Commonwealth of Pennsylvania
Environmental Resources
March 29, 1991

Subject: Stack Test Review

To: Data File
Cogentrix of Pennsylvania, Inc.
Ringgold Township, Jefferson County

From: Jaydeb Pal
Air Pollution Control Engineer
Division of Technical Services
and Monitoring
Bureau of Air Quality Control

Through: Chief, Source Testing and Monitoring Section

Cogentrix of Pennsylvania, Inc. operates three identical Wartsila reciprocating engines each with a rated heat input of 46 million Btu/hr. for the generation of electricity. The engines run on natural gas piloted with diesel fuel oil. The exhaust from each engine is ducted to a catalytic converter and a heat recovery boiler before being discharged to the atmosphere through a common stack. The steam produced in the heat recovery boiler is used to generate electricity.

Particulate, SO_2 and NO_x tests were performed on each engine in the exhaust stack. In addition, simultaneous catalytic converter inlet and stack outlet tests for CO and total gaseous nonmethane organics (TGNMO) were performed on each engine. All tests were conducted by Clean Air Engineering to demonstrate compliance with the plan approval conditions (plan approval no. 33-399-004). The company, however, was not satisfied with the test results of particulate, SO_2 and NO_x, and intends to retest. Per my recent conversation with Mr. Mark Casper of the company, the retesting has been completed and the report containing the results will be submitted to the Department as soon as possible. For this reason, particulate, SO_2 and NO_x tests have not been reviewed. Retesting for particulate, SO_2 and NO_x were performed without any major change in the process that could alter the CO and TGNMO values reported in this report. CO and TGNMO tests were performed in accordance with EPA Methods 10 and 25, respectively, and a preapproved test protocol, and are acceptable to the Department with the following exception:

The average TGNMO reduction was determined from the average inlet and average outlet emission rates of the three runs rather than determining the reduction for each run and then calculating the average reduction. The tables below reflect the corrected values.

The test data also reveals an extreme, unexplained TGNMO variability especially during the testing conducted on Unit No. 3 where reduction efficiencies ranged from 28-92.9%. Although Clean Air Engineering specifies that EPA Method 25 was used, the summary of the method (page 3-10) indicates that an oxidation step (VOC to CO_2) was followed with

the samples then analyzed using a Super Byron 401 gas analyzer. According to Method 25, a reduction of the CO_2 to CH_4 is required and analyzed by an FID. Whether this Super Byron analyzer performs this step is unknown. It is also possible that the VOC variability in the effluent stream is inherent with this type of facility.

Since Unit No. 3 did not meet the minimum required VOC reduction and a retest of this unit is likely, it is recommended that Clean Air Engineering provide an explanation of the Super Byron 401 analyzer's role prior to any further actual testing.

The following data was extracted from the test report:

Unit No. 1

Test run no.	1	2	3	
Test date	1/17/91	1/17/91	1/17/91	
Rated heat input (million Btu/hr.)	46	46	46	
Heat input during test (million Btu/hr.)	50.9	30.3	41.8	
Volumetric flow rate (dscfm)	20,710	28,180	20,530	
CO inlet emissions:				
(ppm)	159	135	153	
(lb./hr.)	20.6	16.6	20	
CO outlet emissions:				
(ppm)	9.1	5.4	6.4	
(lb./hr.)	1.16	0.66	0.82	
CO reduction efficiency (%)	94.3	96	95.8	
Required CO reduction efficiency (%)	90	90	90	
TGNMO inlet emissions:				
(ppm C)	4092	1233	858	
(mg C/dscm^3)	2043	616	428	
(lb. C/hr.)	227.4	65	47.4	
TGNMO outlet emissions:				
(ppm C)	1050	380	1431	
(mg C/dscm^3)	524	190	715	
(lb. C/hr.)	58.3	20	79	
TGNMO reduction efficiency (%)	74.4	69.3	*	71.8 (avg.)
Required TGNMO reduction efficiency (%)	70	70	70	70

Note: Rated heat input value was provided by Mr. Mark A. Casper of the company.
*Efficiency cannot be calculated due to abnormal values.

Unit No. 2

Test run no.	1	2	3	
Test date	1/16/91	1/16/91	1/16/91	
Rated heat input (million Btu/hr.)	46	46	46	
Heat input during test (million Btu/hr.)	52.5	29.6	43.2	
Volumetric flow rate (dscfm)	28,950	29,720	27,970	
CO inlet emissions:				
(ppm)	153	110	111	
(lb./hr.)	10.3	14.3	13.5	
CO outlet emissions:				
(ppm)	7.5	3.2	7.5	
(lb./hr.)	0.95	0.41	0.91	
CO reduction efficiency (%)	95.1	97.1	93.2	
Required CO reduction efficiency (%)	80	80	80	
TGNMO inlet emissions:				
(ppm C)	6354	12366	4356	
(mg C/dnm^3)	3172	6174	2175	
(lb. C/hr.)	343	667	228	
TGNMO outlet emissions:				
(ppm C)	1412	1209	1266	
(mg C/dnm^3)	705	604	632	
(lb. C/hr.)	76.5	67.2	66.2	
TGNMO reduction efficiency (%)	77.8	90.2	71.0	79.7 (avg.)
Required TGNMO reduction efficiency (%)	70	70	70	70

Notes: Rated heat input value was provided by Mr. Mark A. Cooper of the company.

Unit No. 3

Test run no.	1	2	3	
Test date	1/15/91	1/15/91	1/16/91	
Rated heat input (million Btu/hr.)	46	46	46	
Heat input during test (million Btu/hr.)	42.4	43.8	41	
Volumetric flow rate (dscfm)	25,750	31,130	30,360	
CO inlet emissions				
(ppm)	120	100	174	
(lb./hr.)	13.4	13.5	23.1	
CO outlet emissions				
(ppm)	6.4	3.7	7.5	
(lb./hr.)	0.72	0.5	1	
CO reduction efficiency (%)	94.6	96.3	95.7	
Required CO reduction efficiency (%)	80	80	80	
TGNMO inlet emissions				
(ppm C)	11663	5216	29062	
(mg C/dscm^3)	5819	2604	14510	
(lb. C/hr.)	561	304	1651	
TGNMO outlet emissions				
(ppm C)	8396	2880	2051	
(mg C/dscm^3)	4193	1438	1024	
(lb. C/hr.)	404.9	167.7	116.5	
TGNMO reduction efficiency (%)	28	44.8	92.9	55.2 (avg.)
Required TGNMO reduction efficiency (%)	70	70	70	70

Notes: Rated heat input value was provided by Mr. Mark A. Casper of the company.

cc: Prafal R. Shah, Region VI, Meadville
File No. 99-399-004
EPA/BSL
Reading File
Krishna Ramamurthy, A&C Engineering Services, Central Office

JPadlg

Clean Air Engineering

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REPORT ON COMPLIANCE TESTING

Performed for:
COGENTRIX

Conducted at:
RINGGOLD COGENERATION
RINGGOLD, PENNSYLVANIA

CAE Project No: 5509
February 19, 1991

RECEIVED

MAR 4 1991

ENVIRONMENTAL RESOURCES
MEADVILLE REGIONAL OFFICE

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SUMMARY

INTRODUCTION

Clean Air Engineering was contracted by Cogentrix to determine the levels of particulate, sulfur dioxide, nitrogen oxides, carbon monoxide and total gaseous nonmethane organic emissions at the Ringgold Cogeneration facility in Ringgold, Pennsylvania for permitting purposes.

The testing took place at the Catalytic Converter Inlets and Common Stack of Units 1, 2 and 3 on January 15 through 18, 1991. Coordinating the field testing were:

M. Casper - Cogentrix
D. Verma - Pennsylvania Department of Environmental Resources
N. Merico - Clean Air Engineering

SUMMARY OF TEST RESULTS

Stack	Unit 1	Unit 2	Unit 3
Total Particulate			
gr/dscf	0.0030	0.0040	0.0061
lb/hr	0.751	0.992	1.52
Sulfur Dioxide			
lb/dscf	2.35E-06	1.56E-06	1.25E-06
lb/hr	4.11	2.73	2.24
Nitrogen Oxides			
lb/dscf	< 1.55E-07	< 1.56E-07	< 1.36E-07
lb/hr	< 0.27	< 0.27	< 0.24

< Signifies values below detection limits.

SUMMARY (Continued)

	Unit 1	Unit 2	Unit 3
Carbon Monoxide			
Inlet (ppm)	149.0	124.5	131.1
Stack (ppm)	7.0	6.1	5.9
Destruction Efficiency (%)	95.4	95.1	95.5
Total Gaseous Nonmethane Organics			
Inlet (mg/dscm)	1,029.0	3,840.2	7,644.3
Stack (mg/dscm)	476.1	644.0	2,217.9
Destruction Efficiency (%)	73.2	83.2	72.6

The test conditions and results of analysis are presented in Tables 1 through 6 on pages 1-3 through 1-8.

To the best of our knowledge, the data presented in this report are accurate and complete.

Respectfully submitted,

CLEAN AIR ENGINEERING

Robert A. Prekstа
Robert A. Prekstа
Manager, Eastern Region

Kimberly Kampf
Kimberly Kampf
Manager, Technical Communications

TABLE 1 Summary of Test Results

PA DER Methods 5 and 6, and EPA Method 7D
Common Stack - Unit 1 In Operation

Run Number	1	2	3
Date (1991)	January 17	January 17	January 17
Start Time (approx.)	8:45 AM	11:30 AM	1:30 AM
Stop Time (approx.)	10:27 AM	1:07 PM	3:23 AM
Gas Conditions			
Temperature (°F)	329	326	324
Moisture (volume %)	4.9	6.0	5.7
O_2 (dry volume %)	15.9	15.9	15.8
CO_2 (dry volume %)	2.2	2.3	2.2
Process Conditions			
MBtu/hr	50.90	30.26	41.75
Volumetric Flow Rate			
acfm	49,330	47,190	49,140
dscfm	29,710	28,180	29,530
Particulate (Total)			
gr/dscf	0.0017	0.0042	0.0032
lb/hr	0.43	1.02	0.80
lb/MBtu	0.008	0.034	0.019
Particulate (Front Half)			
gr/dscf	0.0015	0.0034	0.0022
lb/hr	0.39	0.82	0.56
lb/MBtu	0.008	0.027	0.013
Particulate (Back Half Insoluble)			
gr/dscf	0.0002	0.0008	0.0010
lb/hr	0.04	0.20	0.25
lb/MBtu	0.001	0.007	0.006
Sulfur Dioxide			
lb/dscf	3.21E-06	1.66E-06	2.15E-06
lb/hr	5.72	2.81	3.81
lb/MBtu	0.112	0.093	0.091
Nitrogen Oxides			
lb/dscf	1.92E-07	< 1.32E-07	< 1.39E-07
lb/hr	0.34	< 0.22	< 0.25
lb/MBtu	0.007	< 0.007	< 0.006

< Signifies values below detection limits.

TABLE 2 Summary of Test Results

PA DER Methods 5 and 6, and EPA Method 7D
Common Stack - Unit 2 In Operation

Run Number	1	2	3
Date (1991)	January 16	January 16	January 16
Start Time (approx.)	12:05 PM	2:43 PM	11:16 AM
Stop Time (approx.)	1:30 PM	5:17 PM	1:25 PM
Gas Conditions			
Temperature (°F)	341	330	329
Moisture (volume %)	5.7	5.3	5.4
O_2 (dry volume %)	14.3	16.8	16.6
CO_2 (dry volume %)	3.0	2.4	2.4
Process Conditions			
MBtu/hr	52.47	29.63	43.16
Volumetric Flow Rate			
acfm	49,490	49,980	46,740
dscfm	28,950	29,720	27,970
Particulate (Total)			
gr/dscf	0.0043	0.0025	0.0053
lb/hr	1.07	0.65	1.26
lb/MBtu	0.020	0.022	0.029
Particulate (Front Half)			
gr/dscf	0.0033	0.0021	0.0038
lb/hr	0.81	0.55	0.90
lb/MBtu	0.015	0.018	0.021
Particulate (Back Half Insolubles)			
gr/dscf	0.0010	0.0004	0.0015
lb/hr	0.27	0.10	0.36
lb/MBtu	0.005	0.003	0.008
Sulfur Dioxide			
lb/dscf	1.66E-06	2.07E-06	0.96E-06
lb/hr	2.89	3.69	1.61
lb/MBtu	0.055	0.125	0.037
Nitrogen Oxides			
lb/dscf	< 1.71E-07	< 1.69E-07	< 1.35E-07
lb/hr	< 0.30	< 0.30	< 0.23
lb/MBtu	< 0.006	< 0.010	< 0.005

< Signifies values below detection limits.

TABLE 6 Summary of Test Results

PA DER Methods 5 and 6, and EPA Method 7D
Common Stack - Unit 3 In Operation

Run Number	1	2	3
Date (1991)	January 15	January 15	January 16
Start Time (approx.)	1:00 PM	4:25 PM	9:05 AM
Stop Time (approx.)	2:23 PM	5:45 PM	10:30 AM
Gas Conditions			
Temperature (°F)	334	332	327
Moisture (volume %)	5.6	5.3	6.2
O_2 (dry volume %)	15.2	16.0	16.0
CO_2 (dry volume %)	3.0	3.0	2.6
Process Conditions			
MBtu/hr*	42.37	43.79	40.94
Volumetric Flow Rate			
acfm	43,060	51,730	51,320
dscfm	25,750	31,130	30,380
Particulate (Total)			
gr/dscf	0.0052	0.0076	0.0053
lb/hr	1.14	2.03	1.38
lb/MBtu	0.027	0.046	0.034
Particulate (Front Half)			
gr/dscf	0.0038	0.0061	0.0047
lb/hr	0.84	1.63	1.22
lb/MBtu	0.020	0.037	0.030
Particulate (Back Half Insolubles)			
gr/dscf	0.0014	0.0015	0.0006
lb/hr	0.30	0.41	0.16
lb/MBtu	0.007	0.009	0.004
Sulfur Dioxide			
lb/dscf	1.16E-06	2.24E-06	0.41E-06
lb/hr	1.79	4.19	0.74
lb/MBtu	0.042	0.096	0.018
Nitrogen Oxides			
lb/dscf	< 1.30E-07	< 1.44E-07	< 1.33E-07
lb/hr	< 0.20	< 0.27	< 0.24
lb/MBtu	< 0.005	< 0.006	< 0.006

< Signifies values below detection limits.
* MBtu/hr for Run 1 was not available so an average of Runs 2 and 3 was used.

TABLE 1 Summary of Test Results

EPA Methods 10 and 25
Unit 1
January 17, 1991

Run Number	1	2	3	Average
Date (1991)	January 17	January 17	January 17	
Start Time (approx.)	9:00 AM	11:30 AM	2:00 PM	
Stop Time (approx.)	10:30 AM	1:00 PM	3:30 PM	
Process Condition				
MBtu/hr	50.90	30.26	41.75	40.97
Inlet[1]				
Carbon Monoxide				
ppm	159.1	134.9	153.1	149.0
lb/hr	20.6	16.6	19.7	19.0
Total Gaseous Nonmethane Organics (TGNMO)				
mg/dscm	2,043.2	615.7	428.2	1,029.0
lb C/hr	227.4	65.0	47.4	113.3
Stack				
Gas Condition				
Temperature (°F)	329	326	324	326
Moisture (volume %)	4.9	6.0	5.7	5.5
O_2 (dry volume %)	15.9	15.9	15.8	15.9
CO_2 (dry volume %)	2.2	2.3	2.2	2.2
Volumetric Flow Rate				
acfm	49,330	47,190	49,140	48,553
dscfm	29,710	28,180	29,530	29,140
Carbon Monoxide				
ppm	9.1	5.4	6.4	7.0
lb/hr	1.16	0.66	0.82	0.88
Total Gaseous Nonmethane Organics (TGNMO)				
mg/dscm	524.0	169.7	714.6	476.1
lb C/hr	56.3	20.0	79.0	52.4
Destruction Efficiencies				
CO (based on ppm)	94.3	96.0	95.8	95.4
TGNMO (based on lbC/hr)[2]	74.4	69.2	*	73.8

[1] The volumetric flow rates at the Inlet were assumed to be equal to the flow rates at the Stack.

[2] The average destruction efficiency was based on the average Inlet and Stack lb C/hr values from Runs 1 and 2.

* See Comments, page 4-1.

TABLE 5 - Summary of Test Results

EPA Methods 10 and 25
Unit 2

Run Number	1	2	3	Average
Date (1991)	January 16	January 16	January 18	
Start Time (approx.)	12:00 PM	2:45 AM	11:30 AM	
Stop Time (approx.)	1:30 PM	5:00 AM	12:30 PM	
Process Conditions				
MBtu/hr	52.47	29.63	43.16	41.75
Inlet[1]				
Carbon Monoxide				
ppm	153.1	109.8	110.5	124.5
lb/hr	19.3	14.2	13.5	15.7
Total Gaseous Nonmethane Organics (TGNMO)				
mg/dscm	3,172.3	6,173.7	2,174.7	3,840.2
lb C/hr	~~334.0~~ 343	687.3	227.8	416.4
Stack				
Gas Conditions				
Temperature (°F)	341	330	329	333
Moisture (volume %)	5.7	5.3	5.4	5.5
O_2 (dry volume %)	14.3	16.8	16.6	15.9
CO_2 (dry volume %)	3.0	2.4	2.4	2.6
Volumetric Flow Rate				
acfm	49,490	49,980	46,740	48,737
dscfm	28,950	29,720	27,970	28,880
Carbon Monoxide				
ppm	7.5	3.2	7.5	6.1
lb/hr	0.95	0.41	0.91	0.76
Total Gaseous Nonmethane Organics (TGNMO)				
mg/dscm	705.1	603.6	~~623.3~~ 632	644.0
lb C/hr	76.5	67.2	66.2	70.0
Destruction Efficiencies				
CO (based on ppm)	95.1	97.1	93.2	95.1
TGNMO (based on lbC/hr)[2]	77.8	90.2	71.8	~~83.2~~ 79.7

1 The volumetric flow rates at the inlet were assumed to be equal to the flow rate at the Stack
2 The average TGNMO destruction efficiency was based on the average Inlet and Stack lbC/hr values.

TABLE 6 Summary of Test Results

EPA Methods 10 and 25
Unit 3

Run Number	1	2	3	Average
Date (1991)	January 15	January 15	January 16	
Start Time (approx.)	1:00 PM	4:30 PM	9:00 AM	
Stop Time (approx.)	2:30 PM	6:00 PM	10:30 AM	
Process Condition				
MBtu/hr[1]	42.37	43.79	40.94	42.37
Inlet[2]				
Carbon Monoxide				
ppm	119.5	99.7	174.2	131.1
lb/hr	13.4	13.5	23.1	16.7
Total Gaseous Nonmethane Organics (TGNMO)				
mg/dscm	5,818.5	2604.100	14,510.40	7,644.3
lb C/hr	561.2	309.6	1,651.2	838.7
Stack				
Gas Condition				
Temperature (°F)	334	332	327	331
Moisture (volume %)	5.6	5.3	6.2	5.7
O_2 (dry volume %)	15.2	16.0	16.0	15.7
CO_2 (dry volume %)	3.0	3.0	2.6	2.8
Volumetric Flow Rate				
acfm	43,060	51,730	51,320	48,710
dscfm	25,750	31,130	30,360	29,087
Carbon Monoxide				
ppm	6.4	3.7	7.5	5.8
lb/hr	0.72	0.50	0.99	0.74
Total Gaseous Nonmethane Organics (TGNMO)				
mg/dscm	4,192.0	1,437.6	1,024.0	2,217.8
lb C/hr	404.3	167.7	116.5	229.5
Destruction Efficiencies				
CO (based on ppm)	94.6	96.3	95.7	95.5
TGNMO (based on lbC/hr)[3]	28.0	44.8	92.9	72.6

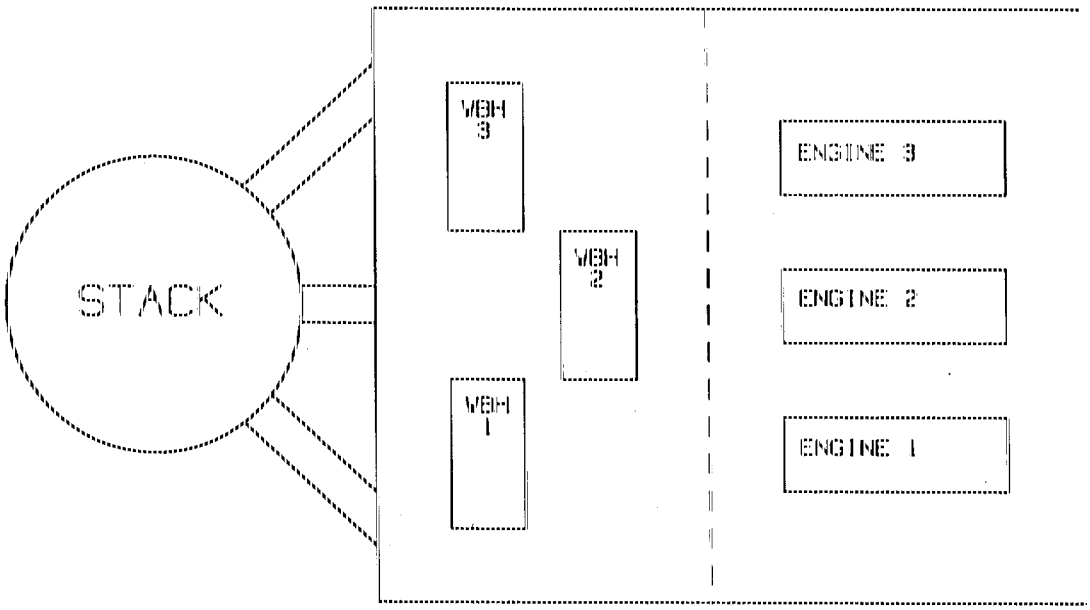
1 MBtu/hr for Run 1 was not available so an average of Runs 2 and 3 was used.
2 The volumetric flow rates at the inlet were assumed to be equal to the flow rate at the stack.
3 The average TGNMO destruction efficiency was based on the average Inlet and Stack lbC/hr values.

DESCRIPTION OF INSTALLATION

The Ringgold Cogeneration facility operates three Wartsila Vasa Diesel engines which are rated at 5.3 MW each. The engines run on natural gas piloted with diesel fuel. Catalytic converters are used to control volatile organic compounds, and waste heat boilers (WHB) produce steam for the turbines. The engine jacket cooling water heats a greenhouse.

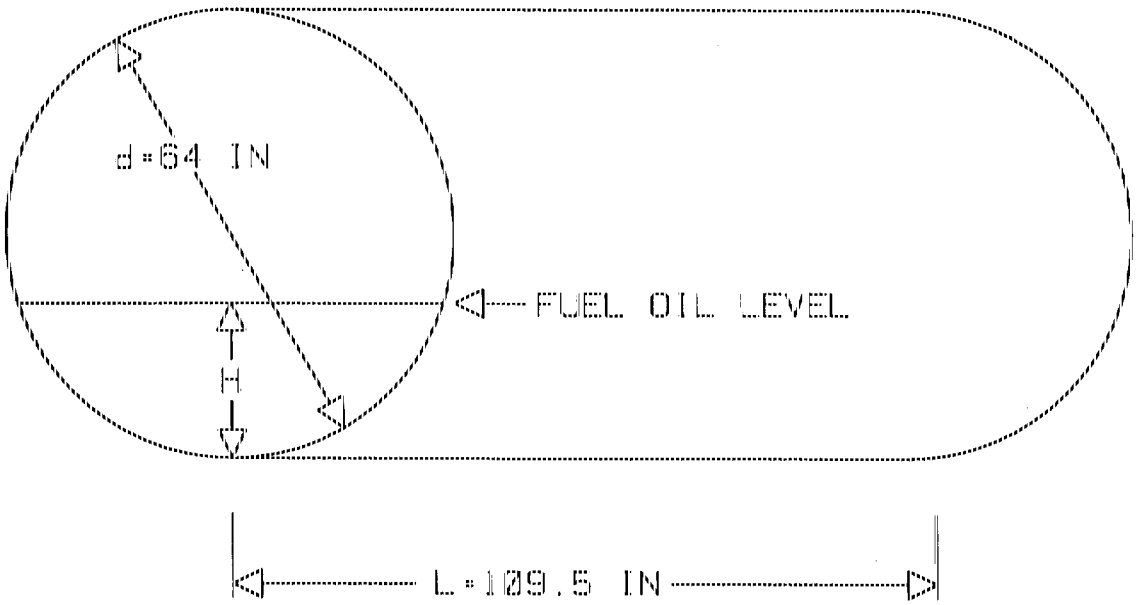
The testing reported in this document was performed at the Catalytic Converter Inlets and Common Stack of Units 1, 2 and 3.

A schematic of the process is shown below.



DESCRIPTION OF INSTALLATION (Continued)

A schematic of the fuel oil tank is shown below.



SUMMARY OF PROCEDURES

SAMPLING PROCEDURES

The sampling followed procedures as detailed in U.S. Environmental Protection Agency (EPA) Methods 1, 2, 3, 4, 5, 6, 7D, 10 and 25. These methods are titled:

- Method 1 ---- "Sample and Velocity Traverses for Stationary Sources;"
- Method 2 ---- "Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube);"
- Method 3 ---- "Gas Analysis for Carbon Dioxide, Oxygen, Excess Air and Dry Molecular Weight;"
- Method 4 ---- "Determination of Moisture Content in Stack Gases;"
- Method 5 ---- "Determination of Particulate Emissions from Stationary Sources;"
- Method 6 ---- "Determination of Sulfur Dioxide Emissions from Stationary Sources;"
- Method 7D - "Determination of Nitrogen Oxides Emissions from Stationary Sources (Alkaline-Permanganate/Ion Chromatographic Method);"
- Method 10 - "Determination of Carbon Monoxide Emissions from Stationary Sources;"
- Method 25 - "Determination of Total Gaseous Nonmethane Organic Emissions as Carbon."

These methods appear in detail in Title 40 of the Code of Federal Regulations (CFR), Part 60, Appendix A.

The sampling was also performed according to the Pennsylvania Department of Environmental Resources (PA DER) "Source Testing Manual," Chapter 139, Sections 139.11 and 139.13. Requirements for these methods parallel the sampling procedures of EPA Methods 5 and 6.

The sampling apparatus are shown in Figs 1 through 5 on pages 3-3 through 3-7. The sampling equipment was designed and manufactured by the Research Appliance Co. and Clean Air Engineering to meet U.S. EPA standards. All equipment was calibrated at the Clean Air Engineering laboratory prior to shipment to the job site.

SUMMARY OF PROCEDURES (continued)

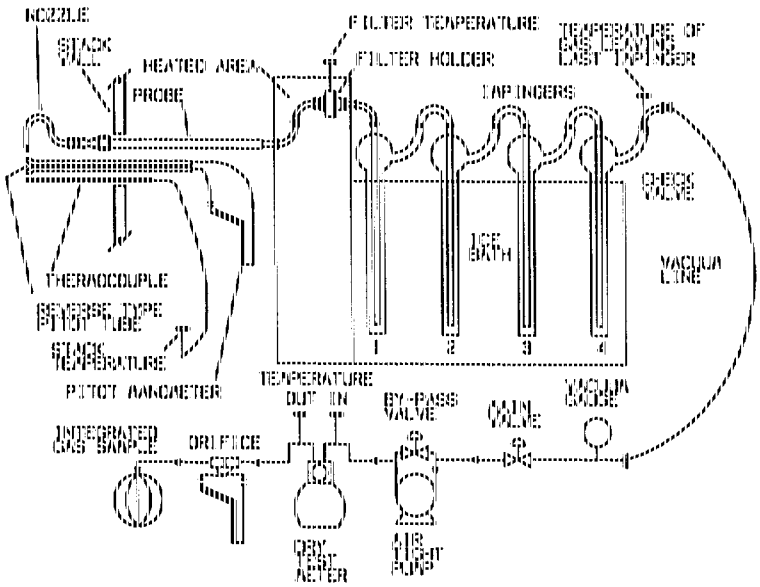
Sampling Locations

The Catalytic Converter Inlets of Units 1, 2 and 3 are identical. Each has five ports. For the carbon monoxide and TGNMO testing a single point was sampled at the center of the duct for 60 minutes.

The Common Stack has four ports. For particulate testing, two ports were sampled. Twelve points were sampled per port. The sampling time per point was 3 minutes for a total sampling time of 72 minutes. For the sulfur dioxide, nitrogen oxides, carbon monoxide and TGNMO testing a single point was sampled at the center of the stack for 60 minutes. The sampling locations are shown in Figure 6 on page 3-8.

Figure 1

The PA DER Method 5 sampling apparatus is shown.

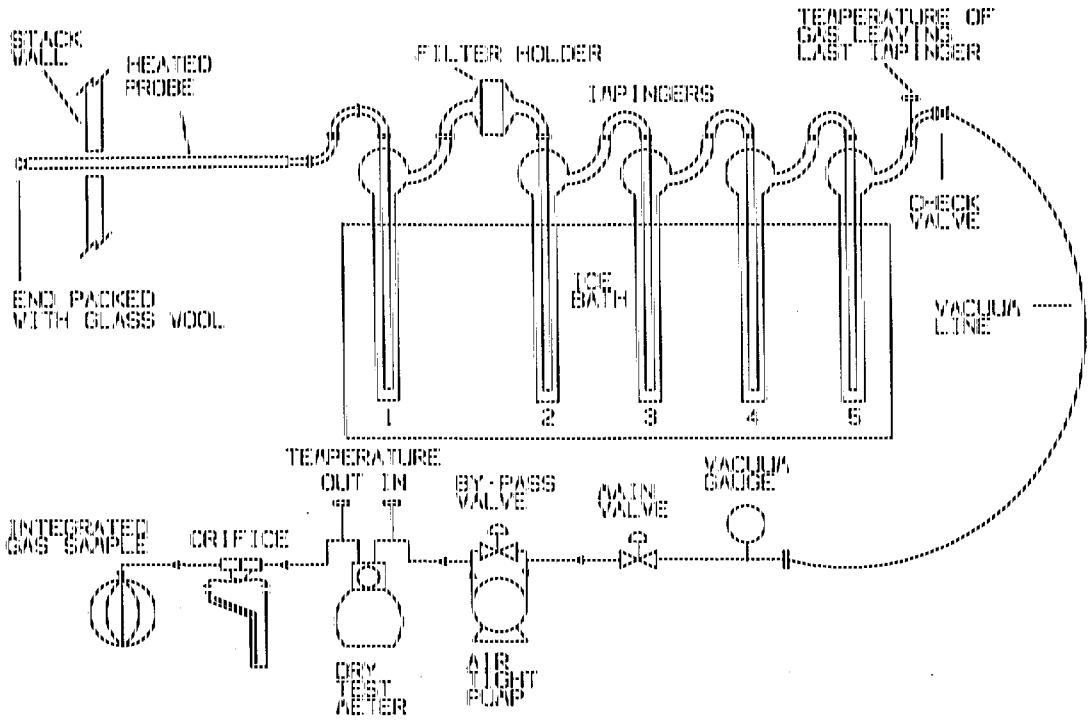


Impinger Contents

1) 100 ml distilled water
2) 100 ml distilled water
3) empty
4) 300 g silica gel

Figure 2

The PA DER Method 6 sampling apparatus is shown.

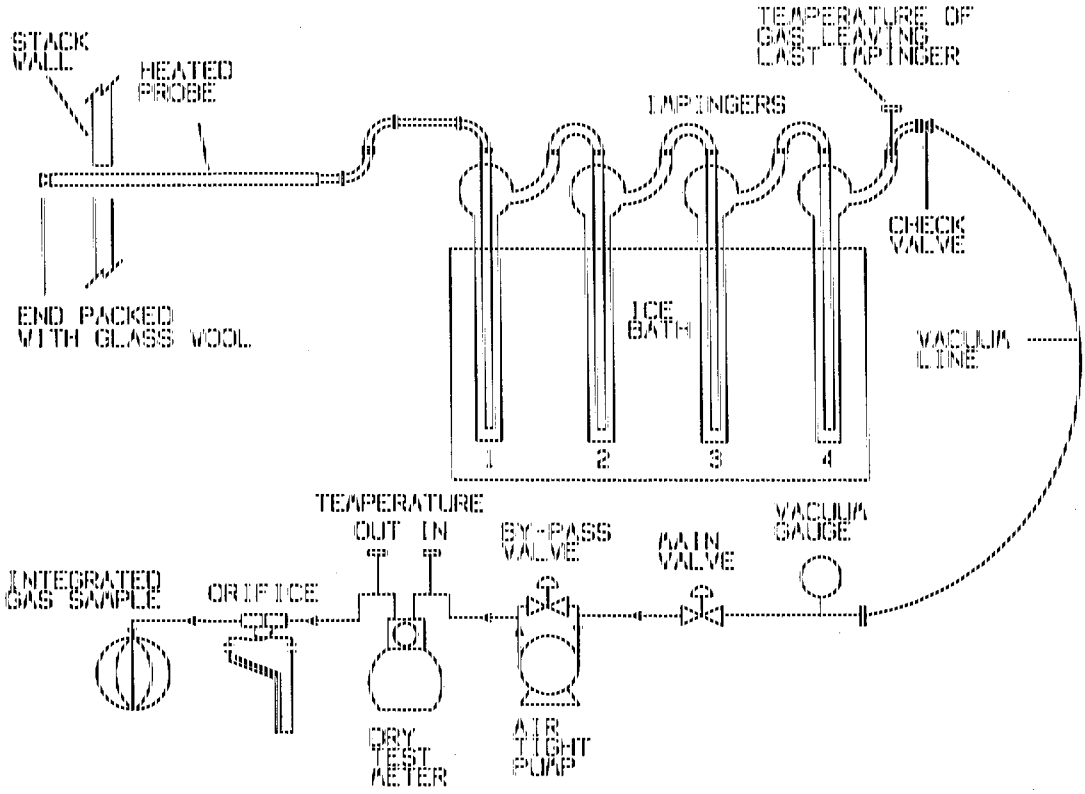


Impinger Contents

1) 150 ml 80% Isopropanol
2) 200 ml 5% sodium hydroxide
3) 100 ml 5% sodium hydroxide
4) 500 ml 5% sodium hydroxide
5) silica gel

Figure 3

The EPA Method 7D sampling apparatus is shown.



Impinger Contents

1) 200 ml 4% potassium permanganate
   2% sodium hydroxide
2) 200 ml 4% potassium permanganate
   2% sodium hydroxide
3) 200 ml 4% potassium permanganate
   2% sodium hydroxide
4) silica gel

Figure 4

The EPA Method 10 sampling apparatus is shown.

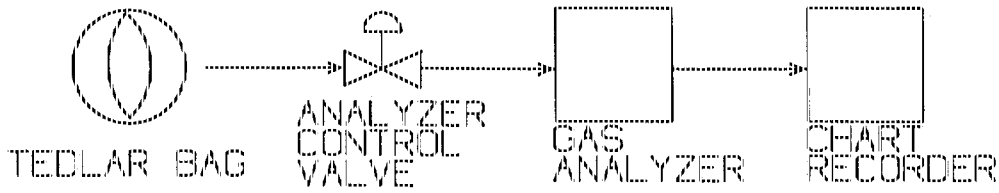


Figure 3

The EPA Method 25 sampling apparatus is shown.

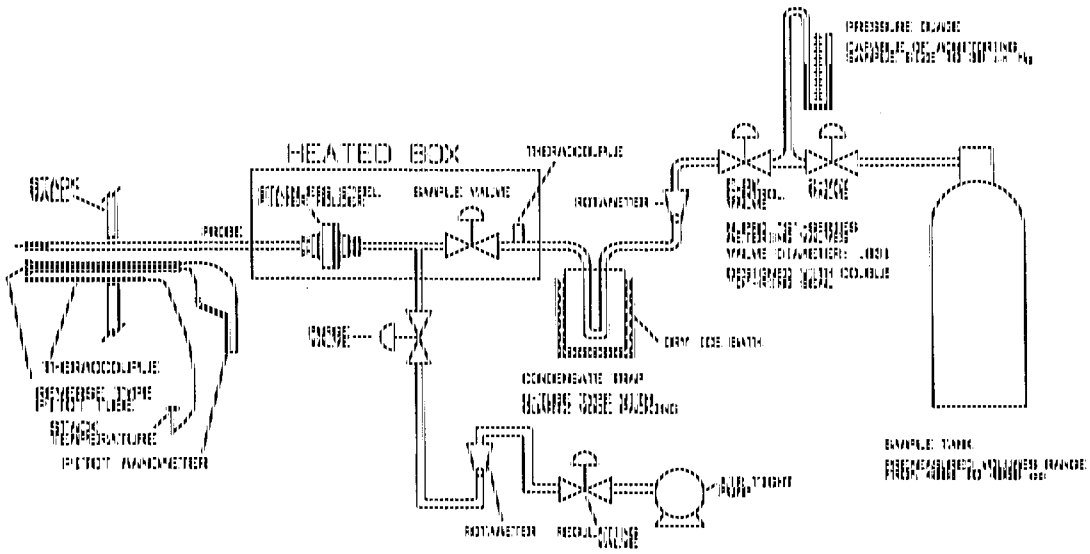
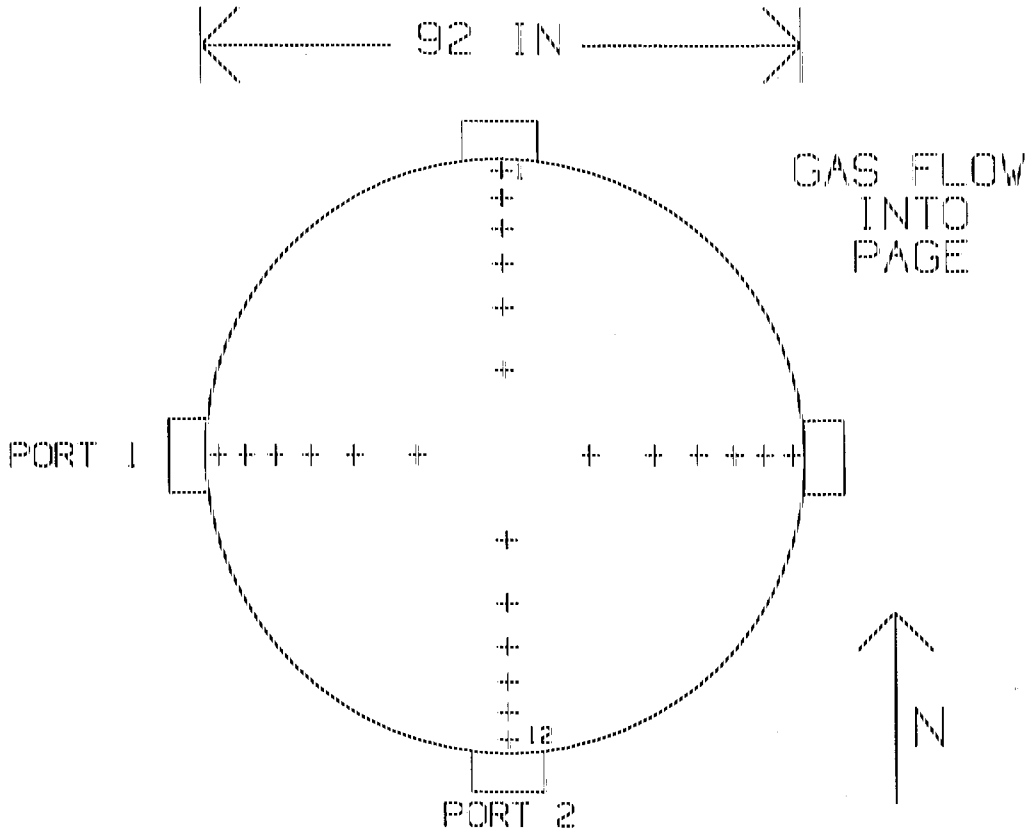


Figure 3

The cross section of the Stack shows traverse point locations.



TRAVERSE POINT	PORT TO POINT DISTANCE (IN)
1	90.0
2	85.6
3	81.1
4	75.7
5	69.0
6	59.3
7	32.7
8	23.0
9	16.3
10	10.9
11	6.2
12	2.0

SUMMARY OF PROCEDURES (continued)

ANALYTICAL PROCEDURES

Particulate

The particulate emission rate was determined in accordance with the Pennsylvania Department of Environmental Resources (PA DER) and as detailed in EPA Method 5.

Particulate samples collected on Whatman 934 AH glass fiber filters were analyzed gravimetrically. The probe and nozzles were washed with water then acetone. This wash was transferred to tared beakers and evaporated to dryness. These weight differentials were combined to determine the front half particulate matter.

The back half of the sampling train was also analyzed for particulate matter. The impingers were rinsed with water, then acetone. The water was filtered through 0.8 µm and 0.22 µm membrane filters and analyzed gravimetrically. The membrane filter weights were added to the front half grain loading. The resultant back half weights are presented in the Parameter section of the Appendix. The back half solubles, water and acetone are reported but not included in the front half grain loading as per PA DER requirements.

Sulfur Dioxide

The sulfur dioxide content was measured in accordance with the Pennsylvania Department of Environmental Resources (PA DER) and as detailed in the EPA Method 6. In this procedure, the sulfur dioxide was collected at a constant rate and the weight of oxides of sulfur was determined gravimetrically.

Nitrogen Oxides

The nitrogen oxides emission rate was determined using procedures detailed in EPA Method 7D. An integrated gas sample was extracted from the stack and collected in an alkaline-potassium permanganate solution. Nitrogen oxides ($NO + NO_2$) emissions were oxidized to NO_3 which was analyzed by ion chromatography.

ANALYTICAL PROCEDURES (Continued)

Continuous Emissions Monitoring

Carbon Monoxide

The carbon monoxide emission rate was determined following procedures detailed in EPA Method 10. An integrated gas sample was extracted from the flue gas stream, and a portion was conveyed to a Luft-type nondispersive infrared analyzer (NDIR).

Before and after each run, the monitor was zeroed and calibrated with a certified calibration gas. These calibrations were used to correct the raw data for zero and calibration drift occurring during the test runs.

Total Gaseous Nonmethane Organics (TGNMO)

The TGNMO emissions were determined following procedures detailed in EPA Method 25. An emission sample was withdrawn at a constant rate through a heated filter and a chilled condensate trap by means of an evacuated sample tank. After sampling was completed, any remaining gaseous hydrocarbons and carbon dioxide in the condensate trap were purged into the sample tank. The sample tank was then pressurized further to prepare it for analysis. The condensate trap was then heated and purged with air. This gas then passed through an oxidizer and then into an intermediate collection vessel. This step was repeated a total of three times.

Generally, all hydrocarbons are burned out during the first two burns. The original sample tank and the three burn tanks were analyzed using a Byron Instruments Super Byron 401 gas analyzer. Each tank was analyzed three times. This instrument meets the performance specifications of Method 25. The peak areas were integrated using a Nelson Series 900 analyzer.

The gas analyzer was calibrated and monitored for catalyst efficiency and system linearity with: 1% methane; 9.79 ppm, 20.8 ppm and 193.5 ppm propane; and 49.9 ppm, 517.5 ppm and 1.01% carbon dioxide.

SUMMARY OF PROCEDURES (Continued)

QUALITY CONTROL PROCEDURES

Quality control procedures for all aspects of field sampling; sample preservation and holding time; reagent quality; analytical method; analyst training and safety; and instrument cleaning, calibration and safety were followed. These procedures are generally consistent with EPA guidelines documented in "Quality Assurance Manuals for Air Pollution Measurement Systems," Vol 3, "Stationary Source Specific Methods" (EPA-600/4-77-027b).

COMMENTS

The TGNMO data for Run 3 during the testing of Unit 1 is not included due to an abnormality.

No deviations from standard U.S. EPA testing procedures were noted.

