.35	1.35	4.5	104	251	232	62	91	80	
4	1352	75.70	1.60	1.45	1.45	5.0	103	243	231	62	92	81	

Pitot Tube Calibration Factor C_p 0.812
Volume Collected V_m 46.394 ft³
Water Collected V_w 11.0 ml
Time of Test T_t 72 min.
Stack Pressure P_s -2.0 "H_2O

Pitot Tube No. 11-31
Baro. Press. P_b 30.22 "Hg
Probe Tip Dia. D_n 0.177 in.
% CO_2 0.0 % CO 0.0
% O_2 20.9 % N_2 79.1
Area Stack A_s 1892 in²

Barometer No. #26
Probe Tip No. 96-011-H2
Total Volume of Leak Checks After Start: – ft³
V_m = Dry Gas Meter Calibration Factor 46.627 X 0.995
[Dry Gas Meter Reading – ft³ - (T_t – min. X Leak Rate – cfm)]

Impinger Box No. 21

			Water Weight Gain	
Impinger 1	Final Weight	688.6	Impinger 1	0.0
	Initial Weight	688.6		
	Increase	0.0	Impinger 2	1.4
Impinger 2	Final Weight	717.3	Impinger 3	0.2
	Initial Weight	715.9		
	Increase	1.4	Impinger 4	9.4
Impinger 3	Final Weight	486.8	Impinger 5	
	Initial Weight	486.6		
	Increase	0.2	Impinger 6	
Impinger 4	Final Weight	877.5	Impinger 7	
	Initial Weight	868.1		
	Increase	9.4	Total	11.0 ✓ = V_w
Impinger 5	Final Weight			
	Initial Weight			
	Increase			
Impinger 6	Final Weight			
	Initial Weight			
	Increase			
Impinger 7	Final Weight			
	Initial Weight			
	Increase			

V_w =

g SO_2 = -

V_w =

P_b = 30.22 ✓		$\%CO_2$ = 0.0 ✓	
V_m = 46.394 ✓		$\%O_2$ = 20.9 ✓	
V_w = 11.0 ✓		$\%CO$ = 0.0 ✓	
P_m = 1.306 ✓		$\%N_2$ = 79.1 ✓	
Avg ΔP = 1.383 ✓		A_s = 1892 ✓	
		D_n = 0.177 ✓	
Avg$\sqrt{\Delta P}$ = 1.174 ✓		T_t = 72 ✓	
C_p = 0.812 ✓			
P_s = ~~0.262~~ 0	"H_2O	30.07 ✓	"Hg
T_m = 84 ✓	°F	544 ✓	°R
T_s = 103 ✓	°F	563 ✓	°R

Moisture Content: %M = 1.12 ✓ M_d = 0.9888 ✓ MW_d = 28.836 ✓ MW = 28.71 ✓

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 46.394 \left[\frac{30.22 + \frac{1.306}{13.6}}{84 + 460}\right] = \frac{45.633 \checkmark \text{ sft}^3}{0.634 \checkmark \text{ scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 11.0 = 0.5192 ✓ sft³

$$\% \text{ Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{0.5192}{45.633 + 0.5192} \times 100 = 1.12 \checkmark \%$$

$$V_s = 5123.8 \times 0.812 \sqrt{\frac{563}{30.07 \times 28.71}} \times 1.174 = 3944 \checkmark \text{ fpm}$$

ACFM: 51826

SCFM: ~~49,577~~ 46,473 ✓

$$\%I = \frac{1.039 \times 45.633 \times 563}{0.9888 \times 72 \times 3944 \times 30.07 \times (0.177)^2} = 100.9 \checkmark \%$$

%EA: –

Run Number 2
Unit PHU (Inlet Duct South) #1
Date 1/15/96

[illegible] FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	ΔP, "Pitot" "H_2O	Orifice ΔH "H_2O Desired	Pm, Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	Ts, Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Tm, Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
5	1355	77.76	1.50	1.35	1.35	4.5	104	250	241	62	93	80	
6	1358	79.77	1.30	1.20	1.20	5.0	104	247	234	63	94	81	
End C	1401	81.602	–	–	–	–	–	–	–	–	–	–	
D 1	1404	81.602	1.20	1.00	1.00	4.0	103	262	232	68	91	81	
2	1407	82.79	1.30	1.10	1.10	4.0	105	254	232	66	91	81	
3	1410	84.70	1.20	1.00	1.00	4.0	105	254	237	65	92	81	
4	1413	86.36	1.40	1.20	1.20	4.5	103	253	237	65	93	81	
5	1416	88.28	1.40	1.20	1.20	4.5	104	249	240	65	95	82	
6	1419	90.15	1.30	1.10	1.10	4.5	105	247	242	65	95	82	
End All	1422	92.113	–	–	–	–	–	–	–	–	–	–	

METCO ENVIRONMENTAL

Formaldehyde Field Data

Job Number: 96-011
Job Name: ERM Southwest
Run Number: 3
Unit: Press House Vent (Inlet Duct South) #1
Date: 1/19/96
Operator: Hudson/Wood
Sample Box No. 21 Meter Box No. 11-2

Read and record at the start of each test point.
Purge to: –
Purge time: –
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 41
Assumed Moisture % 2.05
Probe Length 3'
C Factor ΔH 2.5 ΔP 2.7 to reference
Initial Leak @ 15.0 "Hg = 0.000 cfm
Final Leak @ 10.0 "Hg = 0.00[illegible] cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet (T_m)	Remarks
A 1	1816	141.676	1.20	1.10	1.10	4.5	104	231	231	58	85	83	Int. Orsat
2	1819	143.71	1.00	0.94	0.94	4.0	104	239	234	62	85	83	
3	1822	145.21	1.30	1.20	1.20	4.5	102	238	257	62	86	83	
4	1825	147.31	1.30	1.20	1.20	4.5	103	242	268	59	88	83	
5	1828	148.78	1.30	1.20	1.20	4.5	104	233	264	57	89	84	
6	1831	150.79	1.20	1.10	1.10	4.5	104	231	263	57	90	84	
End A	1834	152.601	–	–	–	–	–	–	–	–	–	–	
B 1	1838	152.601	1.55	1.45	1.45	4.5	104	240	232	67	89	84	
2	1841	154.71	1.60	1.55	1.55	5.0	104	238	236	54	91	84	
3	1844	156.84	1.70	1.60	1.60	5.0	104	260	241	54	92	84	
4	1847	159.03	1.70	1.60	1.60	5.0	104	247	237	53	93	84	
5	1850	161.21	1.50	1.40	1.40	5.0	104	249	236	52	95	84	
6	1853	163.22	1.70	1.60	1.60	5.0	105	249	237	56	95	84	
End B	1856	165.394	–	–	–	–	–	–	–	–	–	–	
C 1	1900	165.394	1.10	1.00	1.00	4.0	103	264	253	67	93	85	
2	1903	166.91	1.30	1.15	1.15	4.0	102	259	256	61	93	84	
3	1906	168.91	1.50	1.35	1.35	4.0	104	252	256	59	93	84	
4	1909	171.01	1.60	1.40	1.40	5.0	102	249	260	59	96	85	

Pitot Tube Calibration Factor C_p 0.812
Volume Collected V_m 46.468 ft^3
Water Collected V_w 10.1 ml
Time of Test T_t 72 min.
Stack Pressure P_s -2.0 "H_2O

Pitot Tube No. 11-3-1
Baro. Press. P_b 30.11 "Hg
Probe Tip Dia. D_n 0.177 in.
% CO_2 0.0 % CO 0.0
% O_2 20.9 % N_2 79.1
Area Stack A_s 1892 in^2

Barometer No. #26
Probe Tip No. 96-011 #2
Total Volume of Leak Checks After Start: – ft^3
V_m = Dry Gas Meter Calibration Factor 0.995 X 46.702

[Dry Gas Meter Reading – ft^3 - (T_t – min. X Leak Rate – cfm)]

Impinger Box No. 21

Impinger 1	Final Weight	698.4			
	Initial Weight	698.0			
	Increase	0.4			
Impinger 2	Final Weight	728.0			
	Initial Weight	727.2			
	Increase	0.8			
Impinger 3	Final Weight	485.9			
	Initial Weight	485.7			
	Increase	0.2			
Impinger 4	Final Weight	885.0			
	Initial Weight	876.3			
	Increase	8.7			
Impinger 5	Final Weight				
	Initial Weight				
	Increase				
Impinger 6	Final Weight				
	Initial Weight				
	Increase				
Impinger 7	Final Weight				
	Initial Weight				
	Increase				

Water Weight Gain

Impinger 1	0.4
Impinger 2	0.8
Impinger 3	0.2
Impinger 4	8.7
Impinger 5	
Impinger 6	
Impinger 7	
Total	10.1 ✓ = V_w

V_w =
$g\ SO_2$ = -
V_w =

P_b =	30.11 ✓	$\%CO_2$ =	0.0 ✓
V_m =	46.468 ✓	$\%O_2$ =	20.9 ✓
V_w =	10.1 ✓	$\%CO$ =	0.0 ✓
P_m =	1.287 ✓	$\%N_2$ =	79.1 ✓
Avg ΔP =	1.406 ✓	A_s =	1892 ✓
		D_n =	0.177 ✓
Avg $\sqrt{\Delta P}$ =	1.183 ✓	T_t =	72 ✓
C_p =	0.812 ✓		
P_s =	-0.20 ✓ "H_2O	29.96 ✓	"Hg
T_m =	89 ✓ °F	549 ✓	°R
T_s =	104 ✓ °F	564 ✓	°R

Moisture Content: %M = 1.05 ✓ M_d = 0.9895 ✓ MW_d = 28.836 ✓ MW = 28.72 ✓

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 46.468 \left[\frac{30.11 + \frac{1.287}{13.6}}{89 + 460}\right] = \frac{45.123 \checkmark \text{ sft}^3}{0.627 \checkmark \text{ scfm}}$$

$Vw_{gas} = 0.0472 \times Vw = 0.0472 \times$ 10.1 = 0.477 ✓ sft^3

$$\%\ Moisture = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{0.477}{45.123 + 0.477} \times 100 = 1.05 \checkmark\ \%$$

$$V_s = 5123.8 \times 0.812 \sqrt{\frac{564}{29.96 \times 28.72}} \times 1.183 = 3985 \checkmark \text{ fpm}$$

ACFM: 52,356 ✓

SCFM: 48,745 ✓

$$\%I = \frac{1{,}039 \times 45.123 \times 564}{0.9895 \times 72 \times 3985 \times 29.96 \times (0.177)^2} = 99.2 \checkmark\ \%$$

%EA: —

Run Number 3

Unit PHU Inlet Duct South #1

Date 1/19/95

Formaldehyde FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	P_m Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
5	1912	172.98	1.70	1.50	1.50	5.0	103	253	261	59	97	85	
6	1915	175.10	1.40	1.25	1.25	5.0	104	249	262	59	98	85	
End C	1918	177.045	—	—	—	—	—	—	—	—	—	—	
D&1	1920	177.045	1.20	1.10	1.10	4.5	104	257	263	68	96	85	
2	1923	178.82	1.20	1.10	1.10	4.5	105	251	262	63	97	85	
3	1926	180.57	1.50	1.35	1.35	4.5	105	250	261	62	97	85	
4	1929	182.51	1.40	1.25	1.25	4.5	105	247	264	62	98	86	
5	1932	184.57	1.60	1.40	1.40	5.0	103	247	264	63	98	86	
6	1935	186.61	1.20	1.10	1.10	4.5	104	248	264	63	98	86	
End A1	1938	188.378	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

Particulate Field Data

Read and record at the start of each test point.

Job Number 96-011
Job Name ERM Southwest
Run Number 1
Unit Dress House Vent North #2
Date 18 Jan 96
Operator Grubbs, Lindquist, Theckurk
Sample Box No. 35 Meter Box No. 18-1

Purge to: -
Purge time: -
Pitot Leak Check Initial ✓ Final

Ambient Temp. °F 55
Assumed Moisture % 2%
Probe Length 3
C Factor ΔH8-ΔP-9 to reference
Initial Leak @ 15.0 "Hg = 0.000 cfm
Final Leak @ 8.0 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	P_m Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
A 6	1835	633.100	0.90	0.81	0.81	3.5	103	224	236	59	70	69	Integrated Orsat
5	1838	634.66	0.90	0.81	0.81	3.5	103	270	237	51	71	69	
4	1841	636.15	1.05	0.95	0.95	4.0	104	265	247	49	72	69	
3	1844	637.80	1.05	0.95	0.95	4.0	102	268	280	48	74	69	
2	1847	639.45	1.20	1.05	1.05	4.5	101	253	277	47	76	70	
1	1850	641.21	1.10	1.00	1.00	4.5	104	247	277	48	78	70	
End	1853	642.951	-	-	-	-	-	-	-	-	-	-	Δ8-8.8
B 6	1905	642.951	1.10	1.00	1.00	4.5	104	243	239	63	75	71	
5	1908	644.60	1.10	1.00	1.00	4.5	103	250	247	52	76	71	
4	1911	646.31	1.20	1.05	1.05	4.5	103	283	247	49	78	71	
3	1914	648.01	1.20	1.05	1.05	4.5	101	280	251	49	80	72	
2	1917	649.78	1.30	1.20	1.20	4.5	101	280	278	49	82	72	
1	1920	651.57	0.96	1.10	1.10	4.5	102	280	278	56	83	72	
End	1923	653.380	-	-	-	-	-	-	-	-	-	-	
C 6	1927	653.380	1.40	1.30	1.30	4.5	104	243	300	59	81	73	
5	1930	655.26	1.50	1.35	1.35	5.0	101	251	270	52	83	73	
4	1933	657.16	1.10	1.00	1.00	4.5	102	251	281	53	84	74	
3	1936	658.90	1.50	1.35	1.35	5.0	103	250	275	53	86	74	

Pitot Tube Calibration Factor C_p 0.809
Volume Collected V_m ~~40.567~~ ft³ 40.566
Water Collected V_w 18.7 ml
Time of Test T_t 72 min.
Stack Pressure P_s -0.20 "H_2O

Pitot Tube No. 17-3-1
Baro. Press. P_b 30.10 "Hg
Probe Tip Dia. D_n 0.176 in.
% CO_2 0.0 % CO 0.0
% O_2 20.9 % N_2 79.1
Area Stack A_s 1890 in²

Barometer No. 26
Probe Tip No. 18-XII-6
Total Volume of Leak Checks After Start: 0 ft³
V_m = Dry Gas Meter Calibration Factor 0.972 X 41.735
[Dry Gas Meter Reading ___ ft³ - (T_t ___ min. X Leak Rate ___ cfm)]

Impinger Box No. 35

				Water Weight Gain	
Impinger 1	Final Weight	589.4		Impinger 1	0.0
	Initial Weight	588.7			
	Increase	0.0		Impinger 2	6.2
Impinger 2	Final Weight	595.4		Impinger 3	2.7
	Initial Weight	589.2			
	Increase	6.2		Impinger 4	9.8
Impinger 3	Final Weight	521.5	V_w =		
	Initial Weight	518.8	g SO_2 = -	Impinger 5	
	Increase	2.7	V_w =	Impinger 6	
Impinger 4	Final Weight	847.2		Impinger 7	
	Initial Weight	837.4			
	Increase	9.8		Total	18.7 = V_w
Impinger 5	Final Weight				
	Initial Weight				
	Increase				
Impinger 6	Final Weight				
	Initial Weight				
	Increase				
Impinger 7	Final Weight				
	Initial Weight				
	Increase				

P_b =	30.10		$\%CO_2$ =	0.0
V_m =	~~40.567~~ 40.566		$\%O_2$ =	20.9
V_w =	18.7		$\%CO$ =	0.0
P_m =	1.053		$\%N_2$ =	79.1
Avg ΔP =	1.160		A_s =	1892
			D_n =	0.176
Avg$\sqrt{\Delta P}$ =	1.073		T_t =	72
C_p =	0.809			
P_s =	-0.20	"H_2O	30.09	"Hg
T_m =	76	°F	536	°R
T_s =	102	°F	562	°R

Moisture Content %M = 2.14 M_d = 0.9786 MW_d = 28.836 MW = 28.60

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times \cancel{40.567}\ 40.566 \left[\frac{30.10 + \frac{1.053}{13.6}}{76 + 460}\right] = \frac{\cancel{40.312}\ 40.311 \text{ sft}^3}{0.560 \text{ scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 18.7 = 0.8826 sft³

$$\%\text{ Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{0.8826}{40.312 + 0.8826} \times 100 = 2.14\ \%$$

$$V_s = 5123.8 \times 0.809 \sqrt{\frac{562}{30.09 \times 28.60}} \times 1.073 = 3594 \text{ fpm}$$

ACFM: 47,225

SCFM: 43822

$$\%I = \frac{1{,}039 \times \cancel{40.312}\ 40.311 \times 562}{0.9786 \times \cancel{30.01}\ 30.09 \times 3594 \times 72 \times (0.176)^2} = \cancel{100.0}\ 99.7\ \%$$

%EA: ——

Run Number i
Unit Press House Vent North #2
Date 18 Jan96

Particulate FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	P_m Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
2	1939	660.78	0.95	0.86	0.86	5.0	103	228	277	54	87	74	
1	1942	662.66	0.80	0.73	0.73	5.0	102	245	276	55	87	75	
End	1945	664.17	-	-	-	-	-	-	-	-	-	-	
D 6	1948	664.17	1.10	1.00	1.00	4.0	103	240	276	61	84	75	
5	1951	665.84	1.00	0.91	0.91	4.0	103	242	270	58	83	76	Pumpoff @ 1952 666.45
4	2011	667.48	1.50	1.40	1.40	5.0	103	242	271	56	78	76	Pumpon @ 2009
3	2014	669.38	1.50	1.40	1.40	5.0	101	241	268	52	80	76	
2	2017	671.33	1.10	1.00	1.00	4.5	100	250	263	51	81	76	
1	2020	673.06	1.10	1.00	1.00	4.5	100	243	251	56	82	76	
End	2023	674.835	-	-	-	-	-	-	-	-	-	-	

METCO ENVIRONMENTAL

Particulate Field Data

Job Number 96-011
Job Name ERM Southwest
Run Number 2
Unit Press House Vent Inlet Duct (North) #2
Date 19 Jan 96
Operator Grubbs, Linquist, Thornkahrt
Sample Box No. 35 Meter Box No. 18-1

Read and record at the start of each test point.

Purge to: -
Purge time:
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 45
Assumed Moisture % 2.5
Probe Length 3
C Factor ______ to reference
Initial Leak @ 15.0 "Hg = 0.000 cfm
Final Leak @ 6.0 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Remarks
A6	1038	724.620	0.90	0.82	0.82	4.0	100	229	253	56	75	75	Integrated Orsat
5	1041	726.23	0.95	0.87	0.87	4.0	100	230	257	49	76	75	
4	1044	727.76	0.95	0.87	0.87	4.0	100	232	259	46	78	75	
3	1047	729.39	1.20	1.10	1.10	4.0	99	229	259	45	79	75	
2	1050	731.09	1.20	1.10	1.10	4.0	99	235	260	45	80	75	
1	1053	732.85	1.20	1.10	1.10	4.0	99	240	260	45	82	75	
End	1056	734.670	-	-	-	-	-	-	-	-	-	-	
B6	1100	734.670	1.20	1.10	1.10	4.0	99	230	264	52	80	75	
5	1103	736.38	1.20	1.10	1.10	4.0	98	240	268	47	82	75	
4	1106	738.13	1.20	1.10	1.10	4.0	98	222	272	47	83	75	
3	1109	739.88	1.20	1.10	1.10	4.0	98	225	273	47	85	75	
2	1112	741.65	1.20	1.10	1.10	4.0	99	237	275	47	86	76	
1	1115	743.38	0.95	0.87	0.87	4.0	99	232	274	48	87	76	
End	1118	745.030	-	-	-	-	-	-	-	-	-	-	
C6	1121	745.030	1.50	1.35	1.35	4.0	99	242	280	55	86	76	
5	1124	746.38	1.50	1.35	1.35	4.0	99	241	272	49	86	76	
4	1127	748.80	1.50	1.35	1.35	4.0	100	250	282	48	87	77	
3	1130	750.67	1.50	1.35	1.35	4.0	100	251	280	48	88	77	

Pitot Tube Calibration Factor C_p 0.869
Volume Collected V_m 41.504 ft^3
Water Collected V_w 14.1 ml
Time of Test T_t 72 min.
Stack Pressure P_s -2.00 "H_2O

Pitot Tube No. 17-3-1
Baro. Press. P_b 30.26 "Hg
Probe Tip Dia. D_n 0.176 in.
% CO_2 0.0 % CO 0.0
% O_2 20.9 % N_2 79.1
Area Stack A_s 1892 in^2

Barometer No. 26
Probe Tip No. XI-6
Total Volume of Leak Checks After Start: 0 ft^3
V_m = Dry Gas Meter Calibration Factor 0.972 X 42.700
[Dry Gas Meter Reading — ft^3 - (T_t — min. X Leak Rate — cfm)]

Impinger Box No. 35

Impinger 1	Final Weight	581.0		**Water Weight Gain**	
	Initial Weight	577.7		Impinger 1	3.3
	Increase	3.3		Impinger 2	2.4
Impinger 2	Final Weight	605.8		Impinger 3	1.0
	Initial Weight	603.4		Impinger 4	7.4
	Increase	2.4	V_w =		
Impinger 3	Final Weight	520.0	g SO_2 = -	Impinger 5	
	Initial Weight	519.0	V_w =		
	Increase	1.0		Impinger 6	
Impinger 4	Final Weight	854.0		Impinger 7	
	Initial Weight	846.6			
	Increase	7.4		Total	14.1 = V_w
Impinger 5	Final Weight				
	Initial Weight				
	Increase				
Impinger 6	Final Weight				
	Initial Weight				
	Increase				
Impinger 7	Final Weight				
	Initial Weight				
	Increase				

P_b = 30.26		%CO_2 = 0.0	
V_m = 41.504		%O_2 = 20.9	
V_w = 14.1		%CO = 0.0	
P_m = 1.123		%N_2 = 79.1	
Avg ΔP = 1.227		A_s = 1892	
		D_n = 0.176	
Avg$\sqrt{\Delta P}$ = 1.104		T_t = 72	
C_p = 0.809			
P_s = -2.00 "H_2O	30.11 "Hg		
T_m = 80 °F	540 °R		
T_s = 100 °F	560 °R		

Moisture Content: %M = 1.59 M_d = 0.9841 MW_d = 28.836 MW = 28.66

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 41.504 \left[\frac{30.26 + \frac{1.123}{13.6}}{80 + 460}\right] = \frac{41.162\ \text{sft}^3}{0.572\ \text{scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 14.1 = 0.666 sft^3

$$\%\ Moisture = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{0.666}{41.162 + 0.666} \times 100 = 1.59\ \%$$

$$V_s = 5123.8 \times 0.809 \sqrt{\frac{560}{30.11 \times 28.66}} \times 1.104 = 3686\ \text{fpm}$$

$$\%I = \frac{1{,}039 \times 41.162 \times 560}{0.9841 \times 30.11 \times 3684 \times 72 \times (0.176)^2} = 98.3\ \%$$

ACFM: 48436

SCFM: 45388

%EA: ~~98.3~~ —

Run Number 9C 2
Unit Presshouse Vent Stack North #2
Date 19 Jan 96

Particulate FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	P_m Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
2	1133	752.60	1.00	0.91	0.91	4.0	102	275	280	49	89	77	
1	1136	754.30	1.00	0.91	0.91	4.0	99	250	276	50	88	77	
End	1139	755.916	-	-	-	-	-	-	-	-	-	-	
D6	1142	755.916	1.30	1.20	1.20	4.0	100	241	266	58	88	77	
5	1145	757.73	1.30	1.20	1.20	4.0	100	253	266	52	88	78	
4	1148	759.57	1.50	1.40	1.46	5.0	102	261	265	52	88	78	
3	1151	761.49	1.40	1.30	1.30	5.0	103	243	261	57	89	78	
2	1154	763.43	1.30	1.20	1.20	5.0	103	256	260	51	90	78	
1	1157	765.34	1.30	1.20	1.20	5.0	104	250	248	50	90	78	
End	1200	767.320	-	-	-	-	-	-	-	-	-	-	

METCO ENVIRONMENTAL

Particulate Field Data

Job Number 96-011
Job Name EPM Southwest
Run Number 3
Unit Press House Vent Duct North #2
Date 19 Jan 96
Operator Grubbs, Lindquist, Theulfest
Sample Box No. 35-1 Meter Box No. 18-1

Read and record at the start of each test point.

Purge to: –
Purge time: –
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 67
Assumed Moisture % 2.00
Probe Length 3'
C Factor Δ 9-10 to reference
Initial Leak @ 15.0 "Hg = 0.000 cfm
Final Leak @ 12.0 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	P_m Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
A 6	1457	817.510	0.82	0.85	0.75	3.5	109	249	229	54	79	80	Integrated Orsat
5	1500	818.88	0.92	0.84	0.84	4.0	109	266	231	51	79	80	
4	1503	820.45	0.92	0.84	0.84	4.0	109	267	224	48	81	80	
3	1506	822.01	1.05	0.95	0.95	4.0	109	268	271	46	82	79	
2	1509	823.67	1.15	1.05	1.05	4.0	107	241	258	45	84	79	
1	1512	825.40	1.15	1.05	1.05	4.0	111	238	249	45	85	79	
End	1515	827.200	-	-	-	-	-	-	-	-	-	-	(Unit Down)
B 6	1635	827.200	1.10	1.00	1.00	4.0	104	269	278	88	76	77	
5	1638	828.89	1.10	1.00	1.00	4.0	104	276	268	63	76	77	
4	1641	830.60	1.20	1.10	1.10	4.0	102	271	275	59	78	77	
3	1644	832.37	1.20	1.10	1.10	4.0	103	271	269	58	79	77	
2	1647	834.23	1.20	1.10	1.10	4.0	103	269	261	58	81	77	
1	1650	835.91	1.20	1.10	1.10	4.0	104	269	257	58	82	77	
End	1653	837.761	-	-	-	-	-	-	-	-	-	-	
C 6	1656	837.761	1.50	1.35	1.35	5.0	105	227	252	67	82	77	
5	1659	839.70	1.50	1.35	1.35	5.0	104	238	247	60	84	77	
4	1702	841.58	1.40	1.30	1.30	5.0	104	240	242	59	86	77	
3	1705	843.51	1.40	1.30	1.30	5.0	105	236	239	59	87	77	

Pitot Tube Calibration Factor C_p 0.809
Volume Collected V_m 41.388 ft³
Water Collected V_w ~~15.8~~ 15.4 ml
Time of Test T_t 72 min.
Stack Pressure P_s -2.06 "H_2O

Pitot Tube No. 17-3-1
Baro. Press. P_b 30.15 "Hg
Probe Tip Dia. D_n 0.476 in.
% CO_2 0.0 % CO 0.0
% O_2 20.9 % N_2 79.1
Area Stack A_s ~~1829~~ 1892 in²

Barometer No. 26
Probe Tip No. XII-6
Total Volume of Leak Checks After Start: 0 ft³
V_m = Dry Gas Meter Calibration Factor 0.972 x 42.580
[Dry Gas Meter Reading – ft³ - (T_t – min. X Leak Rate – cfm)]

Impinger Box No. 35

			Water Weight Gain	
Impinger 1	Final Weight	583.3	Impinger 1	3.6
	Initial Weight	579.7		
	Increase	3.6	Impinger 2	3.0
Impinger 2	Final Weight	598.0	Impinger 3	1.7
	Initial Weight	595.0		
	Increase	3.0	Impinger 4	~~7.5~~ 7.1
Impinger 3	Final Weight	521.7	Impinger 5	
	Initial Weight	520.0		
	Increase	1.7	Impinger 6	
Impinger 4	Final Weight	861.1	Impinger 7	
	Initial Weight	854.0		
	Increase	~~7.5~~ 7.1	Total	~~15.8~~ 15.4 ✓ = V_w
Impinger 5	Final Weight			
	Initial Weight			
	Increase			
Impinger 6	Final Weight			
	Initial Weight			
	Increase			
Impinger 7	Final Weight			
	Initial Weight			
	Increase			

V_w =
g SO_2 = -
V_w =

P_b = 30.15 ✓		$\%CO_2$ = 0.0 ✓	
V_m = 41.388 ✓		$\%O_2$ = 20.9 ✓	
V_w = ~~15.8~~ 15.4 ✓		%CO = 0.0 ✓	
P_m = 1.101 ✓		$\%N_2$ = 79.1 ✓	
Avg ΔP = 1.203 ✓		A_s = 1892 ✓	
		D_n = 0.176 ✓	
Avg$\sqrt{\Delta P}$ = 1.092 ✓		T_t = 72 ✓	
C_p = 0.809 ✓			
P_s = -2.00 ✓	"H_2O	30.00 ✓	"Hg
T_m = 81 ✓	°F	541 ✓	°R
T_s = 105 ✓	°F	565 ✓	°R

Moisture Content %M = ~~1.79~~ 1.75 ✓ M_d = ~~0.9821~~ 0.9825 ✓ MW_d = 28.836 ✓ MW = ~~28.64~~ 28.65 ✓

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 41.388 \left[\frac{30.15 + \frac{1.101}{13.6}}{81 + 460}\right] = \frac{40.820 \checkmark \text{ sft}^3}{0.567 \checkmark \text{ scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x ~~15.8~~ 15.4 = ~~0.7458~~ 0.727 ✓ sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{\cancel{0.7458}\ 0.727}{40820 + \cancel{0.7458}\ 0.727}$ x 100 = 1.75 ✓ ~~1.79~~ %

V_s = 5123.8 x 0.809 $\sqrt{\frac{565}{3000 \times \cancel{28.64}\ 28.65}}$ x 1.092 = ~~3671~~ 3670 ✓ fpm

ACFM: ~~48228~~ 48,220 ✓

SCFM: ~~44,549~~ 44,555 ✓

%I = $\frac{1{,}039 \times 40.820 \times 565}{\cancel{0.9821}\ 0.9825 \times 30.00 \times \cancel{3671}\ 3670 \times 72 \times (0.176)^2}$ = 99.3 ✓ %

%EA: —

Run Number 3

Particulate FIELD DATA

Unit Press House Vent Duct (North) | #2

Date 19 Jan 96

			ΔP_s		P_m		T_s				T_m		
Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
2	1708	845.43	1.30	1.20	1.20	5.0	106	228	239	59	88	78	
1	1711	847.31	0.85	0.78	0.78	5.0	104	231	229	58	88	78	
End	1714	848.900	-	-	-	-	-	-	-	.	-	-	
D 6	1717	848.900	1.10	1.00	1.00	4.0	105	242	246	67	85	78	
5	1720	850.58	1.45	1.35	1.35	5.0	~~228~~ 105	234	256	59	87	78	
4	1723	852.51	1.45	1.35	1.35	5.0	106	246	231	56	88	78	
3	1726	854.45	1.50	1.35	1.35	5.0	104	281	236	55	89	79	
2	1729	856.40	1.40	1.30	1.30	5.0	104	227	241	56	90	79	
1	1732	858.34	1.00	0.92	0.92	4.5	105	237	237	56	90	79	
End	1735	860.090	-	-	-	-	-	-	-	-	-	-	

METCO ENVIRONMENTAL

Job Number 96-011
Job Name ERM Southwest
Run Number 1
Unit Press House Vent (North) #2
Date 19 Jan 96
Operator Grubbs, Lindquist, Theuerkauf
Sample Box No. 4S Meter Box No. 18-1

Formaldehyde Field Data

Read and record at the start of each test point.

Purge to: -
Purge time: -
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 45
Assumed Moisture % 2.5%
Probe Length 3
C Factor ΔH10-ΔP-10 to reference
Initial Leak @ 17.0 "Hg = 0.000 cfm
Final Leak @ 15.0 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Remarks
D 6	0820	687.400	0.70	0.70	0.70	3.5	96	240	237	45	70	71	Integrated Orsat
5	0823	688.83	0.70	0.70	0.70	3.5	96	237	252	45	71	71	
4	0826	690.27	0.70	0.70	0.70	3.5	96	232	278	42	73	71	
3	0829	691.72	0.70	0.70	0.70	3.5	96	241	248	40	74	71	
2	0832	693.16	0.70	0.70	0.70	3.5	95	250	240	42	75	71	
1	0835	694.57	0.50	0.50	0.50	3.0	94	240	237	44	76	71	
End	0838	695.855	-	-	-	-	-	-	-	-	-	-	
C 6	0842	695.855	0.40	0.40	0.40	3.0	94	230	245	49	75	71	
5	0845	696.90	0.30	0.30	0.30	3.0	95	232	248	48	75	71	
4	0848	697.86	0.30	0.30	0.30	3.0	96	240	249	48	75	71	
3	0851	698.81	0.37	0.37	0.37	3.0	93	242	249	49	76	71	
2	0854	699.85	1.10	1.10	1.10	3.0	93	250	251	49	79	71	
1	0857	701.58	0.95	0.95	0.95	3.0	94	242	252	49	82	72	
End	0900	703.270	-	-	-	-	-	-	-	-	-	-	
B 6	0903	703.270	1.00	1.00	1.00	4.0	93	229	259	56	80	72	
5	0906	704.96	1.00	1.00	1.00	4.0	93	228	251	51	82	73	
4	0909	706.63	1.20	1.25	1.25	4.5	94	240	263	50	84	73	10-9.6
3	0912	708.58	1.10	1.15	1.15	4.5	95	234	263	49	86	73	

Pitot Tube Calibration Factor C_p 0.813
Volume Collected V_m 35.828 ft³
Water Collected V_w 17.5 ml
Time of Test T_t 72 min.
Stack Pressure P_s -2.50 "H_2O

Pitot Tube No. 18-3-2
Baro. Press. P_b 30.28 "Hg
Probe Tip Dia. D_n 0.180 in.
% CO_2 0.0 % CO 0.0
% O_2 20.9 % N_2 79.1
Area Stack A_s 1892 in²

Barometer No. 26
Probe Tip No. 96-011-1
Total Volume of Leak Checks After Start: 0 ft³
V_m = Dry Gas Meter Calibration Factor 0.972 X 36.860

[Dry Gas Meter Reading - ft³ - (T_t - min. X Leak Rate - cfm)]

Impinger Box No. 45

				Water Weight Gain	
Impinger 1	Final Weight	726.9		Impinger 1	0.5
	Initial Weight	726.4			
	Increase	0.5		Impinger 2	0.0
Impinger 2	Final Weight	726.0		Impinger 3	0.0
	Initial Weight	726.0			
	Increase	0.0	V_w =	Impinger 4	17.0
Impinger 3	Final Weight	515.7	g SO_2 = -	Impinger 5	
	Initial Weight	515.7	V_w =		
	Increase	0.0		Impinger 6	
Impinger 4	Final Weight	904.0		Impinger 7	
	Initial Weight	887.0			
	Increase	17.0		Total	17.5 ✓ = V_w
Impinger 5	Final Weight				
	Initial Weight				
	Increase				
Impinger 6	Final Weight				
	Initial Weight				
	Increase				
Impinger 7	Final Weight				
	Initial Weight				
	Increase				

P_b =	30.28 ✓	$\%CO_2$ =	0.0 ✓
V_m =	35.828 ✓	$\%O_2$ =	20.9 ✓
V_w =	~~17.7~~ 17.5 ✓	%CO =	0.0 ✓
P_m =	0.851 ✓	$\%N_2$ =	79.1 ✓
Avg ΔP =	0.830 ✓	A_s =	1892 ✓
		D_n =	0.180 ✓
Avg$\sqrt{\Delta P}$ =	0.895 ✓	T_t =	72 ✓
C_p =	0.813 ✓		
P_s =	-2.40 ✓ "H_2O	30.10 ✓	"Hg
T_m =	76 ✓ °F	536 ✓	°R
T_s =	95 ✓ °F	555 ✓	°R

Moisture Content %M = 2.26 ✓ M_d = 0.9774 ✓ MW_d = 28.836 ✓ MW = 28.59 ✓

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 35.828 \left[\frac{30.28 + \frac{0.851}{13.6}}{76 + 460}\right] = \frac{35.798 \checkmark \text{ sft}^3}{0.497 \checkmark \text{ scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 17.5 = 0.826 ✓ sft^3

$$\% \text{ Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{0.826}{35.798 + 0.826} \times 100 = 2.26 \checkmark \%$$

$$V_s = 5123.8 \times 0.813 \sqrt{\frac{555}{30.10 \times 28.59}} \times 0.895 = 2994 \checkmark \text{ fpm}$$

ACFM: 39,339 ✓

SCFM: 36934 ✓

$$\%I = \frac{1{,}039 \times 35798 \times 555}{0.9774 \times 30.10 \times 2994 \times 72 \times (0.180)^2} = 100.5 \checkmark \%$$

%EA: —

Formaldehyde FIELD DATA

Run Number 1
Unit Press House Vent (North) #2
Date 19 Jan 96

			ΔP_s		P_m		T_s				T_m		
Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
2	0915	710.33	1.20	1.25	1.25	4.5	93	236	262	48	87	73	
1	0918	712.19	1.20	1.25	1.25	4.5	93	240	261	48	88	74	
End	0921	714.130	-	-	-	-	-	-	-	-	-	-	
A 6	0924	714.130	0.90	0.95	0.95	4.0	94	269	260	59	84	74	
5	0927	715.75	0.85	0.90	0.90	4.0	94	270	246	48	85	74	
4	0930	717.34	0.92	0.98	0.98	4.0	97	278	273	47	86	75	
3	0933	718.99	0.92	0.98	0.98	4.0	99	270	249	48	87	75	Pump off @ 0935 720.165
2	0940 0936 to	720.78	1.10	1.15	1.15	4.0	97	261	259	52	~~75~~ 84	75	pump on @ 0939
1	0943	722.39	1.10	1.15	1.15	4.0	96	252	253	48	85	75	
End	0946	724.260	-	-	-	-	-	-	-	-	-	-	

METCO ENVIRONMENTAL

Formaldehyde Field Data

Job Number 96-011
Job Name ERM Southwest
Run Number 2
Unit Press House Vent Duct North #2
Date 19 Jan 96
Operator Grubbs Theuikauf
Sample Box No. 35 Meter Box No. 18-1

Read and record at the start of each test point.

Purge to: –
Purge time: –
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 50
Assumed Moisture % 2.5
Probe Length 3
C Factor ΔH/0-ΔP9.6 to reference
Initial Leak @ 15.0 "Hg = 0.000 cfm
Final Leak @ ____ "Hg = ____ cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Remarks
D 6	1300	773.270	0.90	0.94	0.94	4.0	105	270	240	58	80	77	Integrated Orsat
5	1303	774.21	0.90	0.94	0.94	4.0	104	271	239	59	81	77	
4	1306	776.67	1.50	1.55	1.55	4.5	105	261	252	57	82	77	
3	1309	778.63	1.50	1.55	1.55	4.5	104	275	270	53	84	77	
2	1312	780.71	1.30	1.35	1.35	4.5	106	271	271	49	86	77	
1	1315	782.64	1.20	1.25	1.25	4.5	105	259	262	48	87	78	
End	1318	784.548	-	-	-	-	-	-	-	-	-	-	
C 6	1321	784.548	1.50	1.55	1.55	4.5	104	230	264	55	85	78	
5	1324	786.57	1.50	1.55	1.55	4.5	105	239	259	54	84	78	
4	1327	788.65	1.50	1.55	1.55	4.5	105	241	263	47	88	78	
3	1330	790.76	1.50	1.55	1.55	4.0	105	250	262	47	90	78	
2	1333	792.86	1.50	1.55	1.55	4.0	105	225	263	47	91	79	
1	1336	795.00	1.10	1.15	1.15	4.0	104	229	264	49	91	79	
End	1339	796.820	-	-	-	-	-	-	-	-	-	-	
B 6	1343	796.820	1.00	1.05	1.05	4.0	104	236	272	63	86	80	
5	1346	798.55	1.00	1.05	1.05	4.0	106	239	272	52	88	79	
4	1349	800.31	1.00	1.05	1.05	4.0	106	247	265	51	88	79	
3	1352	802.09	0.95	1.00	1.00	4.0	106	270	264	50	85	79	

Pitot Tube Calibration Factor C_p 0.813
Volume Collected V_m 42.724 ft³
Water Collected V_w 6.1 ml
Time of Test T_t 72 min.
Stack Pressure P_s -2.00 "H_2O

Pitot Tube No. 18-3-2
Baro. Press. P_b 30.22 "Hg
Probe Tip Dia. D_n 0.180 in.
% CO_2 0.0 % CO 0.0
% O_2 20.9 % N_2 79.1
Area Stack A_s 1892 in²

Barometer No. 26
Probe Tip No. 96-011 G1 box III (18)
Total Volume of Leak Checks After Start: – ft³
V_m = Dry Gas Meter Calibration Factor 0.972 X 43.955
[Dry Gas Meter Reading – ft³ - (T_t – min. X Leak Rate – cfm)]

Impinger Box No. 45

Impinger 1	Final Weight	717.5	
	Initial Weight	715.5	
	Increase	2.0	
Impinger 2	Final Weight	721.2	
	Initial Weight	720.0	
	Increase	1.2	
Impinger 3	Final Weight	514.8	
	Initial Weight	514.4	
	Increase	0.4	
Impinger 4	Final Weight	905.8	
	Initial Weight	903.3	
	Increase	2.5	
Impinger 5	Final Weight		
	Initial Weight		
	Increase		
Impinger 6	Final Weight		
	Initial Weight		
	Increase		
Impinger 7	Final Weight		
	Initial Weight		
	Increase		

Water Weight Gain

Impinger 1	2.0
Impinger 2	1.2
Impinger 3	0.4
Impinger 4	2.5
Impinger 5	
Impinger 6	
Impinger 7	
Total	6.1 ✓ = V_w

V_w =
g SO_2 = -
V_w =

P_b =	30.22 ✓	$\%CO_2$ =	0.0 ✓
V_m =	~~43.955~~ 42.724	$\%O_2$ =	20.9 ✓
V_w =	6.1 ✓	%CO =	0.0 ✓
P_m =	1.183 ✓	$\%N_2$ =	79.1 ✓
Avg ΔP =	1.36 ✓	A_s =	1892 ✓
		D_n =	0.180 ✓
Avg$\sqrt{\Delta P}$ =	1.059 ✓	T_t =	72 ✓
C_p =	0.813 ✓		
P_s =	-2.00 ✓ "H_2O	30.07 ✓	"Hg
T_m =	83 ✓ °F	543 ✓	°R
T_s =	105 ✓ °F	565 ✓	°R

Moisture Content %M = 0.68 ✓ M_d = 0.9932 ✓ MW_d = 28.836 ✓ MW = 28.76 ✓

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times \cancel{43.955}\ 42.724 \left[\frac{30.22 + \frac{1.183}{13.6}}{83 + 460}\right] = \frac{42.088 \checkmark \text{ sft}^3}{0.585 \checkmark \text{ scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 6.1 = 0.288 ✓ sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{0.288}{42.088 + 0.288}$ x 100 = 0.68 ✓ %

V_s = 5123.8 x 0.813 $\sqrt{\frac{565}{30.07 \times 28.76}}$ x 1.059 = 3566 ✓ fpm

ACFM: 46,849 ✓

SCFM: 43,866 ✓

%I = $\frac{1{,}039 \times 42.088 \times 565}{0.9932 \times 30.07 \times 3566 \times 72 \times (0.180)^2}$ = 99.4 ✓ %

%EA: —

Run Number 2
Unit Press House Vent Duct North #2
Date 19 Jan 96

Formaldehyde FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	P_m Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
2	1355	803.82	1.00	1.05	1.05	4.0	106	264	257	51	90	80	
1	1358	805.56	0.97	1.00	1.00	4.0	104	270	254	51	90	80	
End	1402	807.245	-	-	-	-	-	-	-	-	-	-	
A 6	1404	807.245	0.80	0.83	0.83	4.0	106	260	253	60	87	86	
5	1407	808.70	0.80	0.83	0.83	4.0	107	265	251	55	87	80	
4	1410	810.35	0.95	1.00	1.00	4.0	107	260	251	53	89	80	
3	1413	811.99	0.90	0.95	0.95	4.0	105	256	250	52	89	80	
2	1416	813.73	1.00	1.05	1.05	4.0	106	258	250	52	90	80	
1	1419	815.46	1.00	1.05	1.05	4.0	106	259	248	53	90	81	
End	1422	817.225	-	-	-	-	-	-	-	-	-	-	

METCO ENVIRONMENTAL

Job Number 96-011
Job Name ERM Southwest
Run Number 3
Unit Press House Vent ~~Stack~~ (North) #2
Date 19 Jan 96
Operator Grubbs, Theukauf
Sample Box No. 4S Meter Box No. 18.1

Formaldehyde Field Data

Read and record at the start of each test point.

Purge to: –
Purge time: –
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 50
Assumed Moisture % 2.00
Probe Length 3'
C Factor ΔH 1.0 ΔP 9.6 to reference
Initial Leak @ 16.5 "Hg = 0.000 cfm
Final Leak @ 15.0 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H₂O	Orifice ΔH "H₂O Desired	P_m Orifice ΔH "H₂O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	T_m Dry Gas Temp. °F Outlet	Remarks
D 6	1816	860.130	1.25	1.30	1.30	4.5	108	229	230	55	79	79	Integrated Orsat
5	1819	864.05	1.40	1.45	1.45	4.5	107	231	231	49	81	79	
4	1822	866.08	1.80	1.90	1.90	5.0	107	230	276	55	84	79	
3	1825	868.28	1.80	1.90	1.90	5.0	105	240	271	57	86	79	
2	1828	870.60	1.50	1.55	1.55	5.0	105	250	253	56	88	79	
1	1831	872.76	1.20	1.25	1.25	4.5	105	240	249	54	89	79	
End	1834	874.750	-	-	-	-	-	-	-	-	-	-	
C 6	1838	874.750	1.60	1.65	1.65	5.0	105	239	257	61	85	79	
5	1841	876.83	1.60	1.65	1.65	5.0	105	240	259	54	87	79	
4	1844	878.95	1.60	1.65	1.65	5.0	104	241	259	52	89	79	
3	1847	881.14	1.50	1.55	1.55	5.0	104	250	259	51	90	79	
2	1850	883.23	1.05	1.10	1.10	4.5	104	247	260	51	91	80	
1	1853	885.05	0.95	1.00	1.00	4.0	103	241	262	52	90	80	
End	1856	887.065	-	-	-	-	-	-	-	-	-	-	
B 6	1900	887.065	1.10	1.15	1.15	4.5	104	236	272	63	86	80	
5	1903	888.85	1.20	1.25	1.25	4.5	104	235	272	54	88	80	
4	1906	890.75	1.20	1.25	1.25	4.5	105	240	270	53	89	80	
3	1909	892.65	1.20	1.25	1.25	4.5	104	241	269	53	90	80	

Pitot Tube Calibration Factor C_p 0.813
Volume Collected V_m 46.019 ft^3
Water Collected V_w 8.1 ml
Time of Test T_t 72 min.
Stack Pressure P_s -2.00 "H_2O

Pitot Tube No. 18-3-2
Baro. Press. P_b 30.11 "Hg
Probe Tip Dia. D_n 0.180 in.
% CO_2 6.0 % CO 0.0
% O_2 20.9 % N_2 79.1
Area Stack A_s 1892 in^2

Barometer No. 26
Probe Tip No. B-96-011-6
Total Volume of Leak Checks After Start: 0 ft^3
V_m = Dry Gas Meter Calibration Factor 0.972 X 47.345
[Dry Gas Meter Reading – ft^3 - (T_t – min. X Leak Rate – cfm)]

Impinger Box No. 45

				Water Weight Gain	
Impinger 1	Final Weight	724.5		Impinger 1	0.4
	Initial Weight	724.1			
	Increase	0.4		Impinger 2	0.3
Impinger 2	Final Weight	731.2		Impinger 3	0.0
	Initial Weight	730.9			
	Increase	0.3		Impinger 4	7.4
			V_w =		
Impinger 3	Final Weight	516.1	g SO_2 = -	Impinger 5	
	Initial Weight	516.1	V_w =		
	Increase	0.0		Impinger 6	
Impinger 4	Final Weight	912.3		Impinger 7	
	Initial Weight	904.9			
	Increase	7.4		Total	8.1 ✓ = V_w
Impinger 5	Final Weight		P_b = 30.11 ✓	$\%CO_2$ =	0.0 ✓
	Initial Weight		V_m = 46.019 ✓	$\%O_2$ =	20.9 ✓
	Increase		V_w = 8.1 ✓	$\%CO$ =	0.0 ✓
			P_m = 1.356 ✓	$\%N_2$ =	79.1 ✓
Impinger 6	Final Weight		Avg ΔP = 1.302 ✓	A_s =	1892 ✓
	Initial Weight			D_n =	0.180 ✓
	Increase		Avg$\sqrt{\Delta P}$ = 1.136 ✓	T_t =	72 ✓
			C_p = 0.813 ✓		
Impinger 7	Final Weight		P_s = -2.00 ✓ "H_2O	29.96 ✓	"Hg
	Initial Weight		T_m = 84 ✓ °F	544 ✓	°R
	Increase		T_s = 105 ✓ °F	565 ✓	°R

Moisture Content %M = 0.84 ✓ M_d = 0.9916 ✓ MW_d = 28.836 ✓ MW = 28.74 ✓

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 46.019 \left[\frac{30.11 + \frac{1.356}{13.6}}{84 + 460}\right] = \frac{45.105 ✓ \text{ sft}^3}{0.626 ✓ \text{ scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 8.1 = 0.3823 ✓ sft³

$$\% \text{ Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{0.3823}{45.105 + 0.3823} \times 100 = 0.84 ✓ \%$$

$$V_s = 5123.8 \times 0.813 \sqrt{\frac{565}{29.96 \times 28.74}} \times 1.136 = 3833 ✓ \text{ fpm}$$

ACFM: 50365 ✓

SCFM: 46902 ✓

$$\%I = \frac{1.039 \times 45.105 \times 565}{0.9916 \times 29.96 \times 3833 \times 72 \times (0.180)^2} = 99.7 ✓ \%$$

%EA: —

Run Number 96-011

Unit PressHouseVent Stack North # 2

Date 19 Jan 96

Formaldehyde FIELD DATA

		ΔP_s		P_m		T_s				T_m		
Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks
2	1912	894.52	1.50	1.55	1.55	5.0	103	229	270	53	91	80	
1	1915	896.63	1.10	1.15	1.15	5.0	103	251	271	52	92	80	
End	1918	898.560	-	-	-	-	-	-	-	-	-	-	
A 6	1920	898.560	0.90	0.95	0.95	4.0	104	239	274	60	89	81	
5	1923	900.19	1.00	1.05	1.05	4.0	105	260	276	56	90	81	
4	1926	901.91	1.20	1.25	1.25	4.0	104	251	274	55	91	81	
3	1929	903.77	1.20	1.25	1.25	4.0	105	250	270	54	92	81	
2	1932	905.81	1.20	1.25	1.25	4.0	103	243	239	54	92	81	
1	1935	907.55	1.20	1.25	1.25	4.0	103	245	240	54	93	81	
End	1938	909.475	-	-	-	-	-	-	-	-	-	-	

PRELIMINARY VELOCITY TRAVERSE DATA
AND
SAMPLING LOCATION DATA

Job No. 96-11

Job Name ERM Southwest

Sampling Location Press House Stack

Date 1/18/96 Time ______

Stack Height ~~80~~ 81' ft.

Sampling Port Height Above Ground 41 ft.

	Port A	Port B	Port C	Port D	Average
Port & Inside Diameter (in.)	96		96		96
Port & Wall Thickness (in.)	5		5		5
Inside Stack Diameter (in.)	91		91		91 ✓

Sampling Ports are 18 ft. 2 in. (~~5.44~~ 2.40 stack ~~diameters~~) downstream of disturbance (inlet, constriction, bend, expansion)

Sampling Ports are ~~25~~ 40 ft. ~~8~~ in. (~~2.30~~ 5.27 stack ~~diameters~~) upstream of disturbance (outlet, constriction, bend, expansion)

Point Number	Percent Diameter	Distance from Ref. Point (decimal in.)	Distance from Ref. Point (fractional in.)	Port A ΔP / T_s / α	Port B ΔP / T_s / α	Port C ΔP / T_s / α	Port D ΔP / T_s / α
1	2.1	1.911 ✓	~~1 7/8~~ 1 15/16 ✓	0.74/238/+14	0.65/225/+10	/ /	/ /
2	6.7	6.097 ✓	6 1/8 ✓	0.94/232/+10	0.75/238/+14	/ /	/ /
3	11.8	10.738 ✓	10 3/4 ✓	0.97/228/+8	0.70/233/+6	/ /	/ /
4	17.7	16.107 ✓	16 1/8 ✓	0.88/223/+8	0.64/228/+7	/ /	/ /
5	25.0	22.750 ✓	22 3/4 ✓	0.82/238/+14	0.70/224/+9	/ /	/ /
6	35.6	32.396 ✓	32 3/8 ✓	0.67/228/+10	0.68/230/+16	/ /	/ /
7	64.4	58.604 ✓	58 5/8 ✓	0.38/230/0	0.78/238/+17	/ /	/ /
8	75.0	68.250 ✓	68 1/4 ✓	0.33/233/0	0.54/227/+14	/ /	/ /
9	82.3	74.893 ✓	74 7/8 ✓	0.34/226/+11	0.55/225/+14	/ /	/ /
10	88.2	80.262 ✓	80 1/4 ✓	0.49/220/+16	0.50/222/+13	/ /	/ /
11	93.3	84.903 ✓	84 7/8 ✓	0.41/235/+12	0.49/229/0	/ /	/ /
12	97.9	89.089 ✓	89 1/16 ✓	0.41/223/+17	0.54/232/+10	/ /	/ /
13				/ /	/ /	/ /	/ /
14				/ /	/ /	/ /	/ /
15				/ /	/ /	/ /	/ /
16				/ /	/ /	/ /	/ /
17				/ /	/ /	/ /	/ /
18				/ /	/ /	/ /	/ /
19				/ /	/ /	/ /	/ /
20				/ /	/ /	/ /	/ /
21				/ /	/ /	/ /	/ /
22				/ /	/ /	/ /	/ /
23				/ /	/ /	/ /	/ /
24				/ /	/ /	/ /	/ /

Pitot Tube No. ______

C_p = ______

P_b = 29.92 "Hg

P_s = −0.56 "H_2O 29.88 ✓ "Hg

A_s = 6504 in.^{2}

Average ΔP 0.620

Average $\sqrt{\Delta P}$ 0.778

Average T_s 229 °F

Average α 10.4 ✓ degrees

South

PRELIMINARY VELOCITY TRAVERSE DATA
AND South
SAMPLING LOCATION DATA #1

Job No. 96-11

Job Name ERM Southwest

Stack Height ~~757~~ 13 ft.

Sampling Location Press House Vat Inlet Duct Sampling Port Height Above Ground 11 ft.

Date 1-18-96 Time 1020

Squar Duct 48

	Port A	Port B	Port C	Port D	Average	
Port & Inside Diameter (in.)	44 1/2	44	44	44	44 1/8	De = 43.41; 43 5/16
Port & Wall Thickness (in.)	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	
Inside Stack Diameter (in.)	40	39.5	39.5	39.5	39 5/8" × ~~48~~ 47 3/4	

12+20 1/2 Sampling Ports are 26 ft. 6 1/2 in. (7.34 5 70 stack diameters) downstream of disturbance (Fan (inlet) constriction, bend, expansion)

13 1/2 Sampling Ports are 6 ft. 1 1/2 in. (1.69 stack diameters) upstream of ~~disturbance~~ (outlet, constriction, bend, expansion)

Point Number	~~4×4~~ Percent Diameter	Distance from Ref. Point (decimal in.)	Distance from Ref. Point (fractional in.)	Port A ΔP / T_s / α	Port B ΔP / T_s / α	Port C ΔP / T_s / α	Port D ΔP / T_s / α
1	4×6	3.302	3 5/16	1.10 / 100 / 0	1.30 / 102 / 0	1.39 / 100 / 0	0.957 / 100 / 0
2		9.906	9 15/16	1.20 / 101 / 5°	1.60 / 101 / 0	1.50 / 100 / 0	1.30 / 100 / 0
3		16.510	16 1/2	1.40 / 100 / 0	1.60 / 101 / 0	1.60 / 101 / 5°	1.50 / 99 / 0
4		23.115	23 1/8	1.30 / 99 / 0	1.70 / 102 / 0	1.70 / 101 / 0	1.50 / 101 / 0
5		29.719	29 3/4	1.20 / 100 / 5°	1.60 / 101 / 0	1.60 / 101 / 0	1.40 / 101 / 0
6		36.323	36 5/16	1.20 / 99 / 5°	1.40 / 99 / 5°	1.40 / 101 / 0	1.10 / 99 / 0
7				/ /	/ /	/ /	/ /
8				/ /	/ /	/ /	/ /
9				/ /	/ /	/ /	/ /
10				/ /	/ /	/ /	/ /
11				/ /	/ /	/ /	/ /
12				/ /	/ /	/ /	/ /
13				/ /	/ /	/ /	/ /
14				/ /	/ /	/ /	/ /
15				/ /	/ /	/ /	/ /
16				/ /	/ /	/ /	/ /
17				/ /	/ /	/ /	/ /
18				/ /	/ /	/ /	/ /
19				/ /	/ /	/ /	/ /
20				/ /	/ /	/ /	/ /
21				/ /	/ /	/ /	/ /
22				/ /	/ /	/ /	/ /
23				/ /	/ /	/ /	/ /
24				/ /	/ /	/ /	/ /

Pitot Tube No. 18-10-1

C_p = 0.807

P_b = 29.92 "Hg

P_s = ~~-0~~ -.20 "H_2O 29.77 "Hg

A_s = 1892 in.^{2}

Average ΔP 1.394

Average $\sqrt{\Delta P}$ 1.177

Average T_s 100 °F

Average α 1.0 degrees

D-72

North #2

PRELIMINARY VELOCITY TRAVERSE DATA
AND
SAMPLING LOCATION DATA

Job No. 96-11

Job Name ERM Southwest

Stack Height 13 ft.

Sampling Location North Press House Vent Inlet

Sampling Port Height Above Ground 11 ft.

Date 1-18-96 Time 1020

	Port A	Port B	Port C	Port D	Average
Port & Inside Diameter (in.)	44	44	44	44	44
Port & Wall Thickness (in.)	4 1/4	4 1/4	4 1/2	4 1/2	4 3/8
Inside Stack Diameter (in.)	39 3/4	39 3/4	39 1/2	39 1/2	39 5/8 x ~~48~~ 47 3/4

D_e = 43.~~412~~ 435/16 315

Sampling Ports are 6 ft. 5 in. (1.7~~48~~ 700 stack diameters) downstream of disturbance 5 in. (inlet, constriction, bend, expansion)

Sampling Ports are 6 ft. 1 1/2 in. (1.85 stack diameters) upstream of disturbance (outlet, constriction, bend, expansion)

Point Number	Percent Diameter	Distance from Ref. Point (decimal in.)	Distance from Ref. Point (fractional in.)	Port A ΔP / T_s / α	Port B ΔP / T_s / α	Port C ΔP / T_s / α	Port D ΔP / T_s / α
1	4x6	3.302 ✓	3 5/16 ✓	0.92/110/0	0.93/110/0	0.81/110/0	0.92/110/0
2		9.906 ✓	9 15/16 ✓	0.96/111/0	1.10/110/+5°	1.10/111/0	1.30/110/+5°
3		16.510 ✓	16 1/2 ✓	0.89/112/+5°	1.10/110/+5°	1.30/110/0	1.40/111/+10°
4		23.115 ✓	23 1/8 ✓	0.91/110/0	1.20/112/+5°	1.30/110/+5°	1.00/110/+5°
5		29.719 ✓	29 3/4 ✓	0.81/110/+5°	1.10/111/+10°	1.40/111/+5°	1.40/110/+10°
6		36.323 ✓	36 5/16 ✓	0.84/111/0	0.85/109/+10°	1.10/110/+10°	0.81/110/+5°
7				/ /	/ /	/ /	~~.45/108/+5°~~
8				/ /	/ /	/ /	/ /
9				/ /	/ /	/ /	/ /
10				/ /	/ /	/ /	/ /
11				/ /	/ /	/ /	/ /
12				/ /	/ /	/ /	/ /
13				/ /	/ /	/ /	/ /
14				/ /	/ /	/ /	/ /
15				/ /	/ /	/ /	/ /
16				/ /	/ /	/ /	/ /
17				/ /	/ /	/ /	/ /
18				/ /	/ /	/ /	/ /
19				/ /	/ /	/ /	/ /
20				/ /	/ /	/ /	/ /
21				/ /	/ /	/ /	/ /
22				/ /	/ /	/ /	/ /
23				/ /	/ /	/ /	/ /
24				/ /	/ /	/ /	/ /

Pitot Tube No. ______

C_p = ______

P_b = ______ "Hg

P_s = ______ "H_2O ______ "Hg

A_s = 1892 ✓ in.^{2}

D-73

Average ΔP 1.060 ✓

Average $\sqrt{\Delta P}$ 1.025 ✓

Average T_s 110 ✓ °F

Average α 4.2 ✓ degrees

METCO ENVIRONMENTAL
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Addison, TX 75001
(214) 931-7127

SOURCE EMISSIONS SURVEY
OF
LOUISIANA-PACIFIC CORPORATION
PRESS HOUSE RTO STACK (EPN RTO3) AND
PRESS HOUSE NUMBERS 1 AND 2
VENT DUCTS

SILSBEE, TEXAS

TNRCC PERMIT 19695 2 of 2

FOR

ERM-SOUTHWEST, INC.

VOLUME II

JANUARY 1996

FILE NUMBER 96-11A

APPENDIX E

Analytical Data

METCO Environmental

Particulate Analysis Summary

Job Number 96-11
Job Name ERM
Location Silsbee, Tx

Date Analysis Completed 1-26-96
Unit Tested Press House Vent Stack

Run No.	1				
Particulate on Filter (mg)	0.8				
Particulate in Front Wash (mg)*	1.9				
MF (mg)	2.7				
Particulate in Impinger #1 (mg)	8.6				
MT (mg)	11.3				

HT ✓

M. Ganter
Analyst

* Less Acetone Residue

METCO Environmental

Particulate Analysis EPA Method 5

Stack Filters

Job Number 96-11 Location Silsbee, Tx

Job Name ERM Unit Tested Press House Vent Stack

Desiccator Time In	1/23	1410 1/25			
Desiccator Time Out	1408 1/25	818 1/26			

Run No. 1	Filter No. H60				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.6148	0.6148			

Filter & Particulate Average (g) 0.6148
Initial Filter Weight (g) 0.6140
Total Particulate (mg) 0.8

Run No.	Filter No.				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)					

Filter & Particulate Average (g) _____
Initial Filter Weight (g) _____
Total Particulate (mg)

Run No.	Filter No.				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)					

Filter & Particulate Average (g) _____
Initial Filter Weight (g) _____
Total Particulate (mg)

MH
Analyst

METCO Environmental

Particulate Analysis EPA Method 5

Front Wash

Job Number 96-11 Location Silsbee, Tx

Job Name ERM Unit Tested Press House Vent Stack

Desiccator Time In	815 1/23	1415 1/23			
Desiccator Time Out	1413 1/23	1348 1/24			

Run No. 1	Volume (ml) 205				
Final Weight (g)	130.5027	130.5027	✓		
Initial Weight (g)	130.4992	130.4992			
Particulate Weight (g)	0.0035	0.0035			

Particulate Average (mg) 3.5

Less Acetone Blank (mg) 1.6

Total Particulate (mg) 1.9

Run No.	Volume (ml)				
Final Weight (g)					
Initial Weight (g)					
Particulate Weight (g)					

Particulate Average (mg)

Less Acetone Blank (mg)

Total Particulate (mg)

Run No.	Volume (ml)				
Final Weight (g)					
Initial Weight (g)					
Particulate Weight (g)					

Particulate Average (mg)

Less Acetone Blank (mg)

Total Particulate (mg)

Run No.	Volume (ml)				
Final Weight (g)					
Initial Weight (g)					
Particulate Weight (g)					

Particulate Average (mg)

Less Acetone Blank (mg)

Total Particulate (mg)

GML

Analyst

METCO Environmental

Particulate Analysis EPA Method 5

Back Half Analysis

Job Number 96-11
Job Name ERM

Location Silsbee, Tx.
Unit Tested Press House Vent Stack

Desiccator Time In	807 1/25	1155 1/25			
Desiccator Time Out	1153 1/25	833 1/26			

Run No. 1	Volume (ml) 565				
Final Weight (g)	121.4161	121.4166 ✓			
Initial Weight (g)	121.4078	121.4078			
Particulate Weight (g)	0.0083	0.0088			

Particulate Average (mg) 8.6
Less Ammonium Sulfate (mg) –
Total Particulate (mg) 8.6

Run No.	Volume (ml)				
Final Weight (g)					
Initial Weight (g)					
Particulate Weight (g)					

Particulate Average (mg)
Less Ammonium Sulfate (mg)
Total Particulate (mg)

Run No.	Volume (ml)				
Final Weight (g)					
Initial Weight (g)					
Particulate Weight (g)					

Particulate Average (mg)
Less Ammonium Sulfate (mg)
Total Particulate (mg)

Run No.	Volume (ml)				
Final Weight (g)					
Initial Weight (g)					
Particulate Weight (g)					

Particulate Average (mg)
Less Ammonium Sulfate (mg)
Total Particulate (mg)

mb
Analyst

METCO Environmental

Particulate Analysis Summary

Job Number 96-11

Job Name ERM

Location Silsbee, Tx.

Date Analysis Completed 1-26-96

Unit Tested Press House Vent Stack

Run No.		2	3		
Particulate on Filter (mg)		1.0	0.8		
Particulate in Front Wash (mg)*		0.6	1.1		
MF (mg)		1.6	1.9		
Particulate in Impinger #1 (mg)**		2.8	3.4		
MT (mg)		4.4	5.3		

HT

M. Gantt
Analyst

* Less Acetone Residue

** Less Ammonium Sulfate

METCO Environmental

Particulate Analysis EPA Method 5

Stack Filters

Job Number 96-11 Location Silsbee, Tx

Job Name ERM Unit Tested Press House Vent Stack

Desiccator Time In	1/23	1415 1/25			
Desiccator Time Out	1410 1/25	820 1/26			

Run No. ______ Filter No. ______

Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)					

Filter & Particulate Average (g) ______
Initial Filter Weight (g) ______
Total Particulate (mg) ______

Run No. 2 Filter No. E57

Filter & Particulate + Tare Weight (g)					
Tare Weight (g)			✓		
Filter & Particulate (g)	0.6349	0.6345			

Filter & Particulate Average (g) 0.6347
Initial Filter Weight (g) 0.6337
Total Particulate (mg) 1.0

Run No. 3 Filter No. E59

Filter & Particulate + Tare Weight (g)					
Tare Weight (g)			✓		
Filter & Particulate (g)	0.6285	0.6288			

Filter & Particulate Average (g) 0.6287
Initial Filter Weight (g) 0.6279
Total Particulate (mg) 0.8

MA
Analyst

METCO Environmental

Particulate Analysis EPA Method 5

Front Wash

Job Number 96-11 Location Silsbee, Tx.

Job Name ERM Unit Tested Press House Vent Stack

Desiccator Time In	815 1/23	1425 1/23			
Desiccator Time Out	1415 1/23	1350 1/24			

Run No.	Volume (ml)				
Final Weight (g)					
Initial Weight (g)					
Particulate Weight (g)					

Particulate Average (mg) ______
Less Acetone Blank (mg) ______
Total Particulate (mg) ______

Run No. 2	Volume (ml) 210				
Final Weight (g)	179.8134	179.8134	✓		
Initial Weight (g)	179.8111	179.8111			
Particulate Weight (g)	0.0023	0.0023			

Particulate Average (mg) 2.3
Less Acetone Blank (mg) 1.7
Total Particulate (mg) 0.6

Run No. 3	Volume (ml) 210				
Final Weight (g)	177.1071	177.1072	✓		
Initial Weight (g)	177.1044	177.1044			
Particulate Weight (g)	0.0027	0.0028			

Particulate Average (mg) 2.8
Less Acetone Blank (mg) 1.7
Total Particulate (mg) 1.1

Acetone Blank	Volume (ml) 225				
Final Weight (g)	127.3373	127.3369	✓		
Initial Weight (g)	127.3350	127.3350			
Difference (g)	0.0023	0.0019			

Average (mg) 2.1
* mg/l 9.3

* Note: If greater than 7.9 mg/l, use 7.9 mg/l.

mb
Analyst

METCO Environmental

Particulate Analysis EPA Method 5

Back Half Analysis

Job Number 96-11 Location Silsbee, Tx

Job Name ERM Unit Tested Press House Vent Stack

Desiccator Time In	810 1/25	1202 1/25	840 1/26		
Desiccator Time Out	1155 1/25	835 1/26	1440 1/26		

Run No.	Volume (ml)				
Final Weight (g)					
Initial Weight (g)					
Particulate Weight (g)					

Particulate Average (mg)

Less Ammonium Sulfate (mg)

Total Particulate (mg)

Run No. 2	Volume (ml) 176				
Final Weight (g)	126.0426	126.0434	126.0438 ✓		
Initial Weight (g)	126.0408	126.0408	126.0408		
Particulate Weight (g)	0.0018	0.0026	0.0030		

Particulate Average (mg) 2.8

Less Ammonium Sulfate (mg) 0

Total Particulate (mg) 2.8

Run No. 3	Volume (ml) 178				
Final Weight (g)	121.6457	121.6466	121.6468 ✓		
Initial Weight (g)	121.6433	121.6433	121.6433		
Particulate Weight (g)	0.0024	0.0033	0.0035		

Particulate Average (mg) 3.4

Less Ammonium Sulfate (mg) .0

Total Particulate (mg) 3.4

Run No.	Volume (ml)				
Final Weight (g)					
Initial Weight (g)					
Particulate Weight (g)					

Particulate Average (mg)

Less Ammonium Sulfate (mg)

Total Particulate (mg)

MB

Analyst

SO_2 EMISSION DATA

Job Number 96-11 Location Silsbee, Tx.

Job Name GRM Unit Tested Press House Vent Stac.

Run Number		2	3			
$\underline{N}$ - normality of $Ba(ClO_4)_2$		0.0100	→			
ML_I - ml in impinger #2		334	337			
ML_I - ml in impinger #3		285	287			
ML_A - ml in aliquot #2		10	10			
ML_A - ml in aliquot #3		10	10			
ML_B - ml of $Ba(ClO_4)_2$ to titrate #2		0.05	0.05			
		0.05	0.05			
		0.05	0.05			
Average ML_B - ml of $Ba(ClO_4)_2$		0.05	0.05			
ML_B - ml of $Ba(ClO_4)_2$ to titrate #3		0.05	0.05			
		0.05	0.05			
		0.05	0.05			
Average ML_B - ml of $Ba(ClO_4)_2$		0.05	0.05			
ML_{BB} - ml of $Ba(ClO_4)_2$ to titrate blank	0.05	→				
T_m - average gas meter temp., °F						
V_m - volume of dry gas sampled @ meter conditions, ft.^{3}						
P_b - barometric pressure, "Hg Abs.						
Q_s - stack gas volume dry @ standard conditions, *SCFM						
C_I - SO_2 in impinger #2, mgs		0	0			
C_I - SO_2 in impinger #3, mgs		0	0			
C_T - total SO_2 in impingers, mgs		0	0			
ppm SO_2						
C_{SO_2} - emission rate of SO_2, lbs/day						
C_{SO_2} - emission rate of SO_2, lbs/hr						
C_s - emission rate of S, lbs/day						

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

$$C_I = \frac{ML_I \times (ML_B - ML_{BB}) \times \underline{N} \times 32}{ML_A}$$

$$C_T = C_I \#2 + C_I \#3$$

$$\text{ppm } SO_2 = \frac{0.7513 \times C_T \times (T_m + 460)}{V_m \; P_b}$$

$$C_{SO_2} = \text{ppm } SO_2 \times Q_s \times 239.2 \times 10^{-6}$$

$$C_s = \frac{C_{SO_2}}{2}$$

METCO ENVIRONMENTAL

SULFUR TRIOXIDE EMISSION DATA

Job Number 96-11 Location Silsbee, Tx

Job Name ERM Unit Tested Press House Vent Stack

Run Number		2	3			
Date						
Time						
$\underline{N}$ - normality of $Ba(ClO_4)_2$		0.0100	0.0100			
ML_I - ml in impinger		176	178			
ML_A - ml in aliquot		10	10			
ML_B - ml of $Ba(ClO_4)_2$ to titrate		0.05	0.05			
		0.05	0.05			
		0.05	0.05			
Average ML_B - ml of $Ba(ClO_4)_2$ to titrate		0.05	0.05			
ML_{BB} - ml of $Ba(ClO_4)_2$ to titrate blank		0.05	0.05			
T_m - average gas meter temp., °F						
V_m - volume of dry gas sampled @ meter conditions, $ft.^3$						
P_b - barometric pressure, "Hg Abs.						
Q_s - stack gas volume dry @ standard conditions, *SCFM						
C_I - SO_3 in impinger, mgs						
ppm SO_3		0	0			
C_{SO_3} - emission rate of SO_3, lbs/day						
C_S - emission rate of S, lbs/day						

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

$$\text{ppm } SO_3 = \frac{0.6021 \times C_I \times (T_m + 460)}{V_m\ P_b}$$

$$C_I = \frac{ML_I \times (ML_B - ML_{BB}) \times \underline{N} \times 40}{ML_A}$$

$$C_{SO_3} = \text{ppm } SO_3 \times Q_s \times 299.1 \times 10^{-6}$$

$$C_S = \frac{C_{SO_3}}{2.5}$$

SO_2 EMISSION DATA

Job Number 96-11 Location Silsbee, Tx.

