MOSTARDI-PLATT ASSOCIATES, INC.
Environmental Contract Engineering Services
1077 Entry Drive
Bensenville, IL 60106
(708) 860-5900

Scottsville

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GASEOUS EMISSION STUDY
PERFORMED FOR
WASTE MANAGEMENT OF NORTH AMERICA, INC.
AT THE
MONROE LIVINGSTON POWER PRODUCTION PLANT
SCOTTSVILLE, NEW YORK
NO. 2 GAS RECOVERY ENGINE STACK
MAY 2, 1990

Not used for default Comp. Assessment - Values are likely representative of cleaned up LFG.

Recovery Engine - ~~Flows~~ outlet
Inlet - CH_4
NO_x, CO, SO_2, TGNMO outlet
Toxics - ΣBP<150°C inlet + outlet

PROJECT NO: 00504
DATE SUBMITTED: JULY 24, 1990

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MOSTARDI-PLATT
ASSOCIATES, INC.

CERTIFICATION SHEET

Having supervised and worked on the test program described in this report, and having written this report, I hereby certify the data, information, and results in this report to be accurate and true according to the methods and procedures used.

MOSTARDI-PLATT ASSOCIATES, INC.

Scott W. Banach

Scott W. Banach
Chemical Engineer

MOSTARDI-PLATT ASSOCIATES, INC.
Environmental Contract Engineering Services
1077 Entry Drive
Bensenville, IL 60106
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GASEOUS EMISSION STUDY PERFORMED FOR WASTE MANAGEMENT OF NORTH AMERICA, INC. AT THE MONROE LIVINGSTON POWER PRODUCTION PLANT SCOTTSVILLE, NEW YORK NO. 2 GAS RECOVERY ENGINE STACK

INTRODUCTION

A gaseous emissions test program was performed by MOSTARDI-PLATT ASSOCIATES, INC. (MPA) on the Gas Recovery Engine Stack at the Monroe Livingston Power Production Plant of Waste Management of North America, Inc. (Waste Management) in Scottsville, New York, on May 2, 1990. The tests were authorized by and performed for Waste Management.

The purpose of this test program was to determine the particulate, nitrogen oxide (NO_2) sulfur dioxide (SO_2) carbon monoxide (CO), volatile organics and total gaseous Non-Methane Hydrocarbons (TGNMO) emission rates from Unit No. 2 gas recovery engine stack under normal conditions.

The tests were conducted by Messrs. J. Crivlare, C. Trezak, and S. Banach of MPA. Mr. Barry Rogers and Mr. Ronald Chraston of Waste Management provided assistance and coordinated plant operating conditions during the test program.

SUMMARY OF RESULTS

Three two-hour particulate tests were performed on Engine No. 2 exhaust. The results of the three test runs averaged 0.08 lbs/hr. A complete test results summary can be found on page 14.

Three tests for NO_X, CO, SO_2, and TGNMO were performed on May 2, 1990 during the three particulate runs. The results of these tests were as follows:

Pollutant	PPM	Lbs/Hr
NO_X	319	4.99
CO	687	6.55
SO_2	637	0.12
TGNMO	111	0.91

A test result table can be found on page 12.

Volatile organics were also determined from three VOST tests in order to calculate the destruction efficiency across the engine. The results are tabulated on page 13.

TEST PROCEDURES

All testing, sampling, analytical and calibration procedures used for this test program was performed as described in the Code of Federal Regulations, Title 40, Appendix A, Methods 1-6, 7E, 10, 25 and the latest revisions thereof. Where applicable, the Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods, EPA 600-4-77-027b was used to determine the precise procedures.

A total number of 12 test points in each test plane using both test port for the outlet location, was agreed upon by all parties involved before testing commenced.

The particulate sampling train was manufactured by Andersen Samplers of Atlanta, Georgia and meets all specifications of USEPA Method 5. A three foot 316 stainless steel-lined probe was used at the test locations. Drawings depicting the sampling ports, test point location and the sampling trains are appended in this report.

Velocity pressures were determined simultaneously during sampling with a calibrated S-type pitot tube and inclined manometer. All temperatures were measured using calibrated thermocouples with a potentiometer and resistance thermometer detectors (RTD's).

The filter media were Whatman 934AH glass microfibre filters exhibiting a 99.98% efficiency on a 0.3 micron DOP Smoke particles in accordance with ASTM Standard Method D-2986-71. All sample contact surfaces of the trains were washed with Reagent grade acetone. These washes were placed in sealed and marked containers for analysis.

Sample recovery was performed at the jobsite by S.W. Banach of MPA. Final analyses were performed by M. Mares at the MPA laboratory in Bensenville, Illinois. Copies of all sample analysis sheets are appended in this report.

Calculations were performed by computer and an explanation of the nomenclature and calculations along with the complete test results is appended. Also appended are calibration data and copies of the raw field data sheets.

Nitrogen Oxide Determination

Method 7E was used for determining nitrogen oxides (NO_x) emissions from the gas recovery engine stack. A gas sample was continuously extracted from the stack through a heated sampling probe. A portion of the sample stream was conveyed via a heated sampling line to gas analyzers for determination of NO_x.

Prior to emission sampling the Thermo Electron Model 10AR chemiluminescent NO/NO_x monitor was zeroed and calibrated. A high level, mid-level, low-level, and zero gas were introduced into the NO_x sampling system.

The sample gas manifold was then adjusted for emissions sampling. Three (3) sixty-minute emissions samples were performed. At the end of the first and second runs, the zero gas and mid-level gas were introduced into the sampling system to check calibration. A full calibration using all levels of calibration gas was performed again after the third sample run.

The chemiluminescent reaction of NO and O_3 provides the basis for this instrument operation. Specifically:

$$NO + O_3 \text{ ---> } NO_2 + O_2 + h_v.$$

Light emission results when electronically excited NO_2 molecules revert to their ground state.

To measure NO concentrations, the gas sample to be analyzed is blended with O_3 in a reaction chamber. The resulting chemiluminescence is monitored through an optical filter by a high-sensitivity photomultiplier positioned at one end of the

chamber. The filter/photomultiplier combination responds to light in a narrow-wavelenght band unique to the above reaction (hence, no interference). The output from the photomultiplier is linearly proportional to the NO concentration.

To measure NO_x concentrations (i.e., NO plus NO_2), the sample gas flow is diverted through an NO_2-to-NO converter. The chemiluminescent response in the reaction chamber to the converted effluent is linearly proportional to the NO_x concentration entering the converter. The instrument is operated in the NO_x mode during all tests and calibration.

Diluent Determination

A Method 3A test procedure was used to determine the carbon dioxide and oxygen concentrations. A continuous stack gas sample from the sample manifold was introduced to each monitor for analysis. Prior to and after sampling, each analyzer was challenged with calibration gases at several level. This method defines the results to be on the dry basis in percent by volume.

Calibration gas certificates and calibrations can be found appended.

SULFUR DIOXIDE DETERMINATION

The Method 6 test procedure was used to determine the sulfur dioxide concentrations. Each gas sample was extracted from the sampling system in the trailer.

The sulfur dioxide was separated from the sulfuric acid mist including sulfur trioxide and was measured by the barium-thorin titration method. The barium ions reacts preferentially with the sulfate ions in solution to form a highly insoluble precipitate. When the barium has reacted with all of the sulfate ions, the excess barium then reacts with the thorin indicator to form a metal salt of the indicator, resulting in a color change.

Prior to and after field use, the following leak checks were performed on the sampling train. A 25-inch mercury vacuum was pulled with a vacuum gauge attached to the inlet of the control module. The hose leading to the dry gas meter was then pinched and a steady vacuum was maintained for longer than 30 seconds with the pump off. Then, with the hose to the meter open, the system was allowed to run with no flow indicated on a 0-50cc/min flowmeter attached to the dry gas meter outlet. The procedure described above was performed at 15 inches mercury vacuum just prior to sampling in the field after plugging the inlet to the midget bubbler. A positive pressure (5 to 7 inches H_2O) leak check was also performed on the system prior to and after field use with no leaks indicated.

The gas was extracted through a seven foot glass-lined probe loosely packed with glass wool at the tip and heated sufficiently to prevent condensation at a constant sampling rate of approximately 0.035 dscfm for 21 minutes. The sample was collected in three midget impingers. The first two midget

impingers contained a recently prepared 8-10% hydrogen peroxide solution to oxidize the SO_2 to $SO_4^=$, which remained in aqueous solution as sulfuric acid. The impingers were placed in an ice bath to maintain the exit gas from the last impinger containing silica gel below 68°F in order to increase the efficiency of the silica gel in drying the metered gas. A leak check of the entire sampling train was performed at a vacuum greater than the sampling vacuum after each sampling in order to determine if any leakage had occurred during the test run. A leakage rate not in excess of 2% of the average sampling rate would have been acceptable. The samples were transferred to polyethylene bottles appropriately marked with sample number and for liquid level before transfer from the test site.

Immediately prior to analysis, the level of the liquid in each sample bottle was observed and no liquid losses had occurred. The sample bottle contents were transferred to a 100-ml volumetric flask and diluted to 100 mls with deionized distilled water. An aliquot of this solution was pipetted into a 250-ml Erlenmeyer flask to which was added 80 mls of 100% isopropanol and four drops of thorin indicator. This sulfate solution was titrated to an orange-pink endpoint with standardized barium solution. The titration was repeated with another aliquot, and the average of both results was used in the final calculations. All samples were transferred to the laboratory by S. Banach, and they were analyzed by Ms. N. Stypa of MPA at the MPA laboratory.

Carbon Monoxide Determination

The Method 10A test procedure was used to determine the carbon monoxide concentrations. The gas sample was extracted and analyzed for carbon monoxide (CO) content using non-dispersive infrared analyzer (NDIR) (Horiba Model Mexa-201E). The gas stream was conditioned by condensing moisture and filtering particulate prior to introduction to the analyzer train consisting of a silica gel impinger to remove remaining moisture and an ascarite impinger to remove the CO_2 (A possible NDIR interferent), before entering the analyzer.

After an appropriate warm up time, the analyzer was calibrated using certified calibration gases.

The analyzer was then re-calibrated with the midrange and zero gas between tests and a full range calibration check was performed after the final test run.

VOLATILE ORGANIC SAMPLING TRAIN

The VOST is designed to extract and concentrate volatile organic compounds with boiling points <150°C from the stack gas effluents of hazardous waste incinerators. The VOST consists of: a quartz or glass-lined probe with a glass wool particulate plug, and isolation valve, a water cooled glass condenser with a thermocouple placed at the outlet to monitor the gas stream temperature (20°C), a sorbent cartridge containing Tenax, a second condenser, a second sorbent cartridge containing Tenax and petroleum based charcoal, a silica gel drying tube, a calibrated

rotometer, a sampling pump, and a dry gas meter, which has 1 liter per revolution dial. A diagram of this system is appended on page 25.

The samples are collected during a twenty minute sampling period at a flow rate of 1 liter per minute. The sample is taken through the glass-lined probe heated to 130°C. The gas stream is cooled to 20°C by passage through a water-cooled condenser and the volatile POHC's are collected on the pair of sorbent cartridges.

The contents of the sorbent cartridges are spiked with an internal standard and thermally desorbed for 10 minutes at 180°C with organic-free nitrogen or helium gas, bubbled through 5 mls or organic free water, and trapped on an analytical absorbent trap. After a 10 minute disruption, the analytical adsorbent trap is rapidly heated to 180°C with the carrier gas flow reversed so that the effluent flow from the analytical trap is directed into the GC/MS. The volatile POHC's are separated by temperature programmed gas chromatography and detected by low resolution mass spectrometry. To achieve increased sensitivity, multiple pairs of cartridges (up to five pairs) may be desorbed onto a single pair of Tenax and Tenax charcoal cartridges. The resulting pair is then analyzed by purge-trap-desorb (P-T-D) GC/MS analysis.

TABLE 1 Selected Target Analytes

VOST ANALYSES

Acetone	Trans -1,2 - Dichloroethene
Acrolein	Trichloroethene
Acrylonitrile	Vinyl Chloride
Benzene	Xylene
Bromoform	1,1,1, Trichloroethane
Bromomethane	1,1,2,2, Tetrachloroethane
Carbon Tetrachloride	1,1,2 Tricitloroethane
Chlorobenzene	1,1 Dichloroethane
Chloroethane	1,1 Dichloroethene
Chloroform	1,2 Dichloroethane
Chloromethane	1,2 Dichloropropene
Dichlorodifluoromethane	1,3 Dichloropropene
Ethylbenzene	Bromodichloromethane
Fluorotrichloromethane	Chlorodibromomethane
Mercaptans (as CH_2S)	2'-Chloroethyl Vinyl Ether
Methyl Ethyl Ketone	Tetra Chloroethane
Methylene Chloride	Toluene

Mr. Fred De Roos of Twin City Labs performed all Quality Assurance Procedures for the analytical portion of the test program.

Sample Cartridge Preparation

The prepacked VOST tubes were prepared by thermally desorbing them at 225°C for 20 minutes with a flow of helium gas. Approximately 15% of the tubes were then desorbed and analyzed for quality assurance purposes to demonstrate that they were free of contamination. The tubes were then capped and shipped to the field for sample collection.

Analyses

The VOST tubes were desorbed following EPA Method 5040 and analyzed by combined capillary column gas chromatography/mass spectrometry as described in EPA Method 8240. The target analytes were quantified by comparing their responses to the responses of internal standards that were desorbed along with the sample tubes. A laboratory method blank and a field sample were desorbed and analyzed with each batch of samples to demonstrate that the system was free of contamination.

SAMPLE CUSTODY LOG

Activity	Date	Personnel
Sampling	May 2, 1990	S. Banach, J. Crivlare
Recovery	May 2, 1990	S. Banach, J. Crivlare
Analysis	May 5 - June 10	F. DeRoos, J. Pitman

QUALITY ASSURANCE

MPA recognizes the previously described reference methods to be very technique-oriented, and attempts to minimize all factors which can increase error by implementing its Quality Assurance into every segment of its testing activity.

Shelf life of chemical reagents prepared at the MPA laboratory or at the jobsite does not exceed those specified in the above mentioned methods, and those reagents having a shelf life of one week are prepared daily at the jobsite.

Dry test meters and wet test meters were calibrated according to methods described in the Quality Assurance Handbook, Sections 3.3.2, 3.4.2, and 3.5.2. Percent error for the wet test meter according to the methods measured the test sample volumes to within 2 percent at the flow rate and conditions encountered during sampling.

ACKNOWLEDGMENTS

MOSTARDI-PLATT ASSOCIATES, INC. would like to thank the following personnel for their assistance in completing this test program.

Mr. Barry Rogers — Waste Management of North America
Mr. Ronald Chraston — Monroe Livingston Power Production Plant

MOSTARDI-PLATT ASSOCIATES, INC.

Scott W. Banach

Scott W. Banach, Chemical Engineer

SWB/jg

MOSTARDI-PLATT ASSOCIATES, INC.

WASTE MANAGEMENT OF NORTH AMERICA, INC,
MONROE LIVINGSTON POWER PRODUCTION PLANT
SCOTTSVILLE, NEW YORK
MAY 2, 1990
NO. 2 GAS RECOVERY ENGINE STACK

GASEOUS EMISSIONS TEST SUMMARY

Test	Time	O_2	ppm	lbs/dscf	dscfm	lbs/hr
			Nitrogen Oxides			
1	0900-1000	6.08	394	$4.70X10^{-5}$	2116	5.97
2	1200-1300	5.97	448	$5.35X10^{-5}$	2213	7.10
3	1500-1600	7.06	221	$2.64X10^{-5}$	2238	3.54
4	1700-1730	7.19	214	$2.56X10^{-5}$	2189	3.36
			Carbon Monoxide			
1	0900-1000	6.08	792	$5.76X10^{-5}$	2116	7.31
2	1200-1300	5.97	789	$5.73X10^{-5}$	2213	7.61
3	1500-1600	7.06	628	$4.56X10^{-5}$	2238	6.13
4	1700-1730	7.19	539	$3.91X10^{-5}$	2189	5.14
			Sulfur Dioxide			
1	0915-1020	6.08	3.43	$5.70X10^{-7}$	2116	0.07
2	1225-1338	5.97	7.76	$1.29X10^{-6}$	2213	0.17
3	1526-1658	7.06	5.35	$8.90X10^{-7}$	2238	0.12

Total Gaseous Nonmethane Hydrocarbons (as carbon)

Test	Time	mg/m^3	O_2	lbs/hr	as Hexane
1	0857-0957	119	6.08	0.94	1.87
2	1225-1325	92	5.97	0.76	1.53
3	1526-1626	123	7.06	1.03	2.07

MOSTARDI-PLATT ASSOCIATES, INC.

WASTE MANAGEMENT OF NORTH AMERICA INC.
Monroe Livingston Power Production Plant
Scottsville, New York
May 2, 1990

Analyte	Inlet ug/m^3	Outlet ug/m^3
Carbon Tetrachloride	ND	ND
Chlorobenzene	ND	2
Chloroethane	ND	ND
Chloroform	ND	ND
Chloromethane	21,600	ND
Dibromochloromethane	ND	ND
1,1-Dichloroethane	11,000	ND
1,2-Dichloroethane	470	ND
1,1-Dichloroethylene	277	27.3
E-1,2-Dichlorethylene	376	10.2
1,2 Dichloropropane	216	ND
C 1,3 Dichloropropene	ND	ND
T 1,3 Dichloropropene	ND	ND
Methylene Chloride	42,100	32.5
1,1,22 Tetrachloroethane	ND	ND
Tetrachloroethylene	132,000	528.2
1,1,1 Trichloroethane	4,240	ND
1,1,2 Trichloroethane	7.8	ND
Trichloroethylene	38,400	105
Trichloroeluoromethane	7,040	ND
Vinyl Chloride	47,300	18.8
M-Dichlorobenzene	ND	NA
O-Dichlorobenzene	ND	NA
P-Dichlorobenzene	ND	NA
Chlorodifluoromethane	ND	NA
Dichlorodifluoromethane	1450	15
Dichlorofluoromethane	ND	NA
Acrylonnitrile	ND	ND
Benzene	21,500	152
Toluene	199,000	83.5
Ethylbenzene	27,800	27.1
P xylene & M xylene	63,100	163.5
O xylene	19,700	41
Others		
Acetone		430
Acrolein		ND
Bromoform		ND
Bromomethane		ND
Mercaptans		ND
Methylethylketone		20
Methyl Isobutyl Ketone		663
Bromodichloromethane		ND
2-Chloroethylvinyletter		ND

ND-Not Detected
NA-Not Analyzed for

MOSTARDI-PLATT ASSOCIATES, INC.

PARTICULATE TEST RESULTS SUMMARY

Plant: Waste Management — Source: Monroe Livingston

Test Run Number	1	2	3	Average
Test Location	Engine No. 2	Engine No. 2	Engine No. 2	
Source Condition				
Date	05/02/90	05/02/90	05/02/90	05/02/90
Time	0848-1059	1223-1426	1524-1727	
Particulate Concentration:				
@ Flue Conditions, grains/acf	0.0025	0.0009	0.0006	0.0013
@ Standard Conditions, grains/dscf	0.0080	0.0029	0.0018	0.0042
Emission Rate: pounds/hour	0.15	0.06	0.03	0.08
Average Gas Volumetric Flow Rate:				
@ Flue Conditions, acfm	6,771	6,994	7,104	6,956
@ Standard Conditions, dscfm	2,116	2,213	2,238	2,189
Average Gas Temperature, °F	958.8	975.5	971.0	968.4
Average Gas Velocity, ft/sec	209.00	215.87	219.26	214.71
Average Flue Pressure, in. Hg	29.43	29.43	29.43	29.43
Barometric Pressure, in. Hg	29.65	29.65	29.65	29.65
Flue Gas Moisture, percent by volume	14.70	12.50	13.20	13.47
Average $\%CO_2$ by volume, dry basis	13.30	13.25	12.21	12.92
Average $\%O_2$ by volume, dry basis	6.30	5.97	7.13	6.47
Dry Molecular Wt. of Gas, lb/lb-mole	30.3800	30.3588	30.2388	30.3259
Gas Sample Volume, dscf	32.632	84.146	83.095	
Isokinetic Variance	0.96	1.01	0.99	

CONV.CAL (SW)

MOSTARDI-PLATT ASSOCIATES, INC.

GC/MD CANISTER ANALYSIS
CLIENT: WASTE MANAGEMENT - MONROE LIVINGSTON

SAMPLE CONTROL NO.:	9005159-01	DATE SAMPLED:	5-4-90
FIELD ID NO.:	WMNY-04	DATE ANALYZED:	5-18-90
CANISTER NO.:	125	SAMPLE FOOTNOTES:	w

Compounds	Peak Footnote	Concentration (ppmV)	(ug\m3)
Volatile			
CARBON TETRACHLORIDE		ND	ND
CHLOROBENZENE		ND	ND
CHLOROETHANE		ND	ND
CHLOROFORM		ND	ND
CHLOROMETHANE		10.4	21600
DIBROMOCHLOROMETHANE		ND	ND
1,1-DICHLOROETHANE		2.72	11000
1,2-DICHLOROETHANE		0.116	470
1,1-DICHLOROETHYLENE		0.0700	277
T-1,2-DICHLOROETHYLENE		0.0948	376
1,2-DICHLOROPROPANE		0.0466	216
C-1,3-DICHLOROPROPENE		ND	ND
T-1,3-DICHLOROPROPENE		ND	ND
METHYLENE CHLORIDE		12.1	42100
1,1,2,2-TETRACHLOROETHANE		ND	ND
TETRACHLOROETHYLENE		19.5	132000
1,1,1-TRICHLOROETHANE		0.778	4240
1,1,2-TRICHLOROETHANE		0.0014	7.8
TRICHLOROETHYLENE	a	7.15	38400
TRICHLOROFLUOROMETHANE		1.25	7040
VINYL CHLORIDE		18.5	47300
M-DICHLOROBENZENE		ND	ND
O-DICHLOROBENZENE		ND	ND
P-DICHLOROBENZENE		ND	ND
Freons			
CHLORODIFLUOROMETHANE		ND	ND
DICHLORODIFLUOROMETHANE		0.293	1450
DICHLOROFLUOROMETHANE		ND	ND

MOSTARDI-PLATT ASSOCIATES, INC.

GC/MD CANISTER ANALYSIS
CLIENT: WASTE MANAGEMENT - MONROE LIVINGSTON

SAMPLE CONTROL NO.:	9005159-01	DATE SAMPLED:	5-4-90
FIELD ID NO.:	WMNY-04	DATE ANALYZED:	5-18-90
CANISTER NO.:	125	SAMPLE FOOTNOTES:	w

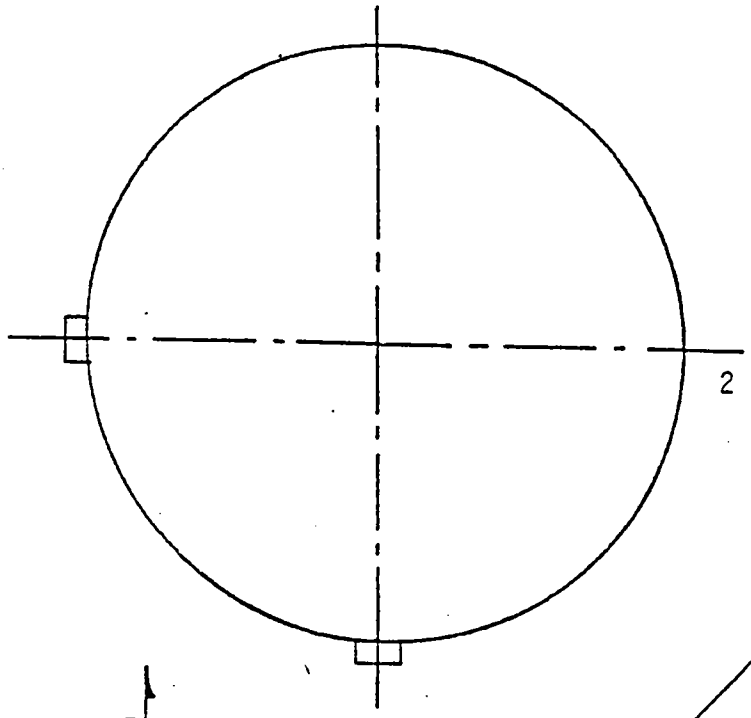
Compounds	Peak Footnote	Concentration (ppmV)	(ug\m3)
Hydrocarbons			
METHANE	c	468000	3.06×10^8
ETHANE		5450	6710000
PROPANE		30.2	54400
N-BUTANE		4.31	10200
N-PENTANE		3.39	10000
N-HEXANE		ND	ND
ACRYLONITRILE		ND	ND
BENZENE		6.73	21500
TOLUENE		52.9	199000
ETHYLBENZENE		6.41	27800
P-XYLENE + M-XYLENE		14.5	63100
O-XYLENE		4.54	19700
TNMHC		2260	7980000

NOTE: TNMHC IS BASED ON AN AVERAGE OF SIX CARBONS AND A MOLECULAR WEIGHT OF 86.2.

Analytical system: Varian 3700 GC
ND Not Detected
a. Trichloroethylene and bromodichloromethane coelute.
c. Normalized values.
w. Multiple dilutions required to bring analytes within instrument calibration range; detection limits are affected accordingly.

Fixed Gases [c] :	(%)	(ug/m3)
CO2	52.2	9.39×10^8
O2	0.17	2.22×10^6
N2	0.72	8.24×10^6

APPENDIX



(Percent of stack diameter from inside wall to traverse point)

Traverse point number on a diameter	Number of traverse points on a diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	85.4	93.3	95.6	96.7	97.5	97.9	98.2	98.4	98.6	98.7	98.9	98.9
2	14.6	75.0	85.3	89.5	91.8	93.3	94.3	95.1	95.6	96.1	96.5	96.8
3		25.0	70.5	80.6	85.4	88.2	90.1	91.5	92.5	93.3	94.0	94.5
4		6.7	29.5	67.7	77.4	82.3	85.4	87.5	89.1	90.3	91.3	92.1
5			14.7	32.3	65.8	75.0	79.9	83.1	85.4	87.1	88.4	89.5
6			4.4	19.4	34.2	64.5	73.1	78.0	81.2	83.5	85.4	86.8
7				10.5	22.6	35.5	63.4	71.7	76.4	79.6	82.0	83.9
8				3.3	14.6	25.0	36.6	62.5	70.4	75.0	78.2	80.6
9					8.2	17.7	26.9	37.5	61.8	69.4	73.9	77.0
10					2.5	11.8	20.1	28.3	38.2	61.2	68.5	72.8
11						6.7	14.6	22.0	29.6	38.8	60.7	67.7
12						2.1	9.9	16.9	23.6	30.6	39.3	60.2
13							5.7	12.5	18.8	25.0	31.5	39.8
14							1.8	8.5	14.6	20.4	26.1	32.3
15								4.9	10.9	16.5	21.8	27.2
16								1.6	7.5	12.9	18.0	23.0
17									4.4	9.7	14.6	19.4
18									1.4	6.7	11.6	16.1
19										3.9	8.7	13.2
20										1.3	6.0	10.5
21											3.5	7.9
22											1.1	5.5
23												3.2
24												1.1

Number of traverse points on a diameter

JOB: Waste Management - Monroe Livingston

DATE: May 2, 1990

TEST NO. ALL

DUCT NO. Engine No. 2 - Outlet

DUCT DIA. 0 ft. 10 ins.

DUCT AREA 0.5454 ft^2

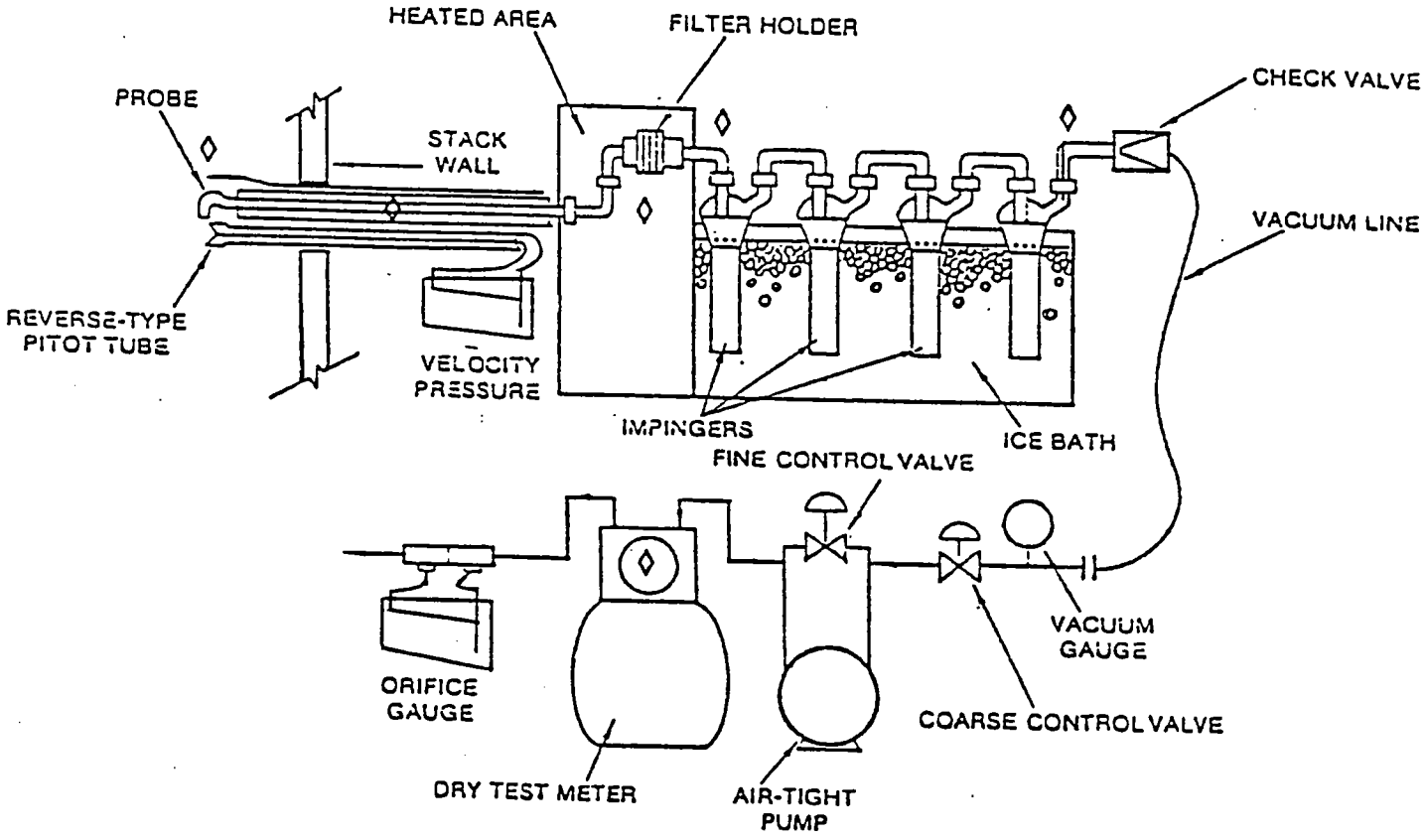
NO. POINTS ACROSS DIA. 6

mostardi-platt associates, inc.

EQUAL AREA TRAVERSE

FOR ROUND DUCTS

SCALE:	DRAWN	APPROVED
18		



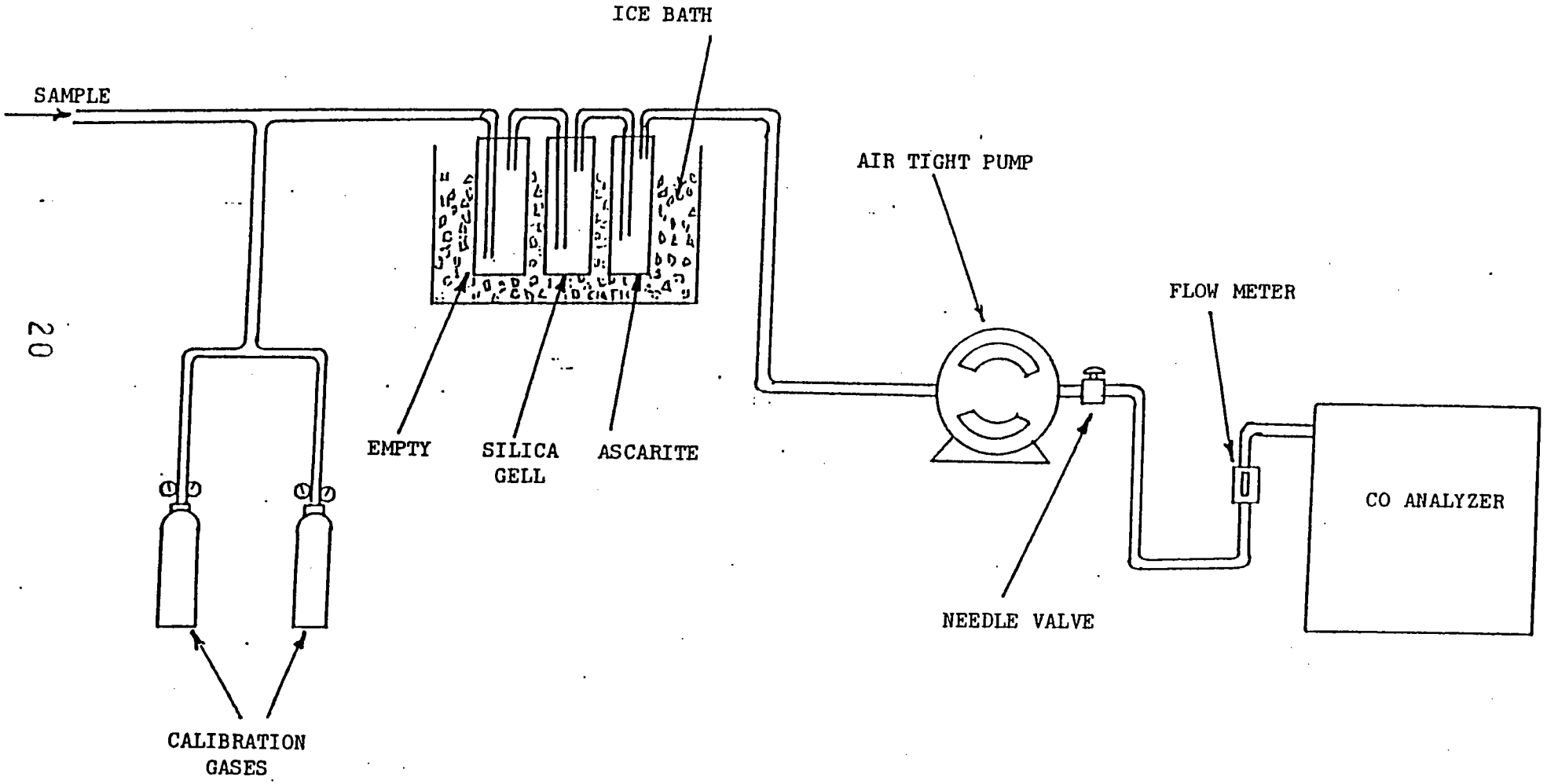
◊ Thermocouple sensor

MPA

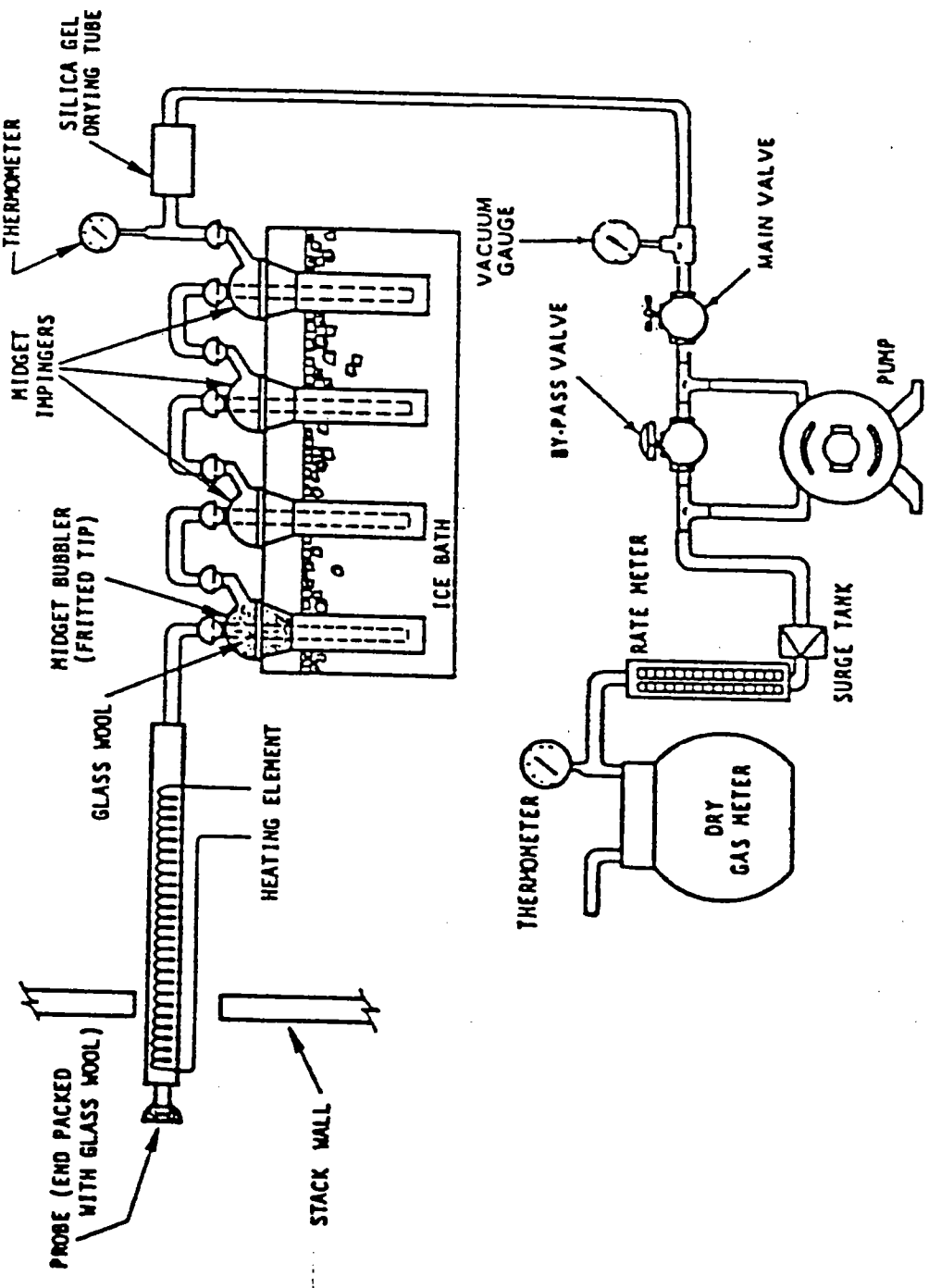
MOSTARDI-PLATT ASSOCIATES, INC.