APPENDIX

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NOMENCLATURE

Nomenclature

A	-	absorbance
A_n	-	cross sectional area of nozzle (ft^2)
A_s	-	cross sectional area of stack (ft^2)
B_{wo}	-	proportion of water vapor in the gas stream by volume (%)
B_{ws}	-	proportion of water vapor in the gas stream by volume (%) at saturated conditions
C_p	-	pitot tube coefficient (dimensionless)
D_f	-	dilution factor
F_d	-	ratio of dry gas generated to gross calories (dscf/MBtu)
F_c	-	ratio of gas generated
GCV	-	gross calorific value of fuel (Btu/lb)
$\overline{DH}$	-	average pressure drop across meter box orifice (in. H_2O)
$\overline{\sqrt{DP}}$	-	average square roots of velocity heads of stack gas ($\sqrt{\text{in. } H_2O}$)
DH@	-	meter orifice calibration coefficient (in. H_2O)
%I	-	percent of isokinetic sampling (acceptable: $90 \leq \%I \leq 110\%$)
K_p	-	pitot tube constant: 85.49 (ft/sec) $\frac{\sqrt{(\text{lb/lb-mole})(\text{in. Hg})}}{\sqrt{(^\circ R)(\text{in. } H_2O)}}$
K_c	-	spectrophotometer calibration factor
M_d	-	dry molecular weight of stack gas (lb/lb-mole)
M_s	-	molecular weight of stack gas, wet basis (lb/lb-mole)
M_n	-	total amount of particulate matter collected (gm)
N	-	normality of titrant (meq/ml)
P_b	-	barometric pressure (in. Hg)
P_{bi}	-	initial barometric pressure (in. Hg)
P_{bf}	-	final barometric pressure (in. Hg)
P_f	-	final pressure of flask (relative in. Hg)
P_i	-	initial pressure of flask (relative in. Hg)
P_s	-	absolute stack gas pressure (in. Hg)
Q_a	-	volumetric flow rate, actual conditions
Q_{std}	-	volumetric flow rate, standard conditions, dry basis
std	-	standard conditions, 29.92 in. Hg, 68°F
T_f	-	final temperature of flask (°F)
T_i	-	initial temperature of flask (°F)

T_m	-	average dry gas meter temperature (°F)
T_s	-	average stack temperature (°F)
T_{std}	-	absolute temperature, standard conditions (528°R)
θ	-	total sampling time (min)
V_a	-	volume of aliquot (ml)
V_f	-	volume of flask (ml)
V_{lc}	-	total volume of liquid collected in impingers and silica gel (ml)
V_m	-	volume of gas sample through the dry gas meter at meter conditions (ft^3)
V_{mstd}	-	volume of gas sample through the dry gas meter, standard conditions (ft^3)
V_{sc}	-	volume of flask sample, standard conditions (ml)
V_{soln}	-	total volume of solution (ml)
V_t	-	volume of titrant used to titrate aliquot (ml)
V_{tb}	-	volume of titrant used to titrate blank (ml)
V_{wstd}	-	volume of water collected, standard conditions (ft^3)
V_s	-	stack gas velocity (ft/sec)
Y_d	-	gas meter correction factor (dimensionless)

Nomenclature

CAL GAS	actual concentration of the upscale calibration gas
CAL I	initial system calibration bias check response for the upscale calibration gas, ppm
CAL F	final system calibration bias check response for the upscale calibration gas, ppm
ZERO I	initial system calibration bias check response for the zero gas, ppm
ZERO F	final system calibration bias check response for the zero gas, ppm
ppm	measured concentration as parts per million in the gas stream
$ppm_{(drift\ calibrated)}$	concentration calibrated for drift as per Eq. 6C-1 of EPA Method 6C

Method 25 Nomenclature

A_s	-	cross sectional area of sampling plane (ft^2)
B_a	-	measured TGNMO analyzer blank value (ppmv C)
B_t	-	measured CO_2 blank value for condensate recovery and conditioning system carrier gas (ppmv CO_2)
B_{wo}	-	proportion of water vapor in the gas stream by volume (%)
C	-	TGNMO concentration in the effluent (ppmv C equivalent)
C_c	-	Calculated condensible organic concentration in the condensate trap (ppmv C equivalent)
C_{cm}	-	measured TGNMO for the condensate trap, ICV (ppm CO_2)
C_p	-	pitot tube coefficient (dimensionless)
C_q	-	calculated noncondensible organic concentration in the effluent (ppmv C equivalent)
C_{tm}	-	measured TGNMO concentration for the sample tank (ppmv C equivalent)
ICV	-	Intermediate collection vessel
K_c	-	calibration factor
M_c	-	TGNMO mass concentration in the effluent (mg C/dscm)
M_d	-	dry molecular weight of gas stream (lb/lb-mole)
M_s	-	molecular weight of gas stream, wet basis (lb/lb-mole)
P_b	-	barometric pressure at test location (mm Hg absolute)
P_{bF}	-	barometric pressure after pressurizing sample tank (mm Hg absolute)
P_{bFf}	-	barometric pressure after pressurizing ICV (mm Hg absolute)
P_{bI}	-	barometric pressure prior to sampling (mm Hg absolute)
P_F	-	final pressure of ICV (mm Hg gauge)
P_f	-	final pressure of ICV (mm Hg absolute)
P_{FI}	-	initial pressure of ICV (mm Hg gauge)
P_g	-	absolute stack gas pressure (in. Hg)
P_T	-	sample tank pressure after sampling, prior to pressurizing (mm Hg gauge)
P_t	-	sample tank pressure after sampling, prior to pressurizing (mm Hg absolute)
P_{TF}	-	final sample tank pressure after pressurizing (mm Hg gauge)
P_{tf}	-	final sample tank pressure after pressurizing (mm Hg absolute)
P_{TI}	-	sample tank pressure prior to sampling (mm Hg gauge)

P_{ti}	-	sample tank pressure prior to sampling (mm Hg absolute)
Q_a	-	volumetric flow rate, actual conditions
Q_s	-	volumetric flow rate, standard conditions
Q_{std}	-	volumetric flow rate, standard conditions, dry basis
T_{tF}	-	final temperature of ICV ($^\circ$ F)
T_{tf}	-	final temperature of ICV ($^\circ$ K)
TGNMO	-	total gaseous nonmethane organics
T_T	-	sample tank temperature at completion of sampling ($^\circ$ F)
T_t	-	sample tank temperature at completion of sampling ($^\circ$ K)
T_{TF}	-	sample tank temperature after pressurizing ($^\circ$ F)
T_{tf}	-	sample tank temperature after pressurizing ($^\circ$ K)
T_{Ti}	-	sample tank temperature prior to sampling ($^\circ$ F)
T_{ti}	-	sample tank temperature prior to sampling ($^\circ$ K)
V	-	sample tank volume (cm^3)
V_S	-	velocity gas stream (ft/sec)
V_s	-	volume gas sampled (dscc)
V_w	-	volume ICV (cm^3)
n	-	number of data points
q	-	total number of analyzer injections from ICV where k = injection number 1...q
r	-	total number of analyzer injections from sample tank where j = injection number 1...r
χ_i	-	individual measurements

SAMPLE CALCULATIONS

COGENTRIX
CAE Project No : 5509

SAMPLE CALCULATIONS - RUN 1, COMMON STACK - UNIT 17TOTAL PARTICULATE

(Note : results are taken from computer analysis)

1. Volume of water collected

$$V_{wstd} = (0.04707)(Vlc)$$
$$= (0.04707)(66.5)$$
$$= 3.13 \text{ wscf}$$

2. Volume of gas metered, standard conditions

$$V_{mstd} = \frac{(17.64)(V_m)\left[P_b + \frac{\Delta H}{13.6}\right]}{(460 + T_m)}(Y_d)$$
$$= \frac{(17.64)(66.82)\left[28.33 + \frac{2.55}{13.6}\right]}{(460 + 92)}(0.9918)$$
$$= 60.44 \text{ dscf}$$

3. Moisture content

$$B_{wo} = \frac{V_{wstd}}{V_{mstd} + V_{wstd}}$$
$$= \frac{3.13}{60.44 + 3.13}$$
$$= 0.0492$$
$$= 4.9\ \%$$

4. Molecular weight of dry gas stream

$$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%CO + \%N_2)$$
$$= 0.44(2.2) + 0.32(15.9) + 0.28(81.9)$$
$$= 28.99$$

5. Molecular weight of stack gas

$$M_s = M_d(1 - B_{wo}) + 18(B_{wo})$$
$$= 28.99(1 - 0.0492) + 18(0.0492)$$
$$= 28.45$$

SAMPLE CALCULATIONS (Continued)

6. Stack pressure (in. Hg)

$$P_s = P_b + \left(\frac{\text{STATIC P}}{13.6}\right)$$
$$= 28.33 + \left(\frac{-0.2}{13.6}\right)$$
$$= 28.32$$

7. Velocity of stack gas

$$V_s = K_p\, C_p\, (DP)^{\frac{1}{2}} \frac{[T_s + 460]^{\frac{1}{2}}}{[(M_s)\,(P_s)]^{\frac{1}{2}}}$$
$$= 85.49\ (0.840)\ (0.251) \frac{[329 + 460]^{\frac{1}{2}}}{[(28.45)\ (28.32)]^{\frac{1}{2}}}$$
$$= 17.81 \text{ ft/sec}$$

8. Total flow of stack gas

$$Q_a = (60)\,(A_s)\,(V_s)$$
$$= (60)\ (46.164)\ (17.81)$$
$$= 49,330 \text{ acfm}$$

$$Q_{std} = \frac{Q_a\, P_s\ (17.64)\ (1 - B_{ws})}{T_s + 460}$$
$$= \frac{(49,330)\ (28.32)\ (17.64)\ (1 - 0.0492)}{329 + 460}$$
$$= 29,710 \text{ dcsfm}$$

9. Percent Isokinetic

$$\%I = \frac{(0.09450)\ (T_s + 460)\ V_{m\,std}}{P_s\, V_s\, A_n\, 9\, (1 - B_{ws})}$$
$$= \frac{(0.09450)\ (329 + 460)\ (60.44)}{(28.32)\ (17.81)\ (0.001310)\ (72)\ (1 - 0.0492)}$$
$$= 99.6\ \%$$

SAMPLE CALCULATIONS (Continued)

10. Calculation of Diesel Btu

(Refer to schematic in the Description of Installation, Section 2 - 1)

$$\text{Volume}_i = \left(r^2 \cos^{-1}\left(\frac{r - H_i}{r}\right) - (r - H_i) \quad 2rH_i - H_i^2\right)(L)(\text{gal/in}^3)$$

$$= \left(32^2 \cos^{-1}\left(\frac{32 - 49.75}{32}\right) - (32 - 49.75) \quad (2)(32)(49.75) - 49.75^2\right)(109.5)(0.004329)$$

$$= 1272 \text{ gal}$$

$$\text{Volume}_f = \left(r^2 \cos^{-1}\left(\frac{r - H_f}{r}\right) - (r - H_f) \quad 2rH_f - H_f^2\right)(L)(\text{gal/in}^3)$$

$$= \left(32^2 \cos^{-1}\left(\frac{32 - 48.25}{32}\right) - (32 - 48.25) \quad (2)(32)(48.25) - 48.25^2\right)(109.5)(0.004329)$$

$$= 1233 \text{ gal}$$

$$\text{MBtu/hr}_{diesel} = \frac{(\text{Volume}_i - \text{Volume}_f)\ (\text{Btu/gal})}{(6)\ (1,000,000)}$$

$$= \frac{(1272 - 1233)\ (139,441)}{(1.25)\ (1,000,000)}$$

$$= 4.30 \text{ MBtu/hr}$$

Calculation of Gas Btu

$$\text{MBtu/hr}_{gas} = \left(\frac{(\text{Total Gas}_f - \text{Total Gas}_i)(10,000) - (\text{Blower Gas}_f - \text{Blower Gas}_i)}{(6)\ (1,000,000)}\right)(\text{Btu/ft}^3)$$

$$= \left(\frac{(12,571 - 12,562)(10,000) - (248,120 - 213,211)}{(1.25)\ (1,000,000)}\right)(1,039)$$

$$= 45.79 \text{ MBtu/hr}$$

Total MBtu/hr

$$\text{MBtu/hr} = (\text{MBtu/hr}_{diesel}) + (\text{MBtu/hr}_{gas})$$

$$= 4.30 + 45.79$$

$$= 50.09 \text{ MBtu/hr}$$

SAMPLE CALCULATIONS (Continued)

11. Particulate

$$\text{gr/dscf} = \frac{(15.43)\ (M_n)}{V_{mstd}}$$

$$= \frac{(15.43)\ (0.0066)}{60.44}$$

$$= 0.0017$$

$$\text{lb/hr} = \frac{(\text{gr/dscf})\ (Q_{std})\ (60)}{7000}$$

$$= \frac{(0.0017)\ (29,710)\ (60)}{7000}$$

$$= 0.43$$

$$\text{lb/MBtu} = \frac{(\text{lb/hr})}{(\text{Mbtu/hr})}$$

$$= \frac{(0.43)}{(50.09)}$$

$$= 0.008$$

SAMPLE CALCULATIONS (Continued)

12. Sulfur Dioxide

$$\text{lb/dscf} = \frac{(\text{mg})}{(453,590)\ (V_{m\text{-}std})}$$

$$= \frac{(45.4)}{(453,590)\ (31.18)}$$

$$= 3.21 \times 10^{-6}$$

$$\text{lb/hr} = (\text{lb/dscf})\ (\text{dscfm})\ (60)$$

$$= (3.21 \times 10^{-6})\ (29,710)\ (60)$$

$$= 5.72$$

$$\text{lb/MBtu} = \frac{(\text{lb/hr})}{(\text{MBtu/hr})}$$

$$= \frac{(5.72)}{(50.09)}$$

$$= 0.112$$

Note : Nitrogen oxides emissions are calculated in a similar manner.

SAMPLE CALCULATIONS (Continued)

13. Method 10 - Carbon Monoxide (Unit 1 - Inlet)

$$ppm_{dry\ calibrated} = (C_{avg} - C_o)\frac{C_{ma}}{(C_m - C_o)}$$

$$= (158.0 - 0.0)\frac{99.7}{(99.0 - 0.0)}$$

$$= 159.1$$

C_{avg} = 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 upscale calibration gas, ppm.

C_{ma} = Actual concentration of the upscale calibration gas, ppm.

$$lb/hr = \left(\frac{(ppm)\ (MW)}{385.3 \times 10^6}\right)(dscfm)(60)$$

$$= \left(\frac{(159.1)\ (28)}{385.3 \times 10^6}\right)(29,710)(60)$$

$$= 20.6$$

SAMPLE CALCULATIONS (Continued)

Method 25 Calculations (Common Stack - Unit 1 - Run 1)

14. Volume of sample (dscc)

$$pt = PT + Pb = -13 + 720$$
$$= 707$$

$$pti = PTI + Pbi = -714 + 720$$
$$= 6$$

$$tt = \left(\frac{5}{9}\right)(TT - 32) + 273 = \left(\frac{5}{9}\right)(75 - 32) + 273$$
$$= 297$$

$$tti = \left(\frac{5}{9}\right)(TTI - 32) + 273 = \left(\frac{5}{9}\right)(73 - 32) + 273$$
$$= 296$$

$$Vs = (0.3857)(V)\left(\frac{pt}{tt} - \frac{pti}{tti}\right)$$
$$= (0.3857)(4,030)\left(\frac{707}{297} - \frac{6}{296}\right)$$
$$= 3,670$$

15. Noncondensible organics (ppmv C equivalents)

$$ptf = PTF + PbF = 914 + 754$$
$$= 1,668$$

$$ttf = \left(\frac{5}{9}\right)(TTF - 32) + 273 = \left(\frac{5}{9}\right)(77 - 32) + 273$$
$$= 298$$

SAMPLE CALCULATIONS (Continued)

Method 25 Calculations (Unit 1 - Run 1A)

14. Volume of sample (dscc)

$$pt = PT + Pb = -13 + 720$$
$$= 707$$

$$pti = PTI + Pbi = -714 + 720$$
$$= 6$$

$$tt = \left(\frac{5}{9}\right)(TT - 32) + 273 = \left(\frac{5}{9}\right)(75 - 32) + 273$$
$$= 297$$

$$tti = \left(\frac{5}{9}\right)(TTI - 32) + 273 = \left(\frac{5}{9}\right)(73 - 32) + 273$$
$$= 296$$

$$Vs = (0.3857)(V)\left(\frac{pt}{tt} - \frac{pti}{tti}\right)$$
$$= (0.3857)(4,030)\left(\frac{707}{297} - \frac{6}{296}\right)$$
$$= 3,670$$

15. Noncondensible organics (ppmv C equivalents)

$$ptf = PTF + PbF = 914 + 754$$
$$= 1,668$$

$$ttf = \left(\frac{5}{9}\right)(TTF - 32) + 273 = \left(\frac{5}{9}\right)(77 - 32) + 273$$
$$= 298$$

SAMPLE CALCULATIONS (Continued)

Method 25 Calculations (Continued)

19. TGNMO, mass (mg C/dscm)

$$Mc = (0.4993)(C)$$
$$= (0.4993)(787.2)$$
$$= 393.0$$

20. Emission rate

$$\text{lb C/hr} = (Q_{std})(Mc)\left(\frac{(0.028317)(60)}{(453.59)(1000)}\right)$$
$$= (29,710)(393.0)\left(\frac{(0.028317)(60)}{(453.59)(1000)}\right)$$
$$= 43.7$$

21. Destruction efficiency, TGNMO (Unit 1 - Run 1)

$$\text{percent} = \frac{\text{lbC/hr}_{inlet} - \text{lbC/hr}_{outlet}}{\text{lbC/hr}_{inlet}}(100)$$

$$= \frac{227.4 - 58.3}{227.4}(100)$$
$$= 74.4$$

The carbon monoxide destruction efficiency was calculated in a similar manner.

22. Average destruction efficiency, TGNMO (Unit 2)

$$\text{percent} = \frac{\text{Average lbC/hr}_{inlet} - \text{Average lbC/hr}_{outlet}}{\text{Average lbC/hr}_{inlet}}(100)$$

$$= \frac{416.4 - 70}{416.4}(100)$$
$$= 83.2$$

The average carbon monoxide destruction efficiency was determined using a straight average.

PARAMETERS

COGENTRIX
CAE Project No: 5509

PARAMETERS

UNIT 1 STACK/TOTAL PARTICULATE

Run No.	1	2	3
A_n	.001310	.001310	.001310
A_s	46.164	46.164	46.164
B_{wo}	.0492	.0602	.0572
$\%CO_2$	2.2	2.3	2.2
C_p	.840	.840	.840
$\overline{DH}$	2.55	2.33	2.53
DH@	1.797	1.797	1.797
$\overline{(\Delta P)}_s$	.251	.240	.250
%I	99.6	102.1	101.6
M_d	28.99	29.00	28.98
M_m	.0066	.0160	.0126
M_s	28.45	28.34	28.36
$\%O_2$	15.9	15.9	15.8
P_b	28.33	28.33	28.33
P_g	28.32	28.32	28.32
Θ	72.0	72.0	72.0
$\overline{T_m}$	92	90	90
$\overline{T_s}$	329	326	324
V_{lc}	66.5	80	79
V_m	66.82	64.83	67.51
V_{mstd}	60.44	58.74	61.27
V_s	17.81	17.04	17.74
V_{wstd}	3.13	3.77	3.72
Y_d	.9918	.9918	.9918

COGENTRIX
CAE Project No: 5509

PARAMETERS

UNIT 2 STACK/TOTAL PARTICULATE

Run No.	1	2	3
A_n	.001310	.001310	.001310
A_s	46.164	46.164	46.164
B_{wo}	.0566	.0532	.0543
$\%CO_2$	3.0	2.4	2.4
C_p	.840	.840	.840
$\overline{DH}$	2.46	2.60	2.28
DH@	1.797	1.797	1.797
$\overline{(DP)}^2_t$	.249	.253	.237
%I	97.6	99.4	104.7
M_d	29.05	29.06	29.05
M_m	.0162	.0099	.0204
M_s	28.43	28.47	28.45
$\%O_2$	14.3	16.8	16.6
P_b	28.16	28.16	28.34
P_s	28.15	28.15	28.33
θ	72.0	72.0	72.0
$\overline{T_m}$	94	90	59
$\overline{T_s}$	341	330	329
V_{lc}	73.5	72	73
V_m	64.48	66.81	62.23
V_{mstd}	57.71	60.30	59.80
V_s	17.87	18.04	16.87
V_{wstd}	3.46	3.39	3.44
Y_d	.9918	.9918	.9918

COGENTRIX
CAE Project No: 5509

PARAMETERS

UNIT 3 STACK/TOTAL PARTICULATE

Run No.	1	2	3
A_n	.001310	.001310	.001310
A_s	46.164	46.164	46.164
B_{wo}	.0560	.0525	.0622
$\%CO_2$	3.0	3.0	2.6
C_p	.840	.840	.840
$\overline{DH}$	1.83	2.54	2.46
DH@	1.797	1.797	1.797
$\overline{(DP)^2_s}$	.219	.264	.260
%I	96.6	94.8	95.0
M_d	29.09	29.12	29.06
M_n	.0170	.0298	.0203
M_s	28.47	28.54	28.37
$\%O_2$	15.2	16.0	16.0
P_b	28.52	28.52	28.16
P_s	28.51	28.51	28.15
θ	72.0	72.0	72.0
$\overline{T_m}$	95	95	93
$\overline{T_s}$	334	332	327
V_{lc}	64	71	83
V_m	56.23	66.63	65.75
V_{mstd}	50.78	60.30	58.93
V_s	15.55	18.68	18.53
V_{wstd}	3.01	3.34	3.91
Y_d	.9918	.9918	.9918

COGENTRIX
CAE Project No: 5509
Common Stack - Unit 1

Particulate Parameters

Run Number	1	2	3
Date (1991)	January 17	January 17	January 17
Start Time (approx.)	8:45 AM	11:30 AM	1:30 AM
Stop Time (approx.)	10:27 AM	1:07 PM	3:23 AM
Total Mn	0.0066	0.0160	0.0126
Front Half w/Filters Mn	0.0060	0.0129	0.0087
Back Half Insolubles Mn	0.0006	0.0031	0.0039
Back Half Solubles Mn	0.0100	0.0000	0.0040

COGENTRIX
CAE Project No: 5509
Common Stack - Unit 2

Particulate Emissions

Run Number	1	2	3
Date (1991)	January 16	January 16	January 18
Start Time (approx.)	12:05 PM	2:43 PM	11:18 AM
Stop Time (approx.)	1:30 PM	5:17 PM	1:25 PM
Total			
Mn	0.0162	0.0099	0.0204
Front Half w/Filters			
Mn	0.0122	0.0084	0.0146
Back Half Insolubles			
Mn	0.0040	0.0015	0.0058
Back Half Solubles			
Mn	0.0000	0.0025	0.0000

COGENTRIX
CAE Project No: 5509
Common Stack - Unit 3

Particulate Parameters

Run Number	1	2	3
Date (1991)	January 15	January 15	January 16
Start Time (approx.)	1:00 PM	4:25 PM	9:05 AM
Stop Time (approx.)	2:23 PM	5:45 PM	10:30 AM
Total Mn	0.0170	0.0298	0.0203
Front Half w/Filters Mn	0.0125	0.0239	0.0179
Back Half Insolubles Mn	0.0045	0.0059	0.0024
Back Half Solubles Mn	0.0030	0.0035	0.0015

COGENTRIX
CAE Project No: 5509
Common Stack - Unit 1

Sulfate and Sulfur Dioxide Parameters

Run No.	1	2	3
Date (1991)	January 17	January 17	January 17
Start Time (approx.)	9:22 AM	11:31 AM	1:41 PM
Stop Time (approx.)	10:22 AM	12:31 PM	2:41 PM
Gas Conditions			
Vm	33.48	31.69	29.13
Pb	28.33	28.33	28.33
Yd	0.9871	0.9871	0.9871
DH	0.95	0.84	0.74
Tm	71	72	67
%CO2	2.2	2.3	2.2
%O2	15.9	15.9	15.8
Qstd (dscfm)*	29,710	28,180	29,530
Vmstd	31.18	29.43	27.30
Sulfate			
grams	0.0058	0.0071	0.0055
lb/dscf	4.10E-07	5.32E-07	4.44E-07
lb/hr	0.73	0.90	0.79
Sulfur Dioxide			
grams	0.0454	0.0222	0.0266
lb/dscf	3.21E-06	1.66E-06	2.15E-06
lb/hr	5.72	2.81	3.81

* The volumetric flow rate was determined during particulate testing performed at the same time.

COGENTRIX
CAE Project No: 5509
Common Stack - Unit 2

Sulfate and Sulfur Dioxide Parameters

Run No.	1	2	3
Date (1991)	January 16	January 16	January 16
Start Time (approx.)	12:10 PM	2:50 PM	11:25 AM
Stop Time (approx.)	1:10 PM	4:15 PM	12:25 PM
Gas Conditions			
Vm	29.60	30.24	26.95
Pb	28.16	28.16	28.34
Yd	0.9871	0.9871	0.9871
DH	0.64	0.62	0.53
Tm	93	92	62
%CO2	3.0	2.4	2.4
%O2	14.3	16.6	16.6
Qstd (dscfm)*	28,950	29,720	27,970
Vmstd	26.27	26.92	25.50
Sulfate			
grams	0.0078	0.0022	0.0069
lb/dscf	6.55E-07	1.80E-07	5.96E-07
lb/hr	1.14	0.32	1.00
Sulfur Dioxide			
grams	0.0198	0.0253	0.0111
lb/dscf	1.66E-06	2.07E-06	9.60E-07
lb/hr	2.89	3.69	1.61

* The volumetric flow rate was determined during particulate testing performed at the same time.

COGENTRIX
CAE Project No: 5509
Common Stack - Unit 3

Sulfate and Sulfur Dioxide Parameters

Run No.	1	2	3
Date (1991)	January 15	January 15	January 16
Start Time (approx.)	1:10 PM	4:30 PM	9:15 AM
Stop Time (approx.)	2:10 PM	5:30 PM	10:15 AM
Gas Conditions			
Vm	33.57	30.42	36.05
Pb	28.52	28.52	28.16
Yd	0.9871	0.9871	0.9871
DH	0.91	0.75	1.05
Tm	82	86	75
%CO2	3.0	3.0	2.6
%O2	15.2	16.0	16.0
Qstd (dscfm)*	25,750	31,130	30,380
Vmstd	30.86	27.63	33.15
Sulfate			
grams	0.0055	0.0017	0.0045
lb/dscf	3.93E-07	1.36E-07	2.99E-07
lb/hr	0.61	0.25	0.55
Sulfur Dioxide			
grams	0.0162	0.0281	0.0061
lb/dscf	1.16E-06	2.24E-06	4.06E-07
lb/hr	1.79	4.19	0.74

* The volumetric flow rate was determined during particulate testing performed at the same time.

COGENTRIX
CAE Project No: 5509
Common Stack - Unit 1

Nitrogen Oxides Parameters

Run No.	1		2		3
Date (1991)	January 17		January 17		January 17
Start Time (approx.)	8:45 AM		11:30 AM		1:30 PM
Stop Time (approx.)	10:30 AM		12:30 PM		2:30 PM
Gas Conditions					
Vm	25.55		27.88		29.13
Pb	28.33		28.33		28.33
Yd	1.0029		1.0029		0.9871
DH	0.80		0.90		0.74
Tm	6		6		67
%CO2	2.2		2.3		2.2
%O2	15.9		15.9		15.8
Qstd (dscfm)*	29,710		28,180		29,530
Vmstd	27.54		30.06		27.30
Nitrogen Oxides					
mg	2.72	<	1.76	<	1.72
lb/dscf	2.18E-07	<	1.29E-07	<	1.39E-07
lb/hr	0.39	<	0.22	<	0.25

* The volumetric flow rate was determined during particulate testing performed at the same time.

COGENTRIX
CAE Project No: 5509
Common Stack - Unit 2

Nitrogen Oxides Parameters

Run No.	1	2	3
Date (1991)	January 16	January 16	January 18
Start Time (approx.)	12:15 PM	2:50 PM	11:25 AM
Stop Time (approx.)	1:15 PM	4:15 PM	12:25 PM
Gas Conditions			
Vm	27.74	26.57	23.99
Pb	29.16	29.16	29.16
Yd	1.0029	1.0029	1.0029
DH	0.80	0.80	0.80
Tm	27	25	12
%CO2	3.0	2.4	2.4
%O2	14.3	16.8	16.6
Qstd (dscfm)*	28,950	29,720	27,970
Vmstd	28.44	27.35	25.37
Nitrogen Oxides			
mg	< 2.04	< 2.06	< 1.56
lb/dscf	< 1.58E-07	< 1.66E-07	< 1.36E-07
lb/hr	< 0.27	< 0.30	< 0.23

* The volumetric flow rate was determined during particulate testing performed at the same time.

COGENTRIX
CAE Project No: 5509
Common Stack - Unit 3

Nitrogen Oxides Parameters

Run No.		1		2		3
Date (1991)		January 15		January 15		January 16
Start Time (approx.)		1:05 PM		4:25 PM		9:10 AM
Stop Time (approx.)		2:05 PM		5:25 PM		10:10 AM
Gas Conditions						
Vm		28.62		28.92		28.22
Pb		28.52		28.52		28.16
Yd		1.0029		1.0029		1.0029
DH		0.90		0.80		0.80
Tm		18		20		26
%CO2		3.0		3.0		2.6
%O2		15.2		16.0		16.0
Qstd (dscfm)"		25,750		31,130		30,380
Vmstd		30.28		30.46		28.99
Nitrogen Oxides						
mg	<	1.82	<	1.81	<	2.00
lb/dscf	<	1.33E-07	<	1.31E-07	<	1.52E-07
lb/hr	<	0.20	<	0.24	<	0.26

" The volumetric flow rate was determined during particulate testing performed at the same time.

COGENTRIX
CAE Project No: 5509
Unit 1 - Inlet
January 17, 1991

Carbon Monoxide Concentration (ppm)

Run No.	1	2	3
Start (approx)	9:22 AM	11:31 AM	1:41 PM
Stop (approx)	9:52 AM	12:01 PM	2:11 PM
ZERO I	0.0	0.0	0.0
CAL. I	99.0	99.0	99.0
ZERO F	0.0	0.0	0.0
CAL. F	99.0	99.0	99.0
ppm	158.0	134.0	152.0
CAL GAS	99.7	99.7	99.7
ppm (drift calibrated)	159.1	134.9	153.1

COGENTRIX
CAE Project No: 5509
Unit 1 - Common Stack
January 17, 1991

Carbon Monoxide Concentration (ppm)

Run No.	1	2	3
Start (approx)	9:22 AM	11:31 AM	1:41 PM
Stop (approx)	9:52 AM	12:01 PM	2:11 PM
ZERO I	0.0	0.0	0.0
CAL I	17.0	17.0	17.0
ZERO F	0.0	0.0	0.0
CAL F	17.0	17.0	17.0
ppm	8.5	5.0	6.0
CAL GAS	16.2	16.2	16.2
ppm (drift calibrated)	9.1	5.4	6.4

COGENTRIX
CAE Project No: 5509
Unit 2 - Inlet

Carbon Monoxide Concentration (ppm)

Run No.	1	2	3
Date (1991)	January 16	January 16	January 18
Start (approx)	12:10 PM	2:40 PM	11:25 AM
Stop (approx)	12:40 PM	3:10 PM	11:55 AM
ZERO I	0.0	0.0	0.0
CAL I	99.0	99.0	99.5
ZERO F	0.0	0.0	0.0
CAL F	99.0	99.0	99.0
ppm	152.0	109.0	110.0
CAL GAS	99.7	99.7	99.7
ppm (drift calibrated)	153.1	109.8	110.5

COGENTRIX
CAE Project No: 5509
Unit 2 - Common Stack

Carbon Monoxide Concentration (ppm)

Run No.	1	2	3
Date (1991)	January 16	January 16	January 16
Start (approx)	12:10 PM	2:40 PM	11:25 AM
Stop (approx)	12:40 PM	3:10 PM	11:55 AM
ZERO I	0.0	0.0	0.0
CAL I	17.0	17.0	17.0
ZERO F	0.0	0.0	0.0
CAL F	17.0	17.0	17.0
ppm	7.0	3.0	7.0
CAL GAS	16.2	16.2	16.2
ppm (drift calibrated)	7.5	3.2	7.5

COGENTRIX
CAE Project No: 5509
Unit 3 - Inlet

Carbon Monoxide Concentration (ppm)

Run No.	1	2	3
Date (1991)	January 15	January 15	January 16
Start (approx)	1:10 PM	2:30 PM	9:15 AM
Stop (approx)	1:40 PM	3:00 PM	9:45 AM
ZERO I	0.0	0.0	0.0
CAL I	99.5	99.0	99.0
ZERO F	0.0	0.0	0.0
CAL F	99.0	99.0	99.0
ppm	119.0	99.0	173.0
CAL GAS	99.7	99.7	99.7
ppm (drift calibrated)	119.5	99.7	174.2

COGENTRIX
CAE Project No: 5509
Unit 3 - Common Stack

Carbon Monoxide Concentration (ppm)

Run No.	1	2	3
Date (1991)	January 15	January 15	January 16
Start (approx)	1:10 PM	2:30 PM	9:15 AM
Stop (approx)	1:40 PM	3:00 PM	9:45 AM
ZERO I	0.0	0.0	0.0
CAL I	17.0	17.0	17.0
ZERO F	0.0	0.0	0.0
CAL F	17.0	17.0	17.0
ppm	6.0	3.5	7.0
CAL GAS	18.2	18.2	18.2
ppm (drift calibrated)	6.4	3.7	7.5

COGENTRIX
CAE Project No: 5509
Unit 1

Total Gaseous Nonmethane Organics Parameters

Location/Run	DSCFM	Mc	Lb C/Hr	Average Mc	Average Lb C/Hr
Unit 1 Inlet					
1	29,710	2,043.2	227.4	2,043.2	227.4
2-A	28,180	728.6	76.9	615.7	65.0
2-B	28,180	502.7	53.1		
3	29,530	428.2	47.4	428.2	47.4
Average	28,900			1,029.0	113.2

Location/Run	DSCFM	Mc	Lb C/Hr	Average Mc	Average Lb C/Hr	Destruction Efficiency	Average Destruction Efficiency
Unit 1 Stack							
1-A	29,710	393.0	43.7	524.0	58.3	80.8	74.4
1-B	29,710	654.9	72.9				
2	28,180	169.7	20.0	169.7	20.0	74.0	69.2
3	29,530	714.6	79.0	714.6	79.0	*	-66.9
Average	29,283			476.1	52.5		25.6

* See Comments page 4-1.

COGENTRIX
CAE Project No: 5509
Unit 2

Total Gaseous Nonmethane Organics Parameters

Location/Run	DSCFM	Mc	Lb C/Hr	Average Mc	Average Lb C/Hr
Unit 2 Inlet					
1-A	28,950	1,991.0	215.9	3,172.3	344.0
1-B	28,950	4,353.5	472.1		
2	29,720	6,173.7	687.3	6,173.7	687.3
3	27,970	2,174.7	227.8	2,174.7	227.8
Average	28,898			3,840.2	419.7

Location/Run	DSCFM	Mc	Lb C/Hr	Average Mc	Average Lb C/Hr	Destruction Efficiency	Average Destruction Efficiency
Unit 2 Stack							
1-A	28,950	673.1	73.0	705.1	76.5	66.2	77.8
1-B	28,950	737.0	79.9			63.1	
2	29,720	603.6	67.2	603.6	67.2	90.2	90.2
3	27,970	632.3	66.2	632.3	66.2	70.9	70.9
Average	28,898			647.0	70.0		79.6

COGENTRIX
CAE Project No: 5509
Unit 3

Total Gaseous Nonmethane Organics Parameters

Location/Run	DSCFM	Mc	Lb C/Hr	Average Mc	Average Lb C/Hr
Unit 3 Inlet					
1	25,750	5,818.5	561.2	5,818.5	561.2
2	31,130	2,604.1	303.6	2,604.1	303.6
3-A	30,380	16,675.5	1,897.6	14,510.4	1,651.2
3-B	30,380	12,345.3	1,404.8		
Average	29,410			7,644.3	838.7

Location/Run	DSCFM	Mc	Lb C/Hr	Average Mc	Average Lb C/Hr	Destruction Efficiency	Average Destruction Efficiency
Unit 3 Stack							
1-A	25,750	2,737.0	264.0	4,192.0	404.3	53.0	28.0
1-B	25,750	5,647.0	544.7				
2	31,130	1,437.8	167.7	1,437.8	167.7	44.8	44.8
3	30,380	1,024.0	116.5	1,024.0	116.5	93.9	92.9
Average	28,253			2,217.9	229.5		55.2

CALIBRATION DATA

FULL TEST CALIBRATION

Meter Box No: 68-V1

(919) 682-0402

TELECOPIER COVER SHEET

TELECOPIER #: 412-695-2895 DATE: 9-5-90

TIME: 3:30 PM

Total number of pages including cover sheet: 1

TO: Scott Williams/CAE

FROM: Reede Strupp

If you did not receive the total number of pages indicated above, or hav any other problems:

Please contact: Caroline 1-800-837-63
(919) 682-04

Equipment: RICOH FAX10 - GROUP 3 (919) 683-13

Calibration Certification
Singer meter serial # M900422
Date Calibrated 6-12-90
Data
Full Flow 1.00059
20% Flow 1.00109
NBS Traceable Bell Prover
American Prover 2989
Cert. #B-057
5-25-88

Date: March 13, 1979 Operator: [illegible]

Meter Box No.: J	Meter Box ΔH@: 1.75	Meter Box Yd: 1.0024	Barometric Pressure: 29.16

				Standard Meter Gas Volume ft³			Meter Box Gas Volume ft³			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vd Net	In	Out	Tds Avg	In	Out	Td Avg	Time θ	Yd	ΔH@
.5W	0.5	-0.5	.9965	239.39	245.33	5.94	126.28	132.47	6.25	82	80	81	103	82	91.5	15	1.0022	1.764
.5M	0.5	-0.5	.9965	245.33	251.22	5.89	132.45	138.45	6.67	82	81	81.5	105	84	94.5	12	1.0039	1.765
.7W	0.7	-0.7	.9969	720.25	733.16	12.91	202.00	215.52	13.52	83	83	83	107	94	100.5	18	1.0004	1.747
.7M	1.7	-1.2	.9957	733.16	745.16	12.00	215.52	228.96	13.04	84	83	83.5	108	96	102	17	1.0012	1.750
.9W	3.0	-2.0	.9914	82.65	83.77	11.12	242.10	253.54	11.44	84	84	84	104	100	102	12	1.0023	1.817
.9M	2.0	-2.0	.9914	83.77	84.88	10.88	253.54	264.65	11.06	84	84	84	104	98	101	11	1.0008	1.788
																	1.0024	
																		1.764

Nomenclature

Pb	Barometric Pressure
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential ("H_2O)
ΔP	Inlet Pressure Differential ("H_2O)
Vd	Volume Dry Gas Meter (ft³)
Vds	Volume Dry Standard (ft³)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential that gave 0.75 cfm of air at 70°F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb(Td + 460)}\left[\frac{(Tds + 460)\theta}{(Vds)(Yds)}\right]^2$$

$$Q = \frac{17.64\,(Vds)(Pb)}{(Tds + 460)\theta}$$

Vacuum Gauge Calibration

Standard (Hg)	Vacuum Gauge

Thermometer Calibration

Standard	Inlet	Outlet

POST TEST CALIBRATION CHECK

Client/Owner: [illegible] Project Number: 55e9

Operator: [illegible] Date: 01/23/91

Meter Box No.: J	Meter Box Vacuum: 8	Meter Box Yd: .9871	Barometric Press.: 28.99

				Standard Meter Gas Volume ft³			Meter Box Gas Volume ft³			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Yds Net	Initial	Final	Vd Net	In	Out	Tds Avg	In	Out	Td Avg	Time θ	Yd	ΔH@
0.481	.8	.19	1.0016	894.45	904.82	8.89	385.01	393.37	9.56	64 64	64 64	64	66 63	66 62	64	18	1.0085	1.77
0.482	.8	.19	1.0015	895.21	904.69	10.87	393.37	404.96	11.69	64 64	64 64	64	63 63	66 66	65	22	0.9786	1.77
0.483	.8	.19	1.0015	904.69	914.58	9.39	404.96	415.16	10.14	64 64	64 64	64	63 64	66 66	66	19	0.9763	1.77

Nomenclature

Pb	Barometric Pressure
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential ("H_2O)
ΔP	Inlet Pressure Differential ("H_2O)
Vd	Volume Dry Gas Meter (ft^3)
Vds	Volume Dry Standard (ft^3)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential that gave 0.75 cfm of air at 70° F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right] \quad .9915\,3$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb\,(Td + 460)}\left[\frac{(Tds + 460)\,\theta}{(Vds)\,(Yds)}\right]^2$$

$$Q = \frac{17.64\,(Vds)\,(Pb)}{(Tds + 460)\,\theta}$$

DATE: 9/22/10

OPERATOR: SMJ

METER BOX Yd: .988

METER BOX ΔH@: 1.771

BAROMETRIC PRESSURE (Pb): 28.91

Q	ΔH	ΔP	Yds	Standard Meter Gas Volume (ft³) Initial	Final	(Vds) Net	Meter Box Gas Volume (ft³) Initial	Final	(Vd) Net	Standard Meter Temperature In	Out	Tds Avg	Meter Box Temperature In	Out	Td Avg	Time (Min.) θ	Yd	ΔH@
3	.30	1.5	.991	95.49	98.02	2.53	311.90	314.46	2.56	70	70	70	132	106	119	14	.984	1.725
3	.30	1.5	.991	98.02	101.41	3.39	314.46	318.25	3.79	70	70	70	124	106	115	10	.980	1.733
4	.30	2.0	.991	101.41	105.20	3.79	318.25	322.15	3.90	70	70	70	124	106	115			
6	.30	2.5	.991	105.20	107.57	2.37	322.15	324.60	2.45	70	70	70	132	103	118	6	.996	1.822
6	.47	2.5	.991	107.57	111.27	3.70	324.60	328.40	3.80	70	70	70	132	103	118	5	.994	1.821
6	.47	2.5	.991	111.27	114.03	2.76	328.40	331.35	2.95	70	70	70	132	103	118			
8	.47	3.5	.991	114.03	117.84	3.81	331.35	335.30	3.95	70	70	70	140	106	123	3.5	.990	1.836
10	.30	2.5	.991	117.84	121.05	3.21	335.30	338.53	3.23	70	70	70	140	106	123	3	.990	1.845
10	.30	2.5	.991	121.05	124.09	3.04	338.53	341.55	3.02	70	70	70	140	106	123			

Q = Flow Rate (cfm)

ΔH = Orifice Pressure Differential (in. H O)

ΔP = Inlet Pressure Differential Standard Meter (in. H O)

Yds = Standard Meter Correction Factor (Unitless)

Yd = Meter Box Correction Factor (Unitless)

ΔH@ = Orifice Pressure Differential that gives 0.75 cfm of air at 70°F and 29.92" Hg (in. H O)

$$Yd = (Yds)\left(\frac{Vds}{Vd}\right)\left(\frac{Td + 460}{Tds + 460}\right)\left(\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right)$$

$$\Delta H@ = \frac{0.0317\ \Delta H}{Pb\ (Td + 460)}\left[\frac{(Tds + 460)\ \theta}{Vds \cdot Yds}\right]^2$$

$$Q = \frac{17.64 \cdot Vds \cdot Pb}{(Tds + 460)\ \theta}$$

.50 = .5

.4

4

POST TEST CALIBRATION CHECK

Client/Owner: Cogentrix

Operator: CG

Project Number: 5509

Date: 2/19/91

Meter Box No.: BFG-2 | Meter Box Vacuum: 20 | Meter Box Yd: .9918 | Barometric Press.: 29.00

				Standard Meter Gas Volume ft³			Meter Box Gas Volume ft³			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Yds Net	Initial	Final	Yd Net	In	Out	Tds Avg	In	Out	Td Avg	Time θ	Yd	ΔH@
.869	2.5	.40	.9993	289.61	299.53	9.92	716.50	727.01	10.51	72 72	70 70	71	120 132	98 102	113	11	1.001	1.656
.866	2.5	.40	.9993	299.53	310.32	10.79	727.01	738.60	11.59	72 72	70 70	71	132 138	102 108	120	12	.9996	1.645
.869	2.5	.40	.9993	310.32	328.36	18.04	738.60	757.80	19.20	72 72	70 70	71	138 138	108 110	124	20	1.012	1.624

Nomenclature

Pb	Barometric Pressure
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential ("H_2O)
ΔP	Inlet Pressure Differential ("H_2O)
Vd	Volume Dry Gas Meter (ft^3)
Vds	Volume Dry Standard (ft^3)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential that gave 0.75 cfm of air at 70° F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb\,(Td + 460)}\left[\frac{(Tds + 460)\,\theta}{(Vds)\,(Yds)}\right]^2$$

$$Q = \frac{17.64\,(Vds)\,(Pb)}{(Tds + 460)\,\theta}$$

POST TEST CALIBRATION CHECK

Client/Owner: Cogentrix

Operator: CG

Project Number: 5509

Date: 2/18/91

Meter Box No.: 68 V-1	Meter Box Vacuum: 2	Meter Box Yd: 1.0029	Barometric Press.: 28.97

				Standard Meter Gas Volume ft^3			Meter Box Gas Volume ft^3			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Yds Net	Initial	Final	Vd Net	In	Out	Tds Avg	In	Out	Td Avg	Time θ	Yd	ΔH@
	1.0				6.77L	.239	6.50L	13.04L	.231			66	64 66		65	75	1.0301	
	1.0				6.56L	.232	1.50L	7.93L	.227			66	68 70		69	15	1.0253	
	1.0				6.49L	.229	0.00L	6.31L	.223			66	70 70		70	15	1.0321	

Nomenclature

Pb	Barometric Pressure
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential ("H_2O)
ΔP	Inlet Pressure Differential ("H_2O)
Vd	Volume Dry Gas Meter (ft^3)
Vds	Volume Dry Standard (ft^3)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential that gave 0.75 cfm of air at 70° F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb\,(Td + 460)}\left[\frac{(Tds + 460)\,\theta}{(Vds)\,(Yds)}\right]^2$$

$$Q = \frac{17.64\,(Vds)\,(Pb)}{(Tds + 460)\,\theta}$$

WEIGHT SHEETS

Project # 5501

ALL WEIGHTS SORTED BY RDS

RDS	RUN	SH #	WT #	IDENTIFIER	FB T	WASH ML	CORR.	GROSS	TARE	NET
		1	1	BLANK	B	50	0.0000	63.5869	63.5868	0.0001
		3	1	BLANK	B	100	0.0003	98.8951	98.8951	0.0000
1	1	1	2	19	B	200	0.0004	101.2990	101.2986	0.0005
1	1	3	11	31	B	75	0.0000	65.6317	65.6297	0.0020
01	1	1	11	78	B	80	0.0002	63.6304	63.6296	0.0006
1	1	2	2	100377	F	------	------	0.6293	0.6262	0.0031
1	1	4	10	2047	F	------	------	0.1049	0.1048	0.0001
				RDS TOTAL						0.0066
2	2	3	12	16	B	90	0.0000	67.2465	67.2448	0.0017
2	2	1	12	195	B	80	0.0002	65.0223	65.0187	0.0031
02	2	1	3	B-4	B	200	0.0004	106.6225	106.6217	0.0004
2	2	2	3	100399	F	------	------	0.6275	0.6173	0.0102
2	2	4	11	2046	F	------	------	0.1066	0.1066	0.0000
02	2	4	2	808	F	------	------	0.0760	0.0694	0.0066
				RDS TOTAL						0.0160
03	3	1	13	21	B	90	0.0002	66.6643	66.6602	0.0039
03	3	3	13	35	B	80	0.0003	64.6202	64.6181	0.0021
3	3	1	4	B-3	B	150	0.0003	107.7351	107.7348	0.0000
3	3	2	4	100400	F	------	------	0.6202	0.6154	0.0048
03	3	4	12	2049	F	------	------	0.1061	0.1061	0.0000
3	3	4	3	809	F	------	------	0.0664	0.0646	0.0018
				RDS TOTAL						0.0126
04	1	1	14	4	B	110	0.0002	56.9603	56.9561	0.0040
4	1	3	14	B-11	B	140	0.0000	109.4359	109.4347	0.0012
4	1	1	5	B-7	B	250	0.0005	108.2726	108.2704	0.0017
04	1	2	5	100375	F	------	------	0.6174	0.6099	0.0075
4	1	4	13	2050	F	------	------	0.1064	0.1064	0.0000
4	1	4	4	811	F	------	------	0.0705	0.0687	0.0018
				RDS TOTAL						0.0162
5	2	1	6	2	B	250	0.0005	102.6137	102.6120	0.0012
05	2	1	15	34	B	120	0.0002	66.1960	66.1943	0.0015
05	2	3	15	74	B	75	0.0000	101.8227	101.8201	0.0026
5	2	2	6	100376	F	------	------	0.6255	0.6221	0.0034
5	2	4	14	2054	F	------	------	0.1034	0.1032	0.0002
05	2	4	5	816	F	------	------	0.0696	0.0686	0.0010
				RDS TOTAL						0.0099
06	3	1	16	1	B	160	0.0003	62.4473	62.4412	0.0056
06	3	1	7	47	B	170	0.0003	103.7463	103.7456	0.0004
6	3	3	16	7	B	160	0.0000	63.8328	63.8296	0.0032
06	3	2	7	100388	F	------	------	0.6250	0.6155	0.0095
06	3	4	15	2051	F	------	------	0.1067	0.1065	0.0002
6	3	4	6	812	F	------	------	0.0696	0.0683	0.0013
				RDS TOTAL						0.0204
07	1	1	17	26	B	80	0.0002	62.8473	62.8436	0.0045