Job Name ERM

SO_2 train only

Unit Tested Press House Vent Stack

Run Number	1				
$\underline{N}$ - normality of $Ba(ClO_4)_2$	0.0100				
ML_I - ml in impinger #2	310				
ML_I - ml in impinger #3	270				
ML_A - ml in aliquot #2	10				
ML_A - ml in aliquot #3	10				
ML_B - ml of $Ba(ClO_4)_2$ to titrate #2	0.05 0.05 0.05				
Average ML_B - ml of $Ba(ClO_4)_2$	0.05				
ML_B - ml of $Ba(ClO_4)_2$ to titrate #3	0.05 0.05 0.05				
Average ML_B - ml of $Ba(ClO_4)_2$	0.05				
ML_{BB} - ml of $Ba(ClO_4)_2$ to titrate blank	0.05				
T_m - average gas meter temp., °F					
V_m - volume of dry gas sampled @ meter conditions, ft.^{3}					
P_b - barometric pressure, "Hg Abs.					
Q_s - stack gas volume dry @ standard conditions, *SCFM					
C_I - SO_2 in impinger #2, mgs	0				
C_I - SO_2 in impinger #3, mgs	0				
C_T - total SO_2 in impingers, mgs	0				
ppm SO_2					
C_{SO_2} - emission rate of SO_2, lbs/day					
C_{SO_2} - emission rate of SO_2, lbs/hr					
C_s - emission rate of S, lbs/day					

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

$$C_I = \frac{ML_I \times (ML_B - ML_{BB}) \times \underline{N} \times 32}{ML_A}$$

$$C_T = C_I \#2 + C_I \#3$$

$$\text{ppm } SO_2 = \frac{0.7513 \times C_T \times (T_m + 460)}{V_m P_b}$$

$$C_{SO_2} = \text{ppm } SO_2 \times Q_s \times 239.2 \times 10^{-6}$$

$$C_s = \frac{C_{SO_2}}{2}$$

METCO ENVIRONMENTAL

SULFUR TRIOXIDE EMISSION DATA

Job Number 76-11 Location [illegible]

Job Name ERM Unit Tested Press House Vent Stack

Run Number SO_3-SO_2 train only	1					
Date						
Time						
$\underline{N}$ - normality of $Ba(ClO_4)_2$	0.0100					
ML_I - ml in impinger	184					
ML_A - ml in aliquot	10					
ML_B - ml of $Ba(ClO_4)_2$ to titrate	0.05					
	0.05					
	0.05					
Average ML_B - ml of $Ba(ClO_4)_2$ to titrate	0.05					
ML_{BB} - ml of $Ba(ClO_4)_2$ to titrate blank	0.05					
T_m - average gas meter temp., °F						
V_m - volume of dry gas sampled @ meter conditions, $ft.^3$						
P_b - barometric pressure, "Hg Abs.						
Q_s - stack gas volume dry @ standard conditions, *SCFM						
C_I - SO_3 in impinger, mgs	0					
ppm SO_3						
C_{SO_3} - emission rate of SO_3, lbs/day						
C_S - emission rate of S, lbs/day						

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

$$\text{ppm } SO_3 = \frac{0.6021 \times C_I \times (T_m + 460)}{V_m \; P_b}$$

$$C_I = \frac{ML_I \times (ML_B - ML_{BB}) \times \underline{N} \times 40}{ML_A}$$

$$C_{SO_3} = \text{ppm } SO_3 \times Q_s \times 299.1 \times 10^{-6}$$

$$C_S = \frac{C_{SO_3}}{2.5}$$

DAT

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Report Prepared for
Metco Environmental
Method 0011 Formaldehyde Analytical Results
Project #0196018

Report Prepared by
***DAT*, Inc.**
6385 Shier Rings Rd.
Dublin, OH 43016

February 7, 1996

Metco Environmental
Method 0011 Formaldehyde Analysis
Project #0196018

Narrative

Twelve samples, each composed of various bottles and fractions, were received on 24 January 1996 for formaldehyde analysis by method M0011. These samples were pooled as follows:

Lab ID.:	Client ID.:
0196018-1	Press House Vent North Run 1
0196018-2	Press House Vent North Run 2
0196018-3	Press House Vent North Run 3
0196018-4	Press House Vent South Run 1
0196018-5	Press House Vent South Run 2
0196018-6	Press House Vent South Run 3
0196018-7	Press House Vent Stack Run 1
0196018-8	Press House Vent Stack Run 2
0196018-9	Press House Vent Stack Run 3
0196018-10	Press House Blank Train
0196018-11	Press House Field Spike (0.8 mg)
0196018-12	Press House Field Spike (50 mg)

All bottle contents associated with a given location and run number were pooled prior to extraction. There were a total of 12 analyses.

Sample Results

The analysis results are presented in a summary table following this narrative.

The residues in three of the samples required 10-fold dilution to obtain concentrations in the extracts which were within the lower and upper calibrator limits. The residues in the non-blank and non-spike samples ranged from approximately 1.5 total mg to 18 total mg. The field blank had 11.25 total μg. The low spike had a total 812 μg or 101% recovery. The high field formaldehyde spike, at 50 mg, had a total of 54.8 mg or 110% recovery.

Quality Control

The calibration curves were linear with r^2 values at or exceeding 0.999. The formaldehyde in the calibration checks deviated from the initial calibration by no more than 5.6%.

000001

The laboratory DNPH spikes (LSs) and laboratory spike duplicates (LSDs) were performed with the hydrazone derivative of formaldehyde. A 15-mL aliquot of DNPH solution was spiked with 15 μg equivalents of the formaldehyde hydrazone and extracted 3 times with 5 mL of methylene chloride. The extracts were then analyzed as typical samples.

The LS and LSD percent recoveries are reported on the Quality Test Results Summary Table. The formaldehyde recoveries ranged from 92% to 93%.

The laboratory method blanks (MB) were performed in the same way as the lab spikes excluding the formaldehyde hydrazone. The background formaldehyde was 0.011 μg/mL in the extract.

<u>Details of Method</u>

A 1.0 mL aliquot from each methylene chloride extract was transferred to individual 2.0 mL auto sampler vials and concentrated to dryness under a stream of high purity nitrogen. The residue was then dissolved in 1.0 mL of HPLC grade acetonitrile and capped for HPLC analysis.

The HPLC analysis was done by injection of 15 μL of sample on a 4.6 mm x 20 cm Hewlett Packard ODS Hypersil column. The HPLC program was as follows:

at time 0:	50% methanol and 50% water,
at time 20 minutes:	80% methanol and 20% water, hold for 2 minutes
at time 24 minutes:	50% methanol and 50% water, followed by a 4 minute equilibration time.

The DNP-hydrazones were detected by optical absorbance of a 360 nm incident beam, and all chromatographic data was acquired electronically by a local network of a personal computer configured with an HP 35900D A/D interface board and HP-G1250C ChemStation software.

<u>Preparation of Hydrazone Standards</u>

Saturated DNPH in 2<u>N</u> HCl was extracted five times with a 7:3 v/v solution of hexane and methylene chloride which was previously proven to have no significant levels of aldehydes or ketones. The DNPH solution was transferred to a rinsed Erlenmeyer flask and 99+% pure analyte was added to the flask with swirling. The hydrazone derivatives were then allowed to fully crystallize by either holding at room temperature or placing in a refrigerator. Methyl ethyl ketone required a second recrystallization by concentrating the hydrazone in boiling acetonitrile and then cooling in refrigerator overnight. The crystals of most standards were collected by filtration through glass fiber filter disks and rinsed thoroughly with HPLC grade water. Where filtration was impractical, the solution was extracted with methylene chloride. The extract was concentrated to dryness and the unreacted aldehyde or ketone was distilled off of the hydrazone. The filtration disk was transferred to a vacuum desiccator remaining in a vacuum with desiccant for at least 24 hours. A solution of approximately 1 mg/mL of hydrazone in HPLC grade acetonitrile was quality tested by HPLC. All serial dilutions were mathematically corrected for molecular weight. For example, 6.9980 mg/mL of formaldehyde hydrazone = 1 mg/mL of formaldehyde.

Data Analysis

The detector signal was acquired on an HP 35900D A/D interface board and using HP-G1250C ChemStation software. The peak areas were computed into molar corrected concentrations of the analytes as μg/mL using a linear regression formula from the initial calibration peak area and μg/mL data. These concentrations were entered into an Excel spreadsheet and mathematically computed into the total μg of analyte as follows:

$(A \times B \times C)/D = \text{Total } \mu g$

Where:
A = Reported μg/mL of analyte
B = Dilution factor (if needed)
C = Total volume of sample extract (mL)
D = Aliquot to final volume ratio
(*e.g.* 1 mL extract in 1 mL acetonitrile)

Report prepared by:

Randall L. Detra, Ph. D.
Senior Chemist, ***DAT***, Inc.

Data release by:

Ronald K. Mitchum, Ph. D.
President, ***DAT***, Inc.

000003

DATA SUMMARY

000004

DATA SUMMARY FOR FORMALDEHYDE ANALYSIS, METHOD 0011

Project: 0195018

Lab ID	Client ID	Total ug	Total mg	Q
0196018-1	Press House Vent North Run 1	9586.78	9.59	
0196018-2	Press House Vent North Run 2	18423.92	18.42	
0196018-3	Press House Vent North Run 3	14061.04	14.06	
0196018-4	Press House Vent South Run 1	7939.70	7.94	
0196018-5	Press House Vent South Run 2	11201.69	11.20	
0196018-6	Press House Vent South Run 3	9028.38	9.03	
0196018-7	Press House Vent Stack Run 1	1487.25	1.49	
0196018-8	Press House Vent Stack Run 2	1691.17	1.69	
0196018-9	Press House Vent Stack Run 3	1461.04	1.46	
0196018-10	Press House Blank Train	11.25	0.01	J
0196018-11	Press House Field Spike (0.8 mg)	811.91	0.81	
0196018-12	Press House Field Spike (50 mg)	54806.95	54.81	

J: The analyte concentration in the extract was less than the lowest calibrator.

DATA REDUCTION FOR FORMALDEHYDE ANALYSIS, METHOD 0011
Project: 0195018.

Lab ID	Client ID	ug/mL	Vol.	Dilut.	Aliq.	Total ug	Total mg	Q
0196018-1	**Press House Vent North Run 1**	19.53	491	1	1	**9586.78**	**9.59**	
0196018-2	**Press House Vent North Run 2**	4.712	391	10	1	**18423.92**	**18.42**	
0196018-3	**Press House Vent North Run 3**	2.954	476	10	1	**14061.04**	**14.06**	
0196018-4	**Press House Vent South Run 1**	19.32	411	1	1	**7939.70**	**7.94**	
0196018-5	**Press House Vent South Run 2**	2.599	431	10	1	**11201.69**	**11.20**	
0196018-6	**Press House Vent South Run 3**	16.84	536	1	1	**9028.38**	**9.03**	
0196018-7	**Press House Vent Stack Run 1**	3.092	481	1	1	**1487.25**	**1.49**	
0196018-8	**Press House Vent Stack Run 2**	3.126	541	1	1	**1691.17**	**1.69**	
0196018-9	**Press House Vent Stack Run 3**	3.102	471	1	1	**1461.04**	**1.46**	
0196018-10	**Press House Blank Train**	0.033	341	1	1	**11.25**	**0.01**	J
0196018-11	**Press House Field Spike (0.8 mg)**	7.381	110	1	1	**811.91**	**0.81**	
0196018-12	**Press House Field Spike (50 mg)**	9.059	121	1	0.02	**54806.95**	**54.81**	

J: The analyte concentration in the extract was less than the lowest calibrator.

DATA SUMMARY FOR FORMALDEHYDE ANALYSIS, METHOD 001
QUALITY TESTS
Project: 0195018.

Lab ID	Client ID	Value	Q	Parameter
0196018-MB	**Method Blank**	**0.01**	J	ug/mL
0196018-LS	**Lab Spike**	**93.0%**		Recovery
0196018-LSD	**Lab Spike Duplicate**	**91.9%**		Recovery
CONCAL1	**Continuing Calib. Check 1**	**1.9%**		Deviation
CONCAL2	**Continuing Calib. Check 2**	**5.5%**		Deviation
CONCAL3	**Continuing Calib. Check 3**	**-5.6%**		Deviaton

J: The analyte concentration in the extract was less than the lowest calibrator.

000038

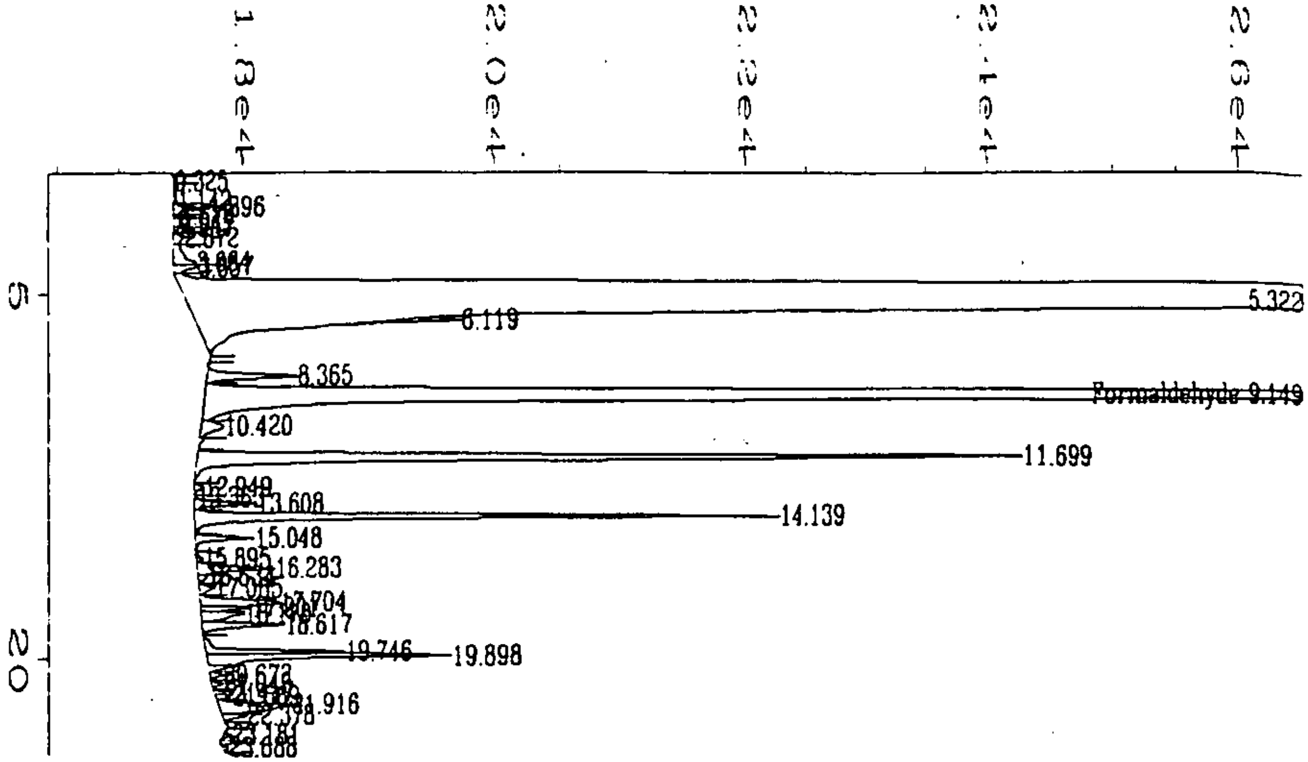
DATA REDUCTION FOR FORMALDEHYDE ANALYSIS, METHOD 0011, QUALITY TESTS
Project: 0195018.

Lab ID	*Client ID*	*ug/mL*	*Vol.*	*Dilut.*	*Aliq.*	*Total ug Q*	*Value*	*Parameter*
0196018-MB	**Method Blank**	0.011	13	1	1	0.15 J	**0.01**	ug/mL
0196018-LS	**Lab Spike**	0.996	14	1	1	13.94	**93.0%**	Recovery
0196018-LSD	**Lab Spike Duplicate**	0.862	16	1	1	13.79	**91.9%**	Recovery
CONCAL1	**Continuing Calib. Check 1**	1.019	1	1	1	1.02	**1.9%**	Deviation
CONCAL2	**Continuing Calib. Check 2**	1.055	1	1	1	1.06	**5.5%**	Deviation
CONCAL3	**Continuing Calib. Check 3**	0.944	1	1	1	0.94	**-5.6%**	Deviaton

J: The analyte concentration in the extract was less than the lowest calibrator.

000039

SAMPLE DATA



External Standard Report

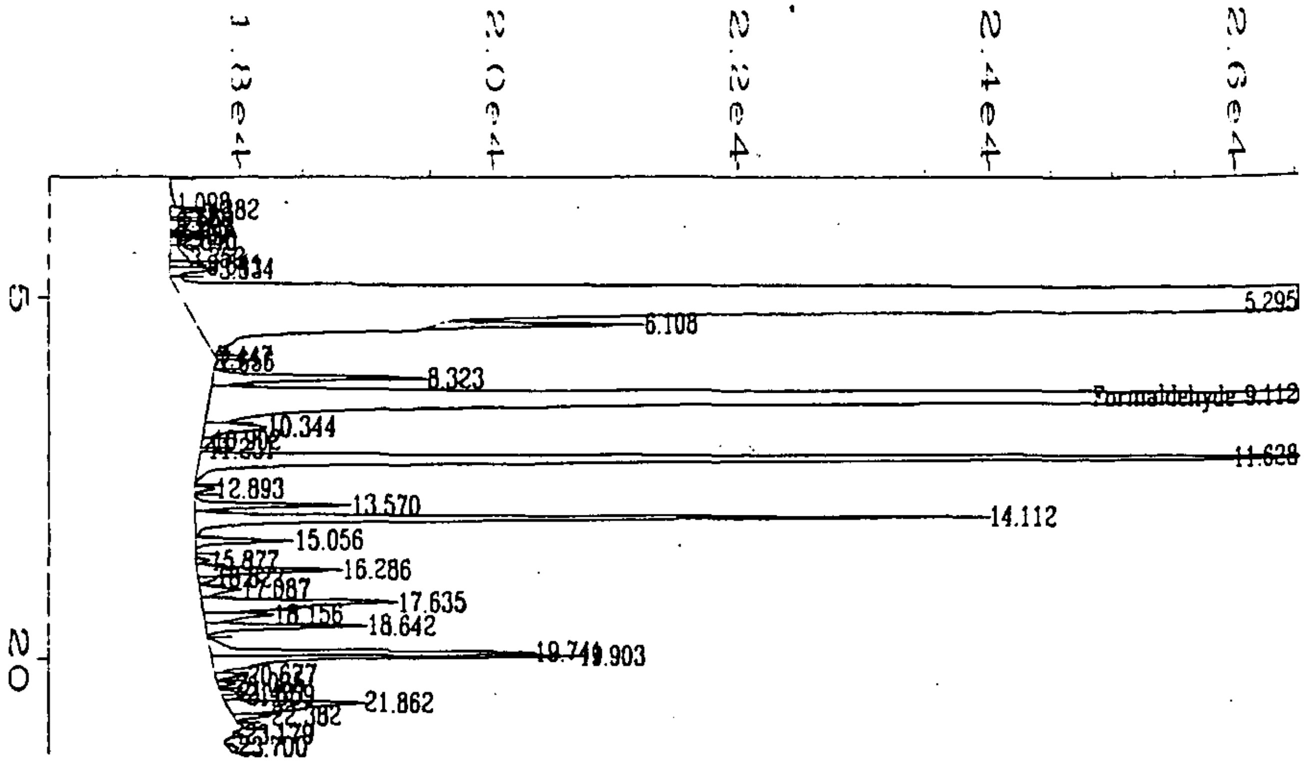
Data File Name : C:\HPCHEM\2\DATA\3FE00036.D
Operator : RLD
Instrument : LC 1 FLUO
Sample Name : 0196018-1
Run Time Bar Code:
Acquired on : 04 Feb 96 05:36 AM
Report Created on: 05 Feb 96 09:08 AM
Last Recalib on : 01 AUG 95 08:43 AM
Multiplier : 1

Page Number : 1
Vial Number : 36
Injection Number : 1
Sequence Line : 1
Instrument Method: FORMALD3.MTH
Analysis Method : FORMALD3.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in C:\HPCHEM\2\DATA\3FE00036.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.149	1104640	VV	0.207	1	19.525	Formaldehyde

000021



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External Standard Report

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```
Data File Name    : C:\HPCHEM\2\DATA\3FE00037.D
Operator          : RLD                           Page Number       : 1
Instrument        : LC 1 FLUO                     Vial Number       : 37
Sample Name       : 0196018-2                     Injection Number  : 1
Run Time Bar Code:                                Sequence Line     : 1
Acquired on       : 04 Feb 96  06:05 AM           Instrument Method: FORMALD3.MTH
Report Created on: 05 Feb 96  09:09 AM            Analysis Method   : FORMALD3.MTH
Last Recalib on   : 01 AUG 95 08:43 AM            Sample Amount     : 0
Multiplier        : 1                             ISTD Amount       :

Sig. 1 in C:\HPCHEM\2\DATA\3FE00037.D
Ret Time     Area     Type Width Ref#  ug/mL              Name
|-------|-----------|----|-----|-----|--------|-------------------------------|
  9.112     2549955 VV   0.208  1      45.239 Formaldehyde
```

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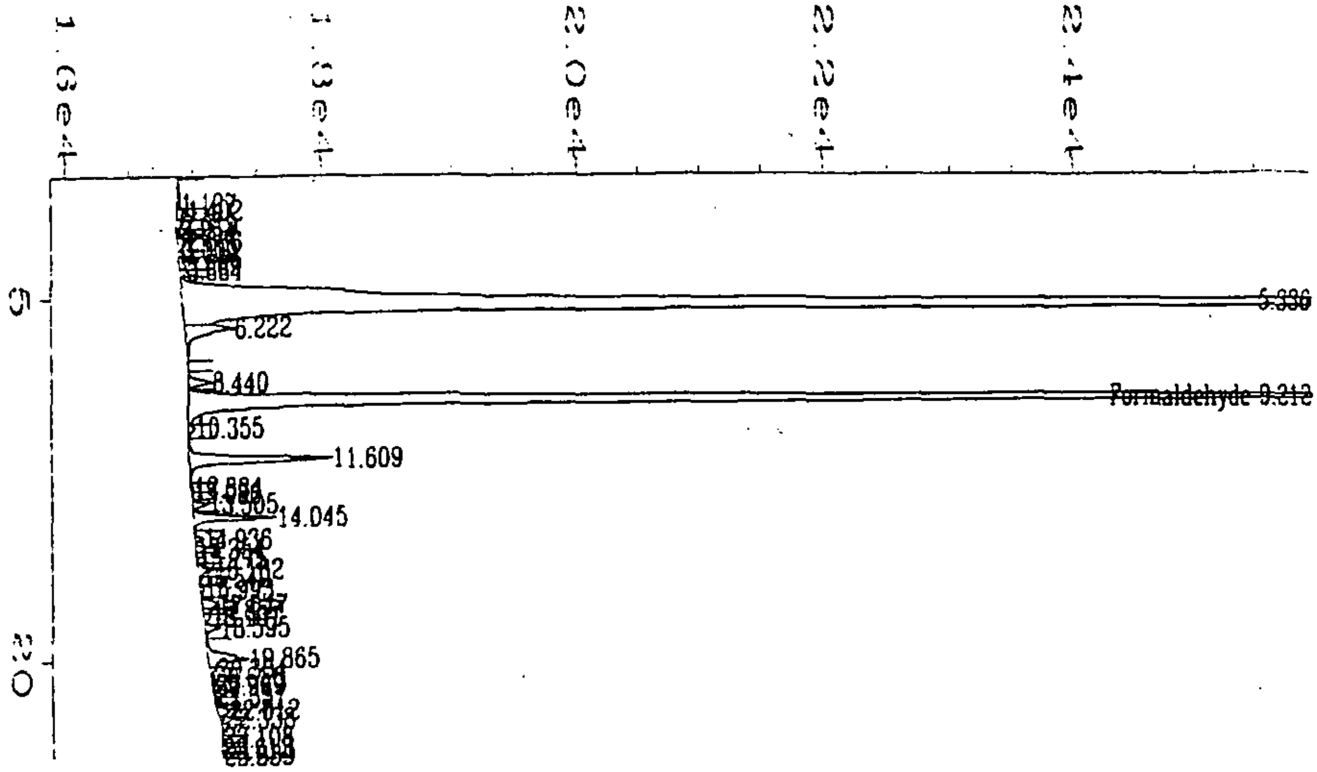
000012



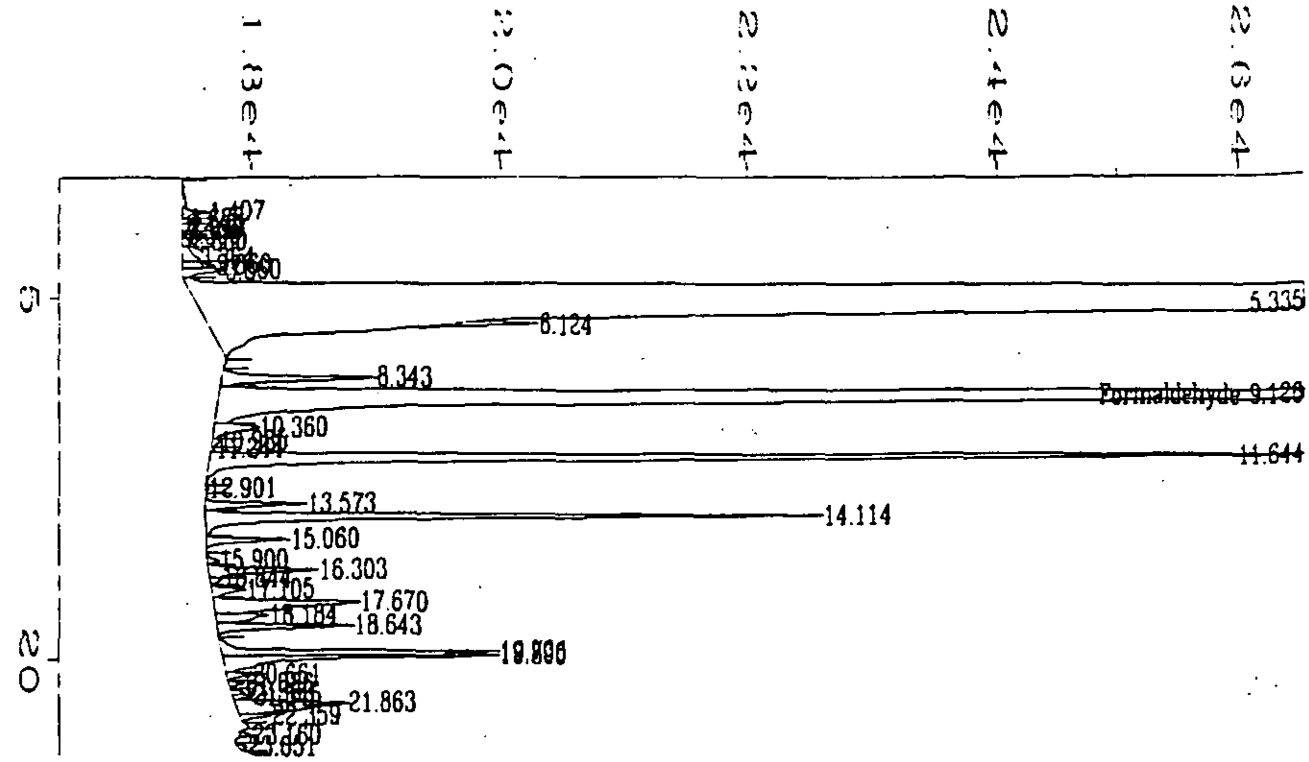
External Standard Report

Data File Name	: C:\HPCHEM\2\DATA\5FE96012.D			
Operator	: RLD		Page Number	: 1
Instrument	: LC 1 FLUO		Vial Number	: 12
Sample Name	: 0196018-2 10X		Injection Number	: 1
Run Time Bar Code:			Sequence Line	: 1
Acquired on	: 05 Feb 96 07:31 PM		Instrument Method:	FORMALD3.MTH
Report Created on:	06 Feb 96 09:29 AM		Analysis Method	: FORMALD3.MTH
Last Recalib on	: 01 AUG 95 08:43 AM		Sample Amount	: 0
Multiplier	: 1		ISTD Amount	:

Sig. 1 in C:\HPCHEM\2\DATA\5FE96012.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.212	272051	VV	0.207	1	4.712	Formaldehyde

000013



External Standard Report

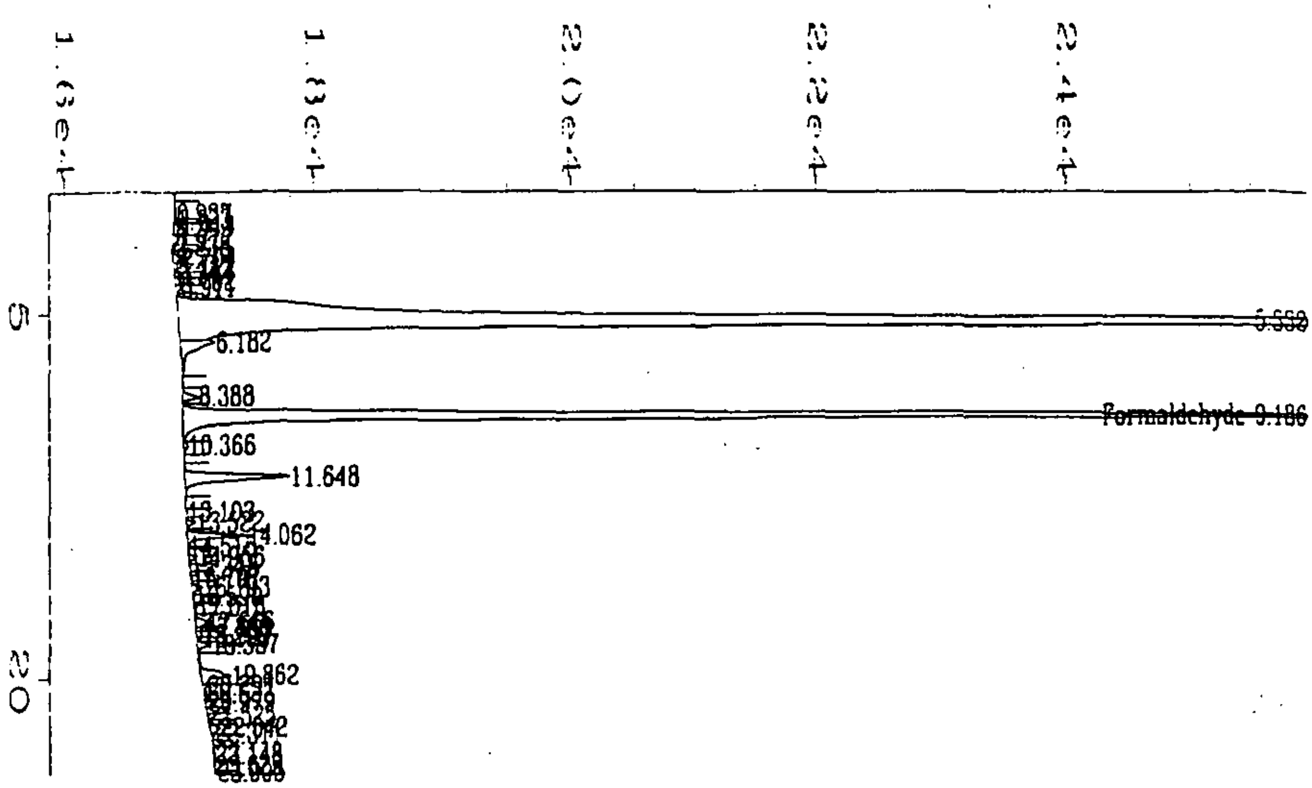
Data File Name : C:\HPCHEM\2\DATA\3FE00038.D
Operator : RLD
Instrument : LC 1 FLUO
Sample Name : 0196018-3
Run Time Bar Code:
Acquired on : 04 Feb 96 06:33 AM
Report Created on: 05 Feb 96 09:09 AM
Last Recalib on : 01 AUG 95 08:43 AM
Multiplier : 1

Page Number : 1
Vial Number : 38
Injection Number : 1
Sequence Line : 1
Instrument Method: FORMALD3.MTH
Analysis Method : FORMALD3.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in C:\HPCHEM\2\DATA\3FE00038.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.126	1692936	VV	0.206	1	29.991	Formaldehyde

000014



External Standard Report

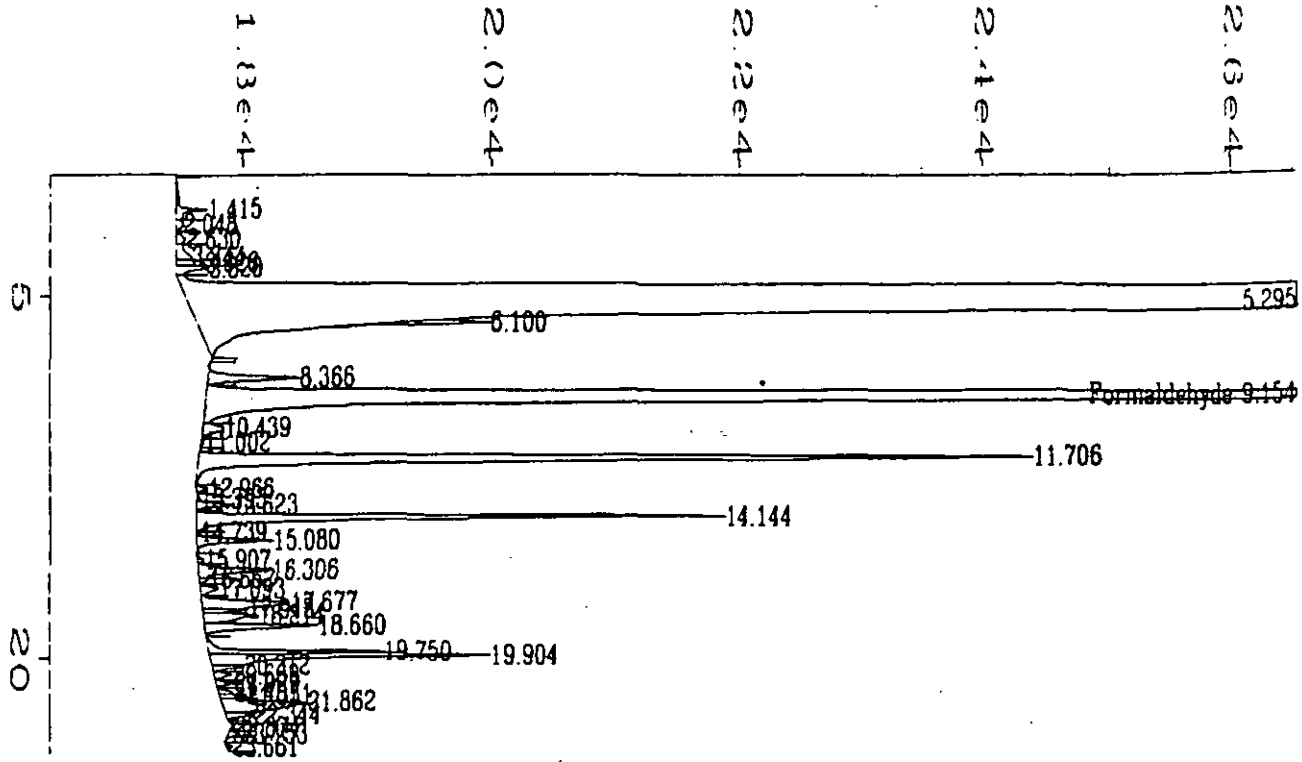
Data File Name : C:\HPCHEM\2\DATA\5FE96013.D
Operator : RLD
Instrument : LC 1 FLUO
Sample Name : 0196018-3 10X
Run Time Bar Code:
Acquired on : 05 Feb 96 08:00 PM
Report Created on: 06 Feb 96 09:29 AM
Last Recalib on : 01 AUG 95 08:43 AM
Multiplier : 1

Page Number : 1
Vial Number : 13
Injection Number : 1
Sequence Line : 1
Instrument Method: FORMALD3.MTH
Analysis Method : FORMALD3.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in C:\HPCHEM\2\DATA\5FE96013.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.186	173211	VV	0.211	1	2.954	Formaldehyde

000015



External Standard Report

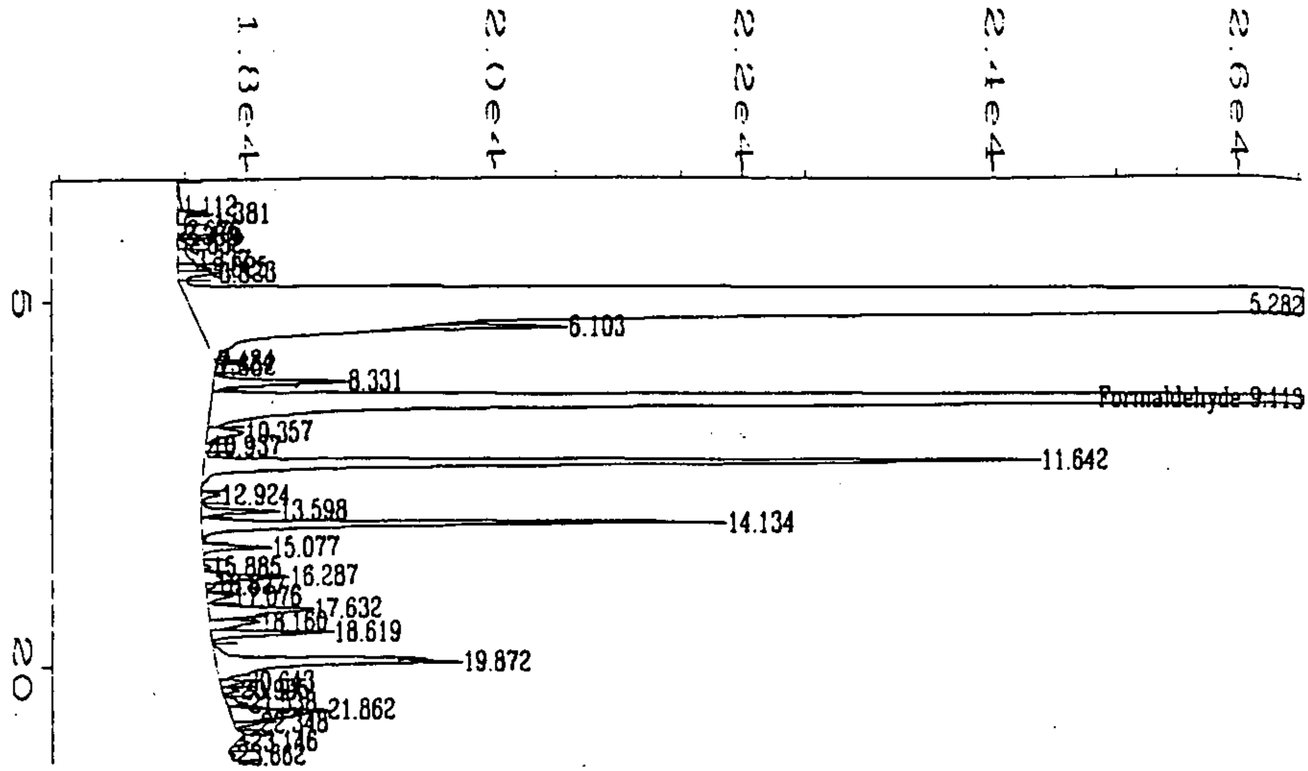
Data File Name : C:\HPCHEM\2\DATA\3FE00039.D
Operator : RLD
Instrument : LC 1 FLUO
Sample Name : 0196018-4
Run Time Bar Code:
Acquired on : 04 Feb 96 07:02 AM
Report Created on: 05 Feb 96 09:09 AM
Last Recalib on : 01 AUG 95 08:43 AM
Multiplier : 1

Page Number : 1
Vial Number : 39
Injection Number : 1
Sequence Line : 1
Instrument Method: FORMALD3.MTH
Analysis Method : FORMALD3.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in C:\HPCHEM\2\DATA\3FE00039.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.154	1093015	VV	0.205	1	19.318	Formaldehyde

000016



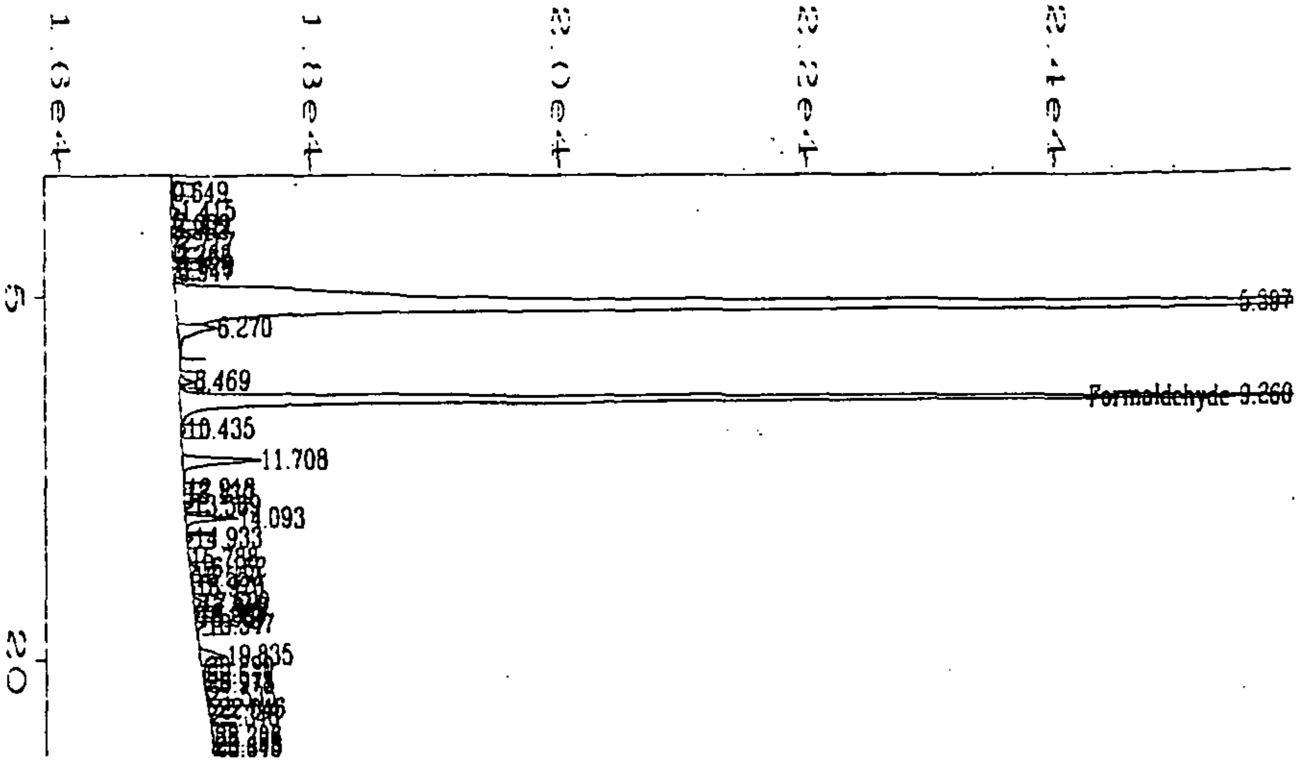
External Standard Report

```
Data File Name    : C:\HPCHEM\2\DATA\3FE00040.D
Operator          : RLD                          Page Number       : 1
Instrument        : LC 1 FLUO                    Vial Number       : 40
Sample Name       : 0196018-5                    Injection Number  : 1
Run Time Bar Code:                               Sequence Line     : 1
Acquired on       : 04 Feb 96   07:30 AM         Instrument Method: FORMALD3.MTH
Report Created on: 05 Feb 96   09:09 AM          Analysis Method   : FORMALD3.MTH
Last Recalib on   : 01 AUG 95 08:43 AM           Sample Amount     : 0
Multiplier        : 1                            ISTD Amount       :
```

Sig. 1 in C:\HPCHEM\2\DATA\3FE00040.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.113	1529715	VV	0.206	1	27.088	Formaldehyde

000017



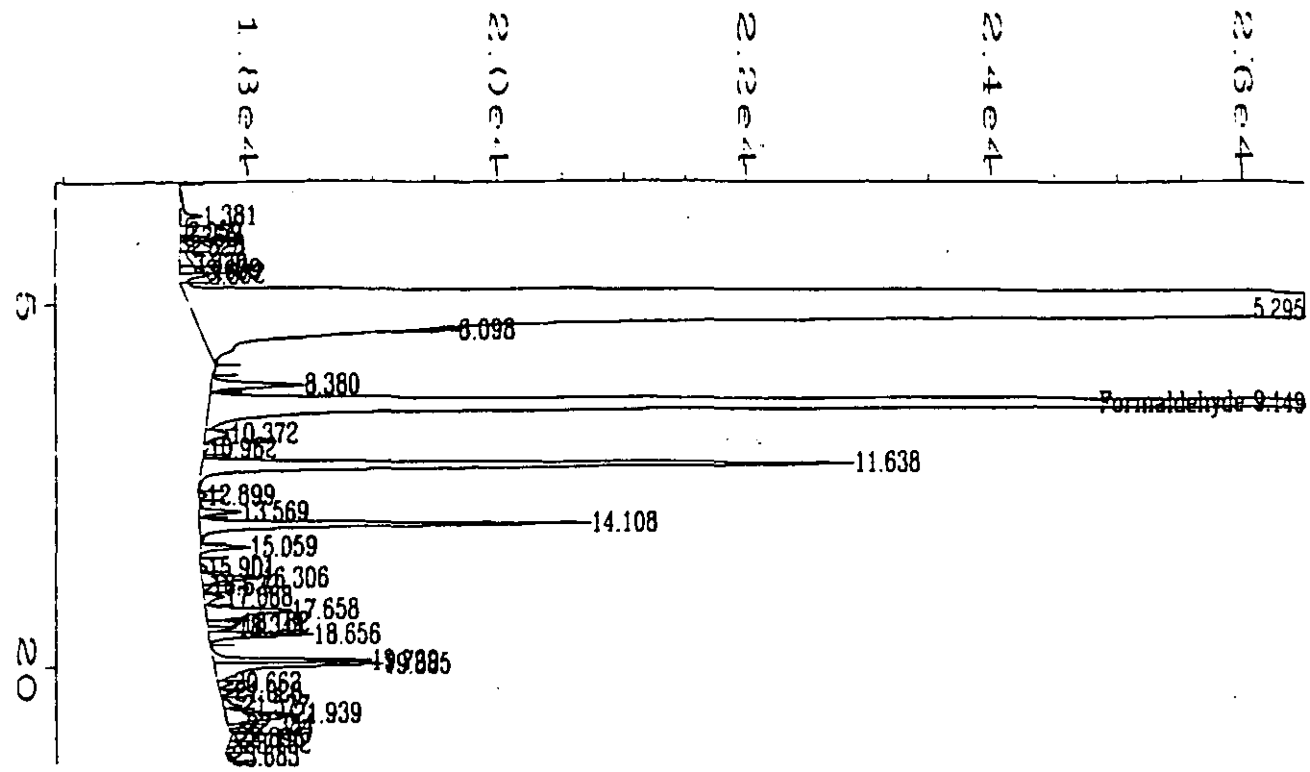
External Standard Report

Data File Name	: C:\HPCHEM\2\DATA\5FE96014.D		
Operator	: RLD	Page Number	: 1
Instrument	: LC 1 FLUO	Vial Number	: 14
Sample Name	: 0196018-5 10X	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 1
Acquired on	: 05 Feb 96 08:28 PM	Instrument Method:	FORMALD3.MTH
Report Created on:	06 Feb 96 09:29 AM	Analysis Method	: FORMALD3.MTH
Last Recalib on	: 01 AUG 95 08:43 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in C:\HPCHEM\2\DATA\5FE96014.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.260	153245	VV	0.209	1	2.599	Formaldehyde

500018



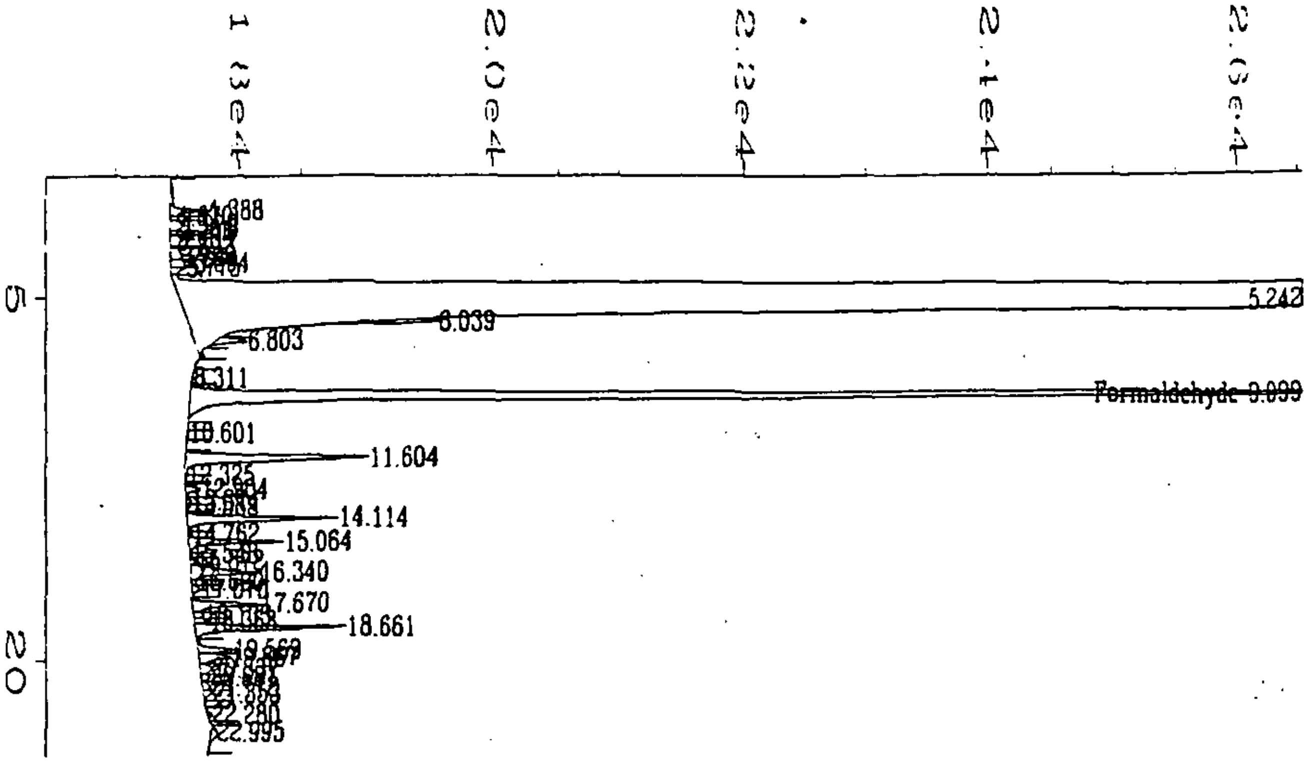
External Standard Report

Data File Name : C:\HPCHEM\2\DATA\3FE00041.D
Operator : RLD
Instrument : LC 1 FLUO
Sample Name : 0196018-6
Run Time Bar Code:
Acquired on : 04 Feb 96 07:59 AM
Report Created on: 05 Feb 96 09:10 AM
Last Recalib on : 01 AUG 95 08:43 AM
Multiplier : 1

Page Number : 1
Vial Number : 41
Injection Number : 1
Sequence Line : 1
Instrument Method: FORMALD3.MTH
Analysis Method : FORMALD3.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in C:\HPCHEM\2\DATA\3FE00041.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.149	953927	VV	0.205	1	16.844	Formaldehyde



External Standard Report

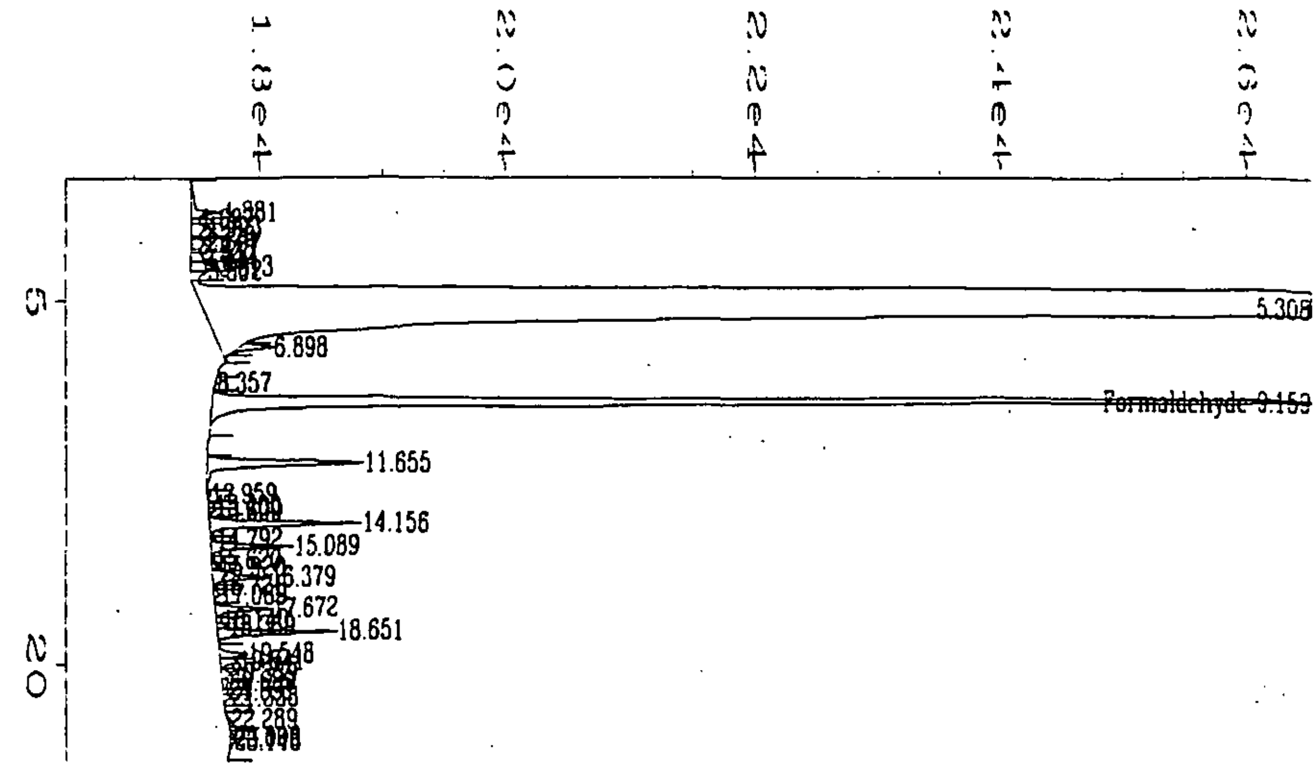
Data File Name : C:\HPCHEM\2\DATA\3FE00042.D
Operator : RLD
Instrument : LC 1 FLUO
Sample Name : 0196018-7
Run Time Bar Code:
Acquired on : 04 Feb 96 08:27 AM
Report Created on: 05 Feb 96 09:10 AM
Last Recalib on : 01 AUG 95 08:43 AM
Multiplier : 1

Page Number : 1
Vial Number : 42
Injection Number : 1
Sequence Line : 1
Instrument Method: FORMALD3.MTH
Analysis Method : FORMALD3.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in C:\HPCHEM\2\DATA\3FE00042.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.099	180987	PV	0.208	1	3.092	Formaldehyde

000020



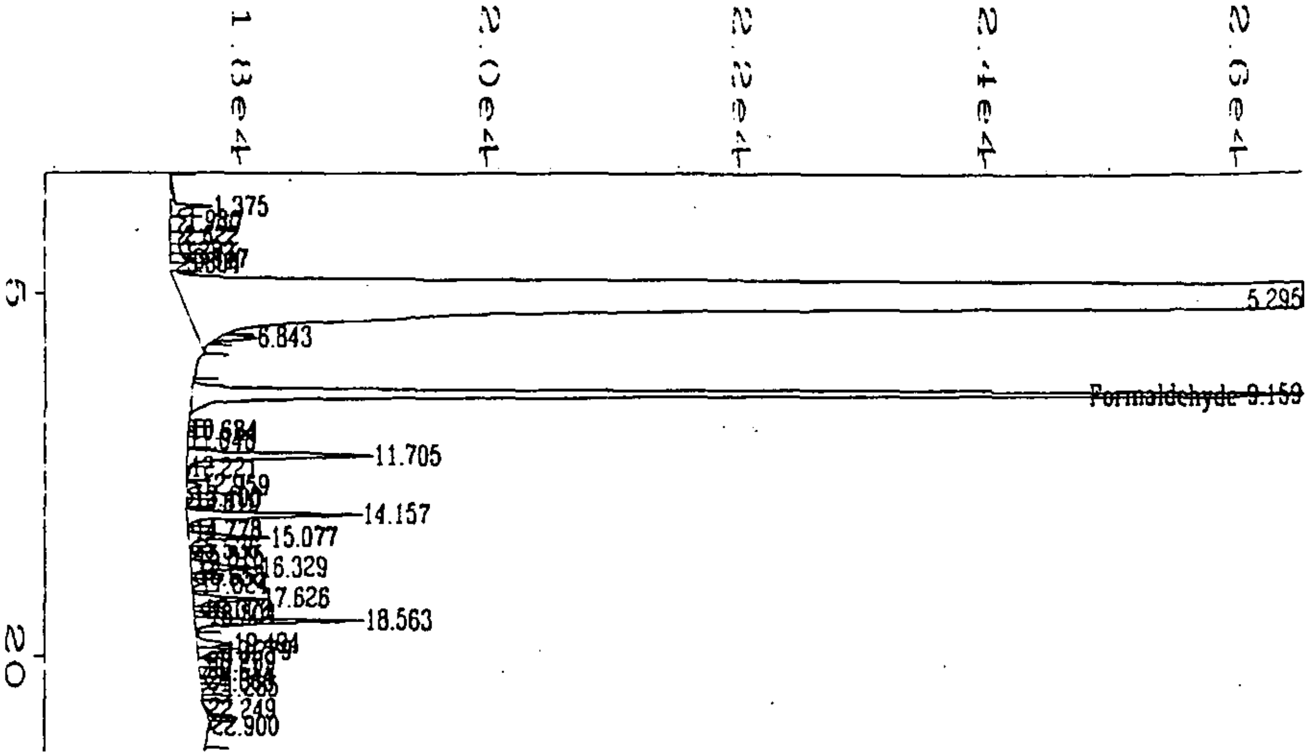
External Standard Report