E.P.A. STACK SAMPLING TRAIN

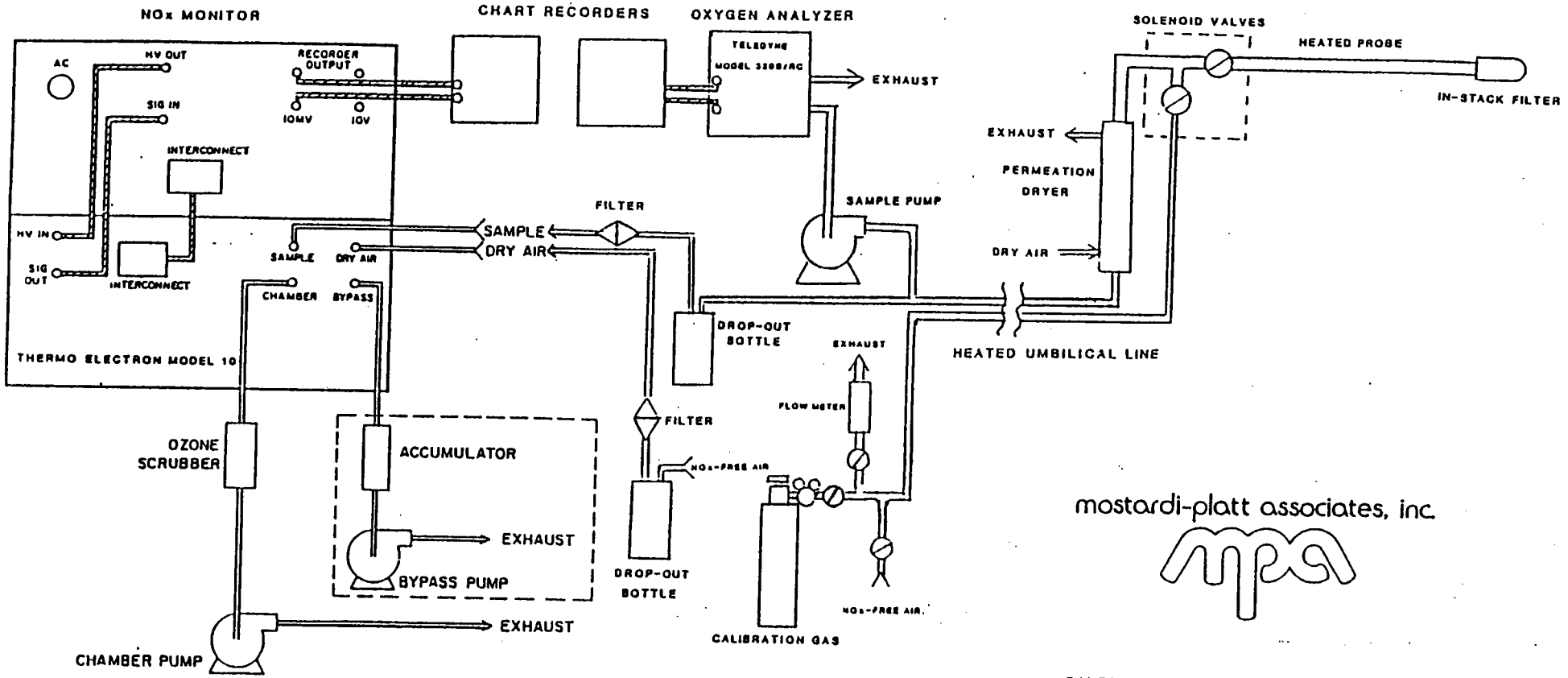
SCALE:	DRAWN	APPROVED
19		



METHOD 10 CO STACK SAMPLING TRAIN



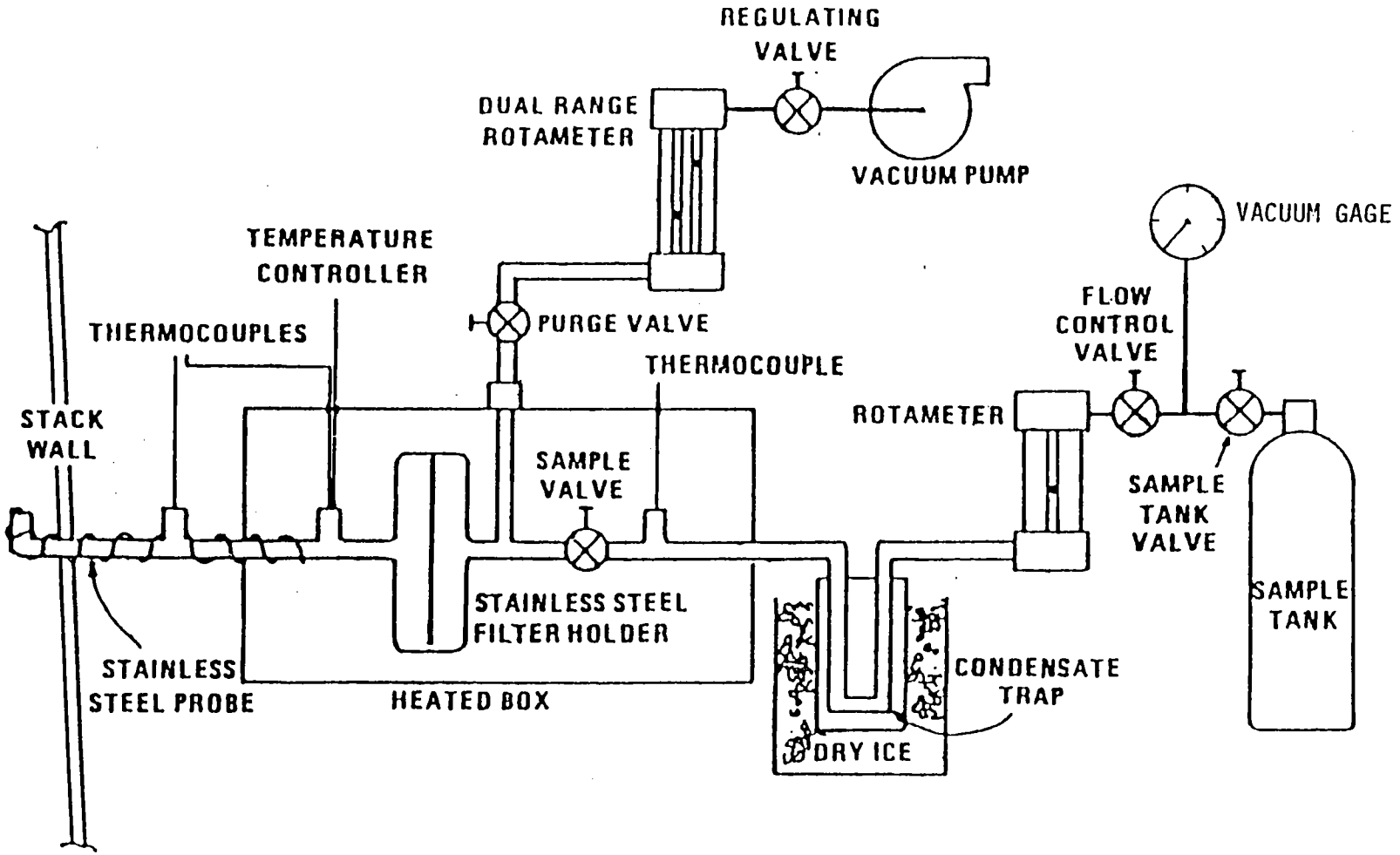
SO_2 sampling train.



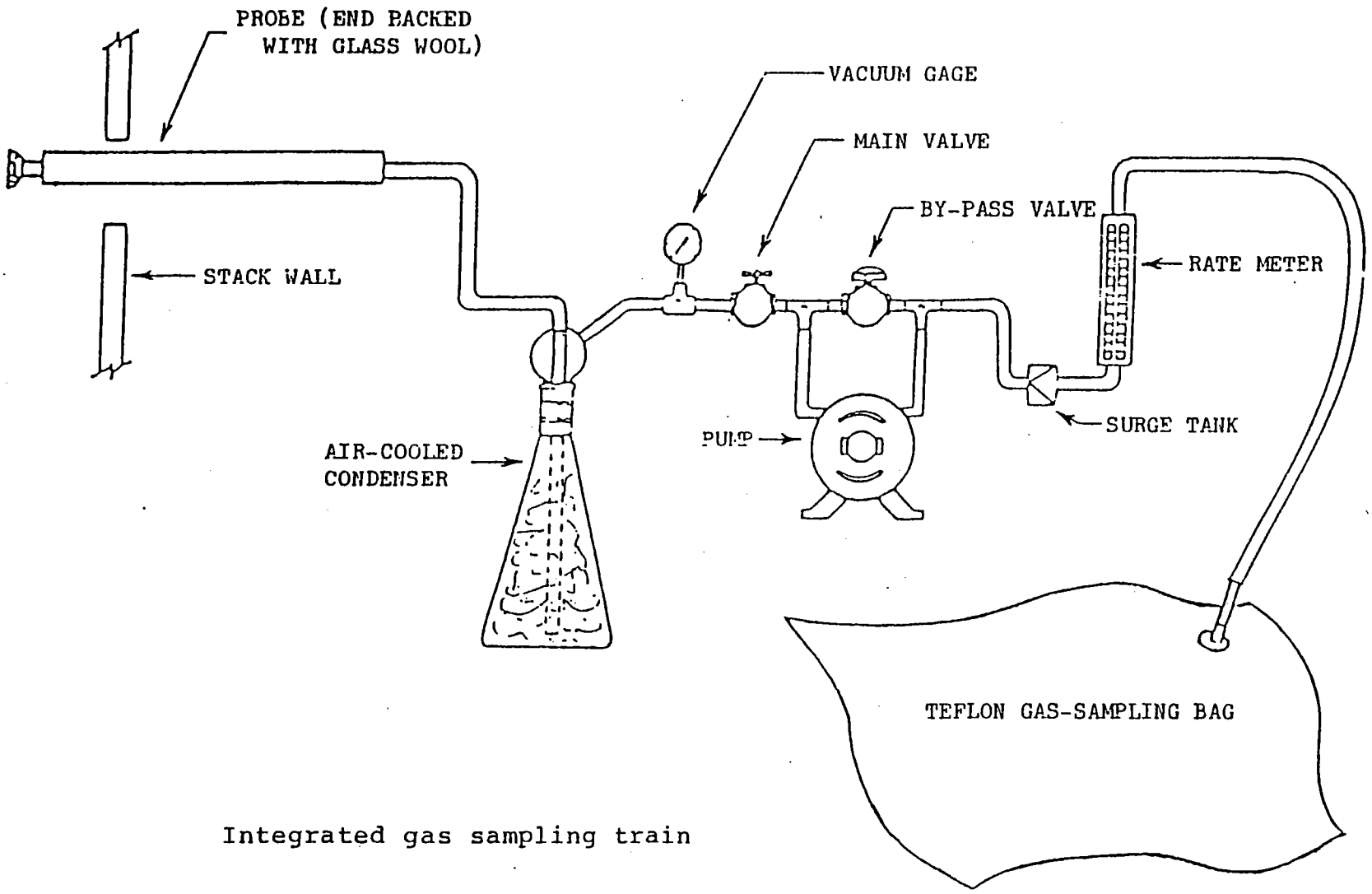
mostardi-platt associates, inc.

CHEMILUMINESCENT NOx MONITOR

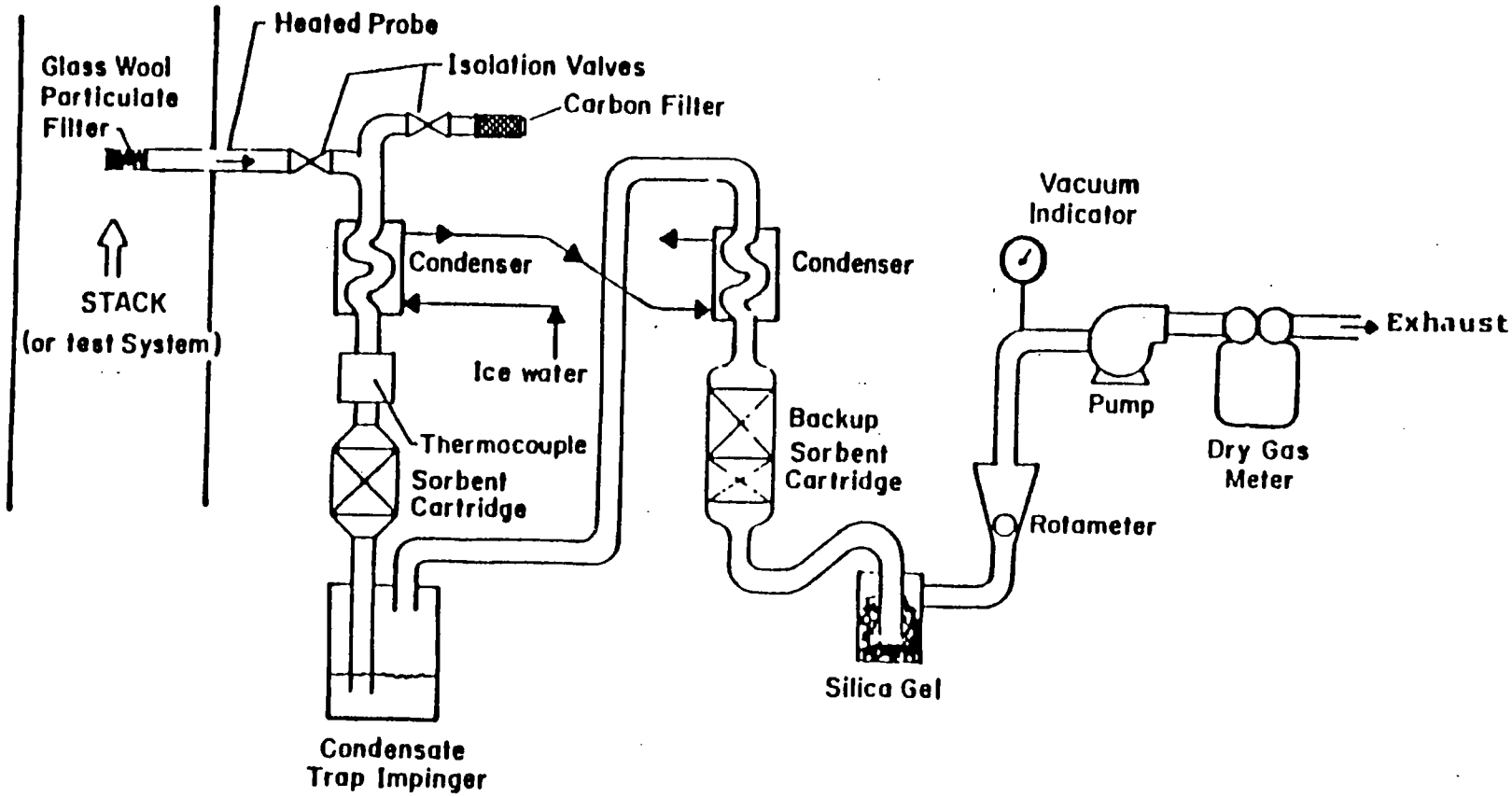
AND SAMPLING TRAIN SCHEMATIC



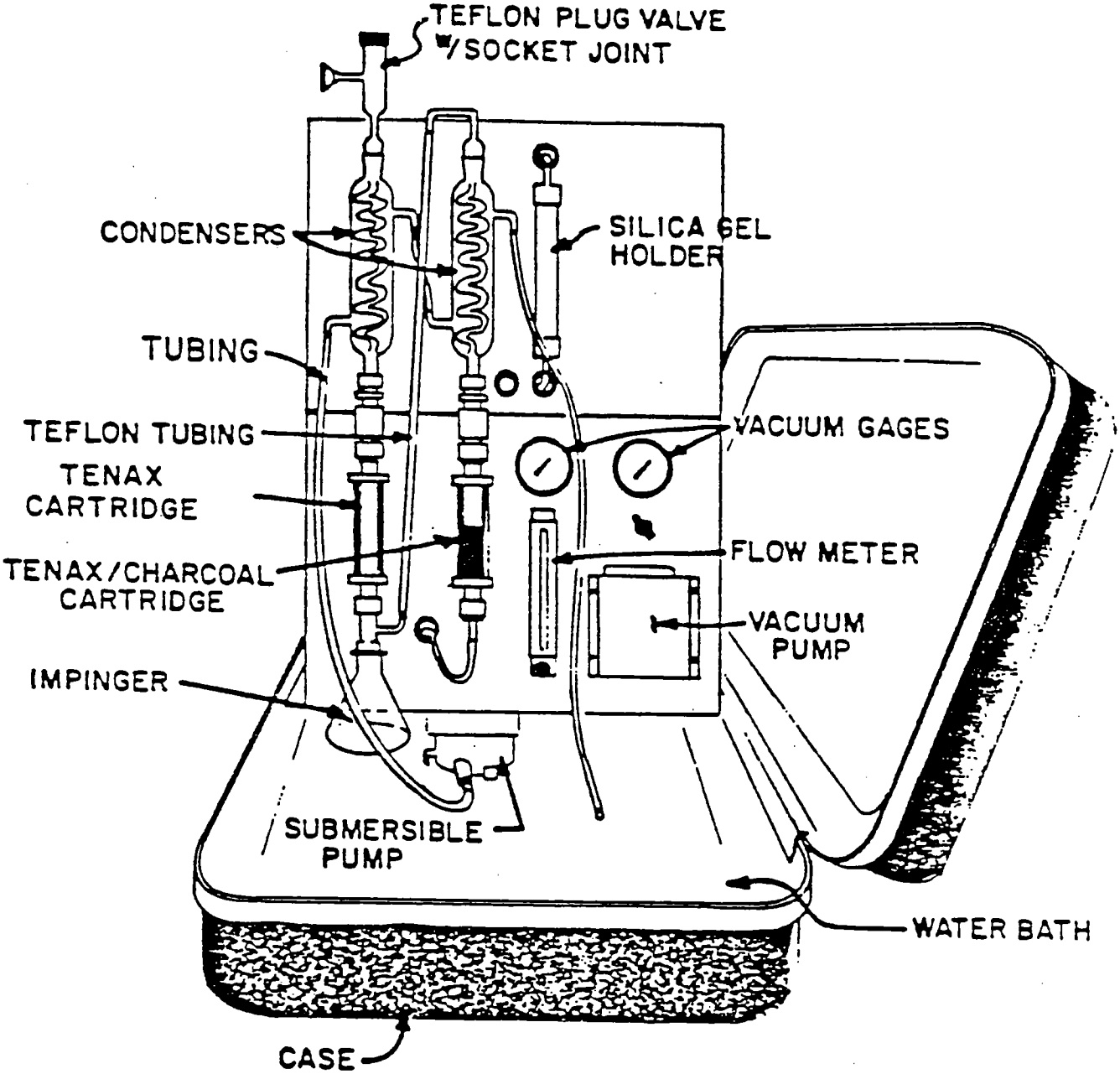
METHOD 25 - TGNMO SAMPLING TRAIN



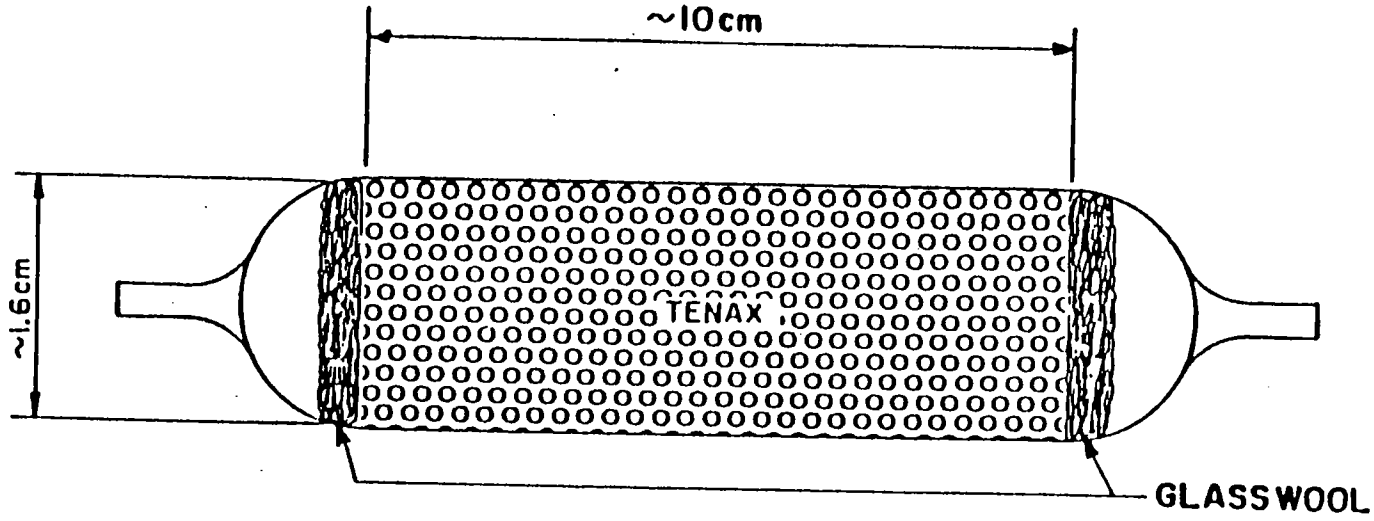
Integrated gas sampling train



SCHEMATIC OF
VOLATILE ORGANIC SAMPLING TRAIN
(VOST)



VOLATILE ORGANIC SAMPLING TRAIN
(I/O CARTRIDGE DESIGN)



INSIDE - INSIDE VOST CARTRIDGE

PPM TO LB/HR
CONVERSION CALCULATIONS

1) NO_x

$$\frac{\text{ppm } NO_x}{8.3755 \times 10^6} = \frac{\text{lbs } NO_x}{\text{DSCF}}$$

$$\frac{\text{lbs } NO_x}{\text{dscf}} \times \frac{\text{dscf}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} = \frac{\text{lbs } NO_x}{\text{hr}}$$

2) SO_2

$$\frac{\text{ppm } SO_2}{6.0151 \times 10^6} = \frac{\text{lbs } SO_2}{\text{dscf}}$$

$$\frac{\text{lbs } SO_2}{\text{dscf}} \times \frac{\text{dscf}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} = \frac{\text{lbs } SO_2}{\text{hr}}$$

3) CO

$$\frac{\text{ppm CO}}{1.3762 \times 10^7} = \frac{\text{lbs CO}}{\text{dscf}}$$

$$\frac{\text{lbs CO}}{\text{dscf}} \times \frac{\text{dscf}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} = \frac{\text{lbs CO}}{\text{hr}}$$

4) TGNMO

$$\text{Emissions (lbs/hr)} = \frac{\text{Conc (mg/m}^3\text{)}}{1000 \text{ 1/m}^3} \times \frac{6.24 \times 10^{-5} \text{ lbs/DSCF}}{\text{mg/l}} \times \text{DSCFM} \times \frac{60 \text{ min}}{\text{hr}}$$

NOMENCLATURE — PARTICULATES

A = Cross-sectional area of stack or duct, ft^2
A_n = Cross-sectional area of nozzle, ft^2
B_{ws} = Water vapor in gas stream, proportion by volume
C_a = Acetone blank residue concentration, g/g
c_{acf} = Concentration of particulate matter in gas stream at actual conditions, gr/acf
C_p = Pitot tube coefficient, dimensionless
c_s = Concentration of particulate matter in gas stream, dry basis, corrected to standard conditions, gr/dscf
IKV = Isokinetic sampling variance, must be .90 ≤ IKV ≤ 1.10
M_d = Dry molecular weight of gas, lb/lb-mole
m_n = Total amount of particulate matter collected, grams
M_s = Molecular weight of gas, wet basis, lb/lb-mole
M_w = Molecular weight of water, 18.0 lb/lb-mole
m_a = Mass of residue of acetone after evaporation, grams
P_{bar} = Barometric pressure at testing site, in.Hg
P_g = Static pressure of gas, in.Hg (in.H_2O/13.6)
P_s = Absolute pressure of gas, in.Hg = $P_{bar} + P_g$
P_{std} = Standard absolute pressure, 29.92 in.Hg
Q_{acfm} = Actual volumetric gas flow rate, acfm
Q_{sd} = Dry volumetric gas flow rate corrected to standard conditions, dscf/hr
R = Ideal gas constant, 21.85 in.Hg-ft^3/°R-lb-mole
T_m = Absolute average dry gas meter temperature, °R
T_s = Absolute average gas temperature, °R
T_{std} = Standard absolute temperature, 528°R
V_a = Volume of acetone blank, ml
V_{aw} = Volume of acetone used in wash, ml
V_{lc} = Total volume of liquid collected in impingers and silica gel, ml
V_m = Volume of gas sample as measured by dry gas meter, dcf
$V_{m(std)}$ = Volume of gas sample measured by dry gas meter, corrected to standard conditions, dscf
v_s = Average gas velocity, ft/sec
$V_{w(std)}$ = Volume of water vapor in gas sample, corrected to standard conditions, scf
W_a = Weight of residue in acetone wash, grams
Y = Dry gas meter calibration factor
ΔH = Average pressure differential across the orifice meter, in.H_2O
Δp = Velocity head of gas, in.H_2O
ρ_a = Density of acetone, 0.7855 g/ml (average)
ρ_w = Density of water, 0.002201 lb/ml
θ = Total sampling time, minutes
K_1 = 17.64 °R/in.Hg
K_2 = 0.04707 ft^3/ml
K_4 = 0.09450/100 = 0.000945
K_p = Pitot tube constant, $85.49 \frac{ft}{sec}\left[\frac{(lb/lb\text{-}mole)(in.Hg)}{(°R)(in.H_2O)}\right]^{1/2}$
%EA = Percent excess air
$\%CO_2$ = Percent carbon dioxide by volume, dry basis
$\%O_2$ = Percent oxygen by volume, dry basis
%CO = Percent carbon monoxide by volume, dry basis
$\%N_2$ = Percent nitrogen by volume, dry basis
0.264 = Ratio of O_2 to N_2 in air, v/v
0.28 = Molecular weight of N_2 or CO divided by 100
0.32 = Molecular weight of O_2 divided by 100
0.44 = Molecular weight of CO_2 divided by 100
13.6 = Specific gravity of mercury (Hg)

CALCULATION FORMULAE
PARTICULATES

1.) $V_{m(std)} = V_m Y \left(\frac{T_{std}}{T_m}\right) \left(\frac{P_{bar} + \frac{\Delta H}{13.6}}{P_{std}}\right) = K_1 V_m Y \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}$

2.) $V_{w(std)} = V_{lc} \left(\frac{\rho_w}{M_w}\right) \left(\frac{RTstd}{P_{std}}\right) = K_2 V_{lc}$

3.) $B_{ws} = \frac{V_{w(std)}}{V_{m(std)} + V_{w(std)}}$

4a.) $C_a = \frac{m_a}{V_a \rho_a}$ 4b.) $W_a = C_a V_{aw} \rho_a$

5.) $c_s = (15.43 \text{ grains/gram}) (m_n / V_{m(std)})$

6.) $c_{acf} = 15.43 \ K_1 \left(\frac{m_n \ P_s}{V_{w(std)} + V_{m(std)}) \ T_s}\right)$

7.) $\%EA = \left(\frac{\%O_2 - (0.5\%CO)}{0.264\%N_2 - (\%O_2 - 0.5\% \ CO)}\right) \times 100$

8. $M_d = 0.44 \ (\%CO_2) + 0.32 \ (\%O_2) + 0.28 \ (\%N_2 + \% \ CO)$

9.) $M_s = M_d (1 - B_{ws}) + 18.0 B_{ws}$

10.) $v_s = K_p C_p \sqrt{\frac{\Delta p \ T_s}{P_s M_s}}$

11.) $Q_{acfm} = v_s A (60_{sec/min})$

12.) $Q_{sd} = (3600_{sec/hr}) (1 - B_{ws}) v_s \left(\frac{T_{std} P_s}{T_s P_{std}}\right) A$

13.) E (emission rate, lbs/hr)
$= Q_{sd}(c_s/7000 \text{ grains/lb})$

14.) IKV $= \frac{T_s V_{m(std)} P_{std}}{T_{std} v_s \theta A_n P_s 60 (1 - B_{ws})} = K_4 \frac{T_s V_{m(std)}}{P_s v_s A_n \theta (1 - B_{ws})}$

CALCULATION FORMULAE
TGNMO

Calculations

Note: All equations are written using absolute pressure; absolute pressures are determined by adding the measured barometric pressure to the measured gauge pressure.

Sample Volume. For each test run, calculate the gas volume sampled:

$$V_s = 0.386\ V \left(\frac{P_t}{T_t} - \frac{P_{ti}}{T_{ti}} \right)$$

Noncondensible Organics. For each sample tank, determine the concentration of nonmethane organics (ppm C):

$$C_t = \left[\frac{\frac{P_{tf}}{T_{tf}}}{\frac{P_t}{T_t} \quad \frac{P_{ti}}{T_{ti}}} \right] \left[\frac{1}{r} \sum_{j=1}^{r} C_{tm_j} - B_a \right]$$

Condensible Organics. For each condensate trap determine the concentration of organics (ppm C):

$$C_c = 0.386 \frac{V_v}{V_s} \frac{P_f}{T_f} \left[\frac{1}{q} \sum_{k=1}^{q} C_{cm_k} - B_t \right]$$

Total Gaseous Nonmethane Organics (TGNMO). To determine the TGNMO concentration for each test run, use the following equation:

$$C = C_t + C_c$$

Total Gaseous Nonmethane Organics (TGNMO) Mass Concentration. To determine the TGNMO mass concentration as carbon for each test run, use the following equation:

$$M_c = 0.498\ C$$

Percent Recovery. To calculate the percent recovery for the liquid injections to the condensate recovery and conditioning system use the following equation:

$$\text{percent recovery} = 1.6 \frac{M}{L} \frac{V_v}{p} \frac{P_f}{T_f} \frac{C_{cm}}{N}$$

Relative Standard Deviation.

$$RDS = \frac{100}{\bar{X}} \sqrt{\frac{\sum (x_i - \bar{x})^2}{n - 1}}$$

NOMENCLATURE - TGNMO

Where:

B_a = Measured NMO blank value for NMO analyzer, ppm C.

B_t = Measured CO_2 blank value for condensate recovery and conditioning system carrier gas, ppm CO_2.

C = Total gaseous non-methane organic (TGNMO) concentration of the effluent, ppm C equivalent.

C_c = Calculated condensible organic (condensate trap) concentration of the effluent, ppm C equivalent.

C_{cm} = Measured concentration (NMO analyzer) for the condensate trap (intermediate collection vessel), ppm CO_2.

C_t = Calculated noncondensible organic concentration (sample tank) of the effluent, ppm C equivalent.

C_{tm} = Measured concentration (NMO analyzer) for the sample tank, ppm NMO.

L = Volume of Liquid injected, microliters

M = Molecular weight of the liquid injected, g/g-mole.

M_c = Total gaseous non-methane organic (TGNMO) mass concentration of the effluent, mg C/dscm.

N = Carbon number of the liquid compound injected (N=7 for toluene, N=6 for hexane).

P_f = Final pressure of the intermediate collection vessel, mm Hg absolute.

P_{ti} = Gas sample tank pressure prior to sampling, mm Hg absolute.

P_t = Gas sample tank pressure after sampling, but prior to pressurizing, mm Hg absolute.

P_{tf} = Final gas sample tank pressure after pressurizing, mm Hg absolute.

T_f = Final temperature of intermediate collection vessel, ^oK.

T_{ti} = Sample tank temperature prior to sampling, ^oK.

T_t = Sample tank temperature at completion of sampling, ^oK.

T_{tf} = Sample tank temperature after pressurizing ^oK.

V = Sample tank volume, cm.

V_v = Intermediate collection vessel volume, cm.

V_s = Gas volume sampled, dscm.

n = Number of data points.

q = Total number of analyzer injections of intermediate collection vessel during analysis (where k=injection number, 1 ...q).

r = Total number of analyzer injections of sample tank during analysis (where j-injection number, 1...r).

x_i = Individual measurements.

$\bar{X}$ = Mean value.

p = Density of liquid injected, g/cc.

MOISTURE CALCULATIONS

$$V_{wc(std)} = \frac{(V_f - V_i)\ \rho_w\ R\ T_{std}}{P_{std}\ M_w} = 0.04707\ (V_f - V_i)$$

$$V_{wsg(std)} = \frac{(W_f - W_i)\ R\ T_{std}}{P_{std}\ M_w} = 0.04715\ (W_f - W_i)$$

$$V_{m(std)} = 17.64\ V_m\ Y\ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}$$

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

Where:

B_{ws} = Water vapor in gas stream, proportion by volume

M_w = Molecular weight of water, 18.015 lb/lb-mole

P_{bar} = Barometric pressure at the testing site, in. Hg

P_{std} = Standard absolute pressure, 29.92 in. Hg

R = Ideal gas constant, 0.048137 (in.Hg)(ft^3)/(g-mole)(°R) = [21.8348(in.Hg)(ft^3)/(lb-mole)(°R)]/ 453.592 g-mole/lb-mole

T_m = Absolute average dry gas meter temperature, °R

T_{std} = Standard absolute temperature, 528 °R

V_f = Final volume of condenser water, ml

V_i = Initial volume of condenser water, ml

V_m = Dry gas volume measured by dry gas meter, dcf

$V_{m(std)}$ = Dry gas volume measured by dry gas meter, corrected to standard conditions, dscf

$V_{wc(std)}$ = Volume of condensed water vapor corrected to standard conditions, scf

$V_{wsg(std)}$ = Volume of water vapor collected in silica gel, corrected to standard conditions, scf

W_f = Final weight of silica gel, g

W_i = Initial weight of silica gel, g

Y = Dry gas meter calibration factor

ΔH = Average pressure exerted on dry gas meter outlet by gas sample bag, in. H_2O

ρ_w = Density of water, 0.9982 g/ml

13.6 = Specific gravity of mercury (Hg)

17.64 = T_{std}/P_{std}

0.04707 = ft^3/ml 0.04715 = ft^3/g

CARBON MONOXIDE CONCENTRATION CALCULATIONS

$C_{CO\ (Stack)} = C_{CO\ (NDIR)} (1-F_{CO_2})$

Where:

C_{CO} Stack = Concentration of CO in stack, ppm by volume (dry basis)

C_{CO} NDIR = Concentration of CO measured by NDIR analyzer, ppm by volume (dry basis)

F_{CO_2} = Volume fraction of CO_2 in sample, (% CO_2) from Orsat analysis divided by 100.

$C_{CO\ Stack\ (Wet\ basis)} = C_{CO\ Stack\ (Dry\ basis)} \times (1-BW_S)$

Where:

$C_{CO\ Stack\ (Wet\ basis)}$ = Concentration of CO in stack, ppm by volume (wet basis)

$C_{CO\ Stack\ (Dry\ basis)}$ = Concentration of CO in stack, pp, by volume (dry basis)

BW_S = Water vapor in gas stream, proportion by volume

SO_2 FIELD TEST DATA

COMPANY WASTE MANAGEMENT
PLANT MONROE LIVINGSTON
SAMPLING LOCATION ENGINE #2

MONITOR TYPE
SERIAL #
DATE-SAMPLES 5/2/90

METER # 6806269
METER CALIBRATION FACTOR, Y= 1
NORMALITY OF BARIUM SOLUTION, N= .00990
Vb=ml of blank = .10
Va=ml of aliquot = 20

TEST 1	TIME	t_m ^oF	Chg(H)	V_m
Pbar 29.65	915	72	.50	5.794
	925	73	.50	6.204
	930	75	.50	6.672
	945	77	.50	7.254
	945			7.254
	AVG	74	.50	1.460

Vt = ml of titrant = .50
Vscf = 1.432
CSO2 = .098x 10^{-5}
PPM = 6

TEST 2	TIME	t_m ^oF	CHG(H)	V_m
Pbar 29.65	950	77	.50	7.261
	1000	78	.50	7.674
	1010	79	.50	8.063
	1020	80	.50	8.394
	1020			8.394
	AVG	79	.50	1.133

Vt = ml of titrant = .15
Vscf = 1.102
CSO2 = .016x 10^{-5}
PPM = 1

TEST 3	TIME	t_m ^oF	Chg(H)	V_m
Pbar 29.65	1225	83	.50	8.397
	1235	85	.50	8.864
	1245	86	.50	9.303
	1255	88	.50	9.719
	1255			9.719
	AVG	86	.50	1.322

Vt = ml of titrant = .65
Vscf = 1.270
CSO2 = .151x 10^{-5}
PPM = 9

TEST 4	TIME	t_m ^oF	CHG(H)	V_m
Pbar 29.65	1308	88	.50	9.788
	1318	87	.50	10.054
	1328	87	.50	10.264
	1338	89	.50	10.748
	1338			10.748
	AVG	88	.50	.960

Vt = ml of titrant = .38
Vscf = .918
CSO2 = .107x 10^{-5}
PPM = 6

PLANT MONROE LIVINGSTON
COMPANY WASTE MANAGEMENT
SAMPLING LOCATION ENGINE #2

MONITOR TYPE
SERIAL #
DATE-SAMPLES 5/2/90

TEST 5	TIME	t_m ^oF	Chg(H)	V_m
Pbar 29.65	1526	87	.50	10.755
	1536	88	.50	11.143
	1546	88	.50	11.466
	1556	89	.50	12.025
	1556			12.025
	AVG	88	.50	1.270

Vt = ml of titrant = .48
Vscf = 1.214
CSO2 = $.109 \times 10^{-5}$
PPM = 7

TEST 6	TIME	t_m ^oF	CHG(H)	V_m
Pbar 29.65	1628	88	.50	12.040
	1638	88	.50	12.521
	1648	87	.50	13.000
	1658	87	.50	13.252
	1658			13.252
	AVG	88	.50	1.212

Vt = ml of titrant = .33
Vscf = 1.160
CSO2 = $.069 \times 10^{-5}$
PPM = 4

MOSTARDI-PLATT ASSOCIATES, INC.