[illegible]	1	2	8	[illegible]	F	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	1	[illegible]	[illegible]	[illegible]	F	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	4	9	[illegible]	F	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]				[illegible] TOTAL					[illegible]
[illegible]	2	1	[illegible]	[illegible]	B	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	2	1	[illegible]	[illegible]	B	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	2	3	[illegible]	[illegible]	B	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	2	4	[illegible]	[illegible]	F	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	2	4	[illegible]	[illegible]	F	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	2	4	[illegible]	[illegible]	F	[illegible]	[illegible]	[illegible]	[illegible]
				[illegible] TOTAL					[illegible]
[illegible]	3	1	[illegible]	[illegible]	B	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	3	1	[illegible]	[illegible]	B	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	3	3	[illegible]	[illegible]	B	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	3	4	[illegible]	[illegible]	F	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	3	4	[illegible]	[illegible]	F	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	3	4	[illegible]	[illegible]	F	[illegible]	[illegible]	[illegible]	[illegible]
				[illegible] TOTAL					[illegible]
		3	8	[illegible]	B	[illegible]	[illegible]	[illegible]	[illegible]
		3	8	[illegible]	B	[illegible]	[illegible]	[illegible]	[illegible]
		3	4	[illegible]	B	[illegible]	[illegible]	[illegible]	[illegible]
		3	2	[illegible]	B	[illegible]	[illegible]	[illegible]	[illegible]
		3	12	[illegible]	B	[illegible]	[illegible]	[illegible]	[illegible]
		3	3	[illegible]	B	[illegible]	[illegible]	[illegible]	[illegible]
		3	7	[illegible]	B	[illegible]	[illegible]	[illegible]	[illegible]
		3	9	[illegible]	B	[illegible]	[illegible]	[illegible]	[illegible]
		3	6	[illegible]	B	[illegible]	[illegible]	[illegible]	[illegible]
		4	19	[illegible]	-	[illegible]	[illegible]	[illegible]	[illegible]

Project # 55091

WEIGH SHEET ## 3 AS ENTERED

ARD	RUN	WT #	IDENTIFIER	FB T	WASH ML	CORR.	GROSS	TARE	NET
		1	BLANK	B	50	0.0000	63.5869	63.5868	0.0001
1	1	2	19	B	200	0.0004	101.2990	101.2986	0.0005
02	2	3	B-4	B	200	0.0004	106.6225	106.6217	0.0004
03	3	4	B-3	B	150	0.0003	107.7351	107.7348	0.0003
4	1	5	B-7	B	250	0.0005	108.2726	108.2704	0.0017
05	2	6	2	B	250	0.0005	102.6137	102.6120	0.0012
06	3	7	47	B	170	0.0003	103.7463	103.7456	0.0004
7	1	8	51	B	140	0.0003	105.0221	105.0154	0.0244
8	2	9	8	B	220	0.0004	103.6485	103.6463	0.0018
09	3	10	45	B	220	0.0004	104.6981	104.6957	0.0020
1	1	11	7B	B	80	0.0002	63.8334	63.8296	0.0036
2	2	12	19B	B	86	0.0002	65.2229	65.2187	0.0021
03	3	13	21	B	90	0.0002	66.8643	66.8602	0.0039
04	1	14	4	B	110	0.0002	56.9603	56.9561	0.0040
5	2	15	34	B	120	0.0002	66.1960	66.1943	0.0015
6	3	16	1	B	160	0.0003	62.4473	62.4412	0.0058
07	1	17	26	B	80	0.0002	62.8473	62.8426	0.0045
8	2	18	13	B	110	0.0002	66.8728	66.8667	0.0059
9	3	19	27	B	110	0.0002	61.8223	61.8197	0.0024

Project # 55091

WEIGH SHEET ## 2 AS ENTERED

ARD	RUN	WT #	IDENTIFIER	FB T	WASH ML	CORR.	GROSS	TARE	NET
			BLANK	-	-----	-----	-----	-----	-----
01	1	2	100377	F	-----	-----	0.6293	0.6262	0.0031
02	2	3	100399	F	-----	-----	0.6275	0.6173	0.0102
03	3	4	100400	F	-----	-----	0.6202	0.5154	0.0048
04	1	5	100375	F	-----	-----	0.6174	0.6099	0.0075
05	2	6	100376	F	-----	-----	0.6255	0.6221	0.0034
06	3	7	100388	F	-----	-----	0.6250	0.6155	0.0095
07	1	8	100321	F	-----	-----	0.6405	0.6342	0.0063
08	2	9	100322	F	-----	-----	0.6444	0.6341	0.0103
09	3	10	100323	F	-----	-----	0.6485	0.6359	0.0126

AE Project # 55091

WEIGH SHEET ## 35 AS ENTERED

ARD	RUN	WT #	IDENTIFIER	FB T	WASH ML	CORR.	GROSS	TARE	NET
		1	BLANK	B	100	0.0000	98.8951	98.8951	0.0000

		5	18	B	500	0.0000	106.4847	106.4847	0.0000
		6	B-5	B	500	0.0000	110.6863	110.6838	0.0025
		7	92	B	500	0.0000	101.4053	101.4053	0.0000
		8	14	B	500	0.0000	105.2393	105.2363	0.0030
		9	A11	B	500	0.0000	114.6568	114.6533	0.0035
		10	44	B	500	0.0000	101.4102	101.4087	0.0015
01	1	11	31	B	75	0.0000	65.8317	65.8297	0.0020
02	2	12	16	B	90	0.0000	67.2465	67.2448	0.0017
03	3	13	35	B	80	0.0000	64.6202	64.6181	0.0021
04	1	14	B-11	B	140	0.0000	109.4359	109.4347	0.0012
05	2	15	74	B	75	0.0000	101.8227	101.8201	0.0026
06	3	16	7	B	160	0.0000	63.8328	63.8296	0.0032
07	1	17	A-10	B	200	0.0000	111.9253	111.9251	0.0002
08	2	18	A-3	B	140	0.0000	110.1798	110.1699	0.0099
09	3	19	C-3	B	170	0.0000	109.0004	108.9980	0.0024

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CAE Project # 55091

WEIGH SHEET # 4 AS ENTERED

R D S	R U N	W T #	IDENTIFIER	F B T	WASH ML	WASH CORR.	GROSS	TARE	NET
			BLANK	-	------	------	------	------	------
02	2	2	808	F	------	------	0.0700	0.0694	0.0006
03	3	3	809	F	------	------	0.0664	0.0646	0.0018
04	1	4	811	F	------	------	0.0705	0.0687	0.0018
05	2	5	816	F	------	------	0.0696	0.0686	0.0010
06	3	6	812	F	------	------	0.0696	0.0683	0.0013
07	1	7	813	F	------	------	0.0708	0.0692	0.0016
08	2	8	814	F	------	------	0.0704	0.0685	0.0019
09	3	9	815	F	------	------	0.0692	0.0684	0.0008
01	1	10	2047	F	------	------	0.1049	0.1048	0.0001
02	2	11	2048	F	------	------	0.1066	0.1066	0.0000
03	3	12	2049	F	------	------	0.1061	0.1061	0.0000
04	1	13	2050	F	------	------	0.1064	0.1064	0.0000
05	2	14	2056	F	------	------	0.1034	0.1032	0.0002
06	3	15	2051	F	------	------	0.1067	0.1065	0.0002
07	1	16	2052	F	------	------	0.1067	0.1067	0.0000
08	2	17	2053	F	------	------	0.1029	0.1029	0.0000
09	3	18	2054	F	------	------	0.1029	0.1028	0.0001

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Particulate Testing
Weight Sheet

Client Cogentrix	Project Number 5509	Analyst RD
Plant Ringold PA	Unit 1, 2, 3	Balance Pgh Fisher
Test Date 1-17, 21-91		

Description	Wt. No.	I.D. and Sample Description[1]	Sample volume (ml)[2]	Date/ Time	Gross Weight (g)	Tare Weight (g)	Date/ Time	Net Weight (g)
Type Filter	1	100377		1-23-91	.6292	.6261	8/22 9:05	.0031
Run 1				10:05	.6294	.6263	8/24 11:26	.0031
Location U-1			T(F)B					0.0031
Type Filter	2	100399		1-23-91	.6277	.6175	10/19 10:25	.0102
Run 2				10:09	.6273	.6171	10/22 9:05	.0102
Location U-1			T(F)B					0.0102
Type Filter	3	100400		1-23-91	.6200	.6152	10/19 10:25	.0048
Run 3				10:14	.6204	.6156	10/22 9:25	.0048
Location U-1			T(F)B					0.0048
Type Filter	4	100375		1-23-91	.6174	.6099	8/22 9:20	.0075
Run 1				10:20	.6173	.6099	8/24 11:41	.0074
Location U-2			T(F)B					0.0075
Type Filter	5	100376		1-23-91	.6256	.6221	8/22 9:37	.0035
Run 2				10:25	.6253	.6220	8/24 11:24	.0033
Location U-2			T(F)B					0.0034
Type Filter	6	100388		1-23-91	.6250	.6153	8/22 9:20	.0097
Run 3				10:27	.6249	.6156	8/24 11:31	.0093
Location U-2			T(F)B					0.0095
Type Filter	7	100321		1-23-91	.6405	.6341	2/24 8:00	.0064
Run 1				10:31	.6404	.6343	2/24 3:10	.0061
Location U-3			T(F)B					0.0063
Type Filter	8	100322		1-23-91	.6444	.6341	2/24 8:01	.0103
Run 2				10:35	.6443	.6340	2/24 3:11	.0103
Location U-3			T(F)B					0.0103
Type Filter	9	100323		1-23-91	.6483	.6359	2/24 8:02	.0124
Run 3				10:40	.6486	.6359	2/24 3:12	.0127
Location U-3			T(F)B					.0126
Type	10							
Run								
Location			T F B					

[1] Note appearance of particulate
[2] Two volumes (e.g. 500/100) indicate an aliquot was taken.
Indicate (T)himble, (F)ilter, or (B)eaker in box below.

Particulate Testing
Weight Sheet

Client Cogentrix	Project Number 5509	Analyst JTH
Plant Ringgold PA	Unit 1,2,3	Balance Dgh Fisher
Test Date 1/15-17/91		

ACETONE F 1/2

Description	Wt. No.	I.D. and Sample Description[1]	Sample volume (ml)[2]	Date/ Time	Gross Weight (g)	Tare Weight (g)	Date/ Time	Net Weight (g)
Type M-5	1		200	1/25 11:10	101.2998	101.2987	12/3 10:10	
Run 1				1/29 11:20	101.2998	101.2984	12/4 2:00	
Location U-1		#19	T F (B)		101.2998	101.2986		0.0012
Type M-5	2		200	1/25 11:10	108.6223	108.6216	12/3 10:15	
Run 2				1/29 11:20	108.6226	108.6217	12/4 2:05	
Location U-1		#B-4	T F (B)		108.6225	108.6217		0.0008
Type M-5	3		150	1/25 11:10	107.7346	107.7347	12/3 10:15	
Run 3				1/29 11:20	107.7351	107.7350	12/4 2:05	
Location U-1		#B-3	T F (B)		107.7349	107.7348		0.0001
Type M-5	4		250	1/25 11:10	108.2728	108.2705	12/3 10:5	
Run 1				1/28 11:25	108.2724	108.2704	12/4 2:05	
Location U-2		#B-7	T F (B)		108.2726	108.2704		0.0022
Type M-5	5		250	1/25 11:15	102.6139	102.6119	12/4 2:32	
Run 2				1/28 11:25	102.6135	102.6120	12/17 11:16	
Location U-2		#2	T F (B)		102.6137	102.6120		0.0017
Type M-5	6		170	1/25 11:15	103.7462	103.7456	12/3 10:15	
Run 3				1/28 11:25	103.7464	103.7456	12/4 2:00	
Location U-2		#47	T F (B)		103.7463	103.7456		0.0007
Type M-5	7		160	1/25 11:20	105.0201	105.0152	12/13 3:30	
Run 1				1/29 11:30	105.0200	105.0156	12/4 2:20	
Location U-3		#51	T F (B)		105.0201	105.0154		0.0046
Type M-5	8		220	1/25 11:20	103.6487	103.6462	12/13 3:37	
Run 2				1/28 11:30	103.6483	103.6464	12/4 2:31	
Location U-3		#8	T F (B)		103.6485	103.6463		0.0022
Type M-5	9		200	1/25 11:20	104.6982	104.6958	12/4 2:34	
Run 3				1/28 11:30	104.6979	104.6956	12/17 11:17	
Location U-3		#45	T F (B)		104.6981	104.6957		0.0024
Type	10							
Run								
Location			T F B					

[1] Note appearance of particulate
[2] Two volumes (e.g. 500/100) indicate an aliquot was taken.
Indicate (T)himble, (F)ilter, or (B)eaker in box below.

CAE P4 ver 1.0
D:\vpformat\weight

Particulate Testing
Weight Sheet

Client Cogentrix	Project Number 5509	Analyst JTH
Plant Ringgold PA	Unit 1,2,3	Balance Pgh Fisher
Test Date 1/15-17/91		

D.I. F1/2

Description	Wt. No.	I.D. and Sample Description[1]	Sample volume (ml)[2]	Date/ Time	Gross Weight (g)	Tare Weight (g)	Date/ Time	Net Weight (g)
Type	1			1/25 10:00	65.8316	65.8294	11/6 10:00	
Run 1			75	1/28 10:30	65.8317	65.8299	11/6 2:00	
Location U-1		#31	T F (B)		65.8317	65.8297		0.0020
Type	2			1/25 10:00	67.2462	67.2446	11/29 10:00	
Run 2			90	1/28 10:30	67.2467	67.2450	11/29 3:00	
Location U-1		#16	T F (B)		67.2465	67.2448		0.0017
Type	3			1/25 10:00	64.6199	64.6182	10/29 11:15	
Run 3			80	1/28 10:30	64.6203	64.6179	10/30 9:40	
Location U-1		#35	T F (B)		64.6202	64.6181		0.0021
Type	4			1/28 10:30	109.4357	109.4349	12/3 10:00	
Run 1			140	1/28 2:30	109.4361	109.4344	12/4 10:00	
Location U-2		#B-11	T F (B)		109.4359	109.4347		0.0012
Type	5			1/28 10:30	101.8224	101.8203	12/20 12:25	
Run 2			75	1/28 2:30	101.8229	101.8198	1/4 10:00	
Location U-2		#74	T F (B)		101.8227	101.8201		0.0026
Type	6			1/25 10:05	63.8327	63.8294	11/29 10:40	
Run 3			160	1/28 2:30	63.8329	63.8298	11/29 3:00	
Location U-2		#7	T F (B)		63.8328	63.8296		0.0032
Type	7			1/28 10:35	111.9253	111.9254	11/15 11:35	
Run 1			200	1/28 2:30	111.9252	111.9249	11/19 12:45	
Location U-3		#A-10	T F (B)		111.9253	111.9251		0.0002
Type	8			1/28 10:35	110.1795	110.1697	12/11 8:57	
Run 2			140	1/28 2:30	110.1800	110.1699	12/11 2:17	
Location U-3		#A-3	T F (B)		110.1798	110.1699		0.0099
Type	9			1/28 10:35	109.0002	108.9978	12/11 8:57	
Run 3			170	1/28 2:30	109.0006	108.9981	12/11 2:17	
Location U-3		#C-3	T F (B)		109.0004	108.9980		0.0024
Type	10							
Run								
Location			T F B					

[1] Note appearance of particulate
[2] Two volumes (e.g. 500/100) indicate an aliquot was taken.
Indicate (T)himble, (F)ilter, or (B)eaker in box below.

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Particulate Testing
Weight Sheet

Client Cogentrix	Project Number 5509	Analyst JTH
Plant Rialto, PA	Unit 1, 2, 3	Balance Pgl Fisher
Test Date 11/15-17/91		

Acetone 3%

Description	Wt. No.	I.D. and Sample Description	Sample volume (ml)[2]	Date/ Time	Gross Weight (g)	Tare Weight (g)	Date/ Time	Net Weight (g)
Type	1	ACETONE BLANK	95	11/25 11:00	63.5866	63.5870	11/29 12:00	
Run				11/28 9:10	63.5871	63.5866	11/29 12:00	0.0001
Location		#32	T F (B)		63.5869	63.5868		0.0001
Type M-5	2		80	11/25 11:00	63.8305	63.8299	11/29 10:00	
Run 1				11/28 9:50	63.8304	63.8298	11/29 3:00	0.0006
Location 2-1		#7	T F(B)		63.8304	63.8298		0.0006
Type M-5	3		80	11/25 11:00	65.0220	65.0188	11/29 12:00	
Run 2				11/28 9:30	65.0218	65.0186	11/29 10:00	
Location 2-1		#19	T F (B)		65.0220	65.0187		0.0033
Type M-5	4		90	11/25 11:00	66.9645	66.8604	11/28 12:00	
Run 3				11/28 9:30	66.8640	66.8597	11/29 10:00	
Location 2-1		#21	T F (B)		66.8643	66.8602		0.0039
Type M-5	5		110	11/25 11:00	56.9600	56.9559	11/29 10:00	
Run 1				11/28 9:30	56.9605	56.9562	11/29 3:00	0.0046
Location 2-2		#4	T F(B)		56.9603	56.9561		0.0042
Type M-5	6		120	11/25 11:00	66.1963	66.1915	11/28 12:00	
Run 2				11/28 9:30	66.1958	66.1910	11/29 10:00	
Location 2-2		#34	T F(B)		66.1960	66.1943		0.0015
Type M-5	7		160	11/25 11:00	62.4475	62.4413	11/28 12:00	
Run 3				11/28 9:35	62.4471	62.4410	11/29 10:00	
Location 2-2		#1	T F(B)		62.4473	62.4412		0.0058
Type M-5	8		80	11/25 11:00	62.8475	62.8423	11/6 10:00	
Run 1				11/28 9:30	62.8470	62.8426	11/6 2:00	
Location 2-3		#26	T F(B)		62.8473	62.8426		0.0045
Type M-5	9		110	11/25 11:00	66.9728	66.9661	11/6 10:00	
Run 2				11/28 9:30	66.9728	66.9669	11/6 2:00	
Location 2-3		#13	T F(B)		66.9728	66.9667		0.0059
Type M-5	10		110	11/25 11:00	61.8235	61.8199	11/28 12:00	
Run 3				11/28 9:35	61.8221	61.8194	11/29 10:00	
Location 2-3		#27	T F(B)		61.8223	61.8197		0.0026

[1] Note appearance of particulate
[2] Two volumes (e.g. 500/100) indicate an aliquot was taken.
Indicate (T)himble, (F)ilter, or (B)eaker in box below.

Particulate Testing
Weight Sheet

Client Cognetrix	Project Number 5509	Analyst JTH
Plant Uniontown, PA	Unit 1, 2, 3	Balance Pgh Fisher
Test Date 1/15-17/91		

D.I. 3½ 0.80u Filters

Description	Wt. No.	ID. and Sample Description[1]	Sample volume (ml)[2]	Date/ Time	Gross Weight (g)	Tare Weight (g)	Date/ Time	Net Weight (g)
Type	1			1/25 1130	0.0721	0.0623	2/22	
Run 2				1/28 945	0.0698	0.0694	2/22	
Location 0-1		#808	T(F)B		0.0706	0.0694		0.0012
Type	2			1/25 1135	0.0664	0.0646	4/8 1105	
Run 3				1/28 945	0.0663	0.0645	4/8 1045	
Location 0-1		#809	T (F) B		0.0664	0.0646		0.0018
Type	3			1/25 1136	0.0705	0.0687	4/8 1051	
Run 1				1/28 945	0.0705	0.0686	4/8 1047	
Location 0-2		#811	T (F) B		0.0705	0.0687		0.0018
Type	4			1/25 1135	0.0697	0.0685	4/8 1103	
Run 2				1/28 945	0.0695	0.0684	4/8 1052	
Location 0-2		#816	T (F) B		0.0696	0.0686		0.0010
Type	5			1/25 1134	0.0696	0.0683	4/8 1101	
Run 3				1/28 945	0.0696	0.0683	4/8 1047	
Location 0-2		#812	T (F) B		0.0696	0.0683		0.0013
Type	6			1/25 1135	0.0709	0.0690	4/8 1100	
Run 1				1/28 945	0.0706	0.0693	4/8 1047	
Location 0-3		#813	T (F) B		0.0702	0.0692		0.0010
Type	7			1/25 1135	0.0705	0.0685	4/8 1100	
Run 2				1/28 945	0.0723	0.0685	4/8 1046	
Location 0-3		#814	T (F) B		0.0704	0.0685		0.0019
Type	8			1/25 1135	0.0690	0.0689	4/8 1100	
Run 3				1/28 945	0.0694	0.0683	4/8 1051	
Location 0-3		#815	T (F) B		0.0692	0.0684		0.0008
Type	9							
Run								
Location			T F B					
Type	10							
Run								
Location			T F B					

1. Note appearance of particulate
2. Two volumes (e.g. 500/100) indicate an aliquot was taken. Indicate (T)himble, (F)ilter, or (B)eaker in box below.

Particulate Testing
Weight Sheet

Client Cogentrix	Project Number 5509	Analyst JTH
Plant Ringgold PA	Unit 1,2,3	Balance Pgh Fisher
Test Date 1/15-17/91	D.I. B½ 0.22μ Filters	

Description	Wt. No.	I.D. and Sample Description[1]	Sample volume (ml)[2]	Date/ Time	Gross Weight (g)	Tare Weight (g)	Date/ Time	Net Weight (g)
Type	1			1/25 11:40	0.1048	0.1046	10/19 9:50	3$ .0001
Run 1				1/28 10:00	0.1050	0.1049	10/22 12:30	
Location U-1		#2047	T F B		0.1049	0.1048		0
Type	2			1/25 11:40	0.1065	0.1063	10/19 9:50	
Run 2				1/28 10:00	0.1067	0.1065	10/22 12:25	
Location U-1		#2048	T F B		0.1066	0.1066		0
Type	3			1/25 11:40	0.1062	0.1059	10/19 9:50	
Run 3				1/28 10:00	0.1059	0.1063	10/22 12:25	
Location U-1		#2049	T F B		0.1061	0.1061		0
Type	4			1/25 11:40	0.1063	0.1061	10/19 9:50	
Run 1				1/28 10:00	0.1063	0.1066	10/22 12:25	
Location U-2		#2050	T F B		0.1063	0.1064		0
Type	5			1/25 11:40	0.1035	0.1033	10/22 9:30	3$ .0002
Run 2				1/28 10:05	0.1033	0.1030	10/22 10:30	
Location U-2		#2056	T F B		0.1034	0.1032		0
Type	6			1/25 11:45	0.1066	0.1064	10/19 9:40	3$ .0002
Run 3				1/28 10:00	0.1067	0.1065	10/22 12:25	
Location U-2		#2051	T F B		0.1067	0.1065		0
Type	7			1/25 11:45	0.1067	0.1066	10/19 9:40	
Run 1				1/28 10:00	0.1066	0.1067	10/22 12:25	
Location U-3		#2052	T F B		0.1067	0.1067		0
Type	8			1/25 11:45	0.1029	0.1028	10/19 9:40	
Run 2				1/28 10:05	0.1029	0.1029	10/22 12:30	
Location U-3		#2053	T F B		0.1029	0.1029		0
Type	9			1/25 11:45	0.1029	0.1030	10/19 9:40	3$ .0001
Run 3				1/28 10:05	0.1028	0.1026	10/22 12:30	
Location U-3		#2054	T F B		0.1029	0.1028		0
Type	10							
Run								
Location			T F B					

[1] Note appearance of particulate
[2] Two volumes (e.g. 500/100) indicate an aliquot was taken.
Indicate (T)himble, (F)ilter, or (B)eaker in box below.

Particulate Testing
Weight Sheet

Client Cogentrix	Project Number 5509	Analyst JTH
Plant Ringgold PA	Unit 1,2,3	Balance Pgh Fisher
Test Date 1/15-17/91		

Filtered D.I. B1/2

Description	Wt. No.	I.D. and Sample Description[1]	Sample volume (ml)[2]	Date/ Time	Gross Weight (g)	Tare Weight (g)	Date/ Time	Net Weight (g)	Net Wt 500 ml.
Type	1		100/500	1/28 9:15	104.1713	104.1692	12/13 3:30	38	
Run 1				1/28 2:15	104.1709	104.1690	12/14 2:38	0.0020	
Location U-1		#41	T F (B)		104.1711	104.1691		0.0010	.0100
Type	2		100/500	1/28 9:15	83.9958	83.9960	12/13 3:31		
Run 2				1/28 2:15	83.9962	83.9961	12/14 3:37		
Location U-1		#73	T F (B)		83.9960	83.9961		0	0
Type	3		100/500	1/28 9:15	101.0310	101.0301	12/13 3:30		
Run 3				1/28 2:15	101.0309	101.0302	12/14 2:30		
Location U-1		#3	T F (B)		101.0342				
					101.0310	101.0302		0.0008	.0040
Type	4		100/500	1/28 9:15	106.4896	106.4848	11/29 10:00		
Run 1				1/28 2:15	106.4848	106.4845	11/29 3:00		
Location U-2		#18	T F (B)		106.4847	106.4847		0	0
Type	5		100/500	1/28 9:20	110.6843	110.6836	12/3 10:05		
Run 2				1/28 2:25	110.6842	110.6840	12/3 2:05		.0025
Location U-2		#B-5	T F (B)		110.6863				
					110.6843	110.6838		0.0005	
Type	6		100/500	1/28 9:20	101.4050	101.4051	12/3 10:05		
Run 3				1/28 2:25	101.4056	101.4054	12/3 2:05		
Location U-2		#92	T F (B)		101.4053	101.4053		0	0
Type	7		100/500	1/28 9:20	105.2367	105.2362	12/14 3:30		
Run 1				1/28 2:25	105.2370	105.2363	12/17 2:34		.0050
Location U-3		#14	T F (B)		105.2373				
					105.2369	105.2363		0.0006	
Type	8		100/500	1/28 9:20	114.6540	114.6533	12/14 3:32		
Run 2				1/28 2:25	114.6539	114.6532	12/17 11:16		.0035
Location U-3		#A11	T F (B)		114.6568				
					114.6540	114.6533		0.0007	
Type	9		100/500	1/28 9:20	101.4087	101.4086	12/13 3:31		
Run 3				1/28 2:30	101.4092	101.4088	12/14 2:33		.0015
Location U-3		#44	T F (B)		101.4102				
					101.4090	101.4087		0.0003	
Type	10	D.I.	100/	1/28 9:20	98.8950	98.8949	12/3 10:05		
Run				1/28 2:30	98.8952	98.8954	12/3 2:05		
Location		BLANK	T F B		98.8951	98.8952		0	

[1] Note appearance of particulate
[2] Two volumes (e.g. 500/100) indicate an aliquot was taken.
Indicate (T)himble, (F)ilter, or (B)eaker in box below.

CAE P4 ver 1.0
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CAE

FIELD DATA

Orsat Readings

Client Cogentrix	Project Number 5509	$F_o = \frac{20.9 - \%O_2}{\%CO_2}$
Plant Ringgold	Unit 3	
Date 1-15-91	Fuel Type N. Gas + Diesel	F_o = 1.083 to 1.230 (for bituminous coal)
Orsat ID 68-2	Leak Check? ✓	

Run Number	Location	Bag ID	Trial	Percent CO_2	Percent $CO_2 + O_2$	Percent O_2	F_o	Sample Time	Analysis Time	Analyst
1	Inlet		1	4.0	18.2	14.2				
			2	4.0	18.2	14.2				
			3							
			Avg.							
2	Inlet		1	2.4	18.8	16.4				
			2	2.6	19.0	16.4				
			3	2.6	19.0	16.4				
			Avg.							
1	Stack		1	3.0	18.2	15.2				
			2	3.0	18.2	15.2				
			3							
			Avg.							
2	Stack		1	3.0	19.0	16.0				
			2	3.0	19.0	16.0				
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							

Orsat Readings

Client	Cogentrix	Project Number	5509
Plant	1-76 - 21	Unit	3-2
Date	Ringgold PA	Fuel Type	N. Gas - Diesel
Orsat ID	68-2	Leak Check?	✓

$$F_o = \frac{20.9 - \%O_2}{\%CO_2}$$

F_o = 1.083 to 1.230 (for bituminous coal)

Run Number	Location	Bag ID	Trial	Percent CO_2	Percent $CO_2 + O_2$	Percent O_2	F_o	Sample Time	Analysis Time	Analyst
3	U-3 in	BB	1	3.0	17.8					
			2	3.0	17.8					
			3							
			Avg.							
1	U-2 in	BB	1	3.0	18.4					
			2	3.0	18.4					
			3							
			Avg.							
2	U-2 in	BB	1	2.8	18.2					
			2	2.8	18.2					
			3							
			Avg.							
3	U-2 in	BB	1	3.0	18.6					
Void ↗ will redo to correspond with stack			2	3.0	18.6					
			3							
			Avg.							
1	~~U-3~~ Stack U-2 NJ	BB	1	3.0	17.2					
			2	3.0	17.4					
			3							
			Avg.							
3	U-3 Stack	BB	1	2.6	18.6					
			2	2.6	18.6					
			3							
			Avg.							
2	U-2 stack	BB	1	2.4	19.2					
			2	2.4	19.2					
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							

Orsat Readings

Client	Cogentrix	Project Number	5509
Plant	Ringgold PA	Unit	1
Date	1-17-91	Fuel Type	N. Gas - Diesel
Orsat ID	66-2	Leak Check?	✓

$$F_o = \frac{20.9 - \%O_2}{\%CO_2}$$

F_o = 1.083 to 1.230 (for bituminous coal)

Run Number	Location	Bag ID	Trial	Percent CO_2	Percent $CO_2 + O_2$	Percent O_2	F_o	Sample Time	Analysis Time	Analyst
1	U-1 in	BB	1	2.8	18.4				2:00	MJ
			2	2.6	18.2					
			3	2.6	18.2					
			Avg.							
2	U-1 in	BB	1	2.6	18.6				2:15	MJ
			2	2.6	18.4					
			3	2.6	18.4					
			Avg.							
3	U-1 in	BB	1	2.6	18.2				2:30	MJ
			2	2.6	18.4					
			3	2.6	18.2					
			Avg.							
1	Stack	BB	1	2.2	18.0					
			2	2.2	18.2					
			3	2.2	18.0					
			Avg.							
2	Stack	BB	1	2.2	18.2					
			2	2.4	18.2					
			3	2.2	18.2					
			Avg.							
3	Stack	BB	1	2.2	18.0					
			2	2.2	18.0					
			3	2.2	18.0					
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							

Orsat Readings

Client Cogentrix	Project Number 5507
Plant Rigesdale	Unit 2
Date 1-16-97	Fuel Type Wood + Diesel
Orsat ID 68-2	Leak Check? ✓

$$F_o = \frac{20.9 - \%O_2}{\%CO_2}$$

F_o = 1.083 to 1.230 (for bituminous coal)

Run Number	Location	Bag ID	Trial	Percent CO_2	Percent $CO_2 + O_2$	Percent O_2	F_o	Sample Time	Analysis Time	Analyst
3	Inlet	B3	1	2.6	18.4					JH
			2	2.6	18.4					
			3							
			Avg.							
3	Stack	B3	1	2.4	19.0					JH
			2	2.4	19.0					
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							

UNIT-1

Particulate Testing Field Data Sheet

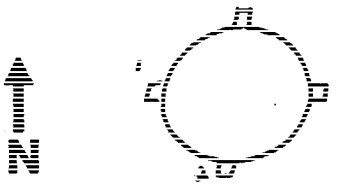
Page 1 of 1

Location: STACK **Run:** 1 PART

Client: COGENTRIX	Project Number: 5609
Plant: Ridgefield	Unit: 1
Date: 1-17-01	Inlet/outlet (Stack)
Meter Operator: PMP	
Probe Operator: DWD	

Sample Box Number: 5-68	Pyrometer Number: F-2
Meter Box Number: BF6-2	
Meter ΔH@: 1.797	Meter Yd: .9918
K Factor: 40	Pitot Cp: .84
Pitot Leak Check: Before ✓	After
Leak Rate Before: .010	CFM @ 15 "Hg
Leak Rate After: .014	CFM @ 19 "Hg
Static Pressure (inches H2O) (+/-): ~~-.02~~ .22 DMW	

Schematic of Testing Location



First point all the way (IN)/OUT		Method: 5
Area (ft²)	Port Len. (in.): 8 1/2	Gas Flow IN OUT

Filter Number	100377
Thimble Number	
Beaker Number	

Ambient Temp. (°F): 22	Bar. Press. (in. Hg): 28.33
Assumed Moisture (%): 11	

Heater Box Setting: 248±25	Probe Heater Setting: 248±25
Probe Length: 10'	Probe Number
Probe Material: SS	Acetone Number
Nozzle Diameter (in.): .490	Nozzle Number

IGS Bag ID Number: 19	
% O2	% CO2
H2O (ml): 40	Silica Gel (gm): 26.5
Total Vlc: 66.5	

Start Time: 9:10 (AM)/PM	Stop Time: 10:27 AM/(PM)

Traverse Point Number	Min/pt 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H2O)	Initial Volume 193.80 Gas Sample Volume Vm (ft³)	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
1-1	3	6	321	.05	2.0	196.28	72	68	34	251	258	
2	6	6	326	.05	2.0	198.76	82	70	34	248	260	
3	9	5	325	.04	1.6	201.03	90	70	34	249	258	
4	12	5	326	.04	1.6	203.26	92	70	34	254	264	
5	15	7	326	.05	2.0	205.75	96	72	36	262	265	
6	18	7	331	.05	2.0	208.24	100	74	36	264	262	
7	21	9	332	.06	2.4	210.96	102	74	36	267	261	
8	24	16	335	.09	3.6	214.18	104	76	36	264	257	
9	27	16	334	.09	3.6	217.41	106	76	36	263	258	
10	30	16	332	.09	3.6	220.69	110	78	36	265	254	
11	33	16	331	.09	3.6	223.97	110	80	38	262	248	
12	36	15	331	.08	3.2	227.09	102	80	38	263	249	
Total			3950	3.022	31.2	66.82	1176	888				
Average			329	.2506	2.55		92					

CAE

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UNIT: 1

Particulate Testing Field Data Sheet

Page 2 of 2

Location: STACK Run: 1 PM&T

Client: COGENTRIX	Project Number
Plant: RALEIGH	Unit 1
Date: 1-17-91	Inlet/outlet/(both)
Meter Operator: PMP	
Probe Operator: DWD	

Schematic of Testing Location

N ↑

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Sample Box Number	Pyrometer Number
Meter Box Number BF6-2	
Meter ΔH@	Meter Ya
K Factor	Pitot C_p
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H2O) (+/-)	

First point all the way IN OUT	Method
Area (ft^2)	Port Len. (in.) / Gas Flow IN OUT

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

Filter Number	100377
Thimble Number	
Beaker Number	

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time AM / PM	Stop Time AM / PM

Traverse Point Number	Min/pt 3 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H2O)	Initial Volume: Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
2-1	39	11	323	.07	2.8	230.03	104	80	38	268	266	
2	42	11	333	.07	2.8	232.95	110	80	38	264	263	
3	45	13	329	.08	3.2	236.02	112	80	38	267	264	
4	48	12	328	.07	2.8	238.98	114	82	38	261	266	
5	51	10	329	.06	2.4	241.76	116	82	38	258	266	
6	54	10	329	.06	2.4	244.50	116	82	38	261	269	
7	57	8	327	.05	2.0	246.79	114	82	38	266	262	
8	60	8	331	.05	2.0	249.58	112	82	38	265	260	
9	63	10	329	.06	2.4	252.33	112	82	38	267	266	
10	66	10	329	.06	2.4	255.09	110	84	38	259	260	
11	69	10	326	.06	2.4	257.85	114	84	38	253	259	
12	72	10	325	.06	2.4	260.62	114	84	38	252	268	
Total			3937	6.016	30.0		1350	984				
Average				(.209)								

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Particulate Testing Field Data Sheet

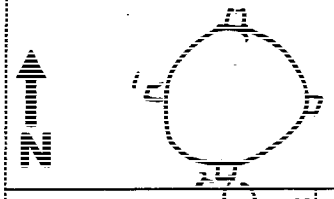
Location: STACK Run: 2 PART

Page 1 of 1

Client: COGENTRIX	Project Number: 6809
Plant: Ringold	Unit: 1
Date: 1-17-91	Inlet/outlet/stack
Meter Operator: PMP	
Probe Operator: DWD	

Sample Box Number: 5-68	Pyrometer Number: F-2
Meter Box Number: BFG-2	
Meter ΔH@: 1.797	Meter Yd: .9918
K Factor: 40	Pitot Cp: .84
Pitot Leak Check: Before /	After
Leak Rate Before: .010 CFM @ 15 "Hg	
Leak Rate After: .008 CFM @ 15 "Hg	
Static Pressure (inches H2O) (+/-): -.2	

Schematic of Testing Location



First point all the way IN OUT	Method: 5	
Area (ft²)	Port Len. (in.): 8 1/2	Gas Flow IN OUT

Filter Number	100399
Thimble Number	
Beaker Number	

Ambient Temp. (°F): 28	Bar. Press. (in. Hg): 28.33
Assumed Moisture (%): 11	

Heater Box Setting: 248 ± 25	Probe Heater Setting: 248 ± 25
Probe Length: 10'	Probe Number:
Probe Material: SS	Acetone Number:
Nozzle Diameter (in.): .490	Nozzle Number:

IGS Bag ID Number: 15	
% O2	% CO2
H2O (ml): 67	Silica Gel (gm): 17
Total Vlc: 80	

Start Time: 11:50 AM / PM Stop Time: 1:07 AM / PM

Traverse Point Number	Min/pt 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H2O)	Initial Volume 261.70 Gas Sample Volume Vm (ft³)	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
1-1	3	6	318	.04	1.6	263.98	72	72	34	257	259	
2	6	6	321	.04	1.6	266.31	84	76	34	255	259	
3	9	6	322	.04	1.6	268.63	90	76	34	260	257	
4	12	6	329	.04	1.6	270.89	94	76	34	261	255	
5	15	8	328	.05	2.0	273.37	96	76	34	260	258	
6	18	6	327	.04	1.6	275.65	98	76	36	259	259	
7	21	9	328	.05	2.0	278.14	100	76	36	255	258	
8	24	13	332	.07	2.8	281.03	102	76	36	253	253	
9	27	14	329	.08	3.2	284.14	106	76	36	252	254	
10	30	14	327	.08	3.2	287.28	108	78	36	259	261	
11	33	13	327	.07	2.8	290.26	108	78	36	261	263	
12	36	12	327	.06	2.4	293.07	110	80		255	261	
Total			3915	2.787	26.4		1168	916				
Average			326	.240	2.333	64.83	90					

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Unit 1

Location: SOTAC Run: 2 PM T

Particulate Testing Field Data Sheet

Page 2 of 2

Client: Cogentrix	Project Number
Plant: Ridgefield	Unit: 1
Date: 1-17-91	Inlet/outlet/stack
Meter Operator: PMP	
Probe Operator: DWD	

Sample Box Number	Pyrometer Number F-2
Meter Box Number RFG-2	
Meter ΔH@	Meter Y_d
K Factor	Pitot C_p
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-)	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number	100 & 99	
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time	AM / PM	Stop Time	AM / PM

Traverse Point Number	Min/pt 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in. H_2O)	Initial Volume Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet T_m in (°F)	Outlet T_m out (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
21	39	16	321	.08	3.2	296.18	96	78	34	250	255	
2	42	14	327	.07	2.8	299.14	102	78	34	252	253	
3	45	16	327	.08	3.2	302.09	108	78	34	250	251	
4	48	16	326	.08	3.2	305.04	112	80	34	256	260	
5	51	12	327	.06	2.4	308.22	114	80	34	259	263	
6	54	10	326	.05	2.0	310.82	112	80	36	262	265	
7	57	10	323	.05	2.0	313.35	110	80	36	264	262	
8	60	12	325	.06	2.4	316.11	110	80	34	258	262	
9	63	10	327	.05	2.0	318.67	110	80	34	256	261	
10	66	12	326	.06	2.4	321.41	108	80	34	259	257	
11	69	10	327	.05	2.0	323.97	108	80	34	258	253	
12	72	10	326	.05	2.0	326.53	108	80	34	260	254	
Total			3908	2.966	29.6		1298	954				
Average			326	$\sqrt{\Delta H}$ = 0.24	2.33	64.83						

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Particulate Testing Field Data Sheet

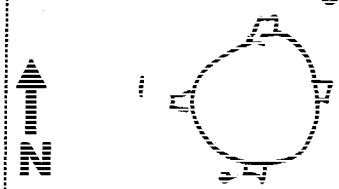
Location: STACK Run: 3 PART

Page 1 of 1

Client: Cogentrix	Project Number: 5509
Plant: Ridgefield	Unit: 1
Date: 1-17-91	Inlet/outlet: Stack
Meter Operator: DMP	
Probe Operator: MP	

Sample Box Number: 5-68	Pyrometer Number: F-2
Meter Box Number: BF6-2	
Meter ΔH@: 1.797	Meter Y_d: .9918
K Factor: 40	Pitot C_p: .84
Pitot Leak Check: Before ✓	After
Leak Rate Before: .008	CFM @ 15 "Hg
Leak Rate After:	CFM @ "Hg
Static Pressure (inches H_2O) (+/-): -.2	

Schematic of Testing Location



First point all the way: IN OUT	Method: 5	
Area (ft^2)	Port Len. (in.): 8 1/2	Gas Flow: IN OUT

Filter Number	100400
Thimble Number	
Beaker Number	

Ambient Temp. (°F): 30	Bar. Press. (in. Hg): 28.33
Assumed Moisture (%): 11	

Heater Box Setting: 248 ± 25	Probe Heater Setting: 248 ± 25
Probe Length: 10'	Probe Number
Probe Material: SS	Acetone Number
Nozzle Diameter (in.): .490	Nozzle Number

IGS Bag ID Number: 11	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time: 208 AM / PM Stop Time: 3:23 AM / PM

Traverse Point Number	Min/pt: 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in. H_2O)	Initial Volume: 326.90 Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet T_m in (°F)	Outlet T_m out (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1-1	3	7	321	.05	2.0	329.42	80	74	34	258	248	
2	6	7	322	.05	2.0	331.93	84	74	34	259	244	
3	9	7	322	.05	2.0	334.43	92	74	34	261	246	
4	12	9	322	.06	2.4	337.18	94	74	34	263	256	
5	15	6	324	.04	1.6	339.49	96	76	34	263	268	
6	18	6	324	.04	1.6	341.77	96	76	34	265	260	
7	21	9	328	.06	2.4	344.48	96	76	36	264	263	
8	24	13	327	.08	3.2	347.60	98	76	36	266	263	
9	27	13	322	.08	3.2	350.72	100	76	36	265	266	
10	30	16	322	.09	3.6	354.03	102	76	36	267	266	
11	33	14	322	.08	3.2	357.22	106	76	36	262	256	
12	36	14	321	.08	3.2	360.39	108	78	36	257	254	
Total			3877	2.992	30.4		1152	912				
Average			324	.250	2.533	67.51	90					

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Particulate Testing Field Data Sheet

Location: STACK Run: 3 PART

Client Cogentrix	Project Number
Plant Rivergold	Unit 1
Date 1-7-91	Inlet/outlet(stack)
Meter Operator PAP	
Probe Operator PAP	

Sample Box Number	Pyrometer Number
Meter Box Number BAC-2	
Meter ΔH@	Meter Ya
K Factor	Pitot C_p
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-)	

Schematic of Testing Location

IN

First point all the way IN OUT	Method	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number	100400	
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
%O2	%CO2
H_2O (ml) 59	Silica Gel (gm) 20
Total Vs	79

Start Time	AM / PM	Stop Time	AM / PM

Traverse Point Number	Minute 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H_2O)	Initial Volume Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
2-1	39	12	322	.07	2.8	363.35	104	78	36	257	264	
2	42	14	321	.08	3.2	366.50	108	78	36	260	263	
3	45	14	323	.08	3.2	369.56	110	80	36	264	263	
4	48	13	326	.07	2.8	372.35	110	80	36	266	264	
5	51	11	327	.06	2.4	375.36	110	80	36	259	263	
6	54	11	325	.06	2.4	378.16	110	80	36	259	261	
7	57	9	324	.05	2.0	380.83	106	80	34	253	256	
8	60	10	323	.06	2.4	383.57	106	80	34	266	262	
9	63	10	323	.06	2.4	386.29	104	80	34	268	254	
10	66	12	324	.07	2.8	389.03	106	80	34	263	261	
11	69	9	327	.05	2.0	391.87	110	80	34	261	263	
12	72	9	325	.05	2.0	394.41	110	80	34	256	260	
Total			3887	3.010	30.4		1294	956				
Average												

Particulate Testing Field Data Sheet

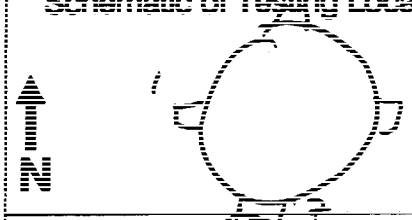
Location: STACK Run: 1 PART

Page 1 of 1

Client: COGENTRIX	Project Number: 5509
Plant: Ringgold	Unit: 2
Date: 1-16-91	Inlet/outlet/stack
Meter Operator: DWD	
Probe Operator: DMD	

Sample Box Number: 5-68	Pyrometer Number:
Meter Box Number: BF6-2	
Meter ΔH@: 1.797	Meter Y_d: .9918
K Factor: 36	Pitot C_p: .84
Pitot Leak Check: Before —	After —
Leak Rate Before: .008 CFM @ 15 "Hg	
Leak Rate After: .016 CFM @ 22 "Hg	
Static Pressure (inches H_2O) (+/-): -.2	

Schematic of Testing Location



First point all the way IN OUT	Method: 5	
Area (ft^2)	Port Len. (in.): 8 1/2	Gas Flow IN OUT

Filter Number	100375
Thimble Number	
Beaker Number	

Ambient Temp. (°F): 50	Bar. Press. (in. Hg): 28.16
Assumed Moisture (%): 11	

Heater Box Setting: 248 ± 25	Probe Heater Setting: 248 ± 25
Probe Length: 10 ft	Probe Number:
Probe Material: SS.	Acetone Number:
Nozzle Diameter (in.): .490	Nozzle Number:

IGS Bag ID Number: 7	
% O_2:	% CO_2:
H_2O (ml): 43	Silica Gel (gm): 30.5
Total V_{lc}: 73.5	

Start Time: 12:05 AM (PM) Stop Time: 1:30 AM (PM)

Traverse Point Number	Min/pt 3 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in. H_2O)	Initial Volume 59.80 / Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet T_m in (°F)	Outlet T_m out (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1-1	3	10	334	.07	2.5	62.57	80	80	40	262	248	
2	6	10	336	.07	2.5	65.34	90	80	40	265	244	
3	9	12	342	.07	2.5	67.10	98	80	40	258	262	
4	12	12	341	.07	2.5	70.10	104	80	40	262	265	
5	15	12	343	.07	2.5	73.67	106	80	40	274	262	
6	18	12	341	.05	2.5	76.43	108	82	42	273	261	
7	21	12	340	.05	2.5	79.01	110	82	42	260	260	
8	24	10	342	.06	2.5	81.91	112	84	42	262	258	
9	27	10	341	.06	2.2	84.45	110	84	42	260	252	
10	30	10	341	.06	2.2	87.06	108	84	42	262	248	
11	33	10	339	.06	2.2	89.47	106	84	42	260	252	
12	36	8	339	.06	2.2	91.91	105	82	42	256	253	
Total			4080	2.995	28.8		1237	982				
Average			341	.249	2.45	64.615	94					

64.48 JB

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Particulate Testing Field Data Sheet

Location: STACK Run: 1 PART Page 2 of 2

Client: COGENTRIX	Project Number
Plant: RINGOLD	Unit: 2
Date: 1/16/91	Inlet/outlet
Meter Operator: DWD	
Probe Operator: PMP	

Sample Box Number	Pyrometer Number
Meter Box Number	
Meter ΔH@	Meter Y$_d$
K Factor: .40	Pitot C$_p$
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H$_2$O) (+/-)	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT
Filter Number	100375	
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	
Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number
IGS Bag ID Number	
% O$_2$	% CO$_2$
H$_2$O (ml)	Silica Gel (gm)
Total V$_m$	
Start Time AM / PM	Stop Time AM / PM

Traverse Point Number	Min/pt Clock time	Pump Vacuum (in. Hg)	Stack Temp. T$_s$ (°F)	Velocity Head ΔP$_s$	Orifice Setting ΔH (in.H$_2$O)	Initial Volume 92.045 / Gas Sample Volume V$_m$ (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet T$_{m\,in}$ (°F)	Outlet T$_{m\,out}$ (°F)	Cond. Temp. T$_c$ (°F)	Filter Temp. T$_f$ (°F)	Probe Temp. (°F)	Notes
1	3	8	334	.06	2.0	94.53	84	80	42	259	263	
2	6	7	339	.04	1.6	96.80	100	80	42	255	258	
3	9	7	342	.04	1.6	99.01	102	82	42	252	266	
4	12	7	338	.04	1.6	101.21	102	82	42	255	271	
5	15	7	339	.04	1.6	103.42	104	82	42	257	263	
6	18	9	342	.06	2.0	105.87	106	84	42	250	251	
7	21	12	345	.07	2.8	108.73	110	84	42	248	238	
8	24	12	345	.07	2.8	111.64	112	84	42	250	249	
9	27	14	345	.08	3.2	114.67	116	84	42	256	267	
10	30	18	342	.10	4.0	118.00	118	86	42	261	266	
11	33	19	341	.10	3.8	121.33	118	88	42	267	268	LOWID NOT FULL RATE
12	36	14	346	.08	3.2	124.415	118	86	42	269	274	
Total			4098	3.975 / 4.342	30.0		1290	1004				
Average												

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4-F21

Particulate Testing Field Data Sheet

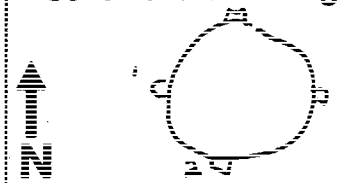
Location: STACK Run: 2 PART

Page 1 of 2

Client: COGENTRIX	Project Number: 5509
Plant: Ridgeland	Unit: 2
Date: 1-16-91	Inlet/outlet/stack
Meter Operator: PMP	
Probe Operator: DWD	

Sample Box Number: 5-68	Pyrometer Number:
Meter Box Number: DF6-2	
Meter ΔH@: 1.797	Meter Yd: .9918
K Factor: 40	Pitot Cp: .84
Pitot Leak Check: Before /	After
Leak Rate Before: .004	CFM @ 15 "Hg
Leak Rate After:	CFM @ "Hg
Static Pressure (inches H2O) (+/-): ~~-.02~~ -.2 NUM	

Schematic of Testing Location



First point all the way IN/OUT	Method 5	
Area (ft²)	Port Len. (in.) 8 1/2	Gas Flow IN/OUT

Filter Number	100376	
Thimble Number		
Beaker Number		

Ambient Temp. (°F) 50	Bar. Press. (in. Hg) 28.16
Assumed Moisture (%) 11	

Heater Box Setting 248±25	Probe Heater Setting 248±25
Probe Length 10'	Probe Number
Probe Material SS	Acetone Number
Nozzle Diameter (in.) .490	Nozzle Number

IGS Bag ID Number 19	
% O2	% CO2
H2O (ml) 38	Silica Gel (gm) 34
Total Vic 72	

Start Time 2:43 AM PM Stop Time 5:17 AM PM

Traverse Point Number	Min/pt 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H2O)	Initial Volume 125.00 Gas Sample Volume Vm (ft³)	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
1-1	3	6	322	.07	2.8	127.92	80	80	40	263	256	
2	6	6	329	.07	2.8	130.84	90	82	40	265	261	
3	9	7	333	.08	3.2	133.92	94	82	40	268	264	
4	12	7	332	.08	3.2	137.01	100	82	40	267	262	
5	15	5	335	.06	2.4	139.72	102	82	42	267	258	
6	18	4	335	.05	2.0	142.20	100	80	42	262	263	
7	21	4	336	.05	2.0	144.66	100	80	42	258	260	
8	24	4	339	.05	2.0	147.15	100	80	42	260	264	
9	27	4	339	.05	2.0	149.58	100	80	44	261	263	*STOPPED TEST @ 3:09
10	30	4	331	.05	2.0	152.06	72	72	40	264	257	STARTED 3:45
11	33	5	334	.06	2.4	154.72	84	76	38	264	267	
12	36	5	332	.06	2.4	157.44	92	76	40	260	260	
Total			3997	2.948	29.2		1114	952				
Average			330	.253	2.6	66.81	90					

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Location: STACK Run: #2 PART.