```
Data File Name    : C:\HPCHEM\2\DATA\3FE00043.D
Operator          : RLD                          Page Number       : 1
Instrument        : LC 1 FLUO                    Vial Number       : 43
Sample Name       : 0196018-8                    Injection Number  : 1
Run Time Bar Code:                               Sequence Line     : 1
Acquired on       : 04 Feb 96  08:56 AM          Instrument Method: FORMALD3.MTH
Report Created on: 05 Feb 96  09:10 AM           Analysis Method   : FORMALD3.MTH
Last Recalib on   : 01 AUG 95 08:43 AM           Sample Amount     : 0
Multiplier        : 1                            ISTD Amount       :
```

Sig. 1 in C:\HPCHEM\2\DATA\3FE00043.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.159	182898	PV	0.205	1	3.126	Formaldehyde

000021



External Standard Report

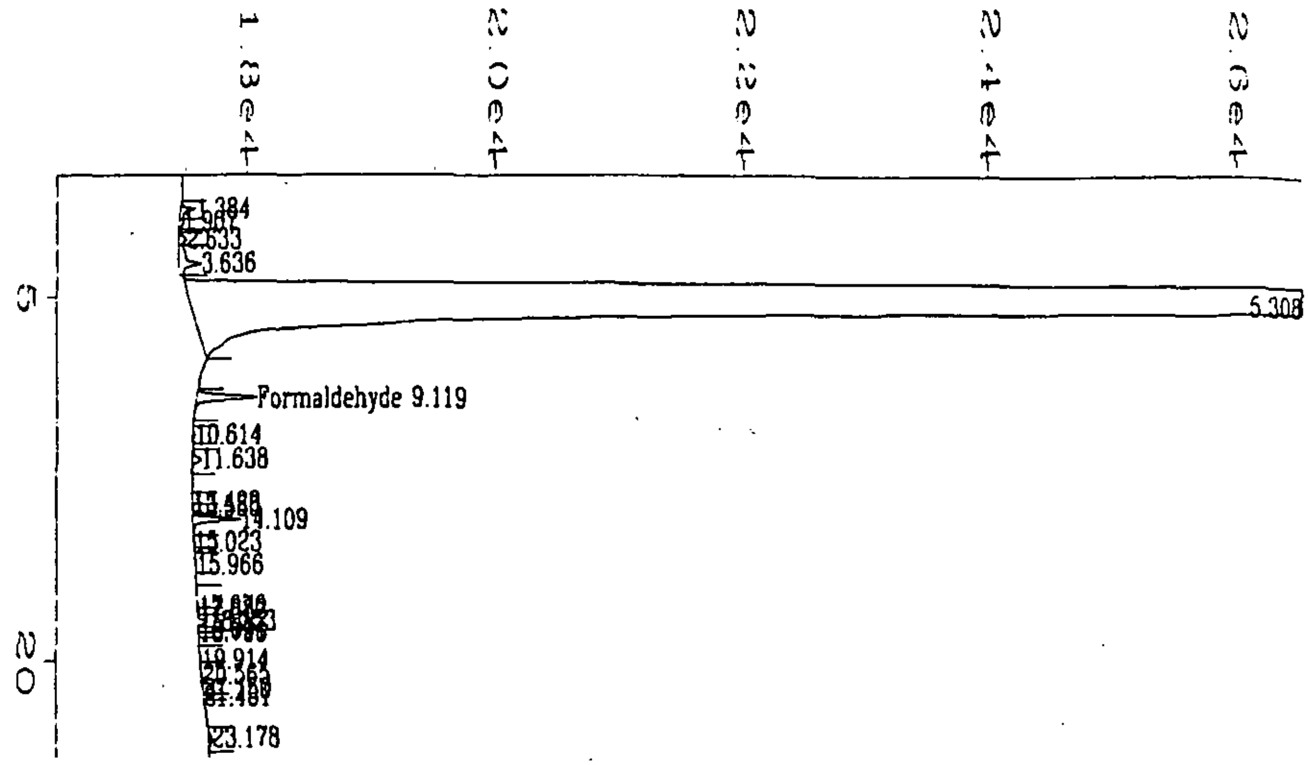
Data File Name : C:\HPCHEM\2\DATA\3FE00044.D
Operator : RLD
Instrument : LC 1 FLUO
Sample Name : 0196018-9
Run Time Bar Code:
Acquired on : 04 Feb 96 09:24 AM
Report Created on: 05 Feb 96 09:10 AM
Last Recalib on : 01 AUG 95 08:43 AM
Multiplier : 1

Page Number : 1
Vial Number : 44
Injection Number : 1
Sequence Line : 1
Instrument Method: FORMALD3.MTH
Analysis Method : FORMALD3.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in C:\HPCHEM\2\DATA\3FE00044.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.159	181501	PV	0.211	1	3.102	Formaldehyde

000022



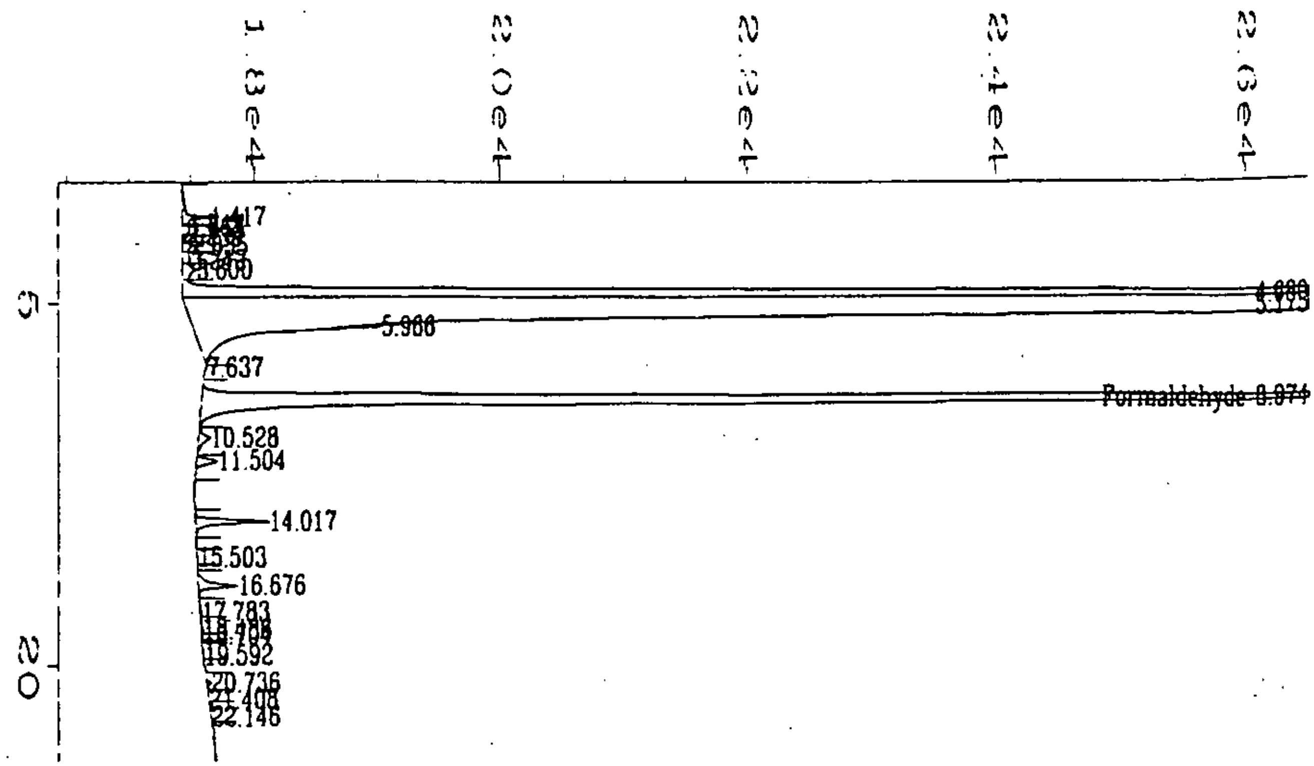
External Standard Report

Data File Name : C:\HPCHEM\2\DATA\3FE00045.D
Operator : RLD
Instrument : LC 1 FLUO
Sample Name : 0196018-10
Run Time Bar Code:
Acquired on : 04 Feb 96 10:23 AM
Report Created on: 05 Feb 96 09:11 AM
Last Recalib on : 01 AUG 95 08:43 AM
Multiplier : 1

Page Number : 1
Vial Number : 45
Injection Number : 1
Sequence Line : 1
Instrument Method: FORMALD3.MTH
Analysis Method : FORMALD3.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in C:\HPCHEM\2\DATA\3FE00045.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.119	6587	VV	0.206	1	0.0330	Formaldehyde



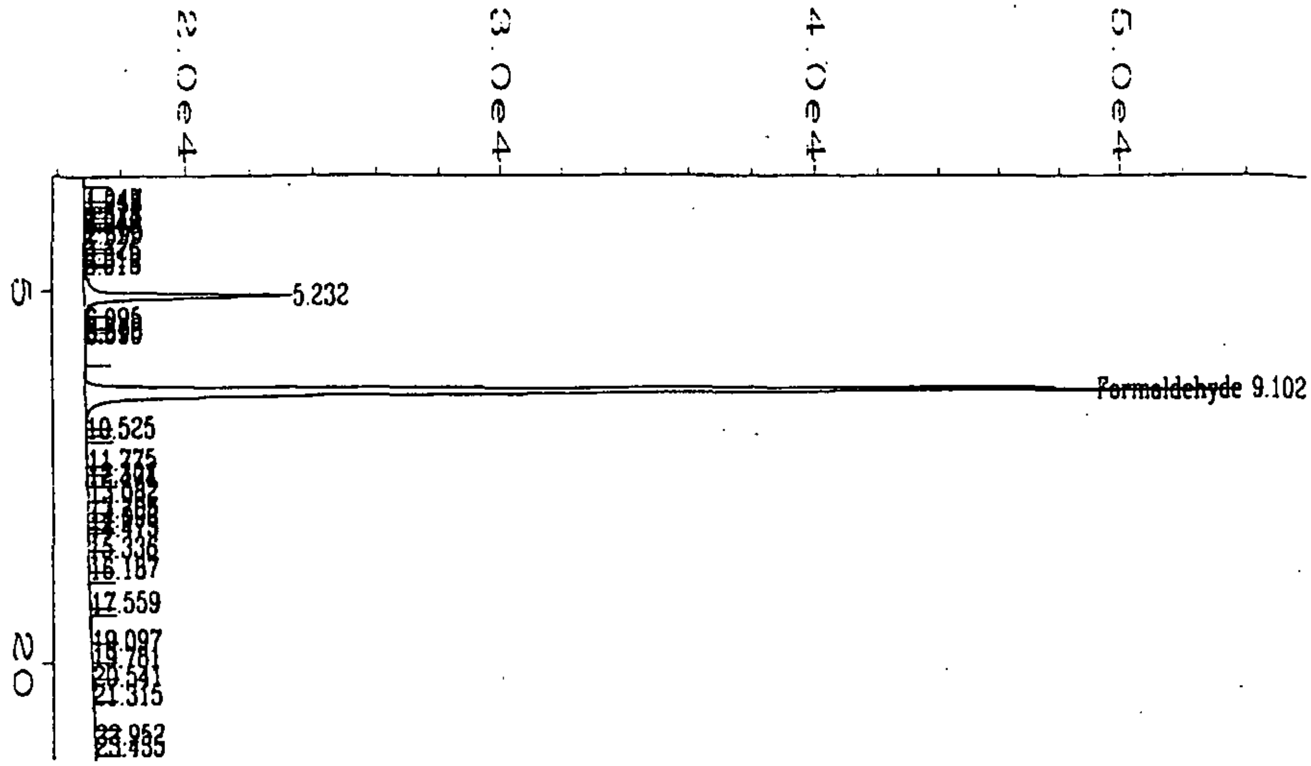
External Standard Report

Data File Name	: C:\HPCHEM\2\DATA\3FE00046.D		
Operator	: RLD	Page Number	: 1
Instrument	: LC 1 FLUO	Vial Number	: 46
Sample Name	: 0196018-11	Injection Number	: 1
Run Time Bar Code	:	Sequence Line	: 1
Acquired on	: 04 Feb 96 10:52 AM	Instrument Method	: FORMALD3.MTH
Report Created on	: 05 Feb 96 09:11 AM	Analysis Method	: FORMALD3.MTH
Last Recalib on	: 01 AUG 95 08:43 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in C:\HPCHEM\2\DATA\3FE00046.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
8.974	422019	PV	0.205	1	7.381	Formaldehyde

000024



External Standard Report

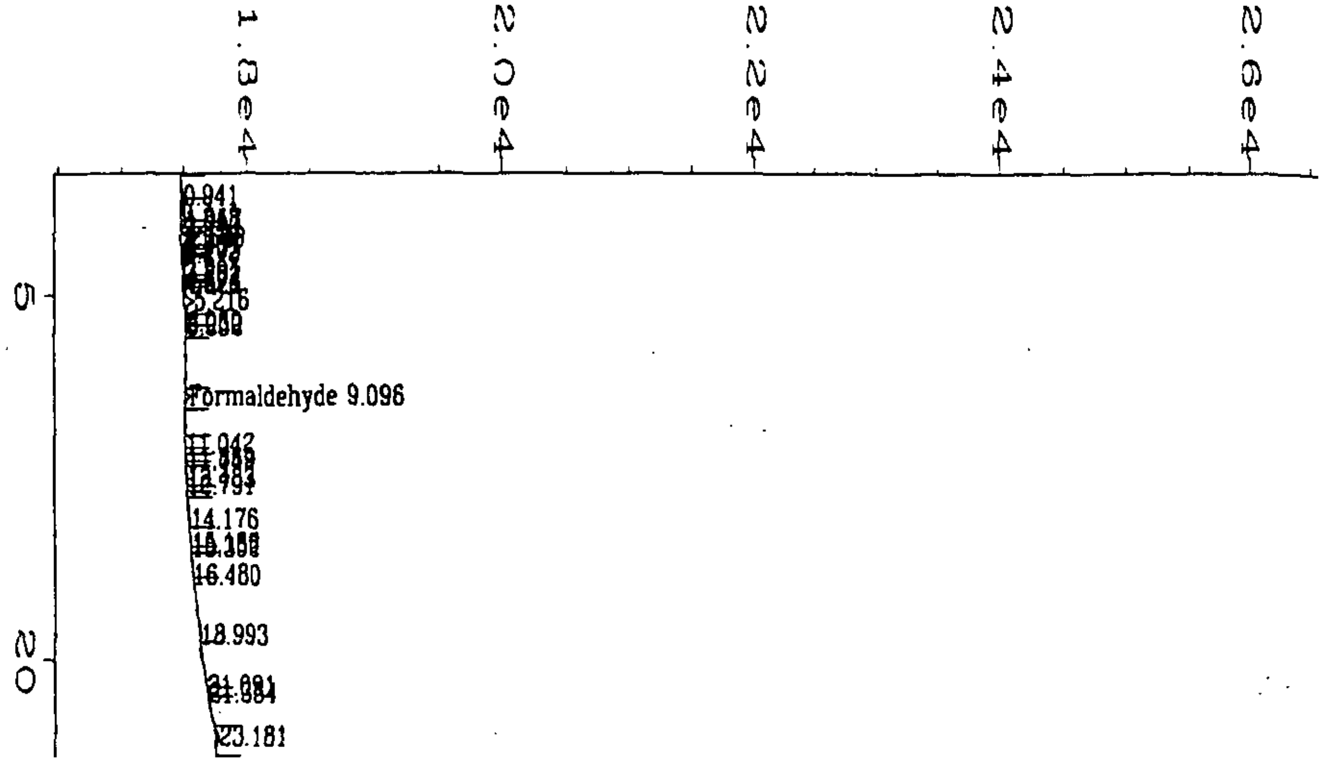
Data File Name	: C:\HPCHEM\2\DATA\6FE96020.D		
Operator	: RLD	Page Number	: 1
Instrument	: LC 1 FLUO	Vial Number	: 20
Sample Name	: 0196018-12	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 1
Acquired on	: 06 Feb 96 07:27 PM	Instrument Method:	FORMALD3.MTH
Report Created on:	07 Feb 96 10:11 AM	Analysis Method	: FORMALD3.MTH
Last Recalib on	: 01 AUG 95 08:43 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in C:\HPCHEM\2\DATA\6FE96020.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.102	516339	PV	0.212	1	9.059	Formaldehyde

000025

BLANK DATA



External Standard Report

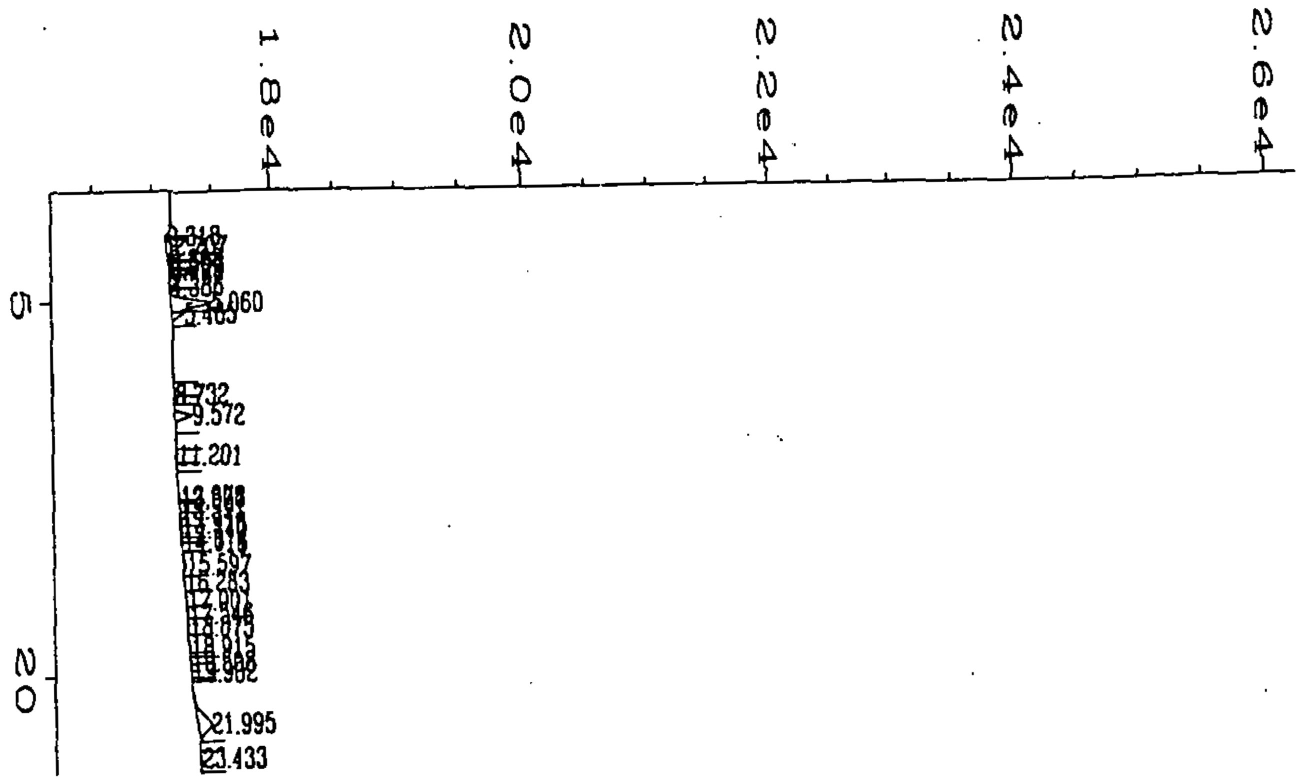
Data File Name : C:\HPCHEM\2\DATA\3FE00025.D
Operator : RLD
Instrument : LC 1 FLUO
Sample Name : INST BLNK 2
Run Time Bar Code:
Acquired on : 04 Feb 96 00:22 AM
Report Created on: 05 Feb 96 09:06 AM
Last Recalib on : 01 AUG 95 08:43 AM
Multiplier : 1

Page Number : 1
Vial Number : 25
Injection Number : 1
Sequence Line : 1
Instrument Method: FORMALD3.MTH
Analysis Method : FORMALD3.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in C:\HPCHEM\2\DATA\3FE00025.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.096	594	VV	0.222	1	0.00297	Formaldehyde

000027



External Standard Report

Data File Name : C:\HPCHEM\2\DATA\5FE96001.D
Operator : RLD
Instrument : LC 1 FLUO
Sample Name : INST BLANK
Run Time Bar Code:
Acquired on : 05 Feb 96 02:11 PM
Report Created on: 06 Feb 96 09:26 AM
Last Recalib on : 01 AUG 95 08:43 AM
Multiplier : 1

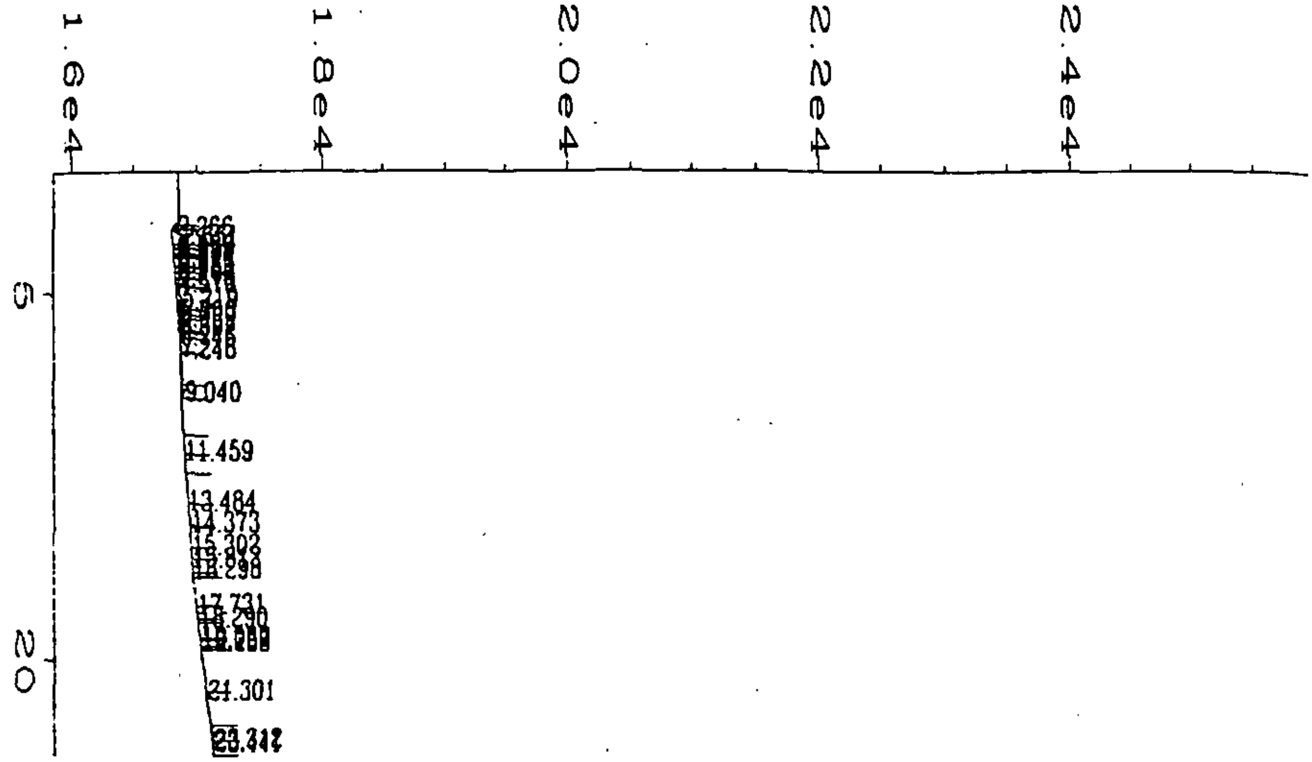
Page Number : 1
Vial Number : 1
Injection Number : 1
Sequence Line : 1
Instrument Method: FORMALD3.MTH
Analysis Method : FORMALD3.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in C:\HPCHEM\2\DATA\5FE96001.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.300	* not found *			1		Formaldehyde

Not all calibrated peaks were found

000028



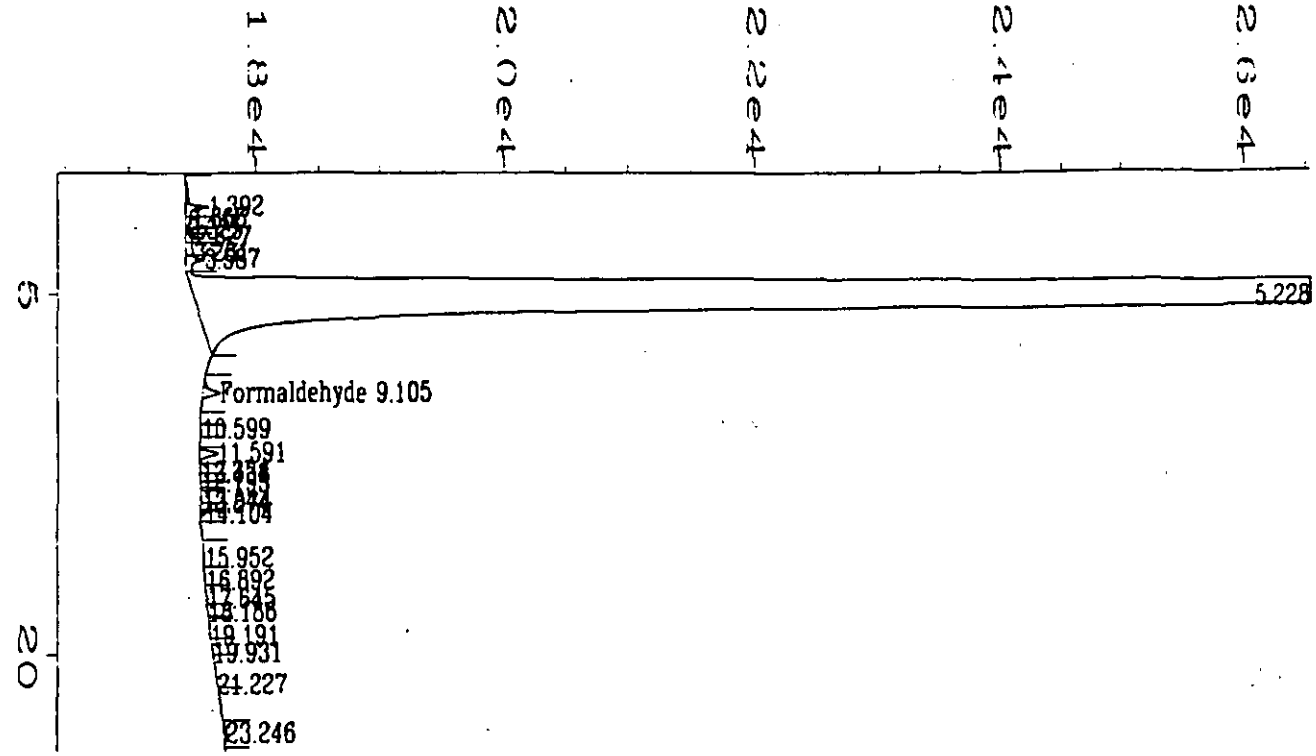
External Standard Report

Data File Name	: C:\HPCHEM\2\DATA\6FE96001.D			
Operator	: RLD	Page Number	:	1
Instrument	: LC 1 FLUO	Vial Number	:	1
Sample Name	: INST BLANK	Injection Number	:	1
Run Time Bar Code:		Sequence Line	:	1
Acquired on	: 06 Feb 96 10:25 AM	Instrument Method:		FORMALD3.MTH
Report Created on:	06 Feb 96 01:21 PM	Analysis Method	:	FORMALD3.MTH
Last Recalib on	: 01 AUG 95 08:43 AM	Sample Amount	:	0
Multiplier	: 1	ISTD Amount	:	

Sig. 1 in C:\HPCHEM\2\DATA\6FE96001.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
8.800	* not found *			1		Formaldehyde

Not all calibrated peaks were found



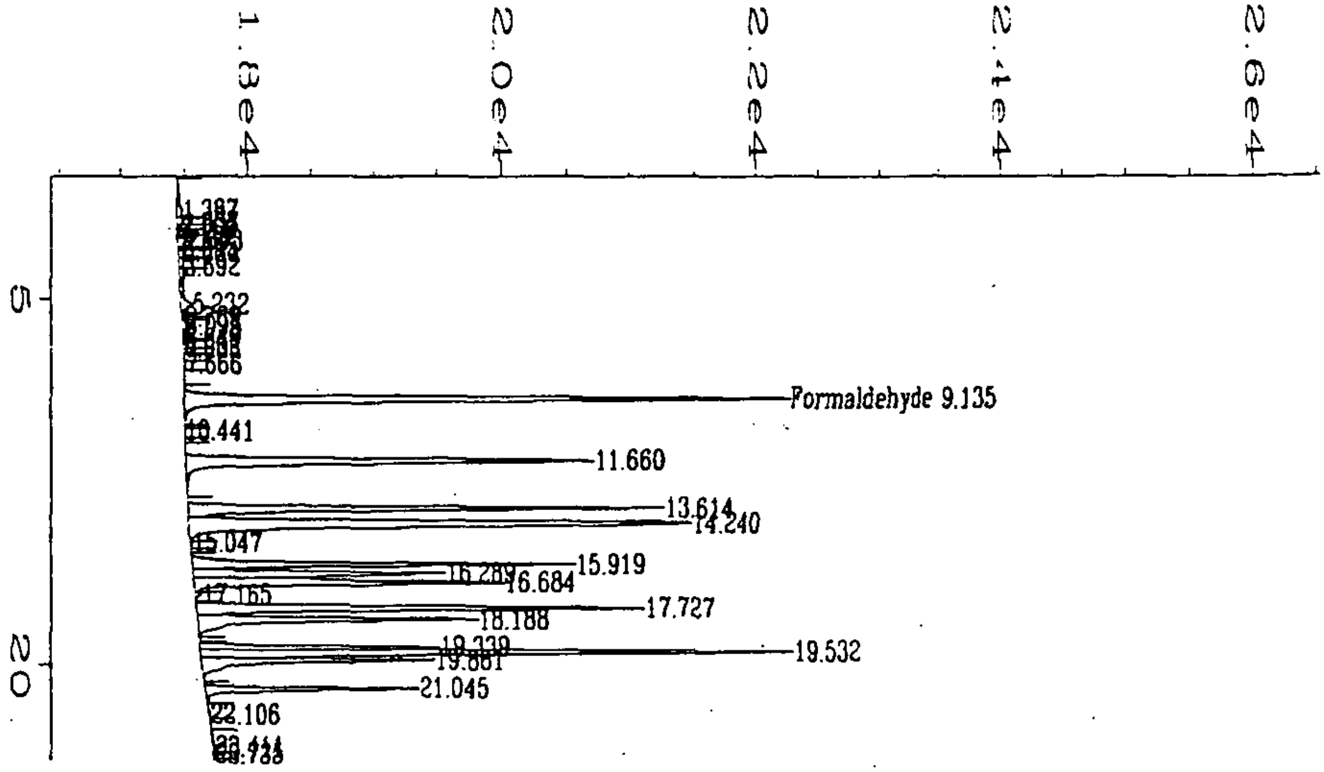
External Standard Report

```
Data File Name    : C:\HPCHEM\2\DATA\3FE00033.D
Operator          : RLD                            Page Number          : 1
Instrument        : LC 1 FLUO                      Vial Number          : 33
Sample Name       : 0196018-MB                     Injection Number     : 1
Run Time Bar Code:                                 Sequence Line        : 1
Acquired on       : 04 Feb 96  04:11 AM            Instrument Method: FORMALD3.MTH
Report Created on: 05 Feb 96  09:08 AM             Analysis Method  : FORMALD3.MTH
Last Recalib on   : 01 AUG 95 08:43 AM             Sample Amount        : 0
Multiplier        : 1                              ISTD Amount          :
```

Sig. 1 in C:\HPCHEM\2\DATA\3FE00033.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.105	2280	BV	0.241	1	0.0114	Formaldehyde

000030



External Standard Report

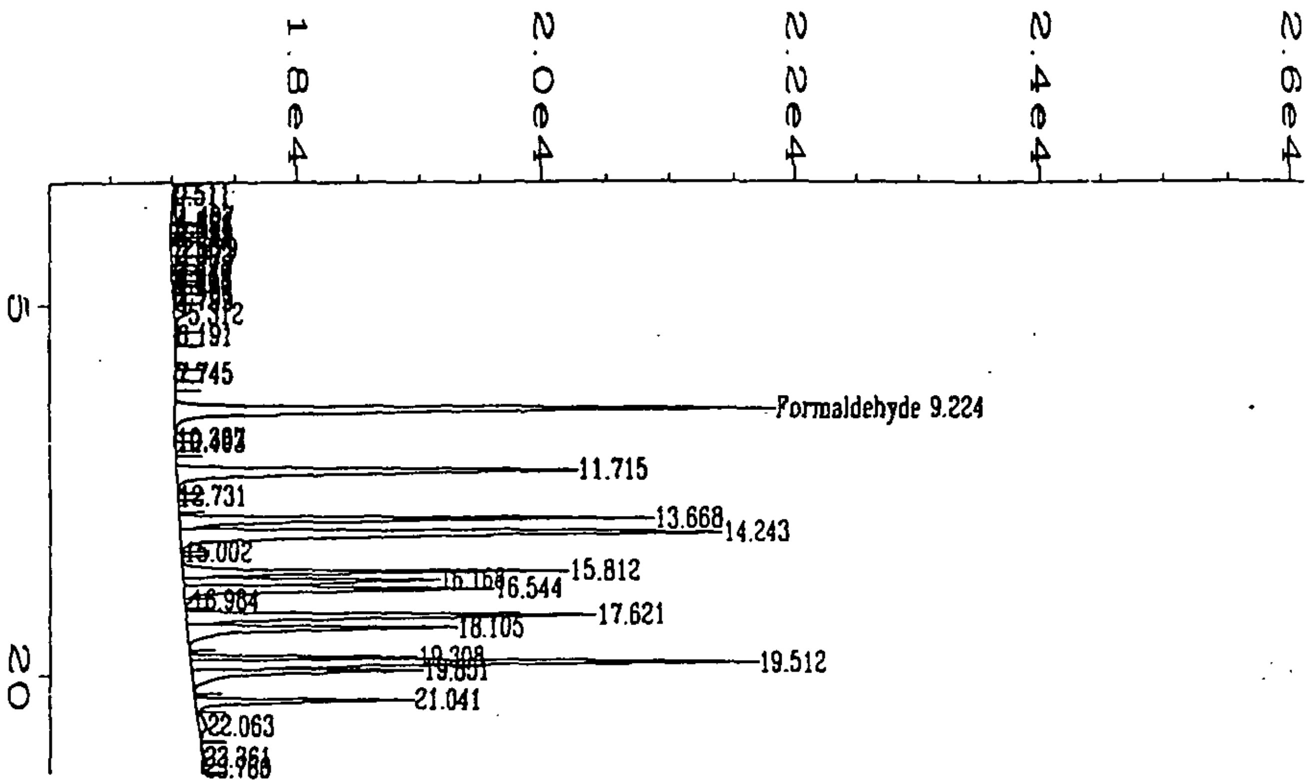
Data File Name : C:\HPCHEM\2\DATA\3FE00026.D
Operator : RLD
Instrument : LC 1 FLUO
Sample Name : CAL 1 ug/mL 2
Run Time Bar Code:
Acquired on : 04 Feb 96 00:51 AM
Report Created on: 05 Feb 96 09:06 AM
Last Recalib on : 01 AUG 95 08:43 AM
Multiplier : 1

Page Number : 1
Vial Number : 26
Injection Number : 1
Sequence Line : 1
Instrument Method: FORMALD3.MTH
Analysis Method : FORMALD3.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in C:\HPCHEM\2\DATA\3FE00026.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.135	64421	PV	0.206	1	1.019	Formaldehyde

600032



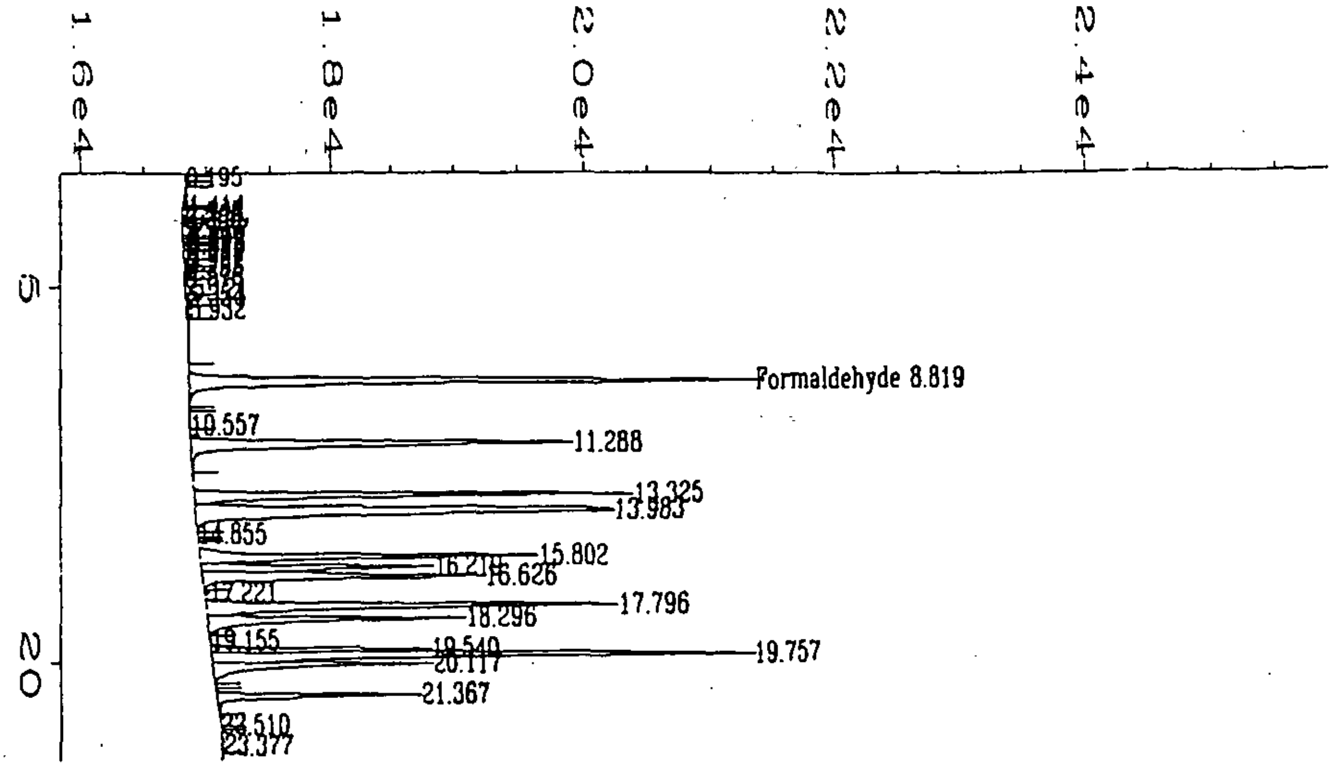
External Standard Report

Data File Name	: C:\HPCHEM\2\DATA\5FE96002.D		
Operator	: RLD	Page Number	: 1
Instrument	: LC 1 FLUO	Vial Number	: 2
Sample Name	: CAL 1.0 ug/mL	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 1
Acquired on	: 05 Feb 96 02:40 PM	Instrument Method:	FORMALD3.MTH
Report Created on:	06 Feb 96 09:26 AM	Analysis Method	: FORMALD3.MTH
Last Recalib on	: 01 AUG 95 08:43 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in C:\HPCHEM\2\DATA\5FE96002.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.224	66468	PV	0.210	1	1.055	Formaldehyde

000033



External Standard Report

Data File Name : C:\HPCHEM\2\DATA\6FE96002.D			
Operator : RLD		Page Number : 1	
Instrument : LC 1 FLUO		Vial Number : 2	
Sample Name : CAL 1.0 ug/mL		Injection Number : 1	
Run Time Bar Code:		Sequence Line : 1	
Acquired on : 06 Feb 96 10:53 AM		Instrument Method: FORMALD3.MTH	
Report Created on: 06 Feb 96 01:21 PM		Analysis Method : FORMALD3.MTH	
Last Recalib on : 01 AUG 95 08:43 AM		Sample Amount : 0	
Multiplier : 1		ISTD Amount :	

Sig. 1 in C:\HPCHEM\2\DATA\6FE96002.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
8.819	60233	BV	0.205	1	0.944	Formaldehyde

000034

Method: C:\HPCHEM\2\METHODS\FORMALD3.MTH

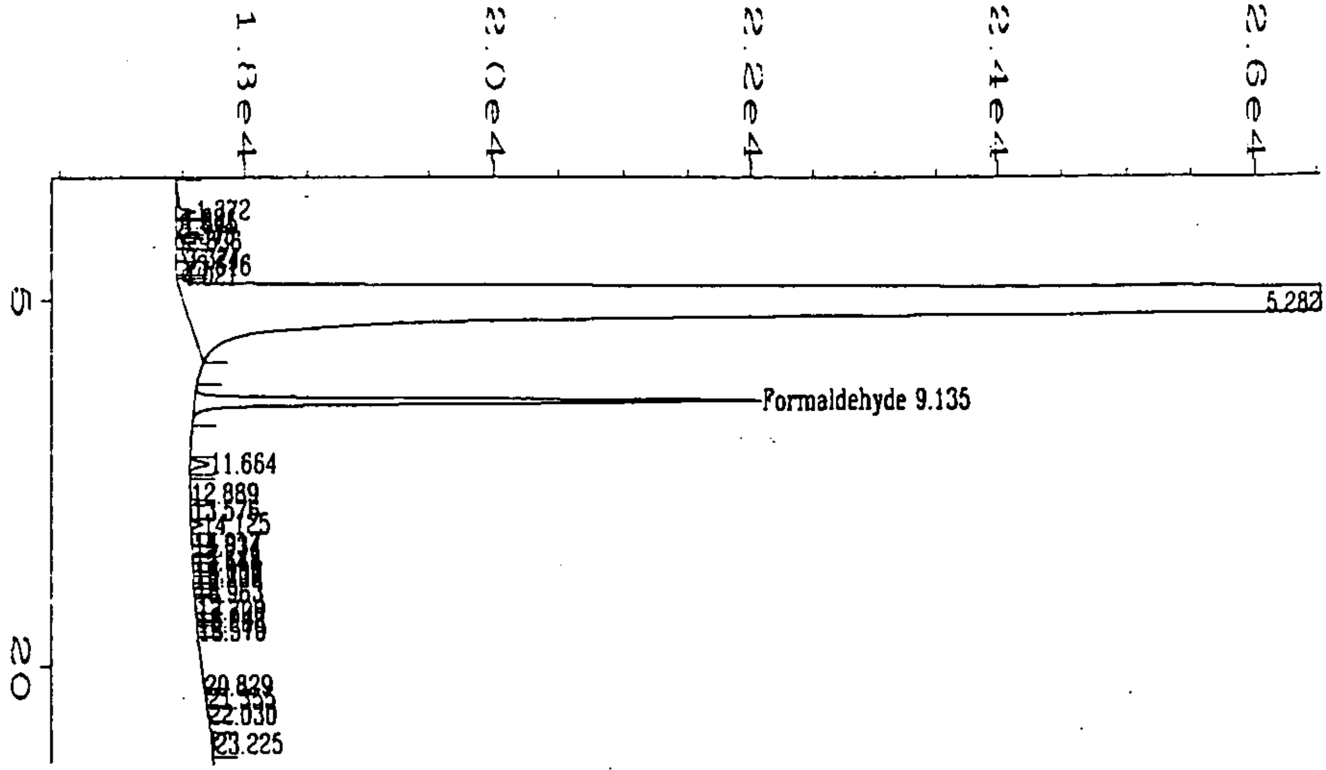
Calibration Table

Pk#	RT	Lvl	ug/mL	Amt/Area	Ref	Istd	I#	Name
1	8.800	1	20.0	1.7737e-005			1	Formaldehyde
		2	5.0	1.6482e-005				
		3	1.0	1.5558e-005				
		4	0.2	1.5651e-005				
		5	0.05	1.5039e-005				

000036

LABORATORY SPIKE DATA

000037



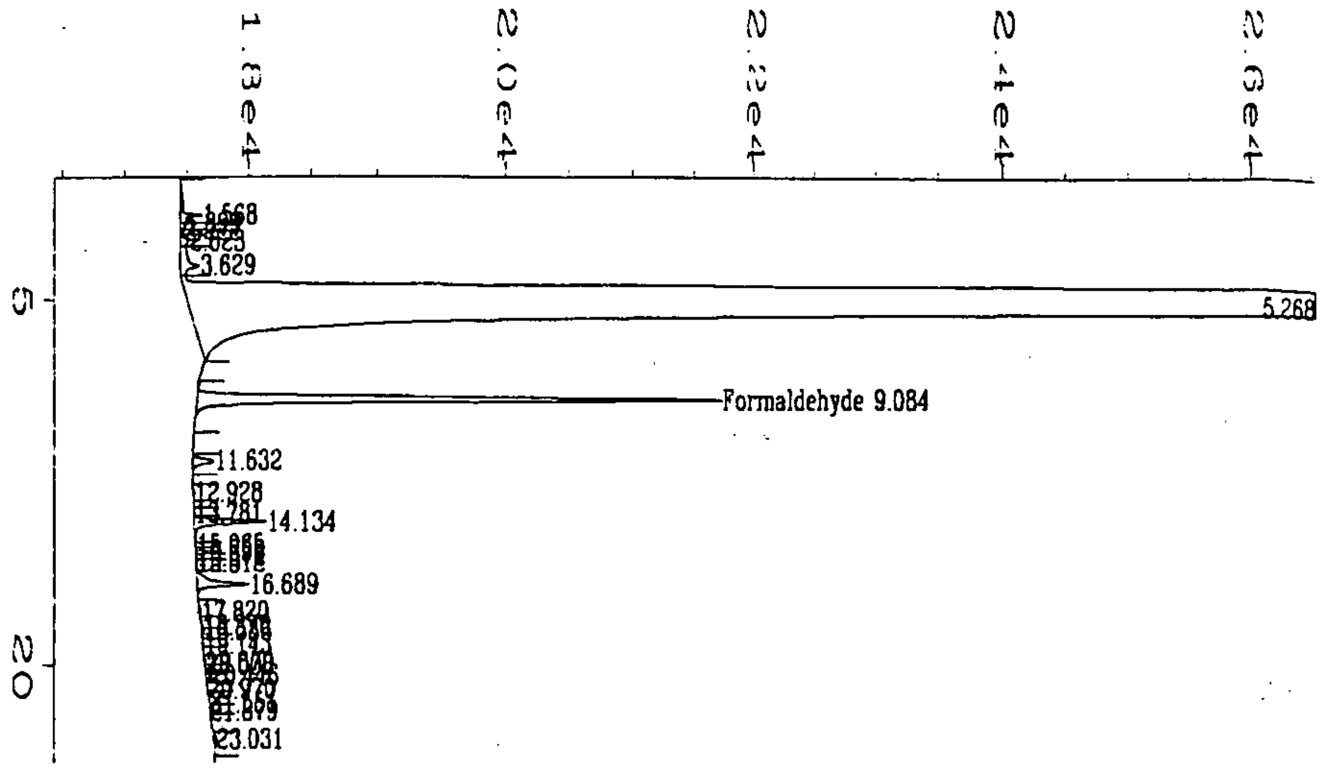
External Standard Report

Data File Name	: C:\HPCHEM\2\DATA\3FE00034.D		
Operator	: RLD	Page Number	: 1
Instrument	: LC 1 FLUO	Vial Number	: 34
Sample Name	: 0196018-LS	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 1
Acquired on	: 04 Feb 96 04:39 AM	Instrument Method:	FORMALD3.MTH
Report Created on:	05 Feb 96 09:08 AM	Analysis Method	: FORMALD3.MTH
Last Recalib on	: 01 AUG 95 08:43 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in C:\HPCHEM\2\DATA\3FE00034.D

Ret Time	Area	Type	Width	Ref#	ug/mL	Name
9.135	63162	BV	0.216	1	0.996	Formaldehyde

000038




```
==========================================================================
                        External Standard Report
==========================================================================

Data File Name    : C:\HPCHEM\2\DATA\3FE00035.D
Operator          : RLD                               Page Number        : 1
Instrument        : LC 1 FLUO                         Vial Number        : 35
Sample Name       : 0196018-LSD                       Injection Number   : 1
Run Time Bar Code:                                    Sequence Line      : 1
Acquired on       : 04 Feb 96  05:08 AM               Instrument Method: FORMALD3.MTH
Report Created on: 05 Feb 96  09:08 AM                Analysis Method    : FORMALD3.MTH
Last Recalib on   : 01 AUG 95 08:43 AM                Sample Amount      : 0
Multiplier        : 1                                 ISTD Amount        :

Sig. 1 in C:\HPCHEM\2\DATA\3FE00035.D
Ret Time      Area     Type Width Ref#  ug/mL                 Name
|-------|-----------|----|-----|-----|--------|------------------------------|
   9.084        55596 BV    0.205  1       0.862 Formaldehyde

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

000033

DOCUMENTATION

000040

Job# 11 Unit Tested Press House Vent North CHAIN OF CUSTODY RECORD Page # ______

Facility Name/Location							# OF CONTAINERS	SAMPLE ANALYSIS REQUIRED												REMARKS (Specific Compounds/Methods)
FRM Southwest / Silsbee, TX																				
Collected By/Company: Robert Thweatt / METCO																				
SAMPLE I.D.	DATE	TIME	AIR	SOIL	COMP	GRAB		RCVRD BY	HCl	PART.	SO2	SO3	PCDD/PCDF	SEMI-VOC	POHC's	METALS	Formaldehyde			
Press house North Front half Press house North Front half Press house North Front half	1/19/96 1/19/96 1/19/96	1015 1430 2045	✓ ✓ ✓				111	RTT RTT ~~RTT~~									✓ ✓ ✓			Formaldehyde
Press house North Impinger 1 Press house North Impinger 1 Press house North Impinger 1	1/19/96 1/19/96 1/19/96	1015 1430 2045	✓ ✓ ✓				111	RTT RTT ~~RTT~~									✓ ✓ ✓			Formaldehyde
Press house North Imp 2&3 Press house North Imp 2&3 Press house North Imp 2&3	1/19/96 1/19/96 1/19/96	1015 1430 2045	✓ ✓ ✓				111	RTT RTT ~~RTT~~									✓ ✓ ✓			Formaldehyde
Press house North filter Press house North filter Press house North filter	1/19/96 1/19/96 1/19/96	1015 1430 2045	✓ ✓ ✓				111	RTT RTT ~~RTT~~									X			Archive filter ~~Formaldehyde~~

Received by:	Date:	Time:	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
[signature] Smith	1/19	2130	[signature]	1/19/96	2130	HT	1/22/96	1000
Relinquished by:	Date:	Time:	Received by lab by: Carol A. Hensley	Date: 1/24/96	Time: 3:00 PM	Remarks:		

METCO

Job# 1-11 Unit Tested Press house Vent South CHAIN OF CUSTODY RECORD Page # ____

Facility Name/Location: ... Southwest / Silsbee, TX

Collected By/Company: Robert Theriot / METCO

SAMPLE I.D.	DATE	TIME	AIR	SOIL	COMP	GRAB	# OF CONTAINRS	RCVRD BY	HCl	PART.	SO_2	SO_3	PCDD/PCDF	SEMI-VOC	POHC's	METALS	Formaldehyde			REMARKS (Specific Compounds/Methods)
Press house Vent South Front wash	1/19/96	1045	✓				1	RTT									✓			Formaldehyde
		1500	✓				1	RTT									✓			
		2045	✓				1	[illegible]									✓			
Press house Vent South Imp 1	1/19/96	1045	✓				1	RTT									✓			Formaldehyde
		1500	✓				1	RTT									✓			
		2045	✓				1	[illegible]									✓			
Press house Vent South Imp 2 & 3	1/19/96	1045	✓				1	RTT									✓			Formaldehyde
		1500	✓				1	RTT									✓			
		2045	✓				1	[illegible]									✓			
Press house Vent South Filter	1/19/96	1045	✓				1	RTT									~~✓~~			Archive Filters
		1500	✓				1	RTT									~~✓~~			
		2045	✓				1	[illegible]									~~✓~~			

Received by:	Date:	Time:	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
... Smith	1/19	2130	[signature]	1/19/96	2130	HT	1/22/96	[illegible]
Relinquished by:	**Date:**	**Time:**	**Received by lab by:**	**Date:**	**Time:**	**Remarks:**		
			Carol A. Hensley	1/24/96	3:00 pm			

Ship to:

METCO

Job# 1141 Unit Tested Press House Vent Stack **CHAIN OF CUSTODY RECORD** Page # ______

Facility Name/Location: 1141 Southwest / S Isbee, TX

Collected By/Company: Robert Thuerkauf / METCO

SAMPLE I.D.	DATE	TIME	AIR	SOIL	COMP	GRAB	# OF CONTAINERS	RCVRD BY	HCl	PART.	SO2	SO3	PCDD/PCDF	SEMI-VOC	POHC's	METALS	Formaldehyde			REMARKS (Specific Compounds/Methods)
																				1131
Press House Vent Stack Front wash	1/19/96	1100 1515 2045	✓ ✓ ✓				1 1 1	RJT RJT ~~RJT~~ JHG									✓ ✓ ✓			Formaldehyde
Press house Vent Stack Imp. 1	1/19/96	1100 1515 2045	✓ ✓ ✓				1 1 1	RJT RJT ~~RJT~~ JHG									✓ ✓ ✓			Formaldehyde
Press house Vent Stack Imp 2 & 3	1/19/96	1100 1515 2045	✓ ✓ ✓				1 1 1	RJT RJT ~~RJT~~ JHG									✓ ✓ ✓			Formaldehyde
Press House Vent Stack Blank [illegible]	1/19/96	1100 1515 2045	✓ ✓ ✓				1 1 1	RJT RJT ~~RJT~~ JHG												Archive [illegible]

Received by:	Date:	Time:	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Paul Smith	1/19	2130	[signature]	1/19/96	2130	HT	1/22/96	1600

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
			Carol A. Hensley	1/24/96	2:00 PM	

Ship to: ______

METCO

0004

Job# 96-11 Unit Tested Press House CHAIN OF CUSTODY RECORD Page # ____

Facility Name/Location: ... Southwest / Silsbee TX

Collected By/Company: METCO / Mark Glicerez, ~~Robert Thurfiled~~

SAMPLE I.D.	DATE	TIME	AIR	SOIL	COMP	GRAB	# OF CONTAINERS	RCVRD BY	HCl	PART.	SO2	SO3	PCDD/PCDF	SEMI-VOC	POHC's	METALS				REMARKS (Specific Compounds/Methods)
... house field spike 0 ... ml @ 4 mg/ml	1/19/96	1730				✓	1	MG												Formaldehyde
Press house field spike 0 ... ml @ 4 mg/ml	1/19/96	1740				✓	1	MG												Formaldehyde
Press house Blank train Front wash	1/19/96		✓				1	DST												Formaldehyde
Press house BLANK train Imp. 1	1/19/96		✓				1	DST												Formaldehyde
Press house Blank train Imp. 2 & 3	1/19/96		✓				1	DST												Formaldehyde
Press house BLANK train Filter	1/19/96		✓				1	DST												Archive

Received by:	Date:	Time:	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
... Smith	1/19	2130	[signature]	1/19/96	2130	HT	1/22/96	10:00

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
			Carol A. Hensley	1/24/96	3:00PM	

Ship to:

METCO

METCO ENVIRONMENTAL

Ron Mitchum
DAT Inc.
6385 Shier Rings Rd.
Dublin, OH 43016-7294
Ph. (614) 791 - 8008

January 23 1996

Dear Ron,

Please analyze these samples for Formaldehyde as in method 0011. Included are :

3 runs from "RTO Dryer Stack # 1"
3 runs from "RTO Dryer Stack # 2"
3 RTO Reagent Blanks
1 RTO Blank Train
3 runs from " Press House Vent North"
3 runs from " Press House Vent South"
3 runs from " Press House Vent Stack"
1 Blank Train Press House Vent
4 field spikes

Please combine all fractions of each run for 1 Formaldehyde number. (This is the second set of samples). I need all the "Dryers" data in 1 report.

P.O # 96- 11

Please call me if you have any questions.

Hanoch Toren

METCO Environmental

DAT, Inc.

Rev 2

SAMPLE DISCREPANCY REPORT

Phone: 800-733-8644 Project # 0196018

Client Chain of Custody ☐ Yes ☐ No

CLIENT CONTACT Metco Phone

The following sample discrepancy exists:

	Sample #	Date	Discrepancy
1	0196018-12 (Field Spike)	1-24-96	COC, Bottle state "0.5ml @ 4mg/ml", but sent 0.5ml @ 100mg/ml spike
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Comments:

Please call the lab(1-800-733-8644) ☐ NO ☐ YES

Project Manager:

000046

Rev 3

DAT, Inc.
SAMPLE DISCREPANCY REPORT

Phone: 800-733-8644

Client Chain of Custody Project 0196015 ☐ Yes ☐ No

CLIENT CONTACT Metco Phone ____

The following sample discrepancy exists:

	Sample #	Date	Discrepancy
1	RTO Dryer Stack #1, Run 1, MeCl2 F.W	1-24-96	COC says "RTO #1 Stack"
2	" " " " Imp 1	"	" " " " "
3	" " " " " " Imp 2/3	"	" " " " "
4	RTO #1 Stack Run 1, Filter	"	did not receive
5	RTO Dryer Stack #1, Run 2, MeCl2 FW	"	COC says "RTO #2 Stack"
6	" " " " " " Imp 1	"	" " " " "
7	" " " " " " Imp 2/3	"	" etc.
8	RTO #2 Stack, Run 2, Filter	"	did not receive
9	RTO #1 STK Blank Train F/W	"	Label, COC say "RTO #1 STK", cover letter says RTO #1 Dryer Stack
10	" Imp 1	"	"
11	" Imp 2/3	"	"
12	RTO #1 Stk Run 2 F/W	"	"
13	" Imp 1	"	"
14	" Imp 2/3	"	"
15	RTO #1 Stk Run 3 F/W	"	"

Comments:

Please call the lab(1-800-733-8644) ☐ NO ☐ YES

Project Manager:

DAT, Inc.

SAMPLE DISCREPANCY REPORT

Project 0196015

Rev 3

Phone: 800-733-8644

Client Chain of Custody ☐ Yes ☐ No

CLIENT CONTACT Metco Phone

The following sample discrepancy exists:

	Sample #	Date	Discrepancy
1	RTO #1 Stk Run 3 Imp 1	1-24-94	Label, COC say "RTO STACK", cover letter says "RTO Dryer Stack #1"
2	" Imp 2/3	"	"
3	RTO #2 Stk Run 2 P/W	"	" "RTO #2 Stack" " "RTO Dryer Stack #2"
4	" Imp 1	"	"
5	" Imp 2/3	"	"
6	RTO #2 Stk Run 3 F/W	"	"
7	" Imp 1	"	"
8	" Imp 2/3	"	"
9	RTO #1 Stack Run #2 Filter	"	did not receive
10	RTO #1 Stack Run #3 Filter	"	"
11	RTO #2 Stack Run #1 Filter	"	"
12	RTO #2 Stack Run #3 Filter	"	"
13	RTO #1 Stack Blank Train Filter	"	"
14			
15			

Comments:

Please call the lab(1-800-733-8644) ☐ NO ☐ YES

Project Manager:

CA H ~~316~~ ~~318~~ 319

Project #: 0196018

Client: Metco

Date Rec'd: 1/24/96

Carrier: Fed Ex

Tracking #: 139 7881 371, 126 4159 732, 126 4160 213, 139 7882 017, 139 7882 342, 139 7880 504, 127 9962 512, 126 4159 617, 126 4159 687, 126 4160 563, 139 7881 475, 127 9961 837

Analysis: Formaldehyde

Condition --

Type(s) of Matrix: DNPH

Temperature: Ambient

Type of Container: 500 ml

Other:

Custody seals? N

Chain of Custody? Y

Client ID:	Lab ID:	Date Sampled	Matrix	Comment
Press House Vent North Run 1 F/W	0196018 - 1A	1/19/96	DNPH	
" " Imp 1	" 1B	"	"	
" " Imp 2/3	" 1C	"	"	
Press House Vent North Run 2 F/W	" 2A	"	"	
" " Imp 1	" 2B	"	"	
" " Imp 2/3	" 2C	"	"	
Press House Vent North Run 3 F/W	" 3A	"	"	
" " Imp 1	" 3B	"	"	
" " Imp 2/3	" 3C	"	"	
Press House Vent South Run 1 F/W	" 4A	"	"	
" " Imp 1	" 4B	"	"	
" " Imp 2/3	" 4C	"	"	
Press House Vent South Run 2 F/W	" 5A	"	"	
" " Imp 1	" 5B	"	"	
" " Imp 2/3	" 5C	"	"	

000049

Log in Form Rev 02/LOGINFRM.XLS

Log in Initial CAL

2 of 3

320

Project #: 0196018

Client: Metco

Date Rec'd: 1/24/96

Carrier: Fed Ex

Tracking #:

Analysis: Formaldehyde

Condition --

Type(s) of Matrix: DNPH

Temperature: ambient

Type of Container: 500ml Other:

Custody seals? N

Chain of Custody? Y

Client ID:	Lab ID:	Date Sampled	Matrix	Comment
Press House Vent South Run 3 F/W	0196018 - 6A	1/19/96	DNPH	
" " Imp 1	" 6B	"	"	
" " Imp 2/3	" 6C	"	"	
Press House Vent Stack Run 1 F/W	" 7A	"	"	
" " Imp 1	" 7B	"	"	
" " Imp 2/3	" 7C	"	"	
Press House Vent Stack Run 2 F/W	" 8A	"	"	
" " Imp 1	" 8B	"	"	
" " Imp 2/3	" 8C	"	"	
Press House Vent Stack Run 3 F/W	" 9A	"	"	
" " Imp 1	" 9B	"	"	
" " Imp 2	" 9C	"	"	
Press House Blank Train F/W	" 10A	"	"	
" Imp 1	" 10B	"	"	
" Imp 2/3	" 10C	"	"	

Log in Form Rev 02/LOGINFRM.XLS

Log in Initial CAH

000050

3<1

Project #: 0196 018

Client: Metco

Date Rec'd: 1/24/96

Carrier: Fed ex

Tracking #:

Analysis: Formaldehyde

Condition --

Type(s) of Matrix: DNPH

Temperature: ambient

Type of Container: 500ml

Other:

Custody seals? N

Chain of Custody? Y

Client ID:	Lab ID:	Date Sampled	Matrix	Comment
Press House Field Spike 0.2ml @ 4mg/ml	0196 018 - 11	1/15/96	DNPH	
Press House Field Spike 0.5ml @ ~~4mg/ml~~ 100mg/ml	" 12	"	"	COC states says "0.5ml @ 4mg/ml" bottle

EXTRACTION FORM   Data / AnalysisTechnologies, Inc.

Project: 0196018   **Analysis:** FORMALDEHYDE

Date	Sam #	Totl. Sam. Size	Totl. Sam. Extr. (ml)	Extr. Vol.	Aliq. Vol.	Sur Init	Spike Init	InSt Init
2/1/96	MB		13 ml		1 ml			
↓	LS		14		↓			
↓	LSD		16		↓			
↓	-1		491		↓			
↓	-2		391		↓			
↓	-3		476		↓			
↓	-4		411		↓			
↓	-5		431		↓			
↓	-6		536		↓			
↓	-7		481		↓			
↓	-8		541		↓			
↓	-9		471		↓			
↓	-10		341		↓			
↓	-11*		110		↓			
↓	-12*		121		~~↓~~ 0.02 (TSD)			

Method	Solvent	Vol.	xRep
Soxhlet	Hex		
✓ Sep fun.	MeOH		
Sonic.	CHCl3		
Cont. Extr.	✓ CH2Cl2	50	x 3*
Vial	ACN		
SPE	EtAc.		
Distill.	IPA		
Other	Water		
No Extrct	Other		

Mix Ratio:

* Samples 11 + 12 were ext. @ 3 x 30 ml CH2Cl2
MS, LS, LSD 3 x 5 ml CH2Cl2

Spike Information

Surrogate	Vol	Amt/Conc
SL- ~~7-23~~ TS		~~105ul/143.18 ug/ml~~ TS
SL-		
SL-		

Int. Std.		
SL-		
SL-		
SL-		
SL-		

LS/MS		
SL- 7-23		105ul/143.18 ug/ml
SL-		
SL-		
SL-		
SL-		

Comments:

Spiked: JJ 2/1/96
witness: TS 2/1/96

000052

SHIPPER'S DECLARATION FOR DANGEROUS GOODS

(Provide at least two copies to the airline)

Shipper
METCO ENVIRONMENTAL
16115 DOOLEY RD.
DALLAS, TX 75244

Air Waybill No. 126 4160 213
Page 1 of 1 Pages
Shipper's Reference Number (optional) 96-11

Consignee
DAT INC.
6385 SHIER RINGS RD.
DUBLIN, OH 43016-7294

FedEx.
Federal Express

Two completed and signed copies of this Declaration must be handed to the operator.

WARNING

Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties. This Declaration must not, in any circumstances, be completed and/or signed by a consolidator, a forwarder, or an IATA cargo agent.

TRANSPORT DETAILS

This shipment is within the limitations prescribed for: (delete non-applicable)

~~PASSENGER AND CARGO AIRCRAFT~~ | CARGO AIRCRAFT ONLY

Airport of Departure: DFW

Airport of Destination: LCK

Shipment type: (delete non-applicable)

NON-RADIOACTIVE | ~~RADIOACTIVE~~

NATURE AND QUANTITY OF DANGEROUS GOODS

Dangerous Goods Identification							
Proper Shipping Name	Class or Division	UN or ID No.	Pack-ing Group	Subsi-diary Risk	Quantity and type of packaging	Packing Inst.	Authorization
CORROSIVE LIQUID, N.O.S. (HYDROCHLORIC ACID - 2 NORMAL, 2,4 DINITROPHENYLHYDRAZINE)	8	UN 1760	II		11 FIBREBOARD BOXES X 1L 1 4G CRATE X 12L	808	

Additional Handling Information

Emergency Telephone Number CHEM TEL 1-800-255-3924

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable International and National Governmental Regulations.

Name/Title of Signatory
SCOT JACKSON SHPG
Place and Date
DALLAS, TX 1/23/96
Signature
(see warning above) [signature]

IF ACCEPTABLE FOR PASSENGER AIRCRAFT, THIS SHIPMENT CONTAINS RADIOACTIVE MATERIAL INTENDED FOR USE IN, OR INCIDENT TO, RESEARCH, MEDICAL DIAGNOSIS, OR TREATMENT.

000055

FedEx M-1421 10/94 LCGOS# 2041730948

Order Acknowledgement
Data/Analysis Technologies, Inc.

To: Hannoch Toren
Metco Environmental

1/24/96

Re: Your Project: ERM, Southwest
DAT Project: 0196015 and 0196018

This is to acknowledge receipt of your sample(s), advise you of the status of your order and obtain authorization to proceed with sample analysis. Please review this information, **sign below and return**. If your have any questions, please phone Data / Analysis Technologies and refer to the DAT project number shown above.

Unless instructed otherwise, we will use the following addresses and telephone numbers:

Billing Address:

Metco Environmental
16115 Dooley Road
P.O. Box 598
Addison, TX 75001

Shipping Address:

Metco Environmental
16115 Dooley Road
Addison, TX 75001

Telephone Numbers:
Phone: 214-931-7127
Fax: 214-931-8398

Our receiving records show the following information about your sample(s).

Custody Seal: no
Chain-of-Custody: yes
Temperature: ambient
Other: good condition

Date Received: 1/24/96
Carrier/ID#: Fed Ex ass't
Container: glass

We have scheduled work on your sample(s) and associated QC samples as follows:

Turn Around Time: 14 days **Due Date: 2/7/96** **Report Level: III**

The following samples will be added to the group of "Dryer" samples rec'd 1/23/96:

Client ID	Lab ID
RTO Dryer Stack #1-Run 1,F/W/Run 1, Imp.1/Run 1, Imp. 2&3	0196015-10 (a-c)
RTO Dryer Stack #2-Run 1,F/W/Run 1, Imp.1/Run 1, Imp. 2&3	0196015-11 (a-c)
RTO Blank Train #1 Stack - F/W/Imp.1/Imp. 2&3	0196015-12 (a-c)
RTO #1 Stack DNPH Rea. Blank/$MeCl_2$ Blank/DI Blank	0196015-13, 14 & 15
0011 Field Spike - High into 50 mL DNPH	0196015-16
0011 Field Spike - Low into 50 mL DNPH	0196015-17
RTO Dryer Stack #1-Run 2,F/W/Run 2, Imp.1/Run 2, Imp. 2&3	0196015-18 (a-c)
RTO Dryer Stack #1-Run 3,F/W/Run 3, Imp.1/Run 3, Imp. 2&3	0196015-19 (a-c)
RTO Dryer Stack #2-Run 2,F/W/Run 2, Imp.1/Run 2, Imp. 2&3	0196015-20 (a-c)
RTO Dryer Stack #2-Run 3,F/W/Run 3, Imp.1/Run 3, Imp. 2&3	0196015-21 (a-c)

Cost formaldehyde analysis for project #0196015:
9 Samples rec'd 1/23/96 + 10 Samples rec'd 1/24/96 @ $130/ea. = $2,470.00

Data/Analysis Technologies, Inc.
6385 Shier Rings Road
Dublin, OH 43016-7294

Phone: 614-791-8008
Fax: 614-791-8007

000053

Order Acknowledgement
Data/Analysis Technologies, Inc.

Separate Project for Report #0196018:

Client ID	Lab ID
Press House Vent North - Run 1,F/W/Run 1, Imp.1/Run 1, Imp. 2&3	0196018-1 (a-c)
Press House Vent North - Run 2,F/W/Run 2, Imp.1/Run 2, Imp. 2&3	0196018-2 (a-c)
Press House Vent North - Run 3,F/W/Run 3, Imp.1/Run 3, Imp. 2&3	0196018-3 (a-c)
Press House Vent South - Run 1,F/W/Run 1, Imp.1/Run 1, Imp. 2&3	0196018-4 (a-c)
Press House Vent South - Run 2,F/W/Run 2, Imp.1/Run 2, Imp. 2&3	0196018-5 (a-c)
Press House Vent South - Run 3,F/W/Run 3, Imp.1/Run 3, Imp. 2&3	0196018-6 (a-c)
Press House Vent Stack - Run 1,F/W/Run 1, Imp.1/Run 1, Imp. 2&3	0196018-7 (a-c)
Press House Vent Stack - Run 2,F/W/Run 2, Imp.1/Run 2, Imp. 2&3	0196018-8 (a-c)
Press House Vent Stack - Run 3,F/W/Run 3, Imp.1/Run 3, Imp. 2&3	0196018-9 (a-c)
Press House Blank Train - F/W/Imp.1/Imp. 2&3	0196018-10 (a-c)
Press House Field Spike - 0.2 mL @ 4 mg/mL	0196018-11
Press House Field Spike - 0.5 mL @ 100 mg/mL	0196018-12

Total Cost for formaldehyde analysis of project #0196018:
12 Samples @ $130/ea. — $1,560.00
Total Cost for formaldehyde analysis of project #0196015 (previous page):
19 Samples @ $130/ea. — $2,470.00

Grand Total: $4,030.00

*Re-extractions or dilutions due to high analyte levels or sample matrix problems may increase the total amount of the final bill.

Other :

If dilutions are required, the additional charge will be $50/dilution.

For additional information, please contact:

Project Management: Sharon S. Liebrecht 800-733-8644

Terms and conditions are as provided to you with our quotation. DAT payment terms are Net 30 days. Late payment will incur a penalty if 1.5% on the past due balance. There is a 2% discount for payment remitted within 10 days of invoice receipt. A 10% discount will apply for pre-payment. All reports remain the property of Data / Analysis Technologies, Inc. until paid for in full. Any change or alteration of these terms must be agreed to in writing prior to receipt of samples.

Thank you for your business!

Accepted for (please sign and return).

P.O. Number: 96- 11

Signature:______________________________ Date:___/___/___.

Failure of the Client to notify DAT of any errors or corrections in the order acknowledgment within 48 hours from the date of this facsimile will constitute the Client's express consent to accept all of the provisions of this document.

Data/Analysis Technologies, Inc.
6385 Shier Rings Road
Dublin, OH 43016-7294

Phone: 614-791-8008
Fax: 614-791-8007

METCO ENVIRONMENTAL

Job # 96-11

Client ERM Southwest

Location Silsbee, TX

Date 1-30-96

Unit Press RTO Stack

RUN	IMP.	Vol. ml.	Phenol ppm	Phenol ppm Dup.	Phenol Total ug.	%R.D		
1	F.W	458	N.D		N.D			
	1	215	0.429		92.24			
	2,3	296	0.092		27.23			
	Run Total, ug.				**119.47**			
2	F.W	332	N.D		N.D			
	1	362	0.399	0.396	144.44	0.75%		
	2,3	380	N.D		N.D			
	Run Total, ug.				**144.44**			
3	F.W	275	N.D		N.D			
	1	357	0.422	0.424	150.65	0.47%		
	2,3	383	N.D		N.D.			
	Run Total, ug.				**150.65**			
R3I1 (2X) 1 ppm SPK			1.210	1.228		1.48%	99.90%	101.70%

METCO ENVIRONMENTAL

Data Reprocessed On 01/30/1996 14:14:56

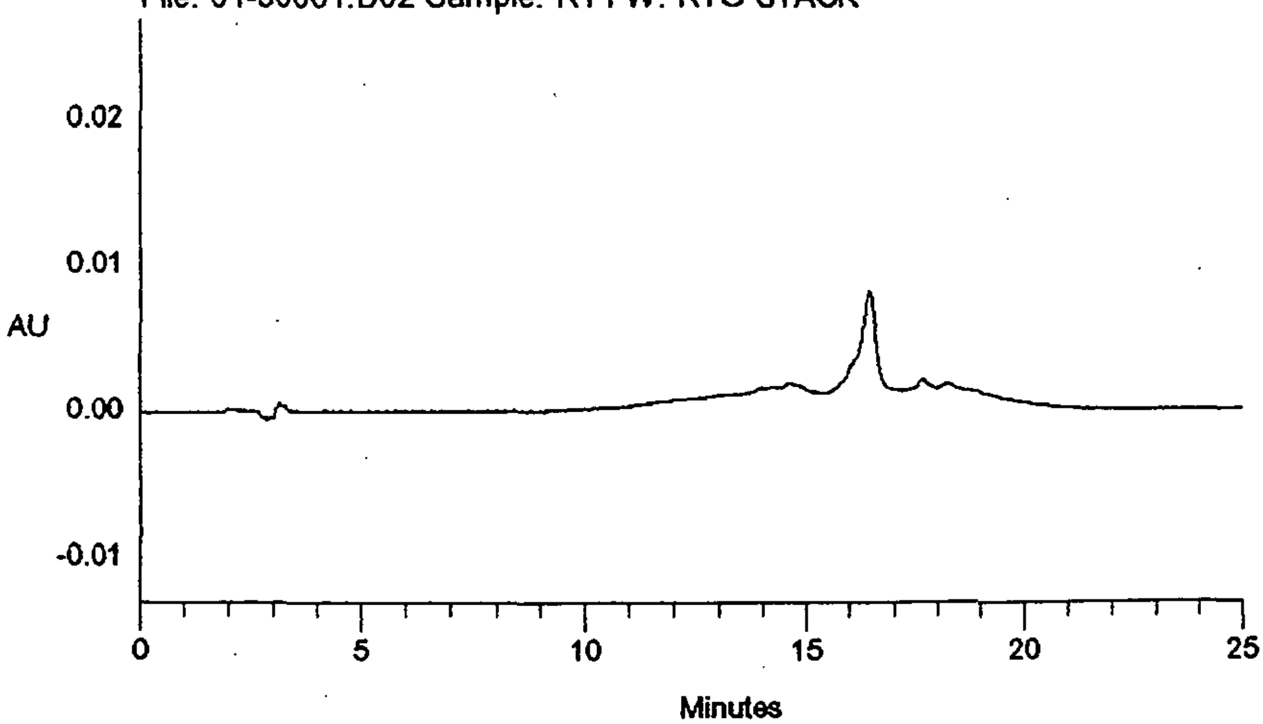
```
==========================================================================
| Sample Name: R1 FW. RTO STACK                Date: 01/30/1996 09:18:43  |
| Data File  : C:\DX\DATA\ORGAN\96-11PH\01-30001.D02                      |
| Method     : C:\DX\METHOD\PHENOL.MET                                    |
| ACI Address: 1  System: 1  Inject#: 2                  Detector:VDM-2   |
| Analyst    : HT             Column: C-18                                |
==========================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	458 1	1	7500	5Hz	0.00	25.00	1

********************** Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
	Totals	0	0	0.000

File: 01-30001.D02 Sample: R1 FW. RTO STACK



METCO ENVIRONMENTAL

Data Reprocessed On 01/30/1996 14:16:53

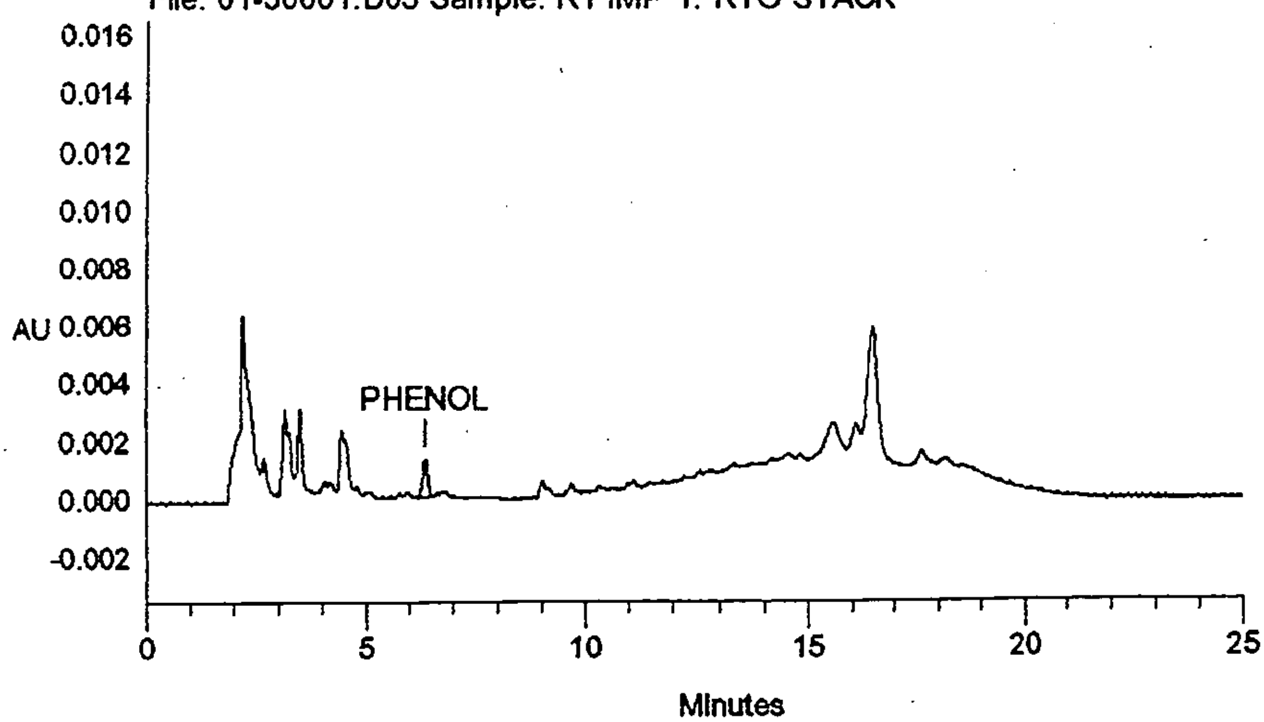
```
Sample Name: R1 IMP 1. RTO STACK            Date: 01/30/1996 10:37:59
Data File  : C:\DX\DATA\ORGAN\96-11PH\01-30001.D05
Method     : C:\DX\METHOD\PHENOL.MET
ACI Address: 1  System: 1  Inject#: 5                 Detector:VDM-2
Analyst    : HT             Column: C-18
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	2/5 1	1	7500	5Hz	0.00	25.00	1

********************* Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.37	PHENOL	1017	129	0.429
	Totals	1017	129	0.429

File: 01-30001.D05 Sample: R1 IMP 1. RTO STACK



METCO ENVIRONMENTAL

Data Reprocessed On 01/30/1996 15:30:16

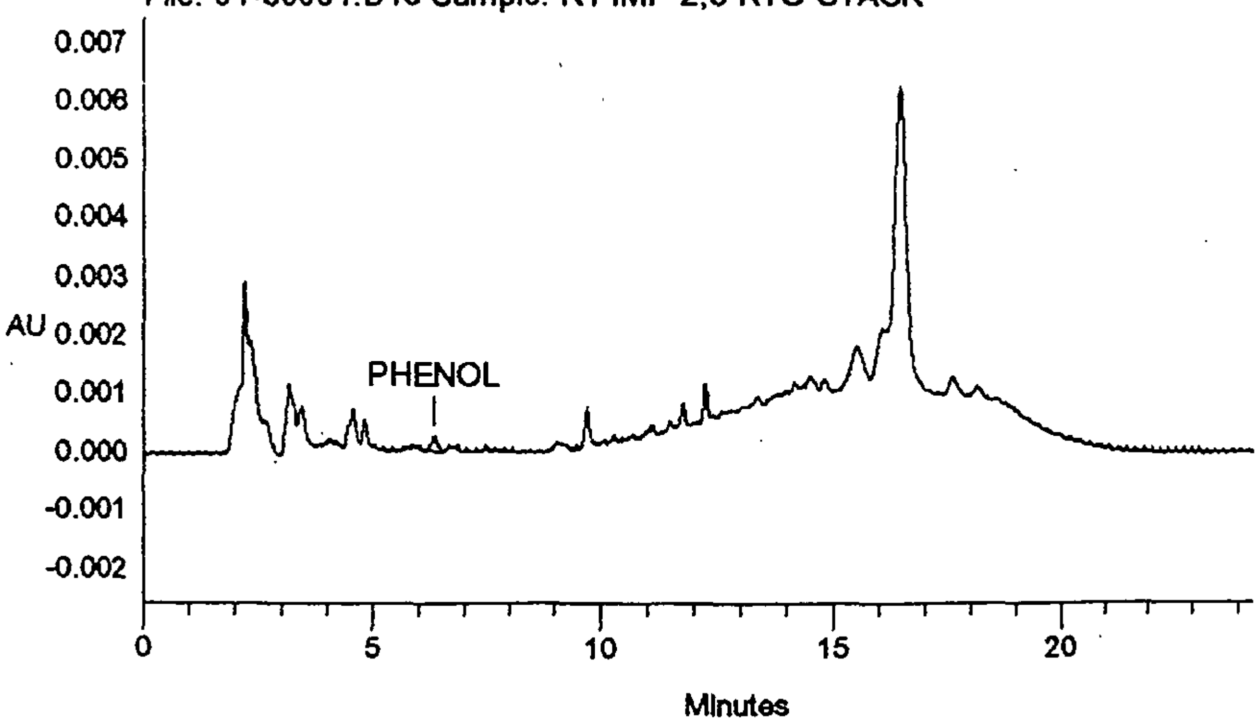
Sample Name: R1 IMP 2,3 RTO STACK   Date: 01/30/1996 15:26:49
Data File : C:\DX\DATA\ORGAN\96-11PH\01-30001.D16
Method   : C:\DX\METHOD\PHENOL.MET
ACI Address: 1   System: 1   Inject#: 16   Detector:VDM-2
Analyst   : HT   Column: C-18

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	296 1	1	7305	5Hz	0.00	24.35		1