TEST SUPPORT DATA

RUN # 1

COMPANY WASTE MANAGEMENT
PLANT MONROE LIVINGSTON
TEST LOCATION OUTLET - ENGINE #2
CLIENT WASTE MANAGEMENT
OPERATOR CT
DATE 5/2/90
CONTROL BOX E9
METER NO. E9
METER CALIBRATION FACTOR 1.000
PITOT ID # 2
PITOT TUBE COEFFICIENT .841
PORT LENGTH 3.00 in.
PORT SIZE 3 in.
PORT TYPE NIPPLE

BAROMETRIC PRESSURE in. Hg. 29.65
FLUE PRESSURE in. H20 -3.00
FLUE PRESSURE in. Hg. abs. 29.43
PROBE LENGTH 3 ft.
PROBE LINER MATERIAL 316 SS
NOZZLE IDENTIFICATION #
CALIBRATED NOZZLE DIAMETER .115 in.
LEAK CHECK PRE .017 POST .018 @ 10.0 in. Hg.
DUCT SHAPE ROUND
DUCT AREA .54 sq. ft.
TEST LENGTH 120 min.
MINUTES PER POINT 5.0
TOTAL NUMBER OF TRAVERSE POINTS 24

MOSTARDI-PLATT ASSOCIATES, INC.

ADDITIONAL INPUT RUN # 1

ORSAT ANALYSES

	$\%CO_2$	$\%O_2$
	13.30	6.30
AVG	13.30%	6.30%

SILICA GEL FINAL WT. 217.0 gm - SILICA GEL INITIAL WT. 200.0 gm =0 17.0

FINAL IMPINGER H_2O 302.0 ml - INITIAL H_2O 200.0 ml = 102.0

TOTAL 119.0

ACETONE BLANK RESIDUE WEIGHT 0.0001
ACETONE BLANK VOLUME 100.0
ACETONE WASH VOLUME 176.0

ITEM	FINAL WT.		INIITAL WT.		NET WT.
FILTER #134	.8059	-	.8011	=	.0048
ACETONE WT.	6.7366	-	6.7242	=	.0124
			TOTAL	=	.0172
			LESS ACETONE BLANK	=	.0002
			TOTAL	=	.0170

MOSTARDI-PLATT ASSOCIATES, INC.

TEST DATA SHEET RUN # 1

PT. NO.	CHG(Ps) (in. H_2O)	SQR(Ps)	TIME	V_{m_3} (ft^3)	CHG(h) (in. H_2O)	t_s (^oF)	t_m INLET (^oF)	t_m OUTLET (^oF)
1.01	4.80	2.191	848	40.14	0.10	1000	52	52
1.02	4.80	2.191	853	41.45	0.10	1002	52	52
1.03	5.00	2.236	858	42.58	0.10	985	54	54
1.04	5.00	2.236	903	43.74	0.10	990	55	55
1.05	4.60	2.145	908	45.08	0.09	969	56	56
1.06	4.60	2.145	913	46.37	0.09	972	57	57
1.07	5.20	2.280	918	47.58	0.10	902	58	58
1.08	5.20	2.280	923	49.10	0.10	901	58	58
1.09	5.50	2.345	928	50.59	0.11	924	59	59
1.10	5.50	2.345	933	52.38	0.11	938	59	59
1.11	5.50	2.345	938	53.67	0.11	950	59	59
1.12	5.50	2.345	943	55.20	0.11	946	59	59
			948	56.94				
2.01	5.20	2.280	959	56.94	0.10	989	60	60
2.02	5.70	2.387	1004	58.35	0.11	994	61	61
2.03	5.30	2.302	1009	59.81	0.11	989	61	61
2.04	5.00	2.236	1014	61.22	0.10	982	61	61
2.05	5.00	2.236	1019	62.55	0.10	957	61	61
2.06	4.70	2.168	1024	63.87	0.09	930	62	62
2.07	4.70	2.168	1029	65.09	0.09	944	62	62
2.08	4.50	2.121	1034	66.40	0.09	950	63	63
2.09	4.80	2.191	1039	67.68	0.10	946	63	63
2.10	4.80	2.191	1044	68.79	0.10	945	63	63
2.11	4.70	2.168	1049	70.01	0.09	950	63	63
2.12	4.70	2.168	1054	71.21	0.09	956	64	64
			1059	72.52				
			—	40.141	INITIAL METER VOLUME			
			—	0.000	VOLUME DRAWN DURING PORT CHANGE			
				32.379	TOTAL TEST VOLUME			

	SQR(Ps)	V_m	CHG(h)	t_s	t_m
TOTAL	53.702	32.379	2.41	23011	1422
AVERAGE	2.2376		0.100	958.8	59.3

RUN #1 - RESULTS SUMMARY

WASTE MANAGEMENT
MONROE LIVINGSTON
5/2/90
OUTLET - ENGINE #2

PARTICULATE CONCENTRATION @STACK COND., Cacf=	0.0025 GR/ACF
PARTICULATE CONCENTRATION @DRY STAND. COND., Cs =	0.0080 GR/SCFD
PARTICULATE CONCENTRATION =	0.15 Lbs/hr
PARTICULATE CONCENTRATION (O_2 BASIS) =	0.016 Lbs/MBtu
BAROMETRIC PRESSURE Pb =	29.65 in. Hg.
AVERAGE FLUE GAS PRESSURE Ps =	29.43 in. Hg.
AVERAGE FLUE GAS TEMPERATURE, Ts =	1419^{0}R
AVERAGE METER TEMPERATURE, Tm =	519^{0}R
TOTAL METER VOLUME, Vm =	32.38 cu. ft.
TOTAL METER VOLUME @STAND. COND. Vm(STD) =	32.632 cu. ft.
TOTAL WATER VAPOR @STAND. COND., Vw(STD) =	5.60 cu. ft.
WATER VAPOR IN GAS STREAM PROPORTION BY VOLUME,Bws =	0.147
AVERAGE CARBON DIOXIDE CONTENT OF GAS, CO_2 =	13.30 %
AVERAGE OXYGEN CONTENT OF GAS, O_2 =	6.30 %
AVERAGE NITROGEN CONTENT OF GAS, N_2 =	80.40 %
MOISTURE CORRECTION FACTOR =	0.853
AVERAGE GAS VELOCITY, Vs =	209.00 ft/sec
AVERAGE GAS VOLUMETRIC FLOW RATE, STACK COND. =	6,771 ACFM
AVERAGE GAS VOLUMETRIC FLOW RATE, STAND. COND. =	2,116 DSCFM
AVERAGE GAS VOLUMETRIC FLOW RATE, STAND. COND. =	126,931 DSCFH
PERCENT EXCESS AIR =	42.21 %
MOLECULAR WEIGHT OF THE STACK GAS, DRY BASIS, Md =	30.3800
MOLECULAR WEIGHT OF THE STACK GAS, WET BASIS, Ms =	28.5663
STACK GAS SPECIFIC GRAVITY (AIR = 1,000) =	0.987
ISOKINETIC VARIANCE, IKV =	0.96

*STANDARD CONDITIONS = 68^{0}F, 29.92 in. Hg.

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MOSTARDI-PLATT ASSOCIATES, INC.

TEST SUPPORT DATA

RUN # 2

COMPANY WASTE MANAGEMENT
PLANT MONROE LIVINGSTON
TEST LOCATION OUTLET - ENGINE #2
CLIENT WASTE MANAGEMENT
OPERATOR CT
DATE 5/2/90
CONTROL BOX E9
METER NO. E9
METER CALIBRATION FACTOR 1.000
PITOT ID # 2
PITOT TUBE COEFFICIENT .841
PORT LENGTH 3.00 in.
PORT SIZE 3 in.
PORT TYPE NIPPLE

BAROMETRIC PRESSURE in. Hg. 29.65
FLUE PRESSURE in. H20 -3.00
FLUE PRESSURE in. Hg. abs. 29.43
PROBE LENGTH 3 ft.
PROBE LINER MATERIAL 316 SS
NOZZLE IDENTIFICATION #
CALIBRATED NOZZLE DIAMETER .176 in.
LEAK CHECK PRE .017 POST .018 @ 10.0 in. Hg.
DUCT SHAPE ROUND
DUCT AREA .54 sq. ft.
TEST LENGTH 120 min.
MINUTES PER POINT 5.0
TOTAL NUMBER OF TRAVERSE POINTS 24

MOSTARDI-PLATT ASSOCIATES, INC.

ADDITIONAL INPUT RUN # 2

ORSAT ANALYSES

	$\%CO_2$	$\%O_2$
	13.25	5.97
AVG	13.25%	5.97%

SILICA GEL FINAL WT. 264.5 gm - SILICA GEL INITIAL WT. 233.2 gm =0 31.3

FINAL IMPINGER H_2O 425.0 ml - INITIAL H_2O 200.0 ml = 225.0

TOTAL 256.3

ACETONE BLANK RESIDUE WEIGHT 0.0001
ACETONE BLANK VOLUME 100.0
ACETONE WASH VOLUME 159.0

ITEM	FINAL WT.		INITIAL WT.		NET WT.
FILTER #138	.8130	-	.8047	=	.0083
ACETONE WT.	6.6854	-	6.6775	=	.0079
			TOTAL	=	.0162
			LESS ACETONE BLANK	=	.0002
			TOTAL	=	.0160

MOSTARDI-PLATT ASSOCIATES, INC.

TEST DATA SHEET RUN # 2

PT. NO.	CHG(Ps) (in. H_2O)	SQR(Ps)	TIME	V_m (ft^3)	CHG(h) (in. H_2O)	t_s (^0F)	t_m INLET (^0F)	t_m OUTLET (^0F)
1.01	6.00	2.449	1223	73.24	0.78	1002	62	62
1.02	5.80	2.408	1228	76.98	0.75	997	63	63
1.03	5.80	2.408	1233	80.72	0.75	996	64	64
1.04	5.30	2.302	1238	84.46	0.69	996	64	64
1.05	5.20	2.280	1243	87.98	0.68	1003	66	66
1.06	4.70	2.168	1248	91.41	0.61	1001	66	66
1.07	5.10	2.258	1253	94.74	0.66	986	66	66
1.08	5.50	2.345	1258	98.26	0.71	980	67	67
1.09	4.90	2.214	1303	101.86	0.64	981	67	67
1.10	4.00	2.000	1308	104.98	0.52	980	68	68
1.11	3.80	1.949	1313	107.78	0.49	986	68	68
1.12	3.90	1.975	1318	110.77	0.51	985	68	68
			1323	113.80				
2.01	6.00	2.449	1326	113.80	0.78	995	65	65
2.02	5.80	2.408	1331	117.53	0.75	990	63	63
2.03	5.90	2.429	1336	121.20	0.77	993	64	64
2.04	5.70	2.387	1341	124.93	0.74	990	65	65
2.05	5.80	2.408	1346	128.52	0.75	980	65	65
2.06	5.50	2.345	1351	132.26	0.72	967	66	66
2.07	5.40	2.324	1356	135.81	0.70	962	66	66
2.08	6.10	2.470	1401	139.44	0.79	950	67	67
2.09	5.80	2.408	1406	143.13	0.75	930	68	67
2.10	5.60	2.366	1411	146.88	0.73	921	68	68
2.11	5.30	2.302	1416	150.50	0.69	922	68	68
2.12	5.40	2.324	1421	154.00	0.70	920	68	68
			1426	157.67				
				− 73.244	INITIAL METER VOLUME			
				− 0.000	VOLUME DRAWN DURING PORT CHANGE			
				84.429	TOTAL TEST VOLUME			

	SQR(Ps)	V_m	CHG(h)	t_s	t_m
TOTAL	55.380	84.429	16.66	23413	1582
AVERAGE	2.3075		0.694	975.5	65.9

RUN #2 - RESULTS SUMMARY

WASTE MANAGEMENT
MONROE LIVINGSTON
5/2/90
OUTLET - ENGINE #2

PARTICULATE CONCENTRATION @STACK COND., Cacf=	0.0009 GR/ACF
PARTICULATE CONCENTRATION @DRY STAND. COND., Cs =	0.0029 GR/SCFD
PARTICULATE CONCENTRATION =	0.06 Lbs/hr
PARTICULATE CONCENTRATION (O_2 BASIS) =	0.006 Lbs/MBtu
BAROMETRIC PRESSURE Pb =	29.65 in. Hg.
AVERAGE FLUE GAS PRESSURE Ps =	29.43 in. Hg.
AVERAGE FLUE GAS TEMPERATURE, Ts =	1436 ^{0}R
AVERAGE METER TEMPERATURE, Tm =	526 ^{0}R
TOTAL METER VOLUME, Vm =	84.43 cu. ft.
TOTAL METER VOLUME @STAND. COND. Vm(STD) =	84.146 cu. ft.
TOTAL WATER VAPOR @STAND. COND., Vw(STD) =	12.10 cu. ft.
WATER VAPOR IN GAS STREAM PROPORTION BY VOLUME, Bws =	0.125
AVERAGE CARBON DIOXIDE CONTENT OF GAS, CO_2 =	13.25 %
AVERAGE OXYGEN CONTENT OF GAS, O_2 =	5.97 %
AVERAGE NITROGEN CONTENT OF GAS, N_2 =	80.78 %
MOISTURE CORRECTION FACTOR =	0.875
AVERAGE GAS VELOCITY, Vs =	215.87 ft/sec
AVERAGE GAS VOLUMETRIC FLOW RATE, STACK COND. =	6,994 ACFM
AVERAGE GAS VOLUMETRIC FLOW RATE, STAND. COND. =	2,213 DSCFM
AVERAGE GAS VOLUMETRIC FLOW RATE, STAND. COND. =	132,788 DSCFH
PERCENT EXCESS AIR =	38.88 %
MOLECULAR WEIGHT OF THE STACK GAS, DRY BASIS, Md =	30.3588
MOLECULAR WEIGHT OF THE STACK GAS, WET BASIS, Ms =	28.8091
STACK GAS SPECIFIC GRAVITY (AIR = 1,000) =	0.995
ISOKINETIC VARIANCE, IKV =	1.01

*STANDARD CONDITIONS = 68 ^{0}F, 29.92 in. Hg.

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MOSTARDI-PLATT ASSOCIATES, INC.

TEST SUPPORT DATA

RUN # 3

COMPANY WASTE MANAGEMENT
PLANT MONROE LIVINGSTON
TEST LOCATION OUTLET - ENGINE #2
CLIENT WASTE MANAGEMENT
OPERATOR CT
DATE 5/2/90
CONTROL BOX E9
METER NO. E9
METER CALIBRATION FACTOR 1.000
PITOT ID # 2
PITOT TUBE COEFFICIENT .841
PORT LENGTH 3.00 in.
PORT SIZE 3 in.
PORT TYPE NIPPLE

BAROMETRIC PRESSURE in. Hg. 29.65
FLUE PRESSURE in. H20 -3.00
FLUE PRESSURE in. Hg. abs. 29.43
PROBE LENGTH 3 ft.
PROBE LINER MATERIAL 316 SS
NOZZLE IDENTIFICATION #
CALIBRATED NOZZLE DIAMETER .176 in.
LEAK CHECK PRE .017 POST .018 @ 10.0 in. Hg.
DUCT SHAPE ROUND
DUCT AREA .54 sq. ft.
TEST LENGTH 120 min.
MINUTES PER POINT 5.0
TOTAL NUMBER OF TRAVERSE POINTS 24

MOSTARDI-PLATT ASSOCIATES, INC.

ADDITIONAL INPUT RUN # 3

ORSAT ANALYSES

	$\%CO_2$	$\%O_2$
	12.31	7.06
	12.11	7.19
AVG	12.21%	7.13%

SILICA GEL FINAL WT. 275.7 gm - SILICA GEL INITIAL WT. 245.1 gm =0 30.6

FINAL IMPINGER H_2O 438.0 ml - INITIAL H_2O 200.0 ml = 238.0

TOTAL 268.6

ACETONE BLANK RESIDUE WEIGHT 0.0001
ACETONE BLANK VOLUME 100.0
ACETONE WASH VOLUME 185.0

ITEM	FINAL WT.		INIITAL WT.		NET WT.
FILTER #144	.7885	-	.7869	=	.0016
ACETONE WT.	6.8091	-	6.8009	=	.0082
			TOTAL	=	.0098
			LESS ACETONE BLANK	=	.0002
			TOTAL	=	.0096

MOSTARDI-PLATT ASSOCIATES, INC.

TEST DATA SHEET RUN # 3

PT. NO.	CHG(Ps) (in. H_2O)	SQR(Ps)	TIME	V_m (ft^3)	CHG(h) (in. H_2O)	t_s (^oF)	t_m INLET (^oF)	t_m OUTLET (^oF)
1.01	6.30	2.510	1524	59.39	0.76	970	62	64
1.02	5.90	2.429	1529	63.15	0.71	973	63	63
1.03	5.60	2.366	1534	66.73	0.67	975	64	64
1.04	5.50	2.345	1539	70.25	0.66	977	65	65
1.05	4.50	2.121	1544	73.71	0.54	975	65	65
1.06	4.50	2.121	1549	76.87	0.54	968	65	65
1.07	5.40	2.324	1554	80.05	0.65	969	65	65
1.08	6.00	2.449	1559	83.49	0.72	967	66	66
1.09	5.50	2.345	1604	87.09	0.66	968	66	66
1.10	6.00	2.449	1609	90.60	0.72	965	66	66
1.11	6.30	2.510	1614	94.23	0.76	963	67	67
1.12	6.00	2.449	1619	97.96	0.72	965	67	67
			1624	101.62				
2.01	6.70	2.588	1627	101.62	0.80	978	65	65
2.02	7.50	2.739	1632	105.52	0.90	976	66	66
2.03	5.90	2.429	1637	109.49	0.71	977	66	66
2.04	6.50	2.550	1642	113.02	0.78	973	66	66
2.05	5.70	2.387	1647	116.79	0.68	975	67	67
2.06	5.20	2.280	1652	120.34	0.62	980	67	67
2.07	5.40	2.324	1657	123.70	0.65	978	67	67
2.08	5.50	2.345	1702	127.19	0.66	972	67	67
2.09	4.70	2.168	1707	130.69	0.56	970	68	68
2.10	4.10	2.025	1712	133.88	0.49	966	67	67
2.11	3.80	1.949	1717	136.92	0.46	963	67	67
2.12	3.80	1.949	1722	139.84	0.46	962	67	67
			1727	142.77				
				− 59.389	INITIAL METER VOLUME			
				− 0.000	VOLUME DRAWN DURING PORT CHANGE			
				83.381	TOTAL TEST VOLUME			

	SQR(Ps)	V_m	CHG(h)	t_s	t_m
TOTAL	56.155	83.381	15.88	23305	1582
AVERAGE	2.3398		0.662	971.0	65.9

RUN #3 - RESULTS SUMMARY

WASTE MANAGEMENT
MONROE LIVINGSTON
5/2/90
OUTLET - ENGINE #2

PARTICULATE CONCENTRATION @STACK COND., Cacf=	0.0006 GR/ACF
PARTICULATE CONCENTRATION @DRY STAND. COND., Cs =	0.0018 GR/SCFD
PARTICULATE CONCENTRATION =	0.03 Lbs/hr
PARTICULATE CONCENTRATION (O_2 BASIS) =	0.004 Lbs/MBtu
BAROMETRIC PRESSURE Pb =	29.65 in. Hg.
AVERAGE FLUE GAS PRESSURE Ps =	29.43 in. Hg.
AVERAGE FLUE GAS TEMPERATURE, Ts =	1431 ^{0}R
AVERAGE METER TEMPERATURE, Tm =	526 ^{0}R
TOTAL METER VOLUME, Vm =	83.38 cu. ft.
TOTAL METER VOLUME @STAND. COND. Vm(STD) =	83.095 cu. ft.
TOTAL WATER VAPOR @STAND. COND., Vw(STD) =	12.60 cu. ft.
WATER VAPOR IN GAS STREAM PROPORTION BY VOLUME, Bws =	0.132
AVERAGE CARBON DIOXIDE CONTENT OF GAS, CO_2 =	12.21 %
AVERAGE OXYGEN CONTENT OF GAS, O_2 =	7.13 %
AVERAGE NITROGEN CONTENT OF GAS, N_2 =	80.66 %
MOISTURE CORRECTION FACTOR =	0.868
AVERAGE GAS VELOCITY, Vs =	219.26 ft/sec
AVERAGE GAS VOLUMETRIC FLOW RATE, STACK COND. =	7,104 ACFM
AVERAGE GAS VOLUMETRIC FLOW RATE, STAND. COND. =	2,238 DSCFM
AVERAGE GAS VOLUMETRIC FLOW RATE, STAND. COND. =	134,266 DSCFH
PERCENT EXCESS AIR =	50.34 %
MOLECULAR WEIGHT OF THE STACK GAS, DRY BASIS, Md =	30.2388
MOLECULAR WEIGHT OF THE STACK GAS, WET BASIS, Ms =	28.6226
STACK GAS SPECIFIC GRAVITY (AIR = 1,000) =	0.989
ISOKINETIC VARIANCE, IKV =	0.99

*STANDARD CONDITIONS = 68 ^{0}F, 29.92 in. Hg.

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CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	02	CO2	02	SO2	CO
CHANNEL UNITS	PPM	%	%	%	PPM	PPM
FULL SCALE VALUE	1000	25.00	25.00	25.0	1000	950
ZERO VALUE	0	-6.25	-6.25	.0	0	-295
INPUT RANGE	10	1	1	1	10	1
09:01	466	6.11	13.25	5.1	-213	939
09:02	403	6.12	13.28	5.0	-213	801
09:03	357	6.27	13.11	5.0	-210	694
09:04	392	6.03	13.34	5.1	-210	949
09:05	359	6.22	13.16	5.2	-208	564
09:06	358	6.30	13.12	5.1	-204	49
09:07	396	5.95	13.36	4.9	-206	969
09:08	344	6.27	13.14	4.9	-206	885
09:09	388	6.12	13.27	6.5	-195	926
09:10	370	6.08	13.25	6.5	-193	944
09:11	390	6.16	13.22	6.5	-195	915
09:12	438	5.94	13.44	6.4	-196	-1570
09:13	403	6.03	13.31	6.4	-195	961
09:14	387	6.14	13.27	6.4	-192	934
09:15	377	6.08	13.31	6.4	-193	943
09:16	400	5.92	13.41	6.4	-193	972
09:17	380	6.05	13.30	6.4	-198	966
09:18	364	6.33	13.16	6.5	-194	903
09:19	349	6.17	13.20	6.5	-190	949
09:20	369	6.22	13.23	6.5	-191	918
09:21	448	6.03	13.39	6.5	-191	958
09:22	439	6.02	13.31	6.4	-189	943
09:23	394	6.11	13.31	6.4	-190	943
09:24	469	5.92	13.45	6.3	-189	-1567
09:25	361	6.12	13.23	6.3	-188	949
09:26	439	5.94	13.45	6.4	-189	-1567
09:27	367	6.03	13.31	6.3	-187	974
09:28	398	6.03	13.36	6.3	-186	969
09:29	362	6.17	13.20	6.4	-186	949
09:30	364	6.11	13.23	6.4	-185	962
09:31	404	6.05	13.34	6.4	-185	978
09:32	465	5.86	13.52	6.3	-185	-1567
09:33	414	5.91	13.42	6.3	-185	974
09:34	417	6.05	13.39	6.3	-183	972
09:35	361	6.12	13.25	6.4	-182	939
09:36	352	6.12	13.25	6.4	-181	357
09:37	357	6.25	13.19	6.5	-181	923
09:38	447	5.91	13.48	6.5	-180	-1567
09:39	377	6.06	13.30	6.4	-181	964
09:40	404	5.95	13.39	6.4	-182	816
09:41	479	5.98	13.45	6.4	-180	967
09:42	451	6.06	13.31	6.4	-180	933
09:43	380	6.17	13.28	6.5	-179	939
09:44	338	6.19	13.16	6.6	-177	928
09:45	389	6.11	13.30	6.5	-177	954
09:46	352	6.17	13.19	6.4	-178	935
09:47	381	6.08	13.27	6.4	-178	936
09:48	346	6.16	13.16	6.4	-177	901
09:49	424	6.09	13.31	6.5	-175	913
09:50	390	6.08	13.25	6.4	-176	947
09:51	344	6.11	13.19	6.5	-175	947
09:52	468	6.11	13.41	6.6	-174	936
09:53	444	5.83	13.52	6.6	-175	-1569
09:54	382	6.20	13.19	6.9	-173	917
09:55	370	6.08	13.28	6.9	-173	937
09:56	426	5.95	13.42	6.7	-173	-1567
09:57	366	6.03	13.30	6.6	-173	966
09:58	387	6.20	13.23	6.6	-172	941
09:59	399	5.89	13.42	6.6	-172	-1569
10:00	375	6.19	13.25	6.6	-172	941
AVERAGE	394	6.08	13.30	6.3	-187	569

PASSWORD : XXXXXX
OK

M

VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

NOX 02 CO2 02 CO

HOURLY SUMMARY 13:00:00 05/02/90 122 WASTE MNGT.

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	O2	CO2	O2	SO2	CO
CHANNEL UNITS	PPM	%	%	%	PPM	PPM
FULL SCALE VALUE	1000	25.00	25.00	25.0	1000	9999
ZERO VALUE	0	-6.25	-6.25	.0	0	-225
INPUT RANGE	10	1	1	1	10	10
12:01	474	6.09	13.20	.2	-145	833
12:02	420	5.91	13.23	.2	-145	864
12:03	391	6.17	13.08	.2	-144	808
12:04	409	6.00	13.20	.2	-145	838
12:05	404	6.11	13.12	.2	-145	823
12:06	453	5.89	13.30	.2	-139	854
12:07	438	6.06	13.16	.2	-145	823
12:08	474	5.91	13.33	.2	-141	849
12:09	517	5.94	13.25	.2	-143	838
12:10	428	6.06	13.17	.2	-144	813
12:11	395	6.06	13.16	.2	-150	828
12:12	421	6.11	13.17	.2	-149	808
12:13	414	5.97	13.25	.2	-148	838
12:14	386	6.16	13.08	.2	-145	792
12:15	421	6.08	13.19	.1	-142	808
12:16	416	6.02	13.20	.2	-140	833
12:17	371	6.27	12.92	.2	-141	787
12:18	427	5.92	13.30	.2	-138	838
12:19	377	6.17	13.08	.2	-144	792
12:20	466	5.97	13.30	.1	-144	838
12:21	445	6.02	13.23	.2	-141	828
12:22	387	5.98	13.17	.2	-146	843
12:23	486	5.97	13.33	.2	-142	823
12:24	490	5.81	13.39	.2	-140	859
12:25	414	6.11	13.16	.2	-138	833
12:26	488	5.84	13.42	.2	-144	981
12:27	476	5.86	13.37	.2	-137	1002
12:28	497	5.89	13.39	.2	-142	1002
12:29	493	5.94	13.37	.2	-149	992
12:30	421	5.98	13.23	.2	-143	971
12:31	486	6.05	13.23	.2	-138	920
12:32	450	6.00	13.27	.2	-143	925
12:33	441	5.94	13.36	.2	-139	976
12:34	402	6.09	13.20	.2	-145	935
12:35	426	5.89	13.33	.2	-143	971
12:36	468	5.95	13.34	.2	-139	966
12:37	476	5.89	13.36	.2	-140	987
12:38	427	6.02	13.23	.2	-140	961
12:39	486	5.84	13.37	.2	-141	997
12:40	452	6.03	13.16	.2	-144	956
12:41	385	6.03	13.17	.2	-138	951
12:42	454	5.98	13.28	.2	-135	956
12:43	451	5.81	13.34	.2	-136	987
12:44	538	5.89	13.34	.1	-133	966
12:45	499	5.73	13.33	.2	-140	1022
12:46	479	5.87	13.23	.2	-141	997
12:47	558	5.84	13.44	.2	-133	997
12:48	447	5.78	13.33	.2	-135	1002
12:49	416	6.05	13.19	.2	-138	951
12:50	444	5.94	13.28	.2	-141	966
12:51	431	6.05	13.09	.2	-132	946
12:52	529	5.69	13.52	.2	-130	1012
12:53	528	5.92	13.14	.2	-131	930
12:54	466	5.98	13.18	.2	-130	930
12:55	460	5.87	13.30	.2	-140	981
12:56	453	5.91	13.17	.2	-127	966
12:57	428	5.94	13.22	.1	-129	971
12:58	429	5.95	13.25	.1	-140	966
12:59	412	5.97	13.19	.1	-125	966
13:00	458	5.98	13.03	.1	-128	951
AVERAGE	448	5.97	13.25	.2	-140	910

PASSWORD : XXXXXX
OK

M
VIEW WHICH CHANNELS ?
>H

HOURLY SUMMARY 16:00:00 05/02/90 122 WASTE MNGT.

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	O2	CO2	O2	SO2	CO
CHANNEL UNITS	PPM	%	%	%	PPM	PPM
FULL SCALE VALUE	1000	25.00	25.00	25.0	1000	9999
ZERO VALUE	0	-6.25	-6.25	.0	0	-225
INPUT RANGE	10	1	1	1	10	10
15:01	200	7.16	12.22	.2	-145	634
15:02	200	7.34	12.02	.2	-138	593
15:03	186	7.37	12.11	.2	-149	588
15:04	220	7.03	12.44	.2	-124	664
15:05	232	6.97	12.52	.2	-136	675
15:06	156	7.44	11.86	.2	-137	567
15:07	153	7.50	11.87	.2	-134	552
15:08	213	7.25	12.22	.2	-124	613
15:09	230	7.03	12.62	.2	-119	654
15:10	204	7.19	12.06	.2	-126	629
15:11	251	6.89	12.44	.2	-130	700
15:12	250	6.86	12.39	.2	-137	710
15:13	269	6.72	12.72	.2	-141	751
15:14	197	7.12	12.05	.2	-138	634
15:15	186	7.33	12.17	.2	-111	583
15:16	230	6.89	12.34	.2	-152	685
15:17	207	6.98	12.19	.2	-125	659
15:18	163	7.34	12.00	.2	-132	567
15:19	186	7.19	12.23	.2	-116	598
15:20	185	7.34	12.06	.2	-128	562
15:21	209	6.92	12.47	.2	-131	670
15:22	217	7.22	12.27	.2	-125	593
15:23	185	7.00	12.33	.2	-139	649
15:24	208	7.02	12.25	.2	-129	644
15:25	196	7.27	11.94	.2	-141	588
15:26	205	6.92	12.58	.2	-128	670
15:27	194	7.09	12.11	.2	-140	746
15:28	170	7.37	11.95	.2	-135	675
15:29	187	6.95	12.36	.2	-124	767
15:30	227	6.81	12.53	.2	-122	813
15:31	181	7.14	12.39	.2	-126	726
15:32	185	7.08	12.52	.2	-124	751
15:33	195	7.00	12.42	.2	-112	757
15:34	172	7.16	12.11	.2	-136	736
15:35	208	7.09	12.37	.2	-139	767
15:36	264	7.03	12.45	.2	-126	777
15:37	291	6.66	12.56	.2	-131	889
15:38	241	6.70	12.52	.2	-138	889
15:39	281	6.78	12.70	.2	-111	843
15:40	271	6.62	12.62	.2	-127	905
15:41	202	7.05	12.05	.2	-136	762
15:42	323	6.66	12.75	.2	-112	864
15:43	321	6.39	12.94	.2	-122	961
15:44	275	6.83	12.53	.2	-130	833
15:45	229	6.70	12.44	.2	-137	859
15:46	297	6.75	12.80	.2	-117	833
15:47	402	6.44	13.06	.2	-137	946
15:48	267	6.84	12.34	.2	-136	838
15:49	394	6.80	12.69	.2	-143	849
15:50	399	6.75	12.78	.2	-115	889
15:51	383	6.89	12.59	.2	-122	843
15:52	193	7.05	12.17	.2	-137	787
15:53	162	7.50	11.92	.2	-135	659
15:54	195	7.44	12.14	.2	-118	685
15:55	151	7.52	11.94	.2	-130	664
15:56	152	7.44	11.98	.2	-128	649
15:57	137	7.50	11.81	.2	-138	618
15:58	121	7.69	11.77	.2	-120	598
15:59	138	7.48	12.05	.2	-107	624
16:00	134	7.58	11.97	.2	-118	598
AVERAGE	221	7.06	12.31	.2	-129	716

PASSWORD : XXXXXX
OK

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 06.

17:27	200	7.19	12.11	603
17:28	240	7.16	12.30	603
17:29	232	7.14	12.02	639
17:30	204	7.22	12.00	613

PASSWORD :
PASSWORD : XXXXXX
OK

>H

HOURLY SUMMARY 17:30:09 05/02/90 122 WASTE MNGT.

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	O2	CO2	O2	SO2	CO
17:01	208	7.17	12.12	.2	-135	613
17:02	241	7.11	12.20	.2	-140	634
17:03	217	7.27	12.02	.2	-124	603
17:04	211	7.19	12.08	.2	-130	618
17:05	248	7.06	12.00	.2	-129	649
17:06	223	7.28	12.20	.2	-143	593
17:07	185	7.25	12.17	.2	-125	598
17:08	220	7.00	12.31	.2	-133	654
17:09	225	7.22	12.27	.2	-125	598
17:10	202	7.16	12.16	.2	-134	624
17:11	206	7.17	12.06	.2	-127	613
17:12	282	6.95	12.23	.2	-106	670
17:13	256	6.86	12.55	.2	-125	716
17:14	210	7.20	12.11	.2	-128	613
17:15	240	7.06	11.97	.2	-136	639
17:16	204	7.19	12.22	.2	-129	618
17:17	185	7.41	12.02	.2	-138	547
17:18	193	7.22	12.09	.2	-123	588
17:19	190	7.33	12.16	.2	-137	572
17:20	206	7.20	12.08	.2	-128	613
17:21	212	7.28	12.02	.2	-120	578
17:22	212	7.17	12.00	.2	-133	613
17:23	209	7.14	12.16	.2	-132	613
17:24	183	7.39	11.59	.2	-120	567
17:25	173	7.33	12.11	.2	-139	562
17:26	207	7.19	12.17	.2	-137	608
17:27	200	7.19	12.11	.2	-141	603
17:28	240	7.16	12.30	.2	-128	603
17:29	232	7.14	12.02	.2	-148	639
17:30	204	7.22	12.00	.2	-119	613
AVERAGE	214<	7.19<	12.11<	.2<	-130<	613<

ANALYSIS

DATE: 05/02/90
TIME: 17:49
ANALYZER#: 73215

ANALYSIS TIME: 165
CYCLE TIME: 180
MODE: RUN

STREAM S
STREAM#:
CYCLE STA :46

COMP NAME	COMP CODE	MOLE %	B.T.U.*	SP. GR
C O 2	117	43.139	0.00	0.65
OXYGEN	116	0.023	0.00	0.000
NITROGEN	114	0.156	0.00	0.001
METHANE	100	56.681	573.62	0.3140
TOTALS		100.000	573.62	0.9712

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

COMPRESSIBILITY FACTOR (1/Z) = 1.0034
DRY B.T.U. @ 14.730 PSIA & 60 DEG. F CORRECTED FOR (1/Z) = 575.5
SAT B.T.U. @ 14.730 PSIA & 60 DEG. F CORRECTED FOR (1/Z) = 565.5
REAL SPECIFIC GRAVITY = 0.9740
UNNORMALIZED TOTAL = 98.96

ACTIVE ALARMS

NONE

ANALYSIS

DATE: 05/02/90
TIME: 17:52
ANALYZER#: 73215

ANALYSIS TIME: 165
CYCLE TIME: 180
MODE: RUN

STREAM SEQUENCE: 1
STREAM#: 1
CYCLE START TIME: 17:49

COMP NAME	COMP CODE	MOLE %	B.T.U.*	SP. GR.*
C O 2	117	43.109	0.00	0.6550
OXYGEN	116	0.020	0.00	0.0002
NITROGEN	114	0.141	0.00	0.0014
METHANE	100	56.731	574.11	0.3142
TOTALS		100.000	574.11	0.9708

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

COMPRESSIBILITY FACTOR (1/Z) = 1.0034
DRY B.T.U. @ 14.730 PSIA & 60 DEG. F CORRECTED FOR (1/Z) = 576.0
SAT B.T.U. @ 14.730 PSIA & 60 DEG. F CORRECTED FOR (1/Z) = 566.0
REAL SPECIFIC GRAVITY = 0.9736
UNNORMALIZED TOTAL = 99.15

ACTIVE ALARMS

mostardi-platt associates, inc

SAMPLE ANALYSIS SHEET

PROJECT: Waste Management NEW YORK #00504

Dates of Project 5-2-90 Dates of Analysis 5/7 - 5/8/90

Transferred to Lab By SWB Analyst MAM + WS

DESCRIPTION	EMPTY WEIGHT	FULL WEIGHT	NET WEIGHT
TEST # 1			
Filter # 134	0.8011	0.8059	0.0048
Acetone Wash # 1471-1475 176 ml	6.7242	6.7366	0.0124
Acetone Blank			-0.0002
Total Weight			0.0170
TEST # 2			
Filter # 138	0.8047	0.8130	0.0083
Acetone Wash # 1461-1465 159 ml	6.6775	6.6854	0.0079
Acetone Blank			-0.0002
Total Weight			0.0160
TEST # 3			
Filter # 144	0.7869	0.7885	0.0016
Acetone Wash # 1421-1425 185 ml	6.8009	6.8091	0.0082
Acetone Blank			-0.0002
Total Weight			0.0096
TEST # Blank			
Filter #			
Acetone Wash # 1451-1455 100 ml	6.7752	6.7753	0.0001
Acetone Blank			
Total Weight			
Test #			
Filter #			
Acetone Wash # ml			
Acetone Blank			
Total Weight			

Waste Mgmt

twin city testing corporation

662 CROMWELL AVENUE
ST. PAUL, MN 55114
PHONE 612/645-3601

REPORT OF: CHEMICAL ANALYSIS

PROJECT: NEW YORK LIST

DATE: July 12, 1990

REPORTED TO: Mostardi-Platt Associates, Inc.
Attn: Scott Banach
1077 Entry Drive
Bensenville, IL 60106

RECEIVED JUL 23 1990

LABORATORY NO. 4410 90-4868

P.O. #5340

INTRODUCTION

This report presents the results of the analyses of three vost tube samples from Mostardi-Platt Associates which were submitted to our laboratory on May 7, 1990. The scope of our analyses was limited to the parameters listed on the attached tables.