Particulate Testing Field Data Sheet

Client: COGENTRIX	Project Number
Plant: Ridgewood	Unit
Date: 1-16-91	Inlet/outlet/stack
Meter Operator: PMP	
Probe Operator: DWD	

Sample Box Number: S-58	Pyrometer Number
Meter Box Number: BFG-2	
Meter ΔH@	Meter Yd
K Factor	Pitot Cp
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H2O) (+/-)	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft²)	Port Len. (in.) 8 1/2	Gas Flow IN OUT

Filter Number	100376	
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O2	% CO2
H2O (ml)	Silica Gel (gm)
Total Vlc	

Start Time AM / PM	Stop Time AM / PM

Traverse Point Number	Min/pt 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H2O)	Initial Volume Gas Sample Volume Vm (ft³)	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
2-1	3	4	326	.05	2.0	159.92	90	78	40	258	257	
2	6	4	330	.05	2.0	162.40	100	80	40	258	260	
3	9	4	329	.05	2.0	164.88	100	80	40	263	262	
4	12	4	330	.05	2.0	167.35	102	80	40	263	262	
5	15	4	330	.05	2.0	169.83	106	80	40	264	262	
6	18	4	331	.05	2.0	172.32	108	80	38	262	260	
7	21	6	334	.08	3.2	175.38	112	82	38	261	261	
8	24	7	331	.09	3.6	178.68	116	84	38	268	249	
9	27	7	329	.09	3.6	181.98	120	86	38	262	262	
10	30	8	330	.10	4.0	185.44	122	88	38	261	265	* Topped @ 4:30
11	33	7	315	.09	3.6	188.72	82	82	36	257	260	START 5:10
12	36	6	318	.08	3.2	191.81	92	82	36	266	259	
Total			3933	3.124	33.2		1250	982				
Average												

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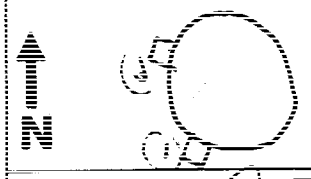
Particulate Testing Field Data Sheet

Page 1 of 3

Location: STACK Run: 3 (RUN)

Client: Cogentrix	Project Number: 5699
Plant: Roanoke	Unit: 2
Date: 1-18-91	Inlet/Outlet/Stack
Meter Operator: BS	
Probe Operator: CC	

Schematic of Testing Location



Ambient Temp. (°F): 10	Bar. Press. (in. Hg): 28.34
Assumed Moisture (%)	

Heater Box Setting: 248 425	Probe Heater Setting: 248 425
Probe Length: 10	Probe Number
Probe Material: SS	Acetone Number
Nozzle Diameter (in.): .490	Nozzle Number

Sample Box Number	Pyrometer Number
Meter Box Number	
Meter ΔH@: 1.797	Meter Yd: .998
K Factor: 46	Pitot Cp: .84
Pitot Leak Check: Before ✓	After ✓
Leak Rate Before: .010	CFM @ 6 "Hg
Leak Rate After: .012	CFM @ 26 "Hg
Static Pressure (inches H2O) (+/-): -.2	

First point all the way IN/OUT	Method	
Area (ft²)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

IOS Bag ID Number	
% O2	% CO2
H2O (ml): 63	Silica Gel (gm): 20
Total Vlc: 73	
Start Time: 1118 (AM) PM	Stop Time: 1239 AM (PM)

Traverse Point Number	Minute: 3 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H2O)	Initial Volume: 378.610 / Gas Sample Volume Vm (ft³): 32.420 / 410.946	Gas Sample Temperature at Dry Gas Meter: Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
1-1	3	17	334	.06	1.8	410.946	68	68	45	350	348	
2	6	17	335	.07	1.8	403.83	69	68	45	350	347	
3	9	21	337	.08	2.0	404.83	70	70	45	351	348	
4	12	15	336	.05	1.6	407.41	73	70	45	346	340	
5	15	17	333	.05	1.6	411.83	74	70	45	341	338	
6	18	16	331	.06	1.9	414.96	73	70	45	341	336	
7	21	15	330	.05	1.6	416.93	73	69	45	345	336	
8	24	15	329	.05	1.6	419.39	70	70	43	347	340	
9	27	15	329	.05	1.6	421.83	76	70	43	340	343	
10	30	17	329	.06	1.9	424.45	76	69	43	345	345	
11	33	15	330	.05	1.6	426.91	73	70	43	346	347	
12	36	15	325	.05	1.6	429.26	73	69	43	348	345	
Total			3980	1.8167	57.6	48.52	426					
Average			(332)	(.0597)	(1.98)		(71)					

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Particulate Testing Field Data Sheet

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Location: Stack Run: 3 (Part)

Client Cogentrix	Project Number
Plant Bingold	Unit 2
Date	Inlet/outlet/stack
Meter Operator RS	
Probe Operator CG	

Sample Box Number	Pyrometer Number
Meter Box Number	
Meter ΔH@	Meter Y_d
K Factor	Pitot C_p
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-)	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time	AM / PM	Stop Time	AM / PM

Traverse Point Number	Min/pt 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet T_m in (°F)	Outlet T_m out (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
2-1	3	12	325	.04	1.6	431.61	50	48	45	255	265	
2	6	12	324	.04	1.6	433.81	60	50	45	255	265	
3	9	14	326	.05	2.0	436.22	66	52	45	250	263	
4	12	14	326	.05	2.0	438.63	68	50	45	250	259	
5	15	14	327	.05	2.0	441.02	70	50	45	250	260	
6	18	13	332	.04	1.6	443.27	70	52	45	251	258	
7	21	13	331	.04	1.6	445.52	68	52	45	254	258	
8	24	23	331	.08	3.2	448.58	68	52	45	255	260	
9	27	24	335	.08	3.2	451.82	70	52	45	256	260	
10	30	21	335	.07	2.8	454.71	64	50	45	257	260	
11	33	21	337	.07	2.8	457.54	70	52	45	256	260	
12	36	21	337	.07	2.8	460.33	70	52	45	256	261	
Total			3966	2.8802			1406					
Average												

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Particulate Testing Field Data Sheet

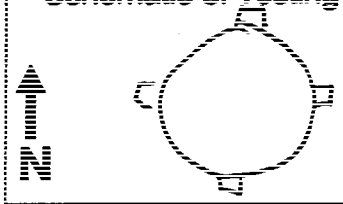
Location: STACK Run: 1 PART

Page 1 of 2

Client COGENTRIX	Project Number
Plant Ringold	Unit 3
Date 1-15-91	Inlet/outlet (stack)
Meter Operator PMP	
Probe Operator DWD	

Sample Box Number	Pyrometer Number
Meter Box Number BFG-2	
Meter ΔH@ 1.797	Meter Y_d .9918
K Factor 36	Pitot C_p .84
Pitot Leak Check: Before /	After
Leak Rate Before .014	CFM @ 15 "Hg
Leak Rate After .014	CFM @ 17 "Hg
Static Pressure (inches H2O) (+/-)	~~-.05~~ -.2

Schematic of Testing Location



First point all the way (IN) OUT	Method	
Area (ft²) 46.164	Port Len. (in.) 8½	Gas Flow (IN) OUT

Filter Number	321	
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg) 28.52
Assumed Moisture (%) 11	

Heater Box Setting 248±25	Probe Heater Setting 248±25
Probe Length 10'	Probe Number
Probe Material S.S.	Acetone Number
Nozzle Diameter (in.) .490	Nozzle Number

IGS Bag ID Number	
% O2	% CO2
H2O (ml) 43	Silica Gel (gm) 21
Total Vlc 24	

Start Time 1100 AM / (PM) Stop Time 2:23 AM / (PM)

Traverse Point Number	Min/pt 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in. H2O)	Initial Volume 858.30 Gas Sample Volume V_m (ft³)	Gas Sample Temperature at Dry Gas Meter Inlet T_m in (°F)	Outlet T_m out (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1-1	3	2	328	.02	.72	859.83	80	74	40	261	258	
2	6	2	329	.02	.72	861.34	86	76	40	264	256	
3	9	2	332	.02	.72	862.85	88	78	40	262	260	
4	12	4	332	.03	1.68 ~~.96~~	864.69	90	78	40	262	264	
5	15	4	333	.03	1.1	866.58	92	80	40	261	263	
6	18	3	334	.02	.72	868.19	94	80	42	254	264	
7	21	3	336	.02	.72	869.64	94	80	42	254	264	
8	24	15	336	.09 ~~.06~~	3.2	872.38	98	82	42	257	261	
9	27	15	337	.09	3.2	875.47	104	82	42	256	262	
10	30	14	337	.08	2.9	878.50	108	84	44	257	262	
11	33	16	337	.09	3.2	881.64	110	86	44	258	259	
12	36	13	335	.07	2.5	884.51	114	88	44	256	255	
Total			4006	2.6741	20.80	56.23	1198	968				
Average			325	.2261	1.83			96				

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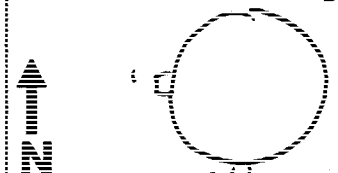
Particulate Testing Field Data Sheet

Location: STACK Run: 1

Client Cogentrix	Project Number
Plant Ringold	Unit 2
Date 1-15-91	Inlet/outlet stack
Meter Operator PMP	
Probe Operator DWD	

Sample Box Number 5-68	Pyrometer Number
Meter Box Number BFG-2	
Meter ΔH@	Meter Y_d
K Factor	Pitot C_p
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-)	

Schematic of Testing Location



First point all the way IN OUT	Method	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number	321	
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time AM / PM	Stop Time AM / PM

Traverse Point Number	Min/pt 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet T_m in (°F)	Outlet T_m out (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
2-1	39	10	327	.06	2.2	887.20	98	88	44	253	254	
2	42	10	331	.06	2.2	889.99	110	90	44	256	261	
3	45	10	333	.05	2.2	892.52	114	90	44	260	257	
4	48	10	334	.06	2.2	895.17	114	92	44	261	254	
5	51	12	333	.07	2.5	897.94	114	92	44	255	258	
6	54	12	338	.07	2.5	900.75	116	92	46	254	259	
7	57	8	336	.05	1.8	903.20	116	94	46	251	262	
8	60	8	337	.05	1.8	905.61	116	94	46	260	256	
9	63	8	336	.05	1.8	908.02	116	94	46	260	256	
10	66	7	337	.04	1.4	910.24	112	92	46	257	260	
11	69	7	337	.04	1.4	912.40	110	90	46	257	258	
12	72	5	336	.03	1.1	914.[illegible]	108	90	46	257	259	
Total			3795	2.153	23.1		1344	1098				
Average			7801	5.427	43.9			4608				

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Particulate Testing Field Data Sheet

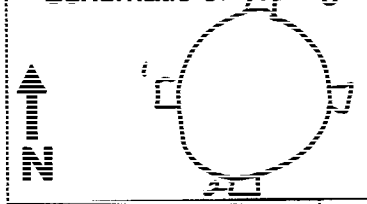
Page 1 of 2

Location: STACK **Run:** 2 PART

Client: COGLATRIX	Project Number: 5809
Plant: RAGOLD	Unit: 3
Date: 1-15-90	Inlet/outlet/stack:
Meter Operator: DMP	
Probe Operator: DWD	

Sample Box Number: 568	Pyrometer Number:
Meter Box Number: BFG-2	
Meter ΔH@: 1.797	Meter Yd: .9918
K Factor: 36	Pitot Cp: .84
Pitot Leak Check: Before / After	
Leak Rate Before: .004 CFM @ 15 "Hg	
Leak Rate After: .006 CFM @ 20 "Hg	
Static Pressure (inches H2O) (+/-): -.2	

Schematic of Testing Location



First point all the way IN OUT	Method: 5	
Area (ft²)	Port Len. (in.): 8 1/2	Gas Flow IN OUT

Filter Number	322	
Thimble Number		
Beaker Number		

Ambient Temp. (°F): 40	Bar. Press. (in. Hg): 28.52
Assumed Moisture (%): 11	

Heater Box Setting: 248±25	Probe Heater Setting: 248±25
Probe Length: 10'	Probe Number:
Probe Material: SS	Acetone Number:
Nozzle Diameter (in.): 490	Nozzle Number: 39

IGS Bag ID Number: 26	
% O2:	% CO2:
H2O (ml): 52	Silica Gel (gm): 19
Total Vlc: 81	

Start Time: 4:25 AM / PM Stop Time: 5:45 AM / PM

Traverse Point Number	Min/pt 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H2O)	Initial Volume 914.70 Gas Sample Volume Vm (ft³)	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
1-1	3	6	325	.04	1.4	916.88	84	82	40	245	253	
2	6	6	330	.04	1.4	919.01	86	82	40	245	253	
3	9	6	330	.04	1.4	921.14	90	82	40	247	255	
4	12	6	334	.04	1.4	923.27	94	82	40	258	248	
5	15	6	330	.04	1.4	925.35	96	82	40	261	247	
6	18	8	332	.05	1.8	927.73	96	80	40	261	262	
7	21	18	334	.10	3.6	930.88	104	80	40	257	264	
8	24	16	335	.09	3.2	934.20	108	82	40	256	261	
9	27	16	334	.09	3.2	937.14	110	82	42	259	247	
10	30	16	333	.09	3.2	940.17	112	82	42	260	246	
11	33	16	333	.09	3.2	943.32	114	84	42	264	246	
12	36	13	332	.07	2.5	946.15	114	84	42	256	245	
Total			3982	3.0044	27.7	66.63	1208	984				
Average			332	.2636	2.54		95					

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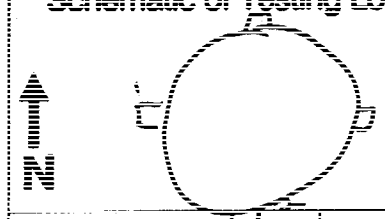
Particulate Testing Field Data Sheet

Location: STACK Run: 2 PART

Client COGENTRIX	Project Number
Plant RINGOLD	Unit 3
Date 1-15-91	Inlet/outlet/stack
Meter Operator PM	PMP
Probe Operator	PMP

Sample Box Number	Pyrometer Number
Meter Box Number BF6-2	
Meter ΔH@ 1.797	Meter Y_d .9918
K Factor	Pitot C_p
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H2O) (+/-)	

Schematic of Testing Location



First point all the way IN OUT		Method
Area (ft²)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time AM / PM	Stop Time AM / PM

Traverse Point Number	Min/pt 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H2O)	Initial Volume Gas Sample Volume V_m (ft³)	Gas Sample Temperature at Dry Gas Meter Inlet T_m in (°F)	Outlet T_m out (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
2-1	39	16	327	.09	3.2	949.32	104	82	42	253	256	
2	42	16	327	.09	3.2	952.43	106	84	42	251	253	
3	45	16	330	.09	3.2	955.61	110	84	42	256	260	
4	48	16	330	.09	3.2	958.65	114	84	42	256	259	
5	51	15	333	.08	2.9	961.73	116	84	40	261	259	
6	54	16	331	.09	3.2	964.78	116	84	40	259	256	
7	57	15	333	.08	2.9	967.83	116	86	40	249	256	
8	60	15	334	.08	2.9	970.83	116	86	40	253	256	
9	63	13	335	.07	2.5	973.77	116	86	38	255	256	
10	66	13	333	.07	2.5	976.52	114	86	38	257	250	
11	69	10	333	.06	2.2	979.13	110	86	38	257	252	
12	72	6	331	.04	1.4	981.33	110	86	38	255	254	
Total			3977	3.326	33.3		1348	1018				
Average			7959	6.327	69			4558				

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Particulate Testing Field Data Sheet

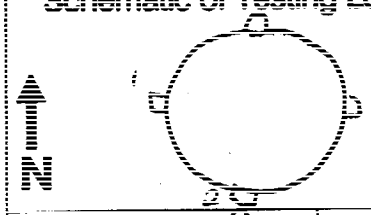
Page 1 of 2

Location: STACK **Run:** 3 PART

Client: CoolTrix	Project Number: 5309
Plant: Ringgold	Unit: 3
Date: 1-16-96	Inlet/outlet/stack:
Meter Operator: PMP	
Probe Operator: DWD	

Sample Box Number: 5-68	Pyrometer Number:
Meter Box Number: BFG-2	
Meter ΔH@: 1.797	Meter Yd:
K Factor: 36	Pitot Cp: .84
Pitot Leak Check: Before /	After /
Leak Rate Before: .012 CFM @ 15 "Hg	
Leak Rate After: .008 CFM @ 20 "Hg	
Static Pressure (inches H2O) (+/-): -.2	

Schematic of Testing Location



First point all the way (IN) OUT	Method: 5	
Area (ft²)	Port Len. (in.): 8 1/2	Gas Flow (IN) OUT

Filter Number	323
Thimble Number	
Beaker Number	

Ambient Temp. (°F): 45	Bar. Press. (in. Hg): 28.16
Assumed Moisture (%): 11	

Heater Box Setting: 248±25	Probe Heater Setting: 248±25
Probe Length: 10'	Probe Number:
Probe Material: SS	Acetone Number:
Nozzle Diameter (in.): .490	Nozzle Number:

IGS Bag ID Number: 31	
% O2:	% CO2:
H2O (ml): 46	Silica Gel (gm): 37
Total Vic: 83	

Start Time: 9:05 AM/PM Stop Time: 10:30 AM/PM PMP

Traverse Point Number	Min/pt 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H2O)	Initial Volume 986.00 Gas Sample Volume Vm (ft³)	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
1-1	3	7	324	.05	1.8	988.36	78	60	36	253	244	
2	6	7	325	.05	1.8	990.38	78	60	36	254	255	
3	9	6	324	.04	1.4	992.49	78	64	36	254	261	
4	12	6	326	.04	1.4	994.60	84	66	38	258	263	
5	15	7	325	.05	1.8	996.94	90	68	38	256	260	
6	18	8	326	.05	1.8	999.29	92	70	38	259	263	
7	21	17	327	.09	3.2	1002.53	94	70	38	260	264	
8	24	17	327	.09	3.2	1005.40	108	74	38	258	262	
9	27	17	327	.09	3.2	1008.42	110	76	40	258	261	
10	30	16	328	.08	2.9	1011.47	110	78	40	260	259	
11	33	15	329	.07	2.5	1014.30	112	80	40	262	259	
12	36	15	328	.07	2.5	1017.12	114	80	40	262	257	
Total			3916	3.006	27.5		1148	846				
Average			327	.260	2.463	65.75	93					

CAE

CAE P2 ver. 1.0
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Particulate Testing Field Data Sheet

Location: STACK Run: 3 PART

Client COGENTRIX	Project Number 5509
Plant Ringgold	Unit 3
Date 1-18-91	Inlet/outlet/stack
Meter Operator PAP	
Probe Operator DWD	

Sample Box Number	Pyrometer Number
Meter Box Number BF6-2	
Meter ΔH@	Meter Yd
K Factor	Pitot Cp
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H2O) (+/-)	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft²)	Port Len. (in.)	Gas Flow IN OUT

Filter Number	323	
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O2	% CO2
H2O (ml)	Silica Gel (gm)
Total Vlc	

Start Time	AM / PM	Stop Time	AM / PM

Traverse Point Number	Min/pt 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H2O)	Initial Volume Gas Sample Volume Vm (ft³)	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
2-1	39	18	324	.08	2.9	1020.34	110	82	40	255	258	
2	42	18	324	.09	3.2	1023.44	112	82	40	257	261	
3	45	18	325	.09	3.2	1026.57	116	86	40	257	263	
4	48	18	325	.09	3.2	1029.64	116	86	40	255	264	
5	51	17	328	.08	2.9	1032.72	120	88	40	256	260	
6	54	17	328	.08	2.9	1035.76	122	90	40	253	259	
7	57	15	329	.07	2.5	1038.57	124	92	42	254	257	
8	60	15	328	.07	2.5	1041.25	120	92	42	254	261	
9	63	15	330	.07	2.5	1044.16	120	90	42	253	260	
10	66	13	327	.06	2.2	1046.85	118	90	42	251	258	
11	69	13	330	.06	2.2	1049.52	118	92	42	250	259	
12	72	9	327	.04	1.4	1051.75	120	94	42	252	258	
Total			3925	3.232	31.6		1416	1064				
Average												

CAE

CAE F2 ver. 1.0
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Location: STACK Run: 1

Page 1 of 1

SO_2 Testing Field Data Sheet

Client: Cogentrix	Project Number: 5509
Plant: Rinaldi PA	Unit: 1
Date: 1-17-91	Inlet/outlet/stack
Meter Operator: [illegible]	
Probe Operator:	

Sample Box Number:	
Pyrometer Number: F-1	
Meter Box Number: J	
Meter ΔH@: 1.804	Meter Y_d: 0.9871

Leak Rate Before: 0 cc/m cf/m @ 15 "Hg	
Leak Rate After: 0.005 cc/m cf/m @ 15 "Hg	

Schematic of Testing Location

N

First point all the way IN OUT	Method 4
Area (ft²)	Port Len. (in.) / Gas Flow IN OUT
Filter Material: GLASS	
Sample Purge Time: 15 min.	
80% IPA ml/gm	H_2O_2 ml/gm

Ambient Temp. (°F): 34	Bar. Press. (in. Hg): 28.83
Assumed Moisture (%):	

Heater Box Setting:	Probe Heater Setting: 70 248 25
Probe Length: 6'	Probe Number:
Probe Material: SS	

IGS Bag ID Number:	
% O_2:	% CO_2:
H_2O (ml):	Silica Gel (gm):
Total V_{lc}:	

Start Time: 9:22 AM / PM | Stop Time: 10:22 AM / PM

Traverse Point Number	Min/pt 5 / Clock Time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Bath Temp. (°F)	Orifice Setting ΔH (in. H_2O)	Initial Volume 080.31 / Gas Sample Volume V_m Circle one: (L) (ft³)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Probe Temp. T_p (°F)			Notes
	5	8	326	33	1.1	083.43	65	60	246			
	10	8	328	34	1.05	086.32	65	60	247			
	15	8	330	34	0.98	089.25	74	60	249			
	20	8	331	35	0.98	092.05	76	61	250			
	25	8	331	35	0.98	094.75	78	61	250			
	30	8	330	36	0.93	097.48	80	61	250			
	35	8	329	37	0.94	100.20	82	62	249			
	40	8	330	38	0.94	102.74	82	62	250			
	45	8	331	38	0.91	105.04	84	64	251			
	50	8	332	38	0.88	108.32	88	66	253			
	55	8	331	38	0.85	111.00	88	66	250			
	60	8	330	38	0.83	113.79	90	68	250			
Average												
Total												

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Location: Stack Run: 2

SO_2 Testing
Field Data Sheet

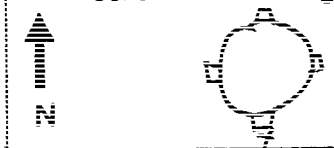
Page 1 of 1

Client Geometrix	Project Number 5507
Plant Ringold PA	Unit 1
Date 1-17-91	Inlet/outlet/stack
Meter Operator JTH	
Probe Operator	

Sample Box Number	
Pyrometer Number	
Meter Box Number J	
Meter ΔH@ 1.804	Meter Y_d 0.9871

Leak Rate Before: 0.01 cc/m cf/m @ 15 "Hg	
Leak Rate After: cc/m cf/m @ "Hg	

Schematic of Testing Location



First point all the way IN OUT	Method 4	
Area (ft²)	Port Len. (in.)	Gas Flow IN OUT
Filter Material Glass		
Sample Purge Time: 15 min.		
80% IPA ml/gm	H_2O_2 ml/gm	

Ambient Temp. (°F) 31	Bar. Press. (in. Hg) 28.33
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting 2 [illegible]
Probe Length 6'	Probe Number
Probe Material SS	

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time: 1131 AM / PM	Stop Time: 1231 AM / PM

Traverse Point Number	Min/pt 5 / Clock Time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Bath Temp. (°F)	Orifice Setting ΔH (in. H_2O)	Initial Volume 3136.42 / Gas Sample Volume V_m Circle one: (L) (ft³)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Probe Temp. T_p (°F)			Notes
	5	8	329	38	0.85	134.39	70	63	255			
	10	8	329	38	0.88	136.91	80	64	255			
	15	8	328	38	0.85	139.55	80	64	254			
	20	8	330	38	0.85	142.22	80	64	251			
	25	8	321	38	0.85	144.87	80	64	251			
	30	8	321	38	0.84	147.52	80	64	250			
	35	8	322	38	0.84	150.24	82	66	248			
	40	8	322	38	0.84	152.83	82	66	249			
	45	8	325	38	0.82	155.35	82	66	250			
	50	8	327	36	0.82	158.01	82	67	251			
	55	8	327	36	0.81	160.52	82	68	249			
	60	8	326	36	0.80	163.11	78	62	247			
Average												
Total												

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Page 1 of 1

Location: Stack Run: 3

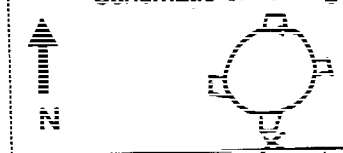
SO_2 Testing Field Data Sheet

Client: Cogentrics	Project Number: 5509
Plant: Ringold QA	Unit: 1
Date: 1-17-90	Inlet/outlet/stack:
Meter Operator: JTH	
Probe Operator:	

Sample Box Number:	
Pyrometer Number: F-1	
Meter Box Number: 3	
Meter ΔH@: 1.804	Meter Y_d: 0.9871

Leak Rate Before: 0 cc/m cf/m @ 10 "Hg	
Leak Rate After: cc/m cf/m @ "Hg	

Schematic of Testing Location



First point all the way IN OUT	Method 4	
Area (ft²)	Port Len. (in.)	Gas Flow IN OUT
Filter Material: GLASS		
Sample Purge Time: 15 min.		
80% IPA ml/gm	H_2O_2 ml/gm	

Ambient Temp. (°F): 2[illegible]	Bar. Press. (in. Hg): 28.33
Assumed Moisture (%):	

Heater Box Setting:	Probe Heater Setting: 248±25
Probe Length:	Probe Number:
Probe Material:	

IGS Bag ID Number:	
% O_2:	% CO_2:
H_2O (ml):	Silica Gel (gm):
Total V_{lc}:	

Start Time: 141 AM PM Stop Time: 241 AM PM

Traverse Point Number	Min/pt 5 / Clock Time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Bath Temp. (°F)	Orifice Setting ΔH (in. H_2O)	Initial Volume ~~180.65~~ 181.17 / Gas Sample Volume V_m Circle one: (L) (ft³)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Gas Sample Temperature at Dry Gas Meter: Outlet $T_{m\,out}$ (°F)	Probe Temp. T_p (°F)			Notes
	5	8	325	36	0.82	183.76	70	63	256			
	10	8	327	36	JTH ~~0.82~~ 0.76	186.20	72	63	255			
	15	8	329	36	0.74	188.70	75	63	257			
	20	8	330	36	0.73	191.13	75	63	250			
	25	8	328	38	0.73	193.76	72	62	249			
	30	8	326	38	0.73	196.15	73	62	248			
	35	8	327	38	0.73	198.59	74	62	256			
	40	8	325	38	0.72	201.04	72	60	258			
	45	8	322	40	0.72	203.47	74	60	258			
	50	8	326	40	0.72	205.93	74	60	260			
	55	8	325	40	0.70	207.99	74	60	258			
	60	8	323	40	0.70	210.30	74	60	256			
Average												
Total												

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Location: outlet Run: 1

SO_2 Testing Field Data Sheet

Client: Cogentrics	Project Number: 5509
Plant: Ringgold Cogen	Unit: 2
Date: 1-16-91	Inlet/outlet/stack
Meter Operator: Joe Hogan	
Probe Operator: " "	

Sample Box Number	
Pyrometer Number	
Meter Box Number: 5	
Meter ΔH@: 1.804	Meter Y_d: .9971

Leak Rate Before: .000	cc/m cf/m @ 15	"Hg	
Leak Rate After: .000	cc/m cf/m @ 15	"Hg	

Schematic of Testing Location

N

First point all the way IN OUT	Method 4	
Area (ft²)	Port Len. (in.)	Gas Flow IN OUT
Filter Material: Glass Fiber		
Sample Purge Time: 15 min.		
80% IPA ml/gm	H_2O_2 ml/gm	

Ambient Temp. (°F): 40°	Bar. Press. (in. Hg): 28.76
Assumed Moisture (%): 11	

Heater Box Setting: [illegible]	Probe Heater Setting: 250 ± 25
Probe Length: 6'	Probe Number
Probe Material: "	

IGS Bag ID Number: N/A	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time: 12:10 AM / PM Stop Time: 1:10 AM / PM

Traverse Point Number	Min/pt 5 / Clock Time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Bath Temp. (°F)	Orifice Setting ΔH (in. H_2O)	Initial Volume 995.91 / Gas Sample Volume V_m Circle one: (L) (ft³)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Probe Temp. T_p (°F)			Notes
	5	8	343	40	0.68	996.41	89°	80	251			
	10	8	343	40	0.68	998.95	95	84	253			
	15	8	343	40	0.66	001.45	100	84	253			
	20	8	342	42	0.66	003.93	102	86	256			
	25	8	341	42	0.65	006.42	102	86	256			
	30	8	341	44	0.63	008.90	102	86	254			
	35	8	342	44	0.63	011.39	102	86	255			
	40	8	342	46	0.65	013.79	102	86	253			
	45	8	336	46	0.63	016.29	102	86	254			
	50	8	334	48	0.62	018.66	104	88	254			
	55	8	339	48	0.61	021.53	108	88	255			
	60	8	340	49	0.60	023.51	110	90	255			
Average												
Total												

SO_2 Testing Field Data Sheet

Location: outlet Run: 2

Client Copperhill	Project Number 6609
Plant Copperhill VA	Unit 2
Date 1-16-97	Inlet/outlet/stack
Meter Operator ATH	
Probe Operator	

Schematic of Testing Location

N

Ambient Temp. (°F)	Bar. Press. (in. Hg) 28.16
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	

Sample Box Number	
Pyrometer Number	
Meter Box Number 1	
Meter ΔH@	Meter Y_d

First point all the way IN OUT	Method 4	
Area (ft²)	Port Len. (in.)	Gas Flow IN OUT

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_m	

Leak Rate Before: 0.003	cfm @ 15	"Hg	Start Time: 2:50 AM / PM
Leak Rate After: 0.003	cfm @ 15	"Hg	Stop Time: 4:15 AM / PM
Filter Material glass			
Sample Purge Time: 15 min.			
80% IPA ml/gm	H_2O_2 ml/gm		

Traverse Point Number	Min/pt 5 / Clock Time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Bath Temp. (°F)	Orifice Setting ΔH (in. H_2O)	Initial Volume 640.67 / Gas Sample Volume V_m Circle one: (L) (ft³)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Probe Temp. T_p (°F)			Notes
	5	8	342	38	0.65	645.18	96	84	247			
	10	8	342	37	0.63	647.63	98	86	247			
	15	8	341	36	0.61	650.06	100	86	248			
	20	8	340	40	0.61	652.53	103	87	249			
	25	8	338	41	0.63	655.07	103	87	251			
	30	9	336	42	0.61	657.49	103	88	252			
	35	8	338	42	0.61	659.89	103	88	252			
	40	8	340	44	0.60	662.31	103	89	255			
	45	8	340	45	0.60	664.72	104	90	255			
	50	8	331	50	0.62	667.15	90	92	249			
	55	8	332	52	0.62	669.54	95	90	249			
	60	8	334	54	0.61	672.91	98	92	250			
Average												
Total												

UNIT 2

Location: STACK Run: 3

Page 1 of 1

SO_2 Testing Field Data Sheet

Client COGENTRIX	Project Number 5509
Plant RINGWOOD	Unit 2
Date 1-18-91	Inlet/outlet/stack
Meter Operator DWD	
Probe Operator	

Sample Box Number	
Pyrometer Number	
Meter Box Number 5	
Meter ΔH@ 1.804	Meter Y_d .9871

Leak Rate Before: .004 cc/m cf/m @ 15 "Hg	
Leak Rate After: .002 cc/m cf/m @ 13 "Hg	

Schematic of Testing Location

First point all the way IN OUT	Method 4	
Area (ft²)	Port Len. (in.) 8 1/2	Gas Flow IN OUT
Filter Material Glass wool		
Sample Purge Time: 10 min.		
80% IPA ml/gm	H_2O_2 ml/gm	

Ambient Temp. (°F)	Bar. Press. (in. Hg) 28.34
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time: 11:25 AM / PM Stop Time: 12:25 AM / PM

Traverse Point Number	Min/pt 5 / Clock Time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F) 5	Bath Temp. (°F)	Orifice Setting ΔH (in. H_2O) 6	Initial Volume 218.90 / Gas Sample Volume V_m Circle one: (L) (ft³)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F) 3	Outlet $T_{m\,out}$ (°F)	Probe Temp. T_p (°F)			Notes
1	5	7	330	34	.45	220.08	60	58				
2	10	7	330	34	.45	223.00	62	58				
3	15	7	332	34	.43	225.02	64	58				
4	20	8	327	34	.44	227.16	64	58				
5	25	9	329	34	.48	229.26	66	58				
6	30	9	327	34	.47	231.36	68	58				
7	35	9	325	34	.46	233.77	64	58				
8	40	9	325	34	.67	236.24	68	58				
	45	9	329	34	.63	238.65	70	58				
	50	9	326	34	.65	241.10	70	58				
	55	9	330	34	.65	243.53	70	58				
	60	9	331	34	.62	245.85	70	58				
Average			394.3		6.40		70.6	69.6				
Total			329		5.333	26.95	62					

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Particulate Testing Field Data Sheet

SO_2

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Location: Stack Run: 1

Client Cogentrix	Project Number 5509
Plant Richmond	Unit 3
Date 1-15-94	Inlet/outlet/other
Meter Operator AM	
Probe Operator	

Schematic of Testing Location

N

Ambient Temp. (°F)	Bar. Press. (in. Hg) 28.52
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

Sample Box Number AM	Pyrometer Number
Meter Box Number 3	
Meter ΔH@ 1.604	Meter Ya .9671
K Factor	Pitot C_p
Pitot Leak Check: Before	After
Leak Rate Before .004 CFM @ 15 "Hg	
Leak Rate After .003 CFM @ 6 "Hg	
Static Pressure (inches H2O) (+/-)	

First point all the way IN OUT	Method	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{sc}	

Start Time 1110 AM / PM Stop Time 2:10 AM / PM

Traverse Point Number	Min/pt 5 Clock time	Pump Vacuum (in. Hg)	Stack Temp Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H2O)	Initial Volume 876.40 Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
	5	8			1.0	879.37	72	68	34		251	
	10	8			0.97	882.09	90	68	34		252	
	15	8			0.93	884.92	93	70	35		253	
	20	8			0.92	887.67	90	72	37		248	
	25	8			0.92	890.60	91	72	40		246	
	30	8			0.92	893.41	92	73	42		256	
	35	8			0.88	896.20	94	74	43		254	
	40	8			0.89	899.00	94	76	45		257	
	45	8			0.87	901.76	94	76	47		256	
	0	8			0.87	904.50	94	76	48		258	
	5	8			0.85	907.27	94	76	49		256	
	60	8			0.85	910.07	94	76	50		257	
Total												
Average												

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Particulate Testing Field Data Sheet

SO_2

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Location: Stack Run: 2

Client Consumers	Project Number 5509
Plant Ringgold	Unit 3
Date 1-15-91	Inlet/outlet/stack
Meter Operator JTH	
Probe Operator	

Sample Box Number	Pyrometer Number
Meter Box Number F	
Meter ΔH@ 1.804	Meter Yd .9871
K Factor	Pitot Cp
Pitot Leak Check: Before	After
Leak Rate Before .004 CFM @ 15 "Hg	
Leak Rate After .002 CFM @ 10 "Hg	
Static Pressure (inches H2O) (+/-)	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F) 40°	Bar. Press. (in. Hg) 28.52
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time 4:30 AM / PM Stop Time 5:30 AM / PM

Traverse Point Number	Min/pt 5 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in. H_2O)	Initial Volume 910.10 Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet T_m in (°F)	Outlet T_m out (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
	5	8			0.76	911.93	83	78	38		248	
	10	8			0.77	914.49	86	78	38		252	
	15	8	917.10		0.76	~~914.10~~ TM	97	~~78~~ 78	40		250	
	20	8			0.75	919.71	97	80	40		253	
	25	8			0.75	922.30	97	81	42		254	
	30	8			0.75	924.91	97	81	43		249	
	35	8			0.75	927.55	97	81	44		256	
	40	8			0.75	930.14	97	81	44		251	
	45	8			0.74	932.72	97	82	45		258	
	50	8			0.74	935.31	97	82	45		260	
	55	8			0.74	937.99	97	82	47		254	
	60	8			0.74	940.52	97	82	47		251	
Total												
Average												

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Location: Stack Run: ~~2~~ 5

SO_2 Testing Field Data Sheet

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Client Cogentrics	Project Number 5 5 2 4
Plant Ringgold PA	Unit 2 3
Date 1-16-91	Inlet/outlet/stack
Meter Operator [illegible]	
Probe Operator	

Sample Box Number	
Pyrometer Number	
Meter Box Number [illegible]	
Meter ΔH@ 1.8041	Meter Y_d 0.9871

Leak Rate Before: 0 cc/m cf/m @ 10 "Hg	
Leak Rate After: 0.003 cc/m cf/m @ 10 "Hg	

Schematic of Testing Location

N

First point all the way IN OUT	Method 4	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT
Filter Material GASS		
Sample Purge Time: 15 min.		
80% IPA ml/gm	H_2O_2 ml/gm	

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting 248±25
Probe Length 6'	Probe Number
Probe Material SS	

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time: 9:15 AM / PM	Stop Time: 10:15 AM / PM

Traverse Point Number	Min/pt 5 / Clock Time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Bath Temp. (°F)	Orifice Setting ΔH (in. H_2O)	Initial Volume 940.52 / Gas Sample Volume V_m Circle one: (L) (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Probe Temp. T_p (°F)			Notes
	5	7	325	38	1.10	943.50	58	60	249			
	10	7	325	38	1.10	946.55	63	61	251			
	15	7	326	38	1.05	949.57	72	62	254			
	20	7	328	40	1.05	952.56	75	62	254			
	25	7	330	40	1.05	955.55	80	63	254			
	30	7	330	42	1.05	958.57	85	65	255			
	35	7	328	42	1.05	961.57	89	68	253			
	40	7	328	44	1.05	964.56	89	68	254			
	45	7	327	44	1.05	967.57	92	72	254			
	50	7	329	46	1.00	970.56	92	72	254			
	55	7	330	46	1.0	973.55	94	75	253			
	60	7	331	49	1.0	976.57	96	78	252			
Average												
Total												

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Particulate Testing Field Data Sheet

MTDL

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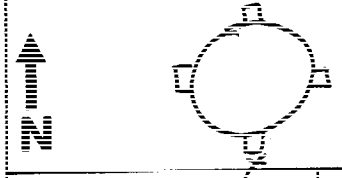
Location: Stack **Run:** 2

Client: Cogentrix	Project Number: 5509
Plant: Ringold PA	Unit: 1
Date: 1-17-91	Inlet/outlet/stack:
Meter Operator: ATH	
Probe Operator:	

Sample Box Number:	Pyrometer Number: F-1
Meter Box Number: 68-41	
Meter ΔH@: N/A	Meter Yd: 1.0029
K Factor:	Pitot C_p:
Pitot Leak Check: Before	After
Leak Rate Before: 0.01 CFM @ 10 "Hg	
Leak Rate After: 0.003 CFM @ 10 "Hg	
Static Pressure (inches H2O) (+/-) ATH ~~0.02~~ -0.2	

Schematic of Testing Location



First point all the way IN OUT	Method	
Area (ft²)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F): 32	Bar. Press. (in. Hg): 28.83
Assumed Moisture (%):	

Heater Box Setting: ~~248±25~~	Probe Heater Setting: 248±25
Probe Length: 6'	Probe Number:
Probe Material: SS	Acetone Number:
Nozzle Diameter (in.):	Nozzle Number:

IGS Bag ID Number:	
% O_2:	% CO_2:
H_2O (ml):	Silica Gel (gm):
Total V_{lc}:	

Start Time: 1130 AM / PM Stop Time: 1230 AM / PM

Traverse Point Number	Min/pt: 5 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H2O)	Initial Volume: 2986.0 Gas Sample Volume V_m (ft³)	Gas Sample Temperature at Dry Gas Meter: Inlet T_m in (°F)	Outlet T_m out (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
	5	2	329		0.9	2888.43	5				255	
	10	2	329		0.9	2890.75	5				255	
	15	2	328		0.9	2893.07	6				254	
	20	2	330		0.9	2895.33	6				255	
	25	2	321		0.9	2897.64	6				251	
	30	2	321		0.9	2899.97	6				250	
	35	2	322		0.9	2902.23	6				248	
	40	2	322		0.9	2904.57	6				249	
	45	2	325		0.9	2906.95	7				250	
	50	2	327		0.9	2909.22	7				251	
	55	2	327		0.9	2911.56	7				249	
	60	2	326		0.9	2913.88	7				247	
Total												
Average												

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Particulate Testing Field Data Sheet

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Location: Stack Run: 3

Client: Cogentrix	Project Number: 5509
Plant: Lidgate QP	Unit: #1
Date: 1-17-90	Inlet/outlet/stack:
Meter Operator: JTH	
Probe Operator:	

Sample Box Number:	Pyrometer Number: F-
Meter Box Number: 68-41	
Meter ΔH@: N/A	Meter Yd: 1.0029
K Factor:	Pitot Cp:
Pitot Leak Check: Before	After
Leak Rate Before: 0	CFM @ 15 "Hg
Leak Rate After: 0	CFM @ 5 "Hg
Static Pressure (inches H2O) (+/-): -0.2	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft²)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F): 30	Bar. Press. (in. Hg): 28.33
Assumed Moisture (%):	