********************* Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.34	PHENOL	218	25	0.092
	Totals	218	25	0.092

File: 01-30001.D16 Sample: R1 IMP 2,3 RTO STACK



METCO ENVIRONMENTAL

Data Reprocessed On 01/30/1996 14:15:11

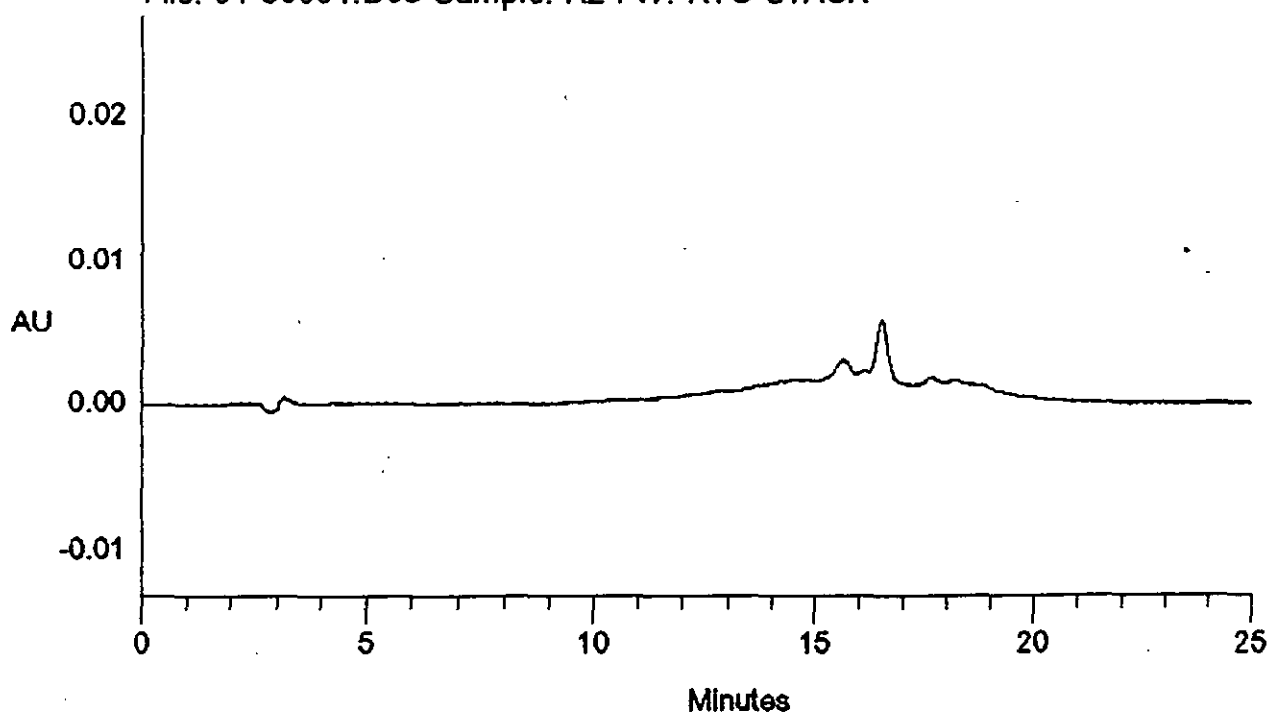
Sample Name: R2 FW. RTO STACK	Date: 01/30/1996 09:45:08
Data File : C:\DX\DATA\ORGAN\96-11PH\01-30001.D03	
Method : C:\DX\METHOD\PHENOL.MET	
ACI Address: 1 System: 1 Inject#: 3	Detector:VDM-2
Analyst : HT Column: C-18	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	332 1	1	7500	5Hz	0.00	25.00	1

********************* Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
	Totals	0	0	0.000

File: 01-30001.D03 Sample: R2 FW. RTO STACK



METCO ENVIRONMENTAL

Data Reprocessed On 01/30/1996 14:18:07

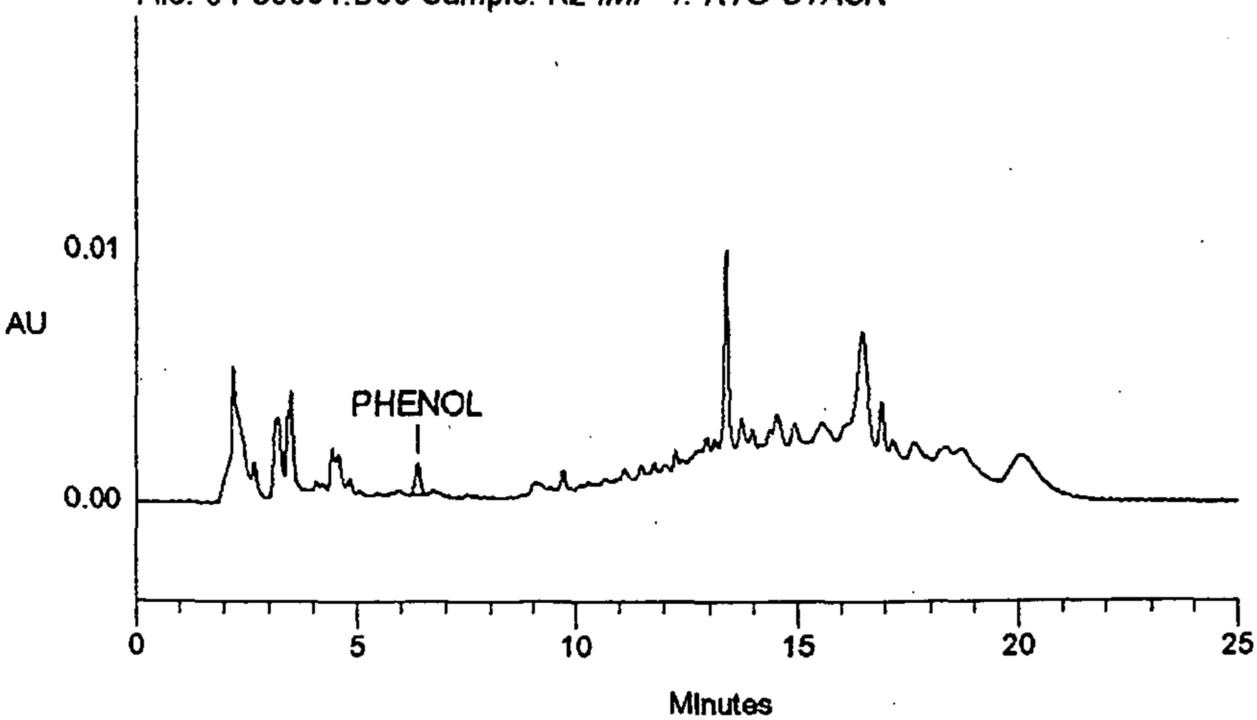
Sample Name: R2 IMP 1. RTO STACK		Date: 01/30/1996 11:04:25
Data File : C:\DX\DATA\ORGAN\96-11PH\01-30001.D06		
Method : C:\DX\METHOD\PHENOL.MET		
ACI Address: 1 System: 1 Inject#: 6		Detector:VDM-2
Analyst : HT	Column: C-18	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	362 1	1	7500	5Hz	0.00	25.00	1

********************* Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.36	PHENOL	946	120	0.399
	Totals	946	120	0.399

File: 01-30001.D06 Sample: R2 IMP 1. RTO STACK



METCO ENVIRONMENTAL

Data Reprocessed On 01/30/1996 14:19:26

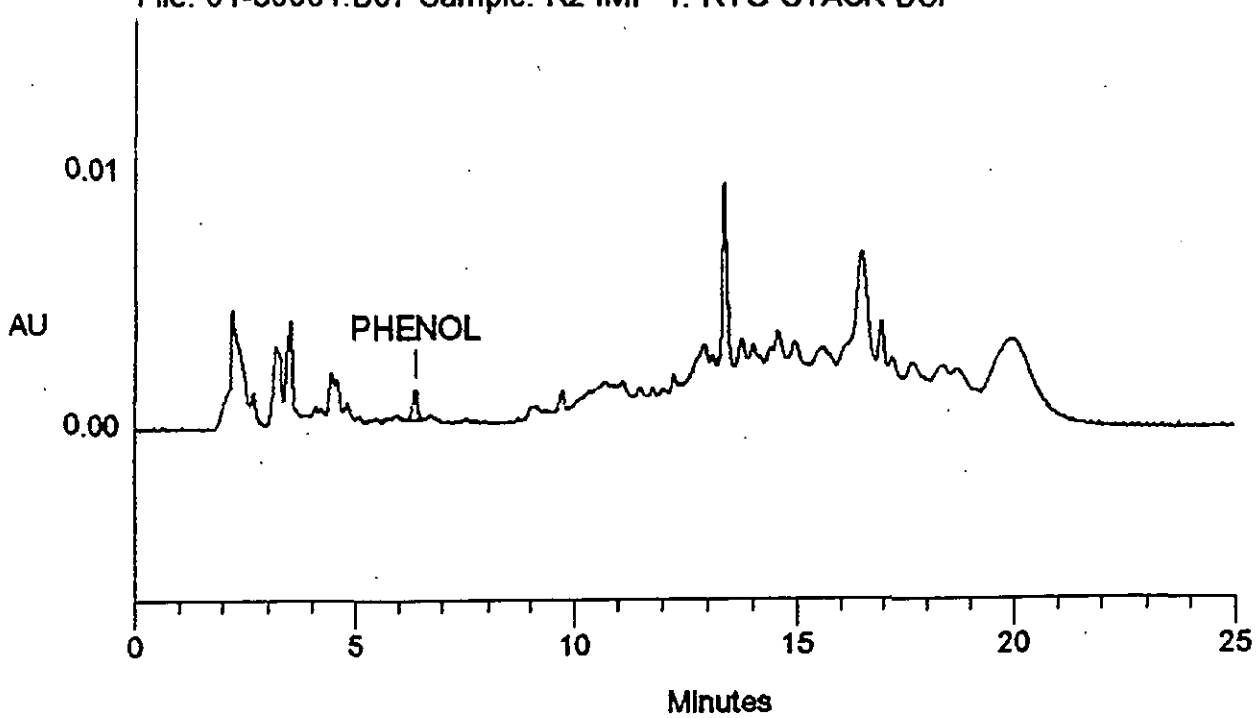
```
==============================================================================
¦ Sample Name: R2 IMP 1. RTO STACK DUP         Date: 01/30/1996 11:30:50     ¦
¦ Data File  : C:\DX\DATA\ORGAN\96-11PH\01-30001.D07                         ¦
¦ Method     : C:\DX\METHOD\PHENOL.MET                                       ¦
¦ ACI Address: 1  System: 1  Inject#: 7                    Detector:VDM-2    ¦
¦ Analyst    : HT              Column: C-18                                  ¦
==============================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	7500	5Hz	0.00	25.00	1

********************** Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.37	PHENOL	938	120	0.396
	Totals	938	120	0.396

File: 01-30001.D07 Sample: R2 IMP 1. RTO STACK DUP



METCO ENVIRONMENTAL

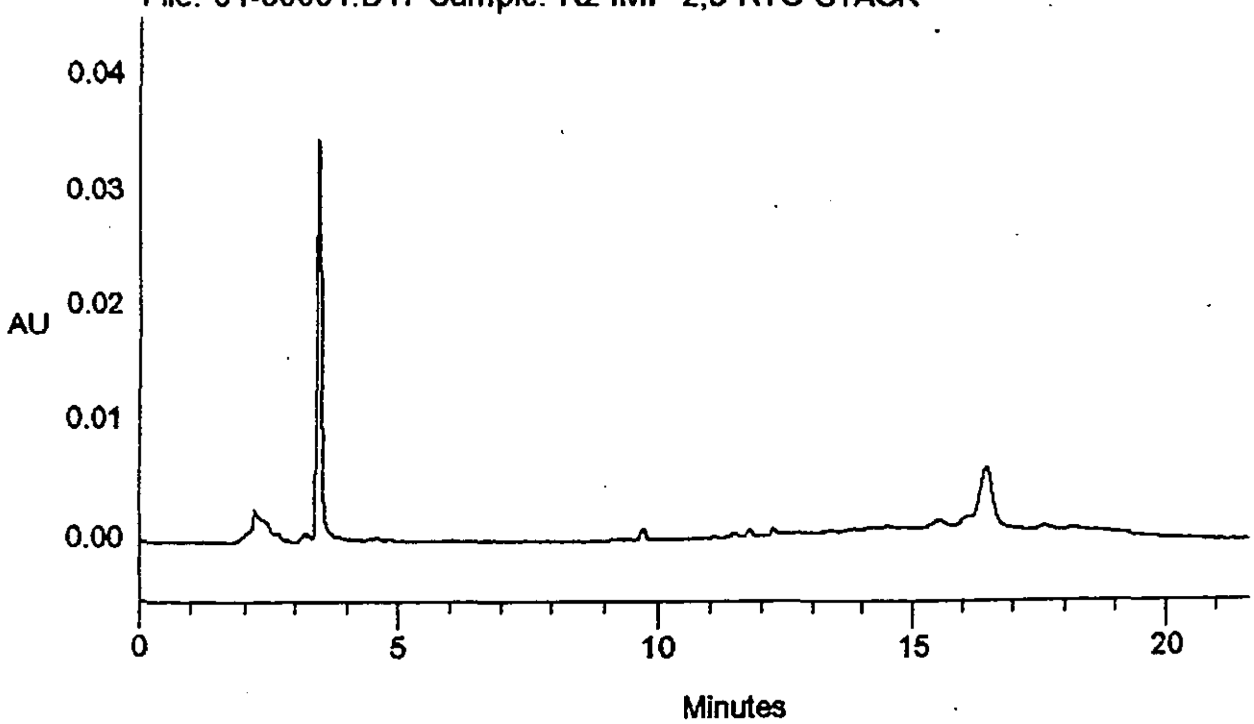
```
==========================================================================
| Sample Name: R2 IMP 2,3 RTO STACK            Date: 01/30/1996 15:50:05  |
| Data File  : C:\DX\DATA\ORGAN\96-11PH\01-30001.D17                      |
| Method     : C:\DX\METHOD\PHENOL.MET                                    |
| ACI Address: 1  System: 1  Inject#: 17                 Detector:VDM-2   |
| Analyst    : HT           Column: C-18                                  |
==========================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	380 1	1	6494	5Hz	0.00	21.64	1

********************** Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
	Totals	0	0	0.000

File: 01-30001.D17 Sample: R2 IMP 2,3 RTO STACK



METCO ENVIRONMENTAL

Data Reprocessed On 01/30/1996 14:15:27

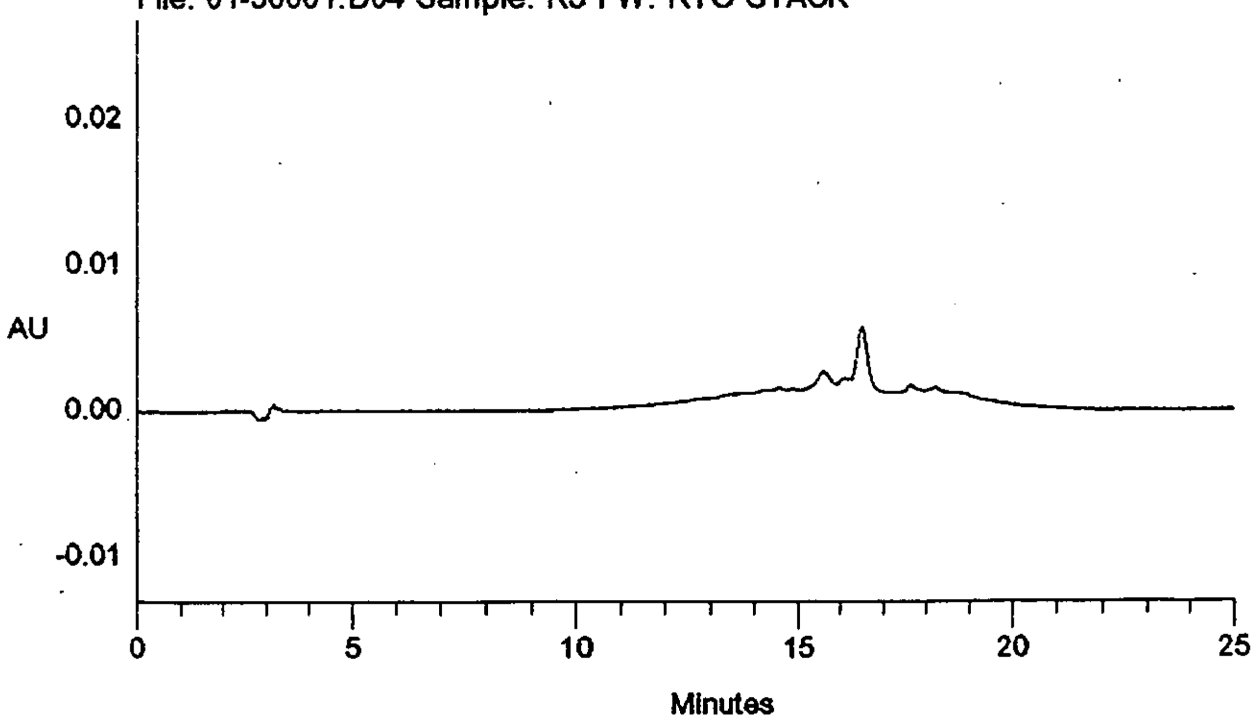
```
Sample Name: R3 FW. RTO STACK                Date: 01/30/1996 10:11:34
Data File  : C:\DX\DATA\ORGAN\96-11PH\01-30001.D04
Method     : C:\DX\METHOD\PHENOL.MET
ACI Address: 1  System: 1  Inject#: 4              Detector:VDM-2
Analyst    : HT           Column: C-18
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	275 1	1	7500	5Hz	0.00	25.00	1

********************* Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
	Totals	0	0	0.000

File: 01-30001.D04 Sample: R3 FW. RTO STACK



METCO ENVIRONMENTAL

Data Reprocessed On 01/30/1996 14:20:46

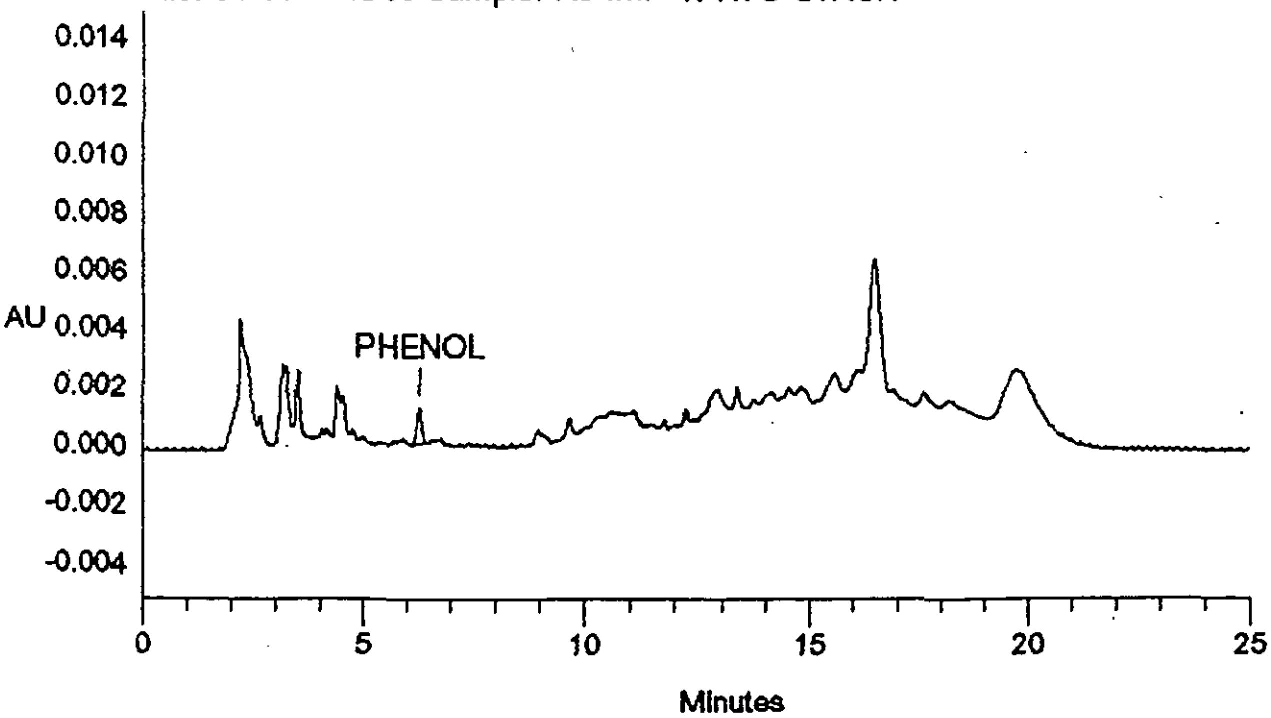
```
==============================================================================
| Sample Name: R3 IMP 1. RTO STACK             Date: 01/30/1996 11:57:16     |
| Data File  : C:\DX\DATA\ORGAN\96-11PH\01-30001.D08                         |
| Method     : C:\DX\METHOD\PHENOL.MET                                       |
| ACI Address: 1  System: 1  Inject#: 8                     Detector:VDM-2   |
| Analyst    : HT               Column: C-18                                 |
==============================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	357 1	1	7500	5Hz	0.00	25.00	1

********************** Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.29	PHENOL	999	124	0.422
	Totals	999	124	0.422

File: 01-30001.D08 Sample: R3 IMP 1. RTO STACK



METCO ENVIRONMENTAL

Data Reprocessed On 01/30/1996 15:01:06

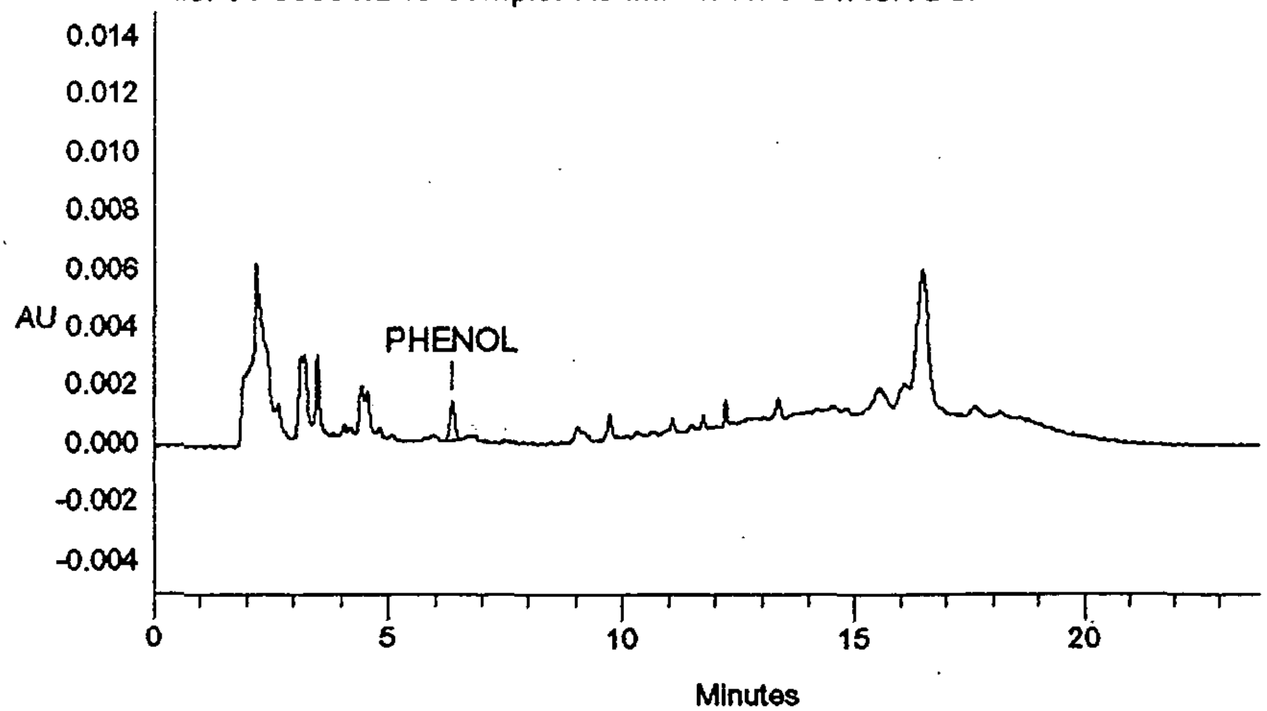
Sample Name: R3 IMP 1. RTO STACK DUP		Date: 01/30/1996 14:59:41	
Data File : C:\DX\DATA\ORGAN\96-11PH\01-30001.D15			
Method : C:\DX\METHOD\PHENOL.MET			
ACI Address: 1 System: 1	Inject#: 15		Detector:VDM-2
Analyst : HT	Column: C-18		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	7178	5Hz	0.00	23.92	1

********************* Component Report: Components Found ********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.38	PHENOL	1004	134	0.424
	Totals	1004	134	0.424

File: 01-30001.D15 Sample: R3 IMP 1. RTO STACK DUP



METCO ENVIRONMENTAL

Data Reprocessed On 01/30/1996 16:12:24

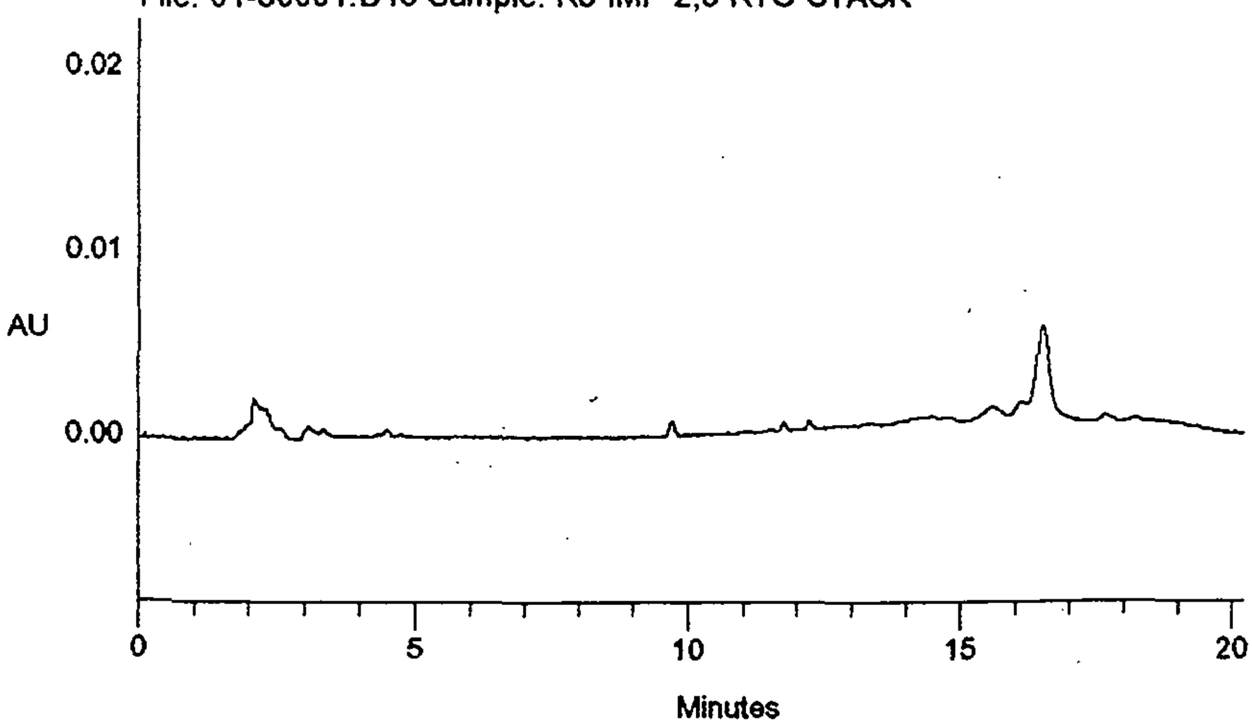
```
==============================================================================
| Sample Name: R3 IMP 2,3 RTO STACK          Date: 01/30/1996 16:11:48        |
| Data File  : C:\DX\DATA\ORGAN\96-11PH\01-30001.D18                          |
| Method     : C:\DX\METHOD\PHENOL.MET                                        |
| ACI Address: 1  System: 1  Inject#: 18                  Detector:VDM-2      |
| Analyst    : HT              Column: C-18                                   |
==============================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	383 1	1	6071	5Hz	0.00	20.24	1

********************** Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
	Totals	0	0	0.000

File: 01-30001.D18 Sample: R3 IMP 2,3 RTO STACK



METCO ENVIRONMENTAL

Data Reprocessed On 01/30/1996 16:52:39

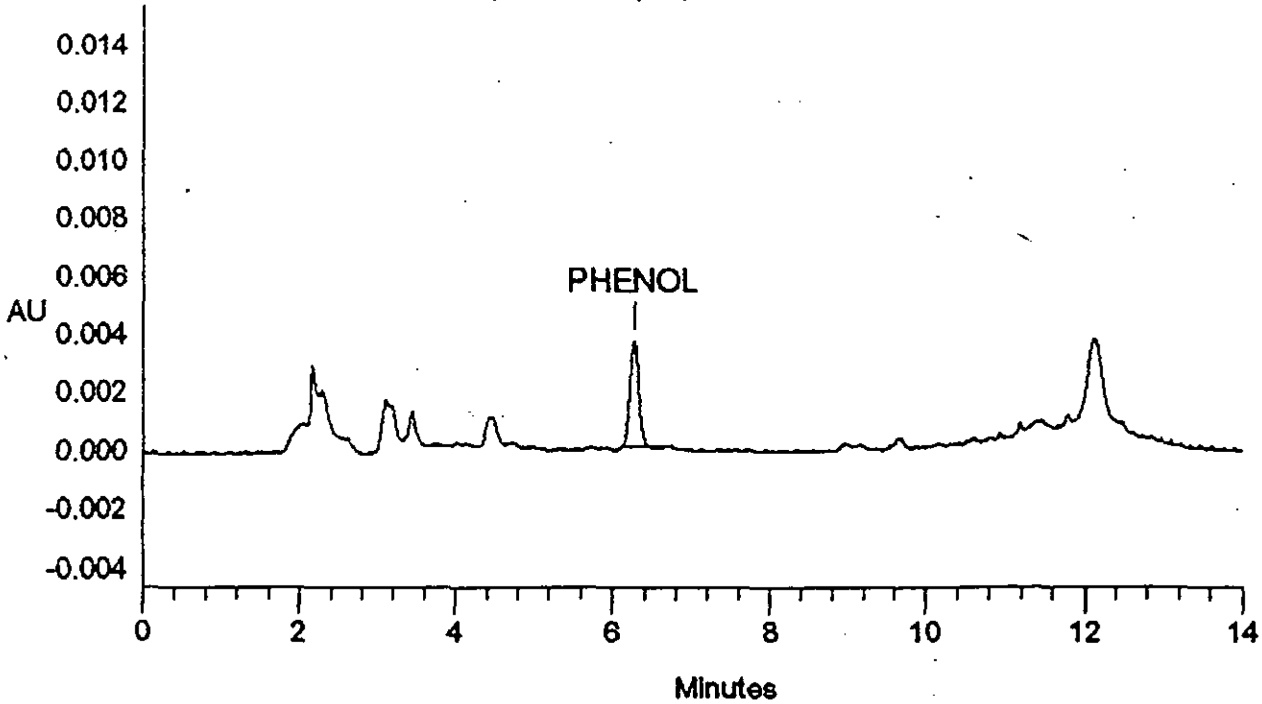
```
=================================================================================
| Sample Name: R3 I1(2X)  SPK 1 PPM          Date: 01/30/1996 16:51:35          |
| Data File  : C:\DX\DATA\ORGAN\96-11PH\01-30001.D20                            |
| Method     : C:\DX\METHOD\PHENOL.MET                                          |
| ACI Address: 1  System: 1  Inject#: 20                  Detector:VDM-2        |
| Analyst    : HT             Column: C-18                                      |
=================================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4204	5Hz	0.00	14.01	1

********************** Component Report: Components Found **********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.27	PHENOL	2867	366	1.210
	Totals	2867	366	1.210

File: 01-30001.D20 Sample: R3 I1(2X) SPK 1 PPM



METCO ENVIRONMENTAL

Data Reprocessed On 01/30/1996 16:36:44

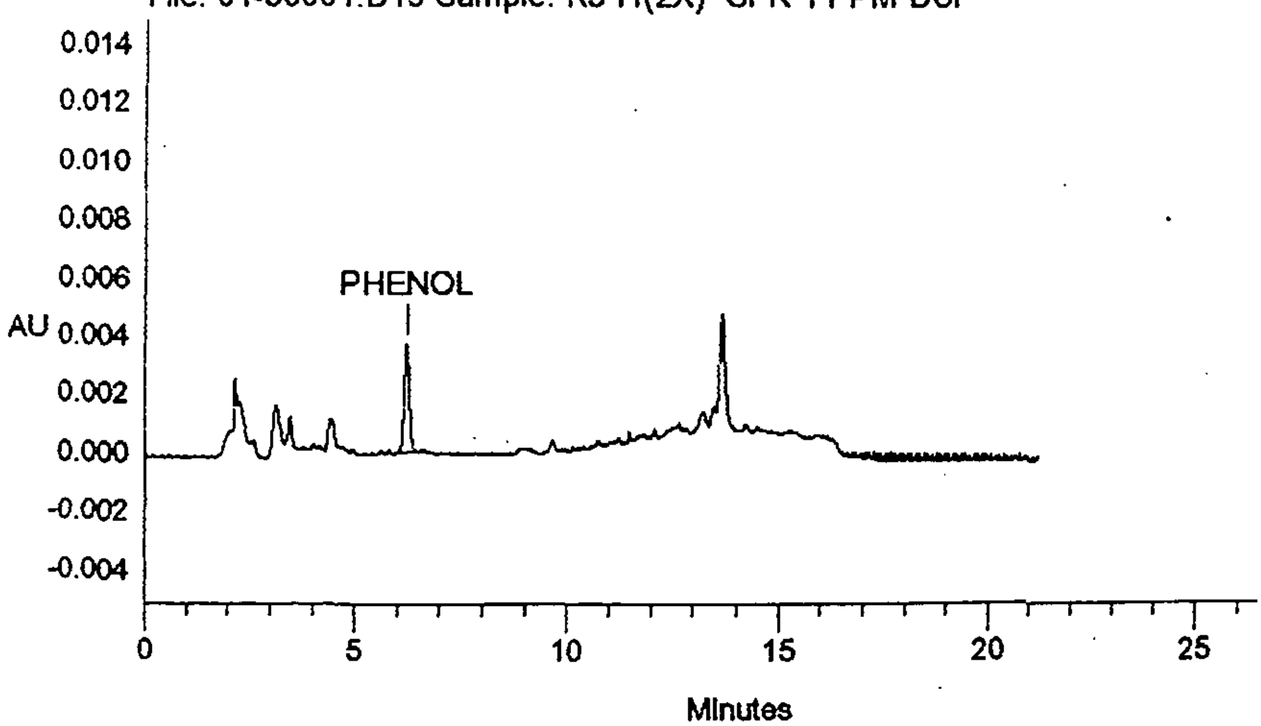
```
==============================================================================
| Sample Name: R3 I1(2X)  SPK 1 PPM DUP       Date: 01/30/1996 16:35:24       |
| Data File  : C:\DX\DATA\ORGAN\96-11PH\01-30001.D19                          |
| Method     : C:\DX\METHOD\PHENOL.MET                                        |
| ACI Address: 1  System: 1  Inject#: 19                  Detector:VDM-2      |
| Analyst    : HT              Column: C-18                                   |
==============================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	6367	5Hz	0.00	26.52	1

********************* Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.23	PHENOL	2908	366	1.228
	Totals	2908	366	1.228

File: 01-30001.D19 Sample: R3 I1(2X) SPK 1 PPM DUP



METCO ENVIRONMENTAL

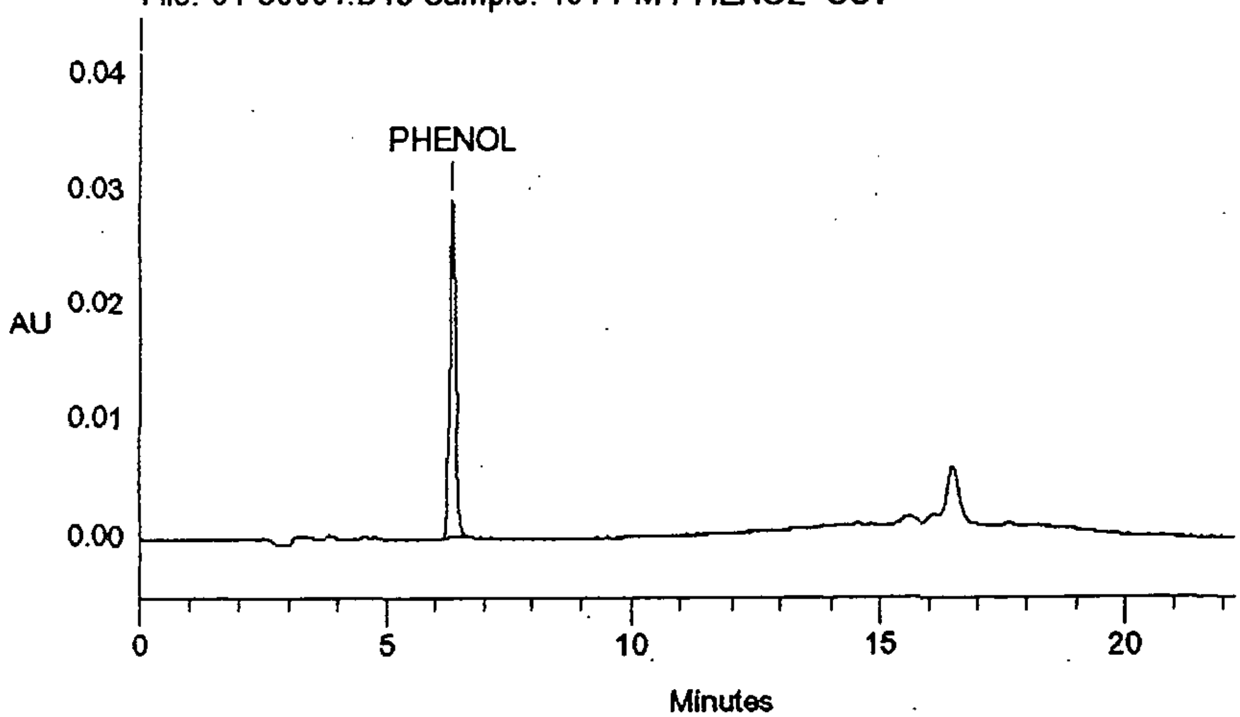
Sample Name: 10 PPM PHENOL CCV	Date: 01/30/1996 14:06:00
Data File : C:\DX\DATA\ORGAN\96-11PH\01-30001.D13	
Method : C:\DX\METHOD\PHENOL.MET	
ACI Address: 1 System: 1 Inject#: 13	Detector:VDM-2
Analyst : HT Column: C-18	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	6677	5Hz	0.00	22.25	1

********************* Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.35	PHENOL	23735	2912	10.021
	Totals	23735	2912	10.021

File: 01-30001.D13 Sample: 10 PPM PHENOL CCV



METCO ENVIRONMENTAL

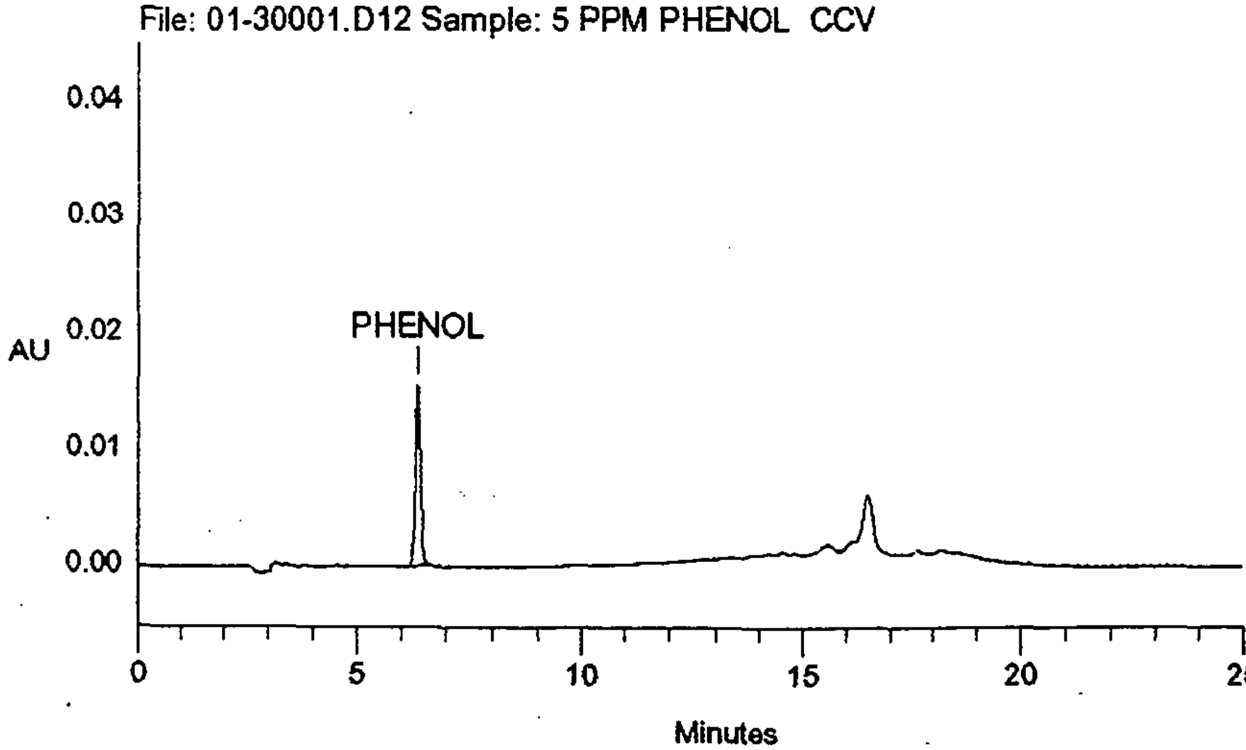
Sample Name: 5 PPM PHENOL CCV		Date: 01/30/1996 13:42:21	
Data File : C:\DX\DATA\ORGAN\96-11PH\01-30001.D12			
Method : C:\DX\METHOD\PHENOL.MET			
ACI Address: 1 System: 1	Inject#: 12		Detector:VDM-2
Analyst : HT	Column: C-18		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	7500	5Hz	0.00	25.00	1

********************* Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.37	PHENOL	12041	1549	5.084
	Totals	12041	1549	5.084

File: 01-30001.D12 Sample: 5 PPM PHENOL CCV



METCO ENVIRONMENTAL

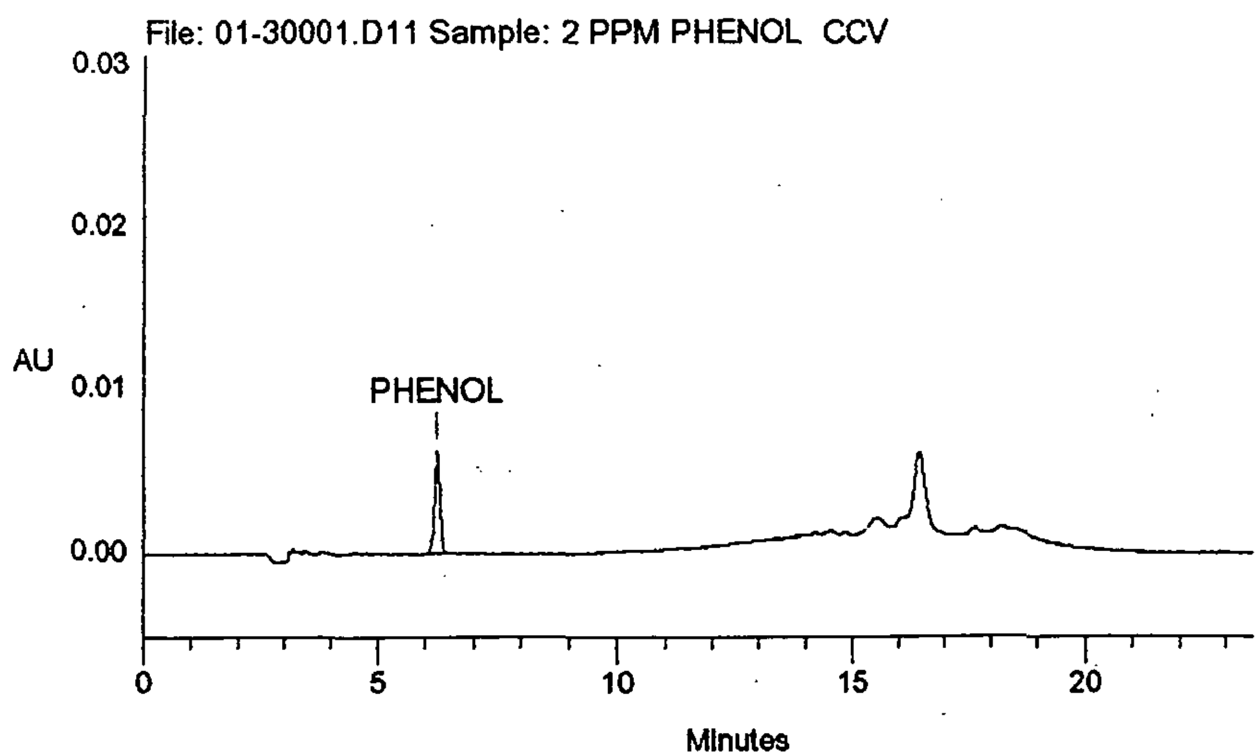
Data Reprocessed On 01/30/1996 13:27:51

```
==========================================================================
| Sample Name: 2 PPM PHENOL  CCV                 Date: 01/30/1996 13:15:07 |
| Data File  : C:\DX\DATA\ORGAN\96-11PH\01-30001.D11                        |
| Method     : C:\DX\METHOD\PHENOL.MET                                      |
| ACI Address: 1  System: 1  Inject#: 11                   Detector:VDM-2   |
| Analyst    : HT              Column: C-18                                 |
==========================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	7084	5Hz	0.00	23.61	1

********************* Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.25	PHENOL	4848	616	2.047
	Totals	4848	616	2.047



METCO ENVIRONMENTAL

Data Reprocessed On 01/30/1996 13:26:35

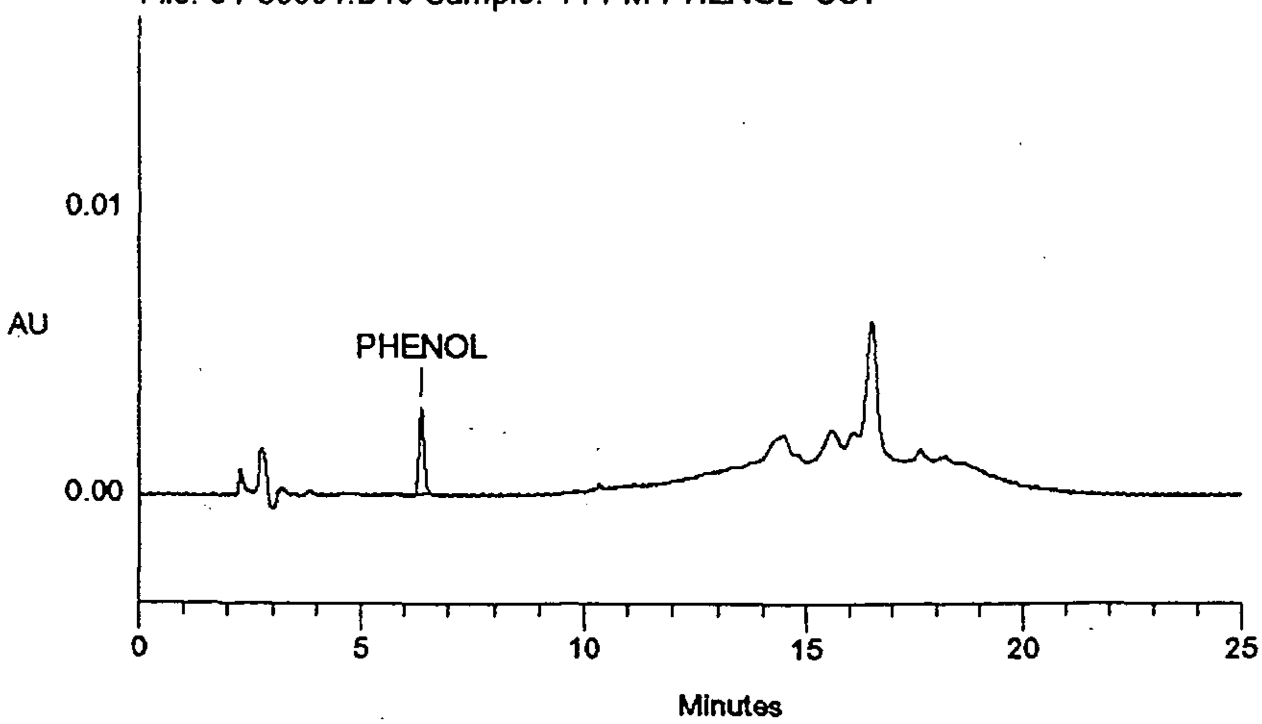
```
=================================================================================
¦ Sample Name: 1 PPM PHENOL  CCV                 Date: 01/30/1996 12:50:06      ¦
¦ Data File  : C:\DX\DATA\ORGAN\96-11PH\01-30001.D10                            ¦
¦ Method     : C:\DX\METHOD\PHENOL.MET                                          ¦
¦ ACI Address: 1  System: 1  Inject#: 10                    Detector:VDM-2      ¦
¦ Analyst    : HT              Column: C-18                                     ¦
=================================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	7500	5Hz	0.00	25.00	1

********************** Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.37	PHENOL	2378	302	1.004
	Totals	2378	302	1.004

File: 01-30001.D10 Sample: 1 PPM PHENOL CCV



METCO ENVIRONMENTAL

Data Reprocessed On 01/30/1996 13:24:43

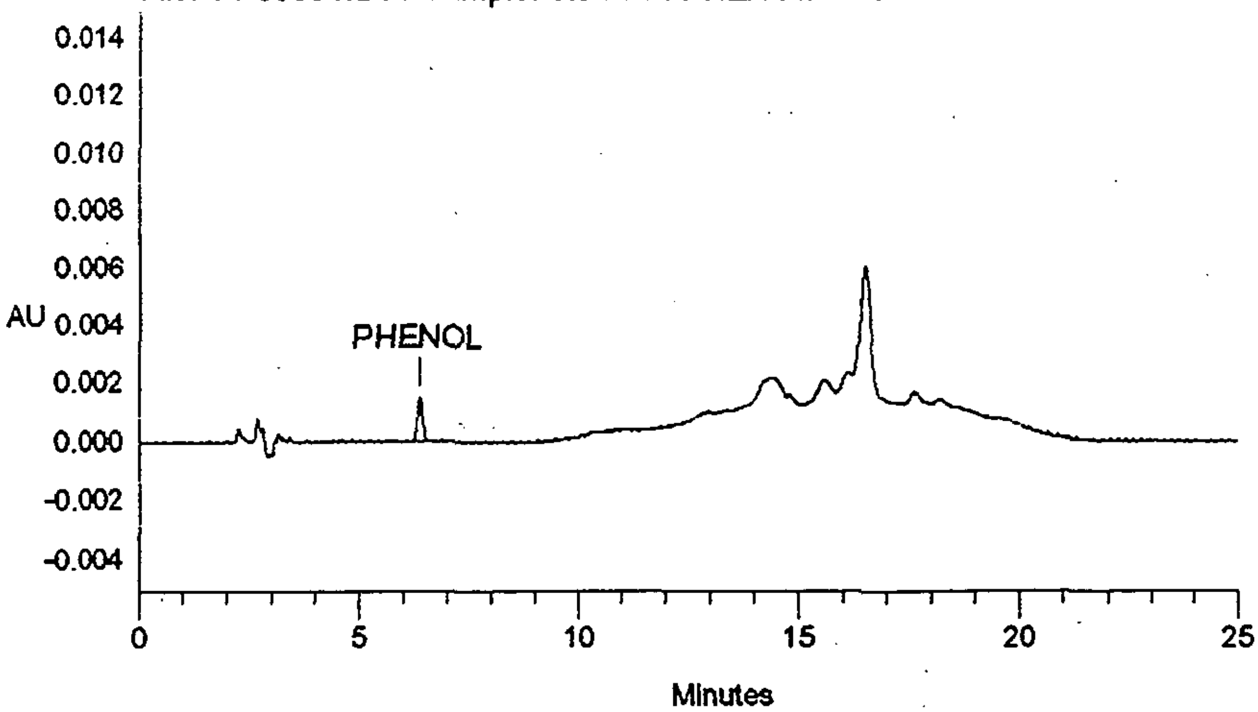
Sample Name: 0.5 PPM PHENOL CCV		Date: 01/30/1996 12:23:41
Data File : C:\DX\DATA\ORGAN\96-11PH\01-30001.D09		
Method : C:\DX\METHOD\PHENOL.MET		
ACI Address: 1 System: 1 Inject#: 9		Detector:VDM-2
Analyst : HT	Column: C-18	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	7500	5Hz	0.00	25.00	1

********************* Component Report: Components Found ********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.35	PHENOL	1184	146	0.500
	Totals	1184	146	0.500

File: 01-30001.D09 Sample: 0.5 PPM PHENOL CCV



METCO ENVIRONMENTAL

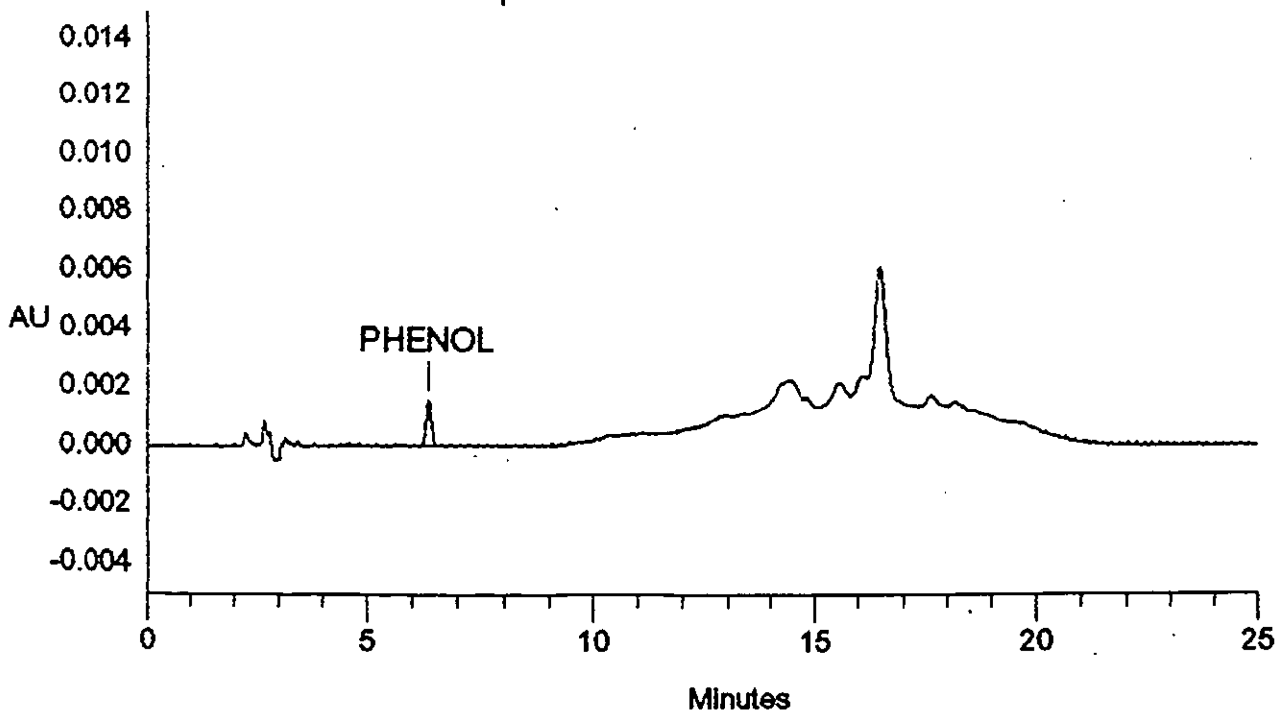
Sample Name: 0.5 PPM PHENOL CCV		Date: 01/30/1996 12:23:41
Data File : C:\DX\DATA\ORGAN\96-11PH\01-30001.D09		
Method : C:\DX\METHOD\PHENOL.MET		
ACI Address: 1 System: 1 Inject#: 9		Detector:VDM-2
Analyst : HT	Column: C-18	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	7500	5Hz	0.00	25.00	1

********************* Component Report: Components Found ********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.35	PHENOL	1202	147	0.514
	Totals	1202	147	0.514

File: 01-30001.D09 Sample: 0.5 PPM PHENOL CCV



METCO ENVIRONMENTAL

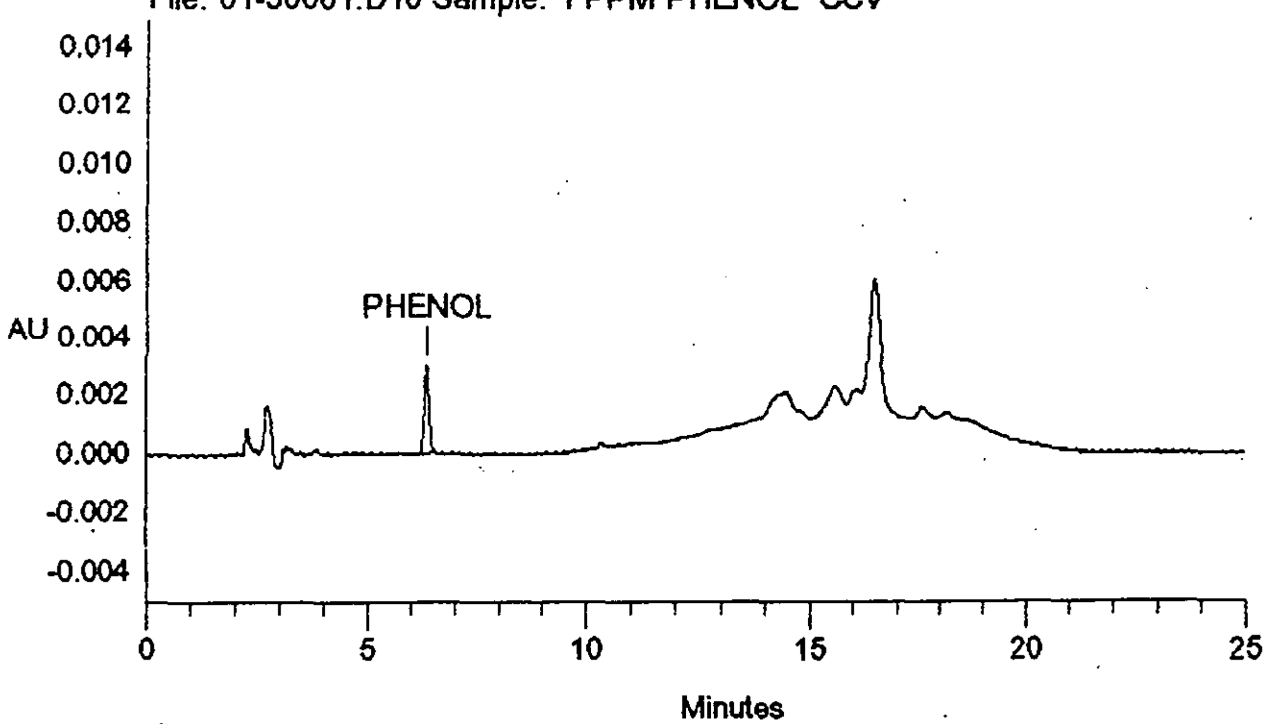
Sample Name: 1 PPM PHENOL CCV		Date: 01/30/1996 12:50:06
Data File : C:\DX\DATA\ORGAN\96-11PH\01-30001.D10		
Method : C:\DX\METHOD\PHENOL.MET		
ACI Address: 1 System: 1 Inject#: 10		Detector:VDM-2
Analyst : HT	Column: C-18	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	7500	5Hz	0.00	25.00	1

********************* Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.37	PHENOL	2369	302	1.013
	Totals	2369	302	1.013

File: 01-30001.D10 Sample: 1 PPM PHENOL CCV



METCO ENVIRONMENTAL

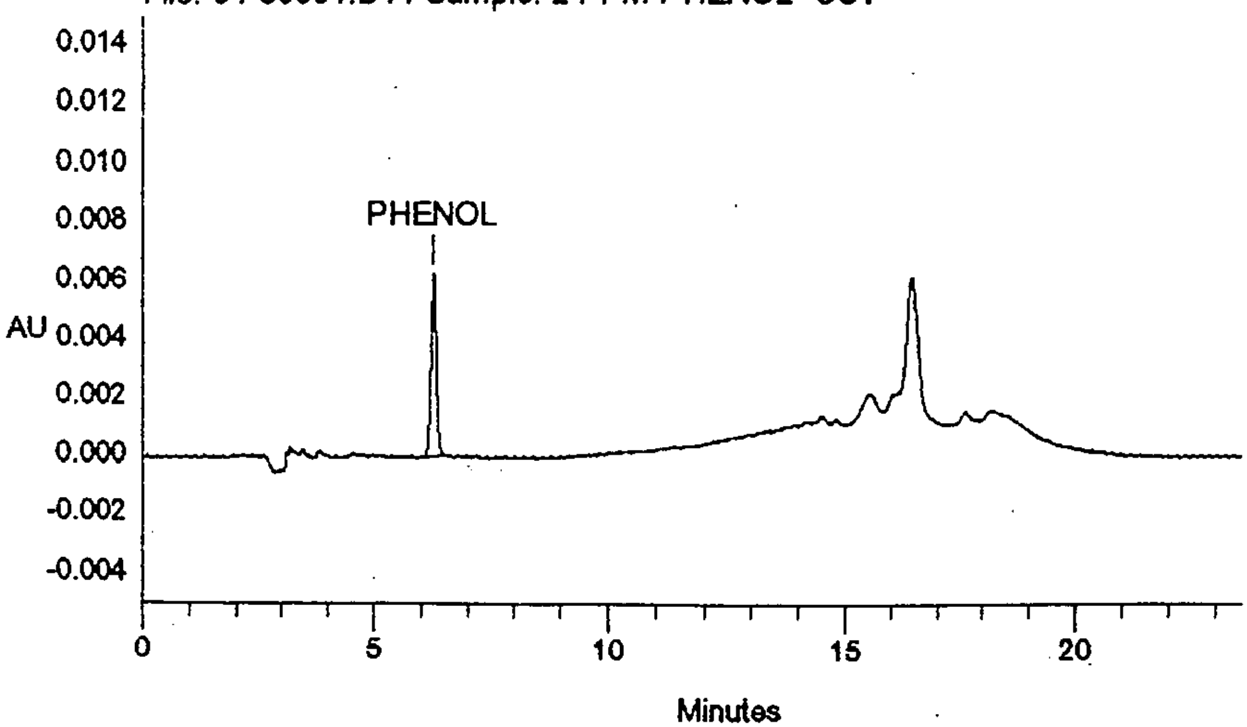
Sample Name: 2 PPM PHENOL CCV	Date: 01/30/1996 13:15:07
Data File : C:\DX\DATA\ORGAN\96-11PH\01-30001.D11	
Method : C:\DX\METHOD\PHENOL.MET	
ACI Address: 1 System: 1 Inject#: 11	Detector:VDM-2
Analyst : HT Column: C-18	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	7084	5Hz	0.00	23.61	1

********************* Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.25	PHENOL	4938	620	2.112
	Totals	4938	620	2.112

File: 01-30001.D11 Sample: 2 PPM PHENOL CCV



METCO ENVIRONMENTAL

Data Reprocessed On 01/31/1996 08:01:46

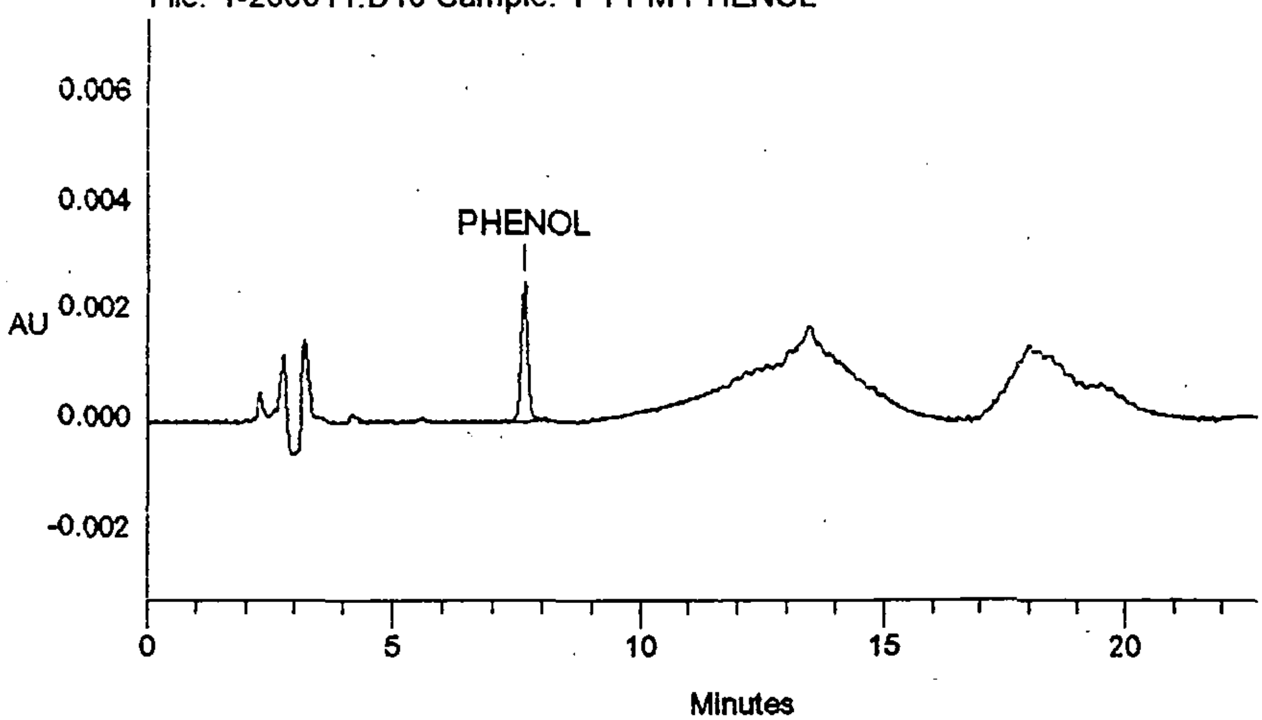
```
==============================================================================
| Sample Name: 1  PPM PHENOL                    Date: 01/26/1996 16:37:27   |
| Data File  : C:\DX\DATA\ORGAN\96-11PH\1-260011.D10                         |
| Method     : C:\DX\METHOD\PHENOL.MET                                       |
| ACI Address: 1  System: 1  Inject#: 10                   Detector:VDM-2    |
| Analyst    : HT              Column: C-18                                  |
==============================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	6835	5Hz	0.00	22.78	1

********************* Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
7.65	PHENOL	2395	255	1.011
	Totals	2395	255	1.011

