VOLATILE ORGANIC COMPOUND AND PARTICULATE EMISSION TESTING AT LOUISIANA-PACIFIC CORPORATION HOULTON, MAINE

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APCC Project 96053

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EXECUTIVE SUMMARY

Air Pollution Characterization and Control, Ltd. (APCC) was retained by Louisiana-Pacific Corporation (Louisiana-Pacific) to provide Emissions Testing and Air Quality Engineering Services at their Houlton, Maine facility. The purpose of this project was to perform source emission measurements in order to calculate the VOC emissions and capture and control efficiency (CE). In addition, particulate matter (PM) emissions were determined in accordance with EPA Method 5 and NSPS Test Method 202 for front half PM (Method 5) and filterable PM including organic and inorganic condensables (Method 202). The testing was completed at the inlet (outlets of the surface and core dryer's primary cyclones) and outlet (stack) of the regenerative thermal oxidizer (RTO) for the following pollutants and diluents:

Particulate	RTO Stack
VOC	RTO Stack, Surface & Core Dryers
O_2 and CO_2	RTO Stack

The table below is a summary of the PM emissions test program which shows compliance with the Maine Department of Environmental Protection (ME DEP) permitted PM emission standard of 0.02 gr/dscf and 15.66 lb/hr from the combined dryer sources while operating at a rate sufficient to maintain press production within 90% of the maximum rate of 21.6 tph.

PARTICULATE EMISSION TESTING
Louisiana-Pacific Corporation
9 July 1996

	AVERAGE EMISSIONS	EMISSIONS STANDARD
RTO Stack M-5	0.3 lb/hr	15.66 lb/hr
RTO Stack M-202	4.46 lb/hr*	15.66 lb/hr
RTO Stack M-5 & 202	4.64 lb/hr*	15.66 lb/hr

Note: * = Average includes only test Runs 2 and 3. See Section 2.1 for discussion.

The table below is a summary of the Volatile Organic Compound (VOC) emissions test program for the RTO Stack which shows compliance with the ME DEP VOC emission standard of 5.61 lb/hr and 95% capture and control efficiency (CE).

VOC EMISSION TESTING ON THE RTO STACK

	AVERAGE EMISSIONS	EMISSIONS STANDARD
RTO Stack	0.95 lb/hr	5.61 lb/hr
RTO CE	96.1%	95%

1.0 INTRODUCTION

Air Pollution Characterization and Control, Ltd. (APCC) was retained by Louisiana-Pacific Corporation (Louisiana-Pacific) to provide Emissions Testing and Air Quality Engineering Services at their Houlton, Maine facility. The purpose of this project was to perform source emission measurements in order to calculate the VOC emissions and capture and control efficiency (CE) as well as the particulate matter (PM) emission rate. Volatile Organic Compound (VOC) testing was performed in accordance with EPA Method 25A to demonstrate compliance with the standards for VOC emissions at the facility. Additionally, APCC performed testing to demonstrate compliance with the particulate matter (PM) standard in accordance with EPA Method 5 and NSPS Test Method 202 for front half PM (Method 5) and filterable PM including organic and inorganic condensables (Method 202) for the RTO stack.

This report prepared by APCC details the methodology that APCC used to determine compliance with the permitted standards for VOC and particulate matter.

This test program was performed on 9 July 1996 by Bruce A. Henning Principal Scientist at APCC, who served as the Project Engineer and a staff of APCC Engineers and Environmental Technicians. Process operations and site coordination was supplied by Mark Stile, Environmental Manager of Louisiana-Pacific.

Section 2 of this report presents the results and discussion and Section 3 contains a process description of the facility including the process data recorded during the test program. Section 4 details the test methods used during the test program. Section 5 contains APCC's quality assurance/quality control guidelines as implemented for this test program.

2.0 RESULTS AND DISCUSSION

This section details the results and discussion of the compliance program with regards to the compliance with the permitted standards for VOC and PM. The results are discussed as applicable to both the ME DEP Air Emissions License No. A-327-72-G-M and the US EPA Clean Air Act Consent Decree entered into with Louisiana-Pacific on 30 September 1993.

2.1 RTO Stack Particulate Matter Emissions

Compliance PM emissions testing was performed at the Louisiana-Pacific facility located in Houlton, Maine on 9 July 1996. Sampling was performed at the exhaust stack of the RTO. Testing was performed to determine emission concentrations and the emission rates in accordance with EPA Method 5 and NSPS Test Method 202 for front half particulate matter (Method 5) and filterable particulate matter including organic and inorganic condensables (Method 202).

Louisiana-Pacific's Air Emissions License No. A-327-72-G-M requires that the filterable (front half) emissions from the RTO stack be less than 0.02 gr/dscf and 15.66 lb/hr. The PM testing program was completed with both the surface and core dryer units operating at a rate sufficient to maintain press production within 90% of the maximum rate of 21.6 tph. The emission rate was determined to be in compliance at 5.4% of the allowable 15.66 lb/hr with a total emission rate of 0.30 lb/hr and a PM concentration of 5.43E-04 gr/dscf. A summary of each of the PM test results based on the filterable (front half) emissions from the RTO stack is presented below in summary Table 2-1.

Table 2-1

Data Summary for Method 5 PM on the RTO Stack

Louisiana-Pacific
Houlton, Maine

TEST NUMBER: DATE: TIME:