Heater Box Setting:	Probe Heater Setting: 248/25
Probe Length: 6'	Probe Number:
Probe Material: SS	Acetone Number:
Nozzle Diameter (in.):	Nozzle Number:

IGS Bag ID Number:	
% O2:	% CO2:
H2O (ml):	Silica Gel (gm):
Total Vlc:	

Start Time: 130 AM PM Stop Time: 230 AM PM

Traverse Point Number	Min/pt 5 Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H2O)	Initial Volume 2929.00 Gas Sample Volume Vm (ft³)	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
	5	2	325		0.8	2921.31	4				256	
	10	2	327		0.8	2923.58	4				257	
	15	2	326		0.8	2925.87	4				255	
	20	2	324		0.8	2928.23	4				256	
	25	2	327		0.8	2930.69	4				254	
	30	2	330		0.8	2933.09	4				253	
	35	2	329		0.8	2935.54	5				250	
	40	2	326		0.8	2937.89	5				249	
	45	2	331		0.8	2940.17	5				256	
	50	2	330		0.8	2942.46	5				258	
	55	2	328		0.8	2944.93	5				258	
	60	2	326		0.8	2947.24	5				260	
Total												
Average												

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Particulate Testing Field Data Sheet

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Location: outlet Run: 1

Client Cogentrix	Project Number 5589
Plant Rivergate	Unit 2
Date 1-16-91	Inlet/outlet/effluent
Meter Operator ATH	
Probe Operator	

Schematic of Testing Location

N

Ambient Temp. (°F)	Bar. Press. (in. Hg) 26.16
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

Sample Box Number	Pyrometer Number
Meter Box Number 6841	
Meter ΔH@ N/A	Meter Yd 1.0029
K Factor	Pitot Cp
Pitot Leak Check: Before	After
Leak Rate Before 0.0	CFM @ 15 "Hg
Leak Rate After 0.0	CFM @ 15 "Hg
Static Pressure (inches H2O) (+/-)	

First point all the way IN OUT | Method

Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

IGS Bag ID Number	
% O2	% CO2
H2O (ml)	Silica Gel (gm)
Total Vlc	

Start Time 1215 AM PM Stop Time 1715 AM PM

Traverse Point Number	Minute 5 Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H2O)	Initial Volume 2772.00 Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Gas Sample Temperature at Dry Gas Meter Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
	5	2	343		0.8	2774.27	2	7			251	
	10	2	343		0.8	2776.58	2	7			253	
	15	2	343		0.8	2778.95	2	7			255	
	20	2	342		0.8	2781.81	2	7			256	
	25	2	341		0.8	2783.54	2	7			256	
	30	2	341		0.8	2785.89	2	7			257	
	35	2	342		0.8	2788.25	2	7			257	
	40	2	342		0.8	2790.49	2	7			255	
	45	2	336		0.9	2792.79	2	7			254	
	50	2	334		0.8	2795.16	2	9			254	
	55	2	339		0.8	2797.41	2	8			255	
	60	2	340		0.9	2800.20	2	8			255	
Total						2799.74						
Average												

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#2

Particulate Testing Field Data Sheet

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Location: outlet Run: 2

Client Cogeneration	Project Number 5509
Plant Ringold PA	Unit 2
Date 1-61-91	Inlet/outlet/stack
Meter Operator ATH	
Probe Operator	

Sample Box Number	Pyrometer Number
Meter Box Number 68-V1	
Meter ΔH@	Meter Y_d 1.0029
K Factor	Pitot C_p
Pitot Leak Check: Before	After
Leak Rate Before ✓	CFM @ "Hg
Leak Rate After ✓	CFM @ "Hg
Static Pressure (inches H2O) (+/-) = 0.02"	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg) 28.16
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time 2155 AM / PM Stop Time 4:20 AM / PM

Traverse Point Number	Min/pt 5 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H2O)	Initial Volume 2803.00 ~~2800.~~ ATH Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet T_m in (°F)	Outlet T_m out (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
	5	2	342		0.8	2805.35	24				247	
	10	2	342		0.8	2807.75	25				247	
	15	2	341		0.8	2810.13	25				248	
	20	2	340		0.8	2812.48	25				249	
	25	2	338		0.8	2814.91	25				251	
	30	2	336		0.8	2816.25	25				251	
	35	2	338		0.8	2818.69	25				252	
	40	2	340		0.8	2821.10	25				255	
	45	2	340		0.8	2823.45	25				255	
	50	2	331		0.8	2825.80	25				248	
	55	2	332		0.8	2827.23	24				249	
	60	2	334		0.8	2829.57	24				250	
Total												
Average												

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UNIT-2

Particulate Testing Field Data Sheet

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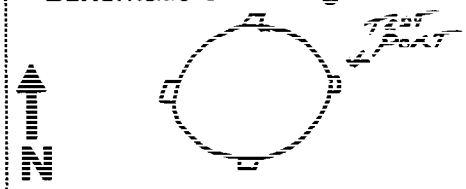
Location: STACK **Run:** 3 7D

Client COVENTRIX	Project Number 5509
Plant RINGGOLD	Unit 2
Date 1-18-91	Inlet/outlet/stack
Meter Operator PMP	
Probe Operator	

Sample Box Number	Pyrometer Number
Meter Box Number G8-U1	
Meter ΔH@ N/A	Meter Yd 1.0029
K Factor	Pitot Cp
Pitot Leak Check: Before	After
Leak Rate Before .002	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H2O) (+/-)	

Schematic of Testing Location



First point all the way IN OUT	Method	
Area (ft²)	Port Len. (in.) 8 1/2	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg) 28.16
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O2	% CO2
H2O (ml)	Silica Gel (gm)
Total Vlc	

Start Time 12:25 AM PM Stop Time 1:25 AM PM

Traverse Point Number	Min/pt Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	IN CW C Orifice Setting ΔH (in.H2O)	Initial Volume 3002.80 Gas Sample Volume Vm (ft³)	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
	5	2			.8	3005.19	10					
	10	2			.8	3007.57	11					
	15	2			.8	3009.94	11					
	20	2			.8	3012.30	11					
	25	2			.8	3014.13	12					
	30	2			.8	3015.90	12					
	35	2			.8	3017.74	12					
	40	2			.8	3019.54	12					
	45	2			.8	3021.36	12					
	50	2			.8	3023.17	12					
	55	2			.8	3024.98	13					
	60	2			.8	3026.79	13					
Total						23.99						
Average												

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Particulate Testing Field Data Sheet

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Location: Stack Run: 1

Client Cogenarics	Project Number 5509
Plant Ringdale	Unit 3
Date 1-15-91	Inlet/outlet/stack
Meter Operator ATH	
Probe Operator	

Sample Box Number	Pyrometer Number
Meter Box Number 68-VI	
Meter ΔH@ N/A	Meter Yd 1.0029
K Factor	Pitot Cp
Pitot Leak Check: Before	After
Leak Rate Before ✓	CFM @ "Hg
Leak Rate After ✓	CFM @ "Hg
Static Pressure (inches H2O) (+/-)	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft²)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg) 26.52
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O2	% CO2
H2O (ml)	Silica Gel (gm)
Total Vic	

Start Time 1:05 AM / PM Stop Time 2:05 AM / PM

Traverse Point Number	Min/pt 5 Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	~~Orifice Setting ΔH~~ (in.H2O)	Initial Volume 2665.00 Gas Sample Volume Vm (ft³)	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
	5	2			0.9	2667.21	16					
	10	2			0.9	2669.61	16					
	15	2			0.9	2672.01	16					
	20	2			0.9	2674.39	16					
	25	2			0.9	2676.86	17					
	30	2			0.9	2679.26	17					
	35	2			0.9	2681.65	18					
	40	2			0.9	2684.00	18					
	45	2			0.9	2686.41	19					
	50	2			0.9	2688.78	20					
	55	2			0.9	2691.14	20					
	60	2			0.9	2693.62	21					
Total						28.62						
Average												

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Particulate Testing Field Data Sheet

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Location: Stack Run [redacted]2

Client Cogenerics	Project Number 5309
Plant Ringgold	Unit 3
Date 1-15-91	Inlet/outlet/stack
Meter Operator JTH	
Probe Operator	

Sample Box Number	Pyrometer Number
Meter Box Number 68-V1	
Meter ΔH@ N/A	Meter Yd 1.0029
K Factor	Pitot Cp
Pitot Leak Check: Before	After
Leak Rate Before ✓	CFM @ "Hg
Leak Rate After ✓	CFM @ "Hg
Static Pressure (inches H2O) (+/-)	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft²)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg) 26.52
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O2	% CO2
H2O (ml)	Silica Gel (gm)
Total Vlc	

Start Time 4:25 AM / PM Stop Time 5:25 AM / PM

Traverse Point Number	Min/pt Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H2O)	Initial Volume 2696[redacted] Gas Sam[redacted] Vm	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
	5	2			0.8	2698.39		18			247	
	10	2			0.8	2700.90		18			252	
	15	2			0.8	2703.31		18			254	
	20	2			0.8	~~2705.5~~ 2705.88		18			254	
	25	2			0.8	2708.36		18			252	
	30	2			0.8	2710.75		18			253	
	35	2			0.8	2713.16		19			251	
	40	2			0.8	2715.52		20			250	
	45	2			0.8	2717.89		21			249	
	50	2			0.8	2720.35		22			251	
	55	2			0.8	2722.61		24			254	
	60	2			0.8	2724.92		24			253	
Total												
Average												

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Particulate Testing Field Data Sheet

(M7-D)

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Location: _____ Run: 7th X 3

Client Cogentrics	Project Number 5509
Plant Ringold	Unit #2 3
Date 1-16-91	Inlet/outlet stack
Meter Operator JTH	
Probe Operator	

Sample Box Number	Pyrometer Number
Meter Box Number 08-41	
Meter ΔH@ N/A	Meter Yd 1.0029
K Factor	Pitot Cp
Pitot Leak Check: Before	After
Leak Rate Before ✓	CFM @ "Hg
Leak Rate After ✓	CFM @ "Hg
Static Pressure (inches H2O) (+/-)	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft²)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg) 28.16
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O2	% CO2
H2O (ml)	Silica Gel (gm)
Total Vic	

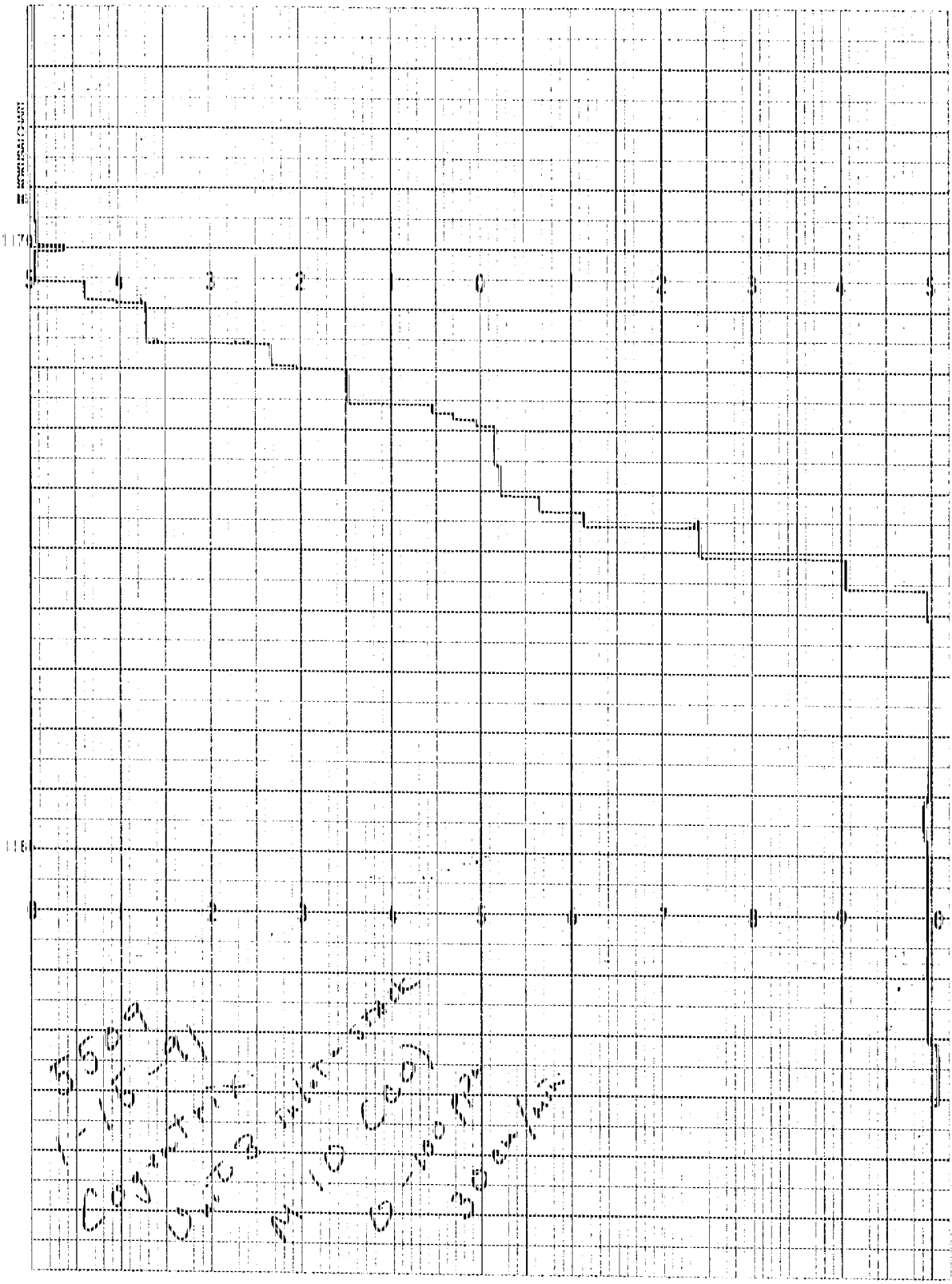
Start Time 9:10 AM / PM	Stop Time 10:10 AM / PM

Traverse Point Number	Min/pt 5 Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H2O)	Initial Volume ~~94~~ 2726.0 Gas Sample Volume Vm (ft³)	~~Gas Sample Temperature at Dry Gas Meter~~ Meter Temp Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
	5	2	325		0.8	2728.26	24				249	
	10	2	325		0.8	2730.61	24				251	
	15	2	328		0.8	2732.95	24				254	
	20	2	328		0.8	2735.40	25				254	
	25	2	330		0.8	2737.74	25				254	
	30	2	330		0.8	2740.02	25				252	
	35	2	328		0.8	2742.39	27				253	
	40	2	328		0.8	2744.71	27				254	
	45	2	327		0.8	2747.15	27				254	
	50	2	329		0.8	2749.43	27				254	
	55	2	330		0.8	2751.79	28				253	
	60	2	331		0.8	2754.22	28				252	
Total												
Average												

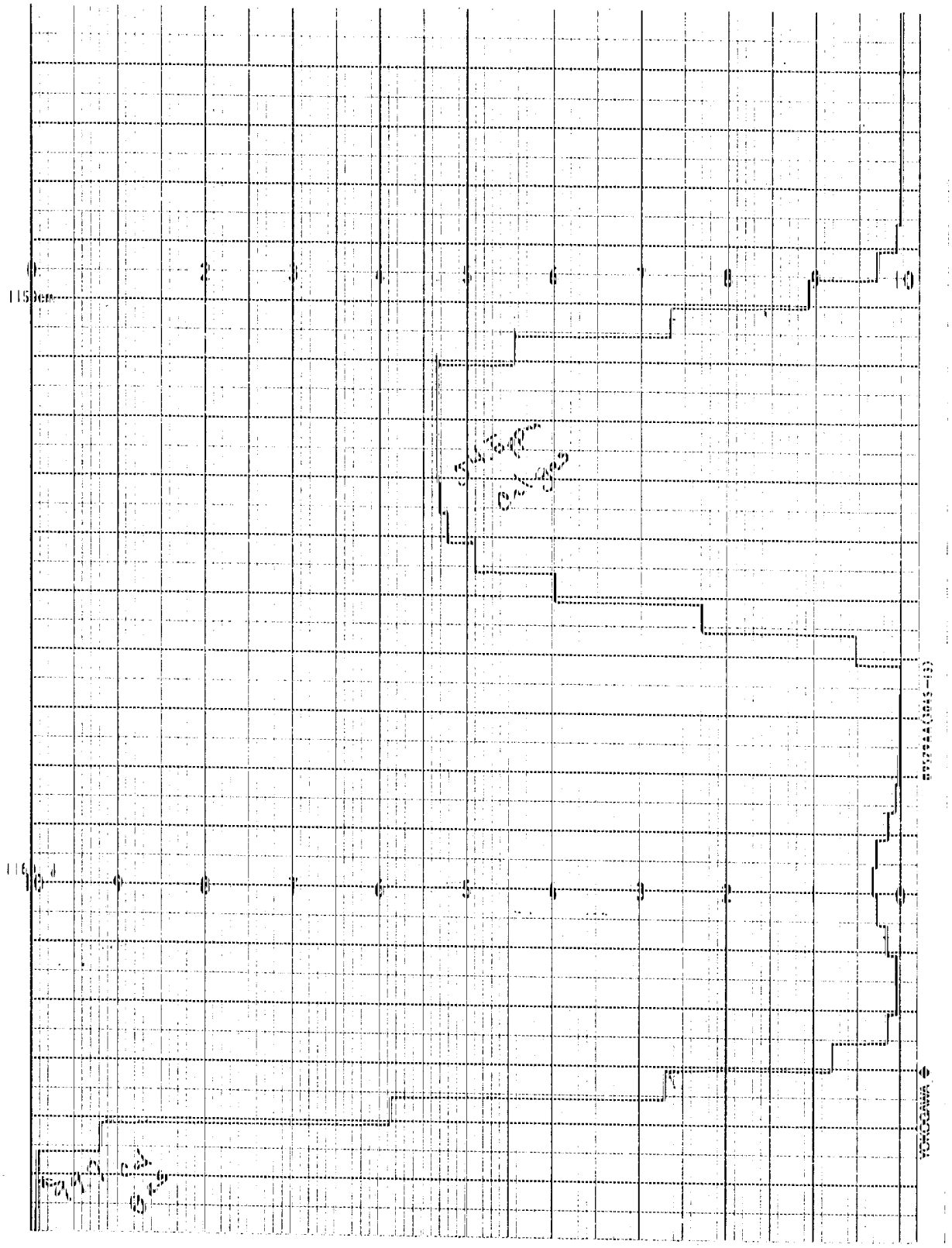
CAE

CAE P2 ver. 1.0
D:\vpforms\m5data-1

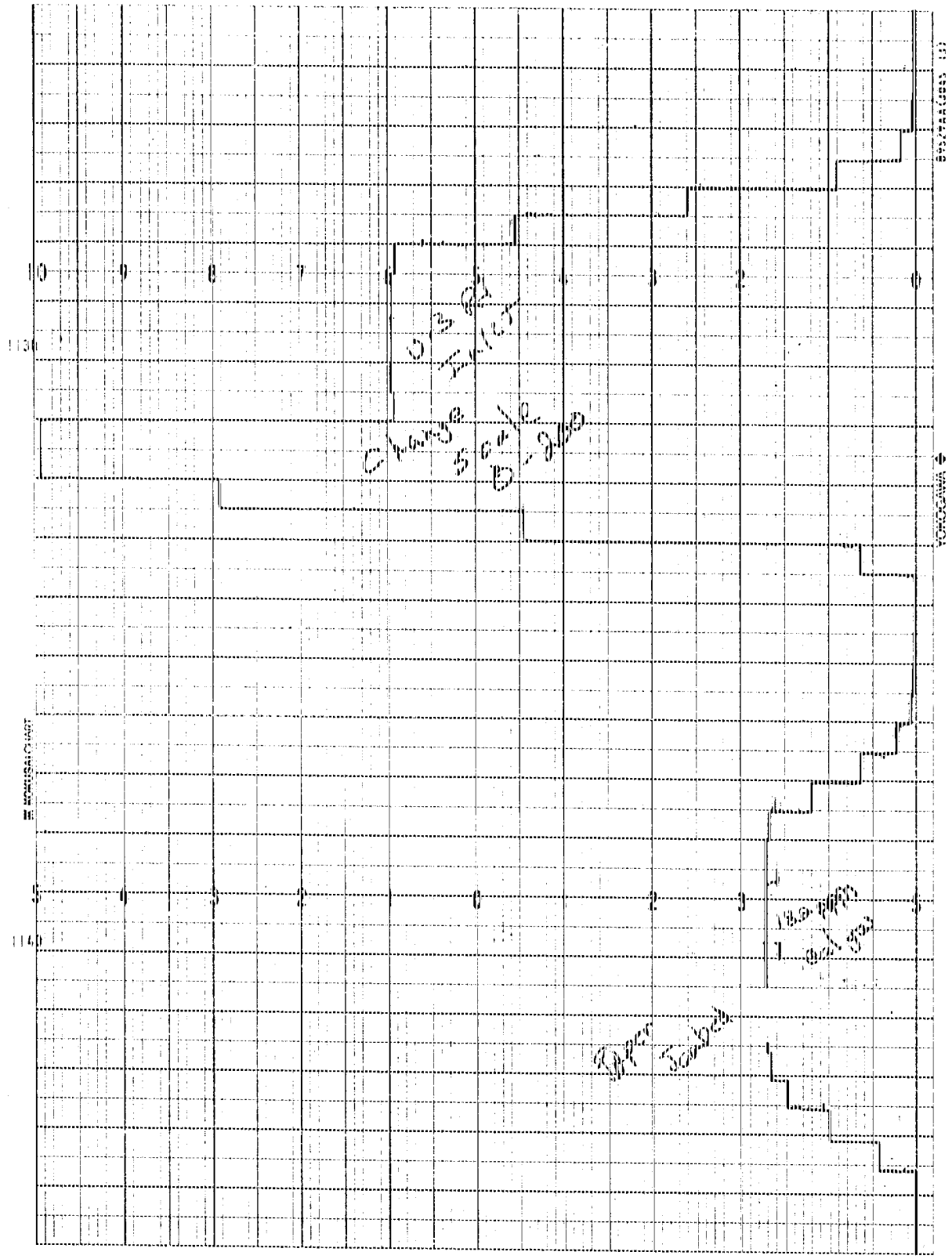
COGENTRIX
Unit 3 - Inlet and Common Stack
Carbon Monoxide Concentration (ppm)
January 15, 1991



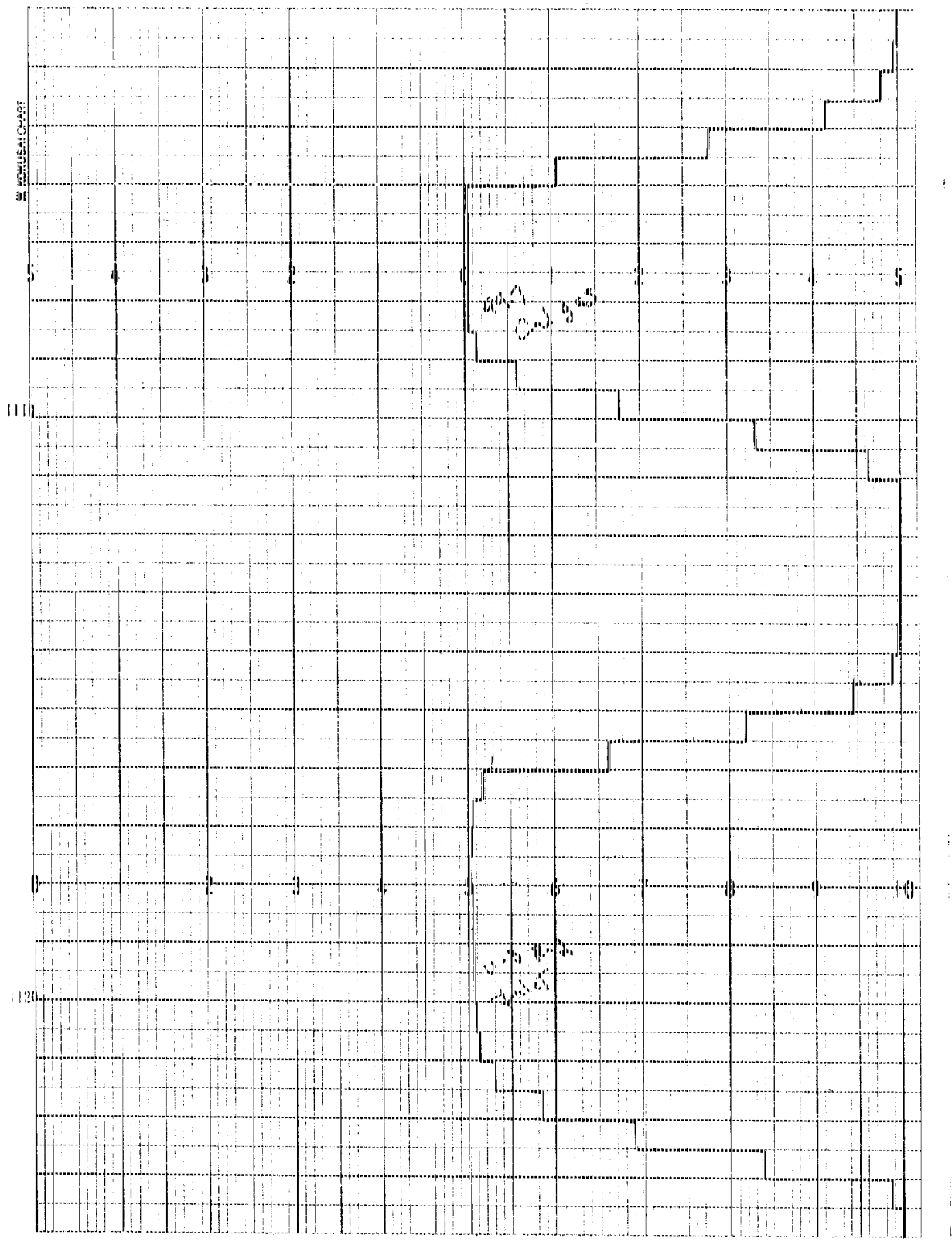
COGENTRIX
Unit 3 - Inlet and Common Stack
Carbon Monoxide Concentration (ppm)
January 15, 1991



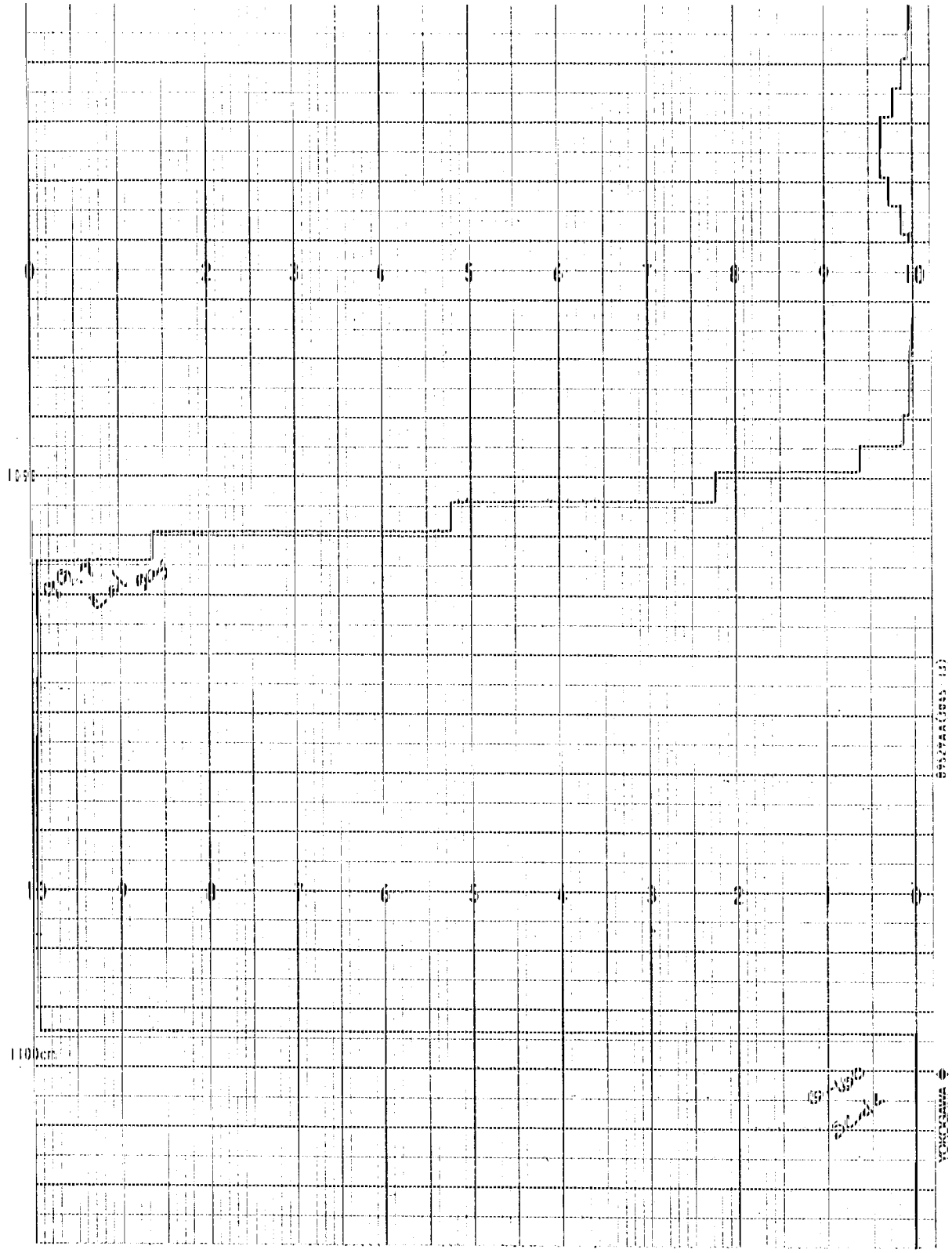
COGENTRIX
Unit 3 - Inlet and Common Stack
Carbon Monoxide Concentration (ppm)
January 15, 1991



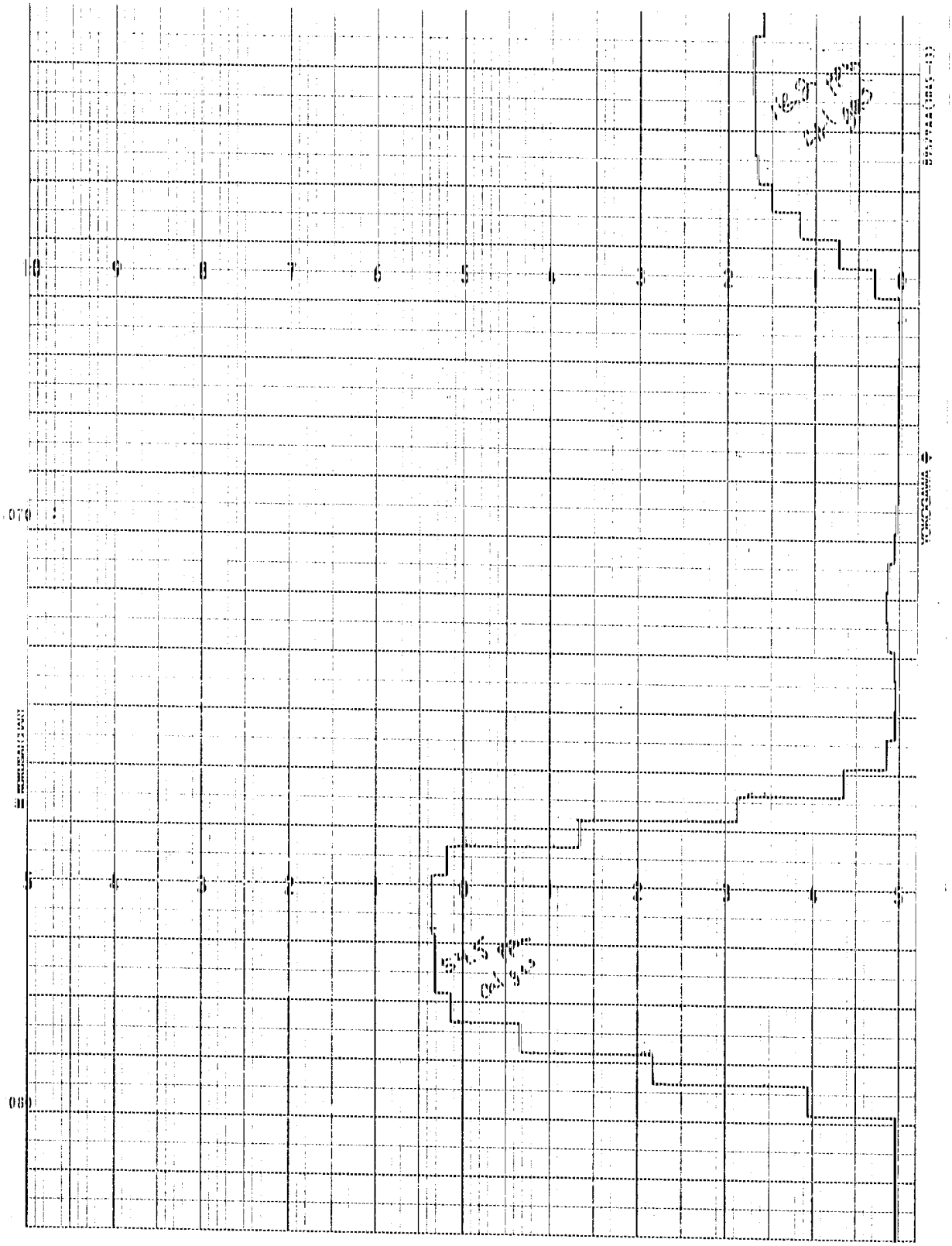
COGENTRIX
Unit 3 - Inlet and Common Stack
Carbon Monoxide Concentration (ppm)
January 15, 1991



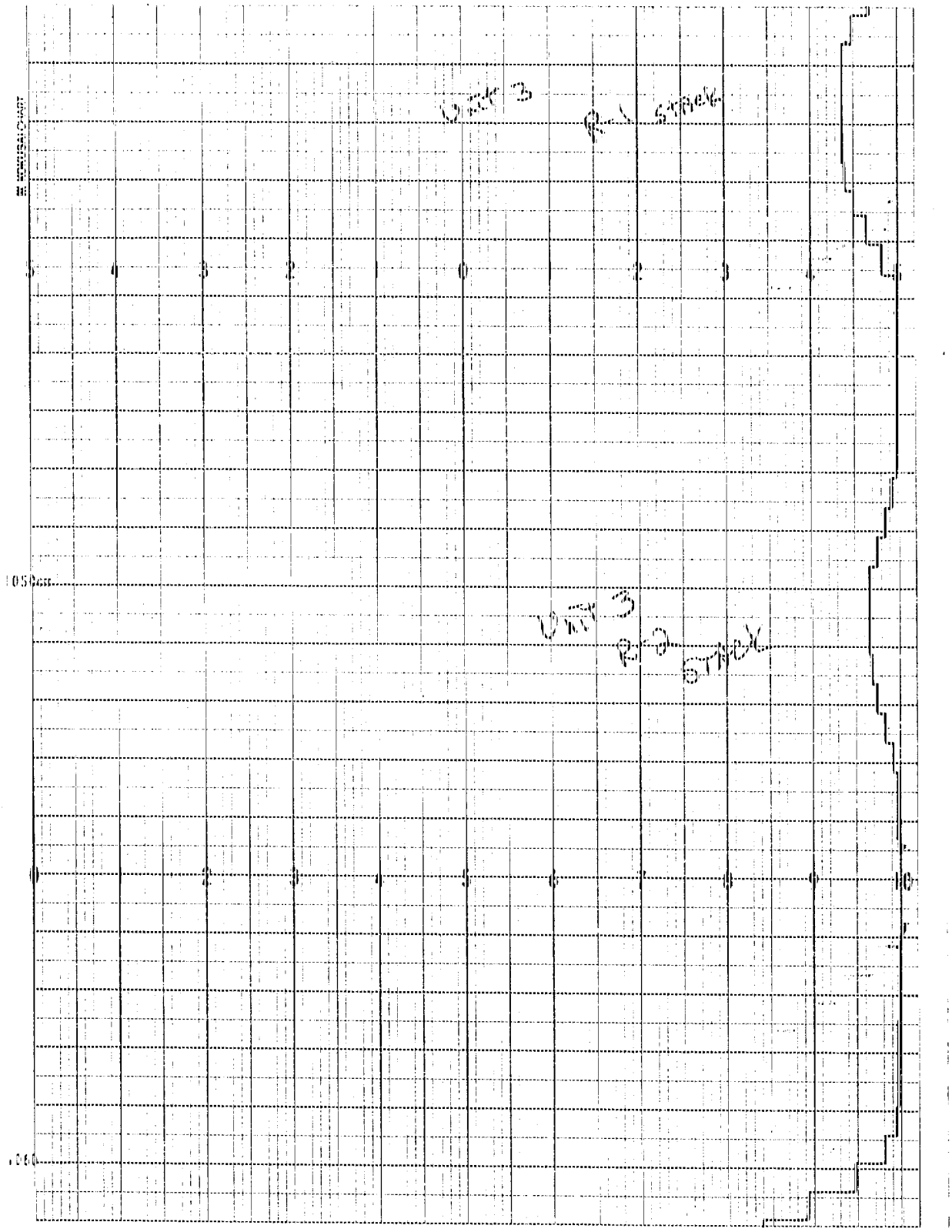
COGENTRIX
Unit 3 - Inlet and Common Stack
Carbon Monoxide Concentration (ppm)
January 15, 1991



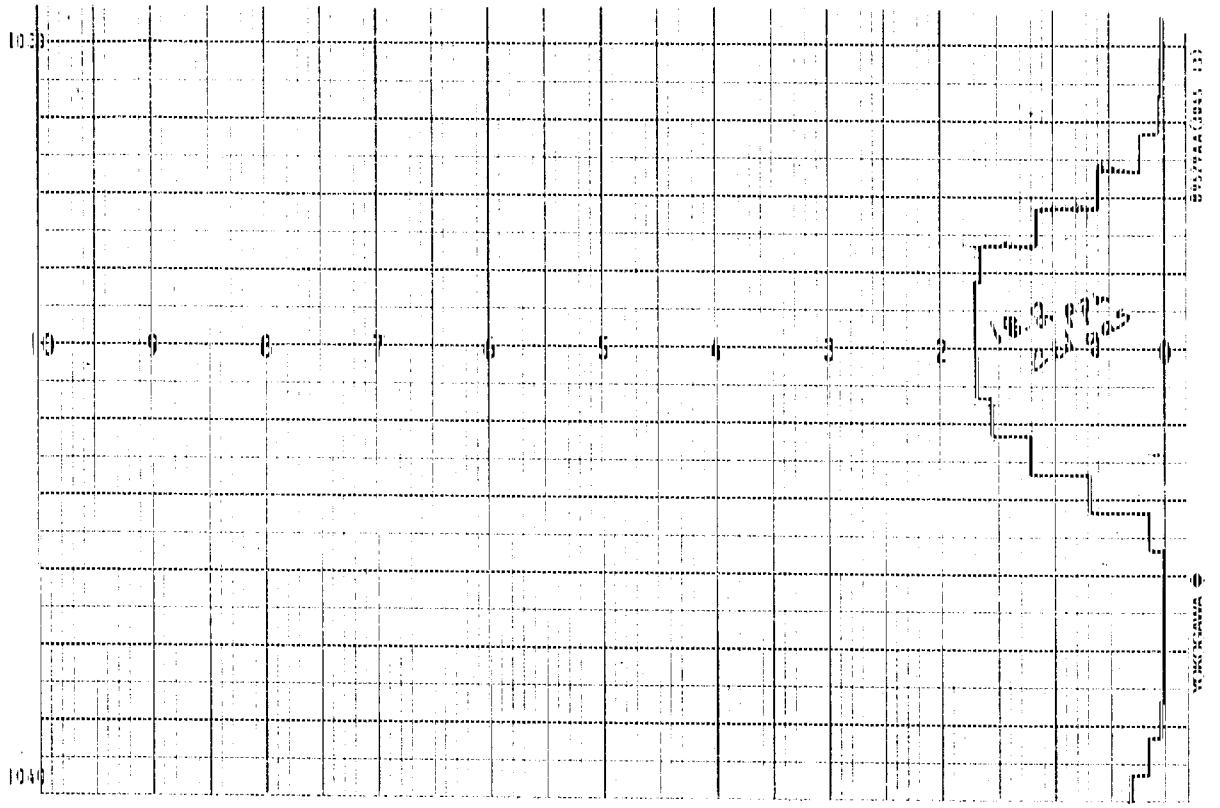
COGENTRIX
Unit 3 - Inlet and Common Stack
Carbon Monoxide Concentration (ppm)
January 15, 1991



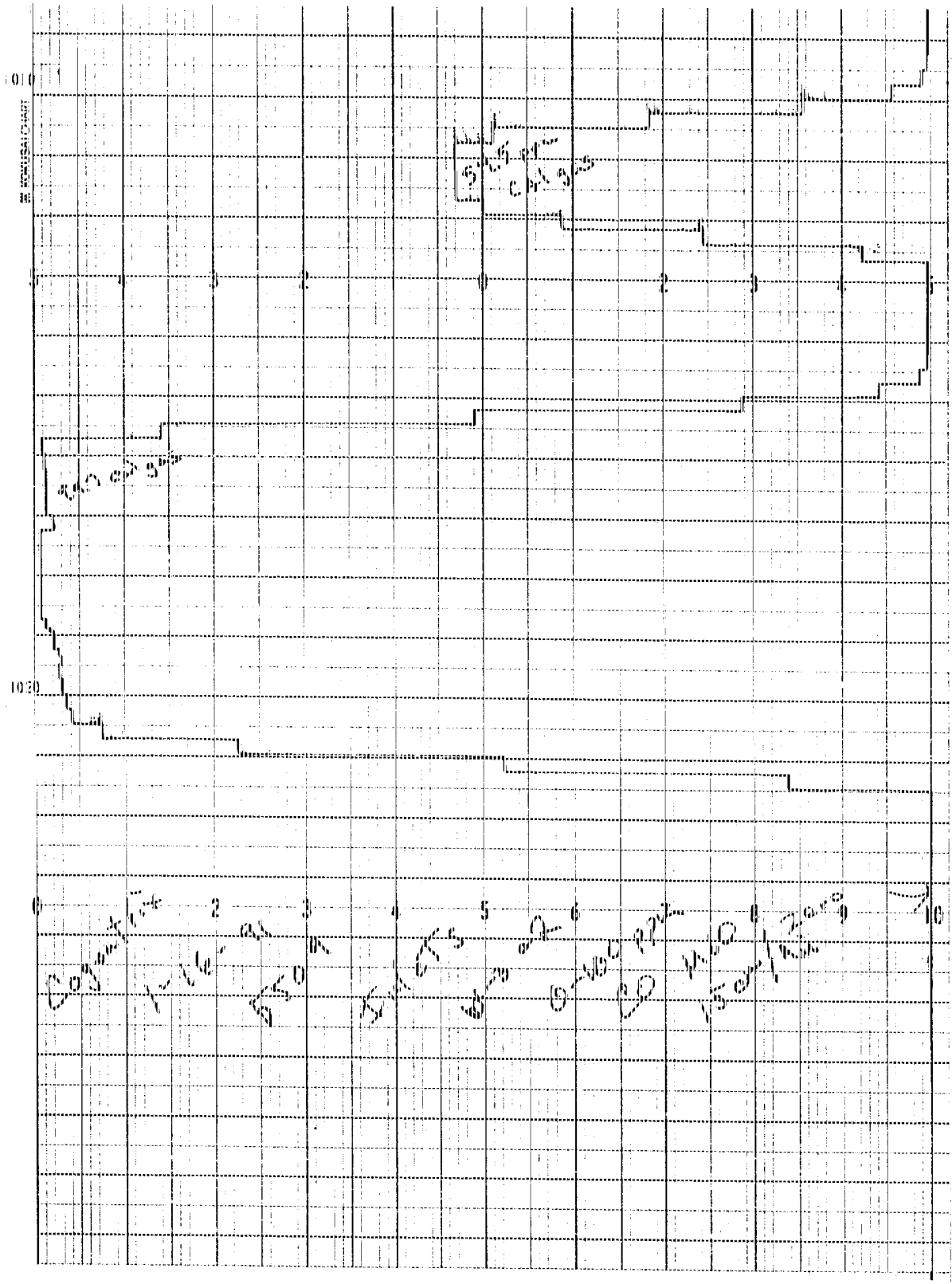
COGENTRIX
Unit 3 - Inlet and Common Stack
Carbon Monoxide Concentration (ppm)
January 15, 1991



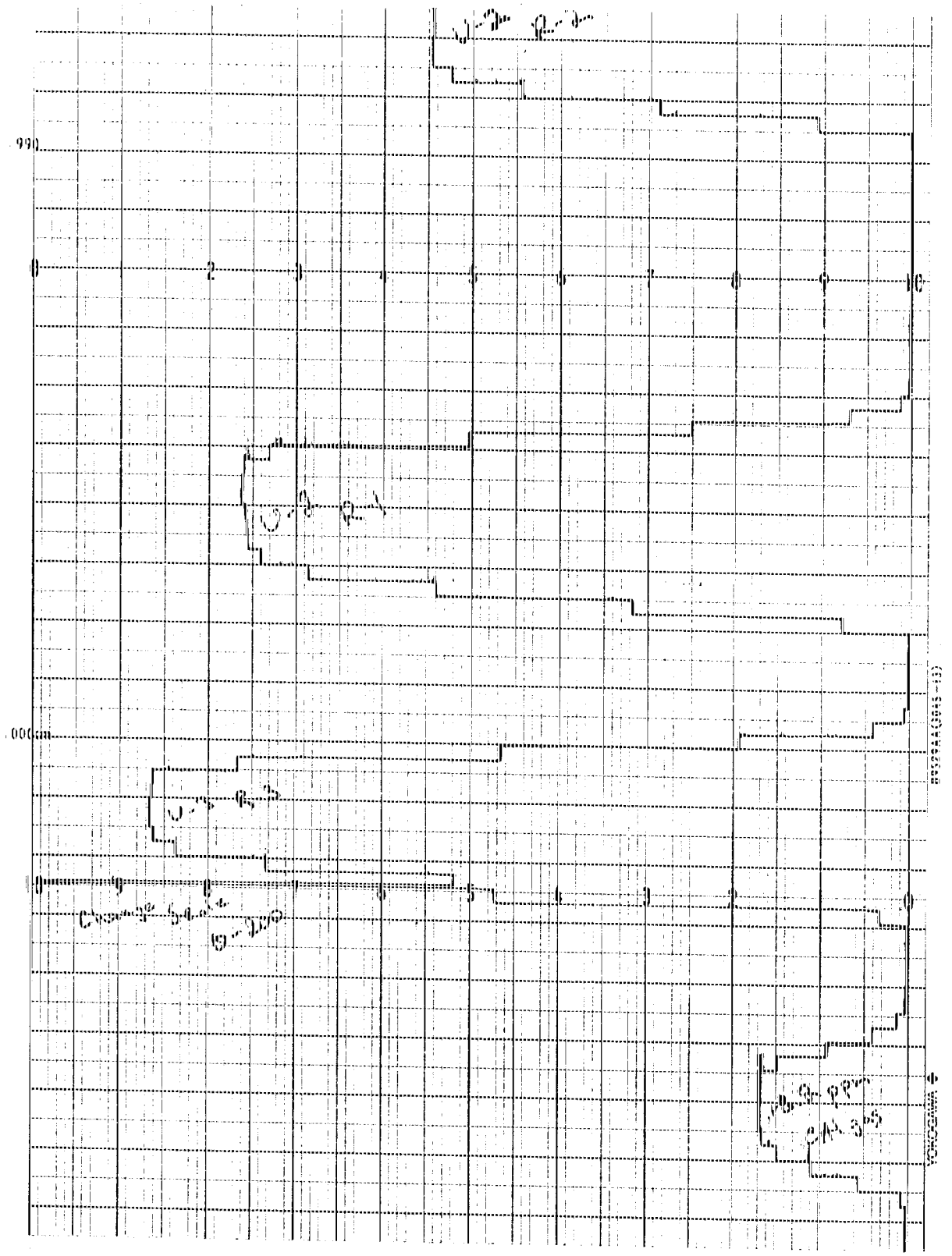
COGENTRIX
Unit 3 - Inlet and Common Stack
Carbon Monoxide Concentration (ppm)
January 15, 1991