File: 1-260011.D10 Sample: 1 PPM PHENOL



METCO ENVIRONMENTAL

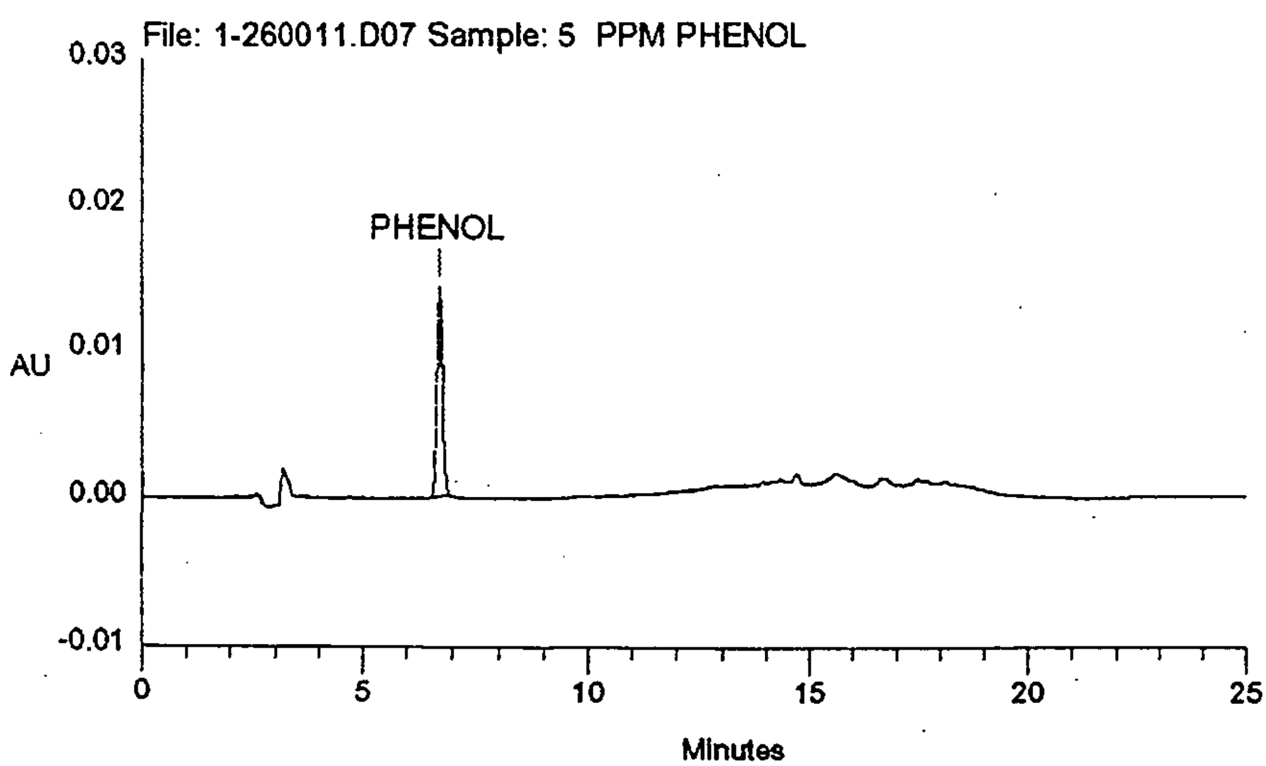
Data Reprocessed On 01/31/1996 08:02:54

```
================================================================================
| Sample Name: 5  PPM PHENOL                      Date: 01/26/1996 13:34:15   |
| Data File   : C:\DX\DATA\ORGAN\96-11PH\1-260011.D07                          |
| Method      : C:\DX\METHOD\PHENOL.MET                                        |
| ACI Address: 1  System: 1  Inject#: 7                    Detector:VDM-2      |
| Analyst     : HT            Column: C-18                                     |
================================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	7500	5Hz	0.00	25.00	1

********************* Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.69	PHENOL	12019	1420	5.075
	Totals	12019	1420	5.075



METCO ENVIRONMENTAL

Data Reprocessed On 01/31/1996 08:05:24

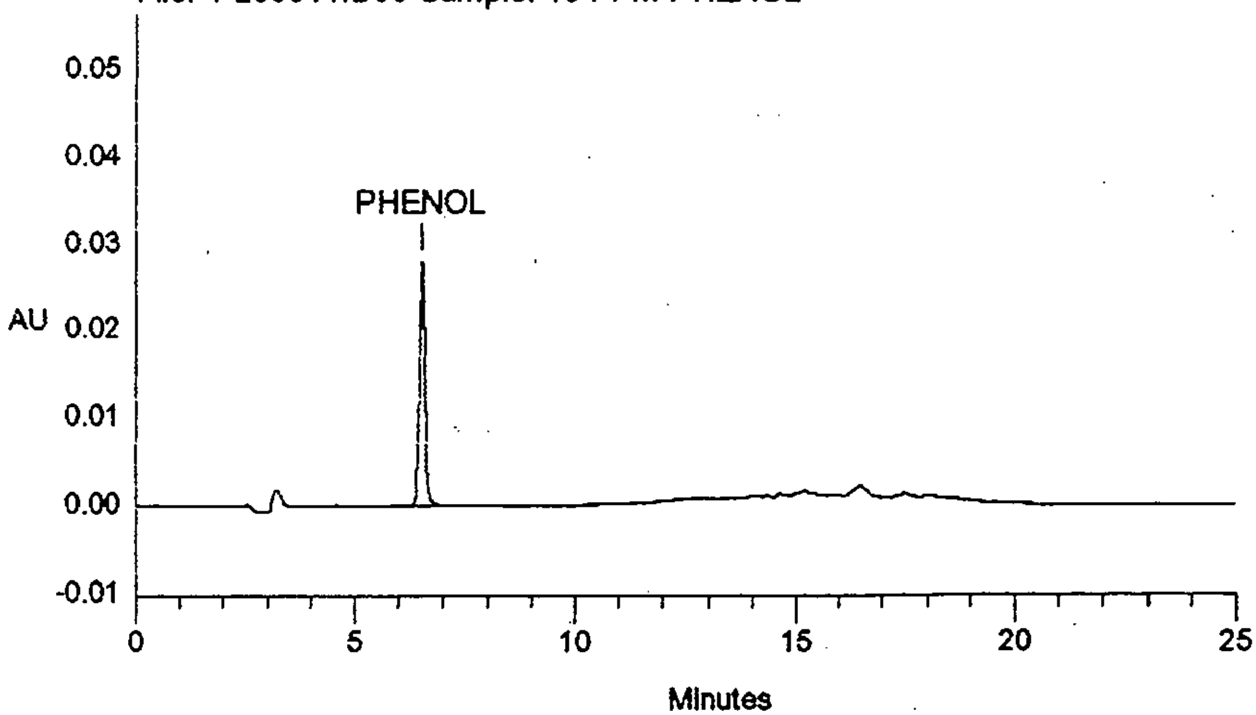
Sample Name: 10 PPM PHENOL   Date: 01/26/1996 13:00:53
Data File : C:\DX\DATA\ORGAN\96-11PH\1-260011.D06
Method : C:\DX\METHOD\PHENOL.MET
ACI Address: 1 System: 1 Inject#: 6   Detector:VDM-2
Analyst : HT   Column: C-18

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	7500	5Hz	0.00	25.00	1

********************* Component Report: Components Found ********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.52	PHENOL	23638	2802	9.980
	Totals	23638	2802	9.980

File: 1-260011.D06 Sample: 10 PPM PHENOL



METCO ENVIRONMENTAL

Data Reprocessed On 01/31/1996 08:06:03

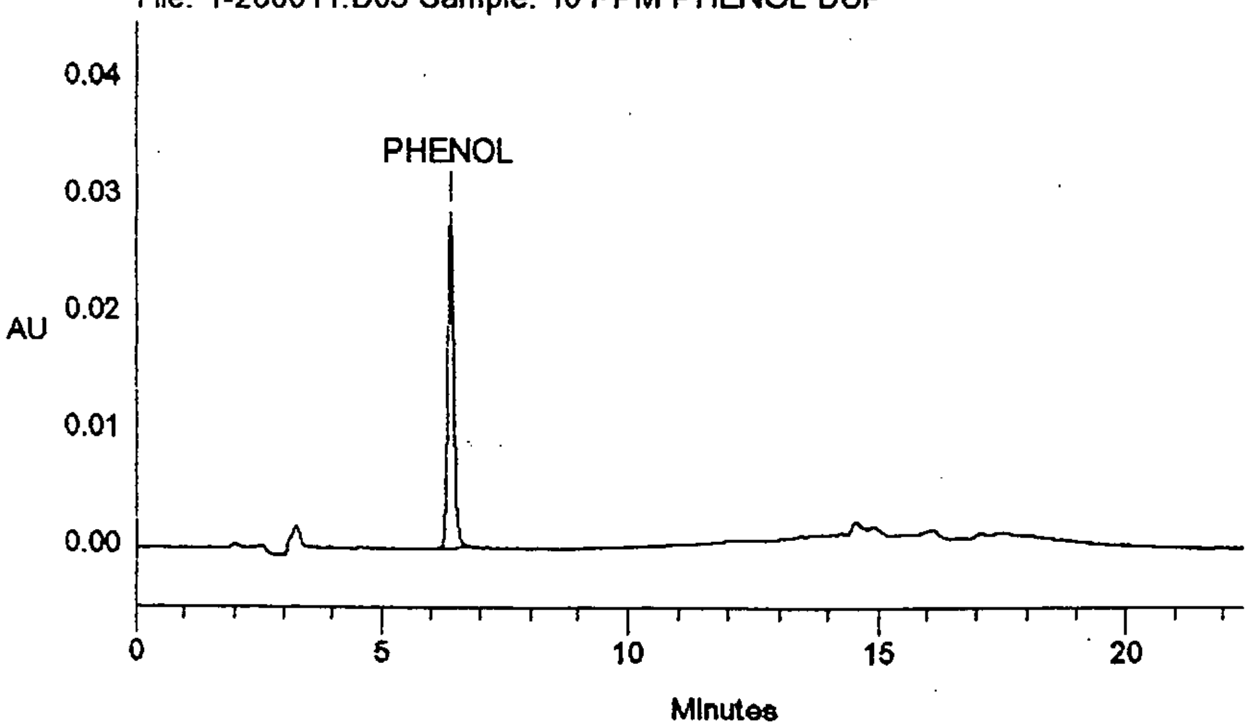
Sample Name: 10 PPM PHENOL DUP		Date: 01/26/1996 12:33:12
Data File : C:\DX\DATA\ORGAN\96-11PH\1-260011.D05		
Method : C:\DX\METHOD\PHENOL.MET		
ACI Address: 1 System: 1	Inject#: 5	Detector:VDM-2
Analyst : HT	Column: C-18	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	6730	5Hz	0.00	22.43	1

********************* Component Report: Components Found *********************

Ret Time	Component Name	Area	Height	Concentration ppm
6.39	PHENOL	23840	2854	10.065
	Totals	23840	2854	10.065

File: 1-260011.D05 Sample: 10 PPM PHENOL DUP



SCIENTIFIC CONSULTING LABORATORIES, INC.

January 31, 1996

Mr. Hanoch Toren
Metco Environmental
16115 Dooley Road
Dallas, Texas 75244

SCLI Project # 2728
Metco Job # 96-11A

ANALYTICAL REPORT

Sample Description:

Metco Environmental collected 6 samples from the Press House Stack at the Louisiana Pacific facility in Silsbee, Texas, and delivered them to SCLI for analysis.

Sample Analysis:

The samples were analyzed for 4,4' methylenediphenyl diisocyanate (MDI) according to NIOSH method 5521 by HPLC with a UV detector.

Analytical Results:

See Analytical Results Table

Submitted by:

Greg Hawk

Greg Hawk, R.E.M., R.H.S.P.
Director of Environmental Services

(214) 241-4468 1548 Valwood Parkway, Suite 110, Carrollton, TX 75006 FAX (214) 241-4541

QUALITY CONTROL AND ANALYTICAL RESULTS TABLE

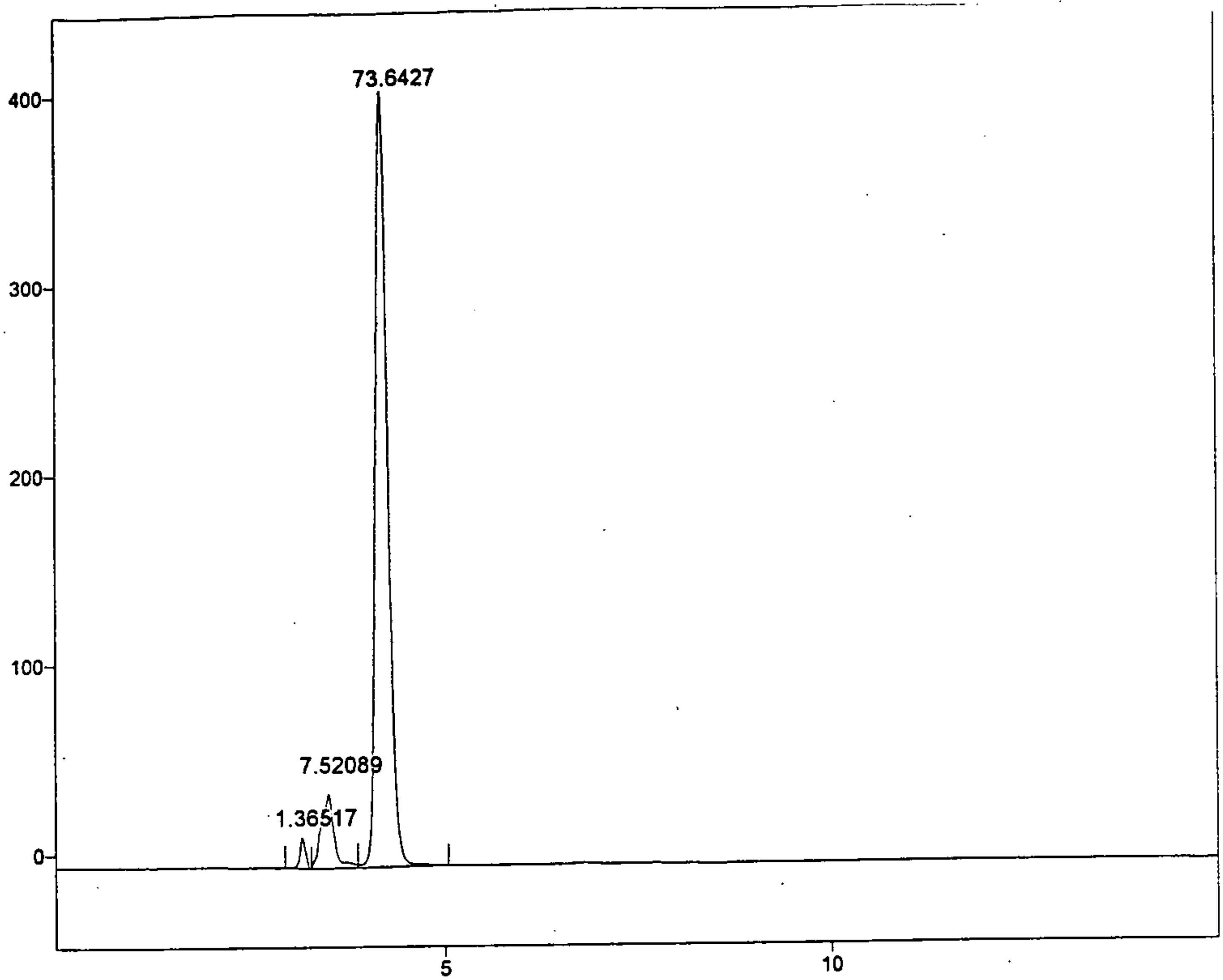
Sample Description	MDI
Press House Stack Run 1 Impinger 1	< 0.2 ug
Press House Stack Run 1 Impinger 2,3	< 0.2 ug
Press House Stack Run 2 Impinger 1	< 0.2 ug
Press House Stack Run 2 Impinger 2,3	< 0.2 ug
Press House Stack Run 3 Impinger 1	< 0.2 ug
Press House Stack Run 3 Impinger 2,3	< 0.2 ug
Press House Stack Run 3 Impinger 2,3 Replicate	< 0.2 ug
% RD	0.0 %
Press House Stack MDI Absorber Solution Blank	< 0.2 ug

SCIENTIFIC CONSULTING LABORATORIES, INC.

CHROMATOGRAM AND PEAK TABLE KEY

Chromatogram Filename	Description
129SCL01	0.01 ug/ml Standard
129SCL02	0.42 ug/ml Standard
129SCL03	1.04 ug/ml Standard
129SCL04	4.16 ug/ml Standard
129SCL05	10.40 ug/ml Standard
129SCL06	20.80 ug/ml Standard
129SCL07	Solvent Blank
129SCL08	Press House Stack Run 1 Impinger 1
129SCL09	Press House Stack Run 1 Impingers 2 and 3
129SCL10	Press House Stack Run 2 Impinger 1
129SCL11	Press House Stack Run 2 Impingers 2 and 3
129SCL12	0.10 ug/ml Standard
129SCL13	Press House Stack Run 3 Impinger 1
129SCL14	Press House Stack Run 3 Impingers 2 and 3
129SCL15	Press House Stack MDI Absorber Solution Blank

(214) 241-4468 1548 Valwood Parkway, Suite 110, Carrollton, TX 75006 FAX (214) 241-4541



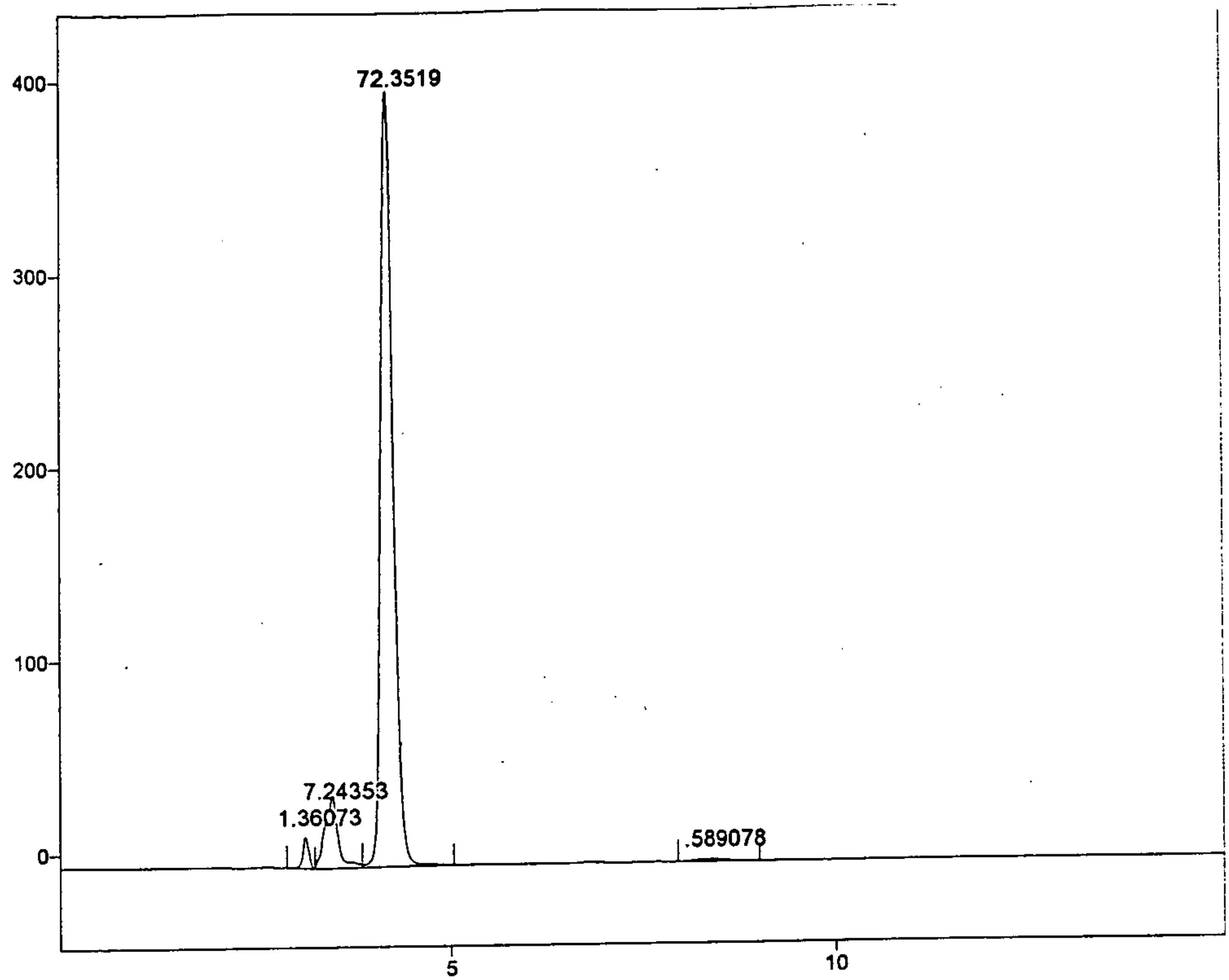
Peak Class	Name	Center X	Peak Area
	Peak 1	3.147	1.365
[	Peak 2	3.472	7.521
]	Peak 3	4.201	73.643

MilliVolts/Minutes

X-Zoom CURSOR

File# 1=129SCL01

1/29/96 3:41 PM Res= .3



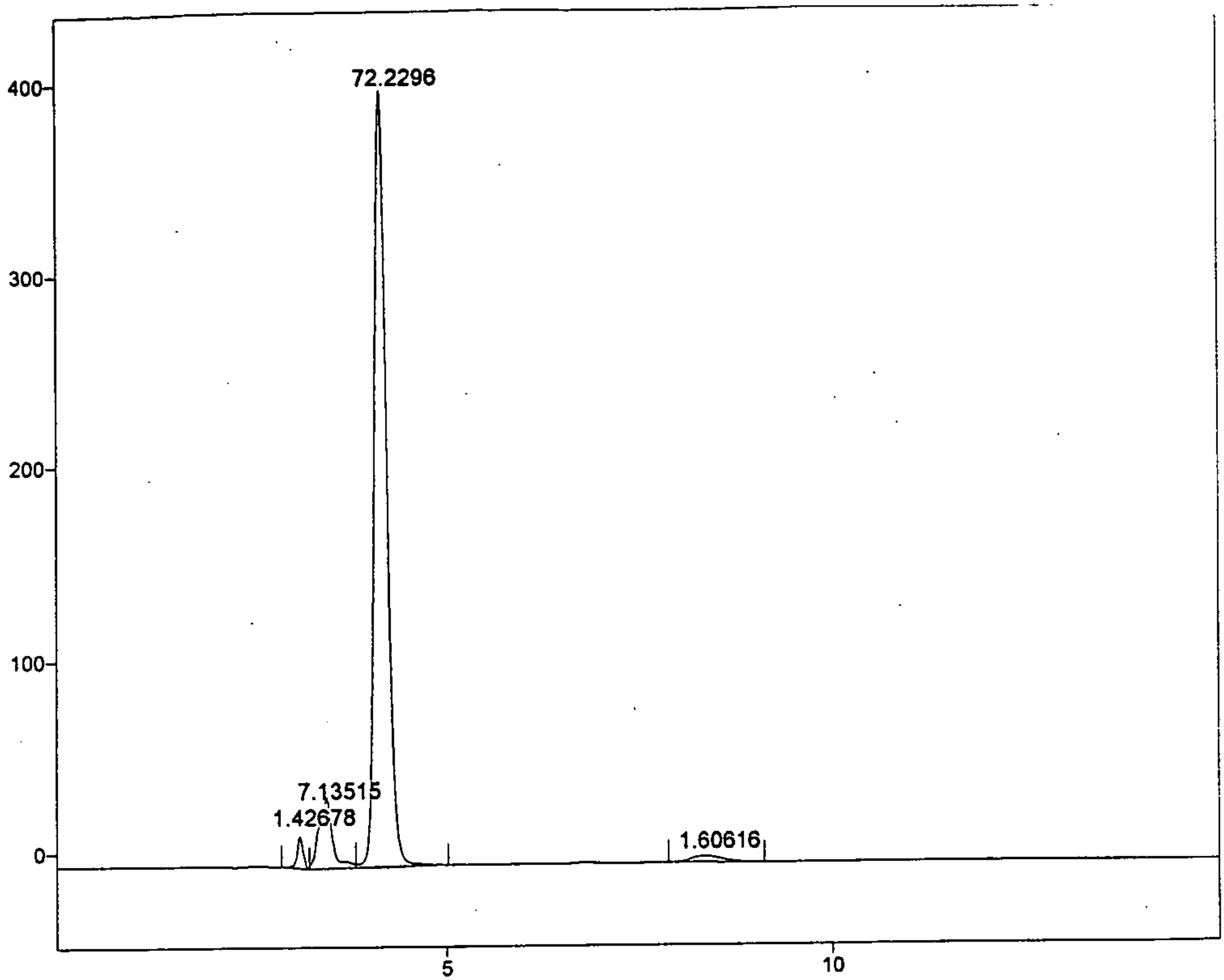
Peak Class	Name	Center X	Peak Area
	Peak 1	3.152	1.361
[	Peak 2	3.477	7.243
]	Peak 3	4.204	72.352
	MDI DERIVATIVE	8.385	.589

MilliVolts/Minutes

X-Zoom CURSOR

File# 2:129SCL02

1/29/96 3:59 PM Res= .3



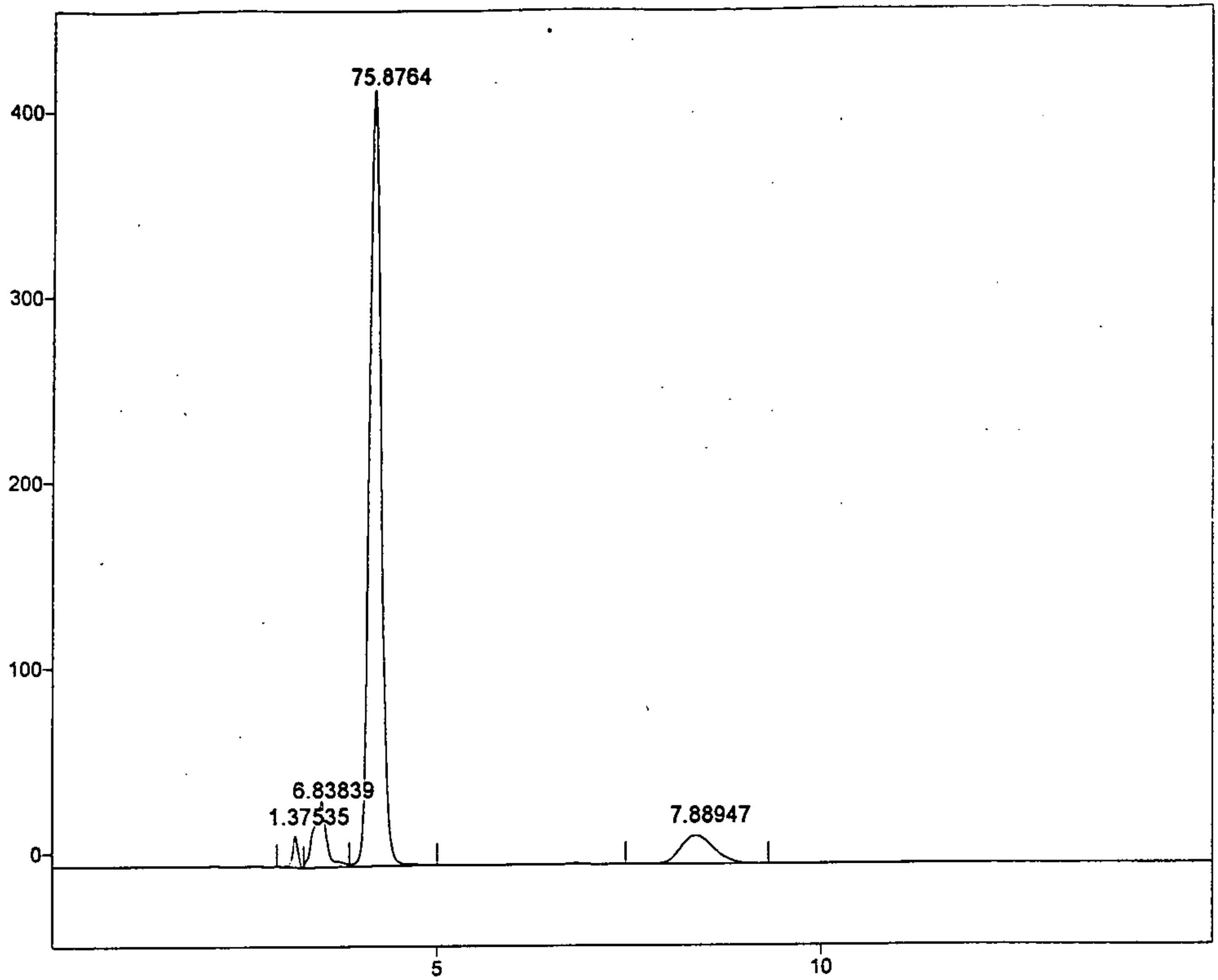
Peak Class	Name	Center X	Peak Area
	Peak 1	3.137	1.427
[	Peak 2	3.461	7.135
]	Peak 3	4.188	72.229
	MDI DERIVATIVE	8.354	1.606

MilliVolts/Minutes

X-Zoom CURSOR

File# 3=129SCL03

1/29/96 4:15 PM Res= .3



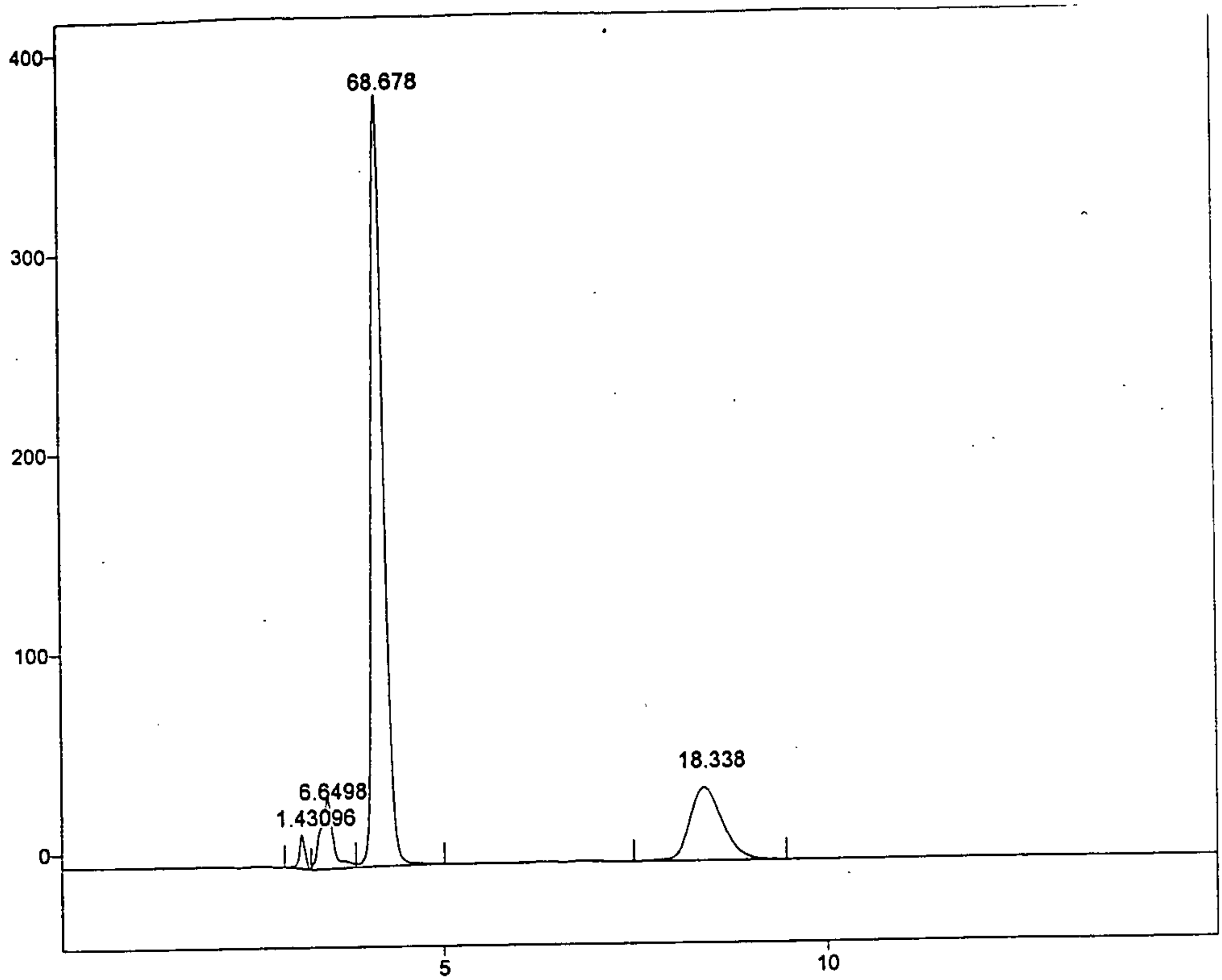
Peak Class	Name	Center X	Peak Area
	Peak 1	3.138	1.375
[	Peak 2	3.464	6.838
]	Peak 3	4.188	75.876
	MDI DERIVATIVE	8.338	7.889

MilliVolts/Minutes

X-Zoom CURSOR

File# 4=129SCL04

1/29/96 4:31 PM Res= .3



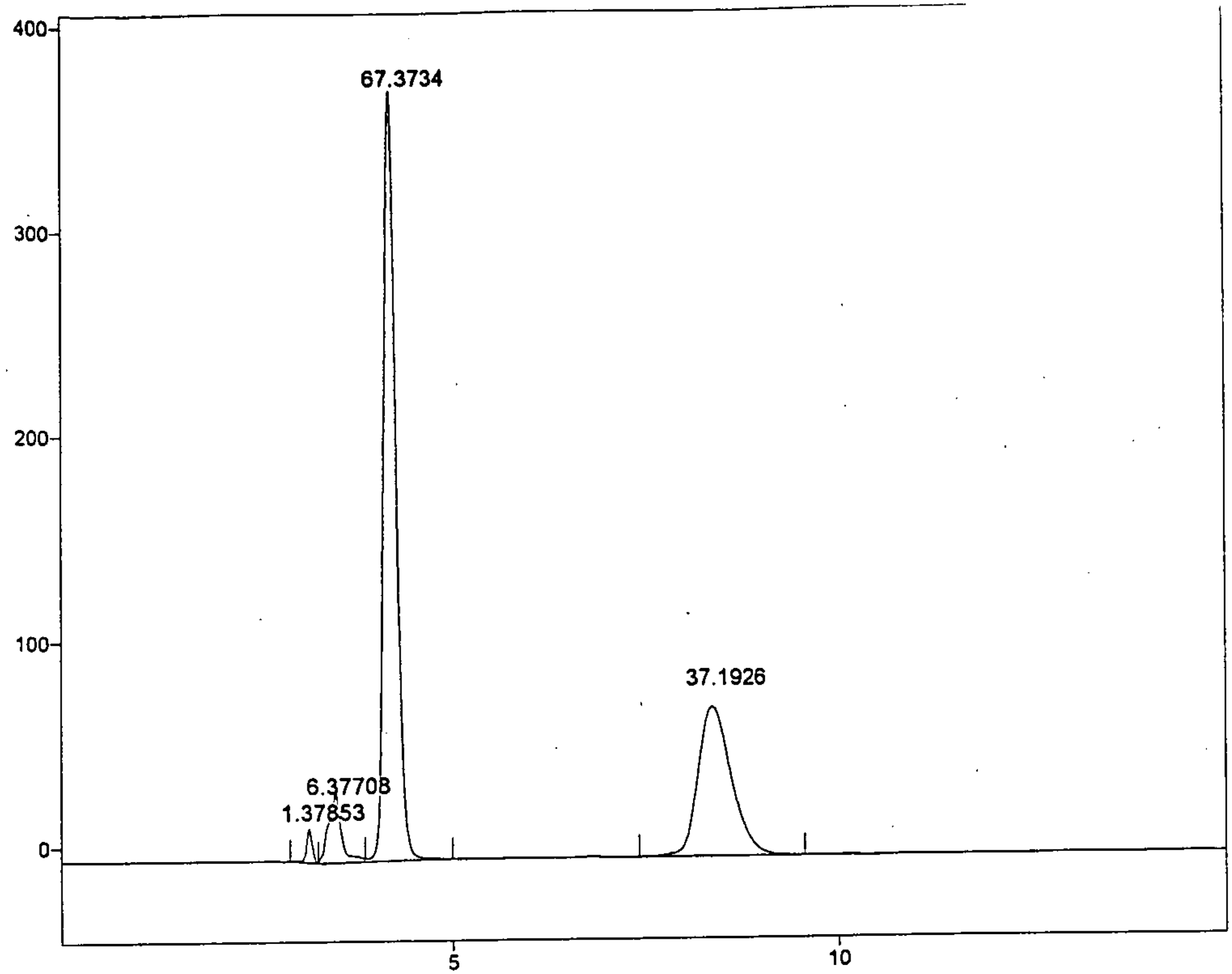
Peak Class	Name	Center X	Peak Area
	Peak 1	3.147	1.431
[	Peak 2	3.473	6.65
]	Peak 3	4.198	68.678
	MDI DERIVATIVE	8.362	18.338

MilliVolts/Minutes

X-Zoom CURSOR

File# 1=129SCL05

1/29/96 4:47 PM Res= .3



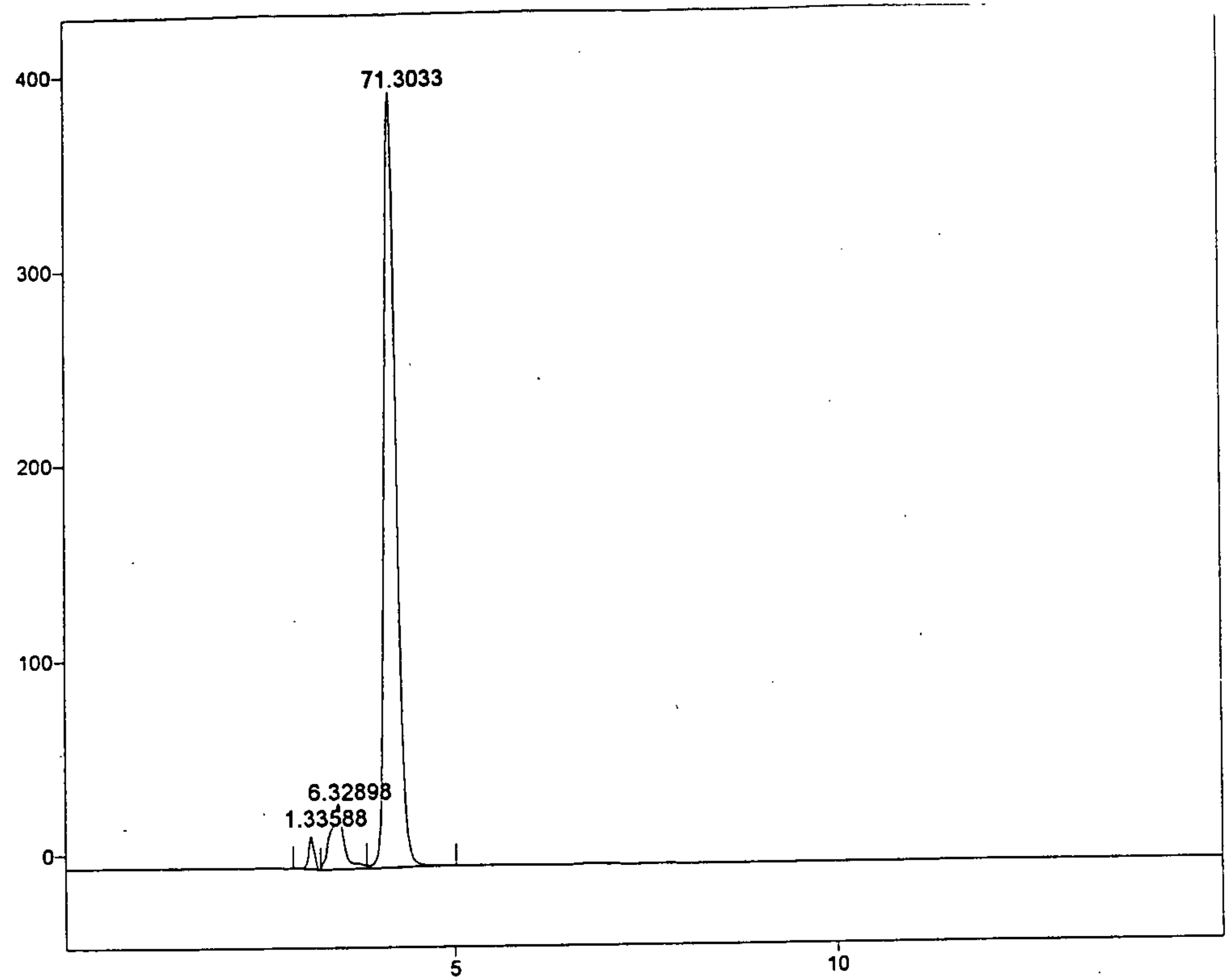
Maximum Y	Name	Center X	Peak Area
7.818	Peak 1	3.147	1.378
20.999	Peak 2	3.472	6.377
366.757	Peak 3	4.197	67.373
66.236	MDI DERIVATIVE	8.348	37.193

MilliVolts/Minutes

X-Zoom CURSOR

File# 2=129SCL06

1/29/98 5:03 PM Res= .3



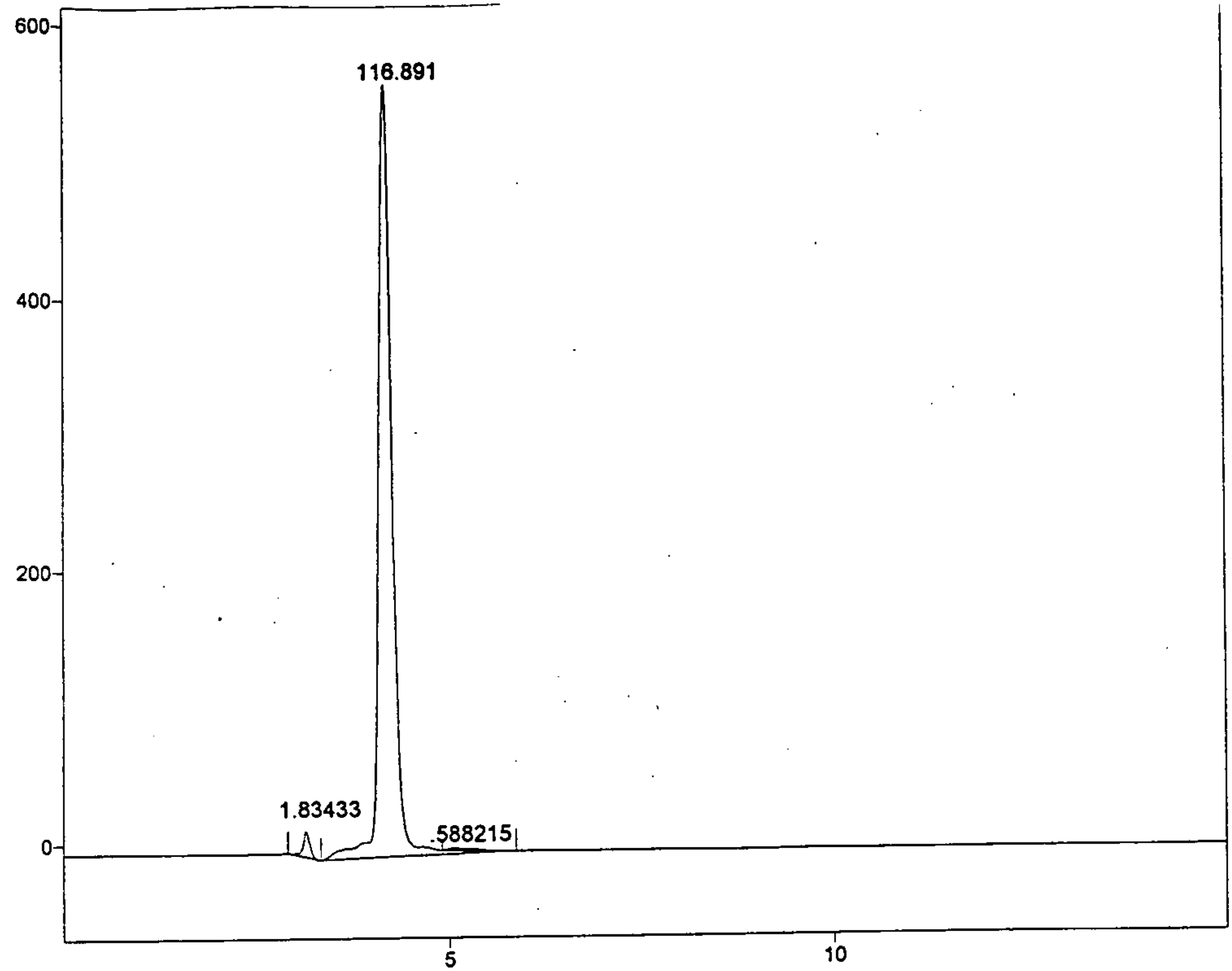
Peak Class	Name	Center X	Peak Area
	Peak 1	3.148	1.336
[	Peak 2	3.473	6.329
]	Peak 3	4.197	71.303

MilliVolts/Minutes

X-Zoom CURSOR

File# 1=129SCL07

1/29/96 5:19 PM Res= .3



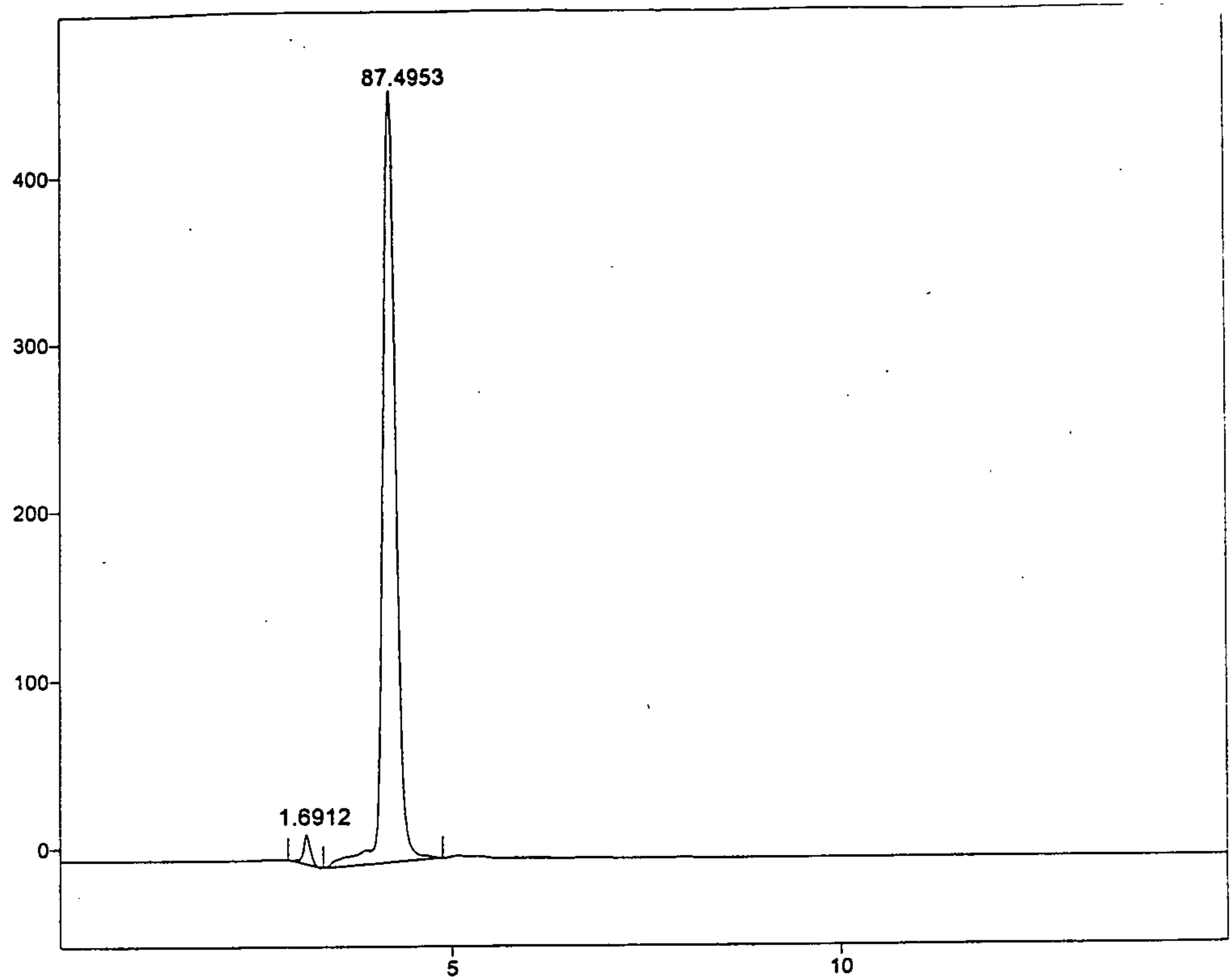
Peak Class	Name	Center X	Peak Area
	Peak 1	3.141	1.834
	Peak 3	4.2	116.891
>	Peak 4	5.083	.588

MilliVolts/Minutes

Y-Zoom CURSOR

File# 2=129SCL08

1/29/96 5:36 PM Res= .3



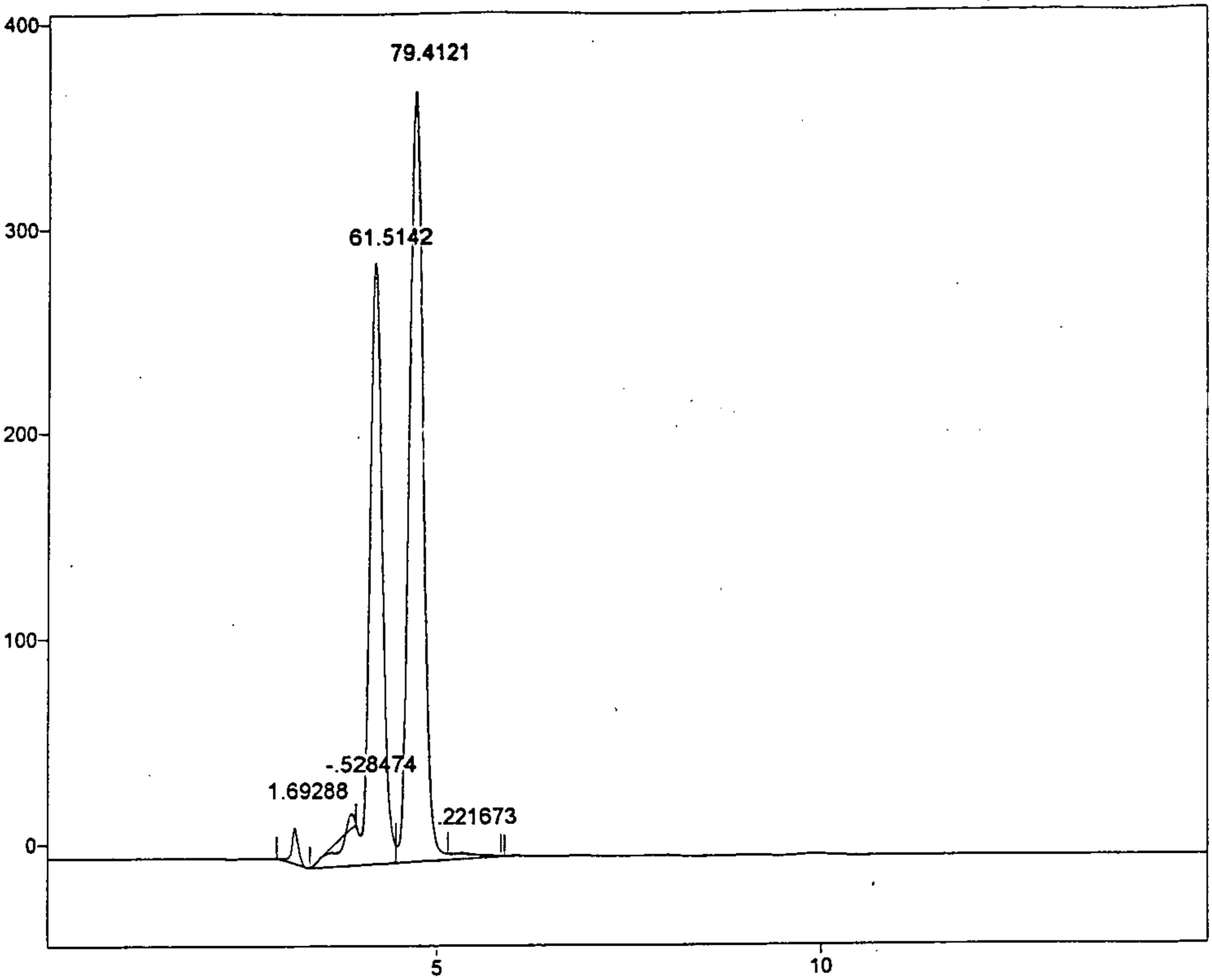
Peak Class	Name	Center X	Peak Area
	Peak 1	3.14	1.691
	Peak 3	4.205	87.495

MilliVolts/Minutes

Y-Zoom CURSOR

File# 3=129SCL09

1/29/96 5:52 PM Res= .3



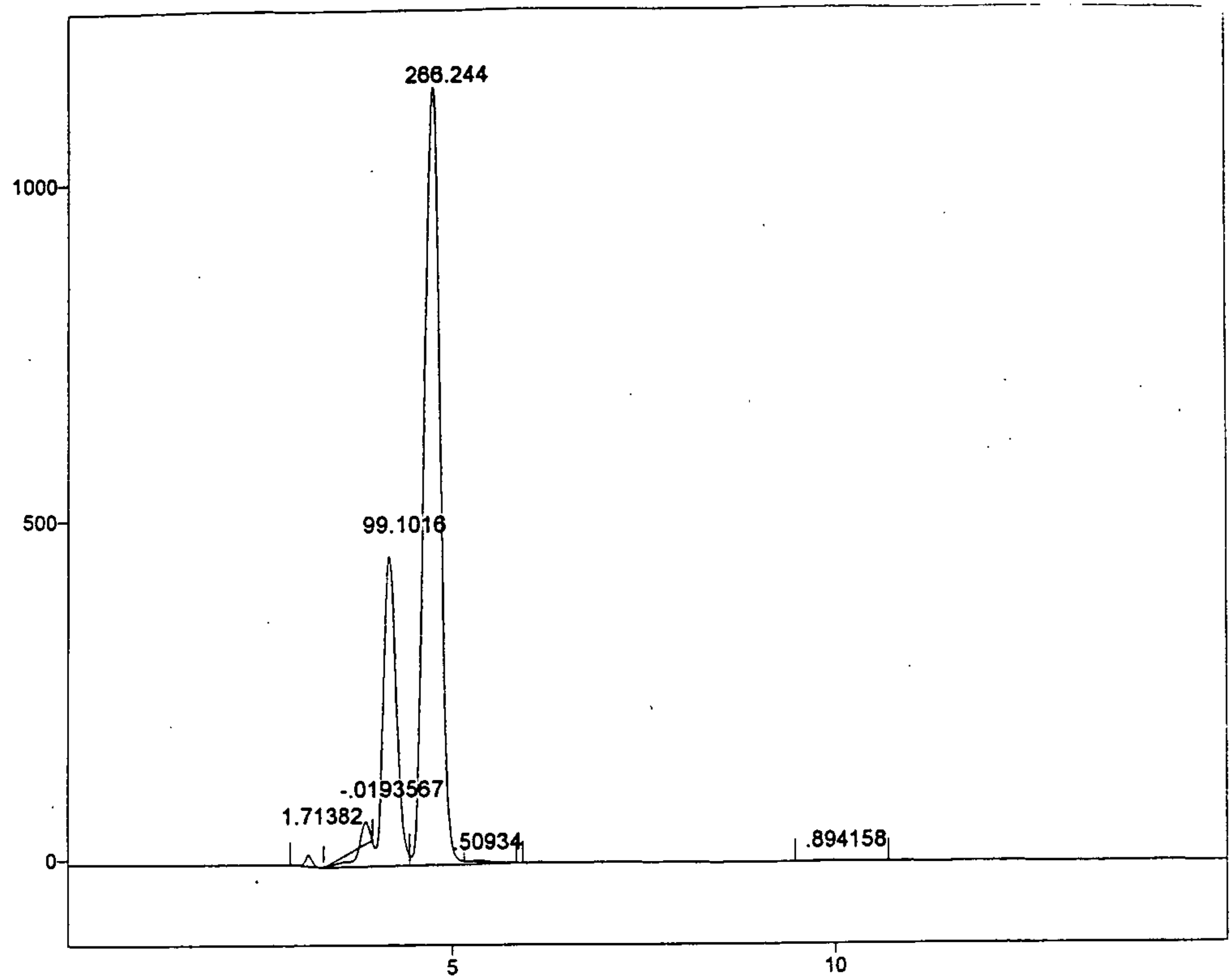
Peak Class	Name	Center X	Peak Area
	Peak 1	3.15	1.693
<		3.928	-.5285
[	Peak 3	4.22	61.514
]		4.737	79.412
>		5.352	.222

MilliVolts/Minutes

Y-Zoom CURSOR

File# 4=129SCL10

1/29/98 6:08 PM Res= .3



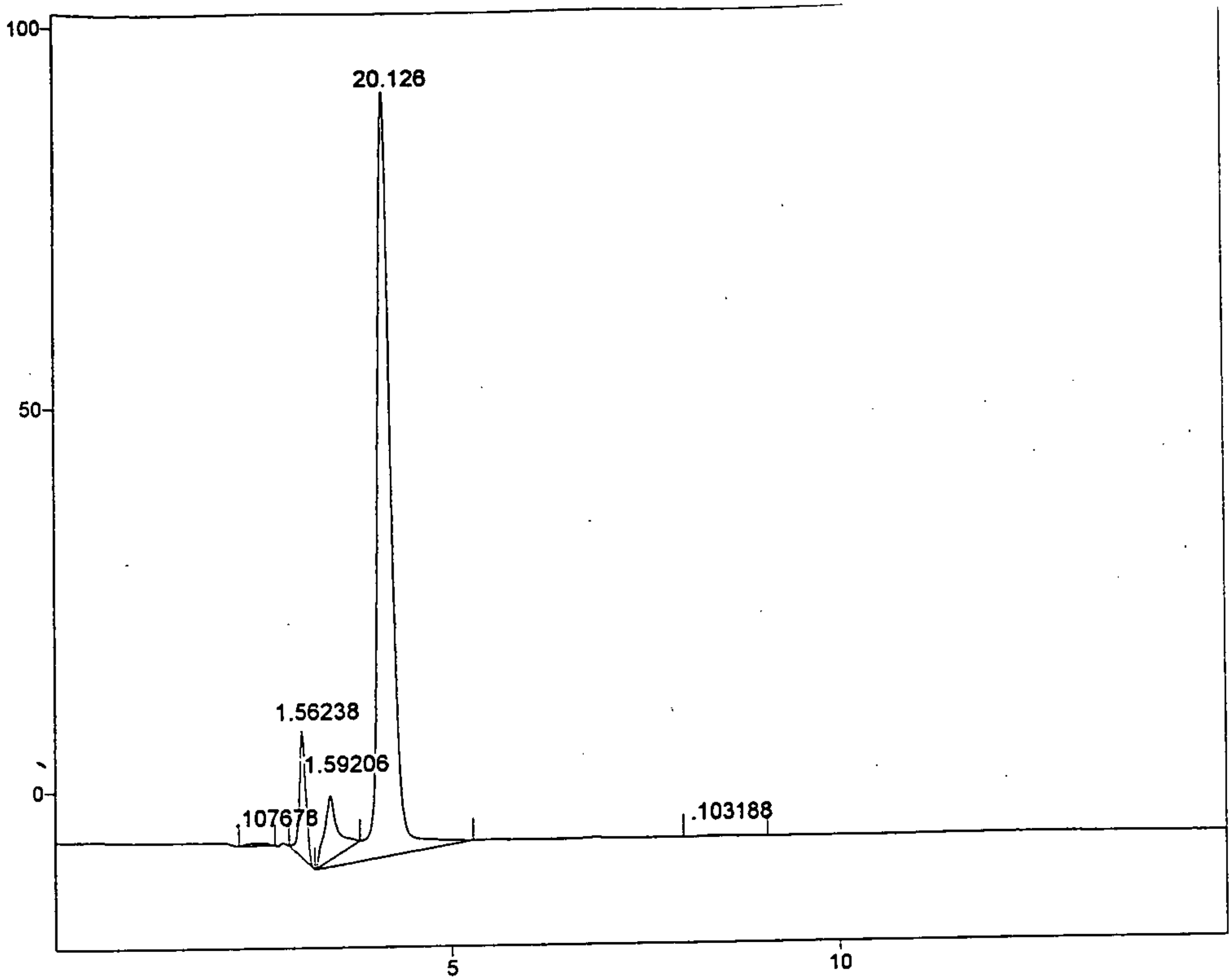
Peak Class	Name	Center X	Peak Area
<		3.914	-.0193
[	Peak 3	4.212	99.102
]		4.757	266.244
>		5.353	.509
		9.946	.894

MilliVolts/Minutes

Y-Zoom CURSOR

File# 1=129SCL11

1/29/98 6:24 PM Res= .3



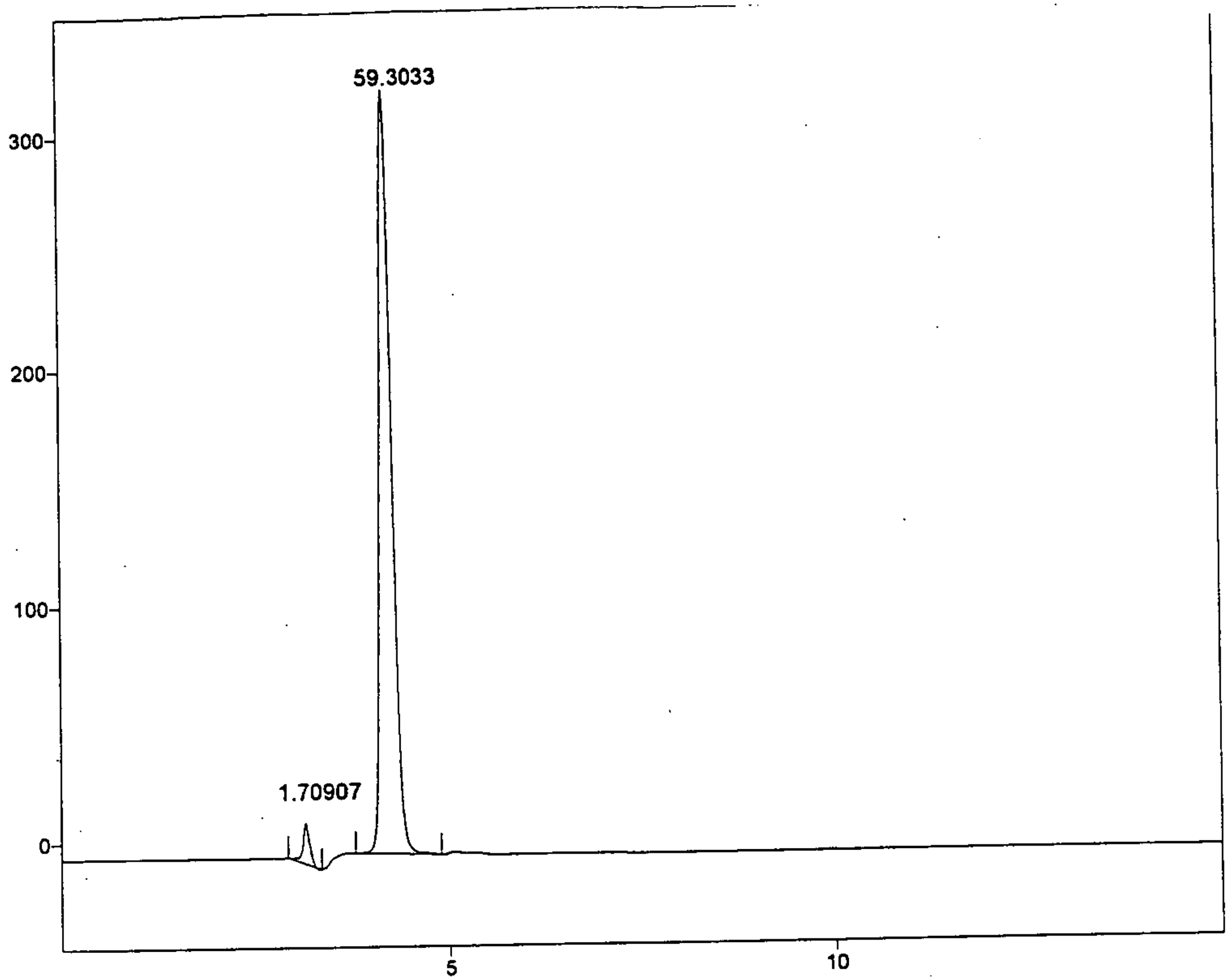
Peak Class	Name	Center X	Peak Area
		2.634	.108
	Peak 1	3.149	1.562
<	Peak 2	3.512	1.592
	Peak 3	4.197	20.126
	MDI DERIVATIVE	8.417	.103

MilliVolts/Minutes

Y-Zoom CURSOR

File# 2=129SCL12

1/29/96 6:40 PM Res= .3



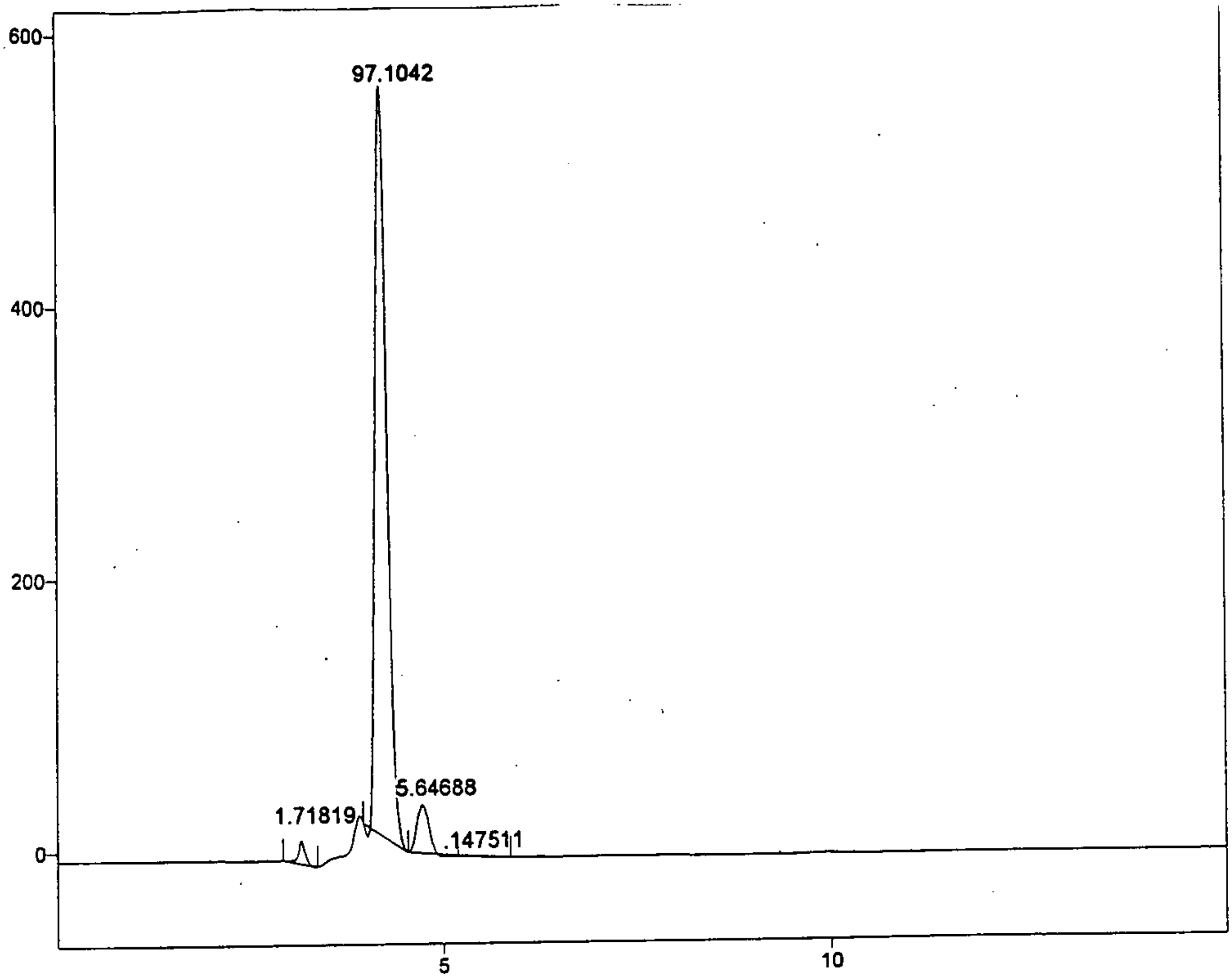
Peak Class	Name	Center X	Peak Area
	Peak 3	4.208	59.303

MilliVolts/Minutes

Y-Zoom CURSOR

File# 3=129SCL13

1/29/96 6:56 PM Res= .3



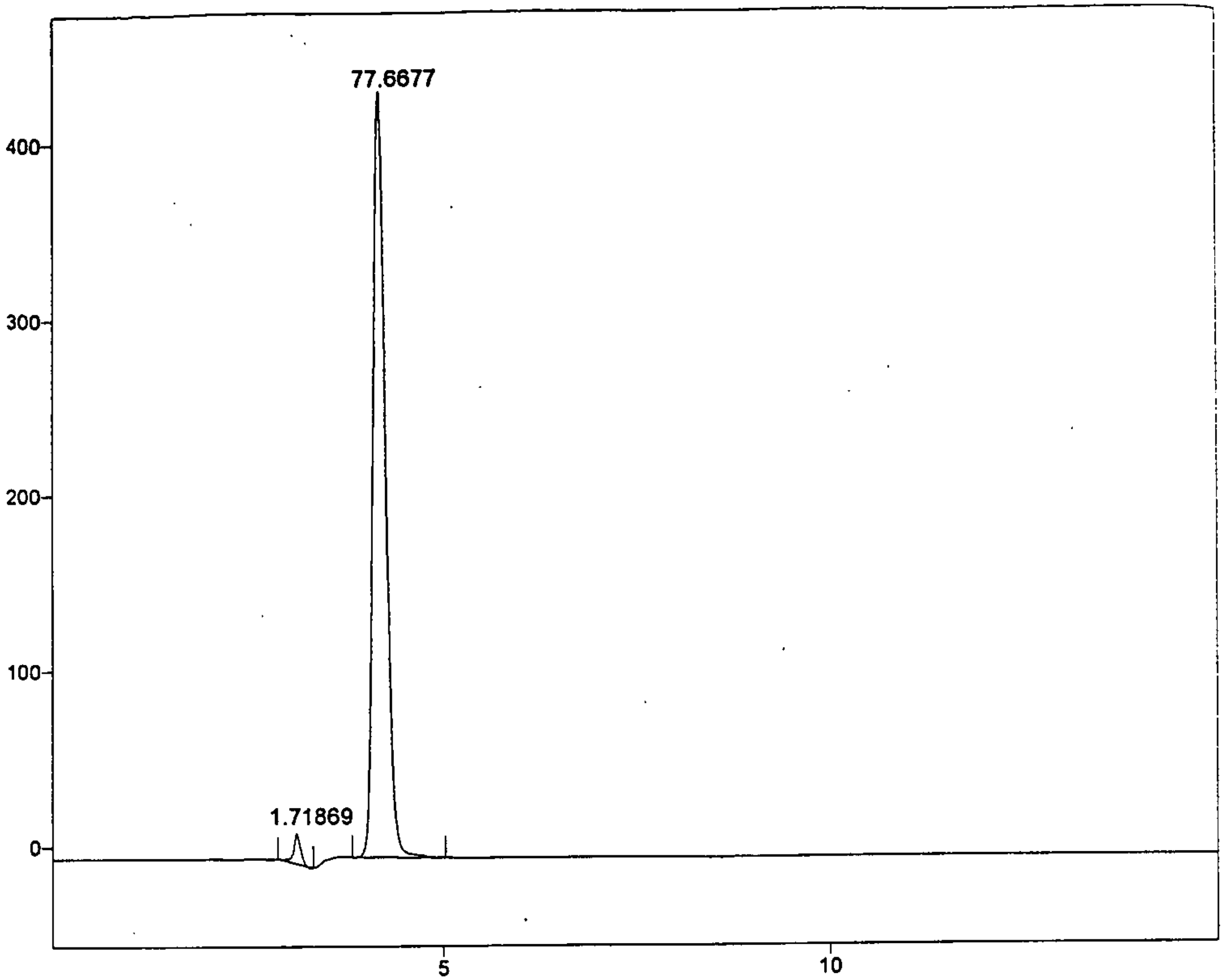
Peak Class	Name	Center X	Peak Area
	Peak 3	4.209	97.104
		4.724	5.647
>		5.342	.147

MilliVolts/Minutes

Y-Zoom CURSOR

File# 4=129SCL14

1/29/96 7:12 PM Res= .3



Peak Class	Name	Center X	Peak Area
	Peak 3	4.206	77.668

MilliVolts/Minutes

Y-Zoom CURSOR

File# 5=129SCL15

1/29/96 7:28 PM Res= .3

METCO Environmental

Particulate Analysis Summary

Job Number 96-11
Job Name ERM Southwest
Location Silsbee, La

Date Analysis Completed 1-26-96
Unit Tested Press House Vent South #1

Run No.	1	2	3		
Particulate on Filter (mg)	1.1	1.7	1.6		
Particulate in Front Wash (mg)*	5.9	6.7	3.8		
MF (mg)	7.0	8.4	5.4		
Particulate in Impinger #1 (mg)	19.0	9.9	8.4		
MT (mg)	26.0	18.3	13.8		

HT ✓

Mary [signature]
Analyst

• Less Acetone Residue

METCO Environmental

Particulate Analysis EPA Method 5

Stack Filters

Job Number 96-11

Job Name ERM

Location Silsbee, Tx.

Unit Tested Press House Vent South Inlet

Desiccator Time In	1/23	14²⁵ 1/25			
Desiccator Time Out	1417 1/25	8³⁰ 1/26			

Run No. 1	Filter No. G5				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)			✓		
Filter & Particulate (g)	0.6145	0.6150			

Filter & Particulate Average (g) 0.6148 ✓
Initial Filter Weight (g) 0.6137 ✓
Total Particulate (mg) 1.1 ✓

Run No. 2	Filter No. G29				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)			✓		
Filter & Particulate (g)	0.6108	0.6111			

Filter & Particulate Average (g) 0.6110 ✓
Initial Filter Weight (g) 0.6093 ✓
Total Particulate (mg) 1.7 ✓

Run No. 3	Filter No. E60				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)			✓		
Filter & Particulate (g)	0.6279	0.6281			

Filter & Particulate Average (g) 0.6280 ✓
Initial Filter Weight (g) 0.6264 ✓
Total Particulate (mg) 1.6 ✓

mg
Analyst

METCO Environmental

Particulate Analysis EPA Method 5

Front Wash

Job Number 96-11 Location Silsbee, Tx.

Job Name ERM Unit Tested Press House Vent Inlet South

Desiccator Time In	815 1/23	1430 1/23			
Desiccator Time Out	1430 1/23	1407 1/24			

Run No. 1	Volume (ml) 164				
Final Weight (g)	165.5110	165.5106	✓		
Initial Weight (g)	165.5042	165.5042			
Particulate Weight (g)	0.0068	0.0064			

Particulate Average (mg) 6.6
Less Acetone Blank (mg) 0.7
Total Particulate (mg) 5.9

Run No. 2	Volume (ml) 175				
Final Weight (g)	145.7543	145.7541	✓		
Initial Weight (g)	145.7468	145.7468			
Particulate Weight (g)	0.0075	0.0073			

Particulate Average (mg) 7.4
Less Acetone Blank (mg) 0.7
Total Particulate (mg) 6.7

Run No. 3	Volume (ml) 175				
Final Weight (g)	140.1974	140.1970	✓		
Initial Weight (g)	140.1927	140.1927			
Particulate Weight (g)	0.0047	0.0043			

Particulate Average (mg) 4.5
Less Acetone Blank (mg) 0.7
Total Particulate (mg) 3.8

Acetone Blank	Volume (ml) 275				
Final Weight (g)	120.0485	120.0480	✓		
Initial Weight (g)	120.0472	120.0472			
Difference (g)	0.0013	0.0008			

Average (mg) 1.1
* mg/l 4.0

* Note: If greater than 7.9 mg/l, use 7.9 mg/l.

mb
Analyst

METCO Environmental

Particulate Analysis EPA Method 5

Back Half Analysis

Job Number 96-11 Location Silsbee, Tex

Job Name ERM Unit Tested Press House Vent Stack South Inlet

Desiccator Time In	810 1/25	1322 1/25			
Desiccator Time Out	1315 1/25	840 1/26			

Run No. 1	Volume (ml) 653				
Final Weight (g)	139.2488	139.2484	✓		
Initial Weight (g)	139.2296	139.2296			
Particulate Weight (g)	0.0192	0.0188			

Particulate Average (mg) 19.0

Less Ammonium Sulfate (mg) —

Total Particulate (mg) 19.0

Run No. 2	Volume (ml) 341				
Final Weight (g)	140.5707	140.5707	✓		
Initial Weight (g)	140.5608	140.5608			
Particulate Weight (g)	0.0099	0.0099			

Particulate Average (mg) 9.9

Less Ammonium Sulfate (mg) —

Total Particulate (mg) 9.9

Run No. 3	Volume (ml) 336				
Final Weight (g)	125.6912	125.6913	✓		
Initial Weight (g)	125.6829	125.6829			
Particulate Weight (g)	0.0083	0.0084			

Particulate Average (mg) 8.4

Less Ammonium Sulfate (mg) —

Total Particulate (mg) 8.4

Run No.	Volume (ml)				
Final Weight (g)					
Initial Weight (g)					
Particulate Weight (g)					

Particulate Average (mg)

Less Ammonium Sulfate (mg)

Total Particulate (mg)

mh

Analyst

METCO Environmental

Particulate Analysis Summary

Job Number 96-11

Job Name ERM Southwest

Location Silsbee, Tx.

Date Analysis Completed 1-26-96

Unit Tested Press House Vent North Inlet #2

Run No.	1	2	3		
Particulate on Filter (mg)	1.2	1.9	2.0		
Particulate in Front Wash (mg)*	4.5	7.1	3.2		
MF (mg)	5.7	9.0	5.2		
Particulate in Impinger #1 (mg)	11.0	9.0	8.7		
MT (mg)	16.7	18.0	13.9		

HT

Mary Banter
Analyst

* Less Acetone Residue

METCO Environmental

Particulate Analysis EPA Method 5

Stack Filters

Job Number 96-11
Job Name ERM

Location Silsbee, Tx.
Unit Tested PH Vent North Inlet

Desiccator Time In	900 1/23	1440 1/25			
Desiccator Time Out	1430 1/25	805 1/26			

Run No. 1	Filter No. G4				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)			✓		
Filter & Particulate (g)	0.6022	0.6024			

Filter & Particulate Average (g) 0.6023
Initial Filter Weight (g) 0.6011
Total Particulate (mg) 1.2

Run No. 2	Filter No. E58				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)			✓		
Filter & Particulate (g)	0.6323	0.6327			

Filter & Particulate Average (g) 0.6325
Initial Filter Weight (g) 0.6306
Total Particulate (mg) 1.9

Run No. 3	Filter No. G30				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)			✓		
Filter & Particulate (g)	0.6036	0.6037			

Filter & Particulate Average (g) 0.6037
Initial Filter Weight (g) 0.6017
Total Particulate (mg) 2.0

mh
Analyst

METCO Environmental

Particulate Analysis EPA Method 5

Front Wash

Job Number 96-11

Job Name ERM

Location Silsbee, Tx

Unit Tested Press House Vent Inlet North

Desiccator Time In	1130 1/23	1455 1/23			
Desiccator Time Out	1445 1/23	1355 1/24			

Run No. 1	Volume (ml) 225				
Final Weight (g)	136.8361	136.8363	✓		
Initial Weight (g)	136.8299	136.8299			
Particulate Weight (g)	0.0062	0.0064			

Particulate Average (mg) 6.3

Less Acetone Blank (mg) 1.8

Total Particulate (mg) 4.5

Run No. 2	Volume (ml) 170				
Final Weight (g)	138.3759	138.3760	✓		
Initial Weight (g)	138.3676	138.3676			
Particulate Weight (g)	0.0083	0.0084			

Particulate Average (mg) 8.4

Less Acetone Blank (mg) 1.3

Total Particulate (mg) 7.1

Run No. 3	Volume (ml) 149				
Final Weight (g)	177.1280	177.1275			
Initial Weight (g)	177.1234	177.1234			
Particulate Weight (g)	0.0046	0.0041			

Particulate Average (mg) 4.4

Less Acetone Blank (mg) 1.2

Total Particulate (mg) 3.2

Acetone Blank	Volume (ml) 275				
Final Weight (g)	124.7197	124.7194	✓		
Initial Weight (g)	124.7165	124.7165			
Difference (g)	0.0032	0.0029			

Average (mg) 3.1

* mg/l 11.3

* Note: If greater than 7.9 mg/l, use 7.9 mg/l.

mb

Analyst

METCO Environmental

Particulate Analysis EPA Method 5

Back Half Analysis

Job Number 96-11

Job Name ERM

Location Silsbee, Tx

Unit Tested PH Vent North Inlet

Desiccator Time In	810 1/25	1337 1/25		
Desiccator Time Out	1325 1/25	850 1/26		

Run No. 1	Volume (ml) 420			
Final Weight (g)	150.2175	150.2175	✓	
Initial Weight (g)	150.2065	150.2065		
Particulate Weight (g)	0.0110	0.0110		

Particulate Average (mg) 11.0

Less Ammonium Sulfate (mg) —

Total Particulate (mg) 11.0

Run No. 2	Volume (ml) 314			
Final Weight (g)	124.3450	124.3451	✓	
Initial Weight (g)	124.3361	124.3361		
Particulate Weight (g)	0.0089	0.0090		

Particulate Average (mg) 9.0

Less Ammonium Sulfate (mg) —

Total Particulate (mg) 9.0

Run No. 3	Volume (ml) 320			
Final Weight (g)	121.5776	121.5778	✓	
Initial Weight (g)	121.5690	121.5690		
Particulate Weight (g)	0.0086	0.0088		

Particulate Average (mg) 8.7

Less Ammonium Sulfate (mg) —

Total Particulate (mg) 8.7

labelled as blank for RTO stacks

Run No. DI Blank	Volume (ml) 400			
Final Weight (g)	163.2262	163.2260	✓	
Initial Weight (g)	163.2200	163.2200		
Particulate Weight (g)	0.0062	0.0060		

Particulate Average (mg) 6.1

Less Ammonium Sulfate (mg) —

Total Particulate (mg)

mb

Analyst

APPENDIX F

Reference Method Monitors Data

Press House RTO Stack (EPN RTO3)
Oxides of Nitrogen
Concentration

Particulate Matter Tests

Run Number	Measured (ppm)	Adjusted (ppm*)
1	13.3	13.7
2	15.4	14.2
3	15.2	14.0

*Calculated according to equation 6C-1.

Press House RTO Stack (EPN RTO3)
Calibration Summary
Oxides of Nitrogen

Particulate Matter Tests

Run Number	NOx Calibration Initial Drift Check (ppm)	NOx Calibration Final Drift Check (ppm)	Average (ppm)	NOx Zero Initial Drift Check (ppm)	NOx Zero Final Drift Check (ppm)	Average (ppm)	Actual NOx Calibration Value (ppm)	Actual NOx Zero Value (ppm)
1	46.6	46.7	46.7	0.8	0.6	0.7	50.0	0.0
2	49.2	48.8	49.0	0.5	0.4	0.5	46.2	0.0
3	48.8	49.2	49.0	0.4	0.5	0.5	46.2	.0.0

Press House RTO Stack (EPN RTO3)
Oxides of Nitrogen
Concentration

Formaldehyde Tests

Run Number	Measured (ppm)	Adjusted (ppm*)
1	14.6	13.1
2	15.6	14.5
3	15.0	14.0

*Calculated according to equation 6C-1.

METCO ENVIRONMENTAL

Press House RTO Stack (EPN RTO3)
Calibration Summary
Oxides of Nitrogen

FormaldehydeTests

Run Number	NOx Calibration Initial Drift Check (ppm)	NOx Calibration Final Drift Check (ppm)	Average (ppm)	NOx Zero Initial Drift Check (ppm)	NOx Zero Final Drift Check (ppm)	Average (ppm)	Actual NOx Calibration Value (ppm)	Actual NOx Zero Value (ppm)
1	49.5	49.2	49.4	1.0	0.5	0.8	46.2	0.0
2	48.8	48.8	48.8	0.4	0.4	0.4	46.2	0.0
3	49.2	48.1	48.7	0.5	0.2	0.4	46.2	0.0

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[illegible] TEXAS
PRESS RTO STACK
Page : 1

		THC PPM	CO PPM	NOX PPM	
01/18/96	16:26	3.4C	1.8C	0.3C	
01/18/96	16:27	4.6C	1.2C	0.3C	
01/18/96	16:28	3.4C	1.2C	0.2C	ZERO N2 SG9101682 ALC
01/18/96	16:29	3.6C	1.8C	27.5C	
01/18/96	16:30	4.1C	1.3C	85.4C	85.41ppm NO ALM 038783
01/18/96	16:31	3.6C	0.7C	86.6C	ZERO N2
01/18/96	16:32	3.1C	239.0C	12.8C	
01/18/96	16:33	3.2C	465.6C	0.6C	469 ppm ~~NO~~ CO BLM 003332
01/18/96	16:34	4.4C	441.3C	12.5C	
01/18/96	16:35	3.2C	62.2C	46.6C	46.2 ppm NO BAL 3110
01/18/96	16:36	3.1C	22.9C	31.3C	
01/18/96	16:37	3.7C	228.0C	0.8C	
01/18/96	16:38	3.6C	249.1C	0.5C	247.1ppm CO ALM 030956
01/18/96	16:39	2.9C	249.9C	0.4C	
01/18/96	16:40	3.1C	125.7C	15.6C	
01/18/96	16:41	4.2C	1.5C	20.0C	20.1ppm NO BAL 1808
01/18/96	16:42	3.0C	8.5C	14.0C	
01/18/96	16:43	2.8C	79.0C	4.2C	
01/18/96	16:44	3.7C	87.3C	30.3C	~~88.51ppmCO~~
01/18/96	16:45	3.6C	87.2C	30.3C	85.86 BAL 4419
01/18/96	16:46	3.3C	51.9C	30.3C	
01/18/96	16:47	1.4C	1.5C	30.3C	
01/18/96	16:48	0.6C	1.1C	30.3C	
01/18/96	16:49	0.5C	1.1C	30.3C	
01/18/96	16:50	0.5C	1.2C	30.3C	ZERO N2 SG9101682 ALC
01/18/96	16:51	35.0C	2.7C	30.3C	
01/18/96	16:52	86.9C	1.6C	30.3C	
01/18/96	16:53	89.4C	1.7C	30.2C	88.51ppm Propane BLM 001578
01/18/96	16:54	86.7C	1.6C	30.2C	
01/18/96	16:55	1.4C	1.2C	30.2C	
01/18/96	16:56	28.1C	1.2C	30.3C	
01/18/96	16:57	47.9C	1.2C	30.3C	47.09ppm Propane ALM 048174
01/18/96	16:58	46.7C	1.2C	30.3C	
01/18/96	16:59	1.2C	1.2C	30.3C	
01/18/96	17:00	23.1C	1.2C	30.3C	
01/18/96	17:01	23.9C	1.2C	30.3C	
01/18/96	17:02	24.0C	1.2C	30.3C	23.23ppm Propane BLM003402
01/18/96	17:03	9.3C	1.2C	30.3C	
01/18/96	17:04	0.6C	1.0C	30.3C	
01/18/96	17:05	3.6C	1.1C	30.3C	
01/18/96	17:06	4.1C	1.6C	30.3C	
01/18/96	17:07	2.8C	1.6C	30.3C	
01/18/96	17:08	3.4C	1.4C	30.3C	
01/18/96	17:09	4.8C	1.5C	30.2C	
01/18/96	17:10	3.0C	1.6C	30.3C	

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SILSBEE TEXAS
PRESS RTO STACK
Page : 2

		THC PPM	CO PPM	NOX PPM	
01/18/96	17:11	2.6C	1.4C	30.3C	
01/18/96	17:12	2.0C	1.3C	30.3C	
01/18/96	17:13	2.3C	1.3C	30.3C	
01/18/96	17:14	2.3C	1.3C	30.3C	
01/18/96	17:15	1.7C	1.5C	30.3C	
01/18/96	17:16	2.9C	1.6C	30.2C	
01/18/96	17:17	4.2C	1.9C	7.7C	
01/18/96	17:18	3.8C	38.7C	2.2C	
01/18/96	17:19	2.7C	97.4C	1.2C	
01/18/96	17:20	3.0C	234.7C	1.0C	
01/18/96	17:21	4.5C	247.8C	0.9C	
01/18/96	17:22	3.1C	247.3C	0.9C	
01/18/96	17:23	2.5C	$\boxed{247.5C}$	$\boxed{0.8C}$	CO Bias; NO_x zero
01/18/96	17:24	2.3C	247.6C	0.8C	
01/18/96	17:25	3.1C	247.4C	0.8C	
01/18/96	17:26	4.3C	188.0C	23.0C	
01/18/96	17:27	3.3C	19.3C	45.5C	
01/18/96	17:28	2.7C	0.9C	46.4C	
01/18/96	17:29	3.5C	0.6C	$\boxed{46.6C}$	NO_x Bias
01/18/96	17:30	4.8C	0.6C	46.0C	
01/18/96	17:31	2.6C	0.7C	9.7C	
01/18/96	17:32	3.5C	1.1C	1.0C	
01/18/96	17:33	4.5C	0.9C	0.8C	
01/18/96	17:34	3.2C	1.0C	0.7C	
01/18/96	17:35	2.9C	1.7C	1.9C	
01/18/96	17:36	3.4C	20.4C	9.1C	
01/18/96	17:37	4.4C	52.3C	14.1C	
01/18/96	17:38	2.7C	69.2C	16.1C	
		-----	-----	-----	
AVERAGES :		9.5	60.5	22.4	

Auxiliary Average Report

[illegible] Aux interval [illegible] Date : 1/13/96

RUN #1 (PART)

Time	THC PPM	CO PPM	NOX PPM
18:36	3.0000	70.3000	14.7000
18:37	2.9000	29.5000	14.1000
18:38	3.4000	38.1000	9.9000
18:39	4.1000	70.6000	17.1000
18:40	2.6000	42.0000	14.4000
18:41	3.3000	27.2000	11.5000
18:42	4.2000	55.2000	16.5000
18:43	2.6000	64.8000	13.0000
18:44	3.0000	26.7000	13.7000
18:45	4.1000	40.0000	15.0000
18:46	3.4000	78.0000	17.1000
18:47	2.7000	39.8000	11.7000
18:48	3.5000	29.0000	10.2000
18:49	4.0000	61.8000	17.1000
18:50	3.1000	64.3000	16.7000
18:51	2.0000	28.8000	11.2000
18:52	2.2000	19.7000	10.1000
18:53	1.7000	17.4000	10.3000
18:54	2.1000	14.9000	14.2000
18:55	2.1000	14.8000	12.0000
18:56	1.4000	13.7000	11.7000
18:57	2.0000	12.7000	10.0000
18:58	1.3000	12.5000	12.3000
18:59	1.7000	9.7000	10.8000
19:00	1.7000	8.8000	12.9000
19:01	1.2000	8.3000	10.5000
19:02	1.6000	7.7000	7.9000
19:03	3.0000	13.2000	12.3000
19:04	4.7000	50.9000	17.1000
19:05	3.2000	77.3000	17.6000
19:06	2.4000	31.5000	12.5000
19:07	2.1000	18.1000	9.0000
19:08	3.1000	20.4000	13.2000
19:09	4.8000	59.2000	18.0000
19:10	3.0000	77.4000	16.9000
19:11	3.3000	30.0000	12.4000
MAX :	4.8000	78.0000	18.0000
MIN :	1.2000	7.7000	7.9000
AVG :	2.7917	35.6750	13.2111
SCANS:	36	36	36

Auxiliary Average Report

DCHID : 07 Site Name : PRKSSSTK Aux Interval : 1 Date : 1/18/96

RUN #1

Time	THC PPM	CO PPM	NOX PPM
19:21	3.0000	47.5000	14.2000
19:22	2.0000	22.9000	8.7000
19:23	3.1000	19.1000	13.2000
19:24	4.7000	48.0000	17.1000
19:25	3.4000	85.5000	15.7000
19:26	3.0000	33.3000	13.8000
19:27	3.0000	28.7000	9.0000
19:28	4.5000	63.4000	17.2000
19:29	3.0000	68.0000	16.6000
19:30	2.6000	27.5000	11.1000
19:31	3.5000	26.9000	13.4000
19:32	4.5000	67.1000	13.2000
19:33	3.1000	62.7000	14.5000
19:34	3.7000	31.0000	14.2000
19:35	4.0000	57.4000	13.8000
19:36	3.1000	62.0000	15.4000
19:37	2.3000	29.1000	10.0000
19:38	2.4000	18.4000	14.0000
19:39	3.1000	16.2000	11.9000
19:40	3.8000	37.9000	12.9000
19:41	3.8000	80.4000	17.5000
19:42	2.6000	43.5000	11.9000
19:43	2.4000	21.7000	13.0000
19:44	2.5000	16.6000	14.2000
19:45	2.7000	16.7000	10.9000
19:46	4.7000	42.1000	14.6000
19:47	3.3000	88.1000	15.7000
19:48	3.0000	38.7000	13.4000
19:49	2.8000	21.9000	14.0000
19:50	2.2000	18.1000	11.9000
19:51	2.3000	15.3000	8.7000
19:52	1.9000	14.7000	12.4000
19:53	2.1000	13.2000	13.3000
19:54	2.3000	12.8000	11.8000
19:55	1.9000	12.7000	13.0000
19:56	2.0000	11.7000	9.0000
19:57	1.7000	11.9000	12.6000
19:58	1.9000	11.0000	13.7000
19:59	2.1000	10.9000	11.5000
20:00	1.9000	11.0000	13.5000
20:01	1.9000	10.7000	9.8000
20:02	1.5000	10.7000	13.2000
20:03	2.1000	9.8000	15.3000
20:04	1.5000	10.6000	11.7000
20:05	2.0000	10.0000	13.1000
20:06	1.8000	9.8000	8.6000
20:07	3.4000	14.6000	13.3000
20:08	4.3000	[illegible]	18.8000
20:09	3.2000	84.3000	17.3000
20:10	3.3000	30.0000	13.3000
[illegible]	[illegible]	33.5000	16.3000
20:12	4.7000	74.4000	18.3000
[illegible]	[illegible]	[illegible]	[illegible]

20:15	3.9000	37.9000	15.0000
MAX :	4.8000	88.1000	18.8000
MIN :	[illegible]	9.8000	6.6000
[illegible] :	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~
[illegible]:	55	55	55

$\boxed{\text{Ave}}$ 2.85 wet ~~2.92~~ dry ✓ . ~~34.55~~ ✓ 34.3 ~~13.26~~ ✓ 13.3

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ERM SOUTHWEST
GILSBRK TEXAS
PRESS RTO STACK
Page : 1

		THC PPM	CO PPM	NOX PPM	
01/18/96	20:27	0.6C	7.6C	11.5C	
01/18/96	20:28	$\boxed{0.6C}$	7.3C	13.1C	ZERO N2
01/18/96	20:29	9.1C	7.0C	9.1C	
01/18/96	20:30	60.5C	6.5C	9.2C	
01/18/96	20:31	56.7C	6.7C	10.4C	
01/18/96	20:32	47.6C	5.6C	13.4C	
01/18/96	20:33	$\boxed{48.0C}$	5.7C	10.8C	47.09 ppm Propane
01/18/96	20:34	47.9C	5.7C	12.1C	
01/18/96	20:35	12.2C	5.5C	8.8C	
01/18/96	20:36	1.6C	5.7C	11.5C	
01/18/96	20:37	3.1C	3.6C	17.0C	
01/18/96	20:38	3.2C	0.1C	45.1C	
01/18/96	20:39	3.5C	-0.1C	46.4C	
01/18/96	20:40	3.4C	-0.1C	$\boxed{46.7C}$	SPAN NOX/ZERO CO
01/18/96	20:41	3.6C	9.1C	37.3C	
01/18/96	20:42	3.9C	190.4C	1.3C	
01/18/96	20:43	3.6C	241.7C	0.6C	
01/18/96	20:44	3.9C	$\boxed{241.7C}$	$\boxed{0.6C}$	SPAN CO/ZERO NOX
01/18/96	20:45	3.1C	211.0C	0.5C	
AVERAGES :		16.6	50.6	16.1	

96 011
[illegible]
[illegible]
PRE... RTO STACK
Page : 1

J.U.M MODEL VC-4 ... ALL CAL'S VARU ... LEAK CK. 20" Hg.
S/N

CO: 0-500 ppm RANGE
TECO MODEL 48 #17
S/N 48-39614-261

NOX: 0-100 ppm RANGE
TECO MODEL 10S #17
S/N 10S-49429-282

Heated system 250

		THC PPM	CO PPM	NOX PPM	
01/19/96	06:35	3.3C	1.1C	0.0C	
01/19/96	06:36	3.3C	0.5C	0.0C	
01/19/96	06:37	3.2C	0.5C	0.0C	ZERO N2 SG9101682ALC
01/19/96	06:38	3.2C	0.4C	22.9C	
01/19/96	06:39	3.2C	0.0C	61.9C	
01/19/96	06:40	3.2C	0.0C	71.6C	
[illegible]	06:41	[illegible]	0.0C	75.8C	
[illegible]	[illegible]	[illegible]	0.0C	78.6C	
[illegible]	06:43	[illegible]	0.0C	84.8C	
[illegible]	06:44	[illegible]	0.0C	85.8C	ZERO CO / 85.41 ppm NO ALM038783
01/19/96	06:45	3.2C	11.1C	71.1C	
01/19/96	06:46	3.1C	362.1C	1.3C	
01/19/96	06:47	3.0C	454.9C	0.7C	
01/19/96	06:48	3.1C	456.6C	0.5C	
01/19/96	06:49	3.3C	457.4C	0.4C	
01/19/96	06:50	3.1C	460.5C	0.3C	469 ppm CO BLM003332
01/19/96	06:51	3.0C	428.4C	13.4C	
01/19/96	06:52	3.0C	52.0C	44.7C	
01/19/96	06:53	3.3C	0.0C	46.5C	46.2 ppm NO BAL3110
01/19/96	06:54	2.6C	27.3C	30.0C	
01/19/96	06:55	2.4C	227.9C	1.0C	
01/19/96	06:56	2.7C	247.6C	0.6C	247.1 ppm CO ALM030956
01/19/96	06:57	2.7C	247.1C	0.5C	
01/19/96	06:58	2.8C	234.9C	4.0C	
01/19/96	06:59	2.9C	36.7C	18.3C	
01/19/96	07:00	2.9C	0.5C	19.9C	20.1 ppm NO BAL1808
01/19/96	07:01	3.0C	1.2C	19.5C	
01/19/96	07:02	3.2C	59.2C	1.2C	
01/19/96	07:03	3.2C	85.4C	4.3C	85.86 BAL4419
01/19/96	07:04	3.2C	85.1C	21.4C	— START NOX CONV. CHECK
01/19/96	07:05	3.0C	31.8C	21.6C	
01/19/96	07:06	1.3C	1.2C	21.7C	
01/19/96	07:07	0.4C	0.5C	21.8C	
01/19/96	07:08	0.3C	0.6C	21.9C	ZERO N2 SG9101682ALC
01/19/96	07:09	62.1C	2.0C	22.0C	
01/19/96	07:10	88.9C	1.2C	22.1C	
01/19/96	07:11	88.5C	1.1C	22.1C	88.51 ppm Propane BLM001578
01/19/96	07:12	52.6C	1.0C	22.2C	
01/19/96	07:13	22.6C	0.5C	22.2C	
01/19/96	07:14	47.3C	0.5C	22.3C	47.09 ppm Propane ALM048174
01/19/96	07:15	46.5C	0.5C	22.2C	
01/19/96	07:16	5.1C	0.5C	22.3C	
01/19/96	07:17	6.7C	0.5C	22.3C	
01/19/96	07:18	23.3C	0.5C	22.4C	23.23 ppm Propane BLM003402
01/19/96	07:19	23.2C	0.5C	22.4C	

[illegible]
[illegible]
[illegible]
[illegible] RTO STACK
Page : 2

		THC PPM	CO PPM	NOX PPM	
01/19/96	07:20	[illegible]	0.6C	22.4C	
01/19/96	07:21	1.8C	0.6C	22.4C	
01/19/96	07:22	2.3C	1.1C	22.5C	
01/19/96	07:23	2.1C	2.3C	22.5C	
01/19/96	07:24	1.8C	2.3C	22.5C	
01/19/96	07:25	2.3C	2.4C	22.5C	
01/19/96	07:26	3.0C	2.5C	22.6C	
01/19/96	07:27	1.9C	2.4C	22.6C	
01/19/96	07:28	1.7C	2.7C	22.6C	
01/19/96	07:29	2.0C	2.8C	22.6C	
01/19/96	07:30	2.5C	3.0C	22.6C	
01/19/96	07:31	2.3C	2.7C	22.6C	
01/19/96	07:32	1.6C	2.5C	22.6C	
01/19/96	07:33	2.4C	2.5C	22.7C	
01/19/96	07:34	2.6C	2.5C	22.7C	– END NOX CONV. CHECK
01/19/96	07:35	2.0C	2.9C	22.7C	
01/19/96	07:36	2.0C	1.2C	29.4C	
01/19/96	07:37	2.2C	0.7C	49.1C	
01/19/96	07:38	2.9C	$\boxed{0.5C}$	$\boxed{49.5C}$	ZERO CO / 46.2 ppm NO BIAS CK. BIAS CK
01/19/96	07:39	1.7C	0.3C	49.4C	
01/19/96	07:40	1.4C	22.4C	31.5C	
01/19/96	07:41	2.0C	211.8C	1.8C	
01/19/96	07:42	2.6C	245.0C	1.3C	
01/19/96	07:43	1.9C	245.2C	1.1C	
01/19/96	07:44	1.7C	$\boxed{245.5C}$	$\boxed{1.0C}$	247.1 ppm CO BIAS CK. / ZERO BIAS CK.
01/19/96	07:45	2.1C	156.2C	0.9C	
01/19/96	07:46	2.5C	4.7C	0.9C	
01/19/96	07:47	1.6C	0.5C	0.8C	
01/19/96	07:48	1.5C	1.5C	0.8C	
01/19/96	07:49	1.5C	3.9C	0.8C	
01/19/96	07:50	1.4C	4.6C	0.6C	
01/19/96	07:51	2.3C	11.7C	6.0C	
01/19/96	07:52	2.5C	77.0C	14.8C	
AVERAGES :		8.4	67.3	22.0	

Auxiliary Average Report

[illegible] Site Name: [illegible] Aux Interval : 1 Date : 1/19/96

RUN #1 Formaldehyde

Time	THC PPM	CO PPM	NOX PPM
08:21	2.0000	31.8000	9.8000
08:22	3.1000	67.3000	17.3000
08:23	2.1000	73.2000	17.4000
08:24	1.8000	31.2000	11.5000
08:25	2.5000	36.2000	14.9000
08:26	2.6000	81.3000	14.1000
08:27	2.1000	54.6000	15.2000
08:28	2.0000	28.1000	14.3000
08:29	3.2000	47.8000	13.4000
08:30	2.4000	80.2000	18.0000
08:31	1.7000	40.9000	10.9000
08:32	2.1000	28.2000	15.0000
08:33	2.5000	62.1000	18.4000
08:34	2.3000	77.6000	16.7000
08:35	2.0000	32.7000	10.6000
08:36	2.5000	34.4000	12.9000
08:37	2.9000	72.2000	16.1000
08:38	2.2000	58.4000	17.0000
08:39	1.6000	27.7000	10.8000
08:40	2.4000	38.9000	11.5000
08:41	2.9000	77.6000	16.3000
08:42	1.9000	42.8000	13.5000
08:43	2.3000	25.9000	14.3000
08:44	2.4000	47.6000	14.8000
08:45	2.5000	70.1000	15.4000
08:46	1.6000	37.0000	12.8000
08:47	1.7000	21.5000	13.5000
08:48	2.6000	27.4000	13.0000
08:49	2.3000	71.9000	18.5000
08:50	2.2000	49.9000	12.4000
08:51	1.6000	28.0000	13.2000
08:52	3.1000	34.0000	16.1000
08:53	2.5000	78.2000	19.6000
08:54	1.7000	43.1000	12.9000
08:55	1.9000	26.8000	9.9000
08:56	2.4000	40.1000	15.9000
08:57	2.4000	73.2000	18.2000
08:58	1.9000	36.6000	12.4000
08:59	2.0000	26.0000	14.6000
09:00	2.7000	50.2000	13.6000
09:01	2.1000	63.9000	15.6000
09:02	1.8000	31.3000	13.9000
09:03	2.1000	26.3000	13.0000
09:04	2.9000	56.0000	18.6000
09:05	2.0000	56.7000	12.9000
09:06	1.9000	29.7000	14.3000
09:07	2.1000	27.5000	14.9000
09:08	2.7000	61.6000	18.1000
09:09	2.4000	57.6000	16.5000
09:10	1.6000	30.7000	9.8000
09:11	2.0000	23.0000	14.4000
09:12	2.9000	40.3000	17.8000
09:13	2.4000	71.4000	16.3000
09:14	2.1000	[illegible]	14.9000
09:15	1.6000	25.7000	9.4000

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]:18	1.9000	[illegible]	[illegible]
09:19	2.1000	[illegible]7.7000	13.4000
[illegible]	[illegible]	44.7000	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible].9000	[illegible]	16.2000
09:23	1.6000	24.3000	12.0000
09:24	[illegible]	27.3000	12.7000
09:25	3.0000	69.0000	18.2000
09:26	2.1000	5[illegible].4000	14.4000
09:27	2.0000	28.8000	16.3000
09:28	2.0000	29.6000	12.4000
09:29	2.7000	70.4000	20.1000
09:30	2.0000	52.2000	13.4000
09:31	1.8000	29.7000	14.5000
09:32	1.7000	22.4000	15.2000
09:33	1.1000	16.4000	12.2000
09:34	1.3000	12.6000	9.6000
09:35	1.0000	11.9000	12.7000
09:36	1.9000	17.0000	13.2000
09:37	2.9000	55.4000	21.1000
09:38	1.8000	67.7000	16.0000
09:39	1.9000	32.7000	11.2000
09:40	1.3000	20.8000	13.3000
09:41	2.0000	19.4000	14.2000
09:42	3.2000	44.3000	19.3000
09:43	2.0000	77.2000	17.3000
09:44	2.2000	34.9000	11.1000
09:45	2.0000	29.0000	14.6000
MAX :	3.2000	81.3000	21.1000
MIN :	1.0000	11.9000	9.4000
AVG :	2.1800	43.8506	14.6294
SCANS:	~~85~~ 81	~~85~~ 81	~~85~~ 81

PLANT DOWN

[illegible] 011
[illegible]
SILSBEE TEXAS
PRESS RTO STACK
Page : 1

		THC PPM	CO PPM	NOX PPM	
01/19/96	09:50	0.3C	80.8C	19.2C	
01/19/96	09:51	0.4C	51.5C	15.7C	
01/19/96	09:52	0.2C	27.7C	12.7C	ZERO N_2
01/19/96	09:53	35.8C	46.8C	16.8C	
01/19/96	09:54	47.4C	78.4C	15.4C	47.09 ppm Propane
01/19/96	09:55	47.0C	36.5C	14.7C	
01/19/96	09:56	31.7C	26.6C	14.2C	
01/19/96	09:57	2.2C	50.4C	13.2C	
01/19/96	09:58	2.4C	20.7C	41.5C	
01/19/96	09:59	1.6C	0.1C	48.6C	
01/19/96	10:00	2.5C	-0.1C	49.2C	ZERO CO/SPAN NOX
01/19/96	10:01	2.7C	1.7C	47.0C	
01/19/96	10:02	2.0C	159.7C	4.0C	
01/19/96	10:03	2.0C	244.6C	2.5C	
01/19/96	10:04	2.3C	244.6C	1.9C	
01/19/96	10:05	3.3C	244.7C	1.2C	
01/19/96	10:06	2.0C	245.2C	0.7C	
01/19/96	10:07	2.1C	245.3C	0.5C	SPAN CO/ZERO NOX
01/19/96	10:08	2.9C	158.2C	0.6C	
01/19/96	10:09	2.2C	7.1C	2.0C	
01/19/96	10:10	2.0C	25.4C	13.8C	
01/19/96	10:11	2.3C	30.2C	16.1C	
01/19/96	10:12	3.0C	68.1C	16.2C	
01/19/96	10:13	2.2C	64.4C	15.5C	
01/19/96	10:14	1.9C	31.9C	10.7C	
AVERAGES :		8.2	87.6	15.8	

Auxiliary Average Report

[illegible] : 07   [illegible] Name : [illegible]   Aux Interval : 1   Date : 1/[illegible]/96

RUN 2 (PART/SO2)

Time	THC PPM	CO PPM	NOX PPM
10:39	2.6000	74.4000	18.4000
10:40	1.9000	46.8000	15.7000
10:41	1.9000	25.5000	12.2000
10:42	2.9000	38.5000	16.3000
10:43	2.3000	74.2000	16.2000
10:44	2.0000	37.2000	15.1000
10:45	2.1000	26.5000	15.3000
10:46	2.6000	53.2000	16.7000
10:47	2.4000	66.0000	17.3000
10:48	1.6000	30.9000	9.9000
10:49	2.5000	30.3000	15.4000
10:50	2.5000	71.5000	19.5000
10:51	2.0000	52.7000	14.2000
10:52	2.1000	26.7000	14.7000
10:53	2.3000	36.6000	11.6000
10:54	3.0000	74.9000	18.8000
10:55	1.9000	40.6000	16.0000
10:56	1.9000	25.3000	11.9000
10:57	2.6000	41.6000	16.4000
10:58	2.1000	71.9000	15.5000
10:59	1.9000	32.9000	14.8000
11:00	2.1000	28.8000	16.2000
11:01	2.7000	63.9000	17.2000
11:02	2.0000	55.2000	16.6000
11:03	1.7000	28.0000	10.9000
11:04	2.5000	33.2000	15.5000
11:05	2.7000	77.0000	21.2000
11:06	1.7000	43.8000	14.3000
11:07	2.1000	24.9000	11.6000
11:08	3.0000	46.0000	15.0000
11:09	2.0000	72.7000	18.9000
11:10	2.0000	32.9000	16.0000
11:11	1.7000	26.7000	13.0000
11:12	2.7000	56.5000	16.9000
11:13	1.8000	62.0000	15.4000
11:14	1.8000	27.7000	14.6000
11:15	2.7000	32.8000	16.0000
11:16	2.3000	72.4000	18.2000
11:17	2.1000	45.8000	12.2000
11:18	1.8000	26.2000	14.2000
11:19	3.2000	44.0000	17.3000
11:20	2.3000	77.7000	19.5000
11:21	1.7000	35.2000	13.6000
11:22	2.2000	26.3000	10.9000
11:23	2.9000	57.2000	17.5000
11:24	2.1000	65.2000	17.0000
11:25	1.9000	28.5000	12.9000
11:26	2.2000	30.1000	15.4000
11:27	2.5000	98.6000	16.8000
11:28	1.9000	52.7000	15.5000
11:29	1.9000	25.5000	14.2000
11:30	2.5000	39.2000	14.5000
[illegible]	[illegible]	[illegible]	[illegible]
11:32	1.8000	39.5000	11.6000

11:34	3.0000	51.4000	18.6000
11:35	2.1000	75.6000	17.0000
11:36	2.0000	31.9000	14.9000
11:37	[illegible]	29.5000	16.3000
11:38	3.0000	64.5000	18.8000
11:39	1.9000	61.7000	17.9000
11:40	1.8000	26.6000	12.6000
11:41	2.3000	32.7000	16.0000
11:42	2.4000	77.4000	16.2000
11:43	2.0000	46.3000	15.2000
11:44	1.9000	26.1000	16.2000
11:45	3.0000	49.3000	15.8000
11:46	2.2000	71.5000	18.4000
11:47	1.6000	33.1000	11.1000
11:48	2.3000	28.4000	15.2000
11:49	2.7000	64.5000	20.4000
11:50	2.1000	63.6000	15.6000
11:51	1.9000	26.4000	12.3000
11:52	2.3000	30.4000	12.0000
11:53	2.7000	72.4000	20.1000
11:54	2.2000	60.6000	17.8000
11:55	1.5000	28.5000	12.8000
11:56	1.5000	19.1000	9.9000
MAX :	3.2000	77.7000	21.2000
MIN :	1.5000	19.1000	9.9000
AVG :	2.2167	46.1051	15.4103
SCANS:	78	78	78

[illegible]
[illegible] SOUTHWEST
[illegible]LEBEE TXXAS
PRESS RTO STACK
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		THC PPM	CO PPM	NOX PPM	
01/19/96	12:02	0.6C	30.1C	13.5C	
01/19/96	12:0[illegible]	0.4C	19.2C	14.3C	
01/19/96	12:04	$\boxed{0.3C}$	15.1C	13.3C	ZERO N2
01/19/96	12:05	4.0C	18.0C	13.9C	
01/19/96	12:06	47.3C	49.2C	16.3C	
01/19/96	12:07	$\boxed{47.3C}$	84.6C	17.8C	47.09ppm Propane
01/19/96	12:08	23.2C	34.8C	15.1C	
01/19/96	12:09	1.2C	21.4C	13.0C	
01/19/96	12:10	2.1C	9.4C	36.4C	
01/19/96	12:11	2.7C	-0.1C	48.2C	
01/19/96	12:12	1.7C	$\boxed{-0.1C}$	$\boxed{48.8C}$	ZERO CO / SPAN NOX
01/19/96	12:13	2.0C	83.2C	15.5C	
01/19/96	12:14	3.2C	240.4C	0.6C	
01/19/96	12:15	2.2C	244.0C	0.5C	
01/19/96	12:16	1.8C	$\boxed{244.9C}$	$\boxed{0.4C}$	SPAN CO/ZERO NOX
AVERAGES :		9.3	72.9	17.8	

Auxiliary Average Report

[illegible] : 07 Site Name : [illegible] Aux Interval : 1 Date : [illegible]

RUN 2 (FORMALDEHYDE)

Time	THC PPM	CO PPM	NOX PPM
13:01	1.8000	24.4000	14.6000
13:02	3.2000	38.7000	17.2000
13:03	2.4000	77.8000	20.3000
13:04	1.9000	40.0000	14.7000
13:05	1.6000	21.8000	9.1000
13:06	2.0000	23.4000	15.1000
13:07	2.9000	63.2000	19.7000
13:08	2.0000	61.4000	16.4000
13:09	2.0000	26.3000	14.2000
13:10	2.2000	28.9000	10.2000
13:11	3.0000	72.7000	20.2000
13:12	1.9000	50.8000	16.5000
13:13	1.8000	25.2000	12.4000
13:14	2.1000	19.2000	14.6000
13:15	2.4000	41.3000	12.4000
13:16	2.6000	72.7000	18.7000
13:17	1.9000	33.1000	15.2000
13:18	2.2000	25.4000	12.8000
13:19	3.0000	51.9000	19.1000
13:20	2.0000	65.7000	14.0000
13:21	2.1000	28.3000	15.0000
13:22	2.3000	30.3000	15.7000
13:23	3.1000	70.4000	18.7000
13:24	2.1000	49.2000	14.6000
13:25	1.9000	25.8000	10.5000
13:26	2.6000	37.1000	17.6000
13:27	2.4000	76.0000	20.5000
13:28	1.9000	38.6000	14.0000
13:29	2.0000	25.2000	11.8000
13:30	2.9000	49.3000	15.8000
13:31	2.2000	69.6000	17.1000
13:32	2.1000	30.7000	16.4000
13:33	2.0000	27.0000	12.6000
13:34	3.1000	59.2000	18.4000
13:35	2.0000	58.4000	13.8000
13:36	1.9000	26.4000	14.3000
13:37	2.8000	30.3000	16.0000
13:38	2.4000	73.9000	19.0000
13:39	2.3000	45.6000	13.1000
13:40	1.9000	26.9000	12.9000
13:41	2.7000	41.5000	17.3000
13:42	2.7000	78.7000	20.0000
13:43	1.7000	35.6000	13.4000
13:44	2.3000	26.8000	10.5000
13:45	2.9000	57.3000	18.7000
13:46	2.2000	64.4000	17.6000
13:47	2.0000	28.6000	13.0000
13:48	[illegible]	29.1000	[illegible]
13:49	[illegible]	68.5000	17.5000
13:50	1.9000	50.1000	15.7000
[illegible]	[illegible]	25.6000	14.8000
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	2.5000	75.1000	19.7000

13:55	1.9000	25.8000	15.2000
13:56	3.1000	52.1000	20.6000
13:57	2.1000	73.2000	17.5000
13:58	2.1000	30.[illegible]000	15.1000
[illegible]	[illegible]	30.1000	[illegible]
[illegible]	[illegible]	[illegible]	19.8000
14:01	1.9000	54.4000	17.4000
14:02	1.9000	26.6000	12.6000
14:03	2.4000	31.6000	16.2000
14:04	2.3000	77.4000	17.0000
14:05	2.1000	43.6000	16.2000
14:06	2.1000	26.5000	14.9000
14:07	3.0000	46.7000	16.8000
14:08	2.4000	74.9000	19.0000
14:09	1.7000	33.7000	10.9000
14:10	2.5000	28.2000	15.8000
14:11	2.9000	64.7000	20.3000
14:12	2.2000	66.4000	15.5000
14:13	2.0000	28.1000	13.5000
14:14	2.5000	33.6000	12.1000
14:15	2.7000	73.0000	20.0000
14:16	2.0000	51.0000	17.4000
14:17	1.9000	26.0000	12.6000
14:18	2.4000	39.0000	15.3000
14:19	2.6000	82.6000	18.0000
14:20	2.0000	37.4000	14.4000
14:21	2.4000	27.4000	16.7000
MAX :	3.2000	82.6000	20.6000
MIN :	1.6000	19.2000	9.1000
AVG :	2.2926	45.0309	15.6383
SCANS:	81	81	81

[illegible] 011
ERM SOUTHWEST
SILSBEE TEXAS
PRESS RTO STACK
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		THC PPM	CO PPM	NOX PPM	
01/19/96	14:25	0.6C	30.0C	15.5C	
01/19/96	14:26	0.3C	73.2C	21.2C	
01/19/96	14:27	0.2C	61.6C	15.1C	ZERO N_2
01/19/96	14:28	38.4C	27.2C	9.8C	
01/19/96	14:29	47.0C	37.4C	14.7C	
01/19/96	14:30	46.9C	80.9C	20.5C	
01/19/96	14:31	47.1C	44.8C	15.6C	47.09 ppm Propane
01/19/96	14:32	2.9C	26.7C	13.7C	
01/19/96	14:33	2.8C	36.8C	12.1C	
01/19/96	14:34	1.9C	8.2C	43.4C	
01/19/96	14:35	1.9C	-0.1C	48.3C	
01/19/96	14:36	2.4C	-0.1C	48.7C	
01/19/96	14:37	2.8C	-0.1C	48.8C	ZERO CO/SPAN NOX
01/19/96	14:38	2.3C	2.0C	45.5C	
01/19/96	14:39	1.7C	158.5C	3.3C	
01/19/96	14:40	2.8C	242.3C	0.6C	
01/19/96	14:41	2.4C	243.4C	0.4C	
01/19/96	14:42	2.0C	243.5C	0.4C	
01/19/96	14:43	1.9C	243.6C	0.4C	SPAN CO/ZERO NOX
01/19/96	14:44	2.4C	183.6C	0.6C	
01/19/96	14:45	2.8C	12.5C	0.7C	
AVERAGES :		10.2	83.6	18.1	

Auxiliary Average Report

[illegible] : 07   Site Name : PRESSTR   Aux Interval : 1   Date : 1/19/96

RUN 3 (Part/50z)

Time	THC PPM	CO PPM	NOX PPM
14:58	1.9000	28.1000	9.6000
14:59	3.3000	52.8000	19.2000
15:00	2.2000	79.0000	19.5000
15:01	2.0000	32.9000	12.5000
15:02	2.4000	32.1000	14.0000
15:03	3.0000	71.2000	15.9000
15:04	2.1000	55.2000	15.6000
15:05	2.2000	27.4000	15.9000
15:06	2.7000	40.0000	14.0000
15:07	2.6000	76.7000	19.6000
15:08	1.8000	43.1000	11.6000
15:09	[illegible]	[illegible]4.3000	16.2000
15:10	3.3000	46.5000	16.3000
15:11	2.1000	83.9000	18.8000
15:12	2.0000	34.3000	10.3000
15:13	1.4000	19.3000	11.8000
15:14	1.5000	12.9000	13.2000
15:15	1.6000	11.1000	11.9000
15:16	1.0000	9.5000	12.5000
15:17	1.5000	8.0000	8.7000
15:18	0.9000	8.0000	11.8000
15:19	1.2000	6.7000	12.3000
15:20	1.2000	6.5000	12.2000
15:21	0.9000	6.2000	12.6000
15:22	1.2000	5.7000	8.0000
15:23	0.8000	5.7000	12.9000
15:24	1.1000	5.2000	13.2000
15:25	1.1000	5.2000	11.5000
15:26	0.9000	5.3000	13.4000
15:27	0.9000	5.4000	9.0000
15:28	0.9000	5.3000	13.0000
15:29	0.8000	5.3000	13.0000
15:30	1.1000	5.1000	11.7000
15:31	1.0000	5.1000	13.4000
15:32	0.8000	5.2000	9.0000
15:33	0.8000	4.7000	13.0000
15:34	0.7000	4.5000	12.7000
15:35	1.0000	4.3000	11.4000
15:36	0.9000	4.2000	13.4000
15:37	0.6000	4.3000	9.1000
15:38	0.8000	4.0000	13.3000
15:39	0.7000	3.8000	13.4000
15:40	0.7000	3.7000	11.3000
15:41	0.9000	3.5000	13.2000
15:42	0.5000	4.2000	8.3000
15:43	0.7000	3.4000	13.5000
15:44	0.5000	3.6000	13.1000
15:45	0.6000	3.3000	11.9000
15:46	0.9000	3.4000	[illegible].7000
15:47	0.4000	3.9000	8.7000
15:48	0.7000	3.0000	13.5000
15:49	0.7000	3.2000	13.5000
[illegible]	[illegible]	[illegible]	[illegible]000
15:51	0.9000	3.4000	12.3000

PLANT DOWN

15:53	[illegible]	3.1000	13.1000
15:54	0.7000	3.4000	14.3000
15:55	0.4000	3.2000	[illegible]
[illegible]	[illegible]	3.1000	11.3000
15:57	[illegible]	3.6000	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
15:59	0.7000	3.1000	15.0000
16:00	0.3000	3.2000	11.3000
16:01	0.8000	3.0000	10.2000
16:02	0.3000	3.5000	11.8000
16:03	0.6000	2.9000	13.0000
16:04	0.7000	2.8000	14.7000
16:05	0.3000	3.1000	11.2000
16:06	0.8000	2.9000	10.7000
16:07	0.3000	3.3000	11.6000
16:08	0.6000	2.8000	13.2000
16:09	0.7000	2.7000	13.7000
16:10	0.4000	3.0000	11.7000
16:11	0.6000	2.8000	9.4000
16:12	0.4000	2.8000	12.5000
16:13	0.5000	2.6000	13.5000
16:14	0.7000	2.6000	13.1000
16:15	0.5000	2.7000	12.4000
16:16	0.5000	2.8000	9.3000
16:17	0.5000	2.7000	12.6000
16:18	0.4000	2.6000	13.3000
16:19	0.6000	2.3000	12.2000
16:20	0.5000	2.6000	13.3000
16:21	0.5000	2.8000	9.5000
16:22	0.6000	2.7000	12.7000
16:23	0.3000	2.7000	13.4000
16:24	0.6000	2.3000	12.1000
16:25	0.7000	2.8000	13.6000
16:26	1.2000	5.4000	9.9000
16:27	3.0000	23.1000	14.7000
16:28	2.3000	71.8000	18.4000
16:29	1.8000	38.9000	15.2000
16:30	1.8000	19.0000	13.0000
16:31	2.4000	26.8000	12.7000
16:32	3.0000	73.8000	18.7000
16:33	1.6000	42.8000	15.9000
16:34	2.2000	23.2000	13.1000
16:35	2.9000	45.6000	19.9000
16:36	2.0000	79.0000	20.8000
16:37	1.9000	31.5000	15.5000
16:38	2.1000	24.4000	15.5000
16:39	3.1000	58.4000	17.2000
16:40	2.1000	61.0000	15.3000
16:41	1.8000	25.5000	10.9000
16:42	2.8000	30.4000	14.7000
16:43	2.6000	75.9000	18.8000
16:44	2.0000	45.6000	13.7000
16:45	2.1000	22.7000	12.7000
16:46	3.3000	39.5000	13.7000
16:47	2.4000	77.3000	17.1000
16:48	3.1000	34.0000	16.6000
16:49	2.1000	25.2000	12.4000
16:50	3.0000	52.8000	17.3000
16:51	2.2000	69.3000	14.4000
[illegible]	[illegible]	[illegible]	[illegible]
16:53	[illegible]	[illegible]	[illegible]
16:54	2.8000	71.8000	16.7000
[illegible]	[illegible]	54.2000	13.7000
[illegible]	[illegible]	[illegible]	[illegible]
16:57	3.1000	38.1000	16.5000

16:59	1.9000	41.8000	13.4000
17:00	2.5000	24.7000	10.5000
17:01	3.3000	48.6000	16.7000
17:02	3.5000	77.0000	18.4000
17:03	2.2000	31.3000	14.0000
17:04	2.[illegible]	27.[illegible]	14.4000
17:05	3.1000	63.9000	16.5000
17:06	2.1000	63.4000	15.7000
17:07	2.1000	26.1000	14.0000
17:08	2.8000	29.9000	14.1000
17:09	3.1000	78.6000	19.7000
17:10	2.2000	48.9000	12.5000
17:11	2.2000	26.0000	14.7000
17:12	3.5000	44.2000	17.1000
17:13	2.5000	82.8000	18.8000
17:14	2.3000	36.8000	13.6000
MAX :	3.5000	84.3000	20.8000
MIN :	0.3000	2.3000	8.0000
AVG :	~~1.6163~~ 2.395✓	~~23.7073~~ 45.665	~~13.5786~~ 15.202
SCANS:	~~187~~	~~187~~ 57	~~187~~ 57

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1658	3.000	84.300	20.000

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SILSBEE TEXAS
PRESS RTO STACK
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		THC PPM	CO PPM	NOX PPM	