SAMPLE IDENTIFICATION

1) 00518; TCT #193612
2) 00519; TCT #193613
3) 00520; TCT #193614

METHODOLOGY

Each sample was purged in a Tekmar model 4210 Automatic Desorber. The volatile organic compounds were trapped on a Carbopak/Carbosieve trap and then heat desorbed into a Tekmar Model 1000 cryotrap to provide a sharply focused band. The cryotrapped compounds were desorbed onto a J&W DB-624 capillary column in an HP5890A gas chromatograph. The column exit was interfaced directly into the ion source of a VG Trio-2 quadrupole mass spectrometer operated in the electron impact ionization mode at 70eV ionizing energy. Data acquisition and processing were controlled by a VG 11-250J data system.

RESULTS

See attached tables.

REMARKS

The samples were analyzed between May 7 and July 3, 1990 and will be held for two weeks from the report date and then discarded unless written instructions to the contrary are submitted by the client.

TWIN CITY TESTING CORPORATION

Joel A. Pitman
Project Coordinator

Ray A. Siery
Manager, Inorganic Chemistry

JAP/RAS/sls

TWIN CITY TESTING
CLIENT: MOSTARDI-PLATT
CLIENT ID: METHOD BLANK

ANALYSIS DATE: 05/23/1990
TCT ID: METHOD BLK
DATE RECEIVED:
RUNNAME:0143F05

MINNESOTA DEPARTMENT OF HEALTH

VOLATILE ORGANIC COMPOUNDS

COMPOUND	NG/SAMPLE	MDL
Dichlorodifluoromethane	ND	50
Chloromethane	ND	50
Vinyl Chloride	ND	50
Bromomethane	ND	50
Chloroethane	ND	50
Trichlorofluoromethane	ND	50
Acetone	89	50
1,1-Dichloroethene	ND	25
Methylene Chloride	ND	25
trans-1,2-Dichloroethene	ND	25
1,1-Dichloroethane	ND	25
2-Butanone	57	50
Chloroform	ND	25
1,1,1-Trichloroethane	ND	25
1,2-Dichloroethane	ND	25
1,1-Dichloro-1-propene	ND	25
Benzene	ND	25
Carbon Tetrachloride	ND	25
Trichloroethene	BQL	25
Bromodichloromethane	ND	25
2-Chloroethyl vinyl ether	ND	50
cis-1,3-Dichloropropene	ND	25
trans-1,3-Dichloropropene	ND	25
Toluene	ND	25
1,1,2-Trichloroethane	ND	25
4-Methyl-2-Pentanone	52	50
Dibromochloromethane	ND	25
Tetrachloroethene	BQL	25
Chlorobenzene	ND	25
Ethylbenzene	BQL	25
Bromoform	BQL	25
m-/p-Xylene	BQL	25
1,1,2,2-Tetrachloroethane	ND	25
Acrolein	ND	50
Acrylonitrile	ND	50
Mercaptains (as CH_2S)	ND	50
SURROGATE RECOVERY:		
1,2-Dichloroethane-d4	210%	
Toluene-d8	135%	
4-Bromofluorobenzene	99%	

ND = not detected
MDL = minimum detection limit
* = detected at a level below the detection limit
BQL = below quantitation limit

Analyst: [signature]

4410 90-4868

Technical Review: M. Murray

Analyst:SAM

TWIN CITY TESTING
CLIENT: MOSTARDI-PLATT
CLIENT ID: 00518

ANALYSIS DATE: 05/23/1990
TCT ID: 193612
DATE RECEIVED:05/07/1990
RUNNAME:0143G071

MINNESOTA DEPARTMENT OF HEALTH

VOLATILE ORGANIC COMPOUNDS

COMPOUND	NG/SAMPLE	MDL
Dichlorodifluoromethane	ND	50
Chloromethane	ND	50
Vinyl Chloride	ND	50
Bromomethane	ND	50
Chloroethane	ND	50
Trichlorofluoromethane	ND	50
Acetone	13000	50
1,1-Dichloroethene	ND	25
Methylene Chloride	2600	25
trans-1,2-Dichloroethene	98	25
1,1-Dichloroethane	ND	25
2-Butanone	2900	50
Chloroform	ND	25
1,1,1-Trichloroethane	150	25
1,2-Dichloroethane	ND	25
1,1-Dichloro-1-propene	ND	25
Benzene	3800	25
Carbon Tetrachloride	ND	25
Trichloroethene	1900	25
Bromodichloromethane	ND	25
2-Chloroethyl vinyl ether	ND	50
cis-1,3-Dichloropropene	ND	25
trans-1,3-Dichloropropene	ND	25
Toluene	2100	25
1,1,2-Trichloroethane	ND	25
4-Methyl-2-Pentanone	15000	50
Dibromochloromethane	ND	25
Tetrachloroethene	19000	25
Chlorobenzene	80	25
Ethylbenzene	450	25
Bromoform	ND	25
m-/p-Xylene	5300	25
o-Xylene	1300	25
1,1,2,2-Tetrachloroethane	ND	25
Acrolein	ND	50
Acrylonitrile	ND	50
Mercaptains (as CH_2S)	ND	50
SURROGATE RECOVERY:		
1,2-Dichloroethane-d4	97%	
Toluene-d8	33%	
4-Bromofluorobenzene	55%	

ND = not detected
MDL = minimum detection limit
* = detected at a level below the detection limit
BQL = below quantitation limit

Analyst: [signature]

4410 90-4868

Technical Review: [signature] 57

Analyst:SAM

TWIN CITY TESTING
CLIENT: MOSTARDI-PLATT
CLIENT ID: 00519

ANALYSIS DATE: 05/23/1990
TCT ID: 193613
DATE RECEIVED:05/07/1990
RUNNAME:0143G091

MINNESOTA DEPARTMENT OF HEALTH

VOLATILE ORGANIC COMPOUNDS

COMPOUND	NG/SAMPLE	MDL
Dichlorodifluoromethane	1700	50
Chloromethane	ND	50
Vinyl Chloride	750	50
Bromomethane	ND	50
Chloroethane	ND	50
Trichlorofluoromethane	7600	50
Acetone	16000	50
1,1-Dichloroethene	1400	25
Methylene Chloride	2500	25
trans-1,2-Dichloroethene	310	25
1,1-Dichloroethane	ND	25
2-Butanone	1300	50
Chloroform	ND	25
1,1,1-Trichloroethane	60	25
1,2-Dichloroethane	ND	25
1,1-Dichloro-1-propene	ND	25
Benzene	2400	25
Carbon Tetrachloride	ND	25
Trichloroethene	2300	25
Bromodichloromethane	ND	25
2-Chloroethyl vinyl ether	ND	50
cis-1,3-Dichloropropene	ND	25
trans-1,3-Dichloropropene	ND	25
Toluene	2300	25
1,1,2-Trichloroethane	ND	25
4-Methyl-2-Pentanone	12000	50
Dibromochloromethane	ND	25
Tetrachloroethene	2200	25
Chlorobenzene	ND	25
Ethylbenzene	710	25
Bromoform	ND	25
m-/p-Xylene	1500	25
o-Xylene	390	25
1,1,2,2-Tetrachloroethane	65	25
Acrolein	ND	50
Acrylonitrile	ND	50
Mercaptans (as CH_2S)	ND	50
SURROGATE RECOVERY:		
1,2-Dichloroethane-d4	37%	
Toluene-d8	24%	
4-Bromofluorobenzene	97%	

ND = not detected
MDL = minimum detection limit
* = detected at a level below the detection limit
BQL = below quantitation limit

Analyst: [signature]

Technical Review: [signature]

58

4410 90-4868

Analyst:SAM

TWIN CITY TESTING
CLIENT: MOSTARDI-PLATT
CLIENT ID: 00520 BLK

ANALYSIS DATE: 05/23/1990
TCT ID: 193614
DATE RECEIVED:05/07/1990
RUNNAME:0143G031

MINNESOTA DEPARTMENT OF HEALTH

VOLATILE ORGANIC COMPOUNDS

COMPOUND	NG/SAMPLE	MDL
Dichlorodifluoromethane	1100	50
Chloromethane	BQL	50
Vinyl Chloride	ND	50
Bromomethane	ND	50
Chloroethane	BQL	50
Trichlorofluoromethane	18000	50
Acetone	5900	50
1,1-Dichloroethene	310	25
Methylene Chloride	1900	25
trans-1,2-Dichloroethene	ND	25
1,1-Dichloroethane	ND	25
2-Butanone	2100	50
Chloroform	BQL	25
1,1,1-Trichloroethane	220	25
1,2-Dichloroethane	ND	25
1,1-Dichloro-1-propene	ND	25
Benzene	60	25
Carbon Tetrachloride	ND	25
Trichloroethene	ND	25
Bromodichloromethane	ND	25
2-Chloroethyl vinyl ether	ND	50
cis-1,3-Dichloropropene	ND	25
trans-1,3-Dichloropropene	ND	25
Toluene	530	25
1,1,2-Trichloroethane	ND	25
4-Methyl-2-Pentanone	240	50
Dibromochloromethane	ND	25
Tetrachloroethene	36	25
Chlorobenzene	ND	25
Ethylbenzene	38	25
Bromoform	ND	25
m-/p-Xylene	130	25
o-Xylene	26	25
1,1,2,2-Tetrachloroethane	ND	25
Acrolein	ND	50
Acrylonitrile	ND	50
Mercaptains (as CH_2S)	ND	50
SURROGATE RECOVERY:		
1,2-Dichloroethane-d4	138%	
Toluene-d8	150%	
4-Bromofluorobenzene	85%	

ND = not detected
MDL = minimum detection limit
* = detected at a level below the detection limit
BQL = below quantitation limit

Analyst: [signature]

4410 90-4868

Technical Review: M. Murray

Analyst:SAM

RESEARCH TRIANGLE LABORATORIES, INC.

METHOD 25 TABLE OF RESULTS

Name: Mostardi-Platt Associates, Inc. ID #90-33-187 Date: 5/10/90

Sample Number	Sample Description	Concentrations (ppmC)					Mass Conc. (mgC/cu.m)
		CO+CH4	CO2	Noncon-densibles	Conden-sibles	TGNMO	
1	Outlet 00503/00504	2740	139870	108	130	238	119
2	Outlet 00505/00506	2566	138835	99	85	184	92
3	Outlet 00507/00508	2779	128820	103	143	247	123

RESEARCH TRIANGLE LABORATORIES, INC.

COMMENTS ON THE ANALYSES
Report #90-33-187

All Samples: The CO2 flushes were performed with the traps in wet ice.

RESEARCH TRIANGLE LABORATORIES, INC.

METHOD 25 EXPERIMENTAL PROCEDURE

Calibration

A propane calibration gas mixture of 82 ppm CO, 68 ppm CH_4, 2.07% CO_2, and 75 ppm propane is injected via a 1-mL sampling loop into the analyzer. The injections are repeated until three integrated areas indicate reasonable agreement. A 1.18% CO_2 standard is run daily with the same requirement. The average daily response factors must agree within 5% of the RF(CO_2) and the RF(NMO) from the initial performance check.

Daily Performance Checks are performed at the beginning of each work day. Calibrations are performed daily or between customer sets of samples, whichever comes first. Additionally, a System Background Check is performed between each set of samples. Duplicate injections of 1.0% CO_2 are made after the final sample each day.

Response factors (average integrated area/concentration in ppmC) are calculated daily from the initial triplicate injections.

Analysis

Each trap is stored under dry ice until just prior to analysis and is flushed of CO_2 by passing zero air through it at -78 °C and via the CO_2 NDIR to the sample tank. Flushing is continued until no NDIR response is noted. The trap is baked at 200 °C with zero air flushing through the trap and via the oxidation catalyst and the NDIR into the collection vessel. Collection is continued until no NDIR response is noted. The trap is transferred to an oven set at 350 °C and baking is continued for 30 minutes. This ensures the cleanliness of the trap for a subsequent sampling. The trap is taken out of the oven and allowed to cool; it is then capped and stored for shipment.

The sample tank is analyzed by injecting an aliquot via a 1-mL sample loop into the GC column, which is held at 85 °C to elute the CO+CH_4 and then the CO_2 which is passed to the oxidation catalyst, reduction catalyst, and FID. The column is then backflushed at 195 °C to elute the organic fraction. The collection vessel is analyzed identically. In both cases, triplicate injections are made. The sample tank is pumped for 5 minutes (to less than 5 mmHg) and air is then allowed in via a paper fiber filter; this procedure is repeated. The tank is pumped 10 minutes and allowed to stand overnight. The tank is then connected to a pressure gauge to test for leaks (maximum permissible leak rate = 10 mmHg/day). If the tank passes the leak test, it is filled with zero air to slightly greater than atmospheric pressure and stored for shipment.

Calculations

Calculations are done in accord with EPA Method 25 procedures. A sample calculation is provided using client/RTL data.

RESEARCH TRIANGLE LABORATORIES, INC.

METHOD 25 SAMPLE CALCULATION

Note: All pressure values have been converted when necessary to mm Hg and all temperature values to Kelvin.

Name: Mostardi-Platt Associates, Inc. ID #90-33-187 Date: 5/10/90

Sample # 1 Outlet 00503/00504

D A T A

Tank new 220:
Volume (cu.m) = 0.004480

	Pressure (mm Hg)	Temp.(K)
Presampling	3.8	284.8
Postsampling	593.1	291.5
Final	1034.0	298.2

Trap OJ

Collection Vessel:
Volume (cu.m) = 0.005777

	Pressure (mm Hg)	Temp.(K)
Final	1028.0	299.2

Calibration Data:

	CO2	Backflush
Response Factor (area units/ppmC)	87.3	93.7
Blank (ppmC)	9.1	
Blank Area (area units)		0

Areas:

CO + CH4	139,150	138,952	140,098
CO2	7,116,291	7,114,829	7,119,738
Noncondensibles	5,516	4,859	7,357
Condensibles	7,158	5,482	5,273

C A L C U L A T I O N S

Measured Concentrations, corrected for blank:

Cm(CO+CH4) = Area(CO+CH4)/RF(CO2)
= 139150 / 87.3 = 1593.9
= 138952 / 87.3 = 1591.7
= 140098 / 87.3 = 1604.8

Cm(CO2) = Area(CO2)/RF(CO2)
= 7116291 / 87.3 = 81515.4
= 7114829 / 87.3 = 81498.6
= 7119738 / 87.3 = 81554.8

Cm(Noncondensibles) = [Area(Noncondensibles) - Blank Area(NMO)]/RF(NMO)
= (5516 - 0)/ 93.7 = 58.9
= (4859 - 0)/ 93.7 = 51.9
= (7357 - 0)/ 93.7 = 78.5

Cm(Condensibles) = Area(Condensibles)/RF(CO2) - Blank(CO2)
= 7158 / 87.3 - 9.1 = 72.9
= 5482 / 87.3 - 9.1 = 53.7
= 5273 / 87.3 - 9.1 = 51.3

Pressure-Temperature Ratio, Q(i) = P(i)/T(i):

postsampling tank: Q(1) = 593.09 / 291.4833 = 2.03473
presampling tank: Q(2) = 3.80999 / 284.8167 = 1.337699E-02
final tank: Q(3) = 1034 / 298.15 = 3.468053
final CV: Q(4) = 1028 / 299.15 = 3.436403

Volume Sampled (dscm) = 0.3857 x Tank Volume x [Q(1)-Q(2)]
= 0.3857 x .00448 x [2.0347 - 0.0134]
= 0.003493

Averages and % Relative Standard Deviations (%RSD) of Cm's are calculated.
(%RSD of C = %RSD of Cm)

Calculated Concentrations:

C(CO+CH4) = Q(3)/[Q(1)-Q(2)] x Cm(CO+CH4)
= 3.4681/(2.0347 - 0.0134) x 1596.8 = 2739.6

C(CO2) = Q(3)/[Q(1)-Q(2)] x Cm(CO2)
= 3.4681/(2.0347 - 0.0134) x 81522.9 = 139869.6

C(Noncondensibles) = Q(3)/[Q(1)-Q(2)] x Cm(Noncondensibles)
= 3.4681/(2.0347 - 0.0134) x 63.1 = 108.2

C(Condensibles)
= Volume(CV)/Volume(Tank) x Q(4)/[Q(1)-Q(2)] x Cm(Condensibles)
= 0.005777/0.004480 x 3.4364/(2.0347 - 0.0134) x 59.3 = 130.0

Total Gaseous Non-Methane Organics(TGNMO)=C(Noncondensibles)+C(Condensibles)
= 108.2 + 130.0
= 238.2

Mass Concentration = 0.4993 x TGNMO
= 0.4993 x 238.2 = 118.9

RESEARCH TRIANGLE LABORATORIES, INC.

METHOD 25 SAMPLE QA/QC DATA & CALIBRATION CHECK/A

5.1.1 Carrier Gas and Auxiliary Oxygen Blank (1/3/90)

$CO + CH_4 + CO_2 + NMO = 0$ ppm Requirement: < 5 ppm

5.1.2 Catalyst Efficiency Check (1/4/90)

$CO_2 = 9982$ ppmC Requirement: $CO_2 = 10000 \pm 200$ ppmC

5.1.3 System Performance Check (1/4/90)

	Average Percent Recovery	%RSD
50 uL hexane/decane	107.6/103.6	0.1/0.5
10 uL hexane/decane	102.1/103.2	0.5/0.9
Requirement	100 ± 10%	< 5

5.2.1 Oxidation Catalyst Efficiency Check (1/5/90)

FID Response with Reduction Catalyst Out = 0.25%

Requirement < 1%

5.2.2 Reduction Catalyst Efficiency Check (1/5/90)

Response of CO_2 with Oxidation Catalyst and Reduction Catalyst operative was 100.3% of response with catalyst out.

Requirement 100 ± 5%

5.2.3 Analyzer Linearity Check and NMO Calibration (1/2/90)

$\overline{RF}$ values agree within 2.5% Requirement: within 2.5%
%RSD values for triplicates < 2% " < 2%
except Propane 4th Dilution (22 ppmc) %RSD = 2.4%

(deviation allowed by Gene Mull, Manager, and Joseph Adamovic, Laboratory Manager)

$\frac{RF(NMO)}{RF(CO_2)} = 1.015$ Requirement: $\frac{RF(NMO)}{RF(CO_2)} = 1.0 \pm 0.1$

5.2.4 System Performance Check (1/5/90 - 4/10/90)

	Measured Value	Expected Value	Requirement
Propane Mix	75.0 ppm	75.0 ppm	± 5%
Hexane	55.4 ppm	55.2 ppm	± 5%
Toluene	54.9 ppm	54.5 ppm	± 5%
Methanol	* ppm	ppm	± 5%

* Methanol is currently being analyzed.

5.3 NMO Analyzer Daily Calibration

Triplicate injections of a mixture containing propane and high-level CO_2 are made at the beginning of each set of samples or every 24 hours, whichever comes first.

Requirements: $DRF(NMO) = [RF(NMO) = 91.5] \pm 5\%$
$DRF(CO_2) = [RF(CO_2) = 86.2] \pm 5\%$

RESEARCH TRIANGLE LABORATORIES, INC.

METHOD 25 DATA REPORT

Name: Mostardi-Platt Associates, Inc. ID #90-33-187 Date: 5/10/90

Sample # 1 Outlet 00503/00504

TANK new 220: TRAP OJ COLLECTION VESSEL:
Volume (cu.m) = 0.004480 Volume (cu.m) = 0.005777

	Pressure (mm Hg)	Temp.(K)		Pressure (mm Hg)	Temp.(K)
Presampling	3.8	284.8			
Postsampling	593.1	291.5			
Final	1034.0	298.2	Final	1028.0	299.2

Volume Sampled (dscm) = 0.003493

Calibration Data:

	CO2	Backflush
Response Factor (area units/ppmC)	87.3	93.7
Blank (ppmC)	9.1	
Blank Area (area units)		0

Areas:

CO + CH4	139,150	138,952	140,098
CO2	7,116,291	7,114,829	7,119,738
Noncondensibles	5,516	4,859	7,357
Condensibles	7,158	5,482	5,273

Concentrations (ppmC):

		%RSD
CO + CH4	2739.6300	0.4394
CO2	139869.6000	0.0354
Noncondensibles	108.2282	21.9082
Condensibles	129.9912	19.9605
TGNMO	238.2194	

(= 118.9429 mgC/cu.m)

RESEARCH TRIANGLE LABORATORIES, INC.

METHOD 25 DATA REPORT

Name: Mostardi-Platt Associates, Inc. ID #90-33-187 Date: 5/10/90

Sample # 2 Outlet 00505/00506

TANK new 223:
Volume (cu.m) = 0.004498

	Pressure (mm Hg)	Temp.(K)
Presampling	3.3	284.8
Postsampling	603.3	291.5
Final	1077.0	299.2

TRAP OH COLLECTION VESSEL:
Volume (cu.m) = 0.005835

	Pressure (mm Hg)	Temp.(K)
Final	1029.0	299.2

Volume Sampled (dscm) = 0.003570

Calibration Data:

	CO2	Backflush
Response Factor (area units/ppmC)	87.3	93.7
Blank (ppmC)	9.1	
Blank Area (area units)		0

Areas:

CO + CH4	128,546	127,805	127,762
CO2	6,949,200	6,915,331	6,920,611
Noncondensibles	6,268	4,737	4,841
Condensibles	4,556	4,334	3,803

Concentrations (ppmC):		%RSD
CO + CH4	2565.7020	0.3442
CO2	138835.4000	0.2630
Noncondensibles	98.6147	16.1962
Condensibles	85.3522	11.2590
TGNMO	183.9669	

(= 91.8547 mgC/cu.m)

RESEARCH TRIANGLE LABORATORIES, INC.

METHOD 25 DATA REPORT

Name: Mostardi-Platt Associates, Inc. ID #90-33-187 Date: 5/10/90

Sample # 3 Outlet 00507/00508

TANK new 135:
Volume (cu.m) = 0.004387

TRAP QF

COLLECTION VESSEL:
Volume (cu.m) = 0.005975

	Pressure (mm Hg)	Temp.(K)		Pressure (mm Hg)	Temp.(K)
Presampling	3.8	284.8			
Postsampling	588.0	291.5			
Final	1312.0	299.2	Final	1017.0	299.2

Volume Sampled (dscm) = 0.003391

Calibration Data:

	CO2	Backflush
Response Factor (area units/ppmC)	87.3	93.7
Blank (ppmC)	9.1	
Blank Area (area units)		0

Areas:

CO + CH4	110,682	110,859	110,963
CO2	5,144,682	5,130,954	5,139,818
Noncondensibles	4,149	4,426	4,704
Condensibles	6,991	5,962	5,678

Concentrations (ppmC):

		%RSD
CO + CH4	2778.5910	0.1282
CO2	128820.3000	0.1355
Noncondensibles	103.3875	6.2693
Condensibles	143.3433	12.7556
TGNMO	246.7307	

(= 123.1926 mgC/cu.m)

BARIUM-THORIN TITRATION ANALYSIS SHEET
for Sulfur Oxides & Sulfuric Acid Mist

MOSTARDI-PLATT ASSOCIATES, INC.

#00504

Project WASTE MANAGEMENT NEW YORK Analyst N. STYPA Date of Analysis 5/8/90

Barium Titrant Standardization (20.00 ml)(0.02N H_2SO_4)=(40.40 ml Ba^{++})(0.0 0 9 9 0 1 N Ba^{++})
(20.00 ml)(0.02N H_2SO_4)=(40.40 ml Ba^{++})(0.0 0 9 9 0 1 N Ba^{++}) Average
(20.00 ml)(0.02N H_2SO_4)=(40.40 ml Ba^{++})(0.0 0 9 9 0 1 N Ba^{++}) Normality
0.0 0 9 9 0 N

Standardization Blank (25ml H_2O + 100ml IPA)=(0.10 ml Ba^{++}), Must be ≤ 0.5ml

Sample Number	Date of Sampling	Sample Description Test Number Pollutant Sampling Location	Liquid at Marked Level	Total Sample (V_{soln}) ml	Sample Aliquot (V_a) ml	Titrant Volume for Sample** Final Reading - Initial Reading = (V_t) ml	Titrant Volume for Blank*	(V_t - V_{tb})
1	5/2/90	1 ENGINE 2		100	20	0.5 - 0.0 = 0.50 0.5 - 0.0 = 0.50 Average 0.50	0.1	0.40
2	5/2/90	2 ENGINE 2		100	20	0.2 - 0.0 = 0.20 0.1 - 0.0 = 0.10 Average 0.15	0.1	0.05
3	5/2/90	3 ENGINE 2		100	20	0.7 - 0.0 = 0.70 0.6 - 0.0 = 0.60 Average 0.65	0.1	0.55
4	5/2/90	4 ENGINE 2		100	20	0.35 - 0.0 = 0.35 0.40 - 0.0 = 0.40 Average 0.38	0.1	0.28
5	5/2/90	5 ENGINE 2		100	20	0.50 - 0.0 = 0.50 0.45 - 0.0 = 0.45 Average 0.48	0.1	0.38
6	5/2/90	6 ENGINE 2		100	20	0.35 - 0.0 = 0.35 0.30 - 0.0 = 0.30 Average 0.33	0.1	0.23
7	5/2/90	Blank H_2O_2 HCL		100	20*	0.1 - 0.0 = 0.1 0.2 - 0.1 = 0.1 Average 0.1 = V_{tb}		

* Volume of aliquot for absorbing solution blank (V_{tb}) must be the same as the sample aliquot.
** Replicate titrations must agree within 1 percent or 0.2 ml, whichever is larger.

CALIBRATION PROCEDURES

PITOT TUBES

The pitot tubes used during this test program were fabricated according to the specification described and illustrated in the Code of Federal Regulations, Title 40, Part 60, Appendix A, Methods 1 through 5 as published in the Federal Register, Volume 42, No. 160, August 18, 1977; hereafter referred to by the appropriate method number. The pitot tubes comply with the alignment specifications in Method 2, Section 4; and the pitot tube assemblies were in compliance with specifications in the same section.

A baseline pitot coefficient of 0.84 was used since this value was the average of several calibrations made during the six months prior to the test program. These pitots have not been damaged or repaired since these calibrations were performed. Wind Tunnel calibrations of pitots are utilized if available.

NOZZLES

The nozzles were measured according to Method 5, section 5.1.

POTENTIOMETERS AND RESISTIVE TEMPERATURE DEVICES (R.T.D.'S)

The potentiometer and thermocouples as well as the R.T.D. were calibrated against a mercury thermometer in a calibration well. Alternative readings are checked utilizing a NBS traceable milivolt source.

DRY GAS METERS

The test meters were calibrated according to Method 5, section 5.3 and "Procedures for Calibrating and Using Dry Gas Volume Meters as Calibration Standards" by P. R. Westlin and R. T. Shigehara, March 10, 1978.

ANALYTICAL BALANCE

The accuracy of the analytical balance was checked with Class S, Stainless Steel Type 303 weights manufactured by F. Hopken and Son, Jersey City, New Jersey.

METER BOX CALIBRATION DATA

Dry Gas Meter No. 6806269 Date 4-3-90 Calibrated By L. CAMPO
Standard Meter No. 6806272 Yr =1.0040 Barometric Pressure, in. Hg (Pb): 29.89 - 0.65 = 29.24

Run No	Orifice Setting, in. H_2O	Gas Volume, ft^3		Pressure, in. H_2O	Meter Temperature, °F				Time		Y	Chg(H@), in. H_2O
		Standard Meter (Vr)	Dry Gas Meter (Vd)	Standard Meter (Pr)	Dry Gas Meter (tr)	Test Meter Inlet (tdi)	Outlet (tdo)	Avg (td)	min.	sec.		
	Chg(H)											
1	0.00	18.958 17.844 1.114	64.814 63.698 1.116	0.00	72	73	73	73.0	25	49	1.004	0.000
2	0.00	19.892 18.958 0.934	65.772 64.814 0.958	0.00	72	74	74	74.0	22	14	0.983	0.000
3	0.00	21.065 19.892 1.173	66.938 65.772 1.166	0.00	72	74	74	74.0	25	57	1.014	0.000
4	0.00	0.000 0.000 0.000	0.000 0.000 0.000	0.00	0	0	0	0.0	0	0	0.000	0.000
5	0.00	0.000 0.000 0.000	0.000 0.000 0.000	0.00	0	0	0	0.0	0	0	0.000	0.000
6	0.00	0.000 0.000 0.000	0.000 0.000 0.000	0.00	0	0	0	0.0	0	0	0.000	0.000

1.000

AVERAGE ~~0.500~~ 0.000

METER BOX CALIBRATION DATA

Dry Gas Meter No. E-9 Date 4-2-90 Calibrated By L. CAMPO
Standard Meter No. 6806272 Yr =0.9910 Barometric Pressure, in. Hg (Pb): 29.82 - 0.65 = 29.17

Run No	Orifice Setting, in. H_2O Chg(H)	Gas Volume, ft^3: Standard Dry Gas Meter (V_r)	Standard Dry Gas Meter (V_d)	Pressure, in. H_2O: Standard Meter (P_r)	Meter Temperature, °F: Standard Dry Gas Meter (t_r)	Inlet (t_{di})	Outlet (t_{do})	Avg (t_d)	Time: min.	sec.	Y	Chg(H@) in. H_2O
		14.472	103.904									
		8.045	97.418									
1	0.20	6.427	6.486	0.00	68	75	75	75.0	16	2	0.995	0.718
		23.692	13.196									
		14.722	4.155									
2	0.45	8.970	9.041	0.00	70	78	78	78.0	14	38	0.998	0.691
		38.869	28.516									
		23.949	13.455									
3	0.65	14.920	15.061	0.00	68	78	78	78.0	21	12	0.999	0.753
		51.131	40.854									
		39.377	29.027									
4	0.90	11.754	11.827	0.00	67	78	78	78.0	14	9	1.003	0.745
		62.714	52.477									
		51.751	41.474									
5	1.30	10.963	11.003	0.00	67	78	78	78.0	10	59	1.005	0.745
		75.758	65.619									
		63.120	52.883									
6	1.90	12.638	12.736	0.00	67	78	78	78.0	10	34	0.999	0.759

AVERAGE 1.000 0.735

M and R BALANCE SERVICE, INC.

Illinois Registration No. 1119

3614 N. Oriole Avenue Chicago, Illinois 60634 (312) 625-9444

CERTIFICATE OF CALIBRATION

Submitted for MOSTARDI PLATT ASSOC. *Completion Date* 1/2/90

Make	*Model No.*	*Serial No.*
TORBAL	EA-1	168491
OHAUS	B1500	10227
SARTORIOUS	A210P	3710004
WEIGHT SET.	100	

The above balances meet or exceed the National Bureau of Standards Specifications

WEIGHT CERTIFICATION 1 mg. TO 100 g. NBS. 737/229825 REF. MIL. SPEC. CAL. SYSTEM REQUIREMENT
200 g. TO 5 Kg. NBS. 6.6/152622 MIL. STD. 45662A PAR. 3..2. 3.
STATEOF IL. # 0949 NBS. 38127

Michael J. Fitzpatrick

Serviceman, Michael J. Fitzpatrick
(Illinois Registration No. 1119)

WEIGHT SET FOR MOSTARDI-PRATT.
Bensenville, IL. 60106

SET # 1000. 1/2/90

Cleaned & Calibrated.

100g = 100.0001g.
50g = 50.0000g
30g = 30.0002g.
20g = 20.0000g
10g = 10.0000g.
5g = 5.0000g
3g = 3.0001g.
2g = 2.0000g
1g = 1.0000g.

500 mg. = 0.5000g
300mg = 0.3000g
200mg = 0.2000g.
100mg = None
50mg = 0.0500g.
30mg = 0.0300g
20mg = 0.0200g
10mg = 0.0100g.

Michael L. Fitzpatrick

M and R BALANCE SERVICE
3614 N. Oriole Ave.
Chicago, IL 60634
(312) 625-9444

mastardi-platt associates, inc.

ANALYTICAL BALANCE - ACCURACY CHECK

Balance I.D. Ell - Torbal Date 12/7/89

Weights Troemner A. Model 100

grams								milligrams								Total, grams	Balance Indicator
50	30	20	10	5	3	2	1	500	300	200	100	50	30	20	10		
															✓	0.01	0.0100
												✓				0.05	0.0500
										✓						0.2	0.2000
								✓								0.5	0.5005
							✓									1.0	1.0000
						✓										2.0	2.0000
				✓	✓											8.0	8.0000
			✓													10.0	10.0000
		✓														30.0	30.0003
✓																50.0	50.0001

Technician Nicole Stypa

TYPE S PITOT TUBE INSPECTION DATA FORM

Pitot tube assembly level? ✓ yes _____ no

Pitot tube openings damaged? _____ yes (explain below) ✓ no

α_1 = 1.0 ° (<10°), α_2 = 1.0 ° (<10°)

β_1 = 0.0 ° (<5°), β_2 = 2.0 ° (<5°)

γ = 0.5 °, θ = 1.0 °, A = 0.640 (in.)

z = A sin γ = 0.0056 (in.); (<0.125 in.)

w = A sin θ = 0.0112 (in.); (<0.03125 in.)

P_A = 0.322 (in.), P_B = 0.318 (in.), D_t = 0.250 (in.)

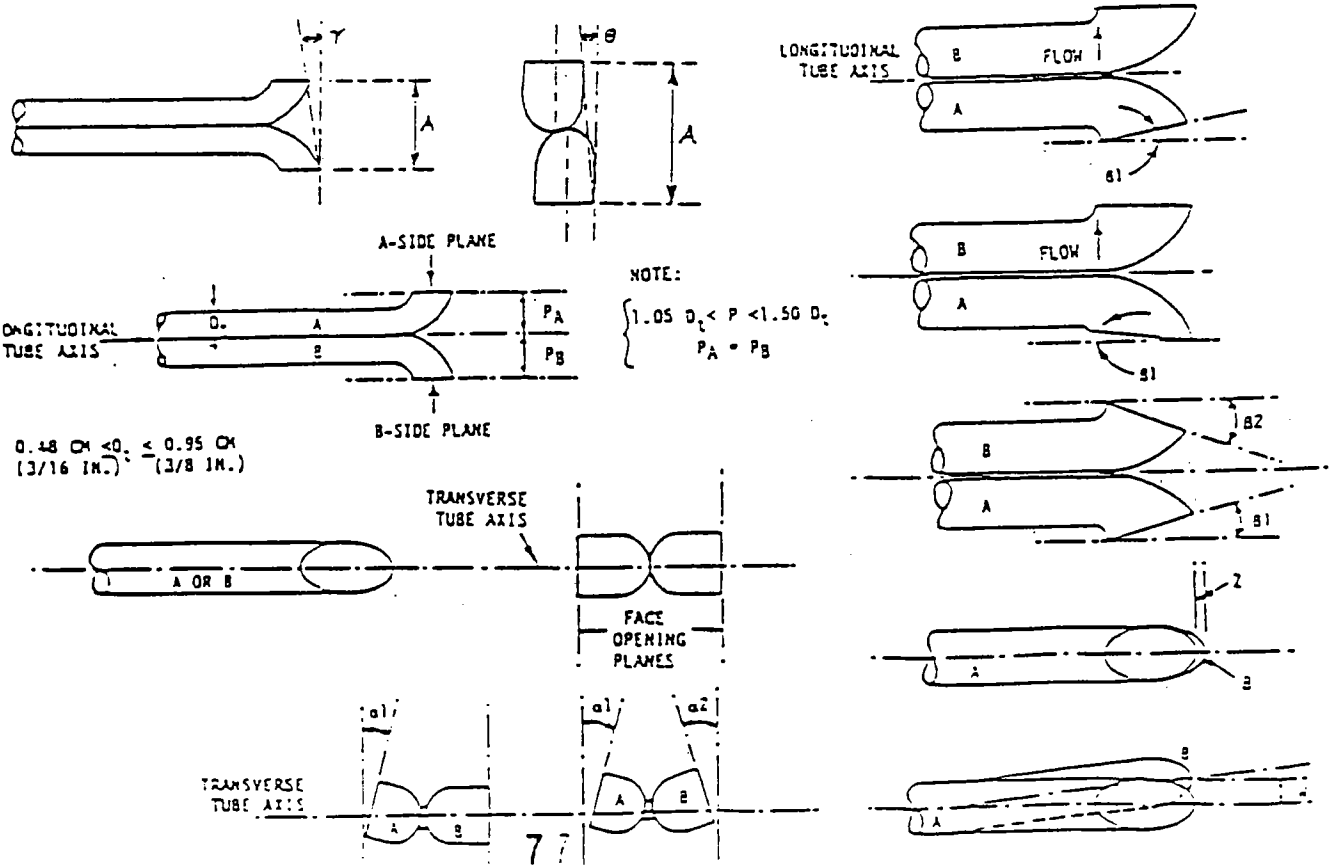
Comments: STAINLESS STEEL - DETACHABLE

CALIBRATED 7-30-87 $C_{D(A)}$ = 0.841

$C_{D(B)}$ = 0.890

Calibration required? ✓ yes _____ no

PITOT TUBE # 2 DATE 7-29-87 NAME Ed Peterson



mostardi-platt associates.