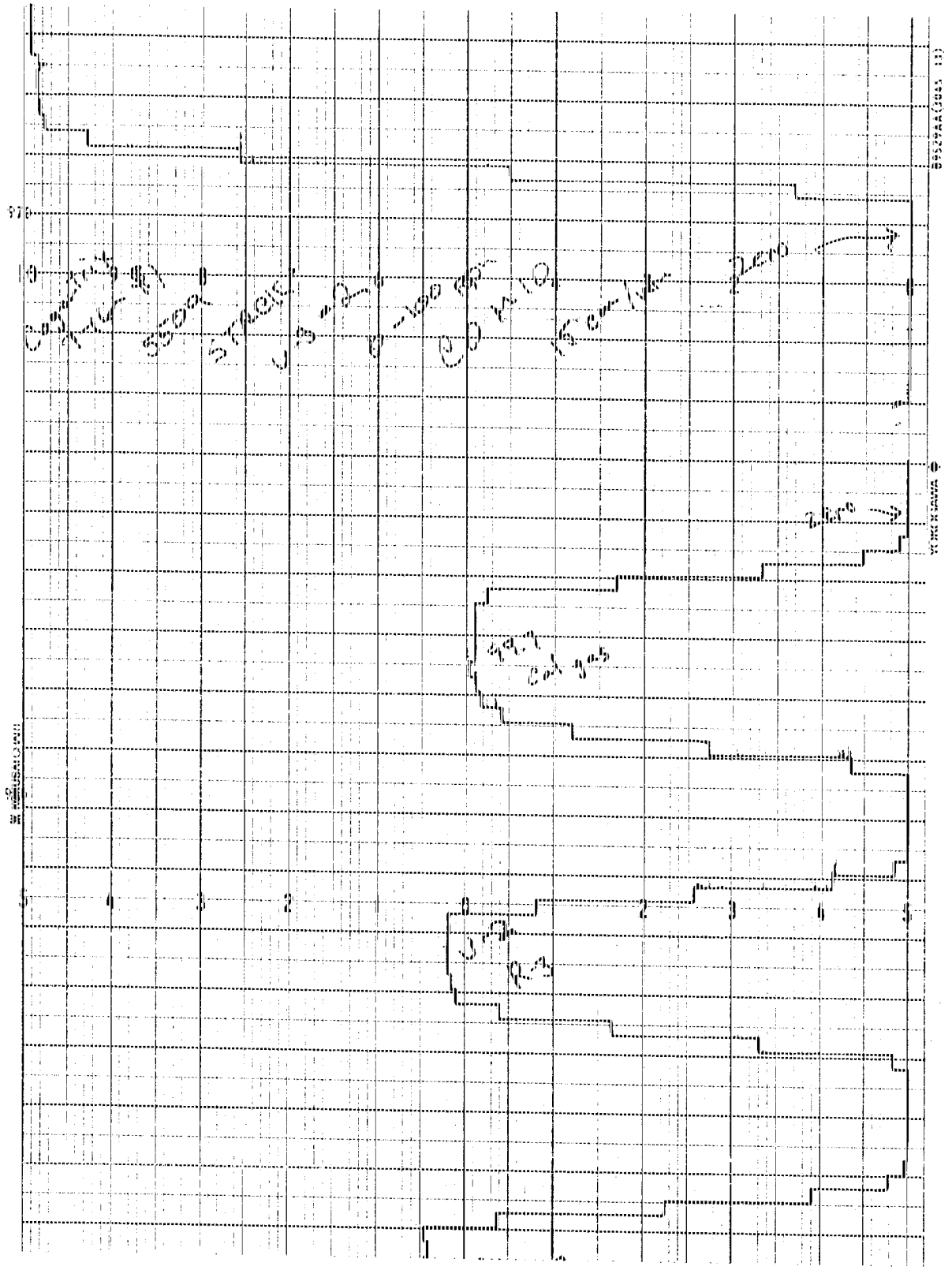
COGENTRIX
Unit 2 and Unit 3 Inlets
Carbon Monoxide Concentration (ppm)
January 16, 1991



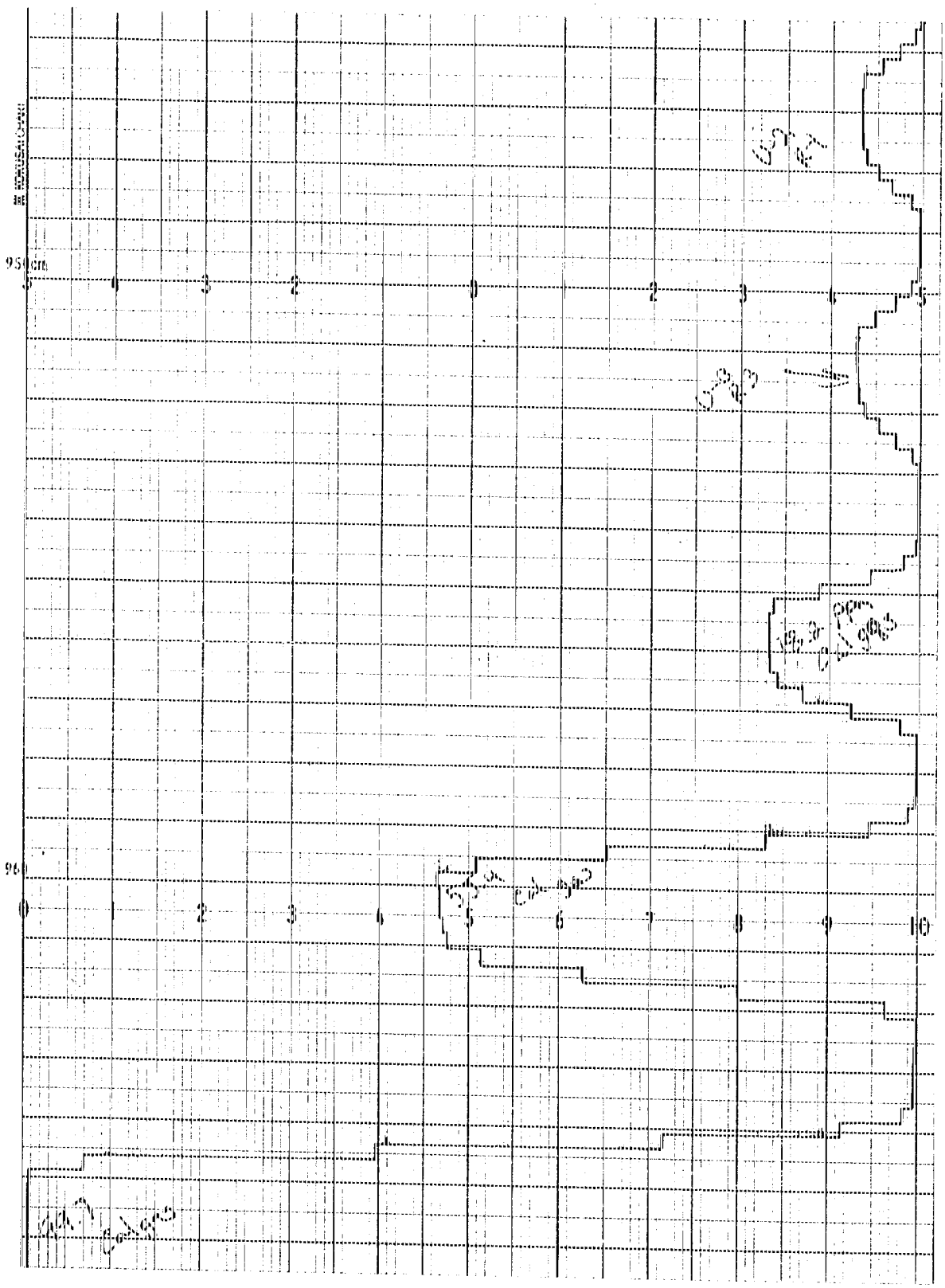
COGENTRIX
Unit 2 and Unit 3 Inlets
Carbon Monoxide Concentration (ppm)
January 16, 1991



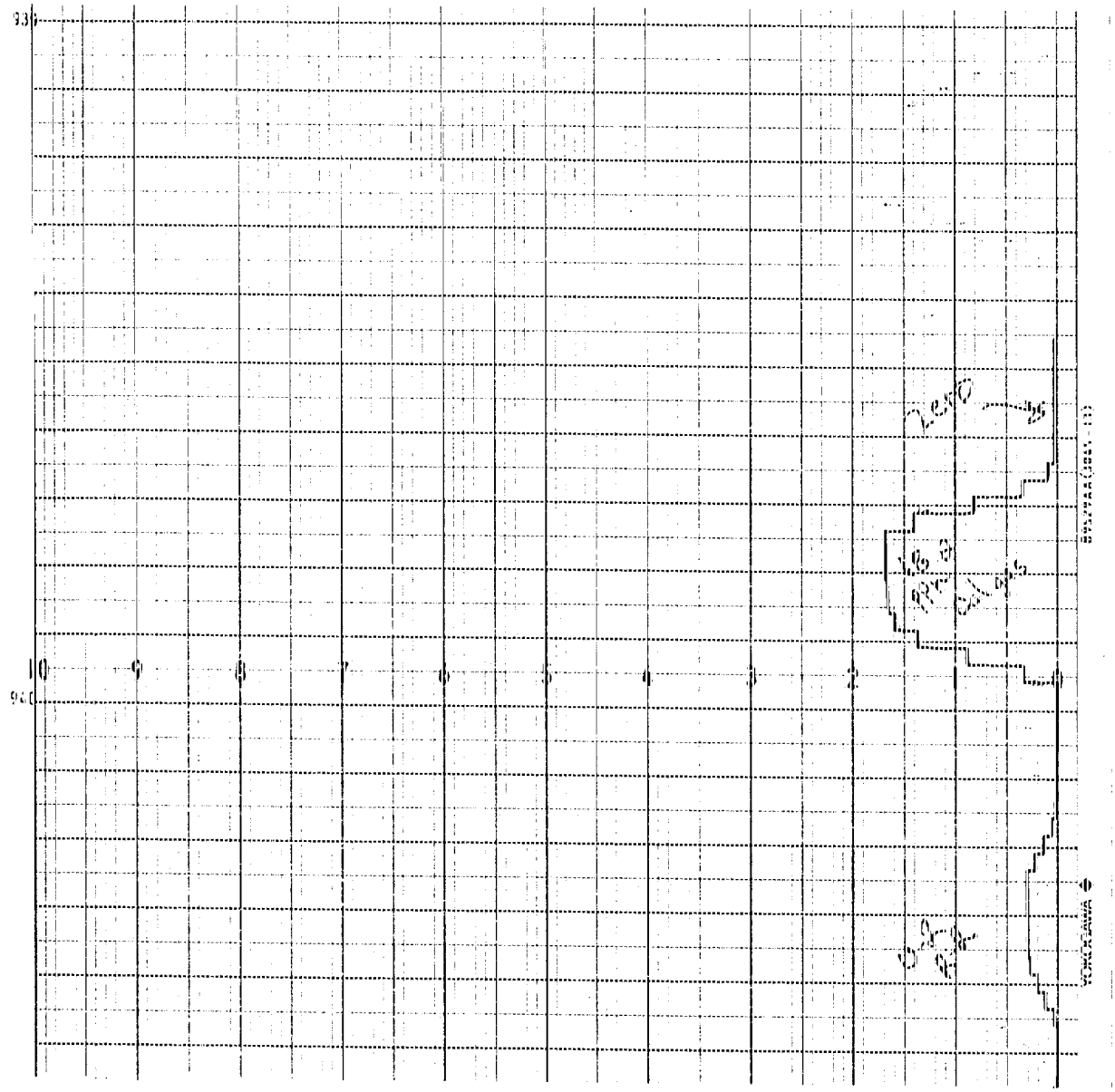
COGENTRIX
Unit 2 and Unit 3 Inlets
Carbon Monoxide Concentration (ppm)
January 16, 1991



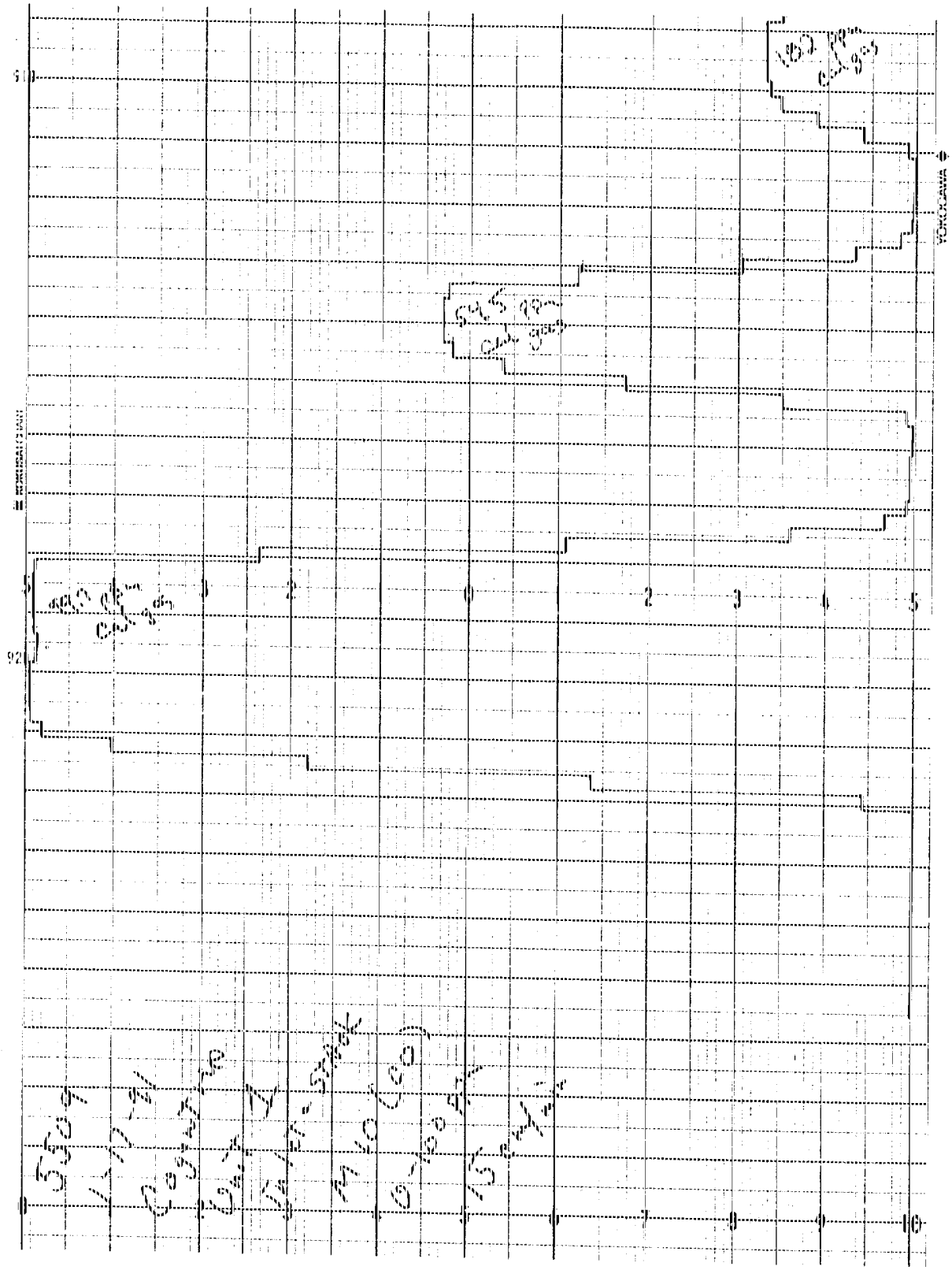
COGENTRIX
Unit 2 and Unit 3 Inlets
Carbon Monoxide Concentration (ppm)
January 16, 1991



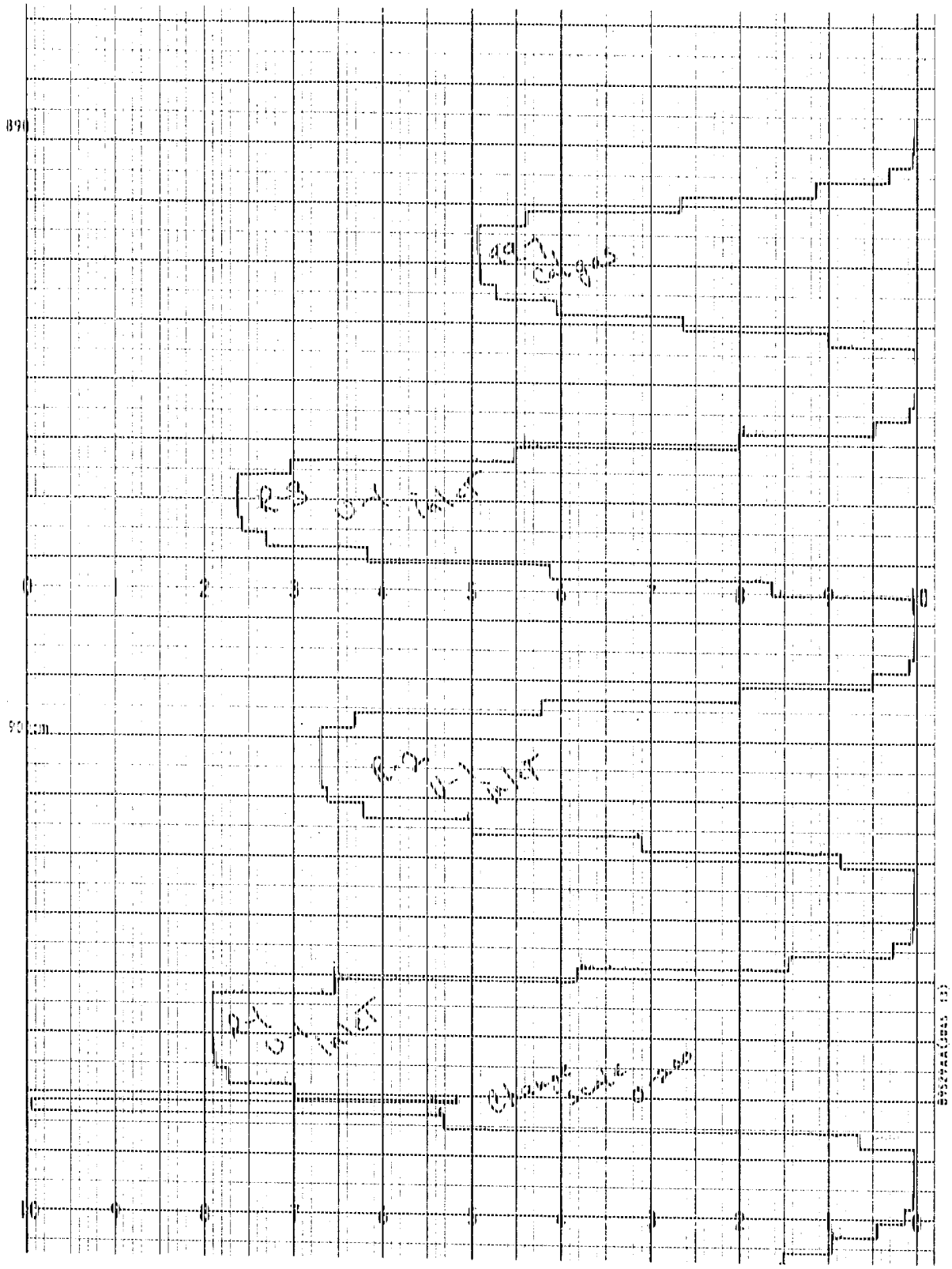
COGENTRIX
Unit 2 and Unit 3 Inlets
Carbon Monoxide Concentration (ppm)
January 16, 1991



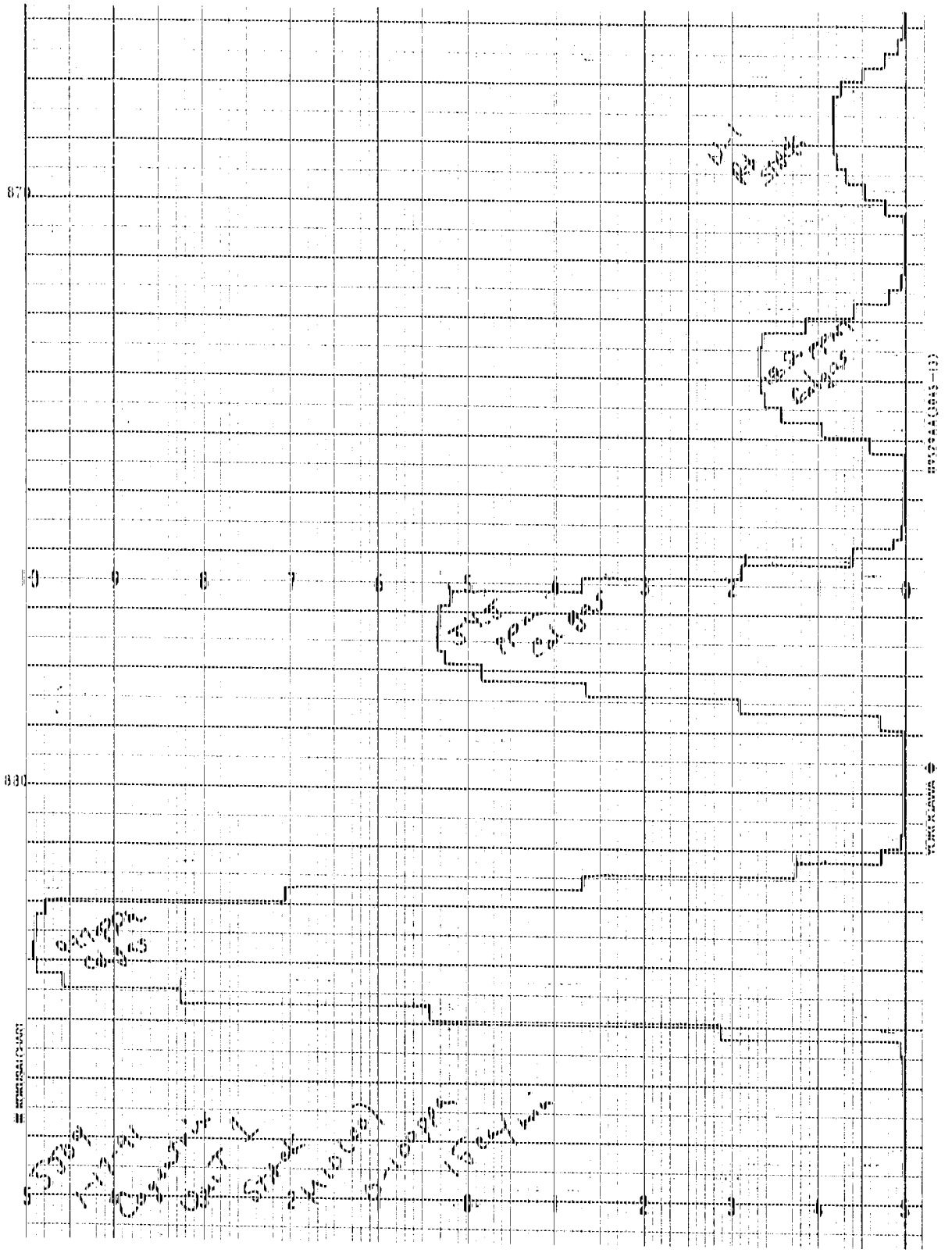
COGENTRIX
Unit 1 Inlet and Common Stack
Carbon Monoxide Concentration (ppm)
January 17, 1991



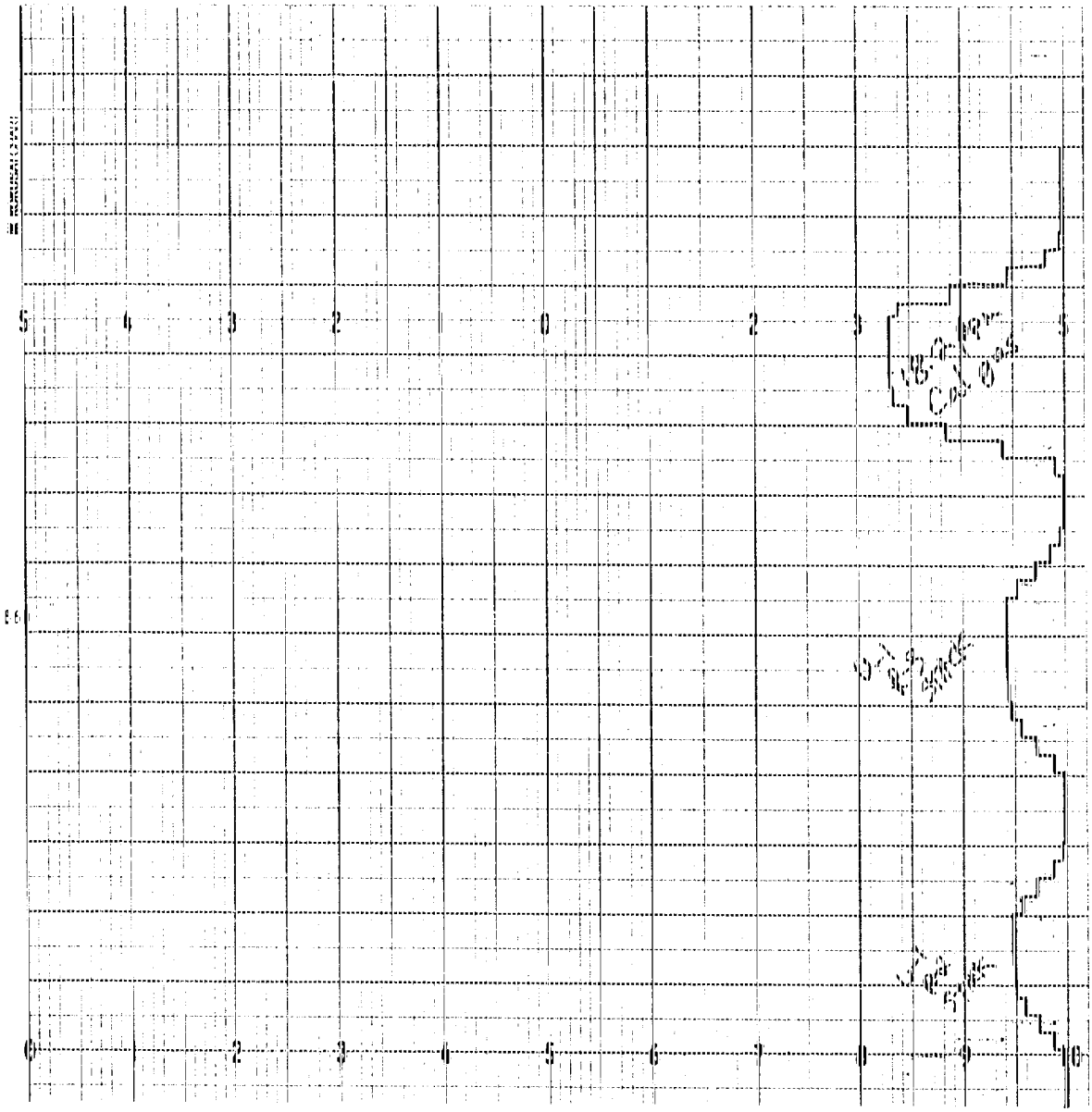
COGENTRIX
Unit 1 Inlet and Common Stack
Carbon Monoxide Concentration (ppm)
January 17, 1991



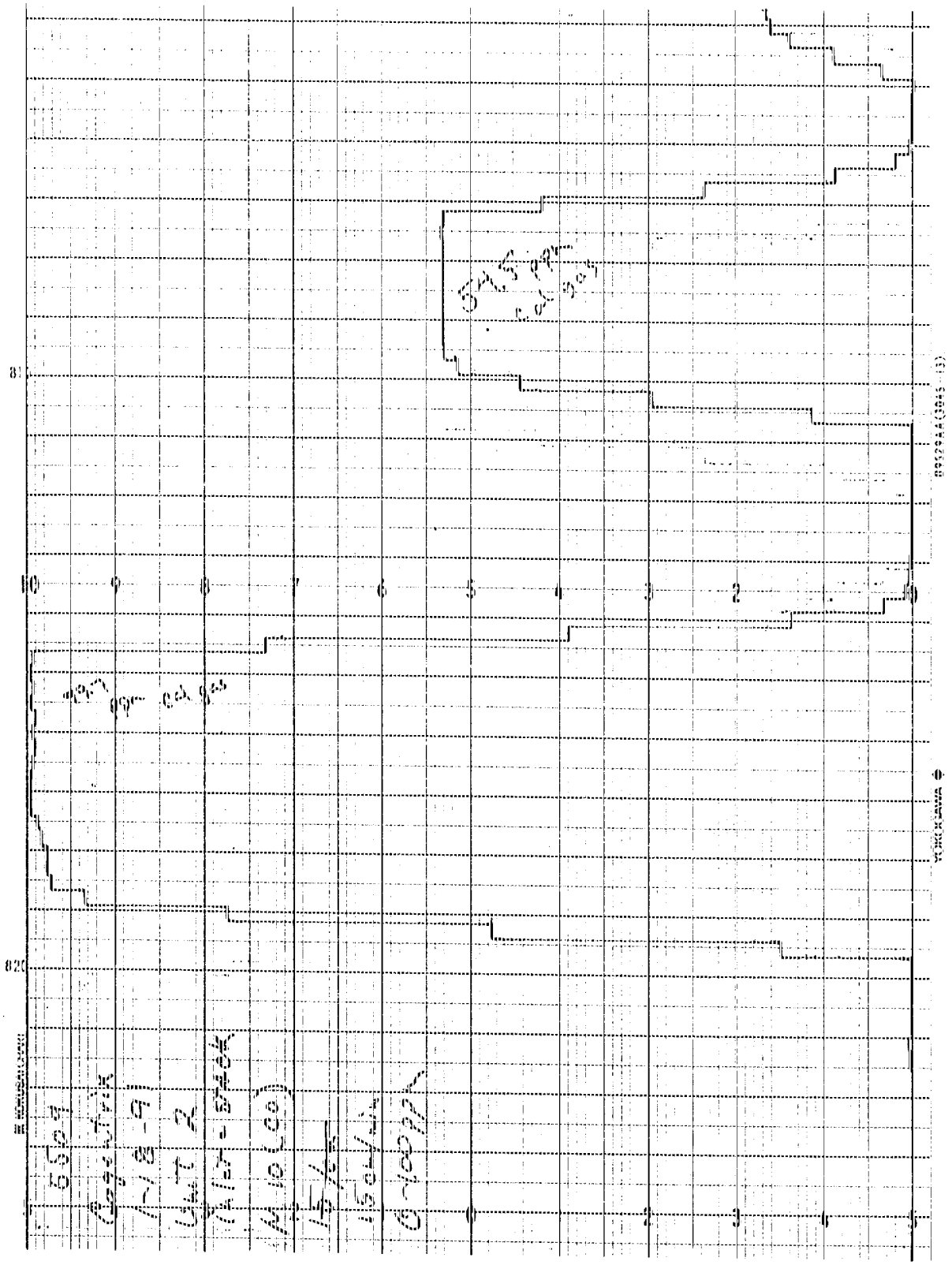
COGENTRIX
Unit 1 Common Stack
Carbon Monoxide Concentration (ppm)
January 17, 1991



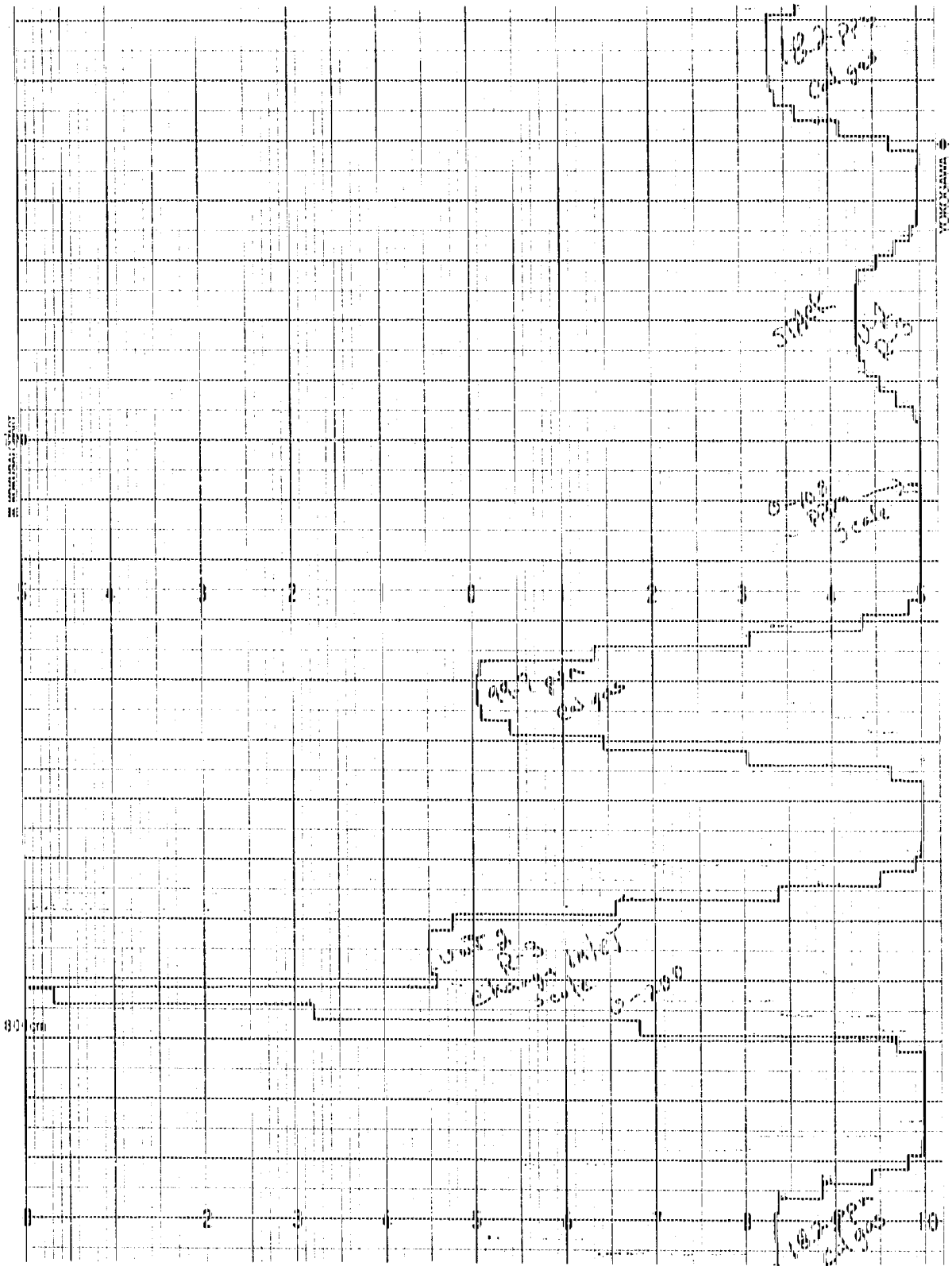
COGENTRIX
Unit 1 Common Stack
Carbon Monoxide Concentration (ppm)
January 17, 1991



COGENTRIX
Unit 2 Inlet and Common Stack
Carbon Monoxide Concentration (ppm)
January 18, 1991



COGENTRIX
Unit 2 Inlet and Common Stack
Carbon Monoxide Concentration (ppm)
January 18, 1991



VOLATILE ORGANIC CARBON BY METHOD 25

Facility: [illegible] Sample Location: [illegible]

Location: [illegible] Operator: [illegible]

Date: [illegible] Run number: 1

Tank number: 4739 Trap number: X17 Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	28.1	27.5	28.33	73
POST TEST	.5	1.0		75

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	OK	OK
POST TEST	OK	OK

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	27.5	70	
5	24.5	70	
10	22.0	70	
15	19.0	70	
20	16.0	70	
25	14.0	70	
30	11.0	70	
35	8.0	70	
40	6.5	170	
45	4.0	170	
50	2.5	50	
55	1.0	30	Didn't want to take tank down to nothing, so I stopped
60			

SAMPLING TRAIN ID# 11 %CO2

SIDE: Left/Right LEFT %H2O

voc25 - 6/11/87

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen Sample Location: Unit 1 Outlet
Location: Ringgold PA Operator: MAX Phillips
Date: 1/17/91 Run number: 1
Tank number: YT 70 Trap number: X40 Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	28.2	27.2	28.33	73
POST TEST	.2	1.0		75

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	ok	ok
POST TEST	ok	ok

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	27.2	70	
5	24.5	70	
10	22.0	70	
15	19.5	70	
20	17.5	70	
25	15.5	70	
30	13.0	70	
35	11.0	70	
40	8.5	70	
45	6.5	70	
50	4.5	70	
55	2.5	70	
60	1.0	70	

SAMPLING TRAIN ID# 11 %CO2
SIDE: Left/Right Right %H2O
voc25 - 6/11/87

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen
Sample Location: Outlet unit 1
Location: Ringgold PA
Operator: Max Phillips
Date: 1/17/91
Run number: 2
Tank number: 4T74
Trap number: C-18
Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/(F)
PRETEST	28.0	27.5	28.33	73
POST TEST	.3	1.0		75

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	ok	ok
POST TEST	ok	ok

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	27.5	70	
5	24.5	70	
10	22.5	70	
15	19.5	70	
20	17.0	70	
25	14.0	70	
30	12.0	70	
35	10.0	70	
40	8.0	70	
45	6.0	70	
50	4.0	70	
55	2.0	70	
60	1.0	70	

SAMPLING TRAIN ID# 11
%CO2
SIDE: Left/Right Left 1
%H2O

voc25 - 6/11/87

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen Sample Location: unit 1 outlet
Location: Ringgold PA Operator: Max Phillips
Date: 1-17-91 Run number: 3
Tank number: 4T21 Trap number: X18 Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/(F)
PRETEST	28.1	27.0	28.33	73
POST TEST	1.6	1.5		75

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	ok	ok
POST TEST	ok	ok

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	26.5	70	
5	24.5	70	
10	22.5	70	
15	20.5	70	
20	18.5	70	
25	16.0	70	
30	14.0	70	
35	12.0	70	
40	10.0	70	
45	7.5	70	
50	5.5	70	
55	3.5	70	
60	1.5	70	

SAMPLING TRAIN ID# 11 %CO2
SIDE: Left/Right Right #2 %H2O
voc25 - 6/11/87

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen Sample Location: Unit 1 inlet
Location: Ringgold PA Operator: NJA
Date: 1-17-91 Run number: 1
Tank number: 4T82 Trap number: YWQ Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.9	27.0	28.33	73
POST TEST	5.6	4.0		75

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	0.0	00
POST TEST	0.0	00

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	27.0	70	
5	25.0	70	
10	23.5	70	
15	22.0	70	
20	20.5	70	
25	19.0	70	
30	16.5	70	
35	14.5	70	
40	12.5	70	
45	10.5	70	
50	9.0	70	
55	7.0	70	
60	4.0	70	

SAMPLING TRAIN ID# 9 %CO2
SIDE: Left/Right Right %H2O
voc25 - 6/11/87

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen Sample Location: Unit 2 inlet
Location: Ringgold 2A Operator: NJK
Date: 1-17-91 Run number: 2
Tank number: 4736 Trap number: B233 Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.9	28.0	28.33	73
POST TEST	~~28.0~~ 5.1 NJK	4.0		75

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	0.0	00
POST TEST	0.0	00

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	28.0	70	
5	26.0	70	
10	24.0	70	
15	22.0	70	
20	20.0	70	
25	18.0	70	
30	16.5	70	
35	15.0	70	
40	12.5	70	
45	10.5	70	
50	8.5	70	
55	6.0	70	
60	4.0	70	

SAMPLING TRAIN ID# 9 %CO2
SIDE: Left/Right Left %H2O
voc25 - 6/11/87

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen
Sample Location: Unit 1 inlet
Location: Ringgold PA
Operator: NJL
Date: 1-17-91
Run number: 2
Tank number: 4T5
Trap number: X39
Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.9	27.5	28.33	73
POST TEST	3.8	2.0		75

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	0.0	60
POST TEST	6.0	00

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	27.5	70	
5	25.5	70	
10	23.5	70	
15	21.5	70	
20	19.5	70	
25	17.5	70	
30	15.5	70	
35	13.5	70	
40	11.5	70	
45	9.5	70	
50	8.0	70	
55	5.0	70	
60	2.0	70	

SAMPLING TRAIN ID# 9
%CO2
SIDE: Left/Right Right
%H2O

voc25 - 6/11/87

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen Sample Location: Unit 2 Inlet
Location: Ringgold PA Operator: MJW
Date: 1-17-91 Run number: 3
Tank number: UT194 Trap number: X14 Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.1	27.0	28.33	73
POST TEST	4.0	3.0		73

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	0.0	00
POST TEST	0.0	00

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	27.0	70	
5	25.5	70	
10	23.5	70	
15	21.5	70	
20	19.0	70	
25	18.0	70	
30	16.0	70	
35	14.0	70	
40	11.5	70	
45	9.5	70	
50	7.0	70	
55	5.0	70	
60	3.0	70	

SAMPLING TRAIN ID# 9 %CO2

SIDE: Left/Right Right %H2O

voc25 - 6/11/87

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen Sample Location: unit 2 outlet
Location: Ringgold PA Operator: M. Phillips
Date: 1-16-90 Run number: 1
Tank number: 4T170 Trap number: B 109 Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.7	27.5	28.16	68
POST TEST	.7	1.0		71

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	OK	OK
POST TEST	OK	OK

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	26.5	70	
5	25.0	70	
10	23.0	70	
15	21.0	70	
20	19.0	70	
25	16.5	70	
30	14.0	70	
35	11.5	70	
40	9.5	70	
45	7.5	70	
50	4.5	70	
55	2.5	70	
60	1.0	70	

SAMPLING TRAIN ID# 11 %CO2
SIDE: Left/Right LEFT %H2O
Voc25 - 6/11/87

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen
Sample Location: unit 2 outlet
Location: Ringgold PA
Operator: Max Phillips
Date: 1-16-90
Run number: 1
Tank number: YT125
Trap number: C-11
Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.6	27.2	28.16	68
POST TEST	2.8	2.5		71

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	OK	OK
POST TEST	OK	OK

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	26.5	70	
5	25.0	70	
10	23.0	70	
15	21.0	70	
20	19.0	70	
25	17.0	70	
30	15.0	70	
35	13.0	70	
40	11.0	70	
45	9.0	70	
50	6.5	70	
55	4.5	70	
60	2.5	70	

SAMPLING TRAIN ID# 11
SIDE: Left/Right Rear
Voc25 - 6/11/87

%CO2
%H2O

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen
Location: Ringgold PA
Date: 1-16-90
Tank number: 4T216
Trap number: 3-18
Sample Location: unit 2 outlet
Operator: Max Phillips
Run number: 2
Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.7	27.5	28.16	68
POST TEST	4.4	4.0		71

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	ok	ok
POST TEST	OK	OK

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	26.0	70	
5	24.5	70	
10	23.0	70	
15	21.0	70	
20	19.0	70	
25	17.0	70	
30	15.0	70	
35	13.5	70	
40	12.0	70	
45	10.5	70	
50	8.5	70	
55	6.0	70	
60	4.0	70	

SAMPLING TRAIN ID# 11
SIDE: Left/Right Right
voc25 - 6/11/87

%CO2
%H2O

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Bridgeport Cogen Sample Location: unit 3 outlet

Location: Bridgeport PA Operator: Mike Phillips

Date: 1-14-10 Run number: 3

Tank number: 4792 Trap number: K-37 Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.7	27.5	29.44	6
POST TEST	27	27		7

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	0	0
POST TEST	0	0

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	24.5	70	
5	25.0	70	
10	23.0	70	
15	21.0	70	
20	19.0	70	
25	18.0	70	
30	17.5	70	
35	13.0	70	
40	10.0	70	
45	8.0	70	
50	6.0	70	
55	4.0	70	
60	2.0	70	

SAMPLING TRAIN ID# 11 %CO2

SIDE: Left/Right Left %H2O

VOC25 - 6/11/97

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen
Sample Location: unit 2 Inlet
Location: Ringgold PA
Operator: NJM
Date: 1-16-90
Run number: 1
Tank number: YT204
Trap number: X19
Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.4	27.0	28.16	68
POST TEST	4.8	4.0		21

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	0.0	00
POST TEST		

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	27.0	70	
5	25.0	70	
10	23.5	70	
15	21.0	70	
20	19.0	70	
25	17.0	70	
30	15.0	70	
35	13.5	70	
40	12.0	70	
45	9.5	70	
50	7.5	70	
55	6.0	70	
60	45	70	

SAMPLING TRAIN ID# 9
SIDE: Left/Right Left
VOC25 - 6/11/87

%CO2
%H2O

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen Sample Location: Unit 2 Tank
Location: Ringgold PA Operator: [illegible]
Date: 1-16-91 Run number: 1 1/2 Tanks
Tank number: #79 Trap number: [illegible]:30 Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	23.8	21.5	28.52	68
POST TEST	4.1	4.0		71

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	0.0	60
POST TEST		

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	21.0	70	
5	19.0	70	
10	17.5	70	
15	15.0	70	
20	13.0	70	
25	11.0	70	
30	9.0	70	
35	7.5	70	
40	6.0	70	
45	4.0	70	switch tank due to
50			low pr. vacuum
55			
60			

SAMPLING TRAIN ID# 9 %CO2
SIDE: Left/Right Right %H2O
VOC25 - 6/11/87

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen
Sample Location: Inlet Unit 2
Location: Ringgold PA
Operator: KJA
Date: 1-16-91
Run number: 1 2/2 Tanks
Tank number: 4T7
Trap number: X30
Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	28.1	12.0	28.52	68
POST TEST	7.0	6.0		71