01/19/96	17:54	0.1C	83.0C	15.9C	ZERO N2
01/19/96	17:55	0.2C	39.3C	14.4C	
01/19/96	17:56	12.8C	27.3C	14.2C	
01/19/96	17:57	46.8C	56.4C	19.4C	
01/19/96	17:58	46.8C	74.4C	16.8C	47.09 ppm Propane
01/19/96	17:59	43.0C	30.8C	8.2C	
01/19/96	18:00	0.4C	26.9C	14.6C	
01/19/96	18:01	2.1C	70.7C	19.0C	
01/19/96	18:02	1.8C	47.9C	23.4C	
01/19/96	18:03	2.0C	5.5C	43.4C	
01/19/96	18:04	2.3C	1.9C	46.6C	
01/19/96	18:05	2.5C	1.7C	46.6C	
01/19/96	18:06	1.9C	1.9C	46.5C	
01/19/96	18:07	1.9C	1.6C	46.1C	
01/19/96	18:08	3.0C	0.0C	48.4C	
01/19/96	18:09	1.9C	-0.1C	49.1C	
01/19/96	18:10	2.0C	-0.1C	49.2C	ZERO CO/SPAN NOX
01/19/96	18:11	2.1C	31.1C	28.7C	
01/19/96	18:12	3.0C	222.3C	0.9C	
01/19/96	18:13	2.1C	242.8C	0.5C	SPAN CO/ZERO NOX
AVERAGES :		8.9	48.3	27.6	

Auxiliary Average Report

DCNID : 07 Site Name : PRESSSTK Aux Interval : 1 Date : 1/19/96

RUN 3 [formaldehyde]

Time	THC PPM	CO PPM	NOX PPM
18:18	2.0000	26.4000	13.2000
18:19	2.7000	37.2000	13.1000
18:20	2.4000	69.4000	17.9000
18:21	2.1000	36.2000	16.5000
18:22	1.9000	26.0000	11.9000
18:23	2.7000	42.8000	17.8000
18:24	2.2000	65.3000	13.8000
18:25	2.0000	31.0000	14.1000
18:26	2.6000	28.5000	15.9000
18:27	2.5000	62.0000	17.7000
18:28	2.3000	49.3000	13.8000
18:29	1.9000	28.2000	12.1000
18:30	2.4000	33.7000	17.9000
18:31	3.1000	74.8000	20.4000
18:32	1.9000	43.4000	14.4000
18:33	2.1000	24.6000	8.9000
18:34	2.4000	30.2000	15.2000
18:35	2.7000	68.8000	20.3000
18:36	2.2000	43.9000	15.1000
18:37	1.9000	27.4000	14.0000
18:38	3.0000	48.0000	14.4000
18:39	2.1000	65.7000	16.4000
18:40	2.1000	31.2000	14.3000
18:41	2.6000	30.3000	13.8000
18:42	2.6000	72.4000	19.6000
18:43	2.3000	43.1000	11.1000
18:44	2.1000	28.8000	14.6000
18:45	3.0000	55.2000	18.4000
18:46	2.2000	64.8000	16.6000
18:47	2.1000	29.9000	13.7000
18:48	2.4000	31.4000	10.5000
18:49	2.7000	71.6000	18.4000
18:50	2.0000	43.0000	14.8000
18:51	2.2000	27.4000	12.9000
18:52	3.0000	51.2000	18.2000
18:53	2.1000	62.6000	13.2000
18:54	2.2000	29.6000	14.6000
18:55	2.6000	37.9000	16.1000
18:56	2.5000	74.8000	17.3000
18:57	2.2000	37.4000	14.7000
18:58	2.1000	28.8000	9.4000
18:59	3.2000	60.3000	18.3000
19:00	2.1000	58.1000	16.7000
19:01	2.2000	28.9000	13.0000
19:02	2.8000	41.8000	17.4000
19:03	2.1000	70.9000	13.5000
19:04	2.2000	32.3000	14.8000
[illegible]	2.1000	[illegible]	[illegible]
19:06	3.0000	67.0000	18.5000
19:07	2.1000	47.7000	12.8000
[illegible]	[illegible]	[illegible]	[illegible]
19:09	2.3000	24.2000	14.5000
[illegible]	[illegible]	31.2000	10.8000

19:12	2.0000	26.1000	11.4000
19:13	3.0000	30.2000	13.8000
19:14	2.3000	74.6000	18.3000
19:15	2.1000	36.6000	16.3000
19:16	2.0000	28.6000	12.4000
19:17	3.1000	61.4000	17.8000
19:18	1.9000	55.8000	13.5000
19:19	2.0000	26.9000	14.2000
19:20	3.2000	42.0000	18.6000
19:21	2.2000	75.1000	17.8000
19:22	2.0000	33.0000	8.0000
19:23	2.3000	30.2000	14.5000
19:24	2.7000	70.5000	20.1000
19:25	2.1000	49.2000	15.2000
19:26	1.6000	25.4000	13.2000
19:27	1.7000	17.7000	8.1000
19:28	2.0000	22.4000	14.0000
19:29	3.1000	62.4000	20.0000
19:30	2.1000	58.0000	16.5000
19:31	1.7000	26.6000	13.4000
19:32	1.6000	16.9000	7.7000
19:33	1.9000	20.4000	14.3000
19:34	3.0000	61.9000	19.8000
19:35	2.0000	61.9000	15.5000
MAX :	3.2000	75.1000	20.4000
MIN :	1.6000	16.9000	7.7000
AVG :	2.3128	44.0974	15.0154
SCANS:	78	78	78

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ERM SOUTHWEST
SILSBEE TEXAS
PRESS RTO STACK
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		THC PPM	CO PPM	NOX PPM	
01/19/96	19:42	0.1C	2.9C	0.7C	
01/19/96	19:43	0.0C	2.9C	0.7C	
01/19/96	19:44	0.0C	2.9C	0.7C	ZERO N2/
01/19/96	19:45	31.1C	2.9C	0.7C	
01/19/96	19:46	48.5C	2.9C	0.7C	
01/19/96	19:47	46.4C	2.9C	0.6C	47.09 ppm Propane
01/19/96	19:48	42.5C	2.9C	0.7C	
01/19/96	19:49	1.1C	3.3C	0.8C	
01/19/96	19:50	5.1C	2.1C	32.7C	
01/19/96	19:51	5.3C	-0.1C	47.4C	
01/19/96	19:52	5.4C	-0.1C	48.1C	ZERO CO/SPAN NOX
01/19/96	19:53	5.4C	3.3C	40.4C	
01/19/96	19:54	5.8C	184.4C	0.4C	
01/19/96	19:55	7.0C	244.5C	0.2C	
01/19/96	19:56	7.2C	244.4C	0.2C	
01/19/96	19:57	7.2C	244.6C	0.2C	SPAN CO/ZERO NOX
01/19/96	19:58	7.2C	242.7C	0.2C	
AVERAGES :		13.1	70.0	10.3	

Press House Number 1 Vent Duct
Oxides of Nitrogen
Concentration

Particulate Matter Tests

Run Number	Measured (ppm)	Adjusted (ppm*)
1	0.5	0.4
2	0.7	0.7
3	0.4	0.3

*Calculated according to equation 6C-1.

Press House Number 1 Vent Duct
Calibration Summary
Oxides of Nitrogen

Particulate Matter Tests

Run Number	NOx Calibration Initial Drift Check (ppm)	NOx Calibration Final Drift Check (ppm)	Average (ppm)	NOx Zero Initial Drift Check (ppm)	NOx Zero Final Drift Check (ppm)	Average (ppm)	Actual NOx Calibration Value (ppm)	Actual NOx Zero Value (ppm)
1	48.0	50.5	49.3	0.1	0.0	0.1	46.2	0.0
2	46.1	47.4	46.8	0.0	0.0	0.0	46.2	0.0
3	48.2	48.9	48.6	0.1	0.0	0.1	46.2	0.0

Press House Number 1 Vent Duct
Oxides of Nitrogen
Concentration

Formaldehyde Tests

Run Number	Measured (ppm)	Adjusted (ppm*)
1	0.4	0.2
2	0.7	0.6
3	0.4	0.4

*Calculated according to equation 6C-1.

Press House Number 1 Vent Duct
Calibration Summary
Oxides of Nitrogen

FormaldehydeTests

Run Number	NOx Calibration Initial Drift Check (ppm)	NOx Calibration Final Drift Check (ppm)	Average (ppm)	NOx Zero Initial Drift Check (ppm)	NOx Zero Final Drift Check (ppm)	Average (ppm)	Actual NOx Calibration Value (ppm)	Actual NOx Zero Value (ppm)
1	47.6	46.1	46.9	0.3	0.0	0.2	46.2	0.0
2	47.4	48.2	47.8	0.0	0.1	0.1	46.2	0.0
3	48.9	48.2	48.6	0.0	0.0	0.0	46.2	0.0

ERM SOUTHWEST
PRESS HOUSE VENT INLET DUCT
SILSBEE, TEXAS
96 011
Page : 1

Init Cal + Bias + NOx Conv. ✓

		THC PPM	CO PPM	NOX PPM	
01/18/96	15:50	-0.4C	0.3C	0.1C	
01/18/96	15:51	-0.4C	0.3C	0.1C	
01/18/96	15:52	-0.3C	0.2C	0.1C	
01/18/96	15:53	0.1C	0.0C	0.0C	Zero CO Init
01/18/96	15:54	0.2C	3.1C	[illegible]	Zero NOx Init
01/18/96	15:55	0.1C	69.3C	0.0C	
01/18/96	15:56	0.0C	83.3C	0.0C	
01/18/96	15:57	0.0C	84.4C	0.0C	
01/18/96	15:58	0.0C	85.6C	0.0C	
01/18/96	15:59	-0.1C	[illegible]	0.0C	85.86 CO Bias Init AL1113
01/18/96	16:00	-0.1C	68.6C	33.2C	
01/18/96	16:01	-0.1C	2.4C	74.0C	
01/18/96	16:02	0.0C	-0.1C	76.0C	
01/18/96	16:03	0.1C	[illegible]	84.7C	Zero CO Init.
01/18/96	16:04	0.2C	-0.1C	[illegible]	86.13 NOx Init
01/18/96	16:05	[illegible]	10.8C	45.0C	Zero Propane Init
01/18/96	16:06	-0.8C	80.9C	0.1C	
01/18/96	16:07	-0.7C	[illegible]	[illegible]	85.86 CO / Zero NOx
01/18/96	16:08	518.3C	83.3C	20.8C	
01/18/96	16:09	749.5C	22.3C	85.7C	
01/18/96	16:10	939.6C	10.0C	86.8C	
01/18/96	16:11	984.9C	10.6C	86.0C	
01/18/96	16:12	993.8C	1.1C	87.7C	
01/18/96	16:13	994.7C	-0.1C	87.5C	
01/18/96	16:14	982.2C	-0.1C	86.3C	
01/18/96	16:15	982.5C	-0.1C	[illegible]	85.86 CO
01/18/96	16:16	986.7C	12.6C	27.3C	
01/18/96	16:17	999.9C	40.5C	0.1C	
01/18/96	16:18	979.3C	[illegible]	[illegible]	42.79 CO BAL354 / Zero NOx
01/18/96	16:19	963.5C	40.7C	10.0C	
01/18/96	16:20	965.4C	12.2C	86.4C	
01/18/96	16:21	964.7C	-0.1C	[illegible]	86.13 NOx
01/18/96	16:22	[illegible]	-0.1C	50.6C	979.5 Propane Init
01/18/96	16:23	970.5C	-0.1C	0.1C	
01/18/96	16:24	969.7C	-0.1C	0.0C	
01/18/96	16:25	844.9C	14.7C	12.2C	
01/18/96	16:26	69.3C	9.4C	44.5C	
01/18/96	16:27	3.8C	0.0C	47.3C	
01/18/96	16:28	2.5C	0.0C	[illegible]	46.22 NOx BLM003059
01/18/96	16:29	-0.1C	0.9C	47.1C	
01/18/96	16:30	-0.5C	6.4C	9.9C	
01/18/96	16:31	-0.7C	1.4C	4.1C	
01/18/96	16:32	[illegible]	0.3C	2.2C	Zero THC
01/18/96	16:33	-0.9C	[illegible]	11.8C	Zero ~~THC~~ CO Bias
01/18/96	16:34	229.6C	0.0C	43.2C	Begin NOx Conv. ✓

96-011
ERM Southwest
Silsbee, Tx.
Press House Inlet Duct (South)
1-18-96
PAS #11
SU886

THC Analyzer
JUM Engineering
Model VE-7
SU S3

CO Analyzer
TECO
Model 48
SU S1

NOx Analyzer
TECO
Model 10S
SU 10S-39471-26

Leak 1/18 15"Hg 0.000

Auxiliary Average Report

DCHID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/18/96

RUN 1 Part

Time	THC PPM	CO PPM	NOX PPM
18:35	112.0000	2.6000	0.9000
18:36	46.0000	2.8000	0.6000
18:37	62.2000	2.7000	0.4000
18:38	114.4000	2.7000	0.9000
18:39	58.9000	2.7000	0.8000
18:40	46.9000	2.4000	0.4000
18:41	92.1000	2.4000	0.6000
18:42	103.6000	2.4000	0.9000
18:43	44.9000	2.1000	0.5000
18:44	63.9000	1.8000	0.4000
18:45	122.4000	1.9000	0.9000
18:46	58.3000	2.0000	0.7000
18:47	48.5000	1.7000	0.4000
18:48	98.0000	1.7000	0.7000
18:49	88.0000	2.0000	0.9000
18:50	44.4000	1.9000	0.5000
18:51	33.9000	1.7000	0.3000
18:52	29.7000	1.6000	0.2000
MAX :	122.4000	2.8000	0.9000
MIN :	29.7000	1.6000	0.2000
AVG :	70.4500	2.1722	0.6111
SCANS:	18	18	18

Auxiliary Average Report

DCNID : 11   Site Name : INLET DT   Aux Interval : 1   Date : 1/18/96

Time	THC PPM	CO PPM	NOX PPM	ZOO: PAH
19:05	46.8000	1.9000	0.5000	
19:06	32.4000	1.6000	0.2000	
19:07	38.0000	1.5000	0.2000	
19:08	105.5000	1.7000	0.5000	
19:09	118.7000	2.1000	0.9000	
19:10	48.2000	2.0000	0.5000	
19:11	75.2000	1.8000	0.4000	
19:12	131.7000	1.9000	0.9000	
19:13	57.1000	1.9000	0.6000	
19:14	48.1000	1.7000	0.3000	
19:15	103.9000	1.8000	0.6000	
19:16	100.7000	2.1000	0.9000	
19:17	44.9000	1.8000	0.5000	
19:18	65.0000	1.7000	0.4000	
19:19	124.4000	1.8000	0.8000	
19:20	67.6000	1.9000	0.7000	
19:21	40.5000	1.7000	0.4000	
19:22	36.4000	1.5000	0.3000	
MAX :	131.7000	2.1000	0.9000	
MIN :	32.4000	1.5000	0.2000	
AVG :	71.3944	1.8000	0.5333	
SCANS:	18	18	18	

Auxiliary Average Report

DCNID : 11   Site Name : INLET DT   Aux Interval : 1   Date : 1/18/96

Time	THC PPM	CO PPM	NOX PPM	Run 1 Part.
19:27	113.8000	1.9000	0.6000	
19:28	97.4000	2.2000	0.9000	
19:29	46.2000	2.1000	0.5000	
19:30	49.5000	1.9000	0.3000	
19:31	119.3000	1.9000	0.6000	
19:32	92.7000	2.2000	0.9000	
19:33	54.2000	2.1000	0.5000	
19:34	90.0000	2.0000	0.6000	
19:35	90.1000	2.2000	0.9000	
19:36	47.4000	2.0000	0.5000	
19:37	36.0000	1.8000	0.3000	
19:38	30.9000	1.8000	0.2000	
19:39	58.4000	1.8000	0.3000	
19:40	124.7000	2.0000	0.8000	
19:41	60.0000	2.4000	0.7000	
19:42	39.0000	2.4000	0.3000	
19:43	32.1000	2.0000	0.2000	
19:44	32.2000	1.7000	0.2000	
MAX :	124.7000	2.4000	0.9000	
MIN :	30.9000	1.7000	0.2000	
AVG :	67.4389	2.0222	0.5167	
SCANS:	18	18	18	

Auxiliary Average Report

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/18/96

Time	THC PPM	CO PPM	NOX PPM	Run 1 Part.
19:48	39.5000	1.7000	0.3000	
19:49	33.8000	1.7000	0.2000	
19:50	30.9000	1.7000	0.2000	
19:51	29.3000	1.6000	0.1000	
MAX :	39.5000	1.7000	0.3000	
MIN :	29.3000	1.6000	0.1000	
AVG :	33.3750	1.6750	0.2000	
SCANS:	4	4	4	

Auxiliary Average Report

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/18/96

Run 1 Part

Time	THC PPM	CO PPM	NOX PPM
20:09	47.0000	2.6000	0.5000
20:10	56.5000	2.2000	0.3000
20:11	123.1000	2.2000	0.7000
20:12	78.1000	2.4000	0.8000
20:13	40.7000	2.1000	0.4000
20:14	65.0000	1.9000	0.3000
20:15	104.6000	1.9000	0.8000
20:16	58.0000	2.0000	0.7000
20:17	36.0000	1.8000	0.3000
20:18	53.3000	1.9000	0.3000
20:19	120.9000	2.1000	0.7000
20:20	72.6000	2.3000	0.8000
20:21	40.6000	2.0000	0.4000
20:22	32.4000	1.9000	0.3000
MAX :	123.1000	2.6000	0.8000
MIN :	32.4000	1.8000	0.3000
AVG :	66.3429	2.0929	0.5214
SCANS:	14	14	14
AVG:	67.075 ~~61.80~~	1.999 ~~1.95~~	~~0.48~~ Avg. 0.528
	↓	↓	↓
	20.32#/hr	0.407#/hr	0.36 → 6C-1
			↓
			0.123#/hr

→ 63.10 ppmdry

↓

20.75#/hr

ERM SOUTHWEST
PRESS HOUSE VENT INLET DUCT
SILSBEE, TEXAS
96 011
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Final Cals

		THC PPM	CO PPM	NOX PPM	
01/18/96	20:30	11.6C	-0.2C	0.0C	zero NOx
01/18/96	20:31	11.5C	-0.3C	0.0C	zero CO
01/18/96	20:32	[illegible]	-0.2C	0.0C	zero THC
01/18/96	20:33	120.9C	15.0C	0.0C	
01/18/96	20:34	529.2C	38.2C	0.0C	
01/18/96	20:35	[illegible]	39.6C	0.0C	486.1 Propane
01/18/96	20:36	498.6C	39.7C	0.0C	
01/18/96	20:37	332.0C	[illegible]	0.0C	42.79 CO Bias
01/18/96	20:38	26.4C	37.1C	14.6C	
01/18/96	20:39	21.3C	8.0C	48.9C	
01/18/96	20:40	18.6C	0.0C	[illegible]	46.22 NOx Bias
		-----	-----	-----	
AVERAGES :		189.0	19.7	10.4	

ERM SOUTHWEST
PRESS HOUSE VENT INLET DUCT
HILLSBORO, TEXAS
96 011
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Init. Cal + Bias + Conv. ✓

		THC PPM	CO PPM	NOX PPM	
01/19/96	06:29	6.0	4.6	0.1	
01/19/96	06:30	7.2C	-0.2C	[redacted]	
01/19/96	06:31	12.5C	-0.1C	0.0C	
01/19/96	06:32	13.0C	[redacted]	0.0C	zero CO init
01/19/96	06:33	3.6C	12.7C	78.4C	
01/19/96	06:34	0.7C	8.3C	89.1C	
01/19/96	06:35	0.5C	0.0C	86.6C	
01/19/96	06:36	0.5C	0.0C	[redacted]	
01/19/96	06:37	0.4C	11.8C	41.7C	
01/19/96	06:38	0.6C	80.9C	[redacted]	
01/19/96	06:39	0.5C	[redacted]	0.1C	85.86 CO 2L1113 (no adjustment)
01/19/96	06:40	-0.3C	81.0C	24.1C	
01/19/96	06:41	-1.7C	11.6C	87.8C	
01/19/96	06:42	-1.7C	[redacted]	86.7C	zero CO
01/19/96	06:43	-0.6C	0.0C	86.0C	
01/19/96	06:44	-0.3C	0.0C	[redacted]	86.13 NOx BAL4137 init.
01/19/96	06:45	[redacted]	13.4C	22.8C	zero THC init.
01/19/96	06:46	0.1C	40.4C	[redacted]	zero NOx
01/19/96	06:47	0.0C	[redacted]	0.1C	42.79 CO BAL354
01/19/96	06:48	795.4C	40.9C	0.1C	
01/19/96	06:49	957.2C	43.2C	32.1C	
01/19/96	06:50	963.9C	13.1C	83.6C	
01/19/96	06:51	[redacted]	0.0C	87.6C	979.5 Propane CAL2366 init.
01/19/96	06:52	975.0C	-0.1C	87.2C	
01/19/96	06:53	124.8C	-0.1C	[redacted]	86.13 NOx
01/19/96	06:54	2.3C	-0.1C	74.4C	
01/19/96	06:55	0.8C	-0.1C	0.2C	
01/19/96	06:56	40.1C	0.0C	7.2C	
01/19/96	06:57	493.1C	0.2C	48.5C	
01/19/96	06:58	495.9C	0.1C	47.8C	
01/19/96	06:59	496.2C	0.1C	[redacted]	46.22 NOx BLM003059
01/19/96	07:00	[redacted]	0.2C	38.6C	486.1 Propane BLM002201
01/19/96	07:01	143.3C	17.7C	0.7C	
01/19/96	07:02	1.3C	29.7C	0.3C	
01/19/96	07:03	0.5C	29.7C	0.2C	
01/19/96	07:04	0.5C	29.6C	0.2C	
01/19/96	07:05	[redacted]	27.1C	0.2C	zero THC
01/19/96	07:06	140.6C	12.0C	0.1C	
01/19/96	07:07	225.9C	10.3C	5.0C	
01/19/96	07:08	226.1C	6.1C	40.5C	
01/19/96	07:09	[redacted]	1.8C	40.7C	219.0 Propane CAL1078
01/19/96	07:10	183.8C	0.2C	40.7C	Begin NOx Conv. ✓
01/19/96	07:11	2.9C	-0.1C	40.7C	
01/19/96	07:12	2.4C	-0.1C	40.8C	
01/19/96	07:13	2.3C	0.0C	40.8C	

96-011
ERM Southwest
Hillsboro, TX.
Press House Inlet Duct (South)
1-19-96
DAS #11
SN 886
THC Analyzer
JUM Engineering
Model VE 7
SN 53
CO Analyzer
TECO
Model 48
SN 31
NOx Analyzer
TECO
Model 10
SN 10-39471-260
Leak Check @ 15" Hg 0.000

ERM SOUTHWEST
PRESS HOUSE VENT INLET DUCT
SILSBEE, TEXAS
96 011
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		THC PPM	CO PPM	NOX PPM	
01/19/96	07:14	2.0C	0.0C	40.8C	Zero CO Bias
01/19/96	07:15	1.7C	14.5C	40.8C	
01/19/96	07:16	1.7C	38.9C	40.9C	
01/19/96	07:17	40.5C	40.5C	40.9C	
01/19/96	07:18	975.4C	40.5C	40.9C	42.79 CO Bias
01/19/96	07:19	[redacted]	40.5C	40.9C	979.5 Propane
01/19/96	07:20	985.8C	40.7C	41.0C	
01/19/96	07:21	427.6C	30.6C	41.0C	
01/19/96	07:22	5.4C	4.8C	41.0C	
01/19/96	07:23	3.6C	2.4C	41.1C	
01/19/96	07:24	3.1C	2.3C	41.1C	
01/19/96	07:25	2.6C	2.2C	41.1C	
01/19/96	07:26	2.4C	2.1C	41.2C	
01/19/96	07:27	1.9C	2.1C	41.2C	
01/19/96	07:28	2.6C	2.0C	41.2C	
01/19/96	07:29	2.4C	2.1C	41.2C	
01/19/96	07:30	2.2C	2.0C	41.3C	
01/19/96	07:31	1.9C	1.9C	41.3C	
01/19/96	07:32	2.1C	1.9C	41.3C	
01/19/96	07:33	1.9C	1.8C	41.4C	
01/19/96	07:34	2.2C	1.8C	41.3C	
01/19/96	07:35	2.2C	1.8C	41.3C	
01/19/96	07:36	2.1C	1.7C	41.4C	
01/19/96	07:37	2.0C	1.7C	41.4C	
01/19/96	07:38	2.0C	1.8C	41.4C	
01/19/96	07:39	1.4C	1.8C	25.5C	
01/19/96	07:40	2.1C	1.7C	0.5C	
01/19/96	07:41	2.0C	0.6C	0.4C	
01/19/96	07:42	1.7C	-0.1C	0.4C	
01/19/96	07:43	1.3C	-0.1C	[redacted]	Zero NOx Bias
01/19/96	07:44	1.8C	-0.1C	0.4C	
01/19/96	07:45	1.7C	0.1C	0.4C	
01/19/96	07:46	1.6C	0.1C	19.5C	
01/19/96	07:47	1.6C	0.1C	47.4C	
01/19/96	07:48	1.2C	0.1C	[redacted]	46.22 NOx Bias
01/19/96	07:49	1.4C	0.1C	47.6C	
		-----	-----	-----	
AVERAGES :		141.8	11.6	35.6	

Auxiliary Average Report

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

Run 1 (South) Fan.

Time	THC PPM	CO PPM	NOX PPM
08:20	33.5000	2.7000	0.3000
08:21	70.7000	2.7000	0.5000
08:22	101.7000	2.9000	0.9000
08:23	35.2000	2.8000	0.5000
08:24	38.5000	2.5000	0.4000
08:25	98.8000	2.5000	0.7000
08:26	61.8000	2.6000	0.7000
08:27	31.3000	2.4000	0.4000
08:28	49.8000	2.3000	0.4000
08:29	109.5000	2.5000	0.8000
08:30	46.1000	2.5000	0.6000
08:31	31.0000	2.3000	0.4000
08:32	60.2000	2.2000	0.5000
08:33	102.4000	2.3000	0.7000
08:34	37.7000	2.3000	0.5000
08:35	36.1000	2.1000	0.3000
08:36	87.3000	2.2000	0.6000
08:37	66.8000	2.3000	0.7000
MAX :	109.5000	2.9000	0.9000
MIN :	31.0000	2.1000	0.3000
AVG :	61.0222	2.4500	0.5500
SCANS:	18	18	18

Auxiliary Average Report

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

Run 1 (South) Form.

Time	THC PPM	CO PPM	NOX PPM
08:42	30.4000	2.0000	0.3000
08:43	47.1000	2.1000	0.4000
08:44	91.4000	2.4000	0.7000
08:45	37.6000	2.4000	0.5000
08:46	24.5000	2.2000	0.3000
08:47	26.5000	2.5000	0.3000
08:48	90.1000	2.5000	0.5000
08:49	55.2000	2.7000	0.6000
08:50	32.4000	2.4000	0.3000
08:51	31.6000	2.3000	0.4000
08:52	95.4000	2.3000	0.5000
08:53	48.3000	2.5000	0.6000
08:54	32.3000	2.3000	0.3000
08:55	34.8000	2.6000	0.4000
08:56	93.2000	2.5000	0.5000
08:57	42.5000	2.5000	0.5000
08:58	30.1000	2.3000	0.4000
08:59	48.9000	2.5000	0.4000
MAX :	95.4000	2.7000	0.7000
MIN :	24.5000	2.0000	0.3000
AVG :	49.5722	2.3889	0.4389
SCANS:	18	18	18

Auxiliary Average Report

DCNID : 11   Site Name : INLET DT   Aux Interval : 1   Date : 1/19/96

Run 1 (South) Form.

Time	THC PPM	CO PPM	NOX PPM
09:03	64.6000	3.1000	0.4000
09:04	66.4000	3.6000	0.6000
09:05	35.1000	3.3000	0.4000
09:06	26.7000	3.2000	0.3000
09:07	64.9000	3.5000	0.4000
09:08	64.2000	3.7000	0.6000
09:09	33.9000	3.6000	0.4000
09:10	25.0000	3.5000	0.3000
09:11	29.3000	3.3000	0.4000
09:12	92.0000	3.2000	0.5000
09:13	41.8000	3.3000	0.4000
09:14	28.2000	2.9000	0.3000
09:15	29.1000	2.8000	0.4000
09:16	97.1000	2.6000	0.5000
09:17	44.4000	2.8000	0.4000
09:18	32.7000	2.3000	0.3000
09:19	35.3000	2.3000	0.4000
09:20	83.5000	2.4000	0.5000
MAX :	97.1000	3.7000	0.6000
MIN :	25.0000	2.3000	0.3000
AVG :	49.6778	3.0778	0.4167
SCANS:	18	18	18

Auxiliary Average Report

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

Run 1 (South) Form.

Time	THC PPM	CO PPM	NOX PPM
09:24	73.0000	2.5000	0.5000
09:25	49.8000	2.8000	0.6000
09:26	33.1000	2.6000	0.4000
09:27	28.3000	2.5000	0.4000
09:28	81.2000	2.7000	0.4000
09:29	46.8000	3.3000	0.5000
09:30	27.7000	3.1000	0.3000
09:31	20.2000	3.0000	0.2000
09:32	16.3000	2.9000	0.2000
09:33	13.5000	3.1000	0.2000
09:34	11.5000	3.2000	0.2000
MAX :	81.2000	3.3000	0.6000
MIN :	11.5000	2.5000	0.2000
AVG :	36.4909	2.8818	0.3545
SCANS:	11	11	11

Auxiliary Average Report

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

RUN 1 (South) Form.

Time	THC PPM	CO PPM	NOX PPM
09:39	21.8000	2.5000	0.3000
09:40	19.7000	2.4000	0.3000
09:41	36.2000	2.5000	0.4000
09:42	108.2000	2.7000	0.6000
09:43	39.8000	3.1000	0.4000
09:44	30.2000	2.8000	0.3000
09:45	67.3000	2.7000	0.4000
09:46	77.9000	2.7000	0.6000
MAX :	108.2000	3.1000	0.6000
MIN :	19.7000	2.4000	0.3000
AVG :	50.1375	2.6750	0.4125
SCANS:	8	8	8
AVG:	50.512 ~~49.38~~	2.679 ~~2.69~~	0.445 ~~0.43~~
	↓	↓	↓
	50.16 dry	8.57 #/hr	0.228 → GC-1
	↓		↓
	16.87 #/hr		0.080 #/hr

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Final Cal RUN 1 Form
Init. Cal RUN 2 Part.

		THC PPM	CO PPM	NOX PPM	
01/19/96	09:54	[illegible]	1.5C	0.1C	zero THC
01/19/96	09:55	-0.6C	0.9C	[illegible]	zero NOx Bias
01/19/96	09:56	269.9C	0.2C	18.2C	
01/19/96	09:57	473.7C	[illegible]	45.1C	zero CO Bias
01/19/96	09:58	[illegible]	0.1C	46.1C	486.1 Propane
01/19/96	09:59	474.5C	0.1C	[illegible]	46.22 NOx Bias
01/19/96	10:00	40.8C	9.3C	19.3C	
01/19/96	10:01	5.5C	37.4C	0.5C	
01/19/96	10:02	5.0C	40.5C	0.1C	
01/19/96	10:03	4.8C	[illegible]	0.0C	42.79 CO Bias
AVERAGES :		174.7	13.1	17.6	

Auxiliary Average Report

DCNID : 11   Site Name : INLET DT   Aux Interval : 1   Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
10:38	90.9000	2.9000	0.5000
10:39	45.9000	3.0000	0.6000
10:40	27.5000	2.7000	0.3000
10:41	37.7000	2.5000	0.3000
10:42	98.0000	2.8000	0.6000
10:43	37.0000	3.0000	0.6000
10:44	27.0000	2.9000	0.3000
10:45	48.6000	2.9000	0.5000
10:46	92.8000	3.1000	0.7000
10:47	32.2000	3.2000	0.5000
10:48	28.2000	3.1000	0.4000
10:49	85.0000	3.3000	0.6000
10:50	52.9000	3.6000	0.8000
10:51	28.4000	3.7000	0.5000
10:52	33.8000	3.7000	0.5000
10:53	93.9000	3.8000	0.7000
10:54	40.5000	3.8000	0.7000
10:55	26.5000	3.5000	0.4000
MAX :	98.0000	3.8000	0.8000
MIN :	26.5000	2.5000	0.3000
AVG :	51.4889	3.1944	0.5278
SCANS:	18	18	18

Run 2 (South) Part

Auxiliary Average Report

DCMID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

RUN 2 (South) Part

Time	THC PPM	CO PPM	NOX PPM
11:00	71.9000	3.7000	0.6000
11:01	63.8000	3.7000	0.8000
11:02	28.3000	3.8000	0.5000
11:03	30.7000	3.8000	0.4000
11:04	87.6000	4.0000	0.7000
11:05	41.1000	4.0000	0.8000
11:06	25.7000	3.6000	0.5000
11:07	36.7000	3.6000	0.6000
11:08	88.5000	3.9000	0.9000
11:09	33.1000	4.2000	0.8000
11:10	25.2000	3.9000	0.6000
11:11	57.5000	3.9000	0.7000
11:12	78.2000	3.9000	0.9000
11:13	28.5000	3.8000	0.6000
11:14	28.0000	3.4000	0.6000
11:15	84.5000	3.5000	0.8000
11:16	46.4000	3.7000	1.0000
11:17	25.4000	3.5000	0.7000
MAX :	88.5000	4.2000	1.0000
MIN :	25.2000	3.4000	0.4000
AVG :	48.9500	3.7722	0.6944
SCANS:	18	18	18

Auxiliary Average Report

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

Run 2 (South) Part

Time	THC PPM	CO PPM	NOX PPM
11:21	21.2000	3.4000	0.7000
11:22	41.0000	3.4000	0.8000
11:23	68.4000	3.5000	1.1000
11:24	23.0000	3.2000	0.8000
11:25	16.1000	2.9000	0.7000
11:26	76.0000	3.0000	1.0000
11:27	49.2000	3.3000	1.2000
11:28	22.2000	3.3000	0.8000
11:29	30.2000	3.2000	0.7000
11:30	83.7000	3.4000	1.0000
11:31	34.6000	3.5000	1.0000
11:32	21.1000	3.0000	0.6000
11:33	34.5000	2.9000	0.7000
11:34	86.4000	3.2000	1.1000
11:35	27.0000	3.3000	0.9000
11:36	22.0000	3.1000	0.7000
11:37	56.8000	3.1000	0.9000
11:38	66.0000	3.3000	1.2000
MAX :	86.4000	3.5000	1.2000
MIN :	16.1000	2.9000	0.6000
AVG :	43.3000	3.2222	0.8833
SCANS:	18	18	18

Auxiliary Average Report

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

RUN 2 (South) Part

Time	THC PPM	CO PPM	NOX PPM
11:42	24.6000	3.4000	1.3000
11:43	25.8000	3.2000	0.9000
11:44	46.8000	3.1000	0.9000
11:45	98.7000	3.3000	1.4000
11:46	36.1000	3.3000	1.1000
11:47	27.3000	3.0000	0.8000
11:48	63.3000	3.0000	1.0000
11:49	86.4000	3.1000	1.3000
11:50	29.4000	2.8000	0.8000
11:51	27.8000	2.6000	0.7000
11:52	86.5000	2.6000	0.9000
11:53	73.7000	2.7000	1.1000
11:54	30.7000	2.4000	0.7000
11:55	20.9000	2.1000	0.5000
11:56	17.1000	2.1000	0.4000
11:57	14.3000	2.1000	0.4000
11:58	18.0000	2.0000	0.4000
11:59	59.2000	2.0000	0.7000
MAX :	98.7000	3.4000	1.4000
MIN :	14.3000	2.0000	0.4000
AVG :	43.7000	2.7111	0.8500
SCANS:	18	18	18
Avg:	46.86	3.22	0.739
	↓	↓	↓
	47.58	0.68 #/hr	0.730 → CC-1
	↓		↓
	15.71 #/hr		0.251 #/hr

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Final Cal Run 2 Part.
Init. Cal Run 2 Form.

		THC PPM	CO PPM	NOX PPM	
01/19/96	12:05	4.2C	0.1C	0.1C	
01/19/96	12:06	4.0C	[illegible]	0.1C	zero CO Bias
01/19/96	12:07	[illegible]	0.6C	0.1C	Zero THC
01/19/96	12:08	298.8C	24.7C	0.1C	
01/19/96	12:09	520.0C	39.8C	[illegible]C	zero NOx Bias
01/19/96	12:10	[illegible]C	40.4C	0.0C	486.1 Propane
01/19/96	12:11	519.5C	[illegible]C	0.0C	42.79 CO Bias
01/19/96	12:12	492.6C	40.4C	0.0C	
01/19/96	12:13	[illegible]C	40.3C	0.1C	486.1 Propane Adjusted
01/19/96	12:14	487.9C	20.7C	0.2C	
01/19/96	12:15	71.2C	2.8C	16.8C	
01/19/96	12:16	4.5C	0.5C	45.0C	
01/19/96	12:17	3.7C	0.1C	47.1C	
01/19/96	12:18	3.3C	0.1C	[illegible]C	46.22 NOx Bias
		-----	-----	-----	
AVERAGES :		244.5	17.9	11.2	

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

Run 2 Form (South)

Time	THC PPM	CO PPM	NOX PPM
13:00	25.8000	3.0000	0.5000
13:01	33.5000	2.7000	0.5000
13:02	87.3000	2.8000	0.9000
13:03	38.8000	2.9000	0.7000
13:04	21.6000	2.4000	0.4000
13:05	20.7000	2.2000	0.3000
13:06	63.5000	2.1000	0.6000
13:07	75.1000	2.3000	0.8000
13:08	28.2000	2.2000	0.4000
13:09	26.3000	2.1000	0.3000
13:10	81.4000	2.1000	0.5000
13:11	51.3000	2.3000	0.7000
13:12	25.0000	2.0000	0.3000
13:13	18.8000	1.7000	0.2000
13:14	33.2000	1.8000	0.3000
13:15	92.1000	2.0000	0.7000
13:16	33.9000	2.1000	0.5000
13:17	24.8000	1.8000	0.3000
MAX :	92.1000	3.0000	0.9000
MIN :	18.8000	1.7000	0.2000
AVG :	43.4056	2.2500	0.4944
SCANS:	18	18	18

Auxiliary Average Report

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
13:21	27.3000	2.2000	0.3000
13:22	86.5000	2.3000	0.6000
13:23	56.2000	2.5000	0.8000
13:24	27.2000	2.3000	0.4000
13:25	31.8000	2.1000	0.3000
13:26	91.0000	2.1000	0.6000
13:27	39.3000	2.2000	0.6000
13:28	26.1000	1.8000	0.3000
13:29	38.8000	1.9000	0.4000
13:30	93.9000	2.0000	0.7000
13:31	32.6000	1.9000	0.4000
13:32	26.2000	1.7000	0.3000
13:33	71.2000	1.7000	0.6000
13:34	75.5000	2.1000	0.8000
13:35	30.2000	2.0000	0.4000
13:36	28.3000	1.8000	0.4000
13:37	97.1000	2.1000	0.7000
13:38	53.2000	2.5000	0.8000
MAX :	97.1000	2.5000	0.8000
MIN :	26.1000	1.7000	0.3000
AVG :	51.8000	2.0667	0.5222
SCANS:	18	18	18

Run 2 Form. (South)

Auxiliary Average Report

DCNID : 11   Site Name : INLET DT   Aux Interval : 1   Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM	RUN 2 Form, (South)
13:43	27.2000	2.7000	0.5000	
13:44	50.7000	2.7000	0.7000	
13:45	86.9000	3.1000	1.0000	
13:46	30.8000	3.3000	0.7000	
13:47	27.9000	3.1000	0.7000	
13:48	81.4000	3.3000	0.9000	
13:49	58.4000	3.6000	1.0000	
13:50	28.3000	3.2000	0.6000	
13:51	32.9000	3.0000	0.7000	
13:52	99.9000	3.1000	1.0000	
13:53	40.8000	3.4000	1.0000	
13:54	26.6000	3.2000	0.7000	
13:55	41.0000	3.4000	0.9000	
13:56	99.4000	3.7000	1.1000	
13:57	32.8000	3.7000	0.9000	
13:58	28.9000	3.4000	0.8000	
13:59	69.7000	3.6000	1.0000	
14:00	68.7000	3.9000	1.2000	
MAX :	99.9000	3.9000	1.2000	
MIN :	26.6000	2.7000	0.5000	
AVG :	51.7944	3.3000	0.8556	
SCANS:	18	18	18	

Auxiliary Average Report

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM	Run 2 Form. (South)
14:04	47.5000	3.7000	1.0000	
14:05	26.9000	3.1000	0.6000	
14:06	38.1000	3.0000	0.7000	
14:07	97.6000	3.3000	1.0000	
14:08	35.3000	3.5000	0.8000	
14:09	27.1000	3.3000	0.7000	
14:10	59.2000	3.6000	1.0000	
14:11	84.4000	3.9000	1.2000	
14:12	29.1000	3.7000	0.8000	
14:13	31.0000	3.3000	0.7000	
14:14	88.7000	3.4000	1.0000	
14:15	56.4000	3.5000	1.1000	
14:16	26.9000	3.1000	1.1000	
14:17	34.7000	2.9000	1.1000	
14:18	106.4000	3.0000	1.2000	
14:19	40.4000	3.3000	0.9000	
14:20	27.6000	3.1000	0.6000	
14:21	45.6000	3.0000	0.8000	
MAX :	106.4000	3.9000	1.2000	
MIN :	26.9000	2.9000	0.6000	
AVG :	50.1611	3.3167	0.9056	
SCANS:	18	18	18	
AVG:	48.29	2.73	0.694 ✓	
	↓	↓	↓	
	49.85 dry	0.59 #/hr	0.576 → 6C-1	
	↓		↓	
	16.98 #/hr		0.265 #/hr	

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Final Cal RUN 2 Form.
Init. Cal RUN3 Part

		THC PPM	CO PPM	NOX PPM	
01/19/96	14:28	0.1C	0.1C	[illegible]	Zero NOx Bias
01/19/96	14:29	-0.1C	0.1C	0.1C	
01/19/96	14:30	[illegible]C	0.1C	17.5C	Zero THC
01/19/96	14:31	169.8C	0.0C	46.7C	
01/19/96	14:32	468.9C	[illegible]	47.9C	Zero CO Bias
01/19/96	14:33	473.3C	0.0C	48.1C	
01/19/96	14:34	474.0C	0.0C	~~48.2C~~	46.22 NOx Bias
01/19/96	14:35	484.2C	0.1C	48.2C	
01/19/96	14:36	~~485.4C~~	3.4C	31.2C	4861 Propane
01/19/96	14:37	484.7C	33.1C	1.3C	
01/19/96	14:38	172.7C	40.2C	0.1C	
01/19/96	14:39	16.5C	[illegible]	0.1C	42.79 CO Bias
		-----	-----	-----	
AVERAGES :		269.1	9.8	24.1	

Auxiliary Average Report

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

Run 3 Part (South)

Time	THC PPM	CO PPM	NOX PPM
17:17	33.4000	1.4000	0.4000
17:18	29.3000	1.1000	0.3000
17:19	91.4000	1.1000	0.5000
17:20	69.2000	1.4000	0.6000
17:21	31.1000	1.0000	0.3000
17:22	37.7000	0.8000	0.3000
17:23	105.5000	0.9000	0.6000
17:24	43.2000	1.0000	0.4000
17:25	28.7000	0.7000	0.2000
17:26	43.4000	0.6000	0.3000
17:27	110.5000	0.8000	0.6000
17:28	36.2000	0.9000	0.3000
17:29	30.2000	0.7000	0.2000
17:30	71.8000	0.7000	0.4000
17:31	93.6000	1.0000	0.6000
17:32	31.6000	0.9000	0.2000
17:33	30.0000	0.6000	0.2000
17:34	88.9000	0.7000	0.4000
MAX :	110.5000	1.4000	0.6000
MIN :	28.7000	0.6000	0.2000
AVG :	55.8722	0.9056	0.3778
SCANS:	18	18	18

Auxiliary Average Report

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

Run 3 Part. (South)

Time	THC PPM	CO PPM	NOX PPM
14:57	30.0000	2.1000	0.3000
14:58	46.2000	2.1000	0.5000
14:59	108.5000	2.2000	0.8000
15:00	35.9000	2.2000	0.5000
15:01	32.6000	1.9000	0.3000
15:02	78.7000	2.0000	0.6000
15:03	63.9000	2.3000	0.7000
15:04	29.9000	2.1000	0.4000
15:05	38.4000	2.0000	0.4000
15:06	98.5000	2.2000	0.7000
15:07	46.5000	2.3000	0.6000
15:08	27.2000	2.0000	0.3000
15:09	40.2000	1.9000	0.4000
15:10	111.5000	2.0000	0.7000
15:11	38.4000	2.1000	0.5000
15:12	23.9000	1.7000	0.2000
15:13	15.9000	1.7000	0.2000
15:14	11.7000	1.6000	0.1000
MAX :	111.5000	2.3000	0.8000
MIN :	11.7000	1.6000	0.1000
AVG :	48.7722	2.0222	0.4556
SCANS:	18	18	18

Auxiliary Average Report

DCHID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM	Run 3 Part (South)
16:35	101.4000	1.4000	0.6000	
16:36	32.9000	1.3000	0.4000	
16:37	25.3000	1.0000	0.2000	
16:38	65.6000	1.1000	0.5000	
16:39	82.3000	1.4000	0.7000	
16:40	28.9000	1.3000	0.3000	
16:41	32.4000	1.2000	0.3000	
16:42	91.6000	1.3000	0.6000	
16:43	50.0000	1.4000	0.6000	
16:44	26.3000	1.2000	0.2000	
16:45	37.1000	1.1000	0.3000	
16:46	103.6000	1.2000	0.6000	
16:47	38.3000	1.3000	0.5000	
16:48	27.1000	1.1000	0.2000	
16:49	53.3000	1.1000	0.5000	
16:50	92.9000	1.4000	0.7000	
16:51	31.7000	1.2000	0.3000	
16:52	28.8000	1.0000	0.2000	
MAX :	103.6000	1.4000	0.7000	
MIN :	25.3000	1.0000	0.2000	
AVG :	52.7500	1.2222	0.4278	
SCANS:	18	18	18	

Auxiliary Average Report

DCNID : 11　　Site Name : INLET DT　　Aux Interval : 1　　Date : 1/19/96

Run 3 Part (South)

Time	THC PPM	CO PPM	NOX PPM
16:56	37.4000	0.8000	0.3000
16:57	101.5000	1.0000	0.7000
16:58	45.1000	1.2000	0.6000
16:59	28.3000	0.9000	0.3000
17:00	44.9000	0.9000	0.5000
17:01	104.8000	1.1000	0.7000
17:02	34.9000	1.2000	0.4000
17:03	28.9000	0.9000	0.3000
17:04	72.6000	1.1000	0.5000
17:05	79.3000	1.4000	0.6000
17:06	30.3000	1.3000	0.3000
17:07	29.8000	1.1000	0.3000
17:08	100.1000	1.2000	0.5000
17:09	57.4000	1.5000	0.6000
17:10	30.1000	1.2000	0.3000
17:11	42.4000	1.1000	0.4000
17:12	104.9000	1.3000	0.7000
17:13	39.1000	1.5000	0.5000
MAX :	104.9000	1.5000	0.7000
MIN :	28.3000	0.8000	0.3000
AVG :	56.2111	1.1500	0.4722
SCANS:	18	18	18
Avg.:	53.40	1.33	0.433
	↓	↓	↓
	54.07 dry	0.219 #/hr	0.317 → GC-1
	↓		↓
	17.86 #/hr		0.109 #/hr

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PRESS HOUSE VENT INLET DUCT
SILSBEE, TEXAS
96 011
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Final Cal RUN 3 Part.
Init Cal RUN 3 Form.

		THC PPM	CO PPM	NOX PPM	
01/19/96	17:41	~~0.0C~~	0.0C	0.0C	zero THC
01/19/96	17:42	-0.1C	~~0.0C~~	-0.1C	Zero CO Bias
01/19/96	17:43	209.9C	1.6C	-0.1C	
01/19/96	17:44	480.3C	29.6C	~~[illegible]~~	zero NOx Bias
01/19/96	17:45	480.9C	39.8C	0.0C	
01/19/96	17:46	~~[illegible]~~	40.1C	-0.1C	486.1 Propane
01/19/96	17:47	368.6C	~~40.2C~~	0.0C	42.79 CO Bias
01/19/96	17:48	15.7C	37.7C	0.0C	
01/19/96	17:49	23.4C	10.0C	0.2C	
01/19/96	17:50	31.4C	2.3C	0.2C	
01/19/96	17:51	24.2C	2.1C	0.1C	
01/19/96	17:52	19.5C	1.8C	0.1C	
01/19/96	17:53	6.0C	1.4C	0.0C	
01/19/96	17:54	2.7C	1.1C	0.0C	
01/19/96	17:55	7.1C	0.8C	24.4C	
01/19/96	17:56	3.6C	0.1C	47.8C	
01/19/96	17:57	2.3C	0.0C	48.7C	
01/19/96	17:58	1.7C	0.0C	~~48.9C~~	46.22 NOx Bias
		-----	-----	-----	
AVERAGES :		119.9	11.6	9.5	

Auxiliary Average Report

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

Run 3 Form (South)

Time	THC PPM	CO PPM	NOX PPM
18:16	53.2000	1.4000	0.4000
18:17	32.4000	1.1000	0.2000
18:18	35.5000	1.0000	0.2000
18:19	88.6000	1.2000	0.5000
18:20	42.0000	1.3000	0.4000
18:21	30.5000	1.1000	0.2000
18:22	41.5000	1.2000	0.3000
18:23	88.6000	1.4000	0.5000
18:24	38.1000	1.4000	0.3000
18:25	30.9000	1.1000	0.2000
18:26	70.0000	1.2000	0.4000
18:27	64.8000	1.5000	0.5000
18:28	35.5000	1.3000	0.2000
18:29	34.7000	1.2000	0.3000
18:30	83.9000	1.4000	0.5000
18:31	46.7000	1.6000	0.4000
18:32	29.3000	1.3000	0.2000
18:33	31.2000	1.2000	0.2000
MAX :	88.6000	1.6000	0.5000
MIN :	29.3000	1.0000	0.2000
AVG :	48.7444	1.2722	0.3278
SCANS:	18	18	18

Auxiliary Average Report

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
18:38	94.7000	1.4000	0.6000
18:39	38.1000	1.5000	0.3000
18:40	33.3000	1.2000	0.3000
18:41	92.0000	1.3000	0.5000
18:42	52.0000	1.7000	0.5000
18:43	33.0000	1.3000	0.3000
18:44	49.9000	1.2000	0.4000
18:45	86.1000	1.4000	0.6000
18:46	35.2000	1.4000	0.4000
18:47	33.0000	1.2000	0.3000
18:48	87.0000	1.3000	0.5000
18:49	48.7000	1.5000	0.6000
18:50	31.9000	1.2000	0.3000
18:51	49.8000	1.1000	0.4000
18:52	89.1000	1.3000	0.6000
18:53	36.2000	1.3000	0.3000
18:54	36.7000	1.0000	0.3000
18:55	96.4000	1.2000	0.6000
MAX :	96.4000	1.7000	0.6000
MIN :	31.9000	1.0000	0.3000
AVG :	56.8389	1.3056	0.4333
SCANS:	18	18	18

Run 3 Form. (South)

Auxiliary Average Report

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

Run 3 Form. (South)

Time	THC PPM	CO PPM	NOX PPM
19:00	34.6000	1.5000	0.3000
19:01	42.6000	1.2000	0.3000
19:02	92.7000	1.3000	0.6000
19:03	38.0000	1.3000	0.4000
19:04	34.9000	1.0000	0.3000
19:05	82.9000	1.1000	0.5000
19:06	55.9000	1.5000	0.6000
19:07	28.1000	1.2000	0.3000
19:08	26.5000	1.0000	0.2000
19:09	64.3000	1.2000	0.4000
19:10	72.2000	1.4000	0.7000
19:11	31.2000	1.3000	0.3000
19:12	35.7000	1.1000	0.3000
19:13	95.4000	1.2000	0.6000
19:14	43.8000	1.4000	0.5000
19:15	31.6000	1.0000	0.3000
19:16	73.6000	1.0000	0.4000
19:17	73.0000	1.2000	0.7000
MAX :	95.4000	1.5000	0.7000
MIN :	26.5000	1.0000	0.2000
AVG :	53.1667	1.2167	0.4278
SCANS:	18	18	18

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Auxiliary Average Report

DCNID : 11 Site Name : INLET DT Aux Interval : 1 Date : 1/19/96

Run 3 Form (South)

Time	THC PPM	CO PPM	NOX PPM
19:20	100.2000	1.2000	0.7000
19:21	39.4000	1.3000	0.5000
19:22	33.0000	1.0000	0.3000
19:23	83.8000	1.0000	0.5000
19:24	56.2000	1.2000	0.6000
19:25	26.8000	0.9000	0.2000
19:26	19.8000	0.7000	0.1000
19:27	22.5000	0.7000	0.1000
19:28	65.3000	0.8000	0.4000
19:29	72.0000	1.1000	0.6000
19:30	29.9000	0.9000	0.2000
19:31	20.2000	0.7000	0.1000
19:32	21.0000	0.7000	0.1000
19:33	67.4000	0.8000	0.4000
19:34	80.4000	1.1000	0.7000
19:35	31.4000	1.1000	0.3000
19:36	43.7000	0.8000	0.3000
19:37	94.1000	1.0000	0.7000
MAX :	100.2000	1.3000	0.7000
MIN :	19.8000	0.7000	0.1000
AVG :	50.3945	0.9444	0.3778
SCANS:	18	18	18
AVG:	52.29	1.18	0.392 ✓
	↓	↓	↓
	52.84 dry	0.251 #/hr	0.313 → GC-1
	↓		↓
	17.70 #/hr		0.130 #/hr

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Final Cals

		THC PPM	CO PPM	NOX PPM	
01/19/96	19:42	1.4C	0.2C	[redacted]	Zero NOx Bias
01/19/96	19:43	1.4C	0.1C	0.0C	
01/19/96	19:44	1.3C	0.1C	17.1C	
01/19/96	19:45	[redacted]	0.1C	46.6C	Zero THC
01/19/96	19:46	237.7C	[redacted]	48.0C	Zero CO Bias
01/19/96	19:47	480.0C	0.1C	48.1C	
01/19/96	19:48	[redacted]	0.1C	[redacted]	486.1 Propane /4622 NOx Bias
01/19/96	19:49	477.6C	0.3C	44.4C	
01/19/96	19:50	395.9C	22.4C	5.5C	
01/19/96	19:51	-3.3C	39.5C	0.2C	
01/19/96	19:52	-11.5C	[redacted]	0.1C	4279 CO Bias
		-----	-----	-----	
AVERAGES :		187.3	9.4	23.5	

Press House Number 2 Vent Duct
Oxides of Nitrogen
Concentration

Particulate Matter Tests

Run Number	Measured (ppm)	Adjusted (ppm*)
1	0.7	0.6
2	1.0	0.8
3	0.8	0.7

*Calculated according to equation 6C-1.

Press House Number 2 Vent Duct
Calibration Summary
Oxides of Nitrogen

Particulate Matter Tests

Run Number	NOx Calibration Initial Drift Check (ppm)	NOx Calibration Final Drift Check (ppm)	Average (ppm)	NOx Zero Initial Drift Check (ppm)	NOx Zero Final Drift Check (ppm)	Average (ppm)	Actual NOx Calibration Value (ppm)	Actual NOx Zero Value (ppm)
1	49.2	47.9	48.6	0.1	0.1	0.1	50.0	0.0
2	44.8	45.6	45.2	0.3	0.1	0.2	46.2	0.0
3	46.9	47.3	47.1	0.0	0.1	0.1	46.2	0.0

Press House Number 2 Vent Duct
Oxides of Nitrogen
Concentration

Formaldehyde Tests

Run Number	Measured (ppm)	Adjusted (ppm*)
1	0.7	0.4
2	1.0	0.9
3	0.7	0.6

*Calculated according to equation 6C-1.

Press House Number 2 Vent Duct
Calibration Summary
Oxides of Nitrogen

FormaldehydeTests

Run Number	NOx Calibration Initial Drift Check (ppm)	NOx Calibration Final Drift Check (ppm)	Average (ppm)	NOx Zero Initial Drift Check (ppm)	NOx Zero Final Drift Check (ppm)	Average (ppm)	Actual NOx Calibration Value (ppm)	Actual NOx Zero Value (ppm)
1	48.0	44.1	46.1	0.6	0.0	0.3	50.0	0.0
2	45.6	46.9	46.3	0.1	0.0	0.1	46.2	0.0
3	47.3	47.4	47.4	0.1	0.1	0.1	46.2	0.0

ERM SOUTHWEST
96 11
SILSBEE, TEXAS
PRESS HOUSE VENT ~~SOUTH~~ North
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Initial Cal + Bias check

		THC PPM	CO PPM	NOX PPM	
01/18/96	15:09	-2.3	1.4	0.0	
01/18/96	15:10	-2.3	1.4	0.0	
01/18/96	15:11	23.5	1.3	0.0	
01/18/96	15:12	12.2	1.3	0.0	
01/18/96	15:13	11.3	1.1	0.0	
01/18/96	15:14	2.2	0.5	0.0	
01/18/96	15:15	2.0	0.4	0.0	
01/18/96	15:16	1.1	0.4	0.0	
01/18/96	15:17	-0.2	0.3	-0.1	
01/18/96	15:18	-0.2	0.2	0.0	
01/18/96	15:19	-0.2	0.2	0.0	zero
01/18/96	15:20	0.0	0.2	8.4	
01/18/96	15:21	-0.3	0.4	48.4	
01/18/96	15:22	-0.3	0.4	48.2	
01/18/96	15:23	-0.4	0.4	49.2	
01/18/96	15:24	-0.2	0.4	49.4	
01/18/96	15:25	-0.4	0.4	49.4	50.0 ppm Nox
01/18/96	15:26	-0.5	0.4	49.4	
01/18/96	15:27	-0.5	0.4	49.5	
01/18/96	15:28	2.1	0.6	12.3	
01/18/96	15:29	0.0	6.7	0.2	
01/18/96	15:30	-0.5	35.2	0.1	
01/18/96	15:31	-0.5	39.9	0.0	
01/18/96	15:32	-0.5	39.9	0.0	
01/18/96	15:33	-0.5	39.9	0.0	
01/18/96	15:34	-0.5	40.1	0.0	
01/18/96	15:35	-0.5	41.2	0.0	
01/18/96	15:36	-0.5	~~42.0~~	~~0.0~~	~~42.3 ppm CO BAL3354~~
01/18/96	15:37	-0.5	42.0	0.0	
01/18/96	15:38	-0.2	41.6	14.2	
01/18/96	15:39	-0.7	16.5	83.3	
01/18/96	15:40	-0.6	0.7	83.1	84.6 ppm Nox
01/18/96	15:41	-0.6	0.5	83.0	
01/18/96	15:42	0.3	0.5	68.2	
01/18/96	15:43	-0.3	13.3	0.6	
01/18/96	15:44	-0.7	77.5	0.1	
01/18/96	15:45	-0.6	88.1	0.0	
01/18/96	15:46	-0.6	86.0	0.0	
01/18/96	15:47	-0.6	85.6	0.0	84.7 ppm CO BLM003062
01/18/96	15:48	-0.7	85.6	0.0	
01/18/96	15:49	-0.4	77.8	17.6	
01/18/96	15:50	-0.8	14.5	49.6	
01/18/96	15:51	-0.8	0.5	49.5	50.0 ppm Nox
01/18/96	15:52	-0.8	0.4	49.5	
01/18/96	15:53	-0.8	1.7	32.6	

ERM Southwest
Silsbee, TX
Press House Vent North

JUM 18
Model VE7
0-1000
SN 10184 1092T

SN 105 53702 245
Model 10S
TECO
0-100

TECO
SN 48 33526-245
Model 48
0-100

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		THC PPM	CO PPM	NOX PPM	
01/18/96	15:54	-0.8	29.8	0.1	
01/18/96	15:55	-0.8	41.1	0.0	
01/18/96	15:56	-0.8	41.1	0.0	423 ppm CO BAL3354
01/18/96	15:57	-0.8	41.1	0.0	
01/18/96	15:58	0.6	39.5	15.5	
01/18/96	15:59	1.6	13.1	47.1	
01/18/96	16:00	1.6	0.6	48.1	
01/18/96	16:01	1.8	0.4	48.3	
01/18/96	16:02	-0.4	0.4	48.5	
01/18/96	16:03	-0.9	3.0	48.8	
01/18/96	16:04	-0.9	15.6	49.0	
01/18/96	16:05	-0.8	17.2	49.2	52.0 ppm NOx Bias
01/18/96	16:06	-0.8	17.2	48.0	123 ppm CO BLM002324
01/18/96	16:07	1.7	14.6	12.0	
01/18/96	16:08	2.1	3.4	2.8	
01/18/96	16:09	2.2	1.1	2.1	
01/18/96	16:10	2.3	1.2	3.4	
01/18/96	16:11	1.9	13.2	0.8	
01/18/96	16:12	1.7	37.3	0.2	
01/18/96	16:13	1.7	40.5	0.1	
01/18/96	16:14	1.8	40.7	0.1	
01/18/96	16:15	1.8	40.8	0.1	zero bias
01/18/96	16:16	33.1	40.9	0.1	423 ppm CO Bias
01/18/96	16:17	143.3	40.9	0.0	
01/18/96	16:18	178.3	38.2	0.1	
01/18/96	16:19	153.5	16.3	0.4	
01/18/96	16:20	151.0	2.0	11.7	
01/18/96	16:21	61.5	1.0	23.6	
01/18/96	16:22	-0.5	0.9	23.6	start converter chk.
01/18/96	16:23	-0.6	0.9	23.7	
01/18/96	16:24	-0.7	0.9	23.7	
01/18/96	16:25	-0.4	0.8	23.6	
01/18/96	16:26	1.1	0.8	23.6	
01/18/96	16:27	1.4	0.9	23.5	zero bias
01/18/96	16:28	1.3	0.9	23.5	
01/18/96	16:29	0.7	0.9	23.4	zero
01/18/96	16:30	0.7	1.0	23.4	
01/18/96	16:31	190.8	0.9	23.4	
01/18/96	16:32	475.5	1.0	23.4	
01/18/96	16:33	478.1	1.0	23.4	
01/18/96	16:34	482.9	1.0	23.5	
01/18/96	16:35	483.3	1.0	23.5	489 ppm propane BAL2652
01/18/96	16:36	334.9	1.0	23.6	
01/18/96	16:37	28.8	1.0	23.6	
01/18/96	16:38	614.4	1.0	23.6	

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		THC PPM	CO PPM	NOX PPM	
01/18/96	16:39	959.2	1.0	23.6	
01/18/96	16:40	959.6	1.1	23.6	
01/18/96	16:41	960.5	1.0	23.6	977.5 ppm propane BLM004065
01/18/96	16:42	960.4	1.1	23.6	
01/18/96	16:43	232.5	1.1	23.6	
01/18/96	16:44	16.5	1.1	23.6	
01/18/96	16:45	112.4	1.1	23.6	
01/18/96	16:46	231.8	1.1	23.6	
01/18/96	16:47	232.0	1.1	23.6	233 ppm propane BAL1761
01/18/96	16:48	153.0	1.0	23.6	
01/18/96	16:49	32.8	1.0	23.6	
01/18/96	16:50	68.3	0.9	23.6	
01/18/96	16:51	14.4	0.9	23.6	
01/18/96	16:52	0.9	1.0	23.7	
01/18/96	16:53	155.7	1.1	23.6	
01/18/96	16:54	458.0	1.1	23.5	
01/18/96	16:55	475.4	1.0	23.3	
01/18/96	16:56	494.4	1.0	14.5	
01/18/96	16:57	494.5	1.4	0.1	489 ppm propane Bias
01/18/96	16:58	494.8	2.3	0.0	
01/18/96	16:59	376.3	2.3	0.4	
01/18/96	17:00	159.7	1.7	0.5	
01/18/96	17:01	33.7	2.0	1.4	
01/18/96	17:02	9.0	2.3	0.9	
01/18/96	17:03	1.5	1.8	0.3	
01/18/96	17:04	1.3	1.6	0.8	zero bias
01/18/96	17:05	1.3	2.2	1.3	
01/18/96	17:06	1.6	2.2	0.5	
01/18/96	17:07	6.6	1.7	0.4	
01/18/96	17:08	9.0	1.9	1.3	
01/18/96	17:09	9.7	2.4	1.0	
01/18/96	17:10	8.2	1.9	0.3	
01/18/96	17:11	9.7	1.6	0.2	
01/18/96	17:12	8.0	1.6	0.2	
01/18/96	17:13	8.5	1.6	0.1	
01/18/96	17:14	6.1	1.6	0.1	
01/18/96	17:15	6.5	1.6	0.1	
01/18/96	17:16	26.8	1.7	0.8	
01/18/96	17:17	145.3	2.3	1.2	
01/18/96	17:18	44.3	2.3	0.5	
01/18/96	17:19	43.5	1.8	0.2	
01/18/96	17:20	128.5	2.0	1.1	
01/18/96	17:21	115.7	2.5	1.1	
01/18/96	17:22	46.9	2.2	0.4	
01/18/96	17:23	29.0	1.9	0.2	

Auxiliary Average Report

DCNID : 01 Site Name : ~~DRYER~~ press house Vent Aux Interval : 1 Date : 1/18/96

Time	THC PPM	CO PPM	NOX PPM
18:36	43.8000	2.2000	0.4000
18:37	105.1000	2.2000	1.0000
18:38	118.4000	2.8000	1.4000
18:39	44.2000	2.6000	0.5000
18:40	66.6000	2.2000	0.5000
18:41	138.9000	2.5000	1.4000
18:42	65.5000	2.7000	0.9000
18:43	45.2000	2.2000	0.3000
18:44	112.4000	2.2000	1.1000
18:45	119.3000	2.6000	1.3000
18:46	44.5000	2.3000	0.5000
18:47	79.0000	2.0000	0.6000
18:48	152.3000	2.4000	1.6000
18:49	70.4000	2.6000	0.9000
18:50	40.8000	2.1000	0.4000
18:51	31.2000	2.0000	0.3000
18:52	26.4000	1.9000	0.2000
18:53	22.9000	1.9000	0.2000
MAX :	152.3000	2.8000	1.6000
MIN :	22.9000	1.9000	0.2000
AVG :	73.7167	2.3000	0.7500
SCANS:	18	18	18

Run 1 (particulate)

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Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/18/96

Time	THC PPM	CO PPM	NOX PPM
19:06	22.9000	1.8000	0.2000
19:07	56.2000	1.7000	0.4000
19:08	167.5000	2.1000	1.3000
19:09	69.3000	2.6000	0.8000
19:10	51.6000	2.0000	0.3000
19:11	136.4000	2.0000	1.2000
19:12	110.6000	2.4000	1.2000
19:13	40.5000	2.1000	0.4000
19:14	77.1000	1.8000	0.5000
19:15	155.6000	2.3000	1.5000
19:16	66.9000	2.5000	0.9000
19:17	41.8000	1.9000	0.3000
19:18	112.4000	1.9000	1.0000
19:19	147.6000	2.4000	1.4000
19:20	52.1000	2.2000	0.6000
19:21	30.6000	1.7000	0.3000
19:22	49.2000	1.6000	0.3000
19:23	154.3000	1.9000	1.3000
MAX :	167.5000	2.6000	1.5000
MIN :	22.9000	1.6000	0.2000
AVG :	85.7000	2.0500	0.7722
SCANS:	18	18	18

!

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/18/96

Time	THC PPM	CO PPM	NOX PPM
19:28	72.7000	2.6000	0.9000