PITOT TUBE CALIBRATION DATA

Calibration pitot tube: type ~~S-Type~~ STANDARD size (OD) 0.375 ID number S-1

Type S pitot tube ID number 2 $C_{p(std)}$ = 0.99

Calibration: date 7-30-87 performed by Ed Peterson

A-Side Calibration

Δp_{std}, (in.) H_2O	Δp_s, (in.) H_2O	$C_{p(S)}$ [a]	DEV. [b]
0.196	0.270	0.842	0.001
0.380	0.525	0.842	0.001
0.660	0.915	0.841	0.000
0.974	1.35	0.841	0.000
1.31	2.52	0.839	0.002
2.20	4.50	0.840	0.001
Average		0.841	

B-Side Calibration

Δp_{std}, (in.) H_2O	Δp_s, (in.) H_2O	$C_{p(S)}$ [a]	DEV. [b]
0.383	0.530	0.842	0.002
0.660	0.920	0.839	0.001
1.08	1.50	0.840	0.000
1.97	2.60	0.842	0.002
3.35	4.51	0.841	0.001
Average		0.840	

[a] $C_{p(S)} = C_{p(std)} \sqrt{\frac{\Delta p_{std}}{\Delta p_s}}$ = 0.841

LEAK CHECK: NO LEAK

[b] $DEV = C_{p(S)} - \bar{C}_p$, (must be ≤ 0.01)

$\bar{C}_p(A) - \bar{C}_p(B)$ = 0.001 (must be ≤ 0.01).

GAS METER C   3RATION DATA

Dry Gas Meter No. 6825350   Date: 1-4-90   Barometric Pressure (P_{bar}) 29.81 - 0.65 = 29.16 in.Hg

Control Module No. A-1   Applicable for (project or test method) [illegible]

Flow Meter (Units) N/A   Wet Test Meter No. 14AH3   Calibrated by [illegible]

System Negative Pressure Leak Check: 0 cc (ft^3) per 1 minute(s) at 10.0 in.Hg vacuum.

System Positive Pressure Leak Check: 0 in.H_2O per 1 minute(s) at initial pressure of 5.0 in.H_2O

Control Module Negative Pressure Leak Check: N/A in.Hg per ____ minute(s) at initial vacuum of ____ in.Hg

DGM Thermometer Calibration Check: 72 °F @ 72 °F of standard mercury thermometer

Dry Gas Meter						Wet Test Meter Y = .993						
Time	V_m dcf	t_m °F	ΔH in.H_2O	Flow Meter Setting	$V_m P_m / T_m$	V_m wcf	t_m °C	ΔP in.H_2O	V.P. of H_2O @ t_m	$V_m P_m / T_m$	Flow Rate dscfm	Y
—	4.973	71	-2.7	N/A		32.4552	22.2	-1.6	.7901			
—	6.095	71	-2.7		.06123186	33.6306	22.2	-1.6	.7901	.06202626		1.0129
20'12"	1.122					1.1754						
—	6.095	71	-2.7			33.6306	22.2	1.6	.7901			
—	7.211	71	-2.7		.06090411	34.8016	22.2	1.6	.7901	.06179411		1.01459
20'10"	1.116					1.171						
—	7.2110	71	-2.7			34.8016	22.2	-1.6	.7901			
—	8.4725	70	-2.7		.06891096	36.0282	22.2	-1.6	.7901	.0647881		0.9393
21'11"	1.2615					1.2266						
—	8.4725	70	-2.7			36.0282	22.2	1.6	.7901			
—	7.6050	71	-2.7		.06196428	37.3050	22.2	1.6	.7901	.0675478		1.089
22'13"	1.1325					1.2768						
												1.014 Average Y

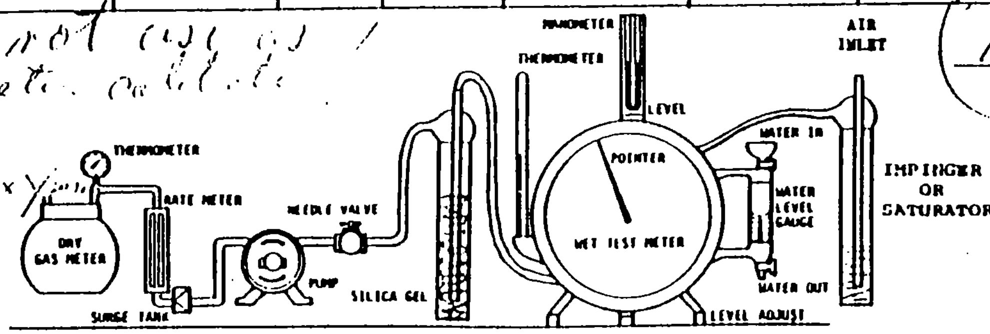
Comments: * Can not [illegible] [illegible] meter [illegible]

Dry Gas Meter (DGM), $\frac{V_m P_m}{T_m} = V_m \times \frac{P_{bar} + \frac{\Delta H}{13.58}}{t_m + 459.67}$

Wet Test Meter (WTM), $\frac{V_m P_m}{T_m} = V_m \times \frac{P_{bar} + \frac{\Delta P}{13.58} - (\text{V.P. of } H_2O @ t_m)}{1.8\, t_m + 32 + 459.67} \times Y_{wtm}$ 531.63

$Y = \frac{WTM}{DGM}$, where: $0.980 \leq Y \leq 1.020$

Standard Conditions: 68°F and 29.92 in.Hg



GAS METER CALIBRATION DATA

Dry Gas Meter No. 6806521.1 Date: 2-27-91 Barometric Pressure (P_{bar}) _____ - 0.65 = 29.42 in.Hg

Control Module No. A-1 Applicable for (project or test method) SECONDARY STANDARD FOR METHOD 5/17

Flow Meter (Units) N/A Wet Test Meter No. 11A113 Calibrated by Leonard CAMPO

System Negative Pressure Leak Check: 0 cc (ft^3) per 1 minute(s) at 12.0 in.Hg vacuum.

System Positive Pressure Leak Check: 0 $in.H_2O$ per 1 minute(s) at initial pressure of 7.0 $in.H_2O$

Control Module Negative Pressure Leak Check: N/A in.Hg per _____ minute(s) at initial vacuum of _____ in.Hg

DGM Thermometer Calibration Check: 71 °F @ 71 °F of standard mercury thermometer WTM Y = 0.9971

Dry Gas Meter						Wet Test Meter						
Time	V_m dcf	t_m °F	ΔH $in.H_2O$	Flow Meter Setting	$V_m P_m / T_m$	V_m wcf	t_m °C	ΔP $in.H_2O$	V.P. of H_2O @ t_m	$V_m P_m / T_m$	Flow Rate dscfm	Y
—	33.770	71	-15.0	N/A		81.7370	22.2	-1.70	0.7901			
—	39.482	71	-15.0	N/A	.3047803	87.3911	22.2	-1.70	0.7901	.3021735	.292	.9914
19'29"	5.712					5.6521						
—	39.482	71	-15.0	N/A		87.3911	22.2	-1.70	0.7901			
—	45.389	71	-15.0	N/A	.3151851	93.2354	22.15	-1.70	0.7901	.3125014	.296	.9948
20'09"	5.907					5.8443						
—	45.389	72	-15.0	N/A		93.2354	22.15	-1.70	0.7877			
—	51.131	72	-15.0	N/A	.3058048	98.9000	22.15	-1.70	0.7877	.3029818	.2907	.9905
19'37"	5.742					5.6646						

Comments:

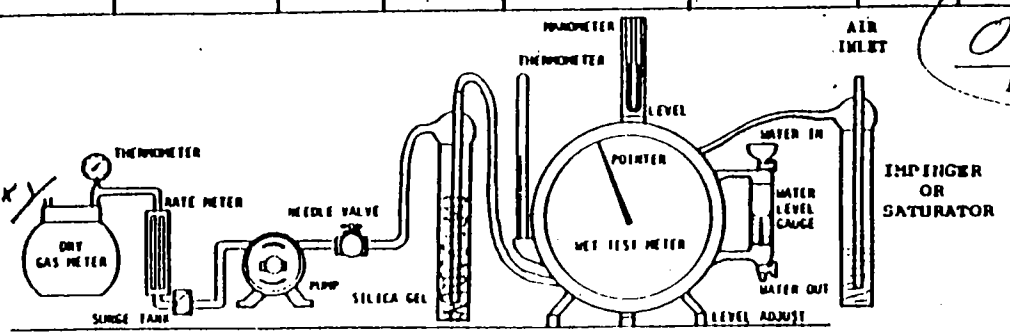
0.991
Average Y

Dry Gas Meter (DGM), $\frac{V_m P_m}{T_m} = V_m \times \frac{P_{bar} + \frac{\Delta H}{13.58}}{t_m + 459.67}$

Wet Test Meter(WTM), $\frac{V_m P_m}{T_m} = V_m \times \frac{P_{bar} + \frac{\Delta P}{13.58} - (\text{V.P. of } H_2O \text{ @ } t_m)}{1.8\, t_m + 32 + 459.67} K$

$Y = \frac{WTM}{DGM}$, where: $0.980 \leq Y \leq 1.020$

Standard Conditions: 68°F and 29.92 in.Hg



S C O T T S P E C I A L T Y G A S E S a division of Scott Environmental Technology, Inc.

1290 COMBERMERE TROY, MICHIGAN 48083 TELEPHONE # (313) 589-2950 FAX: (313) 589-2134

Shipped From : Scott Troy
Date Shipped : ----------
Our Project # : 930271
Your P.O. # : 4015
Page ____ of ____
Expiration Date : 3-12-90

stomer :
MOSTARDI PLATT
1077 ENTRY DRIVE
BENSENVILLE, ILL 60106

CERTIFICATE OF ANALYSIS - EPA PROTOCOL GASES

Certified Per Traceability Protocol # 1

Procedure # G1

File # P01641

Certified Accuracy 1 % NBS Traceable

Cylinder Number ALM-1716

Cylinder Pressure 2000 psig

	REFERENCE STD				GAS ANALYZER		
COMPONENT	CERTIFIED CONC.	SRM # (CRM #)	CYLINDER NUMBER	CONC.	MAKE/MODEL/SERIAL #	LAST CALIBRATION DATE	ANALYTICAL PRINCIPLE
OXYGEN	5.025 %	2659	AAL-18601	20.67 %	BECKMAN	8-3-88	PARAMAGNETIC
		GMIS#	K-6958	21.06 %	----------		
		2658	AAL-3521	10.08 %	----------		

BALANCE GAS : NITROGEN

ANALYSIS DATE : 9-12-88

ZERO GAS (mV)	TEST GAS (mV)	RESULTS %	REFERENCE GAS CONC.	REFERENCE GAS (mV)	RESULTS %
.00	23.70	5.012	20.67 %	98.20	20.67
.00	23.80	5.033		98.20	20.67
.00	23.80	5.033		98.30	20.69

CALCULATED RESULTS 5.012, 5.033, 5.028

AVERAGE : 5.025 %

CALIBRATION CURVE 1 st DEGREE

SRM # (CRM #)	CONC. %	SPLIT PT (%)	DVM (mV)	FITTED VALUE	PERCENT ERROR
2659	20.67	100	98.20	20.67	.00
	10.08	49	47.80	10.08	-0.02
	9.994	48	47.20	9.951	-0.43
	6.018	29	28.40	6.000	-0.30
	3.007	15	14.10	2.995	-0.41
	0.0000	0	0.00	0.0000	0.00
		0		0.00	0.00
GMIS	3.007	LOW	14.10	2.995	-0.41
2658	10.08		47.80	10.08	-0.02

RECEIVED AUG 1 1 1989

Matheson Gas Products
World Leader in Specialty Gases & Equipment

Mostardi-Platt Associates
1077 Entry Drive
Bensenville, Illinois 60106

Attn: Scott Banach

Date August 10, 1989

Our Invoice No. 102-56031

Our Work Order No. 102-85499

Your P.O. No. 4633

Gentlemen:

Below are the results of the analysis you requested, as reported by our laboratory. Results are in volume percent, unless otherwise indicated.

LABORATORY REPORT ON GAS ANALYSIS

COMPONENT	Cyl. No. SX-10115 Requested	Actual	Cyl. No. SX-12821 Requested	Actual	Cyl. No. SX-12184 Requested	Actual
Nitric Oxide	850ppm	0.09300%	430ppm	0.04100%	430ppm	0.04100%
Nitrogen	BAL	BAL	BAL	BAL	BAL	BAL

	Cyl. No. SX-12973 Requested	Actual	Cyl. No. SX-12759 Requested	Actual
Nitric Oxide	150ppm	0.014600%	70ppm	0.006500%
Nitrogen	BAL	BAL	BAL	BAL

Analyst PH 08/04/89

The only liability of this Company for gas which fails to comply with this analysis shall be replacement thereof by the Company without extra cost.

Manhattan Road & Richards Street
P.O. Box 96
Joliet, Illinois 60434
Phone (815) 727-4849

Matheson
World Leader in Specialty Gases & Equipment

MOSTARDI-PLATT ASSOCIATES
1077 ENTRY DRIVE
BENSENVILLE, ILLINOIS 60106

Date: 02/07/90
Customer Purchase Order #: 5075
Matheson Order #: 102-91187
Matheson Lot Number:

Analytical Laboratory Report
GAS MIX CERTIFIED STD. 2 COMPONENT

Cylinder #	Component	Request	Analysis
SX17487	NITRIC OXIDE	425.00ppm	0.043000%
	NITROGEN	Balance	Balance

2000 PSIA

Analyst PJ

The only liability of this Company for gas which fails to comply with this analysis shall be replacement thereof by the Company without extra cost.

The reported values are in VOLUME%

Copy sent_____

Air Products
INDUSTRIAL GAS DIVISION

Air Products and Chemicals, Inc.

Specialty Gas Department
Box 351, RD 1
Tamaqua, PA 18252
(717) 467-2981

ANALYTICAL REPORT

SAMPLE OF: 300 PPM CARBON MONOXIDE/BAL NITROGEN DATE: 7/25/88 PAGE: 1 of 1

SHIPPER NO. CUSTOMER ORDER NO.:

SAMPLE DATE: REQUESTED BY: MOSTARDI PLATT

REMARKS:

ANALYTICAL METHOD		ANALYST
Electrolytic Cell (O_2 Trace)		
Infrared Horiba		
Ion Mobility for N_2 in Ar		
Dew Point		
Hydrogen Flame Analyzer (THC)		
Wet Analysis		
Flame Photometer		

ANALYTICAL METHOD		ANALYST
Gas Chromatography		
Infrared Spectroscopy		
C.G. Flame Ionization Unit	X	RM
Chemiluminescence		
Paramagnetic		
Gravimetric		

ANALYSIS

LAB NO.	CYL. NO.	COMPONENT REQUESTED	CONCENTRATION REQUESTED	ANALYTICAL RESULT	UNIT OF MEASURE
C9178	SG861390	CARBON MONOXIDE	300	279	MOLAR PPM

CERTIFICATION

This analysis has been performed utilizing the analytical method(s) stated and is correct to within the analytical accuracies of this (these) method(s).

Authorized Signature

CC. Cylinder
File

Matheson

World Leader in Specialty Gases & Equipment

MOSTARDI-PLATT ASSOCIATES
1077 ENTRY DRIVE
BENSENVILLE, ILLINOIS 60106

Date: 11/08/89
Customer Purchase Order #: 4855
Matheson Order #: 102-88646
Matheson Lot Number:

Analytical Laboratory Report
GAS MIX CERTIFIED STD. 2 COMPONENT

Cylinder #	Component	Request	Analysis
BX19927	CARBON MONOXIDE	450.00ppm	0.0460%
	NITROGEN	Balance	Balance

2000 PSIA

Analyst PDJ

The only liability of this Company for gas which fails to comply with this analysis shall be replacement thereof by the Company without extra cost.

The reported values are in VOLUME%

Copy sent_____

C02 3.18%

****
* MATHESON GAS MIX CERTIFIED STD. 2 COMPONENT *
****

GAS	REQUESTED	ACTUAL
CARBON DIOXIDE	3.00%	3.1[illegible]0000%
NITROGEN	Balance	Balance

Volume %
2000 psig
209 cu ft
W/O 102-34355
Cyl # SX20041
CGA 580

READ OTHER
SIDE B/4 [illegible]

NOT FOR DRUG USE

PRINTED IN U.S.A.

FORM MA03
12/83

Matheson®
GAS PRODUCTS, INC.

RECEIVED MAR 19 1990

Matheson
Gas Products
World Leader in Specialty Gases & Equipment

Mostardi-Platt Associates
1077 Entry Drive
Bensenville, Illinois 60109

Date March 14, 1990

Our Invoice No. 102-97474

Our Work Order No. 102-92058

Your P.O. No. 5145

Gentlemen:

Below are the results of the analysis you requested, as reported by our laboratory. Results are in volume percent, unless otherwise indicated.

LABORATORY REPORT ON GAS ANALYSIS

COMPONENT	Cyl. No. 76169		Cyl. No. 62335		Cyl. No. 33621-T	
	Requested	Actual	Requested	Actual	Requested	Actual
Carbon Dioxide	11.0%	10.990%	11.0%	10.950%	3.0%	2.980%
Nitrogen	Bal	Bal	Bal	Bal	Bal	Bal

Analyst JF 03/05/90

The only liability of this Company for gas which fails to comply with this analysis shall be replacement thereof by the Company without extra cost.

Richards Street
P.O. Box 96
Joliet, Illinois 60434
Phone. (815) 727-4848

MOSTARDI-PLATT ASSOCIATES, INC.

TEST SUPPORT DATA

TEST RUN # 1

COMPANY Waste Management

PLANT Monroe Liquidow

TEST LOCATION

CLIENT Waste Management

OPERATOR C.T.

DATE 5-2

CONTROL BOX C-9 POT. NO.

METER NO. C-9

METER CALIBRATION FACTOR 1.000

PITOT ID # 2

PITOT TUBE COEFFICIENT .841

PORT LENGTH in.

PORT SIZE 3 IN in.

PORT TYPE Nipple

IMPINGER H_2O: SILICA GEL:

FINAL 302 ml/gm FINAL WT. gm

INITIAL 200 ml/gm INITIAL WT. 236.1 gm

GAIN ml/gm WT. GAIN 17 gm

TOTAL H_2O COLLECTED

DESCRIPTION OF IMPINGER H_2O

SILICA GEL EXHAUSTED ?

IMPINGERS RECOVERED BY

SILICA GEL WEIGHED BY

COMMENTS & NOTES:

THIMBLE NO. TARE WT.

FILTER NO. 37 TARE WT.

BAROMETRIC PRESSURE in. Hg 29.65

FLUE PRESSURE in. H_2O -3

FLUE PRESSURE IN Hg ABS. 29.43

PROBE LENGTH 3 ft.

PROBE LINER MATERIAL #316 Stainless Steel

NOZZLE IDENTIFICATION #

CALIBRATED NOZZLE DIAMETER .115 in.

LEAK CHECK PRE 0.017 POST @ 10/11 in. Hg

DUCT SHAPE Round DIAMETER

DUCT AREA sq. ft. L W

TEST LENGTH 120 min.

MINUTES PER POINT 5

TOTAL NUMBER OF TRAVERSE POINTS 24

GAS ANALYSIS (ORSAT/FYRITE):

CO_2 13.3

O_2 6.3

PITOT LEAK CHECK PRE ✓ POST ✓

H@ 135

SAMPLES REMOVED FROM SITE BY

PROJECT Waste Mgt.

FIELD TEST DATA SHEET
FOR ISOKINETIC SAMPLING

MOSTARDI-PLATT
ASSOCIATES, INC.

TEST RUN NO. 1

TEST LOCATION Engine #2 outlet DATE 7-2-90 PAGE 1 OF 2

Port-Point No.	Velocity Head (ΔP) in. H_2O	$\sqrt{\Delta P}$	Clock Time 24 hr.	Meter Volume (V_m) ft^3	Orifice (ΔH) in. H_2O	Stack Temp. (t_s) °F	Meter Temp. (t_m) Inlet °F	Meter Temp. (t_m) Outlet °F	Meter Rate cfm	Pump Vacuum in. Hg	x 5 Notes		Probe Temp. °F	Filter Holder Temp. °F	Impgr. Outlet Temp. °F
1-1	4.8	2.191	8:48	40.11	.096	1000	52	52	.26	1	1.31		268	250	<68°
-2	4.8	2.191	8 53	41.45	096	1002	52	52	.26	1	1.31	41.45	274	255	Sully
-3	5.0	2.236	8 58	42.58	.10	985	51	51	.27	1	1 34	42.57	270	248	I.C.D
-4	5.0	2.236	9 03	43.74	.10	990	55	55	.27	1	1.34	43.71	273	251	
-5	4.6	2.145	9 08	45.08	092	169	56	56	.26	2	1.28	45.09	270	251	
-6	4.6	2.145	913	46.37	.092	112	57	57	26	2	1.28	46.31	271	250	
-7	5.2	2.280	918	47.58	.104	102	58	58	.27	1	1.37	47.59	269	256	
-8	5.2	2.280	923	49.10	.104	901	60	58	27	2	1.37	49.05	259	258	
-9	5.5	2.345	928	50.59	.11	124	59	59	28	2	1.41	50.50	270	253	
-10	5.5	2.345	933	52.38	.11	938	59	59	28	2	1.41	52.33	268	254	
-11	5.5	2.345	938	53.67	.11	950	59	59	.28	2	1.41	53.78	271	250	
-12	5.5	2.345	943	55.20	.11	946	59	59	28	2	1.41	55.17	243	249	
			948	56.94								56.58			

FIELD TEST DATA SHEET
FOR ISOKINETIC SAMPLING

MOSTARDI-PLATT
ASSOCIATES, INC.

PROJECT Waste Heat of N 4

TEST RUN NO. #1

TEST LOCATION Engine #4 Outlet

DATE 5/2 90

PAGE 2 OF 2

Port-Point No.	Velocity Head (ΔP) in. H_2O	$\sqrt{P}$	Clock Time 24 hr.	Meter Volume (V_m) ft^3	.02 Orifice (ΔH) in. H_2O	Stack Temp. (t_s) °F	Meter Temp. (t_m) Inlet °F	Meter Temp. (t_m) Outlet °F	.12 Meter Rate cfm	Pump Vacuum in. Hg	x 5 Notes		Probe Temp. °F	Filter Holder Temp. °F	Impgr. Outlet Temp. °F
2-1	5.2	2.280	9.59	56.94	.104	989	60	60	.27	1	1.37		270	252	68
-2	5.7	2.387	1004	58.35	.114	994	61	61	.29	1	1.43	58.31	271	250	steel
-3	5.3	2.302	009	59.81	.106	989	61	61	.28	1	1.38	59.78	269	253	
-4	5.0	2.236	1014	61.22	.100	982	61	61	.27	1	1.34	61.19	268	255	
-5	5.0	2.236	1019	62.55	.100	957	61	61	.27	1	1.34	62.53	271	252	
-6	4.7	2.168	1024	63.87	.094	930	62	62	.26	1	1.30	63.89	274	252	
-7	4.7	2.168	1029	65.09	.094	944	62	62	.26	1	1.30	65.17	276	251	
-8	4.5	2.121	1034	66.40	.009	950	63	63	.25	1	1.27	66.39	257	255	
-9	4.8	2.191	1039	67.68	.096	946	63	63	.26	1	1.31	67.66	246	250	
-10	4.8	2.141	1044	68.79	.096	945	63	63	.26	1	1.31	68.99	250	248	
-11	4.7	2.168	1049	70.01	.094	950	63	63	.26	1	1.30	70.10	253	251	
-12	4.7	2.168	054	71.21	.094	956	64	64	.26	1	1.30	71.31	256	250	
			1059	72.52								72.51			
		2.2354		32.319	.0169	958.79	59.25								

05

MOSTARDI-PLATT ASSOCIATES, INC.

TEST SUPPORT DATA

TEST RUN # 2

COMPANY WASTE MGT. OF N.A.
PLANT
TEST LOCATION Engine #2 outlet
CLIENT W.M. of N.A.
OPERATOR CT
DATE 5-2-90
CONTROL BOX E-9 POT. NO. N/A
METER NO. E-9
METER CALIBRATION FACTOR .1000
PITOT ID # 2
PITOT TUBE COEFFICIENT .84
PORT LENGTH in.
PORT SIZE 3 in.
PORT TYPE nipple
IMPINGER H_2O: SILICA GEL:
FINAL 425 ml/gm FINAL WT. 264.5 gm
INITIAL 200 ml/gm INITIAL WT. 233.2 gm
GAIN 225 ml/gm WT. GAIN gm
TOTAL H_2O COLLECTED
DESCRIPTION OF IMPINGER H_2O
SILICA GEL EXHAUSTED ?
IMPINGERS RECOVERED BY
SILICA GEL WEIGHED BY
COMMENTS & NOTES:

THIMBLE NO. TARE WT.
FILTER NO. 138 TARE WT.
BAROMETRIC PRESSURE in. Hg 29.65
FLUE PRESSURE in. H_2O -5
FLUE PRESSURE IN Hg ABS. 29.43
PROBE LENGTH 3 ft.
PROBE LINER MATERIAL #316 Stainless Steel
NOZZLE IDENTIFICATION #
CALIBRATED NOZZLE DIAMETER 0.176 in.
LEAK CHECK PRE .017 POST .005 @ 13/13 in. Hg
DUCT SHAPE Round DIAMETER
DUCT AREA sq. ft. L W
TEST LENGTH 120 min.
MINUTES PER POINT 5
TOTAL NUMBER OF TRAVERSE POINTS 24
GAS ANALYSIS (ORSAT/FYRITE):
CO_2 13.25
O_2 5.97

PITOT LEAK CHECK PRE ✓ POST ✓
H@ 135
SAMPLES REMOVED FROM SITE BY

FIELD TEST DATA SHEET
FOR ISOKINETIC SAMPLING

MOSTARDI-PLATT ASSOCIATES, INC.

PROJECT WASTE MANAGEMENT

TEST RUN NO. #2

TEST LOCATION ENGINE #6 OUTLET

DATE 5/9/90 PAGE 1 OF 2

Port-Point No.	Velocity Head (P) in. H_2O	$\sqrt{P}$	Clock Time 24 hr.	Meter Volume (V_m) ft^3	.13 Orifice (H) in. H_2O	Stack Temp. (t_s) °F	Meter Temp. (t_m) Inlet °F	Meter Temp. (t_m) Outlet °F	.31 Meter Rate cfm	Pump Vacuum in. Hg	×5 Notes		Probe Temp. °F	Filter Holder Temp. °F	Impgr. Outlet Temp. °F
1-1	6.00	2.449	1223	73.244	.78	1002	62	67	.76	5	3.80		>215°	250	<68°
-2	5.80	2.408	1228	76.98	.75	997	63	63	.75	5	3.73	77.04	*	256	Full
-3	5.80	2.408	1233	80.72	.75	996	64	64	.75	5	3.73	80.71		256	Ice
-4	5.30	2.302	1238	84.46	.69	996	64	64	.71	5	3.57	84.44		261	
-5	5.20	2.280	1243	87.98	.68	1003	66	66	.71	5	3.53	88.02		252	
-6	4.70	2.168	1248	91.41	.61	001	66	66	.67	4	3.36	91.31		250	
-7	5.10	2.258	1253	94.74	.66	986	66	66	.70	4	3.50	94.77		250	
-8	5.50	2.345	1258	98.26	.71	980	67	67	.72	5	3.64	98.24		252	
-9	4.90	2.214	1303	101.86	.64	981	67	67	.69	5	3.43	101.90		254	
-10	4.00	2.000	1308	104.98	.52	980	68	68	.62	5	3.10	105.29		248	
-11	3.80	1.949	1313	107.78	.49	986	68	68	.60	5	3.02	108.08		246	
-12	3.90	1.975	1318	110.77	.51	985	68	68	.61	4	3.06	110.80		250	
			1323	113.80								113.83			
				(40.556 ft											

* Due to High temp. IN The Stack.

92

FIELD TEST DATA SHEET
FOR ISOKINETIC SAMPLING

MOSTARDI-PLATT ASSOCIATES, INC.

PROJECT WM. OI N.A.

TEST RUN NO. #2

TEST LOCATION Engine #2 Outlet

DATE 5-2-90

PAGE 1 OF 2

Port-Point No.	Velocity Head (P) in. H_2O	$\sqrt{P}$	Clock Time 24 hr.	Meter Volume (V_m) ft^3	.12, Orifice (H) in. H_2O	Stack Temp. (t_s) °F	Meter Temp. (t_m) Inlet °F	Meter Temp. (t_m) Outlet °F	.31 Meter Rate cfm	Pump Vacuum in. Hg	X5 Notes		Probe Temp. °F	Filter Holder Temp. °F	Impgr. Outlet Temp. °F
2-1	6.00	2.449	1326	113.80	.78	995	65	65	.16	5	3.80		725	260	168
-2	5.80	2.408	1331	117.53	.75	990	63	63	.15	5	3.75	117.60	*	252	Fully
-3	5.90	2.429	1336	121.20	.77	993	64	64	.14	5	3.76	121.28		252	Train
-4	5.70	2.387	1341	124.93	.74	990	65	65	.14	5	3.70	124.96		258	
-5	5.80	2.408	1346	128.52	.75	980	65	65	.15	5	3.75	128.63		253	
-6	5.50	2.345	1351	132.26	.72	967	66	66	.13	5	3.64	132.38		251	
-7	5.40	2.324	1356	135.81	.70	962	66	66	.12	5	3.60	135.90		255	
-8	6.10	2.470	1401	139.44	.79	950	67	67	.17	5	3.85	139.41		252	
-9	6.80	2.408	1406	143.13	.75	930	68	68	.15	5	3.75	143.27		252	
-10	5.60	2.366	1411	146.88	.73	921	68	68	.13	5	3.67	146.88		255	
-11	5.30	2.302	1416	150.50	.69	922	68	68	.11	5	3.55	150.55		250	
-12	5.40	2.324	1421	154.00	.70	920	68	68	.12	5	3.60	154.05		255	
			1426	157.673								157.65			
		(2.307)		(84.429)	(69.47)	975.46	(68.625)								

Because of High Temp.
... to shack

03

MOSTARDI-PLATT ASSOCIATES, INC.

TEST SUPPORT DATA

TEST RUN # 3

COMPANY WASTE MGT. New York

PLANT

TEST LOCATION Engine #2 Outlet

CLIENT WASTE MGT.

OPERATOR CT

DATE 5-2-90

CONTROL BOX E-9 POT. NO. N/A

METER NO. E-9

METER CALIBRATION FACTOR 1.0220

PITOT ID # 2

PITOT TUBE COEFFICIENT .841

PORT LENGTH 3 in.

PORT SIZE 3 in.

PORT TYPE Nipple

IMPINGER H_2O: SILICA GEL:

FINAL 438 ml/gm FINAL WT. 275.7 gm

INITIAL 200 ml/gm INITIAL WT. 245.1 gm

GAIN ml/gm WT. GAIN gm

TOTAL H_2O COLLECTED

DESCRIPTION OF IMPINGER H_2O

SILICA GEL EXHAUSTED ?

IMPINGERS RECOVERED BY

SILICA GEL WEIGHED BY

COMMENTS & NOTES:

THIMBLE NO. TARE WT.

FILTER NO. 1411 TARE WT.

BAROMETRIC PRESSURE in. Hg 29.65

FLUE PRESSURE in. H_2O -3

FLUE PRESSURE IN Hg ABS. 29.643

PROBE LENGTH 3 ft.

PROBE LINER MATERIAL #316 Stainless Steel

NOZZLE IDENTIFICATION #

CALIBRATED NOZZLE DIAMETER 0.176 in.

LEAK CHECK PRE .016 POST .011 @ 12/14 in. Hg

DUCT SHAPE Round DIAMETER

DUCT AREA sq. ft. L W

TEST LENGTH 120 min.

MINUTES PER POINT 5

TOTAL NUMBER OF TRAVERSE POINTS 24

GAS ANALYSIS (ORSAT/FYRITE):

CO_2 12.31 12.11

O_2 7.06 7.19

PITOT LEAK CHECK PRE ✓ POST ✓

H@ .735

SAMPLES REMOVED FROM SITE BY

FIELD TEST DATA SHEET
FOR ISOKINETIC SAMPLING

MOSTARDI-PLATT ASSOCIATES, INC.

PROJECT WASTE MGT

TEST RUN NO. #3

TEST LOCATION Engine #2 Outlet DATE 5-2-10 PAGE 1 OF 2

Port-Point No.	Velocity Head (P) in. H_2O	$\sqrt{P}$	Clock Time 24 hr.	Meter Volume (V_m) ft^3	.12 Orifice (H) in. H_2O	Stack Temp. (t_s) °F	Meter Temp. (t_m) Inlet °F	Meter Temp. (t_m) Outlet °F	.30 Meter Rate cfm	Pump Vacuum in. Hg	x5 Notes		Probe Temp. °F	Filter Holder Temp. °F	Impgr. Outlet Temp. °F
1-1	6.3	2.510	1524	59.389	.76	970	62	62	.75	6	3.76		275	254	268°
-2	5.9	2.429	1529	63.15	.71	973	63	63	.73	6	3.61	63.15		248	Fully
-3	5.6	2.366	1534	66.73	.67	975	64	64	.71	6	3.55	66.79		256	Iced
-4	5.5	2.345	1539	70.25	.66	977	65	65	.70	6	3.50	70.28		261	
-5	4.5	2.121	1544	73.71	.54	975	65	65	.64	5	3.18	73.77		248	
-6	4.5	2.121	1549	76.87	.54	968	65	63	.64	5	3.18	76.89		256	
-7	5.4	2.324	1554	80.05	.65	969	65	65	.70	6	3.49	80.05		247	
-8	6.0	2.450	1559	83.49	.72	967	66	66	.73	6	3.61	83.54		253	
-9	5.5	2.345	1604	87.09	.66	968	66	66	.70	6	3.52	87.16		260	
-10	6.0	2.450	1609	90.60	.72	965	66	66	.73	7	3.67	90.61		253	
-11	6.3	2.516	1614	94.23	.71	963	67	67	.75	7	3.76	94.27		257	
-12	6.0	2.450	1619	97.96	.72	965	67	67	.73	7	3.67	97.99		256	
			1624	101.62								101.63			

Probe Temp Greater than 275°F
Because of Extreme Heat

FIELD TEST DATA SHEET
FOR ISOKINETIC SAMPLING

MOSTARDI-PLATT
ASSOCIATES, INC.

PROJECT Waste Mgt - New York

TEST RUN NO. #3

TEST LOCATION Engine #2 outlet

DATE 5 2 90

PAGE 2 OF 2

Port-Point No.	Velocity Head (P) in. H_2O	$\sqrt{P}$	Clock Time 24 hr.	Meter Volume (V_m) ft^3	.12 Orifice (H) in. H_2O	Stack Temp. (t_s) °F	Meter Temp. (t_m) Inlet °F	Meter Temp. (t_m) Outlet °F	.50 Meter Rate cfm	Pump Vacuum in. Hg	Notes		Probe Temp. °F	Filter Holder Temp. °F	Impgr. Outlet Temp. °F
1-1	6.7	2.588	1627	101.66	.80	978	65	65	.78	7	3.90		275°	249	<68°
-2	7.5	2.739	1632	105.52	.90	976	66	66	.82	8	4.10	105.52	HOT STACK	258	fully
-3	5.9	2.429	1637	109.49	.71	977	66	66	.75	6	3.64	109.62		256	Iced
-4	6.5	2.550	1642	113.02	.78	973	66	66	.76	7	3.82	113.13		259	
-5	5.7	2.387	1647	116.79	.68	975	67	67	.72	7	3.58	116.64		253	
-6	5.2	2.280	1652	120.34	.62	980	67	67	.68	6	3.42	120.38		249	
-7	5.4	2.324	1657	123.70	.65	978	67	67	.70	6	3.49	123.76		254	
-8	5.5	2.345	1702	127.19	.66	972	67	67	.70	6	3.52	127.19		259	
-9	4.7	2.168	1709	130.69	.56	970	68	68	.65	6	3.25	130.71		253	
-10	4.1	2.025	1712	133.88	.49	966	67	67	.61	5	3.05	133.94		252	
-11	3.8	1.949	1717	136.92	.46	963	67	67	.58	5	2.92	136.93		256	
-12	3.8	1.949	1722	139.84	.46	962	67	67	.58		2.91	139.84		250	
			1727	142.77								142.76			
		2.3398		83.381	.662	971.6	65.88								

TGNMO FIELD DATA
(Method 25)

Project Waste Mgt - Monroe Livingston
Client WMI
Process
Operator [illegible]
Sample Location Engine #2 - [illegible]
Run Number #1

Date 5/20/90
Regulator No. MDA 3
Tank Number(s) 226 Trap Number(s) 55
Stack Temperature °F

	Pre-Test	Post-Test
Barometric Pressure Inches Hg	29.65	29.75
Tank Leak Check Inches Hg/10 min	0.00	0.00
Tank Vacuum Inches Hg	29.50	6.40 (>5)
Sample Train Leak Check CM/10 min	0.00	0.00
Ambient Temperature °F	53	65

SAMPLE TIME (5 min. intervals)	GAUGE VACUUM inches Hg	FLOWMETER SETTING	COMMENTS
857	29.60	55	Oven: 24 Probe 125
902	27.60	55	
907	25.60	55	
912	23.70	55	[illegible] 122 P 125
917	21.80	55	
922	19.70	55	
927	17.60	55	O 122 P 125
932	15.80	55	
937	13.90	53	
942	11.70	56	O 122 P 125
947	9.70	55	
952	7.90	53	
957	6.50	52	O P

mostardi-platt associates, ir

TGNMO FIELD DATA
(Method 25)

Project Waste Heat - Monroe Livingston
Client UNI
Process
Operator J. Cavalaro
Sample Location Stack #2-Outlet
Run Number 2

Date May 2, 1990
Regulator No. MDA 3
Tank Number(s) 223 Trap Number(s) 04

Stack Temperature °F

	Pre-Test	Post-Test
Barometric Pressure Inches Hg	29.65	29.75
Tank Leak Check Inches Hg/10 min	0.02	0.06
Tank Vacuum Inches Hg	29.52	6.00 (>5)
Sample Train Leak Check CM/10 min	0.00	0.00
Ambient Temperature °F	53	65

SAMPLE TIME (5 min. intervals)	GAUGE VACUUM inches Hg	FLOWMETER SETTING	COMMENTS
1225	29.50	55	P 125 D 122
1230	27.10	55	
1235	25.50	55	
1240	23.70	55	P 125 D 122
1245	21.80	55	
1250	19.90	55	
1255	17.90	55	P 125 D 122
1300	15.90	58	
1305	13.90	58	
1310	11.90	58	P 124 D 121
1315	9.90	58	
1320	7.90	58	
1325	6.00		P 126 D 123

mostardi-platt associates, ir

TGNMO FIELD DATA
(Method 25)

Project Waste Mgt - Monroe Livingston
Client WMI
Process
Operator J. Crivaro
Sample Location Stack #2 Outlet
Run Number #3

Date Nov 2, 1990
Regulator No. MON3
Tank Number(s) N135 Trap Number(s) OF

Stack Temperature °F

	Pre-Test	Post-Test	
Barometric Pressure Inches Hg	29.65	29.75	
Tank Leak Check Inches Hg/10 min	0.00	0.00	
Tank Vacuum Inches Hg	21.5	6.60	(>5)
Sample Train Leak Check CM/10 min	0.00	0.00	
Ambient Temperature °F	53	65	

SAMPLE TIME (5 min. intervals)	GAUGE VACUUM inches Hg	FLOWMETER SETTING	COMMENTS
1526	29.60	55	P 125 O 122
1531	27.90	56	
1536	25.90	56	
1541	23.90	56	P 126 O 125
1546	21.90	58	
1551	20.00	58	
1556	18.00	58	P 126 -- O 124
1601	16.00	58	
1606	14.00	58	
1611	12.00	58	P 125 O 122
1616	10.00	58	
1621	8.00	57	
1626	6.50		D D

07:49	1	20.75	.00	19.4	-45
07:50	1	20.75	.02	19.4	-2
07:51	1	20.77	.02	19.4	-1
07:52	1	20.75	.02	19.4	-1
07:53	1	20.75	.02	19.4	-2
07:54	1	20.75	.02	19.4	-2
07:55	1	20.75	.02	19.4	-2
07:56	1	20.72	.02	19.4	-2
07:57	1	20.73	.02	19.5	-2
07:58	1	20.73	.02	20.0	-1
07:59	1	20.73	.02	19.8	-2

HOURLY SUMMARY 08:00:00 05/02/90 122 WASTE MNGT.