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	0.0	
POST TEST		

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
45	12.0	70	
50	10.0	70	
55	8.5	70	
60	6.0	70	

SAMPLING TRAIN ID# 9
SIDE: Left/Right Right
VOC25 - 6/11/87

%CO2
%H2O

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen Sample Location: Unit 2 Inlet
Location: Ringgold PA Operator: [illegible]
Date: 1-16-91 Run number: 1 1/2 Tanks
Tank number: #19 Trap number: [illegible] 30 Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	23.8	21.5	28.52	68
POST TEST	4.1	4.0		71

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	0.0	60
POST TEST		

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	21.0	70	
5	19.0	70	
10	17.5	70	
15	15.0	70	
20	13.0	70	
25	11.0	70	
30	9.0	70	
35	7.5	70	
40	6.0	70	
45	4.0	70	Switch tank due to
50			low pr. vacuum
55			
60			

SAMPLING TRAIN ID# 9 %CO2
SIDE: Left/Right Right %H2O
VOC25 - 6/11/87

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ruggeld Cogen Sample Location: Inlet Unit 2
Location: Ruggeld PA Operator: KJA
Date: 1-16-91 Run number: 1 2/2 Tanks
Tank number: 4T7 Trap number: X30 Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	28.1	12.0	28.52	68
POST TEST	7.0	6.0		71

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	0.0	
POST TEST		

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
45	12.0	70	
50	10.0	70	
55	8.5	70	
60	6.0	70	

SAMPLING TRAIN ID# 9 %CO2
SIDE: Left/Right Right %H2O
VOC25 - 6/11/87

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen
Sample Location: Unit 2 in 1st
Location: Ringgold PA
Operator: NJA
Date: 1-16-91
Run number: 2
Tank number: 47130
Trap number: X25
Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.5	26.5	28.66	68
POST TEST	3.9	3.0		71

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	0.0	0.0
POST TEST	0.0	0.0

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	26.5	70	
5	24.5	70	
10	22.0	70	
15	20.5	70	
20	18.5	70	
25	16.5	70	
30	14.5	70	
35	13.0	70	
40	11.0	70	
45	9.0	70	unit trip
50	7.0	70	
55	5.0	70	
60	3.0	70	

SAMPLING TRAIN ID# 9
SIDE: Left/Right Left
VOC25 - 6/11/87

%CO2
%H2O

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen Sample Location: Unit 2 inlet
Location: Ringgold PA Operator: [illegible]
Date: 1-16-2011 Run number: 3
Tank number: 4T152 Trap number: X27 Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.8	26.0	28.16	68
POST TEST	5.7	4.5		71

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	0.0	06
POST TEST		

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	26	70	
5	24.5	70	
10	23.0	70	
15	21.5	70	
20	20.0	70	
25	18.0	70	
30	16.0	70	
35	14.0	70	
40	12.0	70	
45	10.0	70	
50	8.5	70	
55	7.0	70	
60	4.5	70	

SAMPLING TRAIN ID# 9 %CO2

SIDE: Left/Right Left %H2O

VOC25 - 6/11/87

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen
Sample Location: Unit 3 outlet
Location: Ringgold PA
Operator: M. Phillips
Date: 1-15-90
Run number: 1 Right
Tank number: 4T 20
Trap number: C30
Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.9	28.0	28.52	70°
POST TEST	2.5	2.0		75°

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	.000	.000
POST TEST	.000	.000

TIME CLOCK/SAMPLE		GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	3:30	27.0	70	
5	3:35	25.0	70	
10	3:40	23.0	70	
15	3:45	21.0	70	
20	3:50	19.0	70	
25	3:55	17.0	70	
30	4:00	15.0	70	
35	4:05	12.0	70	
40	4:10	10.0	70	
45	4:15	8.0	70	
50	4:20	6.0	70	
55	4:25	4.0	70	
60	4:30	2.0	70	

SAMPLING TRAIN ID# 11
SIDE: Left/Right Right
VOC25 - 6/11/87

%CO2
%H2O

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Bloggold Cogen
Sample Location: Unit 3 Outlet
Location: Bloggold PA
Operator: M. Phillips
Date: 1-15-90
Run number: 1 Leer
Tank number: 4T 76
Trap number: B229
Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.3	27.0	28.52	70°
POST TEST	0.7	0.5		75°

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	.000	.000
POST TEST	.000	.000

TIME CLOCK/SAMPLE		GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	3:30	26.0	70	
5	3:35	24.0	70	
10	3:40	21.5	70	
15	3:45	19.0	70	
20	3:50	16.5	70	
25	3:55	14.5	70	
30	4:00	12.0	70	
35	4:05	9.0	70	
40	4:10	6.5	70	
45	4:15	5.0	70	
50	4:20	3.0	70	
55	4:25	1.5	55	
60	4:30	0.5	20	

SAMPLING TRAIN ID# 11
SIDE: Left/Right LEFT
VOC25 - 6/11/87

%CO2
%H2O

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen
Sample Location: Unit 3 Outlet
Location: Ringgold PA
Operator: M. Phillips
Date: 1-15-90
Run number: 2 Rogen
Tank number: 4T99
Trap number: X11
Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.4	28.0	28.52	70°
POST TEST	3.3	3.0	"	75°

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	.000	.000
POST TEST	.000	.000

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0 5:00pm	27.5	70	
5 5:05	25.0	70	
10 5:10	23.5	70	
15 5:15	21.5	70	
20 5:20	19.5	70	
25 5:25	17.5	70	
30 5:30	15.5	70	
35 5:35	13.0	70	
40 5:40	11.5	70	
45 5:45	10.0	70	
50 5:50	8.0	70	
55 5:55	5.5	70	
60 6:00	3.0	70	

SAMPLING TRAIN ID# 11
SIDE: Left/Right Right
VOC25 - 6/11/87

%CO2
%H2O

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen
Sample Location: unit 3 outlet
Location: Ringgold PA
Operator: M. Phillips
Date: 1-16-90
Run number: 3
Tank number: 97167
Trap number: C-5
Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.7	27.5	28.16	70
POST TEST	2.7	2.5		75

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	ok	ok
POST TEST		

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	26.5	70	
5	25.0	70	
10	23.5	70	
15	21.5	70	
20	19.5	70	
25	17.5	70	
30	15.5	70	
35	13.0	70	
40	11.0	70	
45	9.0	70	
50	7.0	70	
55	5.0	70	
60	2.5	70	

SAMPLING TRAIN ID# 11
SIDE: Left/Right Right
VOC25 - 6/11/87

%CO2
%H2O

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Binggold Cogen
Location: Binggold PA
Date: 1-15-90
Tank number: 9T98
Trap number: B-53
Sample Location: Unit 3 Inlet
Operator: NJM
Run number: 1
Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	29.9	28.0	29.52	70°
POST TEST	7.2	7.0	" "	75°

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	.000	.000
POST TEST	.000	.000

TIME CLOCK/SAMPLE		GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
3:30pm	0	29.0	70	
3:35pm	5	27.5	70	
3:40pm	10	25.5	70	
3:45pm	15	23.0	70	
3:50pm	20	21.0	70	
3:55pm	25	19.0	70	
4:00pm	30	17.0	70	
4:05pm	35	15.5	70	
4:10pm	40	13.5	70	
4:15pm	45	12.0	70	
4:20pm	50	10.0	70	
4:25pm	55	8.0	70	
4:30pm	60	7.0	70	

SAMPLING TRAIN ID# 70
SIDE: Left/Right Left
VOC25 - 6/11/87

%CO2
%H2O

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen Sample Location: Unit 3 Inlet
Location: Ringgold PA Operator: NJM
Date: 1-15-90 Run number: 2
Tank number: 4T41 Trap number: C33 Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	28.1	27.0	28.52	70°
POST TEST	7.0	7.0		75°

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	.000	.000
POST TEST	.000	.000

TIME CLOCK/SAMPLE		GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
5:00 pm	0	27.0	70	
5:05 pm	5	25.5	70	
5:10 pm	10	24.0	70	
5:15 pm	15	22.0	70	
5:20 pm	20	20.0	70	
5:25 pm	25	18.0	70	
5:30 pm	30	16.0	70	
5:35 pm	35	15.0	70	
5:40 pm	40	13.0	70	
5:45 pm	45	12.5	70	
5:50 pm	50	10.5	70	
5:55 pm	55	8.5	70	
6:00 pm	60	7.0	70	

SAMPLING TRAIN ID# 10 %CO2
SIDE: Left/Right LEFT %H2O
VOC25 - 6/11/87

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen Sample Location: Unit 3 Inlet
Location: Ringgold PA Operator: N.J.M
Date: 1-16-90 Run number: 3
Tank number: 47118 Trap number: 3 Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer in mm Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.4	26.0	28.16	70
POST TEST	3.0	2.5	28.16	75

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	0.0	0
POST TEST	0.0	0

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	26.0	70	
5	21.5	70	
10	17.5	70	
15	16.0	70	
20	14.0	70	
25	12.0	70	
30	~~13.0~~ 10.0	70	
35	8.0	70	
40	6.0	70	
45	5.0	70	
50	4.0	70	
55	3.0	70	
60	2.0	70	

SAMPLING TRAIN ID# 9 #CO2
SIDE: Left/Right Right #H2O
VOC25 - 6/11/87

VOLATILE ORGANIC CARBON BY METHOD 25

Facility: Ringgold Cogen
Sample Location: Unit 3 Inlet
Location: Ringgold PA
Operator: N. Im
Date: 1-16-96
Run number: 7
Tank number: 47108
Trap number: YWK
Sample ID:

PRESSURE READINGS	TANK VACUUM Manometer in ~~mm~~ Hg	Gauge cm Hg/in Hg	BAROMETRIC PRESSURE, mm Hg/in Hg	AMBIENT TEMPERATURE, C/F
PRETEST	27.3	27.0	28.16	70
POST TEST	1.0	2.5	28.16	75

LEAK RATE	TANK cm Hg/10 min	TRAP Flowmeter reading (black ball)
PRETEST	0.0	0
POST TEST	0.0	0

TIME CLOCK/SAMPLE	GAUGE VACUUM cm Hg	FLOWMETER SETTING (silver ball)	COMMENTS
0	27.0	70	
5	23.0	70	
10	20.0	70	
15	17.5	70	
20	16.0	70	
25	14.5	70	
30	13.5	70	
35	11.0	70	
40	8.5	70	
45	7.0	70	
50	6.0	70	
55	5.0	70	
60	4.0	70	

SAMPLING TRAIN ID# #9
SIDE: Left/Right Left
VOC25 - 6/11/87

%CO2
%H2O

FIELD DATA PRINTOUTS

RAW DATA SET # 1

)	Plant	COGENTRIX	17)	Heater Box Setting	
)	Location	UNIT 1 STACK	18)	Probe Length', Ft.	
5)	Operator	P.P.	19)	Nozzle Diameter', In.	0.492
)	Date	1/17/91	20)	Probe Heater Setting	
)	Run No.	1	21)	% CO2	15.9
2)	Sample Box No.		22)	% CO2	2.2
7)	Meter Box No.	BF0-2	23)	Ml. H2O	40
)	Meter -H@	1.797	24)	GM. Silica Gel	26.5
9)	K Factor		25)	Total	66.5
10)	Pitot Factor	0.84	26)	Start Time	9:12 AM
1)	Leak Rate Before	0.010015	27)	Finish Time	10:27 AM
12)	Leak Rate After	0.014019	28)	Yd.	0.9916
13)	Static Pres., in -H20	-0.2	29)	Stack Area	46.164
14)	Ambient Temperature		30)	Sampling Time (MIN/PT)	3
15)	Barometric Pressure	28.33	31)	Initial Volume	193.60
16)	Assumed Moisture, %		32)	FILTER & BEAKER #'S	100377F
				19B 7BB 31E 2047F	

Pt. #	Ø	Vac.	Ts	DPs	DH	Vm	Tm in	Tmout	Tc	Tb	%I	
						193.60						P.P.
1 - 1	3	6	321	0.05	2.2	196.28	72	68	34	251	102.1	
1 - 2	3	6	326	0.05	2.0	198.76	82	70	34	248	101.2	
1 - 3	3	5	325	0.04	1.6	201.03	90	76	34	249	102.7	
1 - 4	3	5	326	0.04	1.6	203.26	92	76	34	254	100.7	
1 - 5	3	7	326	0.05	2.0	205.75	96	72	36	261	100.1	
1 - 6	3	7	331	0.05	2.0	208.24	100	74	36	264	99.9	
1 - 7	3	9	332	0.06	2.4	210.96	102	74	36	267	99.6	
1 - 8	3	16	335	0.09	3.6	214.18	104	76	36	264	96.4	
1 - 9	3	16	334	0.09	3.6	217.41	106	76	36	263	96.5	
1 - 10	3	16	332	0.09	3.6	220.64	110	78	36	265	97.3	
1 - 11	3	16	331	0.09	3.6	223.97	110	80	38	262	97.1	
1 - 12	3	15	331	0.08	3.2	227.09	112	80	38	263	97.7	
2 - 1	3	11	323	0.07	2.8	230.03	104	80	36	260	98.5	
2 - 2	3	11	333	0.07	2.8	232.95	110	80	38	264	97.9	
2 - 3	3	13	329	0.08	3.2	236.02	112	82	38	267	96.0	
2 - 4	3	12	328	0.07	2.8	238.98	114	82	38	261	98.4	
2 - 5	3	10	329	0.06	2.4	241.76	116	82	38	258	99.6	
2 - 6	3	10	329	0.06	2.4	244.50	116	82	38	261	98.2	
3 - 7	3	8	327	0.05	2.0	246.79	114	82	38	266	89.8	*
3 - 8	3	8	331	0.05	2.0	249.58	112	82	38	265	129.9	
3 - 9	3	10	329	0.06	2.4	252.33	112	82	38	267	98.9	
3 - 10	3	10	328	0.06	2.4	255.09	112	84	38	259	99.0	
3 - 11	3	10	326	0.06	2.4	257.85	114	84	38	255	98.7	
3 - 12	3	10	325	0.06	2.4	260.62	114	84	38	255	99.6	
72			329	.251	2.55	66.82		92				
Total			Avg.	Root	Avg.	Volume		Avg.				

RAW DATA SET # 2

1)	Plant	COGENTRIX
2)	Location	UNIT 1 STACK
3)	Operator	P.P.
4)	Date	1/17/91
5)	Run No.	2
6)	Sample Box No.	
7)	Meter Box No.	BFG-2
8)	Meter H@	1.797
9)	K Factor	
10)	Pitot Factor	0.84
11)	Leak Rate Before	0.010@15
12)	Leak Rate After	0.008@15
13)	Static Pres., in H2O	-0.2
14)	Ambient Temperature	
15)	Barometric Pressure	28.33
16)	Assumed Moisture, %	
17)	Heater Box Setting	
18)	Probe Length', Ft.	
19)	Nozzle Diameter', In.	0.492
20)	Probe Heater Setting	
21)	% O2	15.9
22)	% CO2	2.3
23)	Ml. H2O	67
24)	GM. Silica Gel	13
25)	Total	80
26)	Start Time	11:50 AM
27)	Finish Time	1:07 PM
28)	Yd.	0.9918
29)	Stack Area	46.164
30)	Sampling Time (MIN/PT)	3
31)	Initial Volume	261.70
32)	FILTER & BEAKER #'S	100399F
	B-4B 19BB 16B 808F	2048F

Pt. #	0	Vac.	Ts	DPs	DH	Vm	Tn in	Tmout	Tc	Tb	%I
											P.P.
0 - 0						261.70					
1 - 1	3	6	318	0.04	1.6	263.98	72	72	34	257	105.1
1 - 2	3	6	321	0.04	1.6	266.31	84	76	34	255	106.1
1 - 3	3	6	322	0.04	1.6	268.63	93	76	34	260	105.1
1 - 4	3	6	329	0.04	1.6	270.89	94	76	34	261	102.4
1 - 5	3	8	328	0.05	2.0	273.37	96	76	34	260	100.4
1 - 6	3	6	327	0.04	1.6	275.65	98	76	36	259	102.8
1 - 7	3	9	328	0.05	2.0	278.14	100	76	36	255	100.4
1 - 8	3	13	332	0.07	2.8	281.03	102	76	36	253	98.6
1 - 9	3	14	329	0.08	3.2	284.14	106	76	36	252	99.0
1 - 10	3	14	327	0.08	3.2	287.28	108	78	36	259	99.5
1 - 11	3	13	327	0.07	2.8	290.26	108	78	36	261	100.8
1 - 12	3	12	327	0.06	2.4	293.07	112	80	36	255	102.2
2 - 1	3	16	321	0.08	3.2	296.18	96	78	34	250	99.2
2 - 2	3	14	327	0.07	2.8	299.14	102	78	34	252	100.7
2 - 3	3	16	327	0.08	3.2	302.09	108	78	34	250	93.5
2 - 4	3	16	326	0.08	3.2	305.04	112	80	34	256	92.9
2 - 5	3	12	327	0.06	2.4	308.22	114	80	34	259	115.3 *
2 - 6	3	10	326	0.05	2.0	310.82	112	80	36	262	103.2
2 - 7	3	10	323	0.05	2.0	313.35	110	80	36	264	100.4
2 - 8	3	12	325	0.06	2.4	316.11	110	80	34	258	100.3
2 - 9	3	10	327	0.05	2.0	318.67	110	80	34	256	101.9
2 - 10	3	12	326	0.06	2.4	321.41	108	80	34	259	99.8
2 - 11	3	10	327	0.05	2.0	323.97	108	80	34	258	102.1
2 - 12	3	10	326	0.05	2.0	326.53	108	80	34	260	102.0

72	326	.24	2.33	64.83	90
Total	Avg.	Root	Avg.	Volume	Avg.

RAW DATA SET # 5

1)	Plant	CCCENTRIX	17)	Heater Box Setting	
2)	Location	UNIT 1 STACK	18)	Probe Length, Ft.	
3)	Operator	E.P.	19)	Nozzle Diameter, In.	0.490
4)	Date	1/17/91	20)	Probe Heater Setting	
5)	Run No.	5	21)	% O2	19.8
6)	Sample Box No.		22)	% CO2	0.2
7)	Meter Box No.	SPS-2	23)	Ml. H2O	89
8)	Meter H@	1.797	24)	Gm. Silica Gel	20
9)	K Factor		25)	Total	79
10)	Pitot Factor	0.84	26)	Start Time	2:08 PM
11)	Leak Rate Before	0.000015	27)	Finish Time	3:23 PM
12)	Leak Rate After	0.000015	28)	Yd.	0.9912
13)	Static Pres., In H2O	-0.2	29)	Stack Area	46.164
14)	Ambient Temperature		30)	Sampling Time (MIN/PT)	5
15)	Barometric Pressure	28.35	31)	Initial Volume	326.92
16)	Assumed Moisture, %		32)	FILTER & BEAKER #'S	1004036
				B-3B 213 356 609F	2049F

Pt. #	@	Vac.	Ts	DPs	DH	Vm	Tm in	Tmout	Tc	Tb	%I
0 - 0						326.92					P.P.
1 - 1	3	7	321	0.05	2.6	329.42	82	74	34	258	103.2
1 - 2	3	7	322	0.05	2.6	331.93	84	74	34	259	102.3
1 - 3	3	7	322	0.05	2.0	334.43	92	74	34	261	101.1
1 - 4	3	9	322	0.06	2.4	337.18	94	74	34	253	101.3
1 - 5	3	6	324	0.04	1.6	339.49	96	76	34	263	103.9
1 - 6	3	6	324	0.04	1.6	341.77	96	76	34	265	102.6
1 - 7	3	9	328	0.06	2.4	344.48	96	76	36	264	100.2
1 - 8	3	13	327	0.08	3.2	347.60	98	76	36	266	99.7
1 - 9	3	13	322	0.08	3.2	350.72	100	76	36	268	99.2
1 - 10	3	16	322	0.07	3.6	354.37	102	76	36	267	99.1
1 - 11	3	14	322	0.08	3.2	357.22	106	76	36	263	102.8
1 - 12	3	14	321	0.06	3.2	360.39	108	76	36	257	99.8
2 - 1	3	12	322	0.07	2.8	363.35	104	76	36	257	99.9
2 - 2	3	14	321	0.08	3.2	366.53	108	78	36	260	99.1
2 - 3	3	14	323	0.09	3.2	369.86	110	80	36	264	96.1
2 - 4	3	13	326	0.07	2.8	372.85	110	80	36	256	102.5
2 - 5	3	11	327	0.06	2.4	375.36	110	82	36	259	101.9
2 - 6	3	11	325	0.06	2.4	378.16	110	82	36	259	101.4
2 - 7	3	9	324	0.05	2.0	380.93	106	82	34	255	106.2
2 - 8	3	10	323	0.06	2.4	383.57	106	80	34	266	99.5
2 - 9	3	10	323	0.06	2.4	386.29	104	80	34	268	99.0
2 - 10	3	12	324	0.07	2.8	389.23	105	82	34	263	99.0
2 - 11	3	9	324	0.05	2.0	391.69	112	80	34	261	105.0
2 - 12	3	9	325	0.05	2.0	394.41	110	80	34	256	100.3
72			324	.25	2.53	67.51		90			
Total			Avg.	Root	Avg.	Volume		Avg.			

RAW DATA SET # 4

1) Plant	COGENTRIX	17) Heater Box Setting	
2) Location	UNIT 2 STACK	18) Probe Length',' Ft.	
3) Operator	P.P.	19) Nozzle Diameter','In.	0.490
4) Date	1/16/91	20) Probe Heater Setting	
5) Run No.	1	21) % O2	14.3
6) Sample Box No.		22) % CO2	3.0
7) Meter Box No.	BFG-2	23) Ml. H2O	43
8) Meter H@	1.797	24) GM. Silica Gel	30.5
9) K Factor		25) Total	73.5
10) Pitot Factor	0.84	26) Start Time	12:05 PM
11) Leak Rate Before	0.008@15	27) Finish Time	1:30 PM
12) Leak Rate After	0.016@22	28) Yd.	0.9918
13) Static Pres., in H2O	-0.2	29) Stack Area	46.164
14) Ambient Temperature		30) Sampling Time (MIN/PT)	3
15) Barometric Pressure	28.16	31) Initial Volume	59.80
16) Assumed Moisture, %		32) FILTER & BEAKER #'S	100375F
		B-7B 4B B-11B 811F	2050F

Pt. #	0	Vac.	Ts	DPs	DH	Vn	Tm in	Tmout	Tc	Tb	%I	
- 0						59.80						P.P.
- 1	3	10	334	0.07	2.5	62.57	80	80	40	262	95.8	
- 2	3	10	336	0.07	2.5	65.34	90	80	40	265	95.0	
- 3	3	12	343	0.07	2.5	67.10	98	80	40	258	60.2	*
- 4	3	12	341	0.07	2.5	70.10	104	80	40	262	101.9	
- 5	3	12	343	0.07	2.5	73.67	106	80	40	274	121.2	*
- 6	3	12	341	0.05	2.5	76.43	108	82	42	273	110.4	*
- 7	3	12	340	0.05	2.5	79.01	110	82	42	270	102.9	
- 8	3	10	342	0.06	2.5	81.91	112	84	42	262	105.4	
- 9	3	10	341	0.06	2.2	84.45	110	84	42	260	92.3	
- 10	3	10	341	0.06	2.2	87.06	108	84	42	262	95.2	
- 11	3	10	339	0.06	2.2	89.47	106	84	42	260	87.8	*
- 12	3	8	339	0.06	2.2	91.91	105	82	42	256	89.1	*
LEAK CK						92.045						
2 - 1	3	8	334	0.05	2.0	94.53	84	80	42	259	101.2	
2 - 2	3	7	339	0.04	1.6	96.80	100	80	42	255	102.0	
2 - 3	3	7	342	0.04	1.6	99.01	102	82	42	252	99.2	
2 - 4	3	7	338	0.04	1.6	101.21	102	82	42	255	98.5	
2 - 5	3	7	339	0.04	1.6	103.42	104	82	42	254	98.8	
2 - 6	3	9	342	0.05	2.0	105.87	106	84	42	250	97.9	
2 - 7	3	12	345	0.07	2.8	108.73	110	84	42	248	96.6	
2 - 8	3	12	345	0.07	2.8	111.64	112	84	42	250	98.1	
2 - 9	3	14	345	0.08	3.2	114.67	116	84	42	256	95.3	
2 - 10	3	18	342	0.10	4.0	118.00	118	86	42	261	93.4	
2 - 11	3	19	341	0.10	3.8	121.33	118	88	42	267	93.1	
2 - 12	3	14	346	0.08	3.2	124.415	118	88	42	269	96.6	

72	341	.249	2.46	64.48	94
Total	Avg.	Root	Avg.	Volume	Avg.

RAW DATA SET # 5

)	Plant	COGENTRIX	17)	Heater Box Setting
)	Location	UNIT 2 STACK	18)	Probe Length,' Ft.
)	Operator	P.F.	19)	Nozzle Diameter,'In. 0.490
)	Date	1/16/91	20)	Probe Heater Setting
)	Run No.	2	21)	% O2 16.8
)	Sample Box No.		22)	% CO2 2.4
)	Meter Box No.	BFG-2	23)	Ml. H2O 38
)	Meter H@	1.797	24)	GM. Silica Gel 34
)	K Factor		25)	Total 72
)	Pitot Factor	0.84	26)	Start Time 2:43 PM
)	Leak Rate Before	0.004015	27)	Finish Time 5:17 PM
)	Leak Rate After	0.004015	28)	Ys. 0.9918
)	Static Press., in H2O	-0.2	29)	Stack Area 46.164
)	Ambient Temperature		30)	Sampling Time (MIN/PT) 3
)	Barometric Pressure	29.16	31)	Initial Volume 128.20
)	Assumed Moisture, %		32)	FILTER & BEAKER #'S 1003767
				3B 34@ 74B 816F 2056F

Pt. #	@	Vac.	Ts	DPs	DH	Vm	Tm in	Tmout	Tc	Tb	%I
-	0					125.00					P.F.
-	1	3	6	322	0.07	2.8	127.92	80	80	42	263	100.1
-	2	3	6	329	0.07	2.8	130.84	90	82	42	265	99.4
-	3	3	7	333	0.08	3.2	133.92	94	82	40	268	98.1
-	4	3	7	332	0.08	3.2	137.01	100	82	40	267	97.9
-	5	3	5	335	0.06	2.4	139.72	102	82	42	267	98.8
-	6	3	4	335	0.05	2.0	142.20	100	80	42	262	99.3
-	7	3	4	336	0.06	2.2	144.66	100	80	42	263	98.6
-	8	3	4	339	0.05	2.0	147.15	100	80	42	260	100.0
-	9	3	4	339	0.05	2.0	149.58	100	82	44	261	97.4
-	10	3	4	331	0.05	2.0	152.06	72	72	40	264	102.4
-	11	3	5	334	0.06	2.4	154.72	84	76	38	264	99.1
-	12	3	5	332	0.06	2.4	157.44	92	76	40	260	100.5
-	1	3	4	326	0.05	2.0	159.92	90	78	40	258	99.9
-	2	3	4	330	0.05	2.0	162.40	100	80	40	258	99.0
-	3	3	4	329	0.05	2.0	164.88	102	80	40	263	99.0
-	4	3	4	330	0.05	2.0	167.35	102	80	40	263	98.4
-	5	3	4	330	0.05	2.0	169.83	106	80	40	264	98.5
-	6	3	4	331	0.05	2.0	172.32	108	80	38	262	98.8
-	7	3	6	334	0.06	3.2	175.38	112	82	36	261	95.9
-	8	3	7	331	0.09	3.6	178.66	116	84	38	268	96.9
-	9	3	7	329	0.09	3.6	181.98	120	86	38	262	96.3
-	10	3	8	330	0.10	4.0	185.44	122	88	38	261	95.6
-	11	3	7	315	0.09	3.6	188.72	82	82	36	257	98.5
-	12	3	6	318	0.08	3.2	191.81	92	82	36	266	97.6
	72			330	.253	2.6	66.81		90			
	Total			Avg.	Root	Avg.	Volume		Avg.			

RAW DATA SHEET **

)	Plant	ZOGENTRIX	17)	Heater Box Setting	
)	Location	UNIT 2 STACK	18)	Probe Length', Ft.	
)	Operator	B.S.	19)	Nozzle Diameter','In.	0.450
)	Date	1/16/91	20)	Probe Heater Setting	
)	Run No.	3	21)	% O2	16.6
)	Sample Box No.		22)	% CO2	2.4
)	Meter Box No.	EFB-2	23)	Ml. H2O	33
)	Meter H@	1.797	24)	GM. Silica Gel	20
)	K Factor		25)	Total	73
)	Pitot Factor	0.84	26)	Start Time	11:18 AM
)	Leak Rate Before	0.010015	27)	Finish Time	12:39 PM
)	Leak Rate After	0.012826	28)	Yd.	0.9918
)	Static Pres., in H2O	-0.2	29)	Stack Area	46.164
)	Ambient Temperature		30)	Sampling Time (MIN/PT)	3
)	Barometric Pressure	28.34	31)	Initial Volume	398.10
)	Assumed Moisture, %		32)	FILTER & BEAKER #'S	1203BBF
				47E 1B 7B 812F 2051F	

PT.	#	Ø	Vac.	Ts	DPs	DH	Vm	Tm in	Tmout	Tc	Tb	%I
0	-	0					398.10					B.S.
1	-	1	3	17	324	0.07	2.6	402.96	48	48	45	250	105.0
1	-	2	3	17	325	0.07	2.6	403.83	62	48	45	250	104.2
1	-	3	3	21	327	0.08	3.2	406.83	70	50	45	259	100.9
1	-	4	3	15	330	0.05	2.0	409.41	72	50	45	260	109.5
1	-	5	3	15	333	0.05	2.0	411.87	74	50	45	261	104.4
1	-	6	3	16	332	0.06	2.4	414.46	72	50	46	261	102.5
1	-	7	3	15	330	0.05	2.0	416.92	72	52	45	265	104.2
1	-	8	3	15	329	0.05	2.0	419.39	76	50	43	264	104.9
1	-	9	3	15	329	0.05	2.0	421.63	70	52	43	260	103.7
1	-	10	3	17	329	0.06	2.4	424.45	70	52	43	257	101.5
1	-	11	3	15	327	0.05	2.0	426.91	72	50	43	256	104.2
1	-	12	3	15	325	0.05	2.0	429.36	72	52	43	259	103.4
2	-	1	3	12	326	0.04	1.6	431.61	58	48	45	255	106.8
2	-	2	3	12	324	0.04	1.6	433.81	60	52	45	255	105.1
2	-	3	3	14	326	0.05	2.0	436.22	66	52	45	252	102.4
2	-	4	3	14	326	0.05	2.0	438.63	68	50	45	250	102.4
2	-	5	3	14	327	0.05	2.0	441.02	70	50	45	250	101.4
2	-	6	3	13	332	0.04	1.6	443.27	70	52	45	251	106.8
2	-	7	3	13	331	0.04	1.6	445.52	68	52	45	254	106.9
2	-	8	3	23	331	0.08	3.2	448.58	66	52	45	255	103.2
2	-	9	3	24	335	0.08	3.2	451.82	70	52	45	256	109.4
2	-	10	3	21	335	0.07	2.8	454.71	64	50	45	257	105.0
2	-	11	3	21	337	0.07	2.8	457.54	70	52	45	256	102.1
2	-	12	3	21	337	0.07	2.8	460.33	70	52	45	256	100.7
		72			329	.237	2.28	62.23		59			
		Total			Avg.	Root	Avg.	Volume		Avg.			

RAW DATA SHEET # 7

1)	Plant	COGENTRIX	17)	Heater Box Setting	
2)	Location	UNIT 3 STACK	18)	Probe Length, Ft.	
3)	Operator	P.P.	19)	Nozzle Diameter, In.	0.490
4)	Date	1/15/91	20)	Probe Heater Setting	
5)	Run No.	1	21)	% O2	15.2
6)	Sample Box No.		22)	% CO2	3.0
7)	Meter Box No.	BFG-2	23)	Ml. H2O	43
8)	Meter H@	1.797	24)	GM. Silica Gel	21
9)	K Factor		25)	Total	64
10)	Pitot Factor	0.84	26)	Start Time	1:00 PM
11)	Leak Rate Before	0.014015	27)	Finish Time	2:20 PM
12)	Leak Rate After	0.014017	28)	Yd.	0.9916
13)	Static Pres., in H2O	-0.2	29)	Stack Area	45.164
14)	Ambient Temperature		30)	Sampling Time (MIN/PT)	5
15)	Barometric Pressure	28.52	31)	Initial Volume	850.30
16)	Assumed Moisture, %		32)	FILTER & BEAKER #'S	10032IF
				E1B 26B A-10B B13F	2052F

Pt.	#	@	Vac.	Ts	DPs	DH	Vm	Tm in	Tmout	Tc	To	%I
)	-	C					850.30					F.P.
1	-	1	3	3	328	0.02	0.72	859.83	80	74	40	261	99.4
1	-	2	3	2	329	0.02	0.72	861.34	86	76	40	264	97.4
1	-	3	3	2	332	0.02	0.72	862.85	88	78	40	262	97.2
1	-	4	3	4	332	0.03	1.10	864.69	90	78	40	262	96.7
1	-	5	3	4	333	0.03	1.10	866.58	92	80	40	261	99.0
1	-	6	3	3	334	0.02	0.72	868.19	94	80	42	254	103.1
1	-	7	3	3	336	0.02	0.72	869.64	94	80	42	254	92.9
1	-	8	3	15	336	0.09	3.20	872.38	98	82	42	257	82.6 *
1	-	9	3	15	337	0.09	3.20	875.47	104	82	42	256	93.0
1	-	10	3	14	337	0.08	2.90	878.58	108	84	44	257	96.1
1	-	11	3	16	337	0.09	3.20	881.64	110	86	44	258	93.6
1	-	12	3	13	335	0.07	2.50	884.51	114	88	44	256	96.2
2	-	1	3	10	327	0.06	2.20	887.20	98	88	44	253	98.3
2	-	2	3	10	331	0.06	2.20	889.99	110	90	44	256	120.9
2	-	3	3	10	333	0.06	2.20	892.52	114	90	44	260	91.3
2	-	4	3	10	334	0.06	2.20	895.17	114	92	44	261	95.5
2	-	5	3	12	333	0.07	2.50	897.94	114	92	44	258	92.4
2	-	6	3	12	338	0.07	2.50	900.75	116	92	46	254	93.9
2	-	7	3	8	336	0.05	1.80	903.20	116	94	46	251	96.4
2	-	8	3	8	337	0.05	1.80	905.61	116	94	46	260	94.9
2	-	9	3	8	336	0.05	1.80	908.02	116	94	46	260	94.6
2	-	10	3	7	337	0.04	1.40	910.24	112	92	46	257	98.2
2	-	11	3	7	337	0.04	1.40	912.42	110	90	46	257	95.8
2	-	12	3	5	336	0.03	1.10	914.53	108	90	46	257	109.2
		72		334	.219	1.83	56.23			95		
		Total		Avg.	Root	Avg.	Volume			Avg.		

RAW DATA SET # 8

)	Plant	COGENTRIX	17)	Heater Box Setting	
)	Location	UNIT 3 STACK	18)	Probe Length',' Ft.	
3)	Operator	P.P.	19)	Nozzle Diameter','In.	0.490
)	Date	1/15/91	20)	Probe Heater Setting	
)	Run No.	2	21)	% O2	16.0
6)	Sample Box No.		22)	% CO2	3.0
)	Meter Box No.	BFG-2	23)	Ml. H2O	52
)	Meter H@	1.797	24)	GM. Silica Gel	19
9)	K Factor		25)	Total	71
10)	Pitot Factor	0.84	26)	Start Time	4:25 PM
1)	Leak Rate Before	0.004@15	27)	Finish Time	5:45 PM
2)	Leak Rate After	0.006@20	28)	Yd.	0.9918
13)	Static Pres., in H2O	-0.2	29)	Stack Area	46.164
4)	Ambient Temperature		30)	Sampling Time (MIN/PT)	3
5)	Barometric Pressure	28.52	31)	Initial Volume	914.70
16)	Assumed Moisture, %		32)	FILTER & BEAKER #'S	100322F
				8B 13B A-3B 814F 2053F	

Pt. #	0	Vac.	Ts	DPs	DH	Vm	Tm in	Tmout	Tc	Tb	%I	
- 0						914.72						P.P.
- 1	3	6	325	0.04	1.4	916.88	84	82	40	245	98.8	
1 - 2	3	6	330	0.04	1.4	919.01	86	82	40	245	96.7	
- 3	3	6	330	0.04	1.4	921.14	90	82	40	247	96.3	
- 4	3	6	334	0.04	1.4	923.27	94	82	40	258	96.2	
1 - 5	3	6	330	0.04	1.4	925.35	96	82	40	261	93.5	
- 6	3	8	332	0.05	1.8	927.73	96	80	40	261	96.1	
- 7	3	18	334	0.10	3.6	930.88	104	80	40	257	89.8	*
- 8	3	16	335	0.09	3.2	934.20	108	82	40	256	99.2	
1 - 9	3	16	334	0.09	3.2	937.14	110	82	42	259	87.6	*
- 10	3	16	333	0.09	3.2	940.17	112	82	42	260	90.1	
- 11	3	16	333	0.09	3.2	943.32	114	84	42	264	93.3	
1 - 12	3	13	332	0.07	2.5	946.15	114	84	42	256	94.9	
- 1	3	16	327	0.09	3.2	949.32	104	82	42	253	94.6	
- 2	3	16	327	0.09	3.2	952.43	106	84	42	251	92.5	
2 - 3	3	16	330	0.09	3.2	955.61	113	84	42	256	94.4	
2 - 4	3	16	330	0.09	3.2	958.65	114	84	42	256	89.9	*
- 5	3	15	333	0.08	2.9	961.73	116	84	40	261	96.6	
- 6	3	16	331	0.09	3.2	964.78	116	84	40	259	90.1	
2 - 7	3	15	333	0.08	2.9	967.83	116	86	40	249	95.4	
- 8	3	15	334	0.08	2.9	970.83	116	86	40	253	93.9	
- 9	3	13	335	0.07	2.5	973.77	116	86	38	255	98.4	
2 - 10	3	13	333	0.07	2.5	976.52	114	86	38	257	92.1	
- 11	3	10	333	0.06	2.2	979.13	110	86	38	257	94.6	
- 12	3	6	331	0.04	1.4	981.33	110	86	38	255	97.4	

72	332	.264	2.54	66.63	95
Total	Avg.	Root	Avg.	Volume	Avg.

RAW DATA SET ## 5

1)	Plant	CCGENTRIX	17)	Heater Box Setting	
2)	Location	UNIT 3 STACK	18)	Probe Length', Ft.	
3)	Operator	P.P.	19)	Nozzle Diameter',' In.	0.490
4)	Date	1/16/91	20)	Probe Heater Setting	
5)	Run No.	5	21)	% O2	16.0
6)	Sample Box No.		22)	% CO2	2.6
7)	Meter Box No.	BF6-2	23)	Ml. H2O	46
8)	Meter H@	1.797	24)	GM. Silica Gel	37
9)	K Factor		25)	Total	83
10)	Pitot Factor	0.84	26)	Start Time	9:05 AM
11)	Leak Rate Before	0.012@15	27)	Finish Time	10:30 AM
12)	Leak Rate After	0.006@20	28)	Ya.	0.991
13)	Static Pres., in H2O	-0.2	29)	Stack Area	46.164
14)	Ambient Temperature		30)	Sampling Time (MIN/PT)	3
15)	Barometric Pressure	26.16	31)	Initial Volume	986.20
16)	Assumed Moisture, %		32)	FILTER & BEAKER #'S	10033SF
				488 278 C-38 815F	2054F

Pt.	#	@	Vac.	Ts	DPs	DH	Vm	Te in	Tmeas	Ts	Tb	%I	
	-	0					986.20						P.F.
1	-	1	3	7	324	0.05	1.8	988.36	78	60	36	253	98.2	
1	-	2	3	7	325	0.05	1.8	990.38	78	60	36	254	84.1	*
	-	3	3	6	324	0.04	1.4	992.49	78	64	36	254	97.7	
	-	4	3	6	326	0.04	1.4	994.60	84	66	38	256	97.1	
1	-	5	3	7	325	0.05	1.8	996.94	90	68	38	256	98.6	
1	-	6	3	8	326	0.05	1.9	999.29	92	70	38	259	95.7	
	-	7	3	17	327	0.29	3.2	1002.53	94	70	38	260	96.6	
9	-	8	3	17	327	0.39	3.2	1005.40	106	74	38	256	88.9	*
1	-	9	3	17	327	0.09	3.2	1008.42	110	76	40	258	90.1	
	-	10	3	16	326	0.08	2.9	1011.47	110	76	40	260	96.3	
1	-	11	3	15	329	0.07	2.5	1014.30	112	80	40	262	95.2	
1	-	12	3	15	326	0.07	2.5	1017.12	114	80	40	262	94.6	
	-	1	3	16	324	0.08	2.9	1020.34	110	82	40	255	101.1	
	-	2	3	16	324	0.09	3.2	1023.44	112	82	40	257	91.6	
2	-	3	3	16	325	0.09	3.2	1026.57	116	86	42	257	91.9	
2	-	4	3	16	325	0.09	3.2	1029.64	116	86	42	255	90.2	
	-	5	3	17	328	0.08	2.9	1032.72	120	88	40	256	95.6	
2	-	6	3	17	328	0.08	2.9	1035.76	122	90	40	253	94.2	
2	-	7	3	15	329	0.07	2.5	1038.57	124	92	42	254	92.5	
	-	8	3	15	328	0.07	2.5	1041.35	120	92	42	254	91.6	
	-	9	3	15	330	0.07	2.5	1044.16	120	93	42	253	93.1	
2	-	10	3	13	327	0.06	2.2	1046.65	116	93	42	251	96.1	
2	-	11	3	13	330	0.06	2.2	1049.52	118	92	42	250	95.4	
1	-	12	3	9	327	0.04	1.4	1051.75	120	94	42	252	96.9	
		72		327	.26	2.46	65.75		93				
		Total		Avg.	Root	Avg.	Volume		Avg.				

LABORATORY DATA

CLIENT: COGENTRIX
CAE Project# 5509

04 February, 1991

ANALYSIS: PA-DER SO2

CLIENT SAMPLE ID		LAB ID	GRAMS SULFATE
5509-11A	UNIT#1 RUN #1	25506-11	0.0056
5509-12A	UNIT#1 RUN #2	25506-14	0.0071
5509-13A	UNIT#1 RUN# 3	25506-17	0.0055
5509-14A	UNIT#2 RUN #1	25506-20	0.0078
5509-15A	UNIT#2 RUN #2	25506-23	0.0022
5509-16A	UNIT#2 RUN #3	25506-26	0.0069
5509-17A	UNIT#3 RUN #1	25506-29	0.0055
5509-18A	UNIT#3 RUN #2	25506-32	0.0017
5509-19A	UNIT#3 RUN #3	25506-35	0.0045

			GRAMS SO2
5509-11B	UNIT#1 RUN #1	25506-12	0.0454
5509-11C	UNIT#1 RUN #1	25506-13	0
5509-12B	UNIT#1 RUN #2	25506-15	0.0222
5509-12C	UNIT#1 RUN #2	25506-16	0
5509-13B	UNIT#1 RUN# 3	25506-18	0.0258
5509-13C	UNIT#1 RUN# 3	25506-19	0.0008
5509-14B	UNIT#2 RUN #1	25506-21	0.0175
5509-14C	UNIT#2 RUN #1	25506-22	0.0023
5509-15B	UNIT#2 RUN #2	25506-24	0.0230
5509-15C	UNIT#2 RUN #2	25506-25	0.0023
5509-16B	UNIT#2 RUN #3	25506-27	0.0082
5509-16C	UNIT#2 RUN #3	25506-28	0.0029
5509-17B	UNIT#3 RUN #1	25506-30	0.0137
5509-17C	UNIT#3 RUN #1	25506-31	0.0025
5509-18B	UNIT#3 RUN #2	25506-33	0.0268
5509-18C	UNIT#3 RUN #2	25506-34	0.0013
5509-19B	UNIT#3 RUN #3	25506-36	0.0032
5509-19C	UNIT#3 RUN #3	25506-37	0.0029

Analyst [signature]

Date 2/6/91

COGENTRIX #5509
February 11,1991

ANALYSIS: Nitrate be 7D (Ion CHROMATOGRAPHY)

Lab ID	Sample ID	Total vol.(ml)	Total NO3(mg)
25506-01	Unit 1, run 1	920	2.72
25506-02	Unit 1, run 2	880	BDL
25506-03	Unit 1, run 3	860	BDL
25506-04	Unit 2, run 1	1020	BDL
25506-05	Unit 2, run 2	1030	BDL
25506-06	Unit 2, run 3	780	BDL
25506-07	Unit 3, run 1	910	BDL
25506-08	Unit 3, run 2	905	BDL
25506-09	Unit 3, run 3	1000	BDL
25506-10	Sample Blank	180	BDL

BDL = Below Detection Limit
Detection Limit = 2 mg/L

Nadine Lajeune [signature]
Date 2/15/91

Frank S. Kilvinger [signature]
Date 2/15/91

Method 25 - 3 runs Results

Table of Carbon Concentration for Method 25 Inlet Samples collected by CAE Department 68 at Congentrix of PA in Ringgold, PA on 1/15, 16 and 17/91 and reported 2/12/91.

		Carbon Concentration			
Source	Sample - Run ID #	Total (Mc) (mg/dscm)	Total (C) (ppmv)	Condensible (Ccm) (ppmv)	Noncondensible (Ctm) (ppmv)
Inlets	1-IN-1	2043.2	4092.1	201.4	3890.8
	1-IN-2A	728.6	1459.3	334.7	1124.6
	1-IN-2B	502.7	1006.8	350.1	656.7
	1-IN-3	428.2	857.5	246.9	610.7
	2-IN-1A	1991.0	3987.5	162.3	3825.2
	2-IN-1B	4353.5	8719.2	756.0	7963.2
	2-IN-2	6173.7	12364.7	5744.6	6620.1
	2-IN-3	2174.7	4355.5	2158.6	2196.9
	3-IN-1	5818.5	11653.3	3995.3	7658.1
	3-IN-2	2604.1	5215.6	2415.7	2799.9
	3-IN-3A	16675.5	33397.8	536.9	32860.9
	3-IN-3B	12345.3	24725.2	5921.4	18803.9

Compiled By: [signature] On: 2/12/91

Approved By: [signature] On: 2/12

Method 25 - 3 runs Results

Table of Carbon Concentration for Method 25 Outlet Samples collected by CAE Department 68 at Congentrix of PA in Ringgold, PA on 1/15, 16 and 17/91 and reported 2/12/91.