19:29	38.8000	2.1000	0.3000
19:30	75.6000	1.9000	0.6000
19:31	166.9000	2.3000	1.4000
19:32	60.2000	2.6000	0.8000
19:33	75.1000	2.0000	0.5000
19:34	140.7000	2.2000	1.5000
19:35	80.1000	2.4000	1.1000
19:36	38.8000	2.1000	0.4000
19:37	27.6000	1.9000	0.3000
19:38	35.0000	1.9000	0.2000
19:39	115.1000	2.0000	1.0000
19:40	134.0000	2.6000	1.3000
19:41	49.7000	2.4000	0.6000
19:42	31.4000	1.9000	0.3000
19:43	22.5000	1.8000	0.2000
19:44	39.7000	1.8000	0.2000
19:45	148.5000	2.0000	1.1000
MAX :	166.9000	2.6000	1.5000
MIN :	22.5000	1.8000	0.2000
AVG :	75.1333	2.1389	0.7056
SCANS:	18	18	18

!

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/18/96

Time	THC PPM	CO PPM	NOX PPM
19:49	26.1000	1.8000	0.2000
19:50	22.1000	1.8000	0.2000
19:51	19.8000	1.8000	0.2000
19:52	18.4000	1.7000	0.1000
MAX :	26.1000	1.8000	0.2000
MIN :	18.4000	1.7000	0.1000
AVG :	21.6000	1.7750	0.1750
SCANS:	4	4	4

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date 1/19/96

Time	THC PPM	CO PPM	NOX PPM
20:10	90.7000	2.1000	0.8000
20:11	163.4000	2.6000	1.4000
20:12	52.0000	2.7000	0.7000
20:13	36.4000	2.1000	0.3000
20:14	112.7000	2.0000	1.0000
20:15	118.9000	2.5000	1.4000
20:16	40.8000	2.3000	0.6000
20:17	29.5000	2.0000	0.3000
20:18	97.0000	2.0000	0.8000
20:19	146.7000	2.5000	1.4000
20:20	50.4000	2.5000	0.6000
20:21	25.0000	2.1000	0.3000
20:22	17.3000	2.0000	0.2000
20:23	14.5000	2.0000	0.1000
MAX :	163.4000	2.7000	1.4000
MIN :	14.5000	2.0000	0.1000
AVG :	~~71.0929~~	~~2.2429~~	0.7071
SCANS:	14	14	14
	73.661	2.157	0.7

Final Cal Run 1 (parts)

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PRESS HOUSE VENT ~~SOUTH~~ North
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		THC PPM	CO PPM	NOX PPM	
01/18/96	20:27	9.9	2.6	0.2	
01/18/96	20:28	10.0	2.5	2.9	
01/18/96	20:29	9.3	1.7	45.6	
01/18/96	20:30	8.2	0.6	47.5	
01/18/96	20:31	7.5	0.5	47.7	
01/18/96	20:32	7.1	0.5	47.8	
01/18/96	20:33	6.8	0.5	47.9	50.0 ppm Nox Bias
01/18/96	20:34	6.4	0.5	47.8	
01/18/96	20:35	6.2	0.5	44.6	zero bias
01/18/96	20:36	6.0	1.6	24.1	
01/18/96	20:37	5.8	2.2	18.2	
01/18/96	20:38	5.7	2.2	12.8	
01/18/96	20:39	5.5	13.0	1.3	
01/18/96	20:40	5.3	37.9	0.2	
01/18/96	20:41	5.2	41.0	0.1	
01/18/96	20:42	5.2	41.1	0.1	zero bias / 42.3 ppm CO bias
01/18/96	20:43	5.1	40.9	0.1	
01/18/96	20:44	319.1	23.9	0.1	
01/18/96	20:45	498.2	3.7	0.1	
01/18/96	20:46	495.6	2.3	0.2	
01/18/96	20:47	493.3	2.5	0.1	
01/18/96	20:48	493.8	2.3	0.2	489 ppm propane bias
01/18/96	20:49	494.4	2.3	0.2	
01/18/96	20:50	147.6	2.2	0.1	
01/18/96	20:51	4.8	2.1	0.1	
01/18/96	20:52	4.2	2.1	0.1	
01/18/96	20:53	4.1	2.3	0.2	
01/18/96	20:54	4.2	2.6	0.1	
01/18/96	20:55	4.7	2.6	0.1	
01/18/96	20:56	4.7	2.6	0.1	zero bias
01/18/96	20:57	4.8	2.5	0.1	
01/18/96	20:58	4.8	2.5	0.2	
01/18/96	20:59	4.7	2.4	0.2	
		-----	-----	-----	
AVERAGES :		93.9	7.6	11.9	

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PRESS HOUSE VENT NORTH
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Initial Cal + Bias Check

		THC PPM	CO PPM	NOX PPM	
01/19/96	06:30	-0.1C	0.5C	-0.1C	
01/19/96	06:31	-0.2C	0.2C	-0.1C	
01/19/96	06:32	-0.2C	0.2C	0.0C	
01/19/96	06:33	4.8C	-0.1C	0.0C	zero
01/19/96	06:34	7.4C	0.1C	-0.1C	
01/19/96	06:35	4.7C	0.3C	43.8C	
01/19/96	06:36	4.0C	0.3C	50.6C	
01/19/96	06:37	4.4C	0.3C	50.3C	
01/19/96	06:38	5.8C	0.3C	49.4C	
01/19/96	06:39	4.2C	16.7C	0.4C	
01/19/96	06:40	4.1C	40.2C	0.1C	
01/19/96	06:41	12.2C	40.2C	0.1C	
01/19/96	06:42	7.7C	16.4C	53.0C	
01/19/96	06:43	4.0C	0.9C	82.6C	
01/19/96	06:44	4.1C	0.4C	82.6C	
01/19/96	06:45	4.3C	0.4C	82.6C	
01/19/96	06:46	4.3C	0.4C	~~83.4C~~	84.61 ppm NOx BLM002626
01/19/96	06:47	4.1C	0.7C	70.9C	
01/19/96	06:48	4.3C	44.7C	0.3C	
01/19/96	06:49	4.3C	84.3C	0.1C	
01/19/96	06:50	4.2C	85.0C	0.0C	
01/19/96	06:51	4.0C	85.5C	0.0C	
01/19/96	06:52	4.5C	~~85.7C~~	0.0C	84.7 ppm CO BLM003062
01/19/96	06:53	4.4C	74.3C	32.1C	
01/19/96	06:54	4.2C	10.2C	51.1C	
01/19/96	06:55	4.1C	0.3C	~~51.10~~	50.0 ppm NOx BLM003007
01/19/96	06:56	7.2C	0.6C	39.9C	
01/19/96	06:57	4.3C	24.3C	0.2C	
01/19/96	06:58	4.0C	40.9C	0.1C	
01/19/96	06:59	4.2C	~~41.10~~	0.0C	42.3 ppm CO BAL3354
01/19/96	07:00	7.9C	35.2C	30.0C	
01/19/96	07:01	4.3C	4.6C	~~51.00~~	50.0 ppm NOx
01/19/96	07:02	8.7C	0.5C	37.5C	
01/19/96	07:03	4.2C	10.8C	0.1C	
01/19/96	07:04	4.2C	17.0C	0.0C	
01/19/96	07:05	5.8C	~~17.1C~~	0.0C	17.3 ppm CO BLM002326
01/19/96	07:06	35.5C	12.8C	0.2C	
01/19/96	07:07	23.4C	3.1C	0.2C	
01/19/96	07:08	28.7C	2.3C	0.2C	
01/19/96	07:09	18.1C	2.2C	0.1C	
01/19/96	07:10	4.0C	0.8C	0.0C	
01/19/96	07:11	3.1C	0.1C	0.0C	
01/19/96	07:12	1.2C	0.1C	0.0C	
01/19/96	07:13	0.6C	0.1C	0.0C	
01/19/96	07:14	371.9C	0.2C	0.0C	

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ERM Southwest
Silsbee, TX
1/19/96
Press House Vent North

Model VE 7
SN 1018410927
0-1000

TECO
Model 48
SN 48-33526-245
0-100

TECO
Model 105
SN 105 33302 245
0-100

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		THC PPM	CO PPM	NOX PPM	
01/19/96	07:15	497.9C	0.3C	0.0C	
01/19/96	07:16	498.1C	0.3C	0.0C	489 ppm propane BAL2652
01/19/96	07:17	492.3C	0.3C	0.0C	
01/19/96	07:18	491.9C	0.3C	3.5C	
01/19/96	07:19	171.4C	0.5C	27.4C	
01/19/96	07:20	40.5C	2.6C	27.3C	
01/19/96	07:21	5.1C	3.4C	27.2C	
01/19/96	07:22	798.5C	2.7C	27.0C	
01/19/96	07:23	976.7C	0.8C	26.9C	
01/19/96	07:24	977.3C	0.6C	19.5C	
01/19/96	07:25	977.7C	0.6C	0.1C	zero bias / 977.5 ppm propane BLM004065
01/19/96	07:26	463.0C	0.8C	26.9C	
01/19/96	07:27	29.5C	2.7C	47.8C	
01/19/96	07:28	26.6C	3.5C	48.2C	50.0 NOx bias
01/19/96	07:29	102.6C	3.5C	48.0C	
01/19/96	07:30	235.6C	1.4C	18.8C	zero bias
01/19/96	07:31	235.8C	2.0C	1.1C	233 ppm propane BAL1761
01/19/96	07:32	235.9C	3.4C	1.3C	
01/19/96	07:33	175.7C	3.7C	26.8C	
01/19/96	07:34	64.1C	21.7C	27.0C	start Converter check
01/19/96	07:35	61.0C	39.8C	27.0C	
01/19/96	07:36	57.9C	41.1C	27.0C	
01/19/96	07:37	53.2C	41.1C	27.1C	
01/19/96	07:38	20.1C	41.1C	27.1C	42.3 ppm CO bias
01/19/96	07:39	14.7C	40.6C	27.1C	
01/19/96	07:40	23.2C	24.2C	27.0C	
01/19/96	07:41	85.2C	4.4C	27.0C	
01/19/96	07:42	66.0C	2.9C	27.0C	
01/19/96	07:43	44.2C	2.4C	27.0C	
01/19/96	07:44	460.7C	2.3C	26.9C	
01/19/96	07:45	496.6C	2.7C	26.9C	
01/19/96	07:46	497.6C	2.8C	26.9C	
01/19/96	07:47	498.3C	2.3C	26.9C	489 ppm propane Bias
01/19/96	07:48	498.3C	2.0C	26.9C	
01/19/96	07:49	217.1C	2.0C	26.8C	
01/19/96	07:50	4.9C	2.2C	26.7C	
01/19/96	07:51	1.8C	2.7C	26.7C	
01/19/96	07:52	1.1C	2.6C	26.5C	zero bias
01/19/96	07:53	23.9C	2.1C	26.4C	
01/19/96	07:54	117.0C	2.2C	26.4C	
01/19/96	07:55	118.7C	2.8C	26.4C	
01/19/96	07:56	33.6C	2.6C	26.4C	
01/19/96	07:57	39.2C	2.2C	26.3C	
01/19/96	07:58	148.3C	2.5C	26.3C	
01/19/96	07:59	92.2C	3.1C	26.4C	

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		THC PPM	CO PPM	NOX PPM	
01/19/96	08:00	33.1C	2.7C	26.4C	
01/19/96	08:01	26.2C	2.2C	26.3C	
01/19/96	08:02	89.0C	2.3C	26.3C	
01/19/96	08:03	145.7C	2.8C	26.3C	
01/19/96	08:04	39.6C	2.6C	26.3C	End converter chk.
01/19/96	08:05	39.5C	2.1C	18.3C	
01/19/96	08:06	136.1C	2.3C	0.9C	
01/19/96	08:07	113.5C	2.8C	0.1C	
		-----	-----	-----	
AVERAGES :		127.0	11.8	22.1	

Auxiliary Average Report

DCNID : 01 Site Name : ~~DRYER~~ Vent Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM	
08:21	172.6000	0.6000	6.0000	Run 1 (formaldehyde)
08:22	84.1000	2.1000	2.1000	
08:23	35.3000	2.2000	0.5000	
08:24	94.1000	2.1000	0.8000	
08:25	169.0000	2.6000	1.4000	
08:26	55.7000	2.6000	0.7000	
08:27	40.9000	2.2000	0.4000	
08:28	131.4000	2.2000	1.0000	
08:29	133.7000	2.7000	1.2000	
08:30	42.6000	2.5000	0.5000	
08:31	56.5000	2.1000	0.5000	
08:32	162.6000	2.3000	1.3000	
08:33	93.3000	2.7000	1.0000	
08:34	36.7000	2.2000	0.4000	
08:35	81.4000	2.0000	0.6000	
08:36	158.1000	2.4000	1.3000	
08:37	64.0000	2.5000	0.7000	
08:38	37.5000	2.0000	0.3000	
MAX :	172.6000	2.7000	6.0000	
MIN :	35.3000	0.6000	0.3000	
AVG :	91.6389	2.2222	1.1500	
SCANS:	18	18	18	

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
08:43	136.3000	2.1000	1.0000
08:44	105.9000	2.6000	1.0000
08:45	41.2000	2.3000	0.4000
08:46	24.2000	1.9000	0.2000
08:47	57.4000	2.0000	0.5000
08:48	156.8000	2.6000	1.0000
08:49	50.4000	2.9000	0.5000
08:50	32.5000	2.2000	0.3000
08:51	86.2000	2.2000	0.6000
08:52	129.4000	2.8000	1.0000
08:53	41.8000	2.7000	0.4000
08:54	32.5000	2.1000	0.3000
08:55	113.0000	2.4000	0.7000
08:56	95.2000	2.9000	0.8000
08:57	34.8000	2.5000	0.3000
08:58	34.8000	2.1000	0.4000
08:59	131.3000	2.4000	0.8000
09:00	60.0000	3.0000	0.7000
MAX :	156.8000	3.0000	1.0000
MIN :	24.2000	1.9000	0.2000
AVG :	75.7611	2.4278	0.6056
SCANS:	18	18	18

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
09:04	55.7000	3.1000	0.6000
09:05	28.9000	2.4000	0.3000
09:06	42.6000	2.4000	0.5000
09:07	141.5000	3.1000	0.8000
09:08	62.8000	3.5000	0.6000
09:09	26.4000	2.8000	0.3000
09:10	28.5000	2.6000	0.4000
09:11	115.2000	2.9000	0.7000
09:12	83.6000	3.6000	0.7000
09:13	32.1000	3.0000	0.3000
09:14	29.1000	2.5000	0.4000
09:15	104.4000	2.7000	0.6000
09:16	91.8000	3.2000	0.7000
09:17	35.7000	2.8000	0.3000
09:18	34.9000	2.2000	0.4000
09:19	132.1000	2.4000	0.8000
09:20	100.7000	3.1000	0.8000
09:21	36.1000	2.7000	0.3000
MAX :	141.5000	3.6000	0.8000
MIN :	26.4000	2.2000	0.3000
AVG :	65.6722	2.8333	0.5278
SCANS:	18	18	18

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
09:25	49.4000	3.0000	0.5000
09:26	26.9000	2.2000	0.3000
09:27	59.4000	2.2000	0.6000
09:28	169.6000	2.9000	0.9000
09:29	62.3000	3.3000	0.5000
09:30	41.0000	2.5000	0.2000
09:31	28.9000	2.2000	0.2000
09:32	18.0000	2.1000	0.1000
09:33	14.5000	2.1000	0.1000
09:34	16.9000	2.0000	0.1000
09:35	38.8000	2.2000	0.4000
MAX :	169.6000	3.3000	0.9000
MIN :	14.5000	2.0000	0.1000
AVG :	47.7909	2.4273	0.3545
SCANS:	11	11	11

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Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
09:40	34.8000	2.0000	0.3000
09:41	134.1000	2.3000	0.8000
09:42	99.7000	3.0000	0.8000
09:43	38.9000	2.7000	0.3000
09:44	54.7000	2.3000	0.5000
09:45	169.6000	2.6000	1.0000
09:46	71.7000	3.1000	0.7000
MAX :	169.6000	3.1000	1.0000
MIN :	34.8000	2.0000	0.3000
AVG :	86.2143	2.5714	0.6286
SCANS:	7	7	7
	73.951	2.5	0.686

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Final Cal Run 1 (formaldehyde)
Initial Cal Run 2 (particulate)

		THC PPM	CO PPM	NOX PPM	
01/19/96	09:47	37.9	2.4	1.0	
01/19/96	09:48	33.0	17.7	0.5	
01/19/96	09:49	13.6	39.4	0.0	
01/19/96	09:50	11.0	41.2	0.0	
01/19/96	09:51	10.3	41.2	0.0	42.3 ppm CO Bias
01/19/96	09:52	10.7	41.2	0.0	zero bias
01/19/96	09:53	12.8	32.2	0.0	
01/19/96	09:54	13.0	17.8	0.1	
01/19/96	09:55	12.5	10.8	0.1	
01/19/96	09:56	11.9	7.0	0.1	
01/19/96	09:57	11.4	5.0	0.1	
01/19/96	09:58	11.1	4.0	0.1	
01/19/96	09:59	13.5	3.5	0.6	
01/19/96	10:00	10.0	2.1	37.0	
01/19/96	10:01	6.9	0.5	43.3	
01/19/96	10:02	7.0	[illegible]	43.9	zero bias
01/19/96	10:03	6.8	[illegible]	[illegible]	46.22 ppm Nox Bias BLM050059
01/19/96	10:04	34.6	0.4	36.1	
01/19/96	10:05	399.8	1.2	3.2	
01/19/96	10:06	487.4	1.8	0.7	
01/19/96	10:07	[illegible]	2.1	1.2	489 ppm propane bias
01/19/96	10:08	481.2	2.5	1.0	
01/19/96	10:09	34.5	2.0	0.4	
01/19/96	10:10	2.4	1.7	0.6	
01/19/96	10:11	[illegible]	2.3	1.2	zero bias
		-----	-----	-----	
AVERAGES :		86.5	11.2	8.6	

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SILSBEE, TEXAS
PRESS HOUSE VENT NORTH
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		THC PPM	CO PPM	NOX PPM	
01/19/96	10:15	15.5	3.3	11.3	
01/19/96	10:16	9.2	3.5	45.3	
01/19/96	10:17	4.5	2.9	45.9	
01/19/96	10:18	4.5	3.0	[illegible]	46.22 ppm Nox BLM 003059 Adjust
01/19/96	10:19	5.7	3.0	31.3	
01/19/96	10:20	5.4	2.6	0.4	
01/19/96	10:21	4.7	2.4	0.3	
01/19/96	10:22	4.6	1.9	33.8	
01/19/96	10:23	4.4	0.6	44.0	
01/19/96	10:24	4.1	0.3	44.7	
01/19/96	10:25	4.4	0.3	[illegible]	46.22 ppm Nox BIAS
01/19/96	10:26	4.4	0.3	40.4	
01/19/96	10:27	4.7	1.1	5.7	
01/19/96	10:28	6.4	2.1	0.5	
01/19/96	10:29	40.4	2.2	[illegible]	zero bias
		-----	-----	-----	
AVERAGES :		8.2	2.0	26.3	

Auxiliary Average Report

DCNID : 01   Site Name : ~~DRYER~~ Vent   Aux Interval : 1   Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
10:39	49.5000	3.1000	0.6000
10:40	39.6000	2.5000	0.4000
10:41	123.1000	2.6000	1.0000
10:42	118.7000	3.2000	1.2000
10:43	40.4000	3.1000	0.5000
10:44	53.4000	2.6000	0.6000
10:45	148.5000	2.9000	1.3000
10:46	77.8000	3.4000	1.1000
10:47	37.8000	3.0000	0.5000
10:48	77.3000	2.8000	0.9000
10:49	155.1000	3.4000	1.5000
10:50	54.7000	3.8000	0.8000
10:51	39.1000	3.5000	0.5000
10:52	101.7000	3.7000	1.1000
10:53	133.1000	4.1000	1.4000
10:54	43.6000	4.0000	0.6000
10:55	44.0000	3.6000	0.6000
10:56	138.2000	4.1000	1.2000
MAX :	155.1000	4.1000	1.5000
MIN :	37.8000	2.5000	0.4000
AVG :	81.9778	3.3000	0.8778
SCANS:	18	18	18

Run 2 (particulate)

!

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
11:01	63.3000	4.4000	0.9000
11:02	37.3000	3.8000	0.4000
11:03	87.4000	3.7000	0.9000
11:04	147.8000	4.3000	1.4000
11:05	48.4000	4.2000	0.7000
11:06	44.0000	3.5000	0.5000
11:07	132.3000	3.7000	1.3000
11:08	104.7000	4.3000	1.3000
11:09	38.8000	4.1000	0.6000
11:10	56.3000	3.8000	0.7000
11:11	153.7000	4.2000	1.5000
11:12	69.8000	4.5000	1.1000
11:13	37.3000	3.9000	0.5000
11:14	83.2000	3.6000	1.0000
11:15	154.4000	4.1000	1.5000
11:16	52.1000	4.1000	0.9000
11:17	42.9000	3.6000	0.6000
11:18	121.1000	3.7000	1.3000
MAX :	154.4000	4.5000	1.5000
MIN :	37.3000	3.5000	0.4000
AVG :	81.9333	3.9722	0.9500
SCANS:	18	18	18

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
11:22	152.1000	3.5000	1.5000
11:23	81.1000	3.8000	1.2000
11:24	36.6000	3.3000	0.6000
11:25	75.1000	3.1000	1.0000
11:26	155.2000	3.5000	1.7000
11:27	57.0000	3.7000	1.0000
11:28	39.0000	3.2000	0.6000
11:29	108.3000	3.3000	1.3000
11:30	141.6000	3.8000	1.8000
11:31	45.5000	3.6000	0.9000
11:32	50.2000	3.0000	0.7000
11:33	146.4000	3.1000	1.6000
11:34	101.0000	3.6000	1.5000
11:35	39.6000	3.1000	0.7000
11:36	68.7000	2.8000	0.9000
11:37	160.6000	3.2000	1.9000
11:38	66.3000	3.6000	1.3000
11:39	36.1000	3.0000	0.6000
MAX :	160.6000	3.8000	1.9000
MIN :	36.1000	2.8000	0.6000
AVG :	86.6889	3.3444	1.1556
SCANS:	18	18	18

!

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
11:43	48.3000	2.9000	0.7000
11:44	137.8000	3.0000	1.8000
11:45	110.2000	3.5000	1.8000
11:46	39.8000	3.2000	0.8000
11:47	71.6000	2.9000	1.0000
11:48	159.8000	3.3000	2.1000
11:49	77.0000	3.6000	1.5000
11:50	35.5000	3.0000	0.7000
11:51	77.2000	2.7000	1.1000
11:52	182.0000	3.1000	2.1000
11:53	72.3000	3.3000	1.3000
11:54	39.2000	2.6000	0.6000
11:55	29.3000	2.3000	0.4000
11:56	24.0000	2.2000	0.3000
11:57	20.4000	2.1000	0.3000
11:58	62.9000	2.1000	0.7000
11:59	168.8000	2.5000	1.9000
12:00	78.5000	2.9000	1.4000
MAX :	182.0000	3.6000	2.1000
MIN :	20.4000	2.1000	0.3000
AVG :	~~79.7000~~	~~2.8444~~	~~1.1389~~
SCANS:	18	18	18
	82.515	3.365	1.031

AVERAGES :	83.0	3.4	1.0

Final Cal Run 2 (particulate)
Initial Cal Run 2 (form.)

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SILSBEE, TEXAS
PRESS HOUSE VENT NORTH
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	THC PPM	CO PPM	NOX PPM	
01/19/96 12:02	27.1	2.7	0.3	
01/19/96 12:03	22.1	3.0	0.3	
01/19/96 12:04	45.5	3.0	0.3	
01/19/96 12:05	149.9	1.5	23.3	
01/19/96 12:06	108.2	0.5	45.0	
01/19/96 12:07	37.6	0.3	45.6	46.22 ppm Nox Bias
01/19/96 12:08	40.9	0.3	42.1	zero Bias
01/19/96 12:09	139.3	12.3	4.7	
01/19/96 12:10	117.3	38.2	0.3	
01/19/96 12:11	39.7	41.1	0.1	42.5 ppm CO Bias
01/19/96 12:12	46.7	41.1	0.1	zero Bias
01/19/96 12:13	101.2	36.4	0.6	
01/19/96 12:14	489.7	11.4	0.7	
01/19/96 12:15	490.3	4.0	0.5	489 ppm propane Bias
01/19/96 12:16	398.7	3.7	0.5	
01/19/96 12:17	3.6	3.8	0.4	
01/19/96 12:18	2.1	2.8	0.4	
01/19/96 12:19	2.0	2.9	0.5	zero bias
	-----	-----	-----	
AVERAGES :	125.7	11.6	9.2	

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Auxiliary Average Report

DCNID : 01   Site Name : DRYER   Aux Interval : 1   Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
13:01	110.6000	3.0000	1.4000
13:02	132.2000	3.5000	1.7000
13:03	48.0000	3.3000	0.8000
13:04	27.5000	2.7000	0.4000
13:05	57.7000	2.5000	0.8000
13:06	156.7000	2.8000	1.7000
13:07	62.9000	3.2000	1.1000
13:08	33.6000	2.6000	0.5000
13:09	68.2000	2.4000	0.9000
13:10	168.7000	2.8000	1.6000
13:11	61.0000	3.1000	0.9000
13:12	30.0000	2.3000	0.4000
13:13	37.4000	1.9000	0.4000
13:14	122.2000	2.2000	1.3000
13:15	103.6000	2.8000	1.4000
13:16	37.2000	2.6000	0.5000
13:17	53.5000	2.1000	0.6000
13:18	145.5000	2.4000	1.5000
MAX :	168.7000	3.5000	1.7000
MIN :	27.5000	1.9000	0.4000
AVG :	80.9167	2.6778	0.9944
SCANS:	18	18	18

Run 2 (form)

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
13:22	150.2000	3.1000	1.6000
13:23	53.1000	3.3000	0.9000
13:24	39.8000	2.5000	0,5000
13:25	107.2000	2.7000	1.2000
13:26	126.5000	3.4000	1.5000
13:27	43.5000	3.0000	0.6000
13:28	48.7000	2.5000	0.6000
13:29	140.5000	2.6000	1.4000
13:30	87.4000	3.0000	1.2000
13:31	36.9000	2.4000	0.4000
13:32	56.8000	2.0000	0.7000
13:33	152.2000	2.4000	1.3000
13:34	62.5000	2.8000	0.9000
13:35	35.7000	2.1000	0.4000
13:36	69.8000	2.0000	0.9000
13:37	157.0000	2.5000	1.4000
13:38	48.5000	2.8000	0.7000
13:39	34.3000	2.0000	0.5000
MAX :	157.0000	3.4000	1.6000
MIN :	34.3000	2.0000	0.4000
AVG :	80.5889	2.6167	0.9278
SCANS:	18	18	18

!

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
13:44	148.1000	3.2000	1.4000
13:45	72.6000	3.8000	1.1000
13:46	35.3000	3.4000	0.5000
13:47	64.2000	3.0000	0.9000
13:48	158.7000	3.4000	1.5000
13:49	50.8000	3.6000	0.9000
13:50	38.1000	2.8000	0.5000
13:51	102.5000	2.7000	1.1000
13:52	125.6000	3.4000	1.4000
13:53	40.8000	3.2000	0.7000
13:54	47.5000	2.7000	0.7000
13:55	142.5000	3.1000	1.5000
13:56	82.9000	3.8000	1.3000
13:57	37.3000	3.3000	0.6000
13:58	63.8000	3.0000	0.9000
13:59	144.7000	3.5000	1.6000
14:00	55.7000	4.0000	1.0000
14:01	36.7000	3.5000	0.7000
MAX :	158.7000	4.0000	1.6000
MIN :	35.3000	2.7000	0.5000
AVG :	80.4333	3.3000	1.0167
SCANS:	18	18	18

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
14:05	46.2000	3.1000	0.7000
14:06	134.9000	3.2000	1.4000
14:07	101.1000	3.8000	1.4000
14:08	39.2000	3.5000	0.7000
14:09	62.3000	3.2000	0.9000
14:10	157.5000	3.6000	1.7000
14:11	68.1000	4.1000	1.2000
14:12	38.3000	3.5000	0.7000
14:13	79.1000	3.3000	1.1000
14:14	159.6000	3.7000	1.7000
14:15	52.4000	3.7000	1.0000
14:16	42.6000	3.0000	0.7000
14:17	124.9000	3.0000	1.4000
14:18	124.3000	3.5000	1.6000
14:19	41.1000	3.3000	0.7000
14:20	55.8000	2.6000	0.7000
14:21	152.8000	2.8000	1.6000
14:22	85.8000	3.4000	1.3000
MAX :	159.6000	4.1000	1.7000
MIN :	38.3000	2.6000	0.7000
AVG :	~~87.6000~~ 82.235	~~3.3500~~ 3.0	1.1389
SCANS:	18	18	18

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PRESS HOUSE VENT NORTH
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Final Cal Run 2 (form.)
Initial Cal Run 3 (part.)

		THC PPM	CO PPM	NOX PPM	
01/19/96	14:23	13.0	2.8	0.6	
01/19/96	14:24	4.4	2.5	0.9	
01/19/96	14:25	3.5	3.0	1.4	
01/19/96	14:26	~~2.8~~	3.6	0.4	zero bias
01/19/96	14:27	254.3	3.7	0.4	
01/19/96	14:28	488.6	3.8	0.4	
01/19/96	14:29	~~488.6~~	3.9	0.4	489 ppm propane bias
01/19/96	14:30	236.4	4.0	0.4	
01/19/96	14:31	5.2	10.5	0.2	
01/19/96	14:32	4.7	36.0	0.0	
01/19/96	14:33	4.1	~~41.0~~	0.0	42.3 ppm CO bias
01/19/96	14:34	4.0	41.1	0.0	
01/19/96	14:35	3.8	41.0	~~0.0~~	zero bias
01/19/96	14:36	3.6	32.3	19.1	
01/19/96	14:37	3.1	7.4	46.2	
01/19/96	14:38	3.4	0.4	~~48.9~~	46.22 ppm Nox bias
01/19/96	14:39	3.4	~~0.3~~	47.1	zero bias
01/19/96	14:40	3.2	1.0	14.3	
01/19/96	14:41	3.0	3.3	0.9	
01/19/96	14:42	3.4	3.8	0.3	
		-----	-----	-----	
AVERAGES :		76.8	12.3	9.0	

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
14:58	158.5000	2.7000	1.4000
14:59	91.8000	3.2000	1.2000
15:00	40.7000	2.8000	0.5000
15:01	82.6000	2.4000	0.9000
15:02	165.7000	2.9000	1.7000
15:03	58.0000	3.2000	0.9000
15:04	41.6000	2.5000	0.4000
15:05	108.8000	2.5000	1.1000
15:06	146.0000	3.2000	1.5000
15:07	44.9000	3.2000	0.7000
15:08	45.5000	2.6000	0.5000
15:09	138.7000	2.6000	1.3000
15:10	110.1000	3.0000	1.3000
15:11	36.3000	2.6000	0.5000
15:12	23.0000	2.0000	0.2000
15:13	18.9000	1.7000	0.1000
15:14	15.3000	1.6000	0.1000
15:15	13.2000	1.6000	0.1000
MAX :	165.7000	3.2000	1.7000
MIN :	13.2000	1.6000	0.1000
AVG :	74.4222	2.5722	0.8000
SCANS:	18	18	18

Run 3 (part)

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
16:36	33.1000	1.5000	0.4000
16:37	54.5000	1.2000	0.5000
16:38	145.7000	1.5000	1.3000
16:39	58.6000	1.9000	0.8000
16:40	33.7000	1.4000	0.3000
16:41	81.3000	1.3000	0.8000
16:42	140.4000	1.8000	1.3000
16:43	43.4000	1.8000	0.6000
16:44	38.0000	1.3000	0.4000
16:45	120.3000	1.3000	1.0000
16:46	104.7000	1.8000	1.2000
16:47	36.2000	1.6000	0.4000
16:48	52.8000	1.1000	0.5000
16:49	150.2000	1.4000	1.2000
16:50	73.7000	1.8000	0.9000
16:51	33.8000	1.3000	0.3000
16:52	67.7000	1.0000	0.7000
16:53	129.1000	1.4000	1.3000
MAX :	150.2000	1.9000	1.3000
MIN :	33.1000	1.0000	0.3000
AVG :	77.6222	1.4667	0.7722
SCANS:	18	18	18

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
16:57	130.9000	1.6000	1.2000
16:58	41.2000	1.4000	0.5000
16:59	47.9000	1.0000	0.4000
17:00	149.3000	1.2000	1.2000
17:01	88.7000	1.7000	1.0000
17:02	37.4000	1.3000	0.4000
17:03	64.7000	1.0000	0.6000
17:04	161.4000	1.5000	1.3000
17:05	60.0000	1.9000	0.8000
17:06	34.4000	1.4000	0.3000
17:07	73.9000	1.3000	0.8000
17:08	163.3000	1.8000	1.2000
17:09	47.5000	2.0000	0.6000
17:10	44.5000	1.3000	0.4000
17:11	132.1000	1.4000	1.1000
17:12	111.7000	1.9000	1.2000
17:13	39.8000	1.7000	0.5000
17:14	56.3000	1.3000	0.6000
MAX :	163.3000	2.0000	1.3000
MIN :	34.4000	1.0000	0.3000
AVG :	82.5000	1.4833	0.7833
SCANS:	18	18	18

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
17:18	63.6000	1.3000	0.7000
17:19	166.2000	1.6000	1.2000
17:20	55.7000	1.9000	0.7000
17:21	41.9000	1.3000	0.4000
17:22	115.0000	1.2000	1.0000
17:23	132.3000	1.7000	1.2000
17:24	43.1000	1.5000	0.5000
17:25	50.0000	1.0000	0.4000
17:26	149.6000	1.2000	1.1000
17:27	95.4000	1.7000	1.0000
17:28	37.7000	1.3000	0.3000
17:29	60.8000	1.0000	0.5000
17:30	170.7000	1.3000	1.2000
17:31	70.7000	1.7000	0.7000
17:32	36.1000	1.1000	0.3000
17:33	70.2000	0.9000	0.7000
17:34	175.7000	1.4000	1.2000
17:35	58.4000	1.7000	0.6000
MAX :	175.7000	1.9000	1.2000
MIN :	36.1000	0.9000	0.3000
AVG :	~~88.5055~~	1.3778	0.7611
SCANS:	18	18	18
	80.762	1.725	

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Final Cal Run 3 (part.)
Initial Cal Run 3 (form.)

	THC PPM	CO PPM	NOX PPM	
01/19/96 17:38	155.3	0.5	46.8	
01/19/96 17:39	50.5	0.2	47.2	zero bias
01/19/96 17:40	55.9	0.2	47.3	46.22 ppm NOx bias
01/19/96 17:41	155.3	0.3	47.4	
01/19/96 17:42	66.8	4.8	20.3	
01/19/96 17:43	11.9	32.9	0.6	
01/19/96 17:44	11.1	40.8	0.1	
01/19/96 17:45	10.7	41.0	0.1	zero bias
01/19/96 17:46	10.7	41.0	0.1	42.3 ppm CO bias
01/19/96 17:47	23.5	30.3	0.2	
01/19/96 17:48	262.5	5.1	0.8	
01/19/96 17:49	495.2	1.7	1.3	
01/19/96 17:50	485.9	1.7	0.6	489 ppm propane bias
01/19/96 17:51	485.0	1.1	0.4	
01/19/96 17:52	386.8	1.3	1.1	
01/19/96 17:53	4.7	1.9	1.2	
01/19/96 17:54	[illegible]	1.7	0.4	zero bias
01/19/96 17:55	4.3	1.2	0.5	
01/19/96 17:56	5.6	1.5	1.3	
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AVERAGES :	141.3	11.0	11.5	

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Auxiliary Average Report

DCNID : 01   Site Name : DRYER   Aux Interval : 1   Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
18:17	41.1000	1.3000	0.4000
18:18	113.1000	1.4000	0.8000
18:19	100.4000	2.0000	1.0000
18:20	39.3000	1.7000	0.4000
18:21	43.3000	1.2000	0.4000
18:22	138.4000	1.5000	0.9000
18:23	76.6000	2.2000	0.8000
18:24	37.6000	1.6000	0.3000
18:25	57.4000	1.3000	0.5000
18:26	143.8000	1.8000	1.0000
18:27	54.7000	2.2000	0.6000
18:28	37.2000	1.5000	0.3000
18:29	94.6000	1.5000	0.7000
18:30	135.5000	2.2000	1.1000
18:31	53.6000	2.2000	0.5000
18:32	33.9000	1.5000	0.3000
18:33	73.6000	1.4000	0.6000
18:34	139.3000	2.0000	1.0000
MAX :	143.8000	2.2000	1.1000
MIN :	33.9000	1.2000	0.3000
AVG :	78.5222	1.6944	0.6444
SCANS:	18	18	18

Run 3 (form.)

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
18:39	39.0000	1.9000	0.3000
18:40	69.8000	1.5000	0.6000
18:41	153.5000	2.1000	1.1000
18:42	48.6000	2.3000	0.5000
18:43	54.2000	1.6000	0.4000
18:44	150.1000	1.8000	1.1000
18:45	78.2000	2.3000	0.9000
18:46	39.3000	1.8000	0.4000
18:47	74.2000	1.4000	0.6000
18:48	150.6000	2.0000	1.2000
18:49	48.5000	2.2000	0.6000
18:50	49.6000	1.4000	0.4000
18:51	145.7000	1.6000	1.0000
18:52	75.6000	2.2000	0.9000
18:53	42.1000	1.7000	0.4000
18:54	105.7000	1.4000	0.8000
18:55	120.9000	2.0000	1.1000
18:56	42.5000	2.0000	0.5000
MAX :	153.5000	2.3000	1.2000
MIN :	39.0000	1.4000	0.3000
AVG :	82.6722	1.8444	0.7111
SCANS:	18	18	18

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
19:01	127.9000	1.5000	0.9000
19:02	100.6000	2.1000	1.1000
19:03	40.4000	1.9000	0.4000
19:04	68.6000	1.4000	0.6000
19:05	149.4000	1.8000	1.2000
19:06	58.1000	2.1000	0.7000
19:07	31.7000	1.6000	0.3000
19:08	57.2000	1.3000	0.4000
19:09	144.1000	1.6000	1.2000
19:10	61.8000	2.1000	0.8000
19:11	39.1000	1.6000	0.4000
19:12	105.5000	1.4000	0.8000
19:13	120.0000	2.0000	1.2000
19:14	42.9000	1.8000	0.5000
19:15	58.2000	1.3000	0.5000
19:16	157.0000	1.5000	1.2000
19:17	58.4000	1.9000	0.8000
19:18	43.2000	1.3000	0.4000
MAX :	157.0000	2.1000	1.2000
MIN :	31.7000	1.3000	0.3000
AVG :	81.3389	1.6778	0.7444
SCANS:	18	18	18

!

Auxiliary Average Report

DCNID : 01 Site Name : DRYER Aux Interval : 1 Date : 1/19/96

Time	THC PPM	CO PPM	NOX PPM
19:21	40.4000	1.6000	0.4000
19:22	67.8000	1.2000	0.6000
19:23	154.2000	1.5000	1.3000
19:24	58.7000	1.8000	0.7000
19:25	36.3000	1.2000	0.3000
19:26	25.3000	1.0000	0.2000
19:27	53.2000	0.9000	0.4000
19:28	152.5000	1.3000	1.3000
19:29	64.2000	1.8000	0.8000
19:30	33.3000	1.3000	0.3000
19:31	23.0000	0.9000	0.1000
19:32	46.6000	0.9000	0.4000
19:33	151.7000	1.2000	1.2000
19:34	61.1000	1.7000	0.8000
19:35	43.5000	1.2000	0.3000
19:36	117.7000	1.1000	1.1000
19:37	98.4000	1.7000	1.2000
19:38	36.7000	1.5000	0.4000
MAX :	154.2000	1.8000	1.3000
MIN :	23.0000	0.9000	0.1000
AVG :	~~70.2556~~	~~1.3222~~	0.6556
SCANS:	18	18	18
	78.197	1.635	

ERM SOUTHWEST
96 11
SILSBEE, TEXAS
PRESS HOUSE VENT NORTH
Page : 1

Final Cal Run 3 (form.)

		THC PPM	CO PPM	NOX PPM	
01/19/96	19:40	84.2	1.4	1.4	
01/19/96	19:41	54.0	1.7	0.8	
01/19/96	19:42	5.1	1.2	0.4	
01/19/96	19:43	4.4	1.2	1.2	
01/19/96	19:44	3.9	1.8	1.2	
01/19/96	19:45	100.6	1.6	0.4	
01/19/96	19:46	490.1	1.2	0.7	
01/19/96	19:47	491.4	1.6	1.4	489 ppm propane Bias
01/19/96	19:48	206.6	1.8	0.7	
01/19/96	19:49	5.7	4.2	0.1	
01/19/96	19:50	5.5	29.9	0.1	Zero
01/19/96	19:51	5.3	40.5	0.1	
01/19/96	19:52	5.2	41.0	0.0	42.3 ppm CO Bias
01/19/96	19:53	5.0	41.0	0.1	
01/19/96	19:54	4.8	28.5	37.5	
01/19/96	19:55	4.8	2.7	47.1	zero bias
01/19/96	19:56	4.9	0.3	[illegible]	46.22 ppm Nox bias
01/19/96	19:57	5.7	[illegible]	45.2	zero bias
01/19/96	19:58	8.0	1.0	7.8	
		-----	-----	-----	
AVERAGES :		78.7	10.7	10.2	

APPENDIX G

Plant Operational Data

Press Production Summary
Press RTO Compliance Testing
Silsbee OSB Plant, Silsbee, Texas

Press Parameter	16-Jan-96 Day		Night		24-Hr. Total
Board Dimension	7/16"	23/32"	7/16"	23/32"	
Press Loads	4	130	191	3	
Panels	48	1560	2292	36	
Thickness, inches	0.447	0.731	0.447	0.731	
Density, lb/cuft	42.9	41.0	42.9	41.0	
Production, sqft/shift, 3/8" basis	584,832	526,656	584,832	526,656	1,111,488
Production, sqft/hr average					46,312
Production, lb/hr average	1,331	67,616	63,563	1,560	67,035

Press Production Summary
Press RTO Compliance Testing
Silsbee OSB Plant, Silsbee, Texas

Press Parameter	Day	17-Jan-96 Night			24-Hr. Total
Board Dimension	23/32"	23/32"	19/16"	3/8"	
Press Loads	135	8	39	131	
Panels	1620	96	468	1572	
Thickness, inches	0.733	0.733	0.63	0.394	
Density, lb/cuft	40.9	40.9	40.1	44.3	
Production, sqft/shift, 3/8" basis					1,074,584
Production, sqft/hr average					**44,774**
Production, lb/hr average	70,237	4,162	17,098	39,680	**65,589**

Press Production Summary
Press RTO Compliance Testing
Silsbee OSB Plant, Silsbee, Texas

	18-Jan-96			
	Day		Night	24-Hr. Total
Press Parameter				
Board Dimension	3/8"	7/16"	7/16"	
Press Loads	4	191	162	
Panels	48	2292	1944	
Thickness, inches	0.385	0.449	0.449	
Density, lb/cuft	48	50.0	50	
Production, sqft/shift, 3/8" basis				958,080
Production, sqft/hr average				39,920
Production, lb/hr average	1,283	74,414	63,115	69,406

We have enclosed two operations certification forms (Form PI-3A and Form PI-3B). TNRCC Rule 116.110(b) of Regulation VI requires you to certify that operations addressed in this permit are in conformance with representations in the permit application. Please file these certifications with both the TNRCC Austin New Source Review Program and the appropriate TNRCC regional office in a timely manner as prescribed by rule.

Your cooperation in this matter is appreciated. If you have further questions, please contact Mr. Patrick N. Agumadu of our Office of Air Quality New Source Review Program.

Sincerely,

William R. Campbell
Acting Executive Director
Texas Natural Resource Conservation Commission

Enclosures

cc: Mr. Marion Everhart, Manager, Air Program, Beaumont

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Office of Air Quality
New Source Review Program
Post Office Box 13087
Austin, Texas 78711-3087

TNRCC

FORM PI-3A

Operations Certification (Part 1 of 2)
TNRCC Rule 116.110(b)(1)(A)

A

For facilities permitted by authority of Title 30 Texas Administrative Code, Chapter 116.

This certification must be signed by an individual with process knowledge in a managerial capacity and must be submitted upon completion of construction and prior to start of operation of the authorized facilities.

Permit Number 19695
Date of Permit Issuance or Last Amendment: September 20 , 1994

I. Permittee

Permit Issued To: Kirby Forest Industries, INc.
Mailing Address: P.O. Box 3107
Conroe, Tx. 77305
Technical Contact: (Person, Title, Mailing Address) James T. Boswell, Dir.Env. Cntl.Sc Division as above
Telephone: (409) 760 5921

II. Permit Unit Information

Permit Unit Name: Two (2) OSB Dryer RTO's
Location: Nearest City Silsbee County: Hardin
TNRCC Air Quality Account Number: HE-0010-B

III. Construction and Operating Schedule Dates

Start of Construction: 04/01/94 Proposed Start of Operation: 10/13/94
Completion of Construction: 09/15/94

IV. A copy of this certification must be sent to the TNRCC Regional Office.

Regional Office (city) sent to: Beaumont, Texas

V. Certification

I, James T. Boswell (Name - please print or type), Director, Environmental Control So.Div (Title - Owner, Plant Manager, President, Vice President, Environmental Director)
state that I have knowledge of the facts herein set forth and that the same are true and correct to the best of my knowledge. I certify that the facilities or changes authorized by the referenced permit have been accomplished as represented, if those representations affect emissions, method of control, or character of emissions.

DATE 10/10/94 SIGNATURE James T. Boswell
Note: Original signature in ink required.

A second certification, FORM PI-3B, must be submitted simultaneously with any report of testing or monitoring results required by the permit or, if no testing or monitoring is required, within 60 days of the commencement of operation.

Version 11/01/1995

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Office of Air Quality
New Source Review Program
Post Office Box 13087
Austin, Texas 78711-3087

TNRCC

FORM PI-3B

Operations Certification (Part 2 of 2)
TNRCC Rule 116.110(b)(1)(B)

B

For facilities permitted by authority of Title 30 Texas Administrative Code, Chapter 116.

This certification must be signed by an individual with process knowledge in a managerial capacity, and must be submitted simultaneously with any report of testing or monitoring results required by the permit or, if no testing or monitoring is required, within 60 days of the commencement of operation.

Permit Number: 19695
Date of Permit Issuance or Last Amendment: ________________

Submittal Date of Form PI-3A (Part 1 of Operations Certification): ________________

I. Permittee

Permit Issued To: ________________
Mailing Address: ________________

Technical Contact: (Person, Title, Mailing Address) ________________
________________ Telephone: ( ) ___-____

II. Permit Unit Information

Permit Unit Name: ________________
Location: Nearest City: ________________ County: ________________
TNRCC Air Quality Account Number: ___-______-__

III. Construction and Operating Schedule Dates

Start of Construction: ________________ Start of Operation: ________________
Completion of Construction: ________________

IV. A copy of this certification must be sent to the TNRCC Regional Office.

Regional Office (city) sent to: ________________

V. Certification

I, ________________ ________________
Name - please print or type Title - Owner, Plant Manager, President, Vice President, Environmental Director

state that I have knowledge of the facts herein set forth and that the same are true and correct to the best of my knowledge. I certify that the facility complies with all terms of the preconstruction permit and that operations of the facility are in compliance with the Texas Clean Air Act (Chapter 382, Texas Health & Safety Code) and the air quality rules of the TNRCC.

DATE ________ SIGNATURE ________________

Note: Original signature in ink required.

Version 11/01/1993

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

AIR QUALITY PERMIT GENERAL CONDITIONS

AND PERTINENT RULES EFFECTIVE FOR PERMITS ISSUED OR AMENDED ON OR AFTER AUGUST 16, 1994

1. The facilities covered by this permit shall be constructed and operated as specified in the application for the permit. All representations regarding construction plans and operation procedures contained in the permit application shall be conditions upon which the permit is issued. Variations from these representations shall be unlawful unless the permit holder first makes application to the Executive Director of the Texas Natural Resource Conservation Commission (TNRCC) to amend this permit in that regard and such amendment is approved. (30 TAC 116.116)

2. Voiding of permit. A permit or permit amendment is automatically void if the holder fails to begin construction within 18 months of date of issuance, discontinues construction for more than 18 consecutive months prior to completion, or fails to complete construction within a reasonable time. Upon request, the Executive Director may grant a onetime 18-month extension of the date to begin construction. (30 TAC 116.115(b)(1)).

3. Construction progress. Start of construction, construction interruptions exceeding 45 days, and completion of construction shall be reported to the appropriate regional office of the Texas Natural Resource Conservation Commission (TNRCC or Commission) not later than 15 working days after occurrence of the event. (30 TAC 116.115(b)(2)).

4. Start-up notification. The appropriate Air Program regional office of the Commission shall be notified prior to the commencement of operations of the facilities authorized by the permit in such a manner that a representative of the TNRCC may be present. Phased construction, which may involve a series of units commencing operations at different times, shall provide separate notification for the commencement of operations for each unit. (30 TAC 116.115(b)(3)).

5. Sampling requirements. If sampling of stacks or process vents is required, the permit holder shall contact the TNRCC Office of Air Quality prior to sampling to obtain the proper data forms and procedures. All sampling and testing procedures must be approved by the Executive Director and coordinated with the regional representatives of the Commission. The permit holder is also responsible for providing sampling facilities and conducting the sampling operations or contracting with an independent sampling consultant. (30 TAC 116.115(b)(4)).

6. Equivalency of methods. It shall be the responsibility of the permit holder to demonstrate or otherwise justify the equivalency of emission control methods, sampling or other emission testing methods, and monitoring methods proposed as alternatives to methods indicated in the conditions of the permit. Alternative methods shall be applied for in writing and must be reviewed and approved by the Executive Director prior to their use in fulfilling any requirements of the permit. (30 TAC 116.115(b)(5)).

7. Recordkeeping. A copy of the permit along with information and data sufficient to demonstrate compliance with the permit shall be maintained in a file at the plant site and made available at the request of personnel from the TNRCC or any air pollution control program having jurisdiction. For facilities that normally operate unattended, this information shall be maintained at the nearest staffed location within Texas specified by the permit holder in the permit application. This information shall include, but is not limited to, production records and operating hours. Additional recordkeeping requirements may be specified in special conditions attached to the permit. Information in the file shall be retained for at least two years following the date that the information or data is obtained. (30 TAC 116.115(b)(6)).

8. Maximum allowable emission rates. The total emissions of air contaminants from any of the sources of emissions listed in the table entitled "Emission Sources - Maximum Allowable Emission Rates" shall not exceed the values stated on the table attached to the permit. (30 TAC 116.115(b)(7)).

9. Maintenance of emission control. The facilities covered by the permit shall not be operated unless all air pollution emission capture and abatement equipment is maintained in good working order and operating properly during normal facility operations. Notification for upsets and maintenance shall be made in accordance with §101.6 and §101.7 of this title (relating to Notification Requirements for Major Upset and Notification Requirements for Maintenance). (30 TAC 116.115(b)(8)).

10. Compliance with rules. Acceptance of a permit by a permit applicant constitutes an acknowledgement and agreement that the holder will comply with all rules, regulations, and orders of the Commission issued in conformity with the Texas Clean Air Act and the conditions precedent to the granting of the permit. If more than one state or federal rule or regulation or permit condition are applicable, then the most stringent limit or condition shall govern and be the standard by which compliance shall be demonstrated. Acceptance includes consent to the entrance of Commission employees and agents into the permitted premises at reasonable times to investigate conditions relating to the emission or concentration of air contaminants, including compliance with the permit. (30 TAC 116.115(b)(9)).

11. This permit may be appealed pursuant to Section 263.36 of the General Rules of the TNRCC and Section 382.032 of the TCAA. Failure to take such appeal constitutes acceptance by the applicant of all terms of the permit. (Tex. Gov't. Code Ann. § 2001, et seq.)

12. This permit may not be transferred, assigned or conveyed by the holder except as provided by rule. (30 TAC 116.110(c)).

13. There may be additional special conditions attached to a permit upon issuance or modification of the permit. Such conditions in a permit may be more restrictive than the requirements of Title 30 of the Texas Administrative Code. (30 TAC 116.115(c))

14. Emissions from this facility must not cause or contribute to a condition of 'air pollution' as defined in Section 382.003(3) of the Texas Clean Air Act (TCAA) or violate Section 382.085 of the TCAA. If the Executive Director determines that such a condition or violation occurs, the holder shall implement additional abatement measures as necessary to control or prevent the condition or violation.

"ent

SPECIAL CONDITIONS

Permit No. 19695

EMISSION STANDARDS AND FUEL SPECIFICATION

1. This permit covers only those sources of emissions listed in the attached table entitled "Emission Sources - Maximum Allowable Emission Rates," and other conditions specified in that attached table. Compliance with these permitted emission limits is based on a total maximum dryer throughput of 75 tons per hour and 326,811 tons per year of dried wafers for all five dryers; a total maximum press throughput of 54,860 ft^2 (3/8-inch) per hour of waferboard; and a total maximum annual plant throughput of 350,000,000 ft_2 of 3/8-inch board processed, on a finished product basis.

2. Fuel for the dryers and thermal oil heaters shall be wood, wood bark, and sweet natural gas as defined in the General Rules adopted by the Texas Natural Resource Conservation Commission (TNRCC). Use of any other fuel will require prior written approval of the Executive Director of the TNRCC.

OPACITY/VISIBLE EMISSION LIMITATIONS

3. Opacity of emissions from the Regenerative Thermal Oxidizer Stacks (RTO1, RTO2, and RTO3) shall not exceed 10 percent averaged over a six-minute period, except for those periods described in TNRCC Rule 111.111(a)(1)(E) of Regulation I.

4. Opacity of emissions from the Baghouse Stacks (11, 12, 13, 14, 15, and 16) and the Sanderdust Cyclone Stack (26) shall not exceed 5 percent averaged over a six-minute period, except for those periods described in TNRCC Rule 111.111(a)(1)(E) of Regulation I.

5. There shall be no visible emissions from all the storage tanks for methylene-diphenyl-diisocyanate (MDI), phenol, formaldehyde (HCHO), diesel, and gasoline.

6. There shall be no visible emissions from the debark, log, sawing, and sawmill fuel handling and processing areas.

OPERATIONAL LIMITATIONS, WORK PRACTICES, AND PLANT DESIGN

7. Disposal of ash must be accomplished in a manner which will prevent the ash from becoming airborne.

8. All air pollution abatement equipment shall be properly maintained and operated during the operation of these facilities. Cleaning and maintenance of the abatement equipment shall be performed as recommended by the manufacturer and as necessary so that the equipment efficiency can be adequately maintained. Records of all maintenance performed must be kept on-site and made available to the TNRCC personnel upon request.

9. Hooding, duct, and collection systems shall be constructed so that these systems effectively capture emissions from the process equipment. These hooding and duct systems shall be maintained free of holes, cracks, and other conditions that would reduce the collection efficiency of the emission capture system.