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	O2	CO2	O2	SO2	CO
CHANNEL UNITS	PPM	%	%	%	PPM	PPM
FULL SCALE VALUE	1000	25.00	25.00	25.0	1000	920
ZERO VALUE	0	-6.25	-6.25	.0	0	-295
INPUT RANGE	10	1	1	1	10	1
07:01	-3	21.91	-.05	.0	-202	-14
07:02	-3	21.92	-.05	.0	-201	-14
07:03	-3	21.92	-.05	.0	-202	-14
07:04	-3	21.92	-.05	.0	-202	-14
07:05	-3	21.92	-.05	.0	-202	-14
07:06	-4	21.92	-.05	.0	-202	-14
07:07	-4	21.92	-.05	.1	-204	-13
07:08	-3	21.94	-.05	.1	-203	-13
07:09	-4	21.92	-.05	.0	-203	-14
07:10	-3	21.92	-.05	.1	-204	-13
07:11	-3	21.92	-.05	.1	-204	-14
07:12	-4	21.92	-.05	.0	-203	-14
07:13	-3	21.92	-.05	.0	-203	-14
07:14	-4	21.94	-.05	.0	-202	-14
07:15	-3	21.92	-.05	.0	-203	-14
07:16	-4	21.92	-.05	.0	-203	-14
07:17	-4	21.92	-.05	.0	-204	-13
07:18	-3	21.92	-.05	.0	-206	-14
07:19	-3	21.92	-.05	.0	-206	-14
07:20	-3	21.92	-.06	.0	-205	-14
07:21	-3	21.92	-.06	.0	-206	-14
07:22	-3	21.92	-.06	.1	-206	-13
07:23	-3	21.92	-.06	.1	-207	-14
07:24	-3	21.92	-.06	.1	-207	-14
07:25	-3	21.94	-.06	.1	-207	-14
07:26	-3	21.92	-.06	.1	-207	-14
07:27	-3	21.92	-.06	.1	-208	-14
07:28	-3	21.91	-.06	.1	-210	-14
07:29	-3	21.92	-.06	.1	-208	-14
07:30	-3	21.92	-.06	.0	-207	-14
07:31	-3	21.94	-.06	.0	-207	-13
07:32	-3	21.94	-.06	.1	-206	-14
07:33	-3	21.94	-.06	.0	-207	-14
07:34	-3	21.94	-.06	.1	-208	-14
07:35	-3	21.94	-.06	.1	-208	-14
07:36	-3	21.94	-.06	.1	-207	-14
07:37	-3	21.94	-.06	.1	-208	-14
07:38	-3	21.94	-.06	.1	-209	-14

07:42	-3	20.87	.00	16.3	-174	-13
07:43	-79	20.77	.02	19.5	-168	-14
07:44	1	20.77	.02	19.5	-169	-7
07:45	1	20.77	.02	19.5	-168	-2
07:46	1	20.77	.02	19.5	-167	-2
07:47	1	20.77	.02	19.4	-168	-1
07:48	1	20.77	.00	19.4	-168	39
07:49	1	20.75	.00	19.4	-170	-45
07:50	1	20.75	.02	19.4	-171	-2
07:51	1	20.77	.02	19.4	-170	-1
07:52	1	20.75	.02	19.4	-170	-1
07:53	1	20.75	.02	19.4	-170	-2
07:54	1	20.75	.02	19.4	-171	-2
07:55	1	20.75	.02	19.4	-171	-2
07:56	1	20.72	.02	19.4	-170	-2
07:57	1	20.73	.02	19.5	-171	-2
07:58	1	20.73	.02	20.0	-170	-1
07:59	1	20.73	.02	19.8	-171	-2
08:00	1	20.73	.02	19.5	-172	-2
AVERAGE	-3	21.53	-.03	6.1	-195	-11

PASSWORD : XXXXXX
OK

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
08:01	1	20.73	.02	19.4	-1
08:02	1	20.73	.02	19.3	-2
08:03	1	20.73	.02	19.3	-2
08:04	1	20.75	.02	19.2	-1
08:05	537	14.50	.00	13.6	-1
08:06	898	.62	-.03	.8	-2

>
>A
VIEW WHICH CHANNELS ? 01,

	NOX
08:06:35	928
08:06:40	928
08:06:45	929
08:06:50	928
08:06:55	928
08:07:00	928
08:07:05	929

930 NOX
0 O2
0 CO
0 CO2

A
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
[illegible]	[illegible]	[illegible]	[illegible]	.3	-2

08:07:30	930	.36	-.03	.3	-1
08:07:35	930	.36	-.03	.3	-1
08:07:40	929	.36	-.03	.3	-1
08:07:45	930	.36	-.03	.3	-1

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
08:07	927	.37	-.03	.3	-1
08:08	929	.36	-.03	.3	-2
08:09	453	3.44	-.02	2.9	-2
08:10	458	.36	-.03	.4	-2

>
>A
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
08:10:30	458	.34	.09	.2	-3
08:10:35	459	.34	.11	.2	-3
08:10:40	459	.34	.11	.2	-3
08:10:45	459	.33	.11	.2	-2
08:10:50	459	.34	.11	.2	-2
08:10:55	455	.34	.11	.2	-2
08:11:00	454	.34	.11	.2	-2
08:11:05	452	.34	.11	.2	-3
08:11:10	452	.34	.11	.2	-3
08:11:15	451	.34	.11	.2	-3
08:11:20	451	.34	.11	.2	-3
08:11:25	452	.34	.11	.2	-3
08:11:30	449	.33	.11	.2	-3
08:11:35	449	.33	.11	.2	-4
08:11:40	449	.33	.11	.2	-3
08:11:45	448	.33	.11	.2	-3
08:11:50	448	.33	.11	.2	-3

>
>M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
08:11	458	.34	.06	.2	-2
08:12	450	.34	.11	.2	-3
08:13	664	1.41	.12	1.1	-3
08:14	915	.58	.11	.6	-2
08:15	45	3.30	.12	3.0	243
08:16	5	.52	.11	.6	476
08:17	4	.50	.09	.4	478

PASSWORD : XXXXXX
OK

430 NOx
0 O2
0 CO
0 CO2

VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
08:17	4	.50	.09	.4	478

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
08:17:25	3	.50	.09	.4	478
08:17:30	3	.50	.09	.4	477
08:17:35	3	.52	.09	.4	477
08:17:40	3	.52	.09	.4	477
08:17:45	3	.52	.09	.4	477
08:17:50	3	.52	.09	.4	477
08:17:55	3	.52	.05	.4	478
08:18:00	3	.52	.03	.4	478
08:18:05	3	.52	.02	.4	478
08:18:10	3	.52	.02	.4	478

CO 460
CO 0
CO2 0
NO4 0
O2

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 04. 06,

	NOX	O2	CO2	O2	CO
08:18	3	.52	.09	.4	477
08:19	3	1.53	.03	.8	458
08:20	2	6.23	2.75	6.1	27
08:21	2	.50	3.30	.6	-6

>M
VIEW WHICH CHANNELS ? 01, 0
>A
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
08:21:20	2	.50	3.22	.4	-5
08:21:25	2	.50	3.23	.4	-5
08:21:30	2	.50	3.22	.4	-6
08:21:35	2	.50	3.22	.4	-6
08:21:40	2	.50	3.22	.4	-6
08:21:45	2	.50	3.22	.4	-7
08:21:50	2	.50	3.21	.4	-7
08:21:55	2	.50	3.22	.4	-6

CO2 3.18
CO2 0
CO 0
NO4 0
O2

VIEW WHICH CHANNELS ? 01, 02, 30 ?
VIEW WHICH CHANNELS ? 3

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
08:22:15	2	.50	3.22	.4	-5
08:22:20	2	.50	3.22	.4	-6
08:22:25	2	.50	3.22	.4	-6

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
08:22	2	.50	3.22	.4	-6
08:23	2	.50	3.23	.4	-6
08:24	2	.56	3.11	.4	-5
08:25	2	7.00	.06	5.9	128

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
08:25:45	1	.37	-.14	.4	263
08:25:50	1	.37	-.14	.3	263
08:25:55	1	.39	-.14	.3	263
08:26:00	1	.39	-.14	.3	263
08:26:40	1	.37	-.14	.4	262
08:26:05	1	.39	-.14	.3	263
08:26:10	1	.39	-.14	.3	263
08:26:15	1	.39	-.14	.3	262
08:26:20	1	.39	-.14	.3	262

277 CO
0 O2
0 CO2
0 NO

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
08:26	1	.37	-.14	.4	263
08:27	2	.45	-.14	.4	261
08:28	1	5.77	-.13	5.4	37
08:29	1	4.94	-.14	4.8	0
08:30	1	4.98	-.14	4.8	-3
08:31	1	4.98	-.08	4.9	-3

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
08:32:05	1	5.00	-.02	5.0	-3
08:32:10	1	5.00	-.02	5.0	-5
08:32:15	1	5.00	-.02	5.0	-4
08:32:20	1	5.00	-.02	5.0	-3
08:32:25	1	5.00	-.02	5.0	-3
08:32:30	1	5.00	-.02	5.0	-3
08:32:35	1	5.00	-.02	5.0	-3
08:32:40	1	5.00	-.02	5.0	-3
08:32:45	1	5.00	-.02	5.0	-3

5.025 O2
0 NOX
0 CO
0 CO

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
08:32	1	5.00	.05	5.0	-3
08:33	1	5.00	-.02	5.0	-3
08:34	1	4.03	5.17	4.2	-5
08:35	1	.58	11.08	.5	-9

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
08:35:25	1	.55	11.05	.3	-8
08:35:30	1	.56	11.05	.3	-8
08:35:35	1	.55	11.05	.3	-9
08:35:40	1	.56	11.05	.3	-10
08:35:45	1	.55	11.06	.3	-9
08:35:50	1	.56	11.06	.3	-9
08:35:55	1	.56	11.06	.3	-9
08:36:00	1	.55	11.06	.3	-9
08:36:05	1	.55	11.06	.3	-9
08:36:10	1	.55	11.06	.3	-9
08:36:15	1	.55	11.06	.3	-10
08:36:20	1	.56	11.06	.3	-9
08:36:25	1	.50	11.08	.3	-10

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
08:36	1	.55	11.05	.3	-9
08:37	1	.52	11.02	.3	-9
08:38	2	14.81	1.69	10.8	-4

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
08:38:55	3	20.69	.02	19.2	-2
08:39:00	3	20.69	.02	19.2	-2
08:39:05	3	20.70	.02	19.3	-2
08:39:10	3	20.70	.02	20.0	-2
08:39:15	3	20.70	.02	20.0	-2
08:39:20	3	20.70	.02	20.0	-3
08:39:25	3	20.70	.02	20.1	-3
08:39:30	3	20.69	.02	20.0	-2
08:39:35	3	20.69	.00	19.8	-2
08:39:40	3	20.70	.00	19.7	-1
08:39:45	3	20.72	.00	19.7	-1
08:39:50	3	20.72	-.02	19.8	-1
08:39:55	3	20.73	-.02	19.9	-2
08:40:00	2	20.73	.00	19.9	-2
08:40:05	2	20.73	.00	19.8	-2
08:40:10	2	20.73	.00	19.7	-2
08:40:15	2	20.73	.00	19.7	-3
08:40:20	2	20.73	-.02	19.8	-3
08:40:25	2	20.73	-.02	19.9	-3
08:40:30	2	20.73	-.02	19.8	-2
08:40:35	2	20.73	-.02	19.7	-2
08:40:40	2	20.73	-.02	19.7	-2

20.9 O2
0 NO
0 CO
0 CO2

HOURLY SUMMARY 09:00:00 05/02/90 122 WASTE MNGT.

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	O2	CO2	O2	SO2	CO
CHANNEL UNITS	PPM	%	%	%	PPM	PPM
FULL SCALE VALUE	1000	25.00	25.00	25.0	1000	1500
ZERO VALUE	0	-6.25	-6.25	.0	0	-295
INPUT RANGE	10	1	1	1	10	1
08:01	1	20.73	.02	19.4	-173	139
08:02	1	20.73	.02	19.3	-171	138
08:03	1	20.73	.02	19.3	-169	138
08:04	1	20.75	.02	19.2	-170	139
08:05	537	14.50	.00	13.6	-182	139
08:06	898	.62	-.03	.8	-225	138
08:07	927	.37	-.03	.3	-226	139
08:08	929	.36	-.03	.3	-227	138
08:09	453	3.44	-.02	2.9	-228	138
08:10	458	.36	-.03	.4	-230	138
08:11	458	.34	.06	.2	-232	138
08:12	450	.34	.11	.2	-235	137
08:13	664	1.41	.12	1.1	-237	137
08:14	915	.58	.11	.6	-236	138
08:15	45	3.30	.12	3.0	-234	500
08:16	5	.62	.11	.6	-237	844
08:17	4	.50	.09	.4	-237	848
08:18	3	.52	.09	.4	-238	846
08:19	3	1.53	.03	.8	-237	817
08:20	2	6.23	2.75	6.1	-214	181
08:21	2	.50	3.30	.6	-237	132
08:22	2	.50	3.22	.4	-233	132
08:23	2	.50	3.23	.4	-235	132
08:24	2	.56	3.11	.4	-235	133
08:25	2	7.00	.06	5.9	-215	330
08:26	1	.37	-.14	.4	-235	530
08:27	2	.45	-.14	.4	-233	526
08:28	1	5.77	-.13	5.4	-224	196
08:29	1	4.94	-.14	4.8	-232	141
08:30	1	4.98	-.14	4.8	-233	136
08:31	1	4.98	-.08	4.9	-232	137
08:32	1	5.00	.05	5.0	-229	136
08:33	1	5.00	-.02	5.0	-232	136
08:34	1	4.03	5.17	4.2	-229	134
08:35	1	.58	11.08	.5	-233	128
08:36	1	.55	11.05	.3	-231	128
08:37	1	.52	11.02	.3	-230	127
08:38	2	14.81	1.69	10.8	-197	135
08:39	3	20.69	.08	18.8	-168	138
08:40	3	20.70	.00	19.9	-167	138
08:41	2	20.73	.00	19.8	-166	138
08:42	3	20.75	.00	19.9	-165	139
08:43	3	20.77	-.02	20.0	-164	139
08:44	3	20.78	-.02	20.1	-164	139
08:45	3	20.80	-.02	20.2	-164	139
08:46	2	20.81	-.02	20.3	-164	139
08:47	2	20.83	-.02	20.4	-164	140
08:48	2	20.83	-.02	20.4	-163	139
08:49	2	20.83	-.02	20.4	-163	139
08:50	2	20.84	-.03	20.4	-163	139
08:51	2	20.86	-.03	20.5	-163	140
08:52	2	20.86	-.03	20.5	-163	138
08:53	2	20.86	-.03	20.5	-162	139
08:54	2	20.86	-.03	20.5	-162	140

08:57	375	6.12	13.28	9.5	-179	1505
08:58	488	5.97	13.48	6.3	-200	1529
08:59	405	5.97	13.39	5.6	-204	-2129
09:00	442	6.06	13.33	5.2	-212	1540
AVERAGE	148	9.45	2.00	9.2	-203	254

```
PASSWORD : XXXXXX
OK


>I
CODE : XXXXXX
OK


STATION NAME = WASTE MNGT.
ACTIVE CHANNELS ARE: 1 THRU 06
KEEP THE SUMMARY FOR HOW MANY DAYS PREVIOUS ? 30
NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN HOURLY AVERAGE = 01
MINIMUM NUMBER OF HOURS IN DAILY AVERAGE = 01
ENABLE ALARMS ? N

CHANNEL NUMBER = 06
CHANNEL NAME =  CO
CHANNEL UNITS = PPM
INPUT RANGE (.1, 1, 5 OR 10 VOLT) ?  1
FULL SCALE VALUE = 920
ZERO VALUE =   -295
BAD STATUS = XXXXXXXX XXXXXXXX
ENABLE AUTO CAL ? N

CHANNEL NUMBER =
UP CHANNEL NUMBER =
>


INITIALIZED PARAMETERS      09:03:10  05/02/90   122     WASTE MNGT.
ACTIVE CHANNELS ARE: 1 THRU 06
NUMBER OF PREVIOUS DAYS INITIALIZED = 30
NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN HOURLY AVERAGE = 01
MINIMUM NUMBER OF HOURS IN DAILY AVERAGE = 01
**********************************************************************
CHANNEL NUMBER       01      02      03      04      05      06
CHANNEL NAME        NOX      O2     CO2      O2     SO2      CO
CHANNEL UNITS       PPM       %       %       %     PPM     PPM
FULL SCALE VALUE   1000   25.00   25.00    25.0    1000     920
ZERO VALUE            0   -6.25   -6.25      .0       0    -295
INPUT RANGE          10       1       1       1      10       1
----------------------------------------------------------------------

CHANNEL      BAD STATUS          AUTO CAL ZERO        AUTO CAL SPAN
  01      XXXXXXXX XXXXXXXX   00000000 00000000    00000000 00000000
  02      XXXXXXXX XXXXXXXX   00000000 00000000    00000000 00000000
  03      XXXXXXXX XXXXXXXX   00000000 00000000    00000000 00000000
  04      XXXXXXXX XXXXXXXX   00000000 00000000    00000000 00000000
  05      XXXXXXXX XXXXXXXX   00000000 00000000    00000000 00000000
  06      XXXXXXXX XXXXXXXX   00000000 00000000    00000000 00000000
```

PASSWORD : XXXXXX
OK

>H

HOURLY SUMMARY 09:03:29 05/02/90 122 WASTE MNGT.

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	02	CO2	02	SO2	CO
09:01	466	6.11	13.25	5.1	-213	909
09:02	403	6.12	13.28	5.0	-213	774
09:03	357	6.27	13.11	5.0	-210	670
AVERAGE	409<	6.17<	13.22<	5.0<	-212<	785<

-

HOURLY SUMMARY 09:07:19 05/02/90 122 WASTE MNGT.

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	02	CO2	02	SO2	CO
09:01	466	6.11	13.25	5.1	-213	909
09:02	403	6.12	13.28	5.0	-213	774
09:03	357	6.27	13.11	5.0	-210	670
09:04	392	6.03	13.34	5.1	-210	919
09:05	359	6.22	13.16	5.2	-208	543
09:06	358	6.30	13.12	5.1	-204	41
09:07	396	5.95	13.36	4.9	-206	938
AVERAGE	390<	6.14<	13.23<	5.0<	-209<	685<

M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	02	CO2	02	CO
09:07	396	5.95	13.36	4.9	938
09:08	344	6.27	13.14	4.9	857
09:09	388	6.12	13.27	6.5	896
09:10	370	6.08	13.25	6.5	914
09:11	390	6.16	13.22	6.5	886
09:12	438	5.94	13.44	6.4	-1839
09:13	403	6.03	13.31	6.4	931
09:14	387	6.14	13.27	6.4	904
09:15	377	6.08	13.31	6.4	913

I
CODE : XXXXXX
>

STATION NAME = WASTE MNGT.
ACTIVE CHANNELS ARE: 1 THRU 06 108
KEEP THE SUMMARY FOR HOW MANY DAYS PREVIOUS ? 30
NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01

MINIMUM NUMBER OF ONE MINUTE SAMPLES IN HOURLY AVERAGE = 01
MINIMUM NUMBER OF HOURS IN DAILY AVERAGE = 01
ENABLE ALARMS ? N

CHANNEL NUMBER = 06
CHANNEL NAME = CO
CHANNEL UNITS = PPM
INPUT RANGE (.1, 1, 5 OR 10 VOLT) ? 1
FULL SCALE VALUE = 950
ZERO VALUE = -295
BAD STATUS = XXXXXXXX XXXXXXXX
ENABLE AUTO CAL ? N

CHANNEL NUMBER =
UP CHANNEL NUMBER =
>

INITIALIZED PARAMETERS 09:16:55 05/02/90 122 WASTE MNGT.
ACTIVE CHANNELS ARE: 1 THRU 06
NUMBER OF PREVIOUS DAYS INITIALIZED = 30
NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN HOURLY AVERAGE = 01
MINIMUM NUMBER OF HOURS IN DAILY AVERAGE = 01

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	O2	CO2	O2	SO2	CO
CHANNEL UNITS	PPM	%	%	%	PPM	PPM
FULL SCALE VALUE	1000	25.00	25.00	25.0	1000	950
ZERO VALUE	0	-6.25	-6.25	.0	0	-295
INPUT RANGE	10	1	1	1	10	1

CHANNEL	BAD STATUS	AUTO CAL ZERO	AUTO CAL SPAN
01	XXXXXXXX XXXXXXXX	00000000 00000000	00000000 00000000
02	XXXXXXXX XXXXXXXX	00000000 00000000	00000000 00000000
03	XXXXXXXX XXXXXXXX	00000000 00000000	00000000 00000000
04	XXXXXXXX XXXXXXXX	00000000 00000000	00000000 00000000
05	XXXXXXXX XXXXXXXX	00000000 00000000	00000000 00000000
06	XXXXXXXX XXXXXXXX	00000000 00000000	00000000 00000000

PASSWORD : XXXXXX
OK

>H

HOURLY SUMMARY 09:17:14 05/02/90 122 WASTE MNGT.

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	O2	CO2	O2	SO2	CO
09:01	466	6.11	13.25	5.1	-213	939
09:02	403	6.12	13.28	5.0	-213	801
09:03	357	6.27	13.11	5.0	-210	694
09:04	392	6.03	13.34	5.1	-210	949
09:05	359	6.22	13.16	5.2	-208	564
09:06	358	6.30	13.12	5.1	-204	49
09:07	396	5.95	13.36	4.9	-206	969
09:08	344	6.27	13.14	4.9	-206	885
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-195	[illegible]

09:12	438	5.94	13.44	6.4	-196	-1570
09:13	403	6.03	13.31	6.4	-195	961
09:14	387	6.14	13.27	6.4	-192	934
09:15	377	6.08	13.31	6.4	-193	943
09:16	400	5.92	13.41	6.4	-193	972
09:17	380	6.05	13.30	6.4	-198	966
AVERAGE	389<	6.11<	13.27<	5.8<	-201<	697<

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
09:17	380	6.05	13.30	6.4	966
09:18	364	6.33	13.16	6.5	903
09:19	349	6.17	13.20	6.5	949
09:20	369	6.22	13.23	6.5	918
09:21	448	6.03	13.39	6.5	958
09:22	439	6.02	13.31	6.4	943
09:23	394	6.11	13.31	6.4	943
09:24	469	5.92	13.45	6.3	-1567
09:25	361	6.12	13.23	6.3	949
09:26	439	5.94	13.45	6.4	-1567
09:27	367	6.03	13.31	6.3	974
09:28	398	6.03	13.36	6.3	969
09:29	362	6.17	13.20	6.4	949
09:30	364	6.11	13.23	6.4	962
09:31	404	6.05	13.34	6.4	978
09:32	465	5.86	13.52	6.3	-1567
09:33	414	5.91	13.42	6.3	974
09:34	417	6.05	13.39	6.3	972
09:35	361	6.12	13.25	6.4	939
09:36	352	6.12	13.25	6.4	357
09:37	357	6.25	13.19	6.5	923
09:38	447	5.91	13.48	6.5	-1567
09:39	377	6.06	13.30	6.4	964
09:40	404	5.95	13.39	6.4	816
09:41	479	5.98	13.45	6.4	967
09:42	451	6.06	13.31	6.4	933
09:43	380	6.17	13.28	6.5	939
09:44	338	6.19	13.16	6.6	928
09:45	389	6.11	13.30	6.5	954
09:46	352	6.17	13.19	6.4	935
09:47	381	6.08	13.27	6.4	936
09:48	346	6.16	13.16	6.4	901
09:49	424	6.09	13.31	6.5	913
09:50	390	6.08	13.25	6.4	947
09:51	344	6.11	13.19	6.5	947
09:52	468	6.11	13.41	6.6	936
09:53	444	5.83	13.52	6.6	-1569
09:54	382	6.20	13.19	6.9	917
09:55	370	6.08	13.28	6.9	937
09:56	426	5.95	13.42	6.7	-1567
09:57	366	6.03	13.30	6.6	966
09:58	387	6.20	13.23	6.6	941
09:59	399	5.89	13.42	6.6	-1569

HOURLY SUMMARY 10:00:00 05/02/90 122 WASTE MNGT.

****

CHANNEL NUMBER 01 02 03 04 05 06

CHANNEL UNITS	PPM	%	%	%	PPM	PPM
FULL SCALE VALUE	1000	25.00	25.00	25.0	1000	950
ZERO VALUE	0	-6.25	-6.25	.0	0	-295
INPUT RANGE	10	1	1	1	10	1
09:01	466	6.11	13.25	5.1	-213	939
09:02	403	6.12	13.28	5.0	-213	801
09:03	357	6.27	13.11	5.0	-210	694
09:04	392	6.03	13.34	5.1	-210	949
09:05	359	6.22	13.16	5.2	-208	564
09:06	358	6.30	13.12	5.1	-204	49
09:07	396	5.95	13.36	4.9	-206	969
09:08	344	6.27	13.14	4.9	-206	885
09:09	388	6.12	13.27	6.5	-195	926
09:10	370	6.08	13.25	6.5	-193	944
09:11	390	6.16	13.22	6.5	-195	915
09:12	438	5.94	13.44	6.4	-196	-1570
09:13	403	6.03	13.31	6.4	-195	961
09:14	387	6.14	13.27	6.4	-192	934
09:15	377	6.08	13.31	6.4	-193	943
09:16	400	5.92	13.41	6.4	-193	972
09:17	380	6.05	13.30	6.4	-198	966
09:18	364	6.33	13.16	6.5	-194	903
09:19	349	6.17	13.20	6.5	-190	949
09:20	369	6.22	13.23	6.5	-191	918
09:21	448	6.03	13.39	6.5	-191	958
09:22	439	6.02	13.31	6.4	-189	943
09:23	394	6.11	13.31	6.4	-190	943
09:24	469	5.92	13.45	6.3	-189	-1567
09:25	361	6.12	13.23	6.3	-188	949
09:26	439	5.94	13.45	6.4	-189	-1567
09:27	367	6.03	13.31	6.3	-187	974
09:28	398	6.03	13.36	6.3	-186	969
09:29	362	6.17	13.20	6.4	-186	949
09:30	364	6.11	13.23	6.4	-185	962
09:31	404	6.05	13.34	6.4	-185	978
09:32	465	5.86	13.52	6.3	-185	-1567
09:33	414	5.91	13.42	6.3	-185	974
09:34	417	6.05	13.39	6.3	-183	972
09:35	361	6.12	13.25	6.4	-182	939
09:36	352	6.12	13.25	6.4	-181	357
09:37	357	6.25	13.19	6.5	-181	923
09:38	447	5.91	13.48	6.5	-180	-1567
09:39	377	6.06	13.30	6.4	-181	964
09:40	404	5.95	13.39	6.4	-182	816
09:41	479	5.98	13.45	6.4	-180	967
09:42	451	6.06	13.31	6.4	-180	933
09:43	380	6.17	13.28	6.5	-179	939
09:44	338	6.19	13.16	6.6	-177	928
09:45	389	6.11	13.30	6.5	-177	954
09:46	352	6.17	13.19	6.4	-178	935
09:47	381	6.08	13.27	6.4	-178	936
09:48	346	6.16	13.16	6.4	-177	901
09:49	424	6.09	13.31	6.5	-175	913
09:50	390	6.08	13.25	6.4	-176	947
09:51	344	6.11	13.19	6.5	-175	947
09:52	468	6.11	13.41	6.6	-174	936
09:53	444	5.83	13.52	6.6	-175	-1569
09:54	382	6.20	13.19	6.9	-173	917
09:55	370	6.08	13.28	6.9	-173	937
09:56	426	5.95	13.42	6.7	-173	-1567
09:57	366	6.03	13.30	6.6	-173	966
09:58	387	6.20	13.23	6.6	-172	941
09:59	399	5.89	13.42	6.6	-172	-1569
10:00	375	6.19	13.25	6.6	-172	941

AVERAGE 394 6.06 13.30 6.3 -167 969

PASSWORD : XXXXXX
OK

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
10:01	389	6.06	13.30	6.7	956
10:02	490	5.94	13.39	6.8	956
10:03	420	6.05	13.37	7.2	947
10:04	316	6.23	13.12	7.7	916
10:05	370	6.03	13.30	7.8	964
10:06	385	6.16	13.23	7.8	931
10:07	440	5.94	13.47	6.6	975
10:08	402	6.02	13.36	6.2	969
10:09	378	5.98	13.36	6.1	976
10:10	388	6.11	13.28	6.2	931
10:11	348	6.11	13.25	6.2	956
10:12	342	6.19	13.20	6.3	940
10:13	352	6.27	13.11	6.3	905
10:14	428	5.94	13.47	6.3	974
10:15	383	5.97	13.34	6.2	972
10:16	347	6.17	13.20	6.3	928
10:17	387	6.11	13.33	6.3	953
10:18	287	6.23	13.08	6.3	903
10:19	388	6.14	13.31	6.4	940
10:20	441	5.83	13.50	6.2	-1567

PASSWORD : XXXXXX
OK

>I
CODE : XXXXXX
OK

STATION NAME = WASTE MNGT.
ACTIVE CHANNELS ARE: 1 THRU 06
KEEP THE SUMMARY FOR HOW MANY DAYS PREVIOUS ? 30
NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN HOURLY AVERAGE = 01
MINIMUM NUMBER OF HOURS IN DAILY AVERAGE = 01
ENABLE ALARMS ? N

CHANNEL NUMBER = 06
CHANNEL NAME = CO
CHANNEL UNITS = PPM
INPUT RANGE (.1, 1, 5 OR 10 VOLT) ? 1
FULL SCALE VALUE = 920
ZERO VALUE = -295
BAD STATUS = XXXXXXXX XXXXXXXX
ENABLE AUTO CAL ? N

CHANNEL NUMBER =
UP CHANNEL NUMBER =

```
ACTIVE CHANNELS ARE: 1 THRU 06
NUMBER OF PREVIOUS DAYS INITIALIZED = 30
NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN HOURLY AVERAGE = 01
MINIMUM NUMBER OF HOURS IN DAILY AVERAGE = 01
*************************************************************************
CHANNEL NUMBER        01       02       03       04       05       06
CHANNEL NAME         NOX       02      CO2       02      SO2       CO
CHANNEL UNITS        PPM        %        %        %      PPM      PPM
FULL SCALE VALUE    1000    25.00    25.00     25.0     1000      920
ZERO VALUE             0    -6.25    -6.25       .0        0     -295
INPUT RANGE           10        1        1        1       10        1
-------------------------------------------------------------------------

CHANNEL      BAD STATUS              AUTO CAL ZERO          AUTO CAL SPAN
  01      XXXXXXXX XXXXXXXX     00000000 00000000      00000000 00000000
  02      XXXXXXXX XXXXXXXX     00000000 00000000      00000000 00000000
  03      XXXXXXXX XXXXXXXX     00000000 00000000      00000000 00000000
  04      XXXXXXXX XXXXXXXX     00000000 00000000      00000000 00000000
  05      XXXXXXXX XXXXXXXX     00000000 00000000      00000000 00000000
  06      XXXXXXXX XXXXXXXX     00000000 00000000      00000000 00000000



PASSWORD : XXXXXX
OK


>M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

                  NOX       02       CO2       02       CO

10:20             441     5.83     13.50      6.2    -1536
10:21             109    14.48      3.91      6.8      532
10:22              41    20.78       .09     11.2      120
10:23              29    20.81       .06     14.5       80
10:24              23    20.80       .06     19.2       83
10:25              19    20.83       .05     24.4        1
10:26              16    20.83       .05     24.5        0
10:27              14    20.83       .03    -25.5        0
10:28              13    20.83      -.06    -25.5        0
10:29              12    20.83      -.02     15.6        0
10:30              58    20.84       .02       .2       -1
10:31               1     9.14      -.06       .2      125
>I
CODE : XXXXXX
?
>I
CODE : XXXXXX
OK


STATION NAME = WASTE MNGT.
ACTIVE CHANNELS ARE: 1 THRU 06
KEEP THE SUMMARY FOR HOW MANY DAYS PREVIOUS ? 30
NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN HOURLY AVERAGE = 01
MINIMUM NUMBER OF HOURS IN DAILY AVERAGE = 01
ENABLE ALARMS ? N
```



```
CHANNEL NUMBER = 06
```

```
INPUT RANGE (.1, 1, 5 OR 10 VOLT) ?  1
FULL SCALE VALUE = 1200
ZERO VALUE =   -295
BAD STATUS = XXXXXXXX XXXXXXXX
ENABLE AUTO CAL ? N

CHANNEL NUMBER = 06
CHANNEL NAME =  CO
CHANNEL UNITS = PPM
INPUT RANGE (.1, 1, 5 OR 10 VOLT) ?  1
FULL SCALE VALUE =   1200
ZERO VALUE =   -295
BAD STATUS = XXXXXXXX XXXXXXXX
ENABLE AUTO CAL ? N

CHANNEL NUMBER =
UP CHANNEL NUMBER =
PASSWORD :


INITIALIZED PARAMETERS      10:36:05  05/02/90   122      WASTE MNGT.
ACTIVE CHANNELS ARE: 1 THRU 06
NUMBER OF PREVIOUS DAYS INITIALIZED = 30
NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN HOURLY AVERAGE = 01
MINIMUM NUMBER OF HOURS IN DAILY AVERAGE = 01
**************************************************************************
CHANNEL NUMBER       01      02      03      04      05      06
CHANNEL NAME        NOX      02     CO2      02     SO2      CO
CHANNEL UNITS       PPM       %       %       %     PPM     PPM
FULL SCALE VALUE   1000   25.00   25.00    25.0    1000    1200
ZERO VALUE            0   -6.25   -6.25      .0       0    -295
INPUT RANGE          10       1       1       1      10       1
--------------------------------------------------------------------------

CHANNEL      BAD STATUS          AUTO CAL ZERO        AUTO CAL SPAN
  01      XXXXXXXX XXXXXXXX   00000000 00000000    00000000 00000000
  02      XXXXXXXX XXXXXXXX   00000000 00000000    00000000 00000000
  03      XXXXXXXX XXXXXXXX   00000000 00000000    00000000 00000000
  04      XXXXXXXX XXXXXXXX   00000000 00000000    00000000 00000000
  05      XXXXXXXX XXXXXXXX   00000000 00000000    00000000 00000000
  06      XXXXXXXX XXXXXXXX   00000000 00000000    00000000 00000000


PASSWORD : XXXXXX
OK


>A
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

                    NOX       02      CO2       02       CO

10:36:30              0      .33    10.86       .2        5
10:36:35              0      .33    10.86       .2        5
10:36:40              0      .33    10.86       .2        5
10:36:45              0      .33    10.86       .2        4
10:36:50              0      .33    10.86       .2        4
10:36:55              0      .33    10.86       .2        5
10:37:00              0      .33    10.86       .2        5
10:37:05              0      .33    10.87       .2        5
10:37:10              0      .33    10.87       .2        4
10:37:15              0      .33    10.87       .2        4
```

10.95 CO2

```
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

                NOX       O2       CO2       O2       CO

10:37             0      .33     10.86       .2        8
10:38             0      .52      9.83       .2        6
10:39             0      .56       .36       .2      198
10:40             0      .34       .05       .2      276
10:41           117      .91       .03       .2      269
10:42           831      .42      -.08       .2       29
10:43           924      .30      -.08       .2       12
>A
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

                NOX       O2       CO2       O2       CO

10:43:30        922      .27      -.08       .2       11
10:43:35        922      .27      -.08       .2       11
10:43:40        922      .27      -.08       .2       11
10:43:45        923      .27      -.08       .2       11
10:43:50        922      .27      -.08       .2       12
10:43:55        922      .27      -.08       .2       11
10:44:00        923      .27      -.08       .2       12
10:44:05        922      .27       .02       .2       13
10:44:10        923      .27       .17       .2       12
10:44:15        922      .27       .22       .2       12
10:44:20        923      .27       .12       .2       13
10:44:25        824      .27       .06       .2       11
10:44:30        788      .33       .12       .2       11
10:44:35        827      .86       .14       .2       13
 M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

                NOX       O2       CO2       O2       CO

10:44           922      .27      -.08       .2       11
10:45           559     2.56       .11       .2       18
10:46            24     1.52       .02       .2      242
10:47            10      .75       .02       .2      269
10:48             2     1.94       .02       .2      245
10:49            -3     4.95       .00       .2       19
10:50          -131     5.00       .00       .2       11
 M
VIEW WHICH CHANNELS ?
 A
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

                NOX       O2       CO2       O2       CO

10:50:40          1     5.00       .00       .2       10
10:50:45          1     5.00       .00       .2       10
10:50:50          1     5.00       .02       .2       10
10:50:55          1     5.00       .00       .2        8
10:51:00          1     5.00       .00       .2        9
10:51:05          1     5.00       .00       .2        9
10:51:10          1     5.00       .00       .2        8
10:51:15          1     5.00       .00       .2        9
10:51:20          1     5.00       .00       .2        9
10:51:25          1     5.00       .02       .2        9
10:51:30          1     5.00       .02       .2        8
PASSWORD : XXXXXX
```

930 NOX

5.02% O2

```
CHANNEL NUMBER = 06
CHANNEL NAME =  CO
CHANNEL UNITS = PPM
INPUT RANGE (.1, 1, 5 OR 10 VOLT) ? .1
FULL SCALE VALUE = 9200
ZERO VALUE = -2950
BAD STATUS = XXXXXXXX XXXXXXXX
ENABLE AUTO CAL ? N

CHANNEL NUMBER = 06
CHANNEL NAME =  CO
CHANNEL UNITS = PPM
INPUT RANGE (.1, 1, 5 OR 10 VOLT) ? 10
FULL SCALE VALUE =   9200
ZERO VALUE =  -2950
BAD STATUS = XXXXXXXX XXXXXXXX
ENABLE AUTO CAL ? N

CHANNEL NUMBER = 06
CHANNEL NAME =  CO
CHANNEL UNITS = PPM
INPUT RANGE (.1, 1, 5 OR 10 VOLT) ? 5
FULL SCALE VALUE = 920
ZERO VALUE =  -2950
BAD STATUS = XXXXXXXX XXXXXXXX
ENABLE AUTO CAL ? N

CHANNEL NUMBER = 06
CHANNEL NAME =  CO
CHANNEL UNITS =
```

HOURLY SUMMARY 11:00:00 05/02/90 122 WASTE MNGT.