		Carbon Concentration			
Source	Sample - Run ID #	Total (Mc) (mg/dscm)	Total (C) (ppmv)	Condensible (Ccm) (ppmv)	Noncondensible (Ctm) (ppmv)
Outlets	1-OUT-1A	393.0	787.2	422.0	365.2
	1-OUT-1B	654.9	1311.6	167.1	1144.5
	1-OUT-2	189.7	380.0	131.6	248.4
	1-OUT-3	714.6	1431.2	173.4	1257.8
	2-OUT-1A	673.1	1348.2	419.3	928.9
	2-OUT-1B	737.0	1476.1	466.8	1009.2
	2-OUT-2	603.6	1208.8	177.5	1031.3
	2-OUT-3	632.3	1266.4	230.9	1035.5
	3-OUT-1A	2737.0	5481.6	531.2	4950.4
	3-OUT-1B	5647.0	11309.9	414.0	10895.9
	3-OUT-2	1437.8	2879.5	355.2	2524.4
	3-OUT-3	1024.0	2051.0	112.6	1938.4

Compiled By: [signature] On: 2/12/91

Approved By: [signature] On: 2/12

Method 25 - 3 runs Results

Job No. 8076 — Plant: Congentrix -Ringgold, PA
Client D68 -Congentrix of PA — Sample Loc. Unit # 1
Disk/File 8076DCP — (In/Out) Inlet
Page No. 3 — Date 2/12/91

Preliminary Data					
Run No.		1-IN-1	1-IN-2A	1-IN-2B	1-IN-3
Tank No.		4T82	4T5	4T36	4T194
Trap No.		YWQ	X39	B233	X14
Tank Volume V(cc)		4028	4008	4009	4034
Field Data					
PTI	(mm Hg)	-709	-709	-709	-688
TTI	(F)	73	73	73	73
PbI	(mm Hg)	720	720	720	720
PT	(mm Hg)	-142	-97	-130	-102
TT	(F)	75	75	75	75
Pb	(mm Hg)	720	720	720	720
Noncondensible Organics					
PT(Lab)	(mm Hg)	-147	-107	-147	-132
TT(Lab)	(F)	76	77	77	77
Pb(Lab)	(mm Hg)	750	750	750	751
PTF	(mm Hg)	914	925	914	914
TTF	(F)	76	78	77	77
PbF	(mm Hg)	750	750	750	751
Ba	(ppmv C)	0.1	0.2	0.1	0.2
Ctm 1	(ppmv C)	1317.5	411.9	226.2	213.4
Ctm 2	(ppmv C)	1331.1	415.6	230.9	217.3
Ctm 3	(ppmv C)	1331.6	413.4	231.3	217.8
Avg. Ctm	(ppmv C)	1326.7	413.6	229.5	216.2
RSD Ctm	(%)	0.6	0.4	1.2	1.1
Condensible Organics					
ICV Tank No.		4T114	4T150	4T71	4T8
ICV Tank, Vv (cc)		4041	4034	4021	4008
PFI	(mm Hg)	-742	-742	-742	-742
TFI	(F)	76	78	77	77
PbFI	(mm Hg)	750	750	750	751
PF	(mm Hg)	914	914	914	914
TF	(F)	76	78	77	77
PbFf	(mm Hg)	750	750	750	751
Bt	(ppmv C)	7.8	0.7	16.5	7.8
Ccm 1	(ppmv C)	76.1	123.7	138.4	95.6
Ccm 2	(ppmv C)	76.2	123.6	138.4	95.3
Ccm 3	(ppmv C)	76.4	123.8	138.4	96.1
Avg. Ccm	(ppmv C)	76.2	123.7	138.4	95.7
RSD Ccm	(%)	0.2	0.1	ERR	0.4
Total Gaseous Nonmethane Organics (TGNMO)					
Vs	(cc)	2964	3187	3016	3074
Dil. Factor (Nom)		2.933	2.720	2.863	2.828
Dil. Factor (Ccm)		2.942	2.721	2.872	2.809
Ct	(ppmv C)	3890.8	1124.6	656.7	610.7
Cc	(ppmv C)	201.4	334.7	350.1	246.9
Ct+Cc= C	(ppmv C)	4092.1	1459.3	1006.8	857.5
Mc	(mg C/dscm)	2043.2	728.6	502.7	428.2

Method 25 - 3 runs Results

Job No. 8076 Plant: Congentrix -Ringgold, PA
Client D68 -Congentrix of PA Sample Loc. Unit # 2
Disk/File 8076DCP (In/Out) Inlet
Page No. 4 Date 2/12/91

Preliminary Data					
Run No.		2-IN-1A	2-IN-1B	2-IN-2	2-IN-3
Tank No.		4T7 & 4T9	4T204	4T130	4T152
Trap No.		X30	X19	X25	X27
Tank Volume V(cc)		8018	4007	4031	4033
Field Data					
PTI	(mm Hg)	-659	-696	-699	-706
TTI	(F)	68	68	68	68
PbI	(mm Hg)	724	715	715	715
PT	(mm Hg)	-141	-122	-99	-145
TT	(F)	71	71	71	71
Pb	(mm Hg)	724	715	715	715
Noncondensible Organics					
PT(Lab)	(mm Hg)	-191	-152	-132	-168
TT(Lab)	(F)	77	77	77	77
Pb(Lab)	(mm Hg)	751	750	750	752
PTF	(mm Hg)	914	914	914	914
TTF	(F)	77	77	77	77
PbF	(mm Hg)	751	750	750	752
Ba	(ppmv C)	0.4	0.1	0.1	0.3
Ctm 1	(ppmv C)	1207.6	2747.7	2380.8	741.2
Ctm 2	(ppmv C)	1204.0	2785.2	2419.8	751.9
Ctm 3	(ppmv C)	1198.8	2799.4	2433.1	752.7
Avg. Ctm	(ppmv C)	1203.5	2777.4	2411.2	748.6
RSD Ctm	(%)	0.4	1.0	1.1	0.9
Condensible Organics					
ICV Tank No.		4T53	4T46	4T90	4T185
ICV Tank, Vv (cc)		4027	4011	4012	3944
PFI	(mm Hg)	-742	-742	-742	-742
TFI	(F)	77	77	77	77
PbFI	(mm Hg)	751	750	750	752
PF	(mm Hg)	914	914	914	914
TF	(F)	77	77	77	77
PbFf	(mm Hg)	751	750	750	752
Bt	(ppmv C)	0.7	18.1	0.7	2.7
Ccm 1	(ppmv C)	102.3	285.7	2111.2	756.0
Ccm 2	(ppmv C)	102.7	279.0	2114.7	753.2
Ccm 3	(ppmv C)	102.0	279.8	2082.7	754.5
Avg. Ccm	(ppmv C)	102.3	281.5	2102.9	754.6
RSD Ccm	(%)	0.3	1.3	0.8	0.2
Total Gaseous Nonmethane Organics (TGNMO)					
Vs	(cc)	5434	3010	3162	2963
Dil. Factor (Nom)		3.180	2.867	2.746	2.936
Dil. Factor (Com)		1.597	2.870	2.733	2.871
Ct	(ppmv C)	3825.2	7963.2	6620.1	2196.9
Cc	(ppmv C)	162.3	756.0	5744.6	2158.6
Ct+Cc= C	(ppmv C)	3987.5	8719.2	12364.7	4355.5
Mc	(mg C/dscm)	1991.0	4353.5	6173.7	2174.7

Method 25 - 3 runs Results

Job No.	8076		Plant: Congentrix -Ringgold, PA		
Client	D68 -Congentrix of PA		Sample Loc. Unit # 3		
Disk/File	8076DCP		(In/Out) Inlet		
Page No.	5		Date	2/12/91	
Preliminary Data					
Run No.		3-IN-1	3-IN-2	3-IN-3A	3-IN-3B
Tank No.		4T48	4T41	4T118	4T108
Trap No.		B53	C33	N03	YWK
Tank Volume V(cc)		4011	4022	4032	4021
Field Data					
PTI	(mm Hg)	-709	-714	-696	-693
TTI	(F)	70	70	70	70
PbI	(mm Hg)	724	724	715	715
PT	(mm Hg)	-183	-178	-76	-25
TT	(F)	75	75	75	75
Pb	(mm Hg)	724	724	715	715
Noncondensible Organics					
PT(Lab)	(mm Hg)	-208	-213	-107	-76
TT(Lab)	(F)	77	77	77	80
Pb(Lab)	(mm Hg)	752	752	752	752
PTF	(mm Hg)	914	914	914	914
TTF	(F)	77	77	77	80
PbF	(mm Hg)	752	752	752	752
Ba	(ppmv C)	0.1	0.3	0.3	0.1
Ctm 1	(ppmv C)	2418.3	906.7	12209.0	7585.7
Ctm 2	(ppmv C)	2422.6	909.7	12283.3	7621.4
Ctm 3	(ppmv C)	2432.9	895.4	12297.6	7607.2
Avg. Ctm	(ppmv C)	2424.6	903.9	12263.3	7604.8
RSD Ctm	(%)	0.3	0.8	0.4	0.2
Condensible Organics					
ICV Tank No.		4T19	4T32	4T193	4T111
ICV Tank, Vv (cc)		4012	4004	4006	4023
PFI	(mm Hg)	-742	-747	-747	-749
TFI	(F)	77	77	77	80
PbFI	(mm Hg)	752	752	752	752
PF	(mm Hg)	914	914	914	914
TF	(F)	77	77	77	80
PbFf	(mm Hg)	752	752	752	752
Bt	(ppmv C)	7.8	1.2	16.7	12.4
Ccm 1	(ppmv C)	1270.7	784.2	218.7	2406.7
Ccm 2	(ppmv C)	1273.4	784.6	218.8	2405.8
Ccm 3	(ppmv C)	1273.0	784.3	217.6	2406.4
Avg. Ccm	(ppmv C)	1272.4	784.4	218.4	2406.3
RSD Ccm	(%)	0.1	<0.1	0.3	<0.1
Total Gaseous Nonmethane Organics (TGNMO)					
Vs	(cc)	2739	2800	3245	3489
Dil. Factor (Nom)		3.159	3.098	2.680	2.473
Dil. Factor (Com)		3.159	3.085	2.662	2.474
Ct	(ppmv C)	7658.1	2799.9	32860.9	18803.9
Cc	(ppmv C)	3995.3	2415.7	536.9	5921.4
Ct+Cc= C	(ppmv C)	11653.3	5215.6	33397.8	24725.2
Mc	(mg C/dscm)	5818.5	2604.1	16675.5	12345.3

Method 25 - 3 runs Results

Job No.	8076		Plant: Congentrix -Ringgold, PA		
Client	D68 -Congentrix of PA		Sample Loc. Unit # 1		
Disk/File	8076DCP		(In/Out) Outlet		
Page No.	6		Date 2/12/91		
Preliminary Data					
Run No.		1-OUT-1A	1-OUT-1B	1-OUT-2	1-OUT-3
Tank No.		4T139	4T70	4T74	4T21
Trap No.		X17	X40	C18	X18
Tank Volume V(cc)		4030	4032	4045	4043
Field Data					
PTI	(mm Hg)	-714	-716	-711	-714
TTI	(F)	73	73	73	73
PbI	(mm Hg)	720	720	720	720
PT	(mm Hg)	-13	-5	-8	-41
TT	(F)	75	75	75	75
Pb	(mm Hg)	720	720	720	720
Noncondensible Organics					
PT(Lab)	(mm Hg)	20	-36	-10	-46
TT(Lab)	(F)	77	76	77	77
Pb(Lab)	(mm Hg)	754	754	754	754
PTF	(mm Hg)	914	914	914	914
TTF	(F)	77	76	77	77
PbF	(mm Hg)	754	754	754	754
Ba	(ppmv C)	0.1	0.2	0.9	0.2
Ctm 1	(ppmv C)	153.5	485.9	104.1	504.4
Ctm 2	(ppmv C)	154.3	490.5	107.1	511.1
Ctm 3	(ppmv C)	154.7	490.4	107.0	513.0
Avg. Ctm	(ppmv C)	154.2	488.9	106.1	509.5
RSD Ctm	(%)	0.4	0.5	1.6	0.9
Condensible Organics					
ICV Tank No.		4T95	4T185	4T195	4T17
ICV Tank, Vv (cc)		4010	3944	3985	4047
PFI	(mm Hg)	-742	-747	-742	-742
TFI	(F)	76	76	77	77
PbFI	(mm Hg)	754	754	754	754
PF	(mm Hg)	914	914	914	914
TF	(F)	76	79	77	79
PbFf	(mm Hg)	754	754	754	754
Bt	(ppmv C)	2.2	0.7	15.5	1.0
Ccm 1	(ppmv C)	180.7	74.5	72.0	71.4
Ccm 2	(ppmv C)	180.7	73.9	72.0	71.4
Ccm 3	(ppmv C)	180.7	73.8	72.1	71.4
Avg. Ccm	(ppmv C)	180.7	74.1	72.0	71.4
RSD Ccm	(%)	<0.1	0.5	0.1	<0.1
Total Gaseous Nonmethane Organics (TGNMO)					
Vs	(cc)	3670	3725	3697	3535
Dil. Factor (Non)		2.371	2.342	2.362	2.470
Dil. Factor (Con)		2.364	2.278	2.327	2.463
Ct	(ppmv C)	365.2	1144.5	248.4	1257.8
Cc	(ppmv C)	422.0	167.1	131.6	173.4
Ct+Cc= C	(ppmv C)	787.2	1311.6	380.0	1431.2
Mc	(mg C/dscm)	393.0	654.9	189.7	714.6

Method 25 - 3 runs Results

Job No. 8076 Plant: Congentrix -Ringgold, PA
Client D68 -Congentrix of PA Sample Loc. Unit # 2
Disk/File 8076DCP (In/Out) Outlet
Page No. 7 Date 2/12/91

Preliminary Data					
Run No.		2-OUT-1A	2-OUT-1B	2-OUT-2	2-OUT-3
Tank No.		4T170	4T125	4T216	4T142
Trap No.		B109	C11	B18	X37
Tank Volume V(cc)		3986	4041	4000	4033
Field Data					
PTI	(mm Hg)	-704	-701	-704	-704
TTI	(F)	68	68	68	68
PbI	(mm Hg)	715	715	715	715
PT	(mm Hg)	-18	-71	-112	-69
TT	(F)	71	71	71	71
Pb	(mm Hg)	715	715	715	715
Noncondensible Organics					
PT(Lab)	(mm Hg)	-25	-86	-112	-66
TT(Lab)	(F)	78	76	77	77
Pb(Lab)	(mm Hg)	754	754	754	754
PTF	(mm Hg)	914	914	914	925
TTF	(F)	78	76	77	77
PbF	(mm Hg)	754	754	754	754
Ba	(ppmv C)	2.2	1.2	0.5	0.9
Ctm 1	(ppmv C)	385.3	380.7	368.3	394.6
Ctm 2	(ppmv C)	390.2	387.9	371.8	398.3
Ctm 3	(ppmv C)	391.5	388.7	371.1	398.1
Avg. Ctm	(ppmv C)	389.0	385.8	370.4	397.0
RSD Ctm	(%)	0.8	1.1	0.5	0.5
Condensible Organics					
ICV Tank No.		4T24	4T93	4T182	4T140
ICV Tank, Vv (cc)		4046	4018	4011	4037
PFI	(mm Hg)	-747	-747	-747	-747
TFI	(F)	78	76	77	78
PbFI	(mm Hg)	754	754	754	754
PF	(mm Hg)	914	914	914	914
TF	(F)	78	76	77	77
PbFf	(mm Hg)	754	754	754	754
Bt	(ppmv C)	0.7	4.0	8.7	0.7
Ccm 1	(ppmv C)	172.7	182.5	72.0	89.5
Ccm 2	(ppmv C)	172.8	183.1	72.3	89.5
Ccm 3	(ppmv C)	172.6	183.1	72.3	89.4
Avg. Ccm	(ppmv C)	172.7	182.9	72.2	89.5
RSD Ccm	(%)	0.1	0.2	0.2	0.1
Total Gaseous Nonmethane Organics (TGNMO)					
Vs	(cc)	3578	3332	3098	3352
Dil. Factor (Non)		2.401	2.624	2.788	2.614
Dil. Factor (Con)		2.438	2.609	2.796	2.601
Ct	(ppmv C)	928.9	1009.2	1031.3	1035.5
Cc	(ppmv C)	419.3	466.8	177.5	230.9
Ct+Cc= C	(ppmv C)	1348.2	1476.1	1208.8	1266.4
Mc	(mg C/dscm)	673.1	737.0	603.6	632.3

Method 25 - 3 runs Results

Job No. 8076 Plant: Congentrix -Ringgold, PA
Client D68 -Congentrix of PA Sample Loc. Unit # 3
Disk/File 8076DCP (In/Out) Outlet
Page No. 8 Date 2/12/91

Preliminary Data					
Run No.		3-OUT-1A	3-OUT-1B	3-OUT-2	3-OUT-3
Tank No.		4T76	4T20	4T99	4T167
Trap No.		B229	C30	X11	C5
Tank Volume V(cc)		4032	4050	4022	4011
Field Data					
PTI	(mm Hg)	-693	-709	-709	-704
TTI	(F)	70	70	70	70
PbI	(mm Hg)	724	724	724	715
PT	(mm Hg)	-18	-64	-84	-69
TT	(F)	75	75	75	75
Pb	(mm Hg)	724	724	724	715
Noncondensible Organics					
PT(Lab)	(mm Hg)	-30	-76	-81	-81
TT(Lab)	(F)	76	76	77	76
Pb(Lab)	(mm Hg)	747	747	747	749
PTF	(mm Hg)	914	914	914	930
TTF	(F)	76	76	77	76
PbF	(mm Hg)	747	747	747	749
Ba	(ppmv C)	0.7	0.1	1.2	0.2
Ctm 1	(ppmv C)	2004.3	4190.8	951.1	723.5
Ctm 2	(ppmv C)	2027.6	4259.0	955.1	742.8
Ctm 3	(ppmv C)	2019.3	4266.6	956.0	738.1
Avg. Ctm	(ppmv C)	2017.1	4238.8	954.1	734.8
RSD Ctm	(%)	0.6	1.0	0.3	1.4
Condensible Organics					
ICV Tank No.		4T2	4T55	4T39	4T143
ICV Tank, Vv (cc)		4011	4001	4001	4047
PFI	(mm Hg)	-742	-742	-742	-742
TFI	(F)	76	77	77	76
PbFI	(mm Hg)	747	747	747	749
PF	(mm Hg)	914	914	914	914
TF	(F)	76	77	77	76
PbFf	(mm Hg)	747	747	747	749
Bt	(ppmv C)	10.2	13.5	2.2	6.8
Ccm 1	(ppmv C)	227.1	176.6	136.8	49.4
Ccm 2	(ppmv C)	229.6	176.6	137.2	49.5
Ccm 3	(ppmv C)	226.4	177.3	136.9	49.5
Avg. Ccm	(ppmv C)	227.7	176.8	137.0	49.5
RSD Ccm	(%)	0.7	0.2	0.2	0.1
Total Gaseous Nonmethane Organics (TGNMO)					
Vs	(cc)	3538	3394	3264	3308
Dil. Factor (Non)		2.455	2.571	2.649	2.639
Dil. Factor (Con)		2.442	2.535	2.635	2.638
Ct	(ppmv C)	4950.4	10895.9	2524.4	1938.4
Cc	(ppmv C)	531.2	414.0	355.2	112.6
Ct+Cc= C	(ppmv C)	5481.6	11309.9	2879.5	2051.0
Mc	(mg C/dscm)	2737.0	5647.0	1437.8	1024.0

STATISTICAL ANALYSIS

STATISTICAL ANALYSIS COGENTRIX

LOCATION - UNIT 1 STACK

RUN	DATE OF RUN	AVERAGE SQ. RT. VEL PRES	AVERAGE TEMP	STANDARD DEVIATION SQ. RT. VEL PRES	STANDARD DEVIATION TEMP	VARIANCE SQ. RT. VEL PRES	VARIANCE TEMP	RMS DEVIATION SQ. RT. VEL PRES	RMS DEVIATION TEMP
1	1/17/91	0.251	328.5	0.031	3.5	0.021	12.2	12.362	1.1
2	1/17/91	0.249	326.8	0.030	3.0	0.021	9.2	12.550	0.9
3	1/17/91	0.250	323.5	0.029	2.8	0.021	4.8	11.479	0.6

LOCATION - UNIT 2 STACK

RUN	DATE OF RUN	AVERAGE SQ. RT. VEL PRES	AVERAGE TEMP	STANDARD DEVIATION SQ. RT. VEL PRES	STANDARD DEVIATION TEMP	VARIANCE SQ. RT. VEL PRES	VARIANCE TEMP	RMS DEVIATION SQ. RT. VEL PRES	RMS DEVIATION TEMP
1	1/16/91	0.249	340.3	0.033	3.2	0.021	10.1	13.318	0.9
2	1/16/91	0.253	338.4	0.032	5.7	0.021	32.5	12.826	1.7
3	1/16/91	0.257	329.4	0.028	4.0	0.021	16.0	11.458	1.2

LOCATION - UNIT 3 STACK

RUN	DATE OF RUN	AVERAGE SQ. RT. VEL PRES	AVERAGE TEMP	STANDARD DEVIATION SQ. RT. VEL PRES	STANDARD DEVIATION TEMP	VARIANCE SQ. RT. VEL PRES	VARIANCE TEMP	RMS DEVIATION SQ. RT. VEL PRES	RMS DEVIATION TEMP
1	1/15/91	0.219	334.2	0.055	3.1	0.033	9.6	25.164	0.9
2	1/15/91	0.264	331.6	0.043	2.6	0.022	5.9	16.391	0.8
3	1/16/91	0.260	326.7	0.035	1.9	0.021	3.6	13.521	0.6

COGENTRIX
CAE Project No: 5509

CHAIN OF CUSTODY

2627

CHAIN OF CUSTODY RECORD

PROJ. NO.: 5509 — PROJECT NAME: DLY

SAMPLERS: (Signature) [illegible] Thuro Mello

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	REMARKS
5509			1AM	X17		Unit #1 Run #1 Outlet
5509				X19		Unit #1 Run #3 Outlet
5509				X19		Unit #2 Run #1 Inlet
5509				X25		Unit #2 Run #2 Inlet
5509				X27		Unit #2 Run #3 Inlet
5509				X30		Unit #2 Run #1 Inlet
5509	7			X37		Unit #2 Run #3 Outlet
5509				X39		Unit #1 Run #2 Inlet
5509				X40		Unit #1 Run #1 Outlet
5509				YW8		Unit #1 Run #1 Inlet
5509				No 3		Unit #3 Run #3 Inlet
5509				YUK		Unit #3 Run #4 Inlet
[illegible]				B-K		Unit #2 Run #[illegible] Outlet
[illegible]				B-53		Unit #3 Run #[illegible] Inlet
[illegible]				R-109		Unit #2 Run #1 Outlet

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[illegible]	[illegible]	[illegible]			
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Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time		

REMARKS: [illegible]

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12628

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME	NO. OF CONTAINERS	REMARKS
5509	D-68		

SAMPLERS: (Signature) [signature]

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	REMARKS
5509	16			TRAP # B 229		Unit #3 Run #1 Outlet
5509	17			B 233		Unit #1 Run #2 Inlet
5509	18			C 5		Unit #3 Run #3 Outlet
5509	19			C 11		Unit #2 Run #1 Outlet
5509	20			C 18		Unit #1 Run #2 Outlet
5509	21			C 30		Unit #3 Run #1 Outlet
5509	22			C 33		Unit #3 Run #2 Inlet
5509	23			X 11		Unit #3 Run #2 Outlet
5509	24			X 14		Unit #1 Run #3 Inlet
				X 48		
				A 205		
				C 12		
				C-29		

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	[illegible]	UPS Driver			
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REMARKS: Traps Not Listed — C-5 / X-13 — Traps missing from your list — B-9 / B-224

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2629

CHAIN OF CUSTODY RECORD

RECEIVED JAN 2 5 1991

PROJ. NO.: 5509

PROJECT NAME: Cogent Hx

SAMPLERS: (Signature) [signature]

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	Fuel Analysis						REMARKS
	5509-A	1-15		Unit 3	1	✓						Determine BTU/gal
	5509-B	1-16		Unit 2	1	✓						
	5509-C	1-17		Unit 1	1	✓						

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	1/23/91 10:00 AM	Kelly A. Rimkus			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by:	Date / Time		

REMARKS:

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2630

CHAIN OF CUSTODY RECORD

PROJ. NO.: 5509 | PROJECT NAME: Cogentrix Ringgold, PA.

SAMPLERS: (Signature) [signature]

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	Method 20						REMARKS
1	5509-1	1-17-91		Stack	2	X						Unit #1 Run #1
2	5509-2	1/17		Stack	2	X						Unit #1 Run #2
3	5509-3	1/17		Stack	2	X						Unit #1 Run #3
4	5509-4	1/16		Stack	2	X						Unit #2 Run #1
5	5509-5	1/16		Stack	2	X						Unit #2 Run #2
6	5509-6	1/16		Stack	2	X						Unit #2 Run #3
7	5509-7	1/15		Stack	2	X						Unit #3 Run #1
8	5509-8	1/15		Stack	2	X						Unit #3 Run #2
9	5509-9	1/15		Stack	2	X						Unit #3 Run #3
10	5509-10				1	X						Sample BLANK

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	1-21-91	FED EX DRIVER			
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Relinquished by: (Signature)	Date / Time	Received for Laboratory by:	Date / Time

REMARKS:

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2631

CHAIN OF CUSTODY RECORD

PROJ. NO.: 5509

PROJECT NAME: Coggentrix Ringgold, PA

SAMPLERS: (Signature) [signature]

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	PA DER 502						REMARKS
11	5509-11-A	1/17		Stack	1	X						Unit #1 Run #1 TPA
12	5509-11-B	1/17		Stack	1	X						Unit #1 Run #1 NaOH
13	5509-11-C	1/17		Stack	1	X						Unit #1 Run #1 NaOH
14	5509-12-A	1/18		Stack	1	X						Unit #1 Run #2 TPA
15	5509-12-B	1/18		Stack	1	X						Unit #1 Run #2 NaOH
16	5509-12-C	1/18		Stack	1	X						Unit #1 Run #2 NaOH
17	5509-13-A	1/17		Stack	1	X						Unit #1 Run #3 TPA
18	5509-13-B	1/17		Stack	1	X						Unit #1 Run #3 NaOH
19	5509-13-C	1/17		Stack	1	X						Unit #1 Run #3 NaOH
20	5509-14-A	1/16		Stack	1	X						Unit #2 Run #1 TPA
21	5509-14-B	1/16		Stack	1	X						Unit #2 Run #1 NaOH
22	5509-14-C	1/16		Stack	1	X						Unit #2 Run #1 NaOH

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[signature]	1-[illegible]-91	FEDEX Driver			
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REMARKS:

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2632

CHAIN OF CUSTODY RECORD

PROJ. NO.: 5509

PROJECT NAME: Cogentrix Ringgold, PA

SAMPLERS: (Signature) [signature]

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	PA DER SO2						REMARKS
23	5509-15-A	1/16		Stack	1	X						Unit #2 Run #2 IPA
24	5509-15-B	1/16		Stack	1	X						Unit #2 Run #2 NaOH
25	5509-15-C	1/16		Stack	1	X						Unit #2 Run #2 NaOH
26	5509-16-A	1/16		Stack	1	X						Unit #2 Run #3 IPA
27	5509-16-B	1/16		Stack	1	X						Unit #2 Run #3 NaOH
28	5509-16-C	1/16		Stack	1	X						Unit #2 Run #3 NaOH
29	5509-17-A	1/15		Stack	1	X						Unit #3 Run #1 IPA
30	5509-17-B	1/15		Stack	1	X						Unit #3 Run #1 NaOH
31	5509-17-C	1/15		Stack	1	X						Unit #3 Run #1 NaOH
32	5509-18-A	1/15		Stack	1	X						Unit #3 Run #2 IPA
33	5509-18-B	1/15		Stack	1	X						Unit #3 Run #2 NaOH
34	5509-18-C	1/15		Stack	1	X						Unit #3 Run #2 NaOH

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	1-4-91	FEDEX DRIVER			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by:	Date / Time		

REMARKS:

Clean Air Engineering
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312/991-5300

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2633

CHAIN OF CUSTODY RECORD

PROJ. NO.: 5509

PROJECT NAME: Cogentrix Ringgold, PA

SAMPLERS: (Signature) [signature]

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	PA DER SOP						REMARKS
35	5509-19-A	1/15		Stack	1	X						Unit#3 Run#3 IPA
36	5509-19-B	1/15		Stack	1	X						Unit#3 Run#3 NaOH
37	5509-19-C	1/15		Stack	1	X						Unit#3 Run#3 NaOH
38	5509-20-A			Sample Blank	1	X						IPA
39	5509-20-B			Sample Blank	1	X						NaOH
40	5509-20-C			Sample Blank	1	X						NaOH

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[signature]	1-21-91	FEDEX Driver			
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Relinquished by: (Signature)	Date / Time	Received for Laboratory by:	Date / Time		

REMARKS:

Clean Air Engineering
207 N. Woodwork Ln.
Palatine, IL 60067
312/991-2300

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CHAIN OF CUSTODY RECORD

3822

PROJ. NO.	PROJECT NAME
5509	D&B Cogentrix

SAMPLERS: (Signature) Alex M Adams / Jeff Dalton

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Methylene Chloride	REMARKS
		1/16		Tank #4T 7		0.2	1.0	2	1	✓	I	Combine Tanks into
		1/16		4T 9		0.2	2.3	2	1	✓	I	1 sample
		1/15		4T 20		0.1	99	3	1	✓	S	
		1/17		4T 21		0.2	99	4	3		S	
		1/15		4T 41		0.3	1.0	3	2		I	
		1/15		4T 48		0.1	1.0	3	1		I	
		1/17		4T 74		0.9	3.6	4	2		S	
		1/15		4T 76		0.7	7.9	3	1	✓	S	
		1/15		4T 99		1.2	2.3	3	2		S	
		1/16		4T 108		0.1	99	3	3	✓	I	
		1/16		4T 118		0.3	3.6	3	3	✓	I	
		1/16		4T 125		1.2	4.0	2	1	✓	S	
		1/16		4T 130		0.1	9.9	2	2		I	
		1/16		4T 142		0.9	1.0	2	3		S	
		1/16		4T 152		0.3	1.0	2	3		I	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Alex M Adams	1/19/96	UPS Driver	UPS Driver		Alex M Adams
Alex M Adams	1/19/96	FED EX			

Relinquished by: (Signature)	Date / Time	Received for Laboratory by:	Date / Time

REMARKS:

Clean Air Engineering
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Palatine, IL 60067
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3823

CHAIN OF CUSTODY RECORD

PROJ. NO.: 5509
PROJECT NAME: D68 Cogentrix

SAMPLERS: (Signature) [signature]

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	Non-Methane Hydrocarbon Blank Value (ppm VC)	Absolute Pressure Tank (mm of Hg)	UNIT #	Run #	Duplicate	Location	REMARKS
		1/16		Tank #4T167		0.2	4.8	3	3		S	
		1/16		4T170		2.2	2.3	2	1	✓	S	
		1/17		4T194		0.2	9.9	1	3		I	
		1/16		4T204		0.1	9.9	2	1	✓	I	
		1/16		4T216		0.5	6.0	2	2		S	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	1/9/91 16:00	UPS Driver	UPS Driver		[signature]
[signature]	1/21/91 4:00	FED EX			

Relinquished by: (Signature)	Date / Time	Received for Laboratory by:	Date / Time

REMARKS:

RETAIN COPY

CAE
Clean Air Engineering
500 W. Wood Street
Palatine, IL 60067
708/991-2300

3827

CHAIN OF CUSTODY RECORD

PROJ. NO.: 5509

PROJECT NAME: D68- CoGentrix

SAMPLERS: (Signature) [signature]

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	Non Methane Hydro carbon Blank Value (ppm V C)	Absolute Tank Pressure (mmHg)	Unit #	Run #	Duplicate Sample	Location	REMARKS
		1/17		Tank # 4T5		0.2	4.1	1	2	✓	I	
		1/17		4T36		0.1	1.5	1	2	✓	I	
				4T49		0.1	1.5					unused kept by 68
				4T57		0.1	1.5					unused kept by 68
		1/17		4T70		0.2	1.5	1	1	✓	S	
		1/17		4T82		0.1	1.5	1	1		I	
				4T107		0.1	7.9					unused kept by 68
		1/17		4T139		0.1	1.5	1	1	✓	S	
				4T141		0.2	1.5					unused kept by 68
				4T187		0.1	2.8					unused kept by 68

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	1/10/91 20:30	Fedex Delivery	Fed EX		[signature]
[signature]	1/21/91 4:00 pm	Fed EX			

Relinquished by: (Signature)	Date / Time	Received for Laboratory by:	Date / Time

REMARKS:

Clean Air Engineering
500 W. Wood Street
Palatine, IL 60067
708/991-[illegible]300

RETAIN COPY

PROCESS DATA

DATE	INTAKE MANIFOLD TEMPERATURE °F	°C	INTAKE MANIFOLD PRESSURE	RACK POSITION DIESEL / GAS	ENGINE SPEED	FUEL INJ TIMING DIESEL / GAS°
0900				13 4 Gas 8a- Gas	720	Gas Tech Gas Tech
0915	110	42	42 37805.37	12 11 26 957	4° 1 3/4°	12562 221201
0930	111	42	43 ↓	12 11 25 976	4° 1 3/8°	12564 220175
0945	112	43	40.5 ↓	12 11 23 998	4° 1 1/8°	12566 221316
1000	109	42	41.0 ↓	12 11 22.5 1017	4° 3/4°	12568 223397
1015	115	44	41.5 ↓	12 11 23 1035	4° 1/2°	12570 224738
1030	117	46	40.5 ↓	12 11 23 1045	4° 1/4°	12571 225120
1045	116	47	40 ↓	12 11 22 1056	4° 0°	12572 250846
1100	117	46	39.5 ↓	12 11 23.5 1073	3° 11 3/4°	12574 252400
1115	117	46	40 ↓	12 11 24 1093	3° 11 1/2°	12576 263806
1130	116	46	41 38152.83	12 11 23 1107	4° 3 3/8°	12577 264002
1145	117	46	40 ↓	12 11 23 1121	4° 3 1/8°	12579 272780
1200	119	47	40 ↓	12 11 23 1135	4° 2 3/4°	12580 274367
1215	118	46	40 ↓	12 11 23.5 1149	4° 2 1/8°	12581 277752
1230	117	46	40.5 ↓	12 11 23 1159	4° 1 7/8°	12582 283534
1245	117	46	40.5 ↓	12 11 23 1168	4° 1 5/8°	12583 289352
1300	120	48	41 ↓	12 11 23 1171	4° 1 5/8°	12584 291370
1315	124	50	41 ↓	12 11 23 1181	4° 1 1/4°	12585 293167
1330	122	49	40 ↓	12 11 23 1195	4° 1°	12586 295432
1345	115	45		12		
1400						
1415						
1430						
1445	115	45	39.5 ↓	12 11 23 1259	3° 11 7/8°	12592 310270
1500	115	45	40 ↓	12 11 23 1274	3° 11 1/2°	12594 320411
1515	115	45	40 39600.37	12 11 23 1282	4° 3 3/8°	12595 324103
1530	115	45	39 ↓	12 11 23 1290	4° 3 1/8°	12596 326507
1545						

PERFTST1.REV000.910114

Page 1

Fuel temp: 45°F Exhaust temp Cyl 6 / 45°F Post cond Cyl 6

1000 See Notes / Sep

11/19

DATE	INTAKE MANIFOLD TEMPERATURE	INTAKE MANIFOLD PRESSURE	RACK POSITION DIESEL / GAS	ENGINE SPEED	FUEL INJ TIMING DIESEL / GAS
0900					
0915					
0930					
0945					
1000					
1015					
1030		#2 Engine	1-16-95		
1045					
1100					
1115					
1130					
1145			Cyl. A-4		
1200	F° C°		B A GAS Gas Flow		
1215	111 43	38.5 25495.76	11 10 23 708	4' 1 3/4"	12420 73160
1230	114 44	39 ↓	12 10 23.5 774	4' 1 1/2"	12421 73667
1245	110 42	39 ↓	12 10 23 788	4' 1 1/8"	12423 74008
1300	112 43	38.5 ↓	12 10 23 796	4' 7/8"	12424 7445
1315	112 43	38.5 ↓	12 10 23.5 809	4' 1/2"	12425 74967
1330	113 43	38.5 ↓	12 10 23 830	4' 1/8"	12426 75642
1345	114 44	38.5 ↓	12 10 23 841	4' 0"	12427 76034
1400	115 44	38. ↓	12 10 23 851	3' 11 1/2"	12429 76793
1415					
1430					
1445					
1500	116 44	41 26336.36	12 10 874	4' 1 7/8"	12431
1515					
1530					
1545					

PERFTST1.REV000.910114 [illegible]

DATE	INTAKE MANIFOLD TEMPERATURE		INTAKE MANIFOLD PRESSURE		RACK POSITION DIESEL / GAS				ENGINE SPEED	FUEL INJ TIMING DIESEL / GAS	
1600	116	45	38.5	26338.36	12	10	22.5	895	3' 4 1/2"	12435	83737
1615	118	46	37.5	27181.91	12	10	22	909	4' 3 3/8"	12436	83756
1630											
1645											
1700											
1715	119	47	37	27181.91	12	10	23	935	4' 1 1/4"	12437	85109
1730	119	47	38	27181.91	12	10	23.5	945	4' 7/8"	12439	85643

PERFTST2.REV000.910114

Engine # 2 1/16/91

Continued

DATE	INTAKE MANIFOLD TEMPERATURE	INTAKE MANIFOLD PRESSURE psi	RACK POSITION DIESEL / GAS	ENGINE SPEED RPM	FUEL INJ TIMING DIESEL / GAS
0900				720	22° / 6° BTDC
0915					
0930					
0945	# 3 Engine 1-15-91				
1000					
1015	F° C°	Fuel Day	Diesel / Gas / Gas Flow	Fuel Day	
1030	118 F° 46 C°	39	11 10 27 357		
1045	117 46	38.5 1619209	11 10 26 365		
1100	117 46	38.5 1704.33	11 10 26 390		64" DIA 109.5" LENGTH
1115	116 44	35 1704.33	11 10 23 393		
1130	116 45	37.5 1704.33	11 10 25 408		
1145	117 46	37.5 1704.33	11 10 24 423	4' 2 5/8"	
1200	117 46	38.0 1704.33	11 10 25 441	4' 2 3/8	
1215	119 47	38.0 1704.33	11 10 25 456	4' 2 1/8	
1230	120 48	38.0 1704.33	11 10 25.5 469	4' 2"	
1245	120 48	38.0 1704.33	11 10 25 483	4' 1 7/8"	
1300	121 48	38.0 1704.33	11 10 25 495	4' 1 5/8"	
1315	119 47	38.0 1704.33	11 10 25 505 495	4' 1 3/8"	
1330	119 48	38.0 1704.33	11 10 25 514	4' 1 1/4"	
1345	118 47	37.5 1704.33	11 10 25 515	4' 1 1/8	
1400	118 46	37.0 1704.33	11 10 24 515	4' 7/8"	Cumulative
1415	117 46	37.5 1704.33	11 10 25 515	4' 5/8"	GAS Total
1430	117 46	37.5 1704.33	11 10 25 515	4' 1/2"	12301
1445	120 48	37.5 1704.33	11 10 24.5 515	4' 1/4"	12302
1500	118 47	37.5 1704.33	11 10 25 515	4' 0"	12303
1515	115 45	37.0 1704.33	11 10 24 515	3' 11 3/4"	12304
1530	116 45	38.0 Filling	11 10 25 515	4' 2 3/4"	12305 * Filling metal fill 4' 3"
1545	115 44	37.5 17896.57	11 10 24 515	4' 3 5/8"	12307 [illegible]

PERFTST1.REV000.910114

DATE	INTAKE MANIFOLD TEMPERATURE °F	°C	INTAKE MANIFOLD PRESSURE kPa	RACK POSITION DIESEL / GAS	ENGINE SPEED	FUEL INJ TIMING °BTDC DIESEL / GAS
1600	109	43	37.6 17895.57	11 10 25 615	4'39 20	12308
1615	112	43	37.0 17895.57	11 10 25 545	4'39	12309
1630	116	44	37.6 17895.57	11 10 24.5 505	4'27 5/8	12307
1645	115	44	38.0 17895.57	11 10 24.6 515	4'27 5/8	12308
1700	114	45	38.5 17895.57	11 10 25.0 545	4'28 3/8	12313
1715	115	45	37.5 17895.57	11 10 25 634	4'28 3/8	12307
1730	116	45	37.0 17895.57	11 10 25 [illegible]	4'28	12315
1745	115	44	38.6 17895.57	11 10 24 [illegible]	4'17 5/8	12316
1800	115	44	37.5 17895.57	11 10 24 [illegible]	4'17 5/8	12316
2348/0332				22 542	4'22 3/8	
0900	115	44	37.0 24652.61	11 10 24 576	4'18 3/8	12303
0915	112	43	37.0 24652.61	11 10 24 585	4'17 5/8	12304
0930	112	43	37.0 24652.61	11 10 235 600	4'18 3/8	12304
0945	112	43	36.5	11 10 24 608	4'17 5/8	12305
1000	112	43	36.5	11 10 24 623	4'18	12307
1015	113	43	37.0	11 10 245 640	4'17 5/8	12308
1030	108	42	37.5	11 10 240 689	4'16	12307
1045	107	41	37.0	11 10 24 679	4'16 5/8	12304
1100	109	42	37.0	11 10 24	4'16 5/8	12303

PERFTST2.REV000.910114

Engine #3 Controls

1/15/91

DATE	INTAKE MANIFOLD TEMPERATURE	INTAKE MANIFOLD PRESSURE	RACK POSITION DIESEL / GAS	ENGINE SPEED	FUEL INJ TIMING DIESEL / GAS
0900	117°F	40psi 52686.09 lb.	A-10 B-12 23 654	720 RPM 4' 1/2"	12750 405937
0915		[illegible]	949		12755
0930					
0945					
1000					
1015					
1030					
1045					
1100					
1115	116°F	41psi 51734.23 lb.	A-10 B-12 23 941	720 RPM 4' 1/2"	12755 0520967
1130	117°F	40psi 51734.23 lb.	A-10 B-12 22 956	720 RPM 4' 1/2"	12756 0522624
1145	117°F	40psi 51734.23 lb.	A-10 B-12 22 968	720 RPM 3' 11 1/2"	12758 0524180
1200	117°F	40psi 51734.23 lb.	A-10 B-12 22 980	720 RPM 3' 11 1/2"	12759 0526477
1215	117°F	40psi 52580.69 lb.	A-10 B-12 22 993	720 RPM 4' 3 5/8"	12760 0528698
1230	117°F	40psi 52580.69 lb.	A-10 B-12 22 1003	720 RPM 4' 3 5/8"	12761 0530488
1245	117°F	40psi 52580.69 lb.	A-10 B-12 22 1014	720 RPM 4' 3 3/4"	12762 0532209
1300					
1315					
1330					
1345					
1400					
1415					
1430					
1445					
1500					
1515					
1530					
1545					

PERFTBT1.REV000.910114

FUEL ANALYSIS

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (708) 953-9300
since 1896
Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN RD., P.O. BOX 127
SOUTH HOLLAND, IL 60473
TELEPHONE: (708) 331-2900
FAX: (708) 333-9060

January 29, 1991

CLEAN AIR ENGINEERING, INC.
207 North Woodwork Lane
Palatine, IL 60067
ATTN: Report Department
Nick J. Merico

Sample identification by
Clean Air Engineering, Inc.

Kind of sample
reported to us: Fuel Oil

Sample ID: 5509-C
Unit 1

Sample taken at: Clean Air Engineering, Inc.

Sample taken by: Clean Air Engineering, Inc.

Date sampled: ----------

P.O. No. PA-8750-68500-5509

Date received: January 22, 1991

Analysis Report No. 71-7610

Gravity At:

Specific at 60/60°F	0.8609
Lbs./gallon at 60°F	7.167
°API	32.9

Heating Values:

Btu/lb	19,456
Btu/gal. at 60°F	139,441

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, South Holland Laboratory

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (708) 953-9300
SINCE 1908
Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN RD., P.O. BOX 127
SOUTH HOLLAND, IL 60473
TELEPHONE: (708) 331-2900
FAX: (708) 333-3060

January 29, 1991

CLEAN AIR ENGINEERING, INC.
207 North Woodwork Lane
Palatine, IL 60067
ATTN: Report Department
Nick J. Merico

Sample identification by
Clean Air Engineering, Inc.

Kind of sample reported to us Fuel Oil

Sample ID: 6 8509-B
Unit 2

Sample taken at Clean Air Engineering, Inc.

Sample taken by Clean Air Engineering, Inc.

Date sampled ---------

P.O. No. PA-8750-68500-5509

Date received January 22, 1991

Analysis Report No. 71-7609

Gravity At:

Specific at 60/60°F	0.8607
Lbs./gallon at 60°F	7.169
°API	32.9

Heating Value:

Btu/lb	19,426
Btu/gal. at 60°F	139,265

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Aaron Hall
Manager, South Holland Laboratory

OVER 40 BRANCH LABORATORIES STRATEGICALLY LOCATED IN PRINCIPAL COAL MINING AREAS, TIDEWATER AND GREAT LAKES PORTS, AND RIVER LOADING FACILITIES
F5605
Original Watermarked For Your Protection
TERMS AND CONDITIONS ON REVERSE

RECEIVED FEB - 5 1991

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (708) 953-9300
SINCE 1896
Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN RD., P.O. BOX 127
SOUTH HOLLAND, IL 60473
TELEPHONE: (708) 331-2900
FAX: (708) 333-3060

January 29, 1991

CLEAN AIR ENGINEERING, INC.
207 North Woodcock Lane
Palatine, IL 60067
ATTN: Report Department
Nick J. Merico

Sample identification by
Clean Air Engineering, Inc.

Kind of sample
reported to us: Fuel Oil

Sample ID: 3509-A
Unit 3

Sample taken at: Clean Air Engineering, Inc.

Sample taken by: Clean Air Engineering, Inc.

Date sampled: --------

P.O. No. PA-8750-68500-5509

Date received: January 22, 1991

Analysis Report No. 71-7608

Gravity At:	
Specific at 60/60°F	0.8597
Lbs./gallon at 60°F	7.158
°API	33.1
Heating Value:	
Btu/lb	19,506
Btu/gal. at 60°F	139,624

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, South Holland Laboratory

The Peoples
Natural Gas Company

A CNG COMPANY

1201 Pitt Street
Pittsburgh, PA 15221--2098

RECEIVED
DEC 1 1990

December 12, 1990

Mr. Steve Chowan
Cogentrix of PA
Highway 33001
Ringgold, PA 15770

Dear Steve,

We have analyzed the following gas sample:

PNG Lab No. 205-4/90 - Cogentrix

	Vol. %
Ethane	2.8
Propane	.34
I Butane	.04
N Butane	.06
I Pentane	.02
N Pentane	.02
Oxygen	.005
Nitrogen	.35
Helium	.05
Hydrogen	.16
Methane	96.16
Heating Value	1,039 Btu/ft^3
Specific Gravity	.5743

The heating value and specific gravity are calculated for gas at 14.73 psia and 60°F.

Sincerely,

Harry C. Mayo

/IPL
cc: M. T. Reilly