10. All baghouse dust drop points shall be maintained in such a manner as to prevent dust emissions from becoming airborne. Disposal of baghouse dust must be accomplished in a manner that will minimize the dust from becoming airborne. There shall be no outside storage of the baghouse dust unless in enclosed and/or covered containers.

11. Replaced or used bags shall be disposed of in a manner that will minimize any dust from becoming airborne.

12. The holder of this permit shall maintain a sufficient supply of spare bags for all baghouses at all times on the plant site.

13. All permanent in-plant roads and parking areas will be watered and/or paved and cleaned.

14. Sampling ports and platform(s) shall be incorporated into the design of the RTO stacks according to the specifications set forth in the attachment entitled "Chapter 2, Stack Sampling Facilities." Alternate sampling facility designs may be submitted for approval by the Executive Director of the TNRCC.

15. If the production rate of the wood wafers by these dryers exceeds by more than 10 percent the pounds per hour maintained during sampling, the company must notify in writing the TNRCC Beaumont Regional Office, and the source may be subject to additional sampling to demonstrate continued compliance with all applicable state and federal regulations.

16. If this facility or any portion of this facility exceeds any of the applicable allowable emission rates or other standards, the holder of this permit shall take immediate corrective action to comply with the applicable standards. These actions may include, but are not limited to, reducing operating temperature, reducing throughput, and/or the installation of additional control equipment. These corrective actions shall not be considered complete until compliance with the allowable emission rates and other standards has been demonstrated. Additional testing may be required.

17. All five dryer cyclones must be vented to RTO1 and RTO2, while the press vents and the unloader vent must be vented to RTO3.

18. This facility shall not produce a nuisance that may cause or contribute to a condition of "air pollution" as defined in Paragraph 101.4 of the General Rules as adopted by the TNRCC. If such a condition does occur, additional controls may be required and the plant shall not operate until given approval by the TNRCC Regional Office in Beaumont.

19. Each RTO must operate at a minimum temperature of 1400°F. If the permitted allowable rates are exceeded, the minimum RTO temperature must be raised to demonstrate compliance with the permitted emissions.

20. The five dryers can all operate at the same time only when the two Dryers RTO1 and RTO2 are in operation. Only three dryers are allowed to operate when only one dryer RTO is operating.

21. The press area must be enclosed in such a manner as to direct all press emissions, including fugitives to the RTO3.

INITIAL DETERMINATION OF COMPLIANCE

22. The holder of this permit shall perform stack sampling and other testing as required to establish the actual pattern and quantities of air contaminants being emitted into the atmosphere from the RTO1, RTO2 and RTO3. The holder of this permit is responsible for providing sampling and testing facilities and conducting the sampling and testing operations at his expense.

A. The appropriate TNRCC regional office in the region where the source is located shall be contacted as soon as testing is scheduled but not less than 45 days prior to sampling to schedule a pretest meeting.

The notice shall include:

(1) Date for pretest meeting.
(2) Date sampling will occur.
(3) Name of firm conducting sampling.
(4) Type of sampling equipment to be used.
(5) Method or procedure to be used in sampling.

The purpose of the pretest meeting is to review the necessary sampling and testing procedures, to provide the proper data forms for recording pertinent data, and to review the format procedures for submitting the test reports.

A written proposed description of any deviation from sampling procedures specified in permit conditions or TNRCC or Environmental Protection Agency (EPA) sampling procedures shall be made available to the TNRCC prior to the pretest meeting. The Regional Manager or the Manager of the Source and Mobile Monitoring Section shall approve or disapprove of any deviation from specified sampling procedures.

Requests to waive testing for any pollutant specified in B of this condition shall be submitted to the TNRCC Office of Air Quality New Source Review Program. Test waivers and alternate/equivalent procedure proposals for New Source Performance Standard testing which must have EPA approval shall be submitted to the TNRCC Source and Mobile Monitoring Section in Austin.

B. Air contaminants emitted from the Dryer RTO1 and RTO2 to be tested for include (but are not limited to) particulate matter (PM), volatile organic compound (VOC), nitrogen oxide (NO_x), carbon monoxide (CO), and HCHO.

Air contaminants emitted from the press RTO3 to be tested for include (but are not limited to) particulate matter (PM), VOC, NO_x, CO, and HCHO, MDI, and phenol.

C. Sampling shall occur within 180 days after the initial start-up of these RTOs and at such other times as may be required by the Executive Director of the TNRCC. Requests for additional time to perform sampling shall be submitted to the regional office. Additional time to comply with the applicable requirements of Title 40 Code of Federal Regulations Part 60 (40 CFR 60) and 40 CFR 61 requires EPA approval, and requests shall be submitted to the TNRCC Source and Mobile Monitoring Section in Austin.

D. The plant shall operate at a maximum dryer production rate of 15 tons per hour of dried material during stack emission testing for each dryer. Primary operating parameters that enable determination of production rate shall be monitored and recorded during the stack test. These parameters are to be determined at the pretest meeting. If the plant is unable to operate at maximum rates during testing, then future production rates may be limited to the rates established during testing. Additional stack testing may be required when higher production rates are achieved.

E. Two copies of the final sampling report shall be forwarded to the TNRCC within 30 days after sampling is completed. Sampling reports shall comply with the attached conditions of Chapter 14 of the TNRCC Sampling Procedures Manual. The reports shall be distributed as follows:

One copy to the TNRCC Beaumont Regional Office.
One copy to the TNRCC Austin Source and Mobile Monitoring Section.

F. Stack sampling shall be repeated every three years and at any other time required by the Executive Director of the TNRCC after the initial sampling in conformity with Conditions A, B, and D of this condition.

G. Upon written request from the holder of this permit, the Executive Director of the TNRCC may waive the retesting requirements of Special Condition No. 22F after two successful samples, provided that the company demonstrates continuous compliance through sampling, monitoring, and recordkeeping with the emission rates and conditions of this permit.

CONTINUOUS DETERMINATION OF COMPLIANCE

23. The holder of this permit shall install, calibrate, and maintain continuous emission monitors (CEMs) to continuously monitor and record opacity from the dryer and press RTO stacks. These CEMs shall meet all of the requirements, including the allowable limits for instrument drift, established in both Performance Specification No. 1, 40 CFR 60, Appendix B, and the TNRCC Sampling Procedures Manual. The CEMs shall be zeroed and spanned daily in order to determine and decrease the amount of instrument drift. Corrective actions shall be taken when the drift exceeds the amount specified in Performance Specification No. 1.

24. The data obtained from the CEMs shall be continuously collected, analyzed, and reduced to percent opacity based on six-minute averages. The percent opacity shall be recorded and maintained and shall be made available to any TNRCC representative upon request. The maximum opacity for any of these six-minute periods shall not exceed 10 percent.

25. Upon written request to, and at the discretion of, the Executive Director of the TNRCC, the holder of this permit may discontinue the operation, recordkeeping, and requirements detailed in Special Conditions No. 23 and No. 24 for the CEMs, provided the holder demonstrates that the dryer can operate in continuous compliance with the opacity limits and conditions of this permit.

26. The CO emission monitoring shall be conducted using commercially available continuous CO emission monitors. Such monitors shall meet the requirements of 40 CFR 60, Appendix B, Performance Standards 2 and 4, and the Quality Assurance and Quality Procedures established in 40 CFR 60, Appendix F.

27. If any emission monitor fails to meet specified performance, it shall be repaired or replaced immediately, but no later than seven days after it was first detected by any employee at the facility, unless written permission is obtained from the TNRCC which allows for a longer repair/replacement time. The holder of this permit shall develop an operation and maintenance program (including stocking necessary spare parts) to ensure that the continuous monitors are available as required.

COMPLIANCE CONDITION

28. Within 90 days after the initial start-up of these RTOs, but no later than 180 days, the holder of this permit shall submit documentation to the TNRCC Beaumont Regional Office which demonstrates that the facility is in compliance with the conditions of this permit. This documentation shall contain at a minimum, copies of sampling records and monitoring logs, results of required testing (where completed), and a review of the facility's compliance with general and special conditions of the construction permit. Requests for any extensions in time for submitting the required information shall be made in writing to the TNRCC Beaumont Regional Office.

29. Within 90 days after the issue date of this permit, all equipment and/or process unit that has the potential to emit air contaminants shall be identified and marked in a conspicuous location with the facility identification numbers as submitted to the TNRCC Emissions Inventory Section and the emission point numbers as listed on the maximum allowable emission rates table.

RECORDKEEPING REQUIREMENTS

30. The holder of this permit shall keep records of the amount of waferboard produced including rejected board, board density, and other information such that the daily average emission rates can be determined as represented in the permit application. These records must be made available at the request of personnel from the TNRCC or any local air pollution agency having jurisdiction.

31. In order to determine continual compliance with emission limitations specified in Special Condition No. 1 and the representations made in the permit application, the holder of this permit shall keep and maintain monthly and annual records of resin and wax usage on a 12-month rolling retention basis. These records must be made available at the request of personnel from the TNRCC or any local air pollution agency having jurisdiction.

32. A copy of this permit shall be kept at the plant site and made available at the request of personnel from the TNRCC or any local air pollution agency having jurisdiction.

Dated 9/20/94

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit No. 19695

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY
RTO1**	Dryer Regenerative Thermal Oxidizer 1	TSP	15.43	64.80
		PM10 (a)	15.43	64.80
		VOC	2.00	8.40
		NOX	23.96	100.64
		SO2	0.87	3.56
		CO	18.23	76.58
		HCHO (b)	0.23	0.26
RTO2**	Dryer Regenerative Thermal Oxidizer 2	TSP	15.43	64.80
		PM10 (a)	15.43	64.80
		VOC	2.00	8.40
		NOX	23.96	100.64
		SO2	0.87	3.56
		CO	18.23	76.58
		HCHO (b)	0.23	0.26
RTO3	Press Regenerative Thermal Oxidizer	TSP	3.86	16.20
		PM10 (a)	3.86	16.20
		VOC	1.00	4.20
		NOX	8.56	35.94
		SO2	0.01	0.04
		CO	18.23	76.58
		HCHO (b)	0.41	1.25
		MDI (b)	0.01	0.03
		C6H5OH (b)	0.14	0.43
11	Saw Line Baghouse	TSP	1.25	3.98
		PM10 (a)	1.25	3.98
12	Fuel Meter Baghosue	TSP	1.50	6.57
		PM10 (a)	1.50	6.57
13	Aspiration System Baghouse	TSP	0.73	3.20
		PM10 (a)	0.73	3.20
14	Raw Fuel Grinder Baghouse	TSP	0.70	3.07
		PM10 (a)	0.70	3.07

Permit No. 19695
Page 2

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

15	Sanderdust Baghouse	TSP	0.61	1.95
		PM10 (a)	0.61	1.95
16	Mat Reject Baghouse	TSP	0.09	0.06
		PM10 (a)	0.09	0.06
17	Debark Area (4)	TSP	0.02	0.08
		PM10 (a)	0.01	0.04
18	MDI Main Tanks (4)	MDI	<0.01	<0.01
20	MDI Work Tank (4)	MDI	<0.01	<0.01
22	Road Fugitives (4)	TSP	1.17	5.09
		PM10 (a)	0.60	2.54
23	PF Main Tanks (4)	HCHO	0.05	0.01
24	LPF Work Tank (4)	HCHO	0.01	0.01
26	Sanderdust Cyclone	TSP	0.61	1.95
		PM10 (a)	0.61	1.95
28	Logo Fugitives (4)	VOC (b)(5)	5.95	3.75
29***	Gasoline Tank (4)	VOC	<.01	<.01
		C6H6	<.01	<.01
30	Diesel Tank (4)	VOC	0.51	0.02

(1) Emission point identification - either specific equipment designation c emission point number from plot plan.
(2) Specific point source name. For fugitive sources use area name c fugitive source name.
(3) TSP - total suspended particulate including PM10
PM10 - particulate matter less than 10 microns
VOC - volatile organic compounds as defined in General Rule 101.:
NOx - total oxides of nitrogen
SO2 - sulfur dioxide
CO - carbon monoxide
HCHO - formaldehyde
MDI - methylene-diphenyl-diisocyanate
C6H5OH - phenol
C6H6 - benzene
(4) Fugitive emissions are an estimate only and should not be considered . a maximum allowable emission rate.

Permit No. 19695
Page 3

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

(5) VOC consists of VOC (0.96 lb/hr and 0.60 t/yr); Mineral Oil (4.61 lb/hr and 2.89 t/yr); and Isoparaffinic HC (0.38 lb/hr and 0.24 t/yr).

* Emission rates are based on and the facilities are limited by the following maximum operating schedule:

Hrs/day 24 Days/week 7 Weeks/year 52 or Hrs/year 8,760

A total maximum dryer throughput of 75 tons per hour and 326,811 tons per year of dried wafers for all five dryers; a total maximum press throughput of 54,860 ft^2 (3/8") per hour of waferboard; and a total maximum annual plant throughput of 350,000,000 square feet of 3/8 inches board processed, on a finished product basis.

** Emission rates from the RTO1 and RTO2 are based on the RTOs' operation of 8400 hours per year.

*** Gasoline storage as per TNRCC Reg. V and very negligible emission is expected from this source.

(a) The PM10 is also counted as wood dust and both are already included in the total TSP estimate.

(b) The emissions of individual organic compounds (i.e. formaldehyde, phenol, MDI, etc.) are included in the total VOC estimate.

Dated 9/20/94

APPENDIX I

Chain of Custody

METCO ENVIRONMENTAL

Chain of Custody

JOB# 96-011

Client ERM Southwest

Location Silsbee, TX

Unit Press House Vent Stack

Date 1-18-96

Method 5

Project Mgr. M. Glicer

	No. of Containers	Absorb. Solution	Init. Vol.	Part.	SO2	SO3	Other Analyses
Filter Cont	1			✓			
Front Wash	1			✓			
Back Wash	1			✓			
Impinger 1							
Impinger 2							
Impinger 3							
Impinger 4							
Impinger 5							
Blank 1	1	ACE		✓			
Blank 2							
NOx							
Other							

Special Instruction

Sample# 1 Recov. by Paul S Burke Date 1-18-96 Time 2115 Location VAU11

Sample# ___ Recov. by ___ Date ___ Time ___ Location ___

Sample# ___ Recov. by ___ Date ___ Time ___ Location ___

Sample# ___ Recov. by ___ Date ___ Time ___ Location ___

Samples Rcvd. by Paul Smith For transport. Date 1/19 Time 2100

Sample Rcvd. at lab by M. Ganter Date 1/22/96 Time 1045

Sample Analyzed by M. Ganter Date 1/26/96 Time 0950

Data Checked by HT Date 1/29/96 Time 1430

METCO ENVIRONMENTAL

Chain of Custody

JOB# 96-011

Date 1-19-96

Client ERM Southwest

Method 5/6

Location Silsbee, TX.

Project Mgr. M. Glicer

Unit Press House Vent Stack

	No. of Containers	Absorb. Solution	Init. Vol.	Part.	SO2	SO3	Other Analyses
Filter Cont	11			✓			
Front Wash	11			✓			
Back Wash							
Impinger 1	11	80% IPA		✓		✓	
Impinger 2	11	6% H_2O_2			✓		
Impinger 3	11	6% H_2O_2			✓		
Impinger 4							
Impinger 5							
Blank 1							
Blank 2							
NOx							
Other							

Special Instruction Run 1 is non-ISO on seperate chain-o-custody

Sample# 2 Recov. by [signature] Date 1-19-96 Time 1310 Location VAN 11

Sample# 3 Recov. by [signature] Date 1-19-96 Time 1045 Location VAN 11

Sample# ___ Recov. by ___ Date ___ Time ___ Location ___

Sample# ___ Recov. by ___ Date ___ Time ___ Location ___

Samples Rcvd. by Paul W. Smith For transport Date 1/19 Time 2100

Sample Rcvd. at lab by M. Baxter Date 1/22/96 Time 1045

Sample Analyzed by Mary Baxter Date 1/26/96 Time 1445

Data Checked by HT Date 1/29/96 Time 1430

METCO ENVIRONMENTAL

Chain of Custody

JOB# 96-011

Client ERM Southwest

Location Silsbee, TX

Unit Press House Vent Stack

Date 1-19-96

Method 6

Project Mgr. M. Gilicer

	No. of Containers	Absorb. Solution	Init. Vol.	Part.	SO2	SO3	Other Analyses
Filter Cont							
Front Wash							
Back Wash							
Impinger 1	1	80% IPA	200ml			✓	
Impinger 2	1	6% H_2O_2	200ml		✓		
Impinger 3	1	6% H_2O_2	200ml		✓		
Impinger 4							
Impinger 5							
Blank 1	1	80% IPA		✓		✓	
Blank 2	1	6% H_2O_2			✓		
NOx							
Other							

Special Instruction Archive Part Sample RUN 1 ; Analyze SO_2, SO_3 only.

Sample# 1 Recov. by [signature] Date 1-19-96 Time 1035 Location UNIT

Sample# ____ Recov. by ____ Date ____ Time ____ Location ____

Sample# ____ Recov. by ____ Date ____ Time ____ Location ____

Sample# ____ Recov. by ____ Date ____ Time ____ Location ____

Samples Rcvd. by Paul Smith For transport. Date 1/19 Time 2100

Sample Rcvd. at lab by M. Ganter Date 1/22/96 Time 1045

Sample Analyzed by Mary Ganter Date 1/25/96 Time 1600

Data Checked by HT Date 1/29/96 Time 1515

Job# 96-11 Unit Tested Press House Vent Stack CHAIN OF CUSTODY RECORD Page # ______

Facility Name/Location: ERM Southwest / Silsbee, TX

Collected By/Company: Robert Theuerkauf / METCO

SAMPLE I.D.	DATE	TIME	AIR	SOIL	COMP	GRAB	# OF CONTAINERS	RCVRD BY	HCl	PART.	SO2	SO3	PCDD/PCDF	SEMI-VOC	POHC's	METALS	Formaldehyde			REMARKS (Specific Compounds/Methods)
Press House Vent Stack Frontwash	1/19/96	1100	✓				1	RJT									✓			Formaldehyde
		1515	✓				1	RJT									✓			
		2045	✓				1	J ~~RJT~~									✓			
Press house Vent Stack Imp. 1	1/19/96	1100	✓				1	RJT									✓			Formaldehyde
		1515	✓				1	RJT									✓			
		2045	✓				1	JH ~~RJT~~									✓			
Press house Vent Stack Imp. 2 & 3	1/19/96	1100	✓				1	RJT									✓			Formaldehyde
		1515	✓				1	RJT									✓			
		2045	✓				1	JH ~~RJT~~									✓			
Press House Vent Stack Filter	1/19/96	1100	✓				1	RJT												Archive Filters
		1515	✓				1	RJT												
		2045	✓				1	JH ~~RJT~~												

Received by:	Date:	Time:	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Paul Smith	1/19	2130	[signature]	1/19/96	2130	HT	1/22/96	1000
Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:		

Ship to: ______

METCO Environmental

Job# 96-11 Unit Tested Press House

CHAIN OF CUSTODY RECORD

Page # ______

Facility Name/Location: ERM Southwest / Silsbee, TX

Collected By/Company: METCO / Mark Glicere ~~Robert Thuelkauf~~

SAMPLE I.D.	DATE	TIME	AIR	SOIL	COMP	GRAB	# OF CONTAINERS	RCVRD BY	HCl	PART.	SO2	SO3	PCDD/PCDF	SEMI-VOC	POHC's	METALS				REMARKS (Specific Compounds/Methods)
Press house field spike 0.2 ml @ 4 mg/ml	1/19/96	1730				✓	1	MG												Formaldehyde
Press house field spike 0.5 ml @ 4 mg/mL	1/19/96	1740				✓	1	MG												Formaldehyde
Press house Blank train Front wash	1/19/96		✓				1	RJT												Formaldehyde
Press house BLANK train Imp. 1	1/19/96		✓				1	RJT												Formaldehyde
Press house Blank train Imp. 2 & 3	1/19/96		✓				1	RJT												Formaldehyde
Press house BLANK train Filter	1/19/96		✓				1	RJT												Archive

Received by:	Date:	Time:	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Paul Smith	1/19	2/30	[signature]	1/19/96	2130	AT	1/22/96	1000
Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:		

Ship to: ______

METCO ENVIRONMENTAL

MITRECO ENVIRONMENTAL

Chain of Custody

JOB# 96-11

Date 1/18/96

Client ERM Southwest

Method Phenols

Location Silsbee, TX

Project Mgr. Glicer

Unit Press RTO Stack

	No. of Containers	Absorb. Solution	Init. Vol.	Part.	SO2	SO3	Other Analyses
Filter Cont	1						Phenols
Front Wash	1						"
Back Wash							
Impinger 1	1	0.1 N NaOH	100ml				Phenols
Impinger 2	1	0.1 N NaOH	100ml				"
Impinger 3							
Impinger 4							
Impinger 5							
Blank 1	1	0.1 N NaOH	200ml				Phenols
Blank 2							
NOx							
Other							

Special Instruction

Sample# 1 Recov. by Jesse Rocha Date 1/18/96 Time 2131 Location VAN

Sample# Blank Recov. by Jesse Rocha Date 1/19/96 Time 0915 Location VAN

Sample# ___ Recov. by ___ Date ___ Time ___ Location ___

Sample# ___ Recov. by ___ Date ___ Time ___ Location ___

Samples Rcvd. by Paul Smith For transport Date 1/19 Time 2100

Sample Rcvd. at lab by HT Date 1/22/96 Time 1100

Sample Analyzed by HT Date 1/31/96 Time 1000

Data Checked by [illegible] Date 1/31/96 Time 11000

TRIGON ENVIRONMENTAL

Chain of Custody

JOB# 96-11

Date 1/19/96

Client ERM Southwest

Method Phenols

Location Silsbee, TX

Project Mgr. Glicer

Unit Press RTO Stack

	No. of Containers	Absorb. Solution	Init. Vol.	Part.	SO2	SO3	Other Analyses
Filter Cont	1 B						
Front Wash							
Back Wash							
Impinger 1	1 B	0.1 N NaOH	200 ml				Phenols
Impinger 2 / Impinger 3	1 B	0.1 N NaOH	200 ml				Phenols
Impinger 4							
Impinger 5							
Blank 1							
Blank 2							
NOx							
Other							

Special Instruction

Sample# 2 Recov. by Jesse Rosales Date 1/19/96 Time 0930 Location VAN

Sample# 3 Recov. by Jesse Rosales Date 1/19/96 Time 1929 Location VAN

Sample# ____ Recov. by ____ Date ____ Time ____ Location ____

Sample# ____ Recov. by ____ Date ____ Time ____ Location ____

Samples Rcvd. by Paul Smith For transport. Date 1/19 Time 2100

Sample Rcvd. at lab by HT Date 1/22/96 Time 1100

Sample Analyzed by HT Date 1/31/96 Time 1000

Data Checked by MA Date 1/31/96 Time 1000

Job# 96-11 Unit Tested Press House Stack CHAIN OF CUSTODY RECORD Page # 1

Facility Name/Location: Louisiana Pacific / Silsbee, TX

Collected By/Company: Jesse Roche / METCO

SAMPLE I.D.	DATE	TIME	AIR	SOIL	COMP	GRAB	# OF CONTAINRS	RCVRD BY	HCl	PART.	SO2	SO3	PCDD/PCDF	SEMI-VOC	POHC's	METALS	MDI			REMARKS (Specific Compounds/Methods)
MDI Imp. 1	1/18/96	2030	✓				1	JR									✓			
MDI Imp. 2, 3	1/18/96	2030	✓				1	JR									✓			
MDI Imp. 1	1/19/96	1200 1745	✓ ✓				1 1	JR JR									✓✓			
MDI Imp. 2,3	1/19/96	1200 1745	✓ ✓				1 1	JR JR									✓✓			
MDI ABSORBER BLANK	1/19/96	~~[illegible]~~ 1745	[illegible]		✓												✓			

Received by:	Date:	Time:	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Paul Smith	1/19/96	2100	Jesse Roche	1/19/96	2100	HT	1/22/96	1100
Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:		

Ship to: ______

METCO ENVIRONMENTAL

METCO ENVIRONMENTAL

Chain of Custody

JOB# 96-011

Client ERM Southwest

Location Silsbee, TX

Unit Press House Vent (South)

Date 1-18-96

Method 5

Project Mgr. M. Glicer

	No. of Containers	Absorb. Solution	Init. Vol.	Part.	SO2	SO3	Other Analyses
Filter Cont	111			✓			
Front Wash	111			✓			
Back Wash	111			✓			
Impinger 1							
Impinger 2							
Impinger 3							
Impinger 4							
Impinger 5							
Blank 1	1	ACE		✓			
Blank 2							
NOx							
Other							

Special Instruction ______

Sample# 1 Recov. by Michael D. Wood Date 1-18-96 Time 2103 Location VAU11

Sample# 2 Recov. by [illegible] Date 1-19-96 Time 1310 Location VAU11

Sample# 3 Recov. by [illegible] Date 1-19-96 Time 1845 Location VAU11

Sample# ____ Recov. by ____ Date ____ Time ____ Location ____

Samples Rcvd. by Paul Smith For transport Date 1/19/96 Time 2100

Sample Rcvd. at lab by M. Santer Date 1/22/96 Time 1045

Sample Analyzed by M.S. Date 1/26/96 Time 0945

Data Checked by HT Date 1/29/96 Time 1515

Job# 96-11 Unit Tested Press house Vent South CHAIN OF CUSTODY RECORD Page # ______

Facility Name/Location: ERM Southwest / Silsbee, TX

Collected By/Company: Robert Theuerkauf / METCO

SAMPLE I.D.	DATE	TIME	AIR	SOIL	COMP	GRAB	# OF CONTAINERS	RCVRD BY	HCl	PART.	SO2	SO3	PCDD/PCDF	SEMI-VOC	POHC's	METALS	Formaldehyde			REMARKS (Specific Compounds/Methods)
Press house Vent South Front wash	1/19/96	1045	✓				1	RJT									✓			Formaldehyde
		1500	✓				1	RJT									✓			
		2045	✓				1	~~RJT~~									✓			
Press house Vent South Imp. 1	1/19/96	1045	✓				1	RJT									✓			Formaldehyde
		1500	✓				1	RJT									✓			
		2045	✓				1	~~RJT~~									✓			
Press house Vent South Imp. 2 & 3	1/19/96	1045	✓				1	RJT									✓			Formaldehyde
		1500	✓				1	RJT									✓			
		2045	✓				1	~~RJT~~									✓			
Press house Vent South Filter	1/19/96	1045	✓				1	RJT									~~✓~~			Archive Filters
		1500	✓				1	RJT									~~✓~~			
		2045	✓				1	~~RJT~~									~~✓~~			

Received by:	Date:	Time:	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Paul Smith	1/19	2130	[signature]	1/19/96	2130	HT	1/22/96	1000
Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:		

Ship to: ______

METCO ENVIRONMENTAL

METCO ENVIRONMENTAL

Chain of Custody

JOB# 96-011

Client ERM Southwest

Location Silsbee, TX

Unit Press House Vent (North)

Date 1-18-96

Method 5

Project Mgr. M. Glicer

	No. of Containers	Absorb. Solution	Init. Vol.	Part.	SO2	SO3	Other Analyses
Filter Cont	111			✓			
Front Wash	111			✓			
Back Wash	111			✓			
Impinger 1							
Impinger 2							
Impinger 3							
Impinger 4							
Impinger 5							
Blank 1	1	ACE		✓			
Blank 2							
NOx							
Other							

Special Instruction

Sample# 1 Recov. by Paul T Bailey Date 1-18-96 Time 2120 Location VAN 11

Sample# 2 Recov. by Paul T Bailey Date 1-19-96 Time 1310 Location VAN 11

Sample# 3 Recov. by Paul T Bailey Date 1-19-96 Time 1845 Location VAN 11

Sample# Recov. by Date Time Location

Samples Rcvd. by Paul Smith For transport. Date 1/19 Time 2100

Sample Rcvd. at lab by M. Ganter Date 1/22/96 Time 1045

Sample Analyzed by M. Ganter Date 1/26/96 Time 0930

Data Checked by HT Date 1/29/96 Time 1515

Job# 96-11 Unit Tested Press House Vent North CHAIN OF CUSTODY RECORD Page # ______

Facility Name/Location: ERM SouthWest / Silsbee, TX

Collected By/Company: Robert Thuerkauf / METCO

SAMPLE I.D.	DATE	TIME	AIR	SOIL	COMP	GRAB	# OF CONTAINERS	RCVRD BY	HCl	PART.	SO2	SO3	PCDD/PCDF	SEMI-VOC	POHC's	METALS	Formaldehyde			REMARKS (Specific Compounds/Methods)
Press house North Frontwash	1/19/96	1015	✓					RJT									✓			
Press house North Frontwash	1/19/96	1430	✓				111	RJT									✓			Formaldehyde
Press house North Frontwash	1/19/96	2045	✓					~~RJT~~ TMG									✓			
Press house North Impinger 1	1/19/96	1015	✓					RJT									✓			
Press house North Impinger 1	1/19/96	1430	✓				111	RJT TMG									✓			Formaldehyde
Press house North Impinger 1	1/19/96	2045	✓					~~RJT~~									✓			
Press house North Imp. 2&3	1/19/96	1015	✓					RJT									✓			
Press house North Imp. 2&3	1/19/96	1430	✓				111	RJT TMG									✓			Formaldehyde
Press house North Imp. 2&3	1/19/96	2045	✓					~~RJT~~									✓			
Press house North filter	1/19/96	1015	✓					RJT									~~✓~~			Archive filters
Press house North filter	1/19/96	1430	✓				111	RJT TMG									~~✓~~			~~Formaldehyde~~
Press house North filter	1/19/96	2045	✓					~~RJT~~									~~✓~~			

Received by:	Date:	Time:	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Paul Smith	1/19	2130	[signature]	1/19/96	2130	HT	1/22/96	1000
Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:		

Ship to: ______

METCO ENVIRONMENTAL

APPENDIX J

Resumes of Test Personnel

BILLY J. MULLINS, JR., President

Education	Post Graduate Study Environmental Engineering at Southern Methodist University, Dallas, Texas 1970.
	M.S. 1969, New York University, New York, New York, in Civil Engineering (Air Resources).
	B.S. 1968, Texas Tech University, Lubbock, Texas, in Civil Engineering (Water Resources). Studies in Engineering at U.S. Naval Academy, Annapolis, Maryland, 1963-1964.
Professional Training Courses	Attended Short Course on Air Pollution Engineering at the University of Texas at Austin, February 1970.
	Attended four-week management course presented by the American Management Association, 1976.
Certification	Registered Professional Engineer Certified Visible Emissions Evaluator Certified Fallout Shelter Analyst Licensed Private Pilot (Multi-Engine-Land, Instrument) Diplomat in the American Academy of Environmental Engineers Inductee into the Stack Sampling Hall of Fame
Professional Memberships	Air & Waste Management Association - Past Chairman, Past Vice Chairman and Past Board of Directors Southwest Section: Past Chairman, Consultants Committee; Past Chairman, Source Measurement Committee Source Evaluation Society - Past President, Past Board of Directors American Management Association

MULLINS

<u>Publications</u>

Co-authored "Sulfur Compound Emissions of the Petroleum Production Industry," December 1974.

Co-authored "Field Procedure for Stabilizing Hydrogen Sulfide Samples to be Analyzed Using Modified Methylene Blue Technique," presented at the Conference on Ambient Air Quality Measurements, Austin, Texas, March 1975.

Co-authored "Atmospheric Emissions Survey of the Sour Gas Industry," October 1975.

Co-authored "Technique for Insuring the Validity of Samples for High Concentrations of Sulfur Dioxide Using the EPA Method 5 Sampling Train," presented at the Third National Conference on Energy and the Environment, College Corner, Ohio, September 1975.

<u>Teaching Experience</u>

Served as a lecturer in the Environmental Protection Agency's training course number 450, "Source Sampling for Particulate Pollutants," for two years from January 1974 to October 1975 and in March, 1992.

Conducted a two-day training course entitled "Technical Assistance in Source Sampling" at Iowa State University, Ames, Iowa, for the Environmental Protection Agency, October 1974.

Conducted EPA's training course number 450, "Source Sampling for Particulate Pollutants," for the EPA at Research Triangle Park, North Carolina, September 1975.

MULLINS

<u>Teaching Experience</u>

Conducted a two-day short course entitled "Performing and Observing Source Sampling" at Dallas, Texas, July 1976, May 1977, October 1977, November 1987 and November 1988; at Lake Charles, Louisiana, May 1977; at Casper, Wyoming, May 1977; and at Point Comfort, Texas, November 1992.

Served as a lecturer in the Environmental Protection Agency's two-day seminar entitled "Asphalt Industry Environmental Solutions," presented in Dallas, Texas, on March 21 and 22, 1979.

Conducted a two-day short course entitled "Performing and Observing Source Sampling" in Phoenix, Arizona in August, 1990 for the State of Arizona, Department of Environmental Quality; in Lincoln, Nebraska, in March 1980 for the State of Nebraska, Air Quality Control Division.

<u>Technical Experience</u>

Directed and performed stack sampling on over 2000 sources of which over 500 were sampled simultaneously using more than one sampling train at several points in the flue gas stream. 1972-present.

Directed and performed over 200 short-term ambient air studies using mobile sampling vans and various ambient air sampling equipment. 1972-present.

Designed, directed and operated over 20 permanent ambient air networks of various size and duration for a variety of parameters. 1972-present.

Designed surface and underground drainage systems for residential subdivisions, public works projects, and shopping centers. 1969-1972.

Designed several residential subdivisions including lot layout, street design, drainage design, and utility design. 1969-1972.

METCO ENVIRONMENTAL

MARK S. GLICER, Project Supervisor II

Education	B.S. 1989, Texas A & M University, College Station, Texas, in Engineering Geology.
Research Projects	Landslides, Frost Heave, Dam Site Selection, and Waste Disposal Site Selection research projects.
Professional Training Courses	Two-day short course, "Performing and Observing Source Sampling," Dallas, Texas, November 1990. Attended 40-hour Occupational and Environmental Training Program on Hazardous Materials (CFR 1910.120) Dallas, Texas, May 1990. Also attended an 8-hour refresher course, February 1994.
Certification	Certified Visible Emissions Evaluator
Technical Experience	Participated in the sampling of over 500 sources, including several of which were sampled simultaneously using more than one sampling train; and has supervised the sampling of over 300 sources, including five trial burns. 1990-present. Experienced in the analysis of commercial calibration gas cylinders for CO_2, O_2, NO_x, SO_2, CO, and H_2S. Experienced with Modified Method 5 Sampling Train (Method 0010). Experienced with VOST sampling procedure (Method 0030). Experienced with calibration techniques for all field testing equipment. Experienced with various multiple metal and acid gas sampling trains. Has performed on-site SO_2 analysis and H_2S fuel gas analysis.

GORDON G. SMITH, Project Supervisor II

Education

B.S. 1988, University of Massachusetts, Amherst, Massachusetts, in Environmental Design.

A.S. 1986, Stockbridge School of Agriculture, Amherst, Massachusetts, in Landscape Operations.

Professional Training Courses

Attended 40-hour Occupational and Environmental Training Program on Hazardous Materials (CFR 1910.120) Dallas, Texas, April 1992. Also attended an 8-hour refresher course, February 1995.

Certification

Certified Visible Emissions Evaluator

Technical Experience

Participated in the sampling of over 500 sources, including several of which were sampled simultaneously using more than one sampling train; and has supervised the sampling of over 250 sources, including three trial burns. 1992-present.

Experienced in the analysis of commercial calibration gas cylinders for CO_2, O_2, NO_x, SO_2, CO, and H_2S.

Experienced with Modified Method 5 Sampling Train (Method 0010).

Experienced with VOST sampling procedure (Method 0030).

Experienced with calibration techniques for all field testing equipment.

Experienced with various multiple metal and acid gas sampling trains.

Has performed on-site SO_2 analysis and H_2S fuel gas analysis.

SMITH

Thoroughly trained in the operation and routine maintenance of the following:

Thermo Environmental Model 10AR NO_x Analyzer
Teledyne Model 326 Oxygen Analyzer
Ratfisch Model RS 100 Total Hydrocarbon Analyzer
Ratfisch Model RS 55 Total Hydrocarbon Analyzer
Western Research Model 721 AT Sulfur Dioxide Analyzer
Horiba Model PIR 2000 Carbon Dioxide Analyzer
J.U.M. Model VE-7 Total Hydrocarbon Analyzer
Thermo Environmental Model 48 Carbon Monoxide Analyzer

DAVID BAILEY, Project Supervisor I

Education — B.S. 1992, Texas Tech University, Lubbock, Texas, in Mechanical Engineering.

Professional Training Courses — Attended 40-hour Occupational and Environmental Training Program on Hazardous Materials (CFR 1910.120) Dallas, Texas, October 1992. Also attended an 8-hour refresher course, January 1994.

Certification — Certified Visible Emissions Evaluator
Southeast Texas Safety Association (STSA) Certification
Contractor Safety Council/Texas City (CSC/TC) Certification

Technical Experience — Participated in the sampling of over 100 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures. 1992-present.

Experienced in the analysis of commercial calibration gas cylinders for CO_2, O_2, NO_x, SO_2, and CO.

Experienced with Modified Method 5 Sampling Train (Method 0010).

Experienced with VOST sampling procedure (Method 0030).

Experienced with calibration techniques for all field testing equipment.

Experienced with various multiple metal and acid gas sampling trains.

BAILEY

Thoroughly trained in the operation and routine maintenance of the following:

Thermo Environmental Model 10AR NO_x Analyzer
Teledyne Model 326 Oxygen Analyzer
Ratfisch Model RS 100 Total Hydrocarbon Analyzer
Ratfisch Model RS 55 Total Hydrocarbon Analyzer
Western Research Model 721 AT Sulfur Dioxide Analyzer
Horiba Model PIR 2000 Carbon Dioxide Analyzer
J.U.M. Model VE-7 Total Hydrocarbon Analyzer
Thermo Environmental Model 48 Carbon Monoxide Analyzer

JESSE ROCHA, Project Supervisor

Education	B.S. 1992, West Texas State University, Canyon, Texas, in Chemistry and Biology.
Professional Training Courses	Attended 40-hour Occupational and Environmental Training Program on Hazardous Materials (CFR 1910.120) Dallas, Texas, October 1992. Also attended an 8-hour refresher course, February, 1995.
Technical Experience	Participated in the sampling of over 150 Sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures. 1992-present.

Experienced in the analysis of commercial calibration gas cylinders for CO_2, O_2, NO_x, SO_2, and CO.

Experienced with VOST sampling procedure (Method 0030).

Experienced with calibration techniques for all field testing equipment.

Experienced with various multiple metals and acid gas sampling trains.

Has performed on-site SO_2 analysis and Total Reduced Sulfur Analysis.

Has performed on-site Particulate Analysis

Experienced with 3-Dimensional velocity probe procedure.

Experienced with Ambient Air monitoring.

ROCHA

<u>Monitors</u>

Thoroughly trained in the operation and routine maintenance of the following:

Thermo Environmental Model 10AR and 10S Oxides of Nitrogen Analyzers
Teledyne Model 326 Oxygen Analyzer
Thermo Environmental Model 48 Carbon Monoxide Analyzer
J.U.M. Model VE-7 Total Hydrocarbon Analyzer
Ratfisch Model RS-55 Total Hydrocarbon Analyzer
Western Research Model 721M Sulfur Dioxide Analyzer

ROBERT J. THEUERKAUF, Environmental Technician II

Education	B.S. 1993, University of Kentucky, Lexington, Kentucky, in Biotechnology.
Professional Training Courses	Attended 40-hour Occupational and Environmental Training Program on Hazardous Materials (CFR 1910.120) Dallas, Texas, April 1994. Also attended an 8-hour refresher course, February, 1995. Attended 3 day course on performing and observing source sampling.
Technical Experience	Participated in the sampling of over 75 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures. 1994-present. Experienced in the analysis of commercial calibration gas cylinders for CO_2, O_2, NO_x, SO_2, and CO. Experienced with calibration techniques for all field testing equipment. Experienced with various multiple metals and acid gas sampling trains.

JAMES M. GRUBBS, Environmental Technician II

Education	Preventive Medical Specialist 1993, U.S. Army, Womack Army Medical Center, Ft. Bragg, NC.
Professional Training Courses	Attended 8-hour Safe Hazardous Materials Transportation Training Program (HM-126F and HM-181) Dallas, Texas, October 1994. Attended Bill Mullins' Performing and Observing Source Sampling Short Course; Dallas, Texas, January 1995.
Technical Experience	Participated in the sampling of over 50 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures. 1993-present.

Experienced with calibration techniques for all field testing equipment.

Thoroughly trained in the operation and routine maintenance of the following:

Anarad AR880 Oxides of Nitrogen Analyzer
Anarad AR23 Oxygen Analyzer
Anarad AR30C2 Sulfur Dioxide Analyzer
Anarad AR50-C Carbon Dioxide Analyzer

LANCE LYNDON HUDSON, Environmental Technician I

Education	B.A. 1994, University of Texas at Arlington, Arlington, Texas, in Geology.
Technical Experience	Participated in the sampling of over 25 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures. 1994-Present.

METCO ENVIRONMENTAL

J. TODD STALEY, Environmental Technician III

Education — Community College of the Air Force in Management & Construction Technology.

Professional Training — Attended 40-hour Occupational and Environmental Training Program on Hazardous Materials (CFR 1910.120), 1990. Also attended 40-hour Hazardous Waste Management, Accumulating, Handling, Disposal, and Contingency Response, 1989.

RCRA Compliance, 40 CFR 265.16, 1991

Certification — Certified Visible Emissions Evaluator

Technical Experience — Participated in the sampling of over 300 sources (15 of which were trial burns), serving in the supervisory capacity on over 150 sources, including several of which were sampled simultaneously using more than one sampling train at several points in the flue gas stream. Thoroughly trained in several EPA testing procedures.

Over three years experience with EPA methods of sampling stationary sources. Thoroughly trained in the following EPA testing procedures: 40 CFR, Title 40, Chapter I, Part 60, Methods 1 through 17, 20, 21, 23 through 25, and 101 through 110.

Has performed on-site gravimetric particulate analysis, sulfur dioxide, and sulfur trioxide analysis.

Thoroughly trained in the operation and routine maintenance of the following:

Thermo Environmental Model 40 Sulfur Dioxide Analyzer
Thermo Environmental Model 48 Carbon Dioxide Analyzer
Thermo Environmental Model 10 AR NO_x Analyzer
J.U.M. Model VE-7 Total Hydrocarbon Analyzer
Servomex Model 1800B Oxygen Analyzer
Teledyne Model 326 Oxygen Analyzer

Thoroughly trained in the calibration techniques for all field testing equipment.

MATTHEW J. LINDQUIST, Environmental Technician I

Education	B.S. 1994, Texas A & M University at Galveston, Galveston, Texas, in Marine Biology.
Technical Experience	Participated in the sampling of over 25 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures. 1995-Present.

MICHAEL D. WOOD, Environmental Field Technician I

Education	B.A., 1991, The University of Texas at Austin, Austin, Texas in Biology; M.A. l993, The University of Texas at Austin, Austin, Texas in Botany.
Technical Experience	Participated in the sampling of over 25 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures. 1995-Present.

JOHN D. PEMBERTON, Environmental Field Technician I

Education — B.A. 1994, McMurry University, Abilene, Texas in Chemistry.

Technical Experience — Participated in the sampling of over 25 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures. 1995-Present

PAUL W. SMITH, Environmental Technician I

Education	B.A. 1995, Baylor University, Waco, Texas in Biology and Environmental Studies.
Technical Experience	Participated in the sampling of over 25 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures. 1995-Present