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	O2	CO2	O2	SO2	CO
CHANNEL UNITS	PPM	%	%	%	PPM	PPM
FULL SCALE VALUE	1000	25.00	25.00	25.0	1000	920
ZERO VALUE	0	-6.25	-6.25	.0	0	-2950
INPUT RANGE	10	1	1	1	10	5
10:01	389	6.06	13.30	6.7	-174	937
10:02	490	5.94	13.39	6.8	-171	937
10:03	420	6.05	13.37	7.2	-168	910
10:04	316	6.23	13.12	7.7	-166	814
10:05	370	6.03	13.30	7.8	-164	963
10:06	385	6.16	13.23	7.8	-164	860
10:07	440	5.94	13.47	6.6	-167	997
10:08	402	6.02	13.36	6.2	-170	978
10:09	378	5.98	13.36	6.1	-170	999
10:10	388	6.11	13.28	6.2	-170	860
10:11	348	6.11	13.25	6.2	-169	937
10:12	342	6.19	13.20	6.3	-169	889
10:13	352	6.27	13.11	6.3	-168	781
10:14	428	5.94	13.47	6.3	-167	995
10:15	383	5.97	13.34	6.2	-169	990
10:16	347	6.17	13.20	6.3	-168	850
10:17	387	6.11	13.33	6.3	-168	930
10:18	287	6.23	13.08	6.3	-167	773
10:19	388	6.14	13.31	6.4	-167	889
10:20	441	5.83	13.50	6.2	-167	-6903
10:21	109	14.48	.91	6.8	-169	-316
10:22	41	20.78	.09	11.2	-149	-1628
10:23	29	20.81	.06	14.5	-147	-1756

10:25	19	20.83	.05	24.4	-130	-2008
10:26	16	20.83	.05	24.5	-130	-2010
10:27	14	20.83	.03	-25.5	-124	-2012
10:28	13	20.83	-.06	-25.5	-119	-2012
10:29	12	20.83	-.02	15.6	-137	-2012
10:30	58	20.84	.02	.2	-167	-2013
10:31	1	9.14	-.06	.2	-166	-1613
10:32	1	.42	-.09	.2	-163	-1263
10:33	1	.41	-.09	.2	-164	-1392
10:34	1	2.09	1.42	.2	-163	-1530
10:35	0	1.05	10.70	.2	-163	-2052
10:36	0	.34	10.86	.2	-162	-2149
10:37	0	.33	10.86	.2	-161	-2174
10:38	0	.52	9.83	.2	-161	-2170
10:39	0	.56	.36	.2	-160	-1673
10:40	0	.34	.05	.2	-161	-1472
10:41	117	.91	.03	.2	-160	-1491
10:42	831	.42	-.08	.2	-159	-2112
10:43	924	.30	-.08	.2	-157	-2155
10:44	922	.27	-.08	.2	-155	-2157
10:45	569	2.56	.11	.2	-155	-2139
10:46	24	1.52	.02	.2	-157	-1559
10:47	10	.75	.02	.2	-157	-1489
10:48	2	1.94	.02	.2	-157	-1551
10:49	-3	4.95	.00	.2	-157	-2137
10:50	-131	5.00	.00	.2	-157	-2159
10:51	1	5.00	.00	.2	-156	-2161
10:52	1	5.00	.00	.2	-155	-2161
10:53	4	4.37	.03	.2	-157	-1659
10:54	2	.89	.00	.2	-156	-820
10:55	2	.92	.00	.2	-154	-822
10:56	2	.94	.00	.2	-154	-829
10:57	2	.94	.00	.2	-153	-835
10:58	2	.94	.00	.2	-154	398
10:59	2	.94	.00	.2	-154	1011
11:00	1	.94	.00	.2	-153	-2008
AVERAGE	188	6.30	5.23	3.4	-159	-891

PASSWORD : XXXXXX
OK

>
>I
CODE : XXXXXX
OK

STATION NAME =

INITIALIZED PARAMETERS 11:00:55 05/02/90 122 WASTE MNGT.
ACTIVE CHANNELS ARE: 1 THRU 06
NUMBER OF PREVIOUS DAYS INITIALIZED = 30
NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN HOURLY AVERAGE = 01
MINIMUM NUMBER OF HOURS IN DAILY AVERAGE = 01
****

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	02	CO2	02	SO2	CO
CHANNEL UNITS	PPM	%	%	%	PPM	PPM

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
11:18	454	.37	.02	.2	-15

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
11:18:55	454	.36	.02	.2	-15
11:19:00	454	.36	.02	.2	-15
11:19:05	454	.37	.02	.2	-15
11:19:10	454	.37	.02	.2	-15
11:19:15	454	.37	.02	.2	-10
11:19:20	454	.36	.02	.2	-5
11:19:25	454	.37	.02	.2	0
11:19:30	447	.37	.02	.2	0
11:19:35	427	.37	.03	.2	5
11:19:40	369	.50	.05	.2	5
11:19:45	89	.83	.06	.2	5
11:19:50	22	2.52	.08	.2	5
11:19:55	12	6.73	.05	.2	10
11:20:00	10	7.86	.03	.2	51
11:20:05	9	5.89	.03	.2	112
11:20:10	8	3.28	.02	.2	174
11:20:15	7	1.66	.02	.2	215
11:20:20	7	.91	.02	.2	245
11:20:25	6	.59	.02	.2	256
11:20:30	6	.47	.02	.2	266
11:20:35	6	.42	.02	.2	266
11:20:40	5	.39	.02	.2	271
11:20:45	5	.37	.02	.2	271
11:20:50	5	.37	.02	.2	271
11:20:55	5	.37	.02	.2	271
11:21:00	4	.36	.02	.2	266
11:21:05	4	.36	.02	.2	266
11:21:10	4	.36	.02	.2	266
11:21:15	4	.37	.02	.2	266
11:21:20	4	.37	.02	.2	266
11:21:25	902	.36	.02	.2	266
11:21:30	156	.36	.02	.2	266
11:21:35	2	.36	.02	.2	266
11:21:40	2	.36	.02	.2	266

M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
11:21	6	1.27	.02	.2	240
11:22	91	.36	.02	.2	266
11:23	9	9.77	.08	.2	143
11:24	3	11.62	.06	.2	189
11:25	1	.37	.02	.1	480

A
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
11:25:55	1	.34	.02	.1	480
11:26:00	1	.34	.02	.1	480

11:26:15	1	.34	.03	.2	475
11:26:20	1	.34	.03	.1	475
11:26:25	1	.34	.02	.1	475
11:26:30	1	.34	.02	.1	475
11:26:35	1	.34	.03	.2	475
11:26:40	1	.33	.02	.1	475
11:26:45	1	.33	.03	.1	475
11:26:50	1	.33	.02	.1	475
11:26:55	1	.33	.02	.2	475
11:27:00	1	.34	.02	.1	480
11:27:05	1	.33	.02	.1	480
11:27:10	1	.33	.02	.1	480
11:27:15	1	.33	.03	.2	480
11:27:20	1	.33	.02	.1	480
11:27:25	1	.33	.02	.2	480
11:27:30	1	.33	.02	.2	480
11:27:35	1	.33	.02	.1	480
11:27:40	1	.33	.02	.2	480
11:27:45	1	.33	.02	.1	486
11:27:50	1	.33	.02	.1	480

>

>M

VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	02	CO2	02	CO
11:31	3	7.28	.08	.1	302
11:32	3	20.53	.14	.1	15
11:33	2	20.73	.11	.1	10
11:34	2	20.78	.12	.1	5
11:35	2	20.80	.12	.2	5
11:36	2	20.84	.14	.2	5
11:37	2	20.86	.14	.1	5
11:38	1	20.87	.12	.1	5
11:39	1	20.89	.12	.1	5
11:40	1	20.91	.08	.1	5
11:41	1	20.92	-.02	.1	5
11:42	1	20.94	-.02	.1	5
11:43	1	20.95	-.03	.1	5
11:44	1	20.94	-.02	.1	5
11:45	1	20.95	-.02	.1	5
11:46	110	17.22	4.89	.1	153
11:47	408	6.31	13.11	.0	787
11:48	427	6.22	13.06	.1	787
11:49	385	6.11	13.17	.1	838
11:50	399	6.05	13.20	.1	854
11:51	411	6.09	13.17	.1	849
11:52	408	6.06	13.20	.1	854
11:53	396	6.14	13.11	.2	833
11:54	381	6.19	13.11	.2	803
11:55	402	6.11	13.16	.2	823
11:56	384	6.11	13.12	.2	828
11:57	415	6.08	13.19	.2	828
11:58	466	5.87	13.33	.2	869
11:59	587	5.72	13.53	.2	895

HOURLY SUMMARY 12:00:00 05/02/90 122 WASTE MNGT.

****

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	02	CO2	02	SO2	CO
CHANNEL UNITS	PPM	%	%	%	PPM	PPM
FULL SCALE VALUE	1000	25.00	25.00	25.0	1000	9999
ZERO VALUE	0	-6.25	-6.25	.0	0	-225

11:01	1	.92	.00	.2	-153	895
11:02	1	.92	.00	.2	-153	1820
11:03	1	.91	.00	.2	-154	4948
11:04	1	.89	.00	.2	-153	2413
11:05	1	.89	.00	.2	-153	332
11:06	1	.89	.00	.2	-152	332
11:07	1	.89	.00	.2	-151	332
11:08	1	.87	.00	.2	-152	348
11:09	1	.87	.00	.2	-150	399
11:10	1	.87	.00	.2	-150	399
11:11	1	.86	.00	.2	-150	399
11:12	1	.87	.00	.2	-150	399
11:13	1	.87	.00	.2	-149	184
11:14	322	2.53	.03	.2	-148	-15
11:15	451	.39	.00	.2	-147	-15
11:16	452	.37	.00	.2	-147	-15
11:17	453	.37	.00	.2	-147	-15
11:18	454	.37	.02	.2	-148	-15
11:19	454	.36	.02	.2	-146	5
11:20	304	1.78	.03	.2	-147	240
11:21	6	1.27	.02	.2	-147	266
11:22	91	.36	.02	.2	-144	143
11:23	9	9.77	.08	.2	-147	189
11:24	3	11.62	.06	.1	-145	480
11:25	1	.37	.02	.2	-145	480
11:26	1	.34	.02	.1	-145	475
11:27	1	.34	.02	.1	-146	480
11:28	1	.33	.02	.1	-146	470
11:29	1	.33	.02	.1	-145	470
11:30	0	.33	.02	.1	-148	302
11:31	3	7.28	.08	.1	-147	15
11:32	3	20.53	.14	.1	-148	10
11:33	2	20.73	.11	.1	-146	5
11:34	2	20.78	.12	.2	-150	5
11:35	2	20.80	.12	.2	-148	5
11:36	2	20.84	.14	.1	-144	5
11:37	2	20.86	.14	.1	-144	5
11:38	1	20.87	.12	.1	-143	5
11:39	1	20.89	.12	.1	-147	5
11:40	1	20.91	.08	.1	-145	5
11:41	1	20.92	-.02	.1	-147	5
11:42	1	20.94	-.02	.1	-144	5
11:43	1	20.95	-.03	.1	-143	5
11:44	1	20.94	-.02	.1	-144	5
11:45	1	20.95	-.02	.1	-142	153
11:46	110	17.22	4.89	.0	-141	787
11:47	408	6.31	13.11	.1	-142	787
11:48	427	6.22	13.06	.1	-142	838
11:49	385	6.11	13.17	.1	-142	854
11:50	399	6.05	13.20	.1	-142	849
11:51	411	6.09	13.17	.1	-143	854
11:52	408	6.06	13.20	.2	-145	833
11:53	396	6.14	13.11	.2	-147	803
11:54	381	6.19	13.11	.2	-145	823
11:55	402	6.11	13.16	.2	-146	828
11:56	384	6.11	13.12	.2	-146	828
11:57	415	6.08	13.19	.2	-146	869
11:58	466	5.87	13.33	.2	-145	895
11:59	587	5.72	13.53	.2	-145	879
12:00	444	5.89	13.27			
AVERAGE	151	7.41	3.19	.2	-147	491

OK

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
12:05	404	6.11	13.12	.2	823
12:06	453	5.89	13.30	.2	854
12:07	438	6.06	13.16	.2	823
12:08	474	5.91	13.33	.2	849
12:09	517	5.94	13.25	.2	838
12:10	428	6.06	13.17	.2	813
12:11	395	6.06	13.16	.2	828
12:12	421	6.11	13.17	.2	808
12:13	414	5.97	13.25	.2	838
12:14	386	6.16	13.08	.2	792
12:15	421	6.08	13.19	.1	808
12:16	416	6.02	13.20	.2	833
12:17	371	6.27	12.92	.2	787
12:18	427	5.92	13.30	.2	838
12:19	377	6.17	13.08	.2	792
12:20	466	5.97	13.30	.1	838
12:21	445	6.02	13.23	.2	828
12:22	387	5.98	13.17	.2	843
12:23	486	5.97	13.33	.2	823
12:24	490	5.81	13.39	.2	859
12:25	414	6.11	13.16	.2	833
12:26	488	5.84	13.42	.2	981
12:27	476	5.86	13.37	.2	1002
12:28	497	5.89	13.39	.2	1002
12:29	493	5.94	13.37	.2	992
12:30	421	5.98	13.23	.2	971
12:31	486	6.05	13.23	.2	920
12:32	450	6.00	13.27	.2	925
12:33	441	5.94	13.36	.2	976
12:34	402	6.09	13.20	.2	935
12:35	426	5.89	13.33	.2	971
12:36	468	5.95	13.34	.2	966
12:37	476	5.89	13.36	.2	987
12:38	427	6.02	13.23	.2	961
12:39	486	5.84	13.37	.2	997
12:40	452	6.03	13.16	.2	956
12:41	385	6.03	13.17	.2	951
12:42	454	5.98	13.28	.2	956
12:43	451	5.81	13.34	.2	987
12:44	538	5.89	13.34	.1	966
12:45	499	5.73	13.33	.2	1022
12:46	479	5.87	13.23	.2	997
12:47	558	5.84	13.44	.2	997
12:48	447	5.78	13.33	.2	1002
12:49	416	6.05	13.19	.2	951
12:50	444	5.94	13.28	.2	966
12:51	431	6.05	13.09	.2	946
12:52	529	5.69	13.52	.2	1012
12:53	528	5.92	13.14	.2	930
12:54	466	5.98	13.16	.2	930
12:55	460	5.87	13.30	.2	981
12:56	453	5.91	13.17	.2	966
12:57	428	5.94	13.22	.1	971
12:58	429	5.95	13.25	.1	966
12:59	412	5.97	13.19	.1	966

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	O2	CO2	O2	SO2	CO
CHANNEL UNITS	PPM	%	%	%	PPM	PPM
FULL SCALE VALUE	1000	25.00	25.00	25.0	1000	9999
ZERO VALUE	0	-6.25	-6.25	.0	0	-225
INPUT RANGE	10	1	1	1	10	10
12:01	474	6.09	13.20	.2	-145	833
12:02	420	5.91	13.23	.2	-145	864
12:03	391	6.17	13.08	.2	-144	808
12:04	409	6.00	13.20	.2	-145	838
12:05	404	6.11	13.12	.2	-145	823
12:06	453	5.89	13.30	.2	-139	854
12:07	438	6.06	13.16	.2	-145	823
12:08	474	5.91	13.33	.2	-141	849
12:09	517	5.94	13.25	.2	-143	838
12:10	428	6.06	13.17	.2	-144	813
12:11	395	6.06	13.16	.2	-150	828
12:12	421	6.11	13.17	.2	-149	808
12:13	414	5.97	13.25	.2	-148	838
12:14	386	6.16	13.08	.2	-145	792
12:15	421	6.08	13.19	.1	-142	808
12:16	416	6.02	13.20	.2	-140	833
12:17	371	6.27	12.92	.2	-141	787
12:18	427	5.92	13.30	.2	-138	838
12:19	377	6.17	13.08	.2	-144	792
12:20	466	5.97	13.30	.1	-144	838
12:21	445	6.02	13.23	.2	-141	828
12:22	387	5.98	13.17	.2	-146	843
12:23	486	5.97	13.33	.2	-142	823
12:24	490	5.81	13.39	.2	-140	859
12:25	414	6.11	13.16	.2	-138	833
12:26	488	5.84	13.42	.2	-144	981
12:27	476	5.86	13.37	.2	-137	1002
12:28	497	5.89	13.39	.2	-142	1002
12:29	493	5.94	13.37	.2	-149	992
12:30	421	5.98	13.23	.2	-143	971
12:31	486	6.05	13.23	.2	-138	920
12:32	450	6.00	13.27	.2	-143	925
12:33	441	5.94	13.36	.2	-139	976
12:34	402	6.09	13.20	.2	-145	935
12:35	426	5.89	13.33	.2	-143	971
12:36	468	5.95	13.34	.2	-139	966
12:37	476	5.89	13.36	.2	-140	987
12:38	427	6.02	13.23	.2	-140	961
12:39	486	5.84	13.37	.2	-141	997
12:40	452	6.03	13.16	.2	-144	956
12:41	385	6.03	13.17	.2	-138	951
12:42	454	5.98	13.28	.2	-135	956
12:43	451	5.81	13.34	.2	-136	987
12:44	538	5.89	13.34	.1	-133	966
12:45	499	5.73	13.33	.2	-140	1022
12:46	479	5.87	13.23	.2	-141	997
12:47	558	5.84	13.44	.2	-133	997
12:48	447	5.78	13.33	.2	-135	1002
12:49	416	6.05	13.19	.2	-138	951
12:50	444	5.94	13.28	.2	-141	966
12:51	431	6.05	13.09	.2	-132	946
12:52	529	5.69	13.52	.2	-130	1012
12:53	528	5.92	13.14	.2	-131	930
12:54	466	5.98	13.16	.2	-130	930
12:55	460	5.87	13.30	.2	-140	981
12:56	453	5.91	13.17	.2	-127	966

12:59	412	5.97	13.19	.1	-125	966
13:00	458	5.98	13.03	.1	-128	951
AVERAGE	448	5.97	13.25	.2	-140	910

PASSWORD : XXXXXX
OK

>M
VIEW WHICH CHANNELS ?
>H

HOURLY SUMMARY 13:04:30 05/02/90 122 WASTE MNGT.

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	O2	CO2	O2	SO2	CO
13:01	382	6.02	13.14	.2	-134	956
13:02	456	5.95	13.16	.1	-134	946
13:03	447	5.86	13.30	.1	-132	971
13:04	436	5.87	13.30	.2	-135	966
AVERAGE	430<	5.92<	13.22<	.2<	-134<	961<

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
13:04	436	5.87	13.30	.2	966
13:05	392	6.09	12.98	.2	920
13:06	438	5.98	13.05	.2	905
13:07	438	5.91	13.14	.2	895
13:08	414	6.08	13.12	.2	838
13:09	237	6.64	11.81	.2	593
13:10	5	17.39	2.16	.2	31
13:11	-1	20.25	.52	.2	5
13:12	-1	18.97	.78	.2	10
13:13	13	17.16	1.91	.2	36
13:14	420	9.44	11.37	.2	532
13:15	522	5.89	13.27	.2	792
13:16	486	5.89	13.34	.2	961
13:17	411	5.97	13.22	.2	966
13:18	384	6.02	13.19	.2	951
13:19	350	6.22	13.05	.2	895
13:20	395	5.97	13.22	.2	951
13:21	449	5.95	13.33	.2	961
13:22	446	5.83	13.33	.2	992
13:23	377	6.03	13.16	.2	956
13:24	393	6.09	13.16	.2	925
13:25	353	6.09	13.09	.2	925
13:26	353	6.17	13.03	.2	905
13:27	446	5.86	13.36	.2	966
13:28	417	5.95	13.23	.2	951
13:29	443	6.00	13.27	.2	935
13:30	405	6.05	13.17	.2	935
13:31	442	5.81	13.33	.2	992
13:32	410	6.03	13.20	.2	951

13:35	440	5.77	13.34	.2	997
13:36	445	6.00	13.27	.2	951
13:37	520	5.75	13.47	.2	997
13:38	476	5.97	13.17	.2	910
13:39	322	6.23	12.95	.2	879
13:40	416	6.05	12.95	.2	941
13:41	455	5.91	13.30	.2	976
13:42	563	5.69	13.53	.2	1017
13:43	382	5.98	13.08	.2	966
13:44	356	6.09	12.95	.2	915
13:45	281	7.67	10.25	.2	797
13:46	47	20.09	.27	.2	194
13:47	32	20.92	.06	.2	10
13:48	24	20.92	.06	.2	5
13:49	18	20.94	-.05	.2	5
13:50	15	20.95	.03	.2	5
13:51	13	20.97	-.02	.2	5
13:52	11	20.97	-.02	.2	5
13:53	9	13.09	-.08	.2	133
13:54	7	.39	-.09	.2	404
13:55	7	.39	-.09	.2	404

13:56	37	.41	-.09	.2	450

PASSWORD : XXXXXX
PASSWORD : XXXXXX
OK

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 06,

	NOX	O2	CO2	O2	CO
13:56:55	2	.39	-.09	.2	480
13:57:10	2	.41	.05	.2	475
13:57:15	2	.41	-.19	.2	475
13:57:20	2	.41	.28	.2	475
13:57:25	1	.41	.31	.2	475
13:57:30	2	.39	.23	.2	475
13:57:35	2	.39	.16	.2	475
13:57:40	1	.41	.09	.2	475
13:57:45	1	.39	.06	.2	480
13:57:50	1	.37	.05	.2	480
13:57:55	1	.34	.05	.2	480
13:58:00	1	.34	.05	.2	480
13:58:05	1	.34	.05	.2	480
13:58:10	1	.34	.05	.2	480
13:58:15	1	.36	.05	.2	480
13:58:20	1	.37	.05	.2	480
13:58:25	1	.37	-.38	.2	480
13:58:30	1	.37	-.27	.2	480
13:58:35	1	.37	.11	.2	480
13:58:40	1	.39	.12	.2	480
13:58:45	1	.39	.08	.2	480
13:58:50	1	.39	.06	.2	480

460 CO

M
VIEW WHICH CHANNELS ? 01. 02. 03.

13:58 2 .39 .09 475

HOURLY SUMMARY 14:00:00 05/02/90 122 WASTE MNGT.

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	O2	CO2	O2	SO2	CO
CHANNEL UNITS	PPM	%	%	%	PPM	PPM
FULL SCALE VALUE	1000	25.00	25.00	25.0	1000	9999
ZERO VALUE	0	-6.25	-6.25	.0	0	-225
INPUT RANGE	10	1	1	1	10	10
13:01	382	6.02	13.14	.2	-134	956
13:02	456	5.95	13.16	.1	-134	946
13:03	447	5.86	13.30	.1	-132	971
13:04	436	5.87	13.30	.2	-135	966
13:05	392	6.09	12.98	.2	-126	920
13:06	438	5.98	13.05	.2	-128	905
13:07	438	5.91	13.14	.2	-127	895
13:08	414	6.08	13.12	.2	-125	838
13:09	237	6.64	11.81	.2	-131	593
13:10	5	17.39	2.16	.2	-129	31
13:11	-1	20.25	.52	.2	-129	5
13:12	-1	18.97	.78	.2	-132	10
13:13	13	17.16	1.91	.2	-126	36
13:14	420	9.44	11.37	.2	-131	532
13:15	522	5.89	13.27	.2	-132	792
13:16	486	5.89	13.34	.2	-131	961
13:17	411	5.97	13.22	.2	-132	966
13:18	384	6.02	13.19	.2	-129	951
13:19	350	6.22	13.05	.2	-128	895
13:20	395	5.97	13.22	.2	-129	951
13:21	449	5.95	13.33	.2	-133	961
13:22	446	5.83	13.33	.2	-134	992
13:23	377	6.03	13.16	.2	-132	956
13:24	393	6.09	13.16	.2	-129	925
13:25	353	6.09	13.09	.2	-129	925
13:26	353	6.17	13.03	.2	-131	905
13:27	446	5.86	13.36	.2	-133	966
13:28	417	5.95	13.23	.2	-132	951
13:29	443	6.00	13.27	.2	-130	935
13:30	405	6.05	13.17	.2	-131	935
13:31	442	5.81	13.33	.2	-130	992
13:32	410	6.03	13.20	.2	-132	951
13:33	407	5.91	13.23	.2	-129	976
13:34	449	6.16	13.16	.2	-130	900
13:35	440	5.77	13.34	.2	-126	997
13:36	445	6.00	13.27	.2	-126	951
13:37	520	5.75	13.47	.2	-127	997
13:38	476	5.97	13.17	.2	-128	910
13:39	322	6.23	12.95	.2	-129	879
13:40	416	6.05	12.95	.2	-129	941
13:41	455	5.91	13.30	.2	-131	976
13:42	563	5.69	13.53	.2	-127	1017
13:43	382	5.98	13.08	.2	-128	966
13:44	356	6.09	12.95	.2	-134	915
13:45	281	7.67	10.25	.2	-134	797
13:46	47	20.09	.27	.2	-125	194
13:47	32	20.92	.06	.2	-126	10
13:48	24	20.92	.06	.2	-125	5
13:49	18	20.94	-.05	.2	-129	5
13:50	15	20.95	.03	.2	-128	5
13:51	13	20.97	.02	.2	-132	5
13:52	11	20.97	-.02	.2	-132	5

13:55	7	.39	-.09	.2	-131	404
13:56	37	.41	-.09	.2	-120	450
13:57	20	.41	-.09	.2	-124	480
13:58	2	.39	.09	.2	-128	475
13:59	1	.37	.00	.2	-124	480
14:00	364	1.59	-.03	.2	-122	378
AVERAGE	295	8.12	9.00	.2	-129	685

PASSWORD : XXXXXX
OK

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
14:01	895	.37	-.03	15
14:02	914	.30	-.05	10

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
14:02:10	915	.30	.03	5
14:02:15	916	.30	.02	5
14:02:20	914	.30	.02	10
14:02:25	915	.28	.02	5
14:02:30	915	.30	.02	10
14:02:35	915	.28	.02	10
14:02:40	915	.30	.02	5
14:02:45	916	.30	-.39	5

>N?
>M
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
14:02	914	.30	-.05	10
14:03	915	.30	-.05	5
14:04	401	1.64	.00	56

>I
CODE : XXXXXX
OK

930 NOX

STATION NAME = WASTE MNGT.
ACTIVE CHANNELS ARE: 1 THRU 06
KEEP THE SUMMARY FOR HOW MANY DAYS PREVIOUS ? 30
NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN INTERVALS = 01
MINIMUM NUMBER OF ONE MINUTE SAMPLES IN HOURLY AVERAGE = 01
MINIMUM NUMBER OF HOURS IN DAILY AVERAGE = 01
ENABLE ALARMS ? N

CHANNEL NUMBER = 06
CHANNEL NAME = CO
CHANNEL UNITS = PPM
INPUT RANGE (.1, 1, 5 OR 10 VOLT) ? 10
FULL SCALE VALUE = 9920
ZERO VALUE = -295

CHANNEL	BAD STATUS	AUTO CAL ZERO	AUTO CAL SPAN
01	XXXXXXXX XXXXXXXX	00000000 00000000	00000000 00000000
02	XXXXXXXX XXXXXXXX	00000000 00000000	00000000 00000000
03	XXXXXXXX XXXXXXXX	00000000 00000000	00000000 00000000
04	XXXXXXXX XXXXXXXX	00000000 00000000	00000000 00000000
05	XXXXXXXX XXXXXXXX	00000000 00000000	00000000 00000000
06	XXXXXXXX XXXXXXXX	00000000 00000000	00000000 00000000

PASSWORD : XXXXXX
OK

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
14:09:20	0	.75	.03	276
14:09:25	0	.61	.03	276
14:09:30	0	.44	.02	276
14:09:35	0	.34	.02	276
14:09:40	0	.28	.03	281
14:09:45	0	.27	.02	281
14:09:50	0	.25	.02	281
14:09:55	0	.25	.02	281
14:10:00	0	.25	.02	281

277 CO

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
14:10	0	.41	.00	281
14:11	0	1.72	3.00	220
14:12	-1	.47	10.58	5

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
14:12:50	-1	.34	10.95	0
14:12:55	-1	.34	10.95	0
14:13:00	-1	.34	10.94	0
14:13:05	-106	.34	9.67	0
14:13:10	-19	.34	9.84	0
14:13:15	0	.34	9.73	0
14:13:20	1	.34	10.95	0
14:13:25	1	.34	10.95	0
14:13:30	1	.34	10.95	-5
14:13:35	1	.34	10.95	0
14:13:40	1	.34	10.95	0
14:13:45	1	.34	10.95	0
14:13:50	1	.34	10.95	0
14:13:55	1	.34	10.95	0
14:14:00	1	.36	10.95	-5
14:14:05	1	.34	10.95	0
14:14:10	1	.34	10.94	0
14:14:15	14	.34	10.73	0

10.95 CO2

>M
VIEW WHICH CHANNELS ? 01, 02, 03,

```
14:14          -10      .34     10.66          0
14:15            3     2.58      5.02          5
>A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

                NOX       02       CO2        CO

14:15:10          1     4.92       .09          5
14:15:15          1     4.92      -.33          5
14:15:20          1     4.92      -.30          5
14:15:25          1     4.94      -.34          5
14:15:30          1     4.94       .14          5
14:15:35          1     4.92       .17          5
14:15:40          1     4.94       .16          5
14:15:45          1     4.94       .14          5
14:15:50          1     4.98       .12          5
14:15:55          1     5.00       .11          5
14:16:00          1     5.00      -.20          5
14:16:05          1     5.00       .00          5
14:16:10          1     5.00       .30          5
14:16:15          1     5.00       .27          5
14:16:20          1     5.00      -.14          5
14:16:25          1     5.00       .17          5
>M
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

                NOX       02       CO2        CO

14:16             1     4.95      -.02          5
14:17             1     5.00       .06          5
14:18             2     5.28       .14        169
>A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

                NOX       02       CO2        CO

14:18:30          1      .36       .08        480
14:18:35          1      .37       .08        480
14:18:40          1      .41      -.31        486
14:18:45          1      .42       .08        480
14:18:50          1      .44       .08        480
14:18:55          1      .44       .08        480
>M
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

                NOX       02       CO2        CO

14:19             1      .39       .05        480
14:20           174     1.91       .05        388
>A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

                NOX       02       CO2        CO

14:20:40        450      .33       .06          5
14:20:45        451      .33       .08          5
14:20:50        450      .33       .06          5
14:20:55        449      .33       .06          5
14:21:00        449      .33       .06          5
14:21:05        450      .33       .06          5
14:21:10        451      .33       .06          5
14:21:15        451      .31       .06          5
14:21:20        451      .33      -.38          5
>M
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5.025 O2

460 CO

430 NO cal

	NOX	O2	CO2	CO
14:21	449	.45	.08	10
14:22	314	2.19	.03	10
14:23	22	19.39	.05	10
14:24	11	20.56	.05	15
14:25	154	11.45	9.97	399
14:26	106	7.45	11.91	557
14:27	109	7.47	11.97	532
14:28	123	7.45	12.16	537
14:29	184	7.02	12.50	675
14:30	230	6.84	12.47	762
14:31	197	7.11	12.25	700
14:32	198	7.37	12.05	634
14:33	184	7.45	11.83	603
14:34	165	7.69	11.73	557
14:35	181	7.42	12.11	629
14:36	192	7.25	12.17	618
14:37	193	7.25	12.20	634
14:38	226	7.25	12.44	629
14:39	196	7.14	12.11	680
14:40	180	7.52	12.12	578
14:41	232	6.92	12.31	726
14:42	175	7.44	12.06	588
14:43	146	7.56	11.47	562
14:44	184	7.56	12.16	547
14:45	196	7.16	12.12	644
14:46	178	7.41	11.94	613
14:47	174	7.36	12.11	598
14:48	200	7.31	12.22	613
14:49	169	7.42	11.92	588
14:50	149	7.53	12.03	562
14:51	215	7.37	12.31	593
14:52	186	7.27	12.16	634
14:53	215	7.14	12.28	644
14:54	179	7.36	12.09	603
14:55	169	7.36	12.19	593
14:56	168	7.42	12.17	583
14:57	200	7.30	12.25	608
14:58	181	7.28	12.28	624
14:59	199	7.33	12.12	593

HOURLY SUMMARY 15:00:00 05/02/90 122 WASTE MNGT.

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	O2	CO2	O2	SO2	CO
CHANNEL UNITS	PPM	%	%	%	PPM	PPM
FULL SCALE VALUE	1000	25.00	25.00	25.0	1000	9999
ZERO VALUE	0	-6.25	-6.25	.0	0	-225
INPUT RANGE	10	1	1	1	10	10
14:01	895	.37	-.03	.2	-125	15
14:02	914	.30	-.05	.2	-124	10
14:03	915	.30	-.05	.2	-123	5
14:04	401	1.64	.00	.2	-125	56
14:05	24	.98	-.05	.2	-117	220
14:06	11	1.00	-.02	.2	-134	240
14:07	6	.97	-.09	.2	-123	225
14:08	3	1.17	.03	.2	-119	235
14:09	0	.98	.03	.2	-120	286
14:10	0	.41	.00	.2	-133	281
14:11	0	1.72	3.00	.2	-124	220
14:12	-1	.47	10.50	.2		

14:15	3	2.58	5.02	.2	-133	5
14:16	1	4.95	-.02	.2	-126	5
14:17	1	5.00	.06	.2	-119	5
14:18	2	5.28	.14	.2	-133	169
14:19	1	.39	.05	.2	-122	480
14:20	174	1.91	.05	.2	-126	388
14:21	449	.45	.08	.2	-126	10
14:22	314	2.19	.03	.2	-124	10
14:23	22	19.39	.05	.2	-133	10
14:24	11	20.56	.05	.2	-139	15
14:25	154	11.45	9.97	.2	-124	399
14:26	106	7.45	11.91	.2	-109	557
14:27	109	7.47	11.97	.2	-126	532
14:28	123	7.45	12.16	.2	-122	537
14:29	184	7.02	12.50	.2	-134	675
14:30	230	6.84	12.47	.2	-118	762
14:31	197	7.11	12.25	.2	-120	700
14:32	198	7.37	12.05	.2	-134	634
14:33	184	7.45	11.83	.2	-135	603
14:34	165	7.69	11.73	.2	-135	557
14:35	181	7.42	12.11	.2	-130	629
14:36	192	7.25	12.17	.2	-144	618
14:37	193	7.25	12.20	.2	-129	634
14:38	226	7.25	12.44	.2	-129	629
14:39	196	7.14	12.11	.2	-128	680
14:40	180	7.52	12.12	.2	-144	578
14:41	232	6.92	12.31	.2	-136	726
14:42	175	7.44	12.06	.2	-128	588
14:43	146	7.56	11.47	.2	-112	562
14:44	184	7.56	12.16	.2	-151	547
14:45	196	7.16	12.12	.2	-120	644
14:46	178	7.41	11.94	.2	-144	613
14:47	174	7.36	12.11	.2	-133	598
14:48	200	7.31	12.22	.2	-140	613
14:49	169	7.42	11.92	.2	-122	588
14:50	149	7.53	12.03	.2	-119	562
14:51	215	7.37	12.31	.2	-139	593
14:52	186	7.27	12.16	.2	-140	634
14:53	215	7.14	12.28	.2	-117	644
14:54	179	7.36	12.09	.2	-120	603
14:55	169	7.36	12.19	.2	-124	593
14:56	168	7.42	12.17	.2	-151	583
14:57	200	7.30	12.25	.2	-107	608
14:58	181	7.25	12.28	.2	-129	624
14:59	199	7.33	12.12	.2	-150	593
15:00	178	7.28	12.27	.2	-131	598
AVERAGE	177	5.69	7.91	.2	-128	414

PASSWORD : XXXXXX
OK

M
VIEW WHICH CHANNELS ? 01, 02, 06,

	NOX	O2	CO
15:00	178	7.28	598

M
VIEW WHICH CHANNELS ? 01, 02, 03,

15:01	200	7.16	12.22	634
15:02	200	7.34	12.02	593
15:03	186	7.37	12.11	588
15:04	220	7.03	12.44	664
15:05	232	6.97	12.52	675
15:06	156	7.44	11.86	567
15:07	153	7.50	11.87	552
15:08	213	7.25	12.22	613
15:09	230	7.03	12.62	654
15:10	204	7.19	12.06	629
15:11	251	6.89	12.44	700
15:12	250	6.86	12.39	710
15:13	269	6.72	12.72	751
15:14	197	7.12	12.05	634
15:15	186	7.33	12.17	583
15:16	230	6.89	12.34	685
15:17	207	6.98	12.19	659
15:18	163	7.34	12.00	567
15:19	186	7.19	12.23	598
15:20	185	7.34	12.06	562
15:21	209	6.92	12.47	670
15:22	217	7.22	12.27	593
15:23	185	7.00	12.33	649
15:24	208	7.02	12.25	644
15:25	196	7.27	11.94	588
15:26	205	6.92	12.58	670
15:27	194	7.09	12.11	746
15:28	170	7.37	11.96	675
15:29	187	6.95	12.36	767
15:30	227	6.81	12.53	813
15:31	181	7.14	12.39	726
15:32	185	7.08	12.52	751
15:33	195	7.00	12.42	757
15:34	172	7.16	12.11	736
15:35	208	7.09	12.37	767
15:36	264	7.03	12.45	777
15:37	291	6.66	12.56	889
15:38	241	6.70	12.52	889
15:39	281	6.78	12.70	843
15:40	271	6.62	12.62	905
15:41	202	7.05	12.05	762
15:42	323	6.66	12.75	864
15:43	321	6.39	12.94	961
15:44	275	6.83	12.53	833
15:45	229	6.70	12.44	859
15:46	297	6.75	12.80	833
15:47	402	6.44	13.06	946
15:48	267	6.84	12.34	838
15:49	394	6.80	12.69	849
15:50	399	6.75	12.78	889
15:51	383	6.89	12.59	843
15:52	193	7.05	12.17	787
15:53	162	7.50	11.92	659
15:54	195	7.44	12.14	685
15:55	151	7.52	11.94	664
15:56	152	7.44	11.98	649
15:57	137	7.50	11.81	618
15:58	121	7.69	11.77	598
15:59	138	7.48	12.05	624

Lowered O_2

FULL SCALE VALUE	1000	25.00	25.00	25.0	1000	9999
ZERO VALUE	0	-6.25	-6.25	.0	0	-225
INPUT RANGE	10	1	1	1	10	10
15:01	200	7.16	12.22	.2	-145	634
15:02	200	7.34	12.02	.2	-138	593
15:03	186	7.37	12.11	.2	-149	588
15:04	220	7.03	12.44	.2	-124	664
15:05	232	6.97	12.52	.2	-136	675
15:06	156	7.44	11.86	.2	-137	567
15:07	153	7.50	11.87	.2	-134	552
15:08	213	7.25	12.22	.2	-124	613
15:09	230	7.03	12.62	.2	-119	654
15:10	204	7.19	12.06	.2	-126	629
15:11	251	6.89	12.44	.2	-130	700
15:12	250	6.86	12.39	.2	-137	710
15:13	269	6.72	12.72	.2	-141	751
15:14	197	7.12	12.05	.2	-138	634
15:15	186	7.33	12.17	.2	-111	583
15:16	230	6.89	12.34	.2	-152	685
15:17	207	6.98	12.19	.2	-125	659
15:18	163	7.34	12.00	.2	-132	567
15:19	186	7.19	12.23	.2	-116	598
15:20	185	7.34	12.06	.2	-128	562
15:21	209	6.92	12.47	.2	-131	670
15:22	217	7.22	12.27	.2	-125	593
15:23	185	7.00	12.33	.2	-139	649
15:24	208	7.02	12.25	.2	-129	644
15:25	196	7.27	11.94	.2	-141	588
15:26	205	6.92	12.58	.2	-128	670
15:27	194	7.09	12.11	.2	-140	746
15:28	170	7.37	11.95	.2	-135	675
15:29	187	6.95	12.36	.2	-124	767
15:30	227	6.81	12.53	.2	-122	813
15:31	181	7.14	12.39	.2	-126	726
15:32	185	7.08	12.52	.2	-124	751
15:33	195	7.00	12.42	.2	-112	757
15:34	172	7.16	12.11	.2	-136	736
15:35	208	7.09	12.37	.2	-139	767
15:36	264	7.03	12.45	.2	-126	777
15:37	291	6.66	12.56	.2	-131	889
15:38	241	6.70	12.52	.2	-138	889
15:39	281	6.78	12.70	.2	-111	843
15:40	271	6.62	12.62	.2	-127	905
15:41	202	7.05	12.05	.2	-136	762
15:42	323	6.66	12.75	.2	-112	864
15:43	321	6.39	12.94	.2	-122	961
15:44	275	6.83	12.53	.2	-130	833
15:45	229	6.70	12.44	.2	-137	859
15:46	297	6.75	12.80	.2	-117	833
15:47	402	6.44	13.06	.2	-137	946
15:48	267	6.84	12.34	.2	-136	838
15:49	394	6.80	12.69	.2	-143	849
15:50	399	6.75	12.78	.2	-115	889
15:51	383	6.89	12.59	.2	-122	843
15:52	193	7.05	12.17	.2	-137	787
15:53	162	7.50	11.92	.2	-135	659
15:54	195	7.44	12.14	.2	-118	685
15:55	151	7.52	11.94	.2	-130	664
15:56	152	7.44	11.98	.2	-128	649
15:57	137	7.50	11.81	.2	-138	618
15:58	121	7.69	11.77	.2	-120	598
15:59	138	7.48	11.85	.2	-107	624
16:00	134	7.58	11.97	.2	-118	598

PASSWORD : XXXXXX
OK

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
16:01	154	7.33	11.84	649
16:02	94	8.84	9.28	593
16:03	30	20.50	.33	82
16:04	24	21.00	.17	10
16:05	19	21.02	.20	10
16:06	15	21.02	.22	5
16:07	11	19.28	.08	25
16:08	7	.98	.00	460
16:09	7	.59	.00	456

A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
16:10:05	5	.30	.05	470
16:10:10	4	.30	.05	470
16:10:15	4	.30	.05	470
16:10:20	4	.30	-.30	470
16:10:25	4	.30	.05	470
16:10:30	4	.30	.05	470
16:10:35	4	.30	.06	470
16:10:40	4	.30	.05	470
16:10:45	4	.30	.05	470
16:10:50	4	.30	.05	470
16:10:55	4	.30	.05	465
16:11:00	4	.30	.05	465
16:11:05	4	.30	-.34	465
16:11:10	4	.30	.05	470
16:11:15	4	.30	.05	465

M
VIEW WHICH CHANNELS ? 01, 02, 06, 03,

	NOX	O2	CO	CO2
16:11	4	.30	470	.02
16:12	5	.33	465	.08
16:13	3	1.41	107	9.66

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
16:13:15	3	.41	10.92	0
16:13:20	3	.41	10.92	0
16:13:25	3	.42	10.94	0
16:13:30	3	.41	10.95	0
16:13:35	3	.41	10.95	0
16:13:40	3	.41	10.95	-5
16:13:45	3	.39	9.84	0
16:13:50	3	.39	9.95	0
16:13:55	3	.39	10.92	0
16:14:00	3	.39	10.97	0

460 CO cal

10.95 CO2

VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
16:14	3	.41	10.67	0
16:15	4	.80	9.34	0
16:16	2	4.80	.16	15

PASSWORD : XXXXXX
OK

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
16:16:20	2	4.94	.08	10
16:16:25	2	4.94	.08	5
16:16:30	2	4.94	.08	5
16:16:35	2	4.94	-.30	5
16:16:40	2	4.94	.08	5
16:16:45	2	4.94	.08	5
16:16:50	2	4.94	.08	5
16:16:55	2	4.94	.09	5
16:17:00	2	4.95	.08	5
16:17:05	2	4.95	.08	5

5.025 O2

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
16:17	2	4.94	.05	5
16:18	301	4.94	.09	5
16:19	914	.53	-.05	5

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
16:19:10	920	.31	.06	5
16:19:15	920	.31	-.31	5
16:19:20	919	.31	.06	5
16:19:25	921	.31	.05	5
16:19:30	920	.31	.06	5
16:19:35	921	.31	.06	5
16:19:40	921	.31	.06	5
16:19:45	921	.31	-.25	5
16:19:50	922	.31	.06	5
16:19:55	921	.31	.05	5
16:20:00	922	.31	.05	5
16:20:05	922	.31	-.31	5

930 NOX

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 04, 05, 06,

	NOX	O2	CO2	O2	SO2	CO
16:20	921	.31	.00	.2	-126	5

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
16:20	921	.31	.00	5
16:21	869	.41	.03	5

16:24	8	20.69	.14	5
16:25	141	14.27	7.36	291
16:26	164	7.27	12.05	603
16:27	180	7.16	12.08	624
16:28	185	7.41	11.95	557
16:29	176	7.20	12.25	680
16:30	199	7.16	12.16	762
16:31	231	7.14	12.33	787
16:32	220	7.09	12.16	813
16:33	251	7.11	12.36	797
16:34	180	7.31	11.87	751
16:35	204	7.30	12.14	741
16:36	180	7.58	11.94	670
16:37	180	7.36	12.00	721
16:38	214	7.22	12.09	741
16:39	179	7.37	12.00	700
16:40	199	7.36	12.17	705
16:41	226	7.11	12.27	792
16:42	227	7.25	12.05	751
16:43	248	7.28	12.11	757
16:44	208	7.34	11.77	726
16:45	204	7.30	12.22	736
16:46	169	7.42	11.69	705
16:47	201	7.39	12.06	685
16:48	141	7.56	11.77	659
16:49	182	7.39	11.78	690
16:50	197	7.37	11.98	700
16:51	232	7.09	12.30	782
16:52	223	7.20	11.94	762
16:53	164	7.50	11.87	670
16:54	194	7.34	12.14	700
16:55	214	7.22	12.19	731
16:56	162	7.50	11.89	654
16:57	196	7.22	12.25	716
16:58	205	7.25	12.00	726
16:59	172	7.41	11.89	598

HOURLY SUMMARY 17:00:00 05/02/90 122 WASTE MNGT.

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	O2	CO2	O2	SO2	CO
CHANNEL UNITS	PPM	%	%	%	PPM	PPM
FULL SCALE VALUE	1000	25.00	25.00	25.0	1000	9999
ZERO VALUE	0	-6.25	-6.25	.0	0	-225
INPUT RANGE	10	1	1	1	10	10
16:01	154	7.33	11.84	.2	-127	649
16:02	94	8.84	9.28	.2	-101	593
16:03	30	20.50	.33	.2	-128	82
16:04	24	21.00	.17	.2	-119	10
16:05	19	21.02	.20	.2	-123	10
16:06	15	21.02	.22	.2	-119	5
16:07	11	19.28	.08	.2	-128	25
16:08	7	.98	.00	.2	-122	460
16:09	7	.59	.00	.2	-130	455
16:10	5	.30	-.02	.2	-134	465
16:11	4	.30	.02	.2	-105	470
16:12	5	.33	.08	.2	-109	465
16:13	3	1.41	9.66	.2	-131	107
16:14	3	.41	10.67	.2	-113	0
16:15	4	.80	9.34	.2	-127	0
16:16	2	4.80	.16	.2	-128	15
16:17	2	4.94	.05	.2	-134	5
16:18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
17:30	204	7.22	12.00	613
17:31	215	7.17	12.22	618
17:32	208	7.19	11.84	613
17:33	45	18.14	1.16	138
17:34	32	20.83	.19	10
17:35	25	20.83	.20	5
17:36	19	20.83	.12	5
17:37	14	18.41	.00	41
17:38	8	.72	-.11	455
17:39	7	.30	-.03	470

>
>A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
17:39:40	5	.28	.05	470
17:39:45	5	.28	.05	470
17:39:50	5	.28	.05	470
17:39:55	5	.28	.05	470
17:40:00	5	.28	.05	475
17:40:05	5	.28	.05	475
17:40:10	5	.28	-.14	470
17:40:15	5	.28	.05	475
17:40:20	5	.28	-.16	475
17:40:25	5	.28	.05	475
17:40:30	5	.28	.05	475
17:40:35	4	.28	.05	470

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
17:40	5	.28	.05	475
17:41	5	.28	.00	470
17:42	6	1.75	6.72	220
17:43	3	.37	10.95	0

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
17:43:50	3	.37	10.97	-5
17:43:55	3	.37	10.98	-5
17:44:00	3	.37	10.97	-5
17:44:05	3	.37	9.80	0
17:44:10	3	.37	10.97	0
17:44:15	3	.37	10.98	0
17:44:20	2	.37	10.98	-5
17:44:25	3	.37	10.98	0
17:44:30	2	.37	11.00	0
17:44:35	2	.36	10.98	0
17:44:40	2	.37	11.00	0
17:44:45	2	.37	10.98	0
17:44:50	2	.37	10.98	0
17:44:55	2	.37	10.98	0
17:45:00	2	.37	10.06	0
17:45:05	2	.37	10.98	-5

NOX 0
CO-460 PPM
O2 - 0
CO2 - 0

10.95 CO2
0 O2
0 CO
0 NOX

PASSWORD :
PASSWORD : XXXXXX
PASSWORD : XXXX
PASSWORD : XXXXXX
OK

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
17:45	2	.37	10.81	0
17:46	3	2.50	6.34	0
17:47	2	4.95	.06	5

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
17:48:00	1	4.94	.08	5
17:48:05	1	4.94	.06	5
17:48:10	1	4.94	.06	5
17:48:15	1	4.94	.06	5
17:48:20	1	4.94	.06	5
17:48:25	1	4.94	.00	0
17:48:30	1	4.94	.06	5
17:48:35	1	4.94	.06	0
17:48:40	1	4.94	.06	0
17:48:45	1	4.94	.06	0
17:48:50	1	4.94	.06	5
17:48:55	1	4.94	.06	0
17:49:00	1	4.94	.06	0

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
17:49	1	4.94	.06	5
17:50	3	5.11	.11	15
17:51	1	.56	.03	240
17:52	1	.27	.02	271

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
17:52:10	1	.27	.05	271
17:52:15	1	.27	.05	271
17:52:20	1	.27	-.06	271
17:52:25	1	.27	-.27	266
17:52:30	1	.27	.05	271
17:52:35	1	.27	.05	271
17:52:40	0	.27	.05	271
17:52:45	1	.27	.05	266
17:52:50	1	.27	-.33	271
17:52:55	1	.27	.05	271
17:53:00	1	.27	.05	271

M
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
17:53	1	.27	-.02	271
17:54	-	-	.27	-

0 NOX
5.02 O2
0 CO2
0 CO

277 CO
0 NOX
0 O2
0 CO2

16:20	921	.31	.00	.2	-126	5
16:21	869	.41	.03	.2	-107	5
16:22	57	15.48	.14	.2	-113	5
16:23	16	20.42	.17	.2	-125	10
16:24	8	20.69	.14	.2	-126	5
16:25	141	14.27	7.36	.2	-119	291
16:26	164	7.27	12.05	.2	-123	603
16:27	180	7.16	12.08	.2	-127	624
16:28	185	7.41	11.95	.2	-122	557
16:29	176	7.20	12.25	.2	-119	680
16:30	199	7.16	12.16	.2	-132	762
16:31	231	7.14	12.33	.2	-137	787
16:32	220	7.09	12.16	.2	-128	813
16:33	251	7.11	12.36	.2	-124	797
16:34	180	7.31	11.87	.2	-121	751
16:35	204	7.30	12.14	.2	-111	741
16:36	180	7.58	11.94	.2	-128	670
16:37	180	7.36	12.00	.2	-123	721
16:38	214	7.22	12.09	.2	-138	741
16:39	179	7.37	12.00	.2	-137	700
16:40	199	7.36	12.17	.2	-143	705
16:41	226	7.11	12.27	.2	-137	792
16:42	227	7.25	12.05	.2	-141	751
16:43	248	7.28	12.11	.2	-145	757
16:44	208	7.34	11.77	.2	-124	726
16:45	204	7.30	12.22	.2	-119	736
16:46	169	7.42	11.69	.2	-124	705
16:47	201	7.39	12.06	.2	-125	685
16:48	141	7.56	11.77	.2	-117	659
16:49	182	7.39	11.78	.2	-144	690
16:50	197	7.37	11.98	.2	-140	700
16:51	232	7.09	12.30	.2	-123	782
16:52	223	7.20	11.94	.2	-128	762
16:53	164	7.50	11.87	.2	-130	670
16:54	194	7.34	12.14	.2	-119	700
16:55	214	7.22	12.19	.2	-132	731
16:56	162	7.50	11.89	.2	-139	654
16:57	196	7.22	12.25	.2	-131	716
16:58	205	7.25	12.00	.2	-120	726
16:59	172	7.41	11.89	.2	-139	598
17:00	192	7.19	12.12	.2	-129	613
AVERAGE	175	7.77	8.03	.2	-126	480

PASSWORD : XXXXXX
OK

^M
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
17:01	208	7.17	12.12	613
17:02	241	7.11	12.20	634
17:03	217	7.27	12.02	603
17:04	211	7.19	12.08	618
17:05	248	7.06	12.00	649
17:06	223	7.28	12.20	593
17:07	185	7.25	12.17	598
17:08	220	7.00	12.31	654
17:09	225	7.22	12.27	598
17:10				

17:12	282	6.95	12.23	670
17:13	256	6.86	12.55	716
17:14	210	7.20	12.11	613
17:15	240	7.06	11.97	639
17:16	204	7.19	12.22	618
17:17	185	7.41	12.02	547
17:18	193	7.22	12.09	588
17:19	190	7.33	12.16	572
17:20	206	7.20	12.08	613
17:21	212	7.28	12.02	578
17:22	212	7.17	12.00	613
17:23	209	7.14	12.16	613
17:24	183	7.39	11.59	567
17:25	173	7.33	12.11	562
17:26	207	7.19	12.17	608
17:27	200	7.19	12.11	603
17:28	240	7.16	12.30	603
17:29	232	7.14	12.02	639
17:30	204	7.22	12.00	613

PASSWORD :
PASSWORD : XXXXXX
OK

>H

HOURLY SUMMARY 17:30:09 05/02/90 122 WASTE MNGT.

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CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	O2	CO2	O2	SO2	CO
17:01	208	7.17	12.12	.2	-135	613
17:02	241	7.11	12.20	.2	-140	634
17:03	217	7.27	12.02	.2	-124	603
17:04	211	7.19	12.08	.2	-130	618
17:05	248	7.06	12.00	.2	-129	649
17:06	223	7.28	12.20	.2	-143	593
17:07	185	7.25	12.17	.2	-125	598
17:08	220	7.00	12.31	.2	-133	654
17:09	225	7.22	12.27	.2	-125	598
17:10	202	7.16	12.16	.2	-134	624
17:11	206	7.17	12.06	.2	-127	613
17:12	282	6.95	12.23	.2	-106	670
17:13	256	6.86	12.55	.2	-125	716
17:14	210	7.20	12.11	.2	-128	613
17:15	240	7.06	11.97	.2	-136	639
17:16	204	7.19	12.22	.2	-129	618
17:17	185	7.41	12.02	.2	-138	547
17:18	193	7.22	12.09	.2	-123	588
17:19	190	7.33	12.16	.2	-137	572
17:20	206	7.20	12.08	.2	-128	613
17:21	212	7.28	12.02	.2	-120	578
17:22	212	7.17	12.00	.2	-133	613
17:23	209	7.14	12.16	.2	-132	613
17:24	183	7.39	11.59	.2	-120	567
17:25	173	7.33	12.11	.2	-139	562
17:26	207	7.19	12.17	.2	-137	608
17:27	200	7.19	12.11	.2	-141	603
17:28	240	7.16	12.30	.2	-128	603
17:29	232	7.14	12.02	.2	-148	639
17:30	204	7.22	12.00	.2	-119	613
AVERAGE	214<	7.19<	12.11<	.2<	-130<	613<

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
17:56:05	0	.30	3.30	0
17:56:10	0	.30	3.30	0
17:56:15	0	.28	3.28	0
17:56:20	0	.30	3.30	0
17:56:25	0	.30	2.61	0
17:56:30	0	.30	3.30	0
17:56:35	0	.28	3.28	0
17:56:40	0	.30	3.30	0
17:56:45	0	.30	3.30	0
17:56:50	0	.28	3.28	0
17:56:55	0	.30	3.28	0
17:57:00	0	.30	3.28	0
17:57:05	0	.30	3.28	0

3.18 CO2
0 CO
0 NOX
0 O2
0

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>M
VIEW WHICH CHANNELS ? 01, 02, 03, 06.

	NOX	O2	CO2	CO
17:57	0	.30	3.23	0
17:58	270	-1.02	2.52	5
17:59	930	.53	-.03	5

>A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
17:59:25	935	.31	-.03	5
17:59:30	934	.31	-.03	5
17:59:35	935	.31	-.03	5
17:59:40	935	.31	-.03	5
17:59:45	936	.31	-.03	5
17:59:50	936	.31	-.03	5
17:59:55	936	.31	-.03	5

930 NOX
0 CO
0 CO2
0 O2
0

HOURLY SUMMARY 18:00:00 05/02/90 122 WASTE MNGT.

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	O2	CO2	O2	SO2	CO
CHANNEL UNITS	PPM	%	%	%	PPM	PPM
FULL SCALE VALUE	1000	25.00	25.00	25.0	1000	9999
ZERO VALUE	0	-6.25	-6.25	.0	0	-225
INPUT RANGE	10	1	1	1	10	10
17:01	208	7.17	12.12	.2	-135	613
17:02	241	7.11	12.20	.2	-140	634
17:03	217	7.27	12.02	.2	-124	603
17:04	211	7.19	12.08	.2	-130	618
17:05	248	7.06	12.00	.2	-129	649
17:06	223	7.28	12.20	.2	-143	593
17:07	185	7.25	12.17	.2	-125	598
17:08	220	7.00	12.31	.2	-133	654
17:09	225	7.22	12.27	.2	-135	598
17:10	202	7.16	12.16	.2	-134	624
17:11	206	7.17	12.06	.2	-127	613
17:12	282	6.95	12.23	.2	-106	670
17:13	256	6.86	12.05	.2	-125	716
17:14	210	7.20	12.11	.2	-129	618

17:17	185	7.41	12.02	.2	-138	547
17:18	193	7.22	12.09	.2	-123	588
17:19	190	7.33	12.16	.2	-137	572
17:20	206	7.20	12.08	.2	-128	613
17:21	212	7.28	12.02	.2	-120	578
17:22	212	7.17	12.00	.2	-133	613
17:23	209	7.14	12.16	.2	-132	613
17:24	183	7.39	11.59	.2	-120	567
17:25	173	7.33	12.11	.2	-139	562
17:26	207	7.19	12.17	.2	-137	608
17:27	200	7.19	12.11	.2	-141	603
17:28	240	7.16	12.30	.2	-128	603
17:29	232	7.14	12.02	.2	-148	639
17:30	204	7.22	12.00	.2	-119	613
17:31	215	7.17	12.22	.2	-131	618
17:32	208	7.19	11.84	.2	-139	613
17:33	45	18.14	1.16	.2	-142	138
17:34	32	20.83	.19	.2	-130	10
17:35	25	20.83	.20	.2	-130	5
17:36	19	20.83	.12	.2	-128	5
17:37	14	18.41	.00	.2	-146	41
17:38	8	.72	-.11	.2	-146	455
17:39	7	.30	-.03	.2	-128	470
17:40	5	.28	.05	.2	-126	475
17:41	5	.28	.00	.2	-130	470
17:42	-6	1.75	6.72	.2	-134	220
17:43	3	.37	10.95	.2	-141	0
17:44	3	.37	10.87	.2	-123	0
17:45	2	.37	10.81	.2	-126	0
17:46	3	2.50	6.34	.2	-123	0
17:47	2	4.95	.06	.2	-129	5
17:48	2	4.94	.06	.2	-137	5
17:49	1	4.94	.06	.2	-122	5
17:50	3	5.11	.11	.2	-143	15
17:51	1	.56	.03	.2	-130	240
17:52	1	.27	.02	.2	-135	271
17:53	1	.27	-.02	.2	-127	271
17:54	2	1.00	.97	.2	-140	230
17:55	0	.39	3.33	.2	-136	5
17:56	0	.31	3.23	.2	-131	0
17:57	0	.30	3.23	.2	-129	0
17:58	270	1.02	2.52	.2	-146	5
17:59	930	.53	-.03	.2	-138	5
18:00	935	.31	-.06	.2	-119	5
AVERAGE	153	6.02	7.47	.2	-132	383

PASSWORD : XXXXXX
OK

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
18:01	789	.72	-.06	5
18:02	459	.61	-.06	5
18:03	444	.30	-.09	5

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>A

	NOX	O2	CO2	CO
18:03:10	445	.30	-.03	5
18:03:15	445	.28	-.05	0
18:03:20	445	.28	-.05	5
18:03:25	445	.30	-.05	5
18:03:30	445	.30	-.05	0
18:03:35	445	.30	-.05	5
18:03:40	445	.30	-.03	5
18:03:45	445	.30	-.03	5
18:03:50	445	.28	-.05	5
18:03:55	445	.30	-.03	5
18:04:00	445	.30	-.03	5
18:04:05	445	.30	-.03	0
18:04:10	446	.30	-.03	5
18:04:15	445	.28	-.38	5
18:04:20	445	.30	-.03	5
18:04:25	446	.28	-.05	5
18:04:30	446	.30	-.03	5

>H

HOURLY SUMMARY 18:04:34 05/02/90 122 WASTE MNGT.

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	O2	CO2	O2	SO2	CO
18:01	789	.72	-.06	.2	-142	5
18:02	459	.61	-.06	.2	-130	5
18:03	444	.30	-.09	.2	-145	5
18:04	445	.30	-.03	.2	-130	5
AVERAGE	534<	.48<	-.06<	.2<	-137<	5<

>M
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
18:05	446	.30	-.13	5
18:06	183	7.61	.00	5
18:07	15	20.09	.03	5
18:08	7	20.61	.00	5

>
>A
VIEW WHICH CHANNELS ? 01, 02, 03, 06,

	NOX	O2	CO2	CO
18:08:10	5	20.70	.05	0
18:08:15	5	20.72	.06	0
18:08:20	5	20.73	.06	5
18:08:25	5	20.73	.05	5
18:08:30	5	20.73	.05	5
18:08:35	4	20.75	.05	5
18:08:40	4	20.75	.06	5
18:08:45	4	20.75	.05	5
18:08:50	4	20.77	.06	5
18:08:55	4	20.77	.06	5

H

CHANNEL NUMBER	01	02	03	04	05	06
CHANNEL NAME	NOX	02	CO2	02	SO2	CO
18:01	789	.72	-.06	.2	-142	5
18:02	459	.61	-.06	.2	-130	5
18:03	444	.30	-.09	.2	-145	5
18:04	445	.30	-.03	.2	-130	5
18:05	446	.30	-.13	.2	-145	5
18:06	183	7.61	.00	.2	-130	5
18:07	15	20.09	.03	.2	-124	5
18:08	7	20.61	.00	.2	-139	5
AVERAGE	349<	6.31<	-.05<	.2<	136<	5<

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METHOD 6 - FIELD DATA SHEET
SULFUR DIOXIDE and MOISTURE

Project: Waste Management Date: 5/2/90

Sampling Location: Engine #2

Source Condition: _____

Dry Gas Meter # 6806269 Y = 1.000

Test(Run) No. 1 Barometric Pressure (P_{bar}) 29.65 in.Hg Orsat Analysis

Gas Temperature 960 °F Static Pressure -3.00 in.H_2O 13.2 %CO_2 6.1 %O_2

Clock Time 24hr	Meter Volume (V_m) ft^3	Meter Gauge Pressure (ΔH) in.H_2O	Meter Temp. (t_m) °F	Impgr. Outlet Temp. °F	Pump Vacuum in.Hg
915	5.794	0.50	72		
925	6.204	0.50	73		
930	6.672	0.50	75		
945	7.254	0.50	77		
		—	—	—	—
AVG	1,460		(T_m)		°R

V_{soln} _____ V_a _____ N _____

$V_t - V_{tb}$ _____ $V_{m(std)}$ _____

_____ lbs SO_2/dscf _____ ppm(dry)

_____ grams (W_f) _____ ppm(wet)

- _____ grams (W_i) B_{ws} = _____

_____ grams $1 - B_{ws}$ = _____

x 0.04715 = _____ $ft^3[V_{w(std)}]$

$$V_{m(std)} = 17.64\ V_m\ Y\ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}$$

$$\text{lbs } SO_2/\text{dscf} = \frac{7.061 \times 10^{-5}}{V_{m(std)}} \times (V_t - V_{tb})\ N\ \frac{V_{soln}}{V_a}$$

$$\text{ppm } SO_2(\text{dry}) = 6.015 \times 10^6 \times \text{lbs } SO_2/\text{dscf} \qquad B_{ws} = \frac{V_{w(std)}}{V_{w(std)} + V_{m(std)}}$$

Comments:

Leak Check: cc/min @ in.Hg

Test(Run) No. 2 Barometric Pressure (P_{bar}) 29.65 in.Hg Orsat Analysis

Gas Temperature 960 °F Static Pressure -3.00 in.H_2O 13.2 %CO_2 6.1 %O_2

Clock Time 24hr	Meter Volume (V_m) ft^3	Meter Gauge Pressure (ΔH) in.H_2O	Meter Temp. (t_m) °F	Impgr. Outlet Temp. °F	Pump Vacuum in.Hg
950	7.261	0.50	77		
1000	7.674	0.50	78		
1010	8.063	0.50	79		
1020	8.394	0.50	80		
		—	—	—	—
AVG	1.133		(T_m)		°R

V_{soln} _____ V_a _____ N _____

$V_t - V_{tb}$ _____ $V_{m(std)}$ _____

_____ lbs SO_2/dscf _____ ppm(dry)

_____ grams (W_f) _____ ppm(wet)

- _____ grams (W_i) B_{ws} = _____

_____ grams $1 - B_{ws}$ = _____

x 0.04715 = _____ $ft^3[V_{w(std)}]$

Comments:

Leak Check: cc/min @ in.Hg

Samples Transferred to Lab By:

_____, Date 144

Operator _____

mostardi-platt associates

METHOD 6 - FIELD DATA SHEET
SULFUR DIOXIDE and MOISTURE

Project: Waste Management Date: 5/2/90

Sampling Location: Engine #2

Source Condition: _____

Dry Gas Meter # 6806269 Y = 1.000

Test(Run) No. 3 Barometric Pressure (P_{bar}) 29.65 in.Hg

Gas Temperature 960 °F Static Pressure -3.00 in.H_2O

Orsat Analysis: 13.2 %CO_2 5.9 %O_2

Clock Time 24hr	Meter Volume (V_m) ft^3	Meter Gauge Pressure (ΔH) in.H_2O	Meter Temp. (t_m) °F	Impgr. Outlet Temp. °F	Pump Vacuum in.Hg
1225	8.397	0.5	83		
1235	8.864	0.5	85		
1245	9.303	0.5	86		
1255	9.719	0.5	88		
		—	—	—	—
AVG	1.322		(T_m)		°R

V_{soln} _____ V_a _____ N _____

$V_t - V_{tb}$ _____ $V_{m(std)}$ _____

_____ lbs SO_2/dscf _____ ppm(dry)

_____ grams (W_f) _____ ppm(wet)

- _____ grams (W_i) B_{ws} = _____

_____ grams $1 - B_{ws}$ = _____

x 0.04715 = _____ ft^3[$V_{w(std)}$]

$$V_{m(std)} = 17.64\ V_m\ Y\ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}$$

$$\text{lbs } SO_2/\text{dscf} = \frac{7.061 \times 10^{-5}}{V_{m(std)}} \times (V_t - V_{tb}) \times \frac{V_{soln}}{V_a}$$

$$\text{ppm } SO_2(\text{dry}) = 6.015 \times 10^6 \times \text{lbs } SO_2/\text{dscf} \qquad B_{ws} = \frac{V_{w(std)}}{V_{w(std)} + V_{m}}$$

Comments:

Leak Check: cc/min @ in.Hg

Test(Run) No. 4 Barometric Pressure (P_{bar}) 29.65 in.Hg

Gas Temperature 960 °F Static Pressure -3.00 in.H_2O

Orsat Analysis: _____ %CO_2 _____

Clock Time 24hr	Meter Volume (V_m) ft^3	Meter Gauge Pressure (ΔH) in.H_2O	Meter Temp. (t_m) °F	Impgr. Outlet Temp. °F	Pump Vacuum in.Hg
1308	9.788	0.5	88		
1318	10.054	0.5	87		
1328	10.264	0.5	87		
1338	10.748	0.5	89		
		—	—	—	—
AVG			(T_m)		°R

V_{soln} _____ V_a _____ N _____

$V_t - V_{tb}$ _____ $V_{m(std)}$ _____

_____ lbs SO_2/dscf _____ ppm(dry)

_____ grams (W_f) _____ ppm(wet)

- _____ grams (W_i) B_{ws} = _____

_____ grams $1 - B_{ws}$ = _____

x 0.04715 = _____ ft^3[$V_{w(std)}$]

Comments:

Leak Check: cc/min @ in.Hg

Samples Transferred to Lab By:

_____, Date 145

Operator _____

mostardi-platt associates

METHOD 6 - FIELD DATA SHEET
SULFUR DIOXIDE and MOISTURE

Project: WM N.Y Date: 5/2/80

Sampling Location: ENGINE #2

Source Condition: _____

Dry Gas Meter # 6806269 Y = 1.000

Test(Run) No. 5 Barometric Pressure (P_{bar}) 29.65 in.Hg

Gas Temperature 950 °F Static Pressure -3.00 in.H_2O

Orsat Analysis: 12.2 %CO_2 6.8 %O

Clock Time 24hr	Meter Volume (V_m) ft^3	Meter Gauge Pressure (ΔH) in.H_2O	Meter Temp. (t_m) °F	Impgr. Outlet Temp. °F	Pump Vacuum in.Hg
1526	10.755	0.50	87		
1536	11.143	0.50	88		
1546	11.766	0.50	88		
1556	12.025	0.50	89		
		—	—	—	—
AVG	1,270		(T_m)		°R

V_{soln} _____ V_a _____ N _____

$V_t - V_{tb}$ _____ $V_{m(std)}$ _____

_____ lbs SO_2/dscf _____ ppm(dr

_____ grams (W_f) _____ ppm(we

- _____ grams (W_i) B_{ws} = _____

_____ grams $1 - B_{ws}$ = _____

x 0.04715 = _____ ft^3[$V_{w(std)}$]

$V_{m(std)} = 17.64\ V_m\ Y \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}$

lbs SO_2/dscf = $\frac{7.061 \times 10^{-5}}{V_{m(std)}} \times (V_t - V_{tb}) \times \frac{V_{soln}}{V_a}$

ppm SO_2(dry) = $6.015 \times 10^6 \times$ lbs SO_2/dscf $B_{ws} = \frac{V_{w(std)}}{V_{w(std)} + V_{m(}}$

Comments:

Leak Check: cc/min @ in.Hg

Test(Run) No. 6 Barometric Pressure (P_{bar}) 29.65 in.Hg

Gas Temperature 950 °F Static Pressure -3.00 in.H_2O

Orsat Analysis: _____ %CO_2 _____ %

Clock Time 24hr	Meter Volume (V_m) ft^3	Meter Gauge Pressure (ΔH) in.H_2O	Meter Temp. (t_m) °F	Impgr. Outlet Temp. °F	Pump Vacuum in.Hg
1628	12.040	0.50	88		
1638	12.521	0.50	88		
1648	13.000	0.50	87		
1658	13.252	0.50	87		
		—	—	—	—
AVG	1,212		(T_m)		°R

V_{soln} _____ V_a _____ N _____

$V_t - V_{tb}$ _____ $V_{m(std)}$ _____

_____ lbs SO_2/dscf _____ ppm(d

_____ grams (W_f) _____ ppm(w

- _____ grams (W_i) B_{ws} = _____

_____ grams $1 - B_{ws}$ = _____

x 0.04715 = _____ ft^3[$V_{w(std)}$]

Comments:

Leak Check: cc/min @ in.Hg

Samples Transferred to Lab By:

_____, Date 146

Operator _____

VOST FIELD DATA SHEET

PLANT: Waste Management
DATE: 5/2/90
LOCATION: ENGINE # 2
OPERATOR: SWG

Y = 1.003

TEST RUN # 1 Barometric Pressure (Pbar) 29.65 in.Hg

Clock Time 24 hr	Meter Volume (l)	Meter Temp (°F)	Condensor Outlet Temp (°F)
1438	03.830	22 / 125	
1443	08.701	23 / 125	
1448	13.504	24 / 125	
1453	17.266	25 / 125	
1458	22.114	27 / 126	
Average	18.284	24.2 75.6	17.915

Leak Check: ✓

Test Run # 2 Barometric Pressure (Pbar) 29.65 in.Hg

Clock Time 24 hr	Meter Volume (l)	Meter Temp (°F)	Condensor Outlet Temp (°F)
1814	23.650	19 / 125	
1819	28.230	19 / 126	
1824	33.804	19 / 124	
1829	39.120	19 / 170	
1834	43.999	20 / 170	
Average	20.349		

Leak Check: ✓ 0.716 DSCF
0.020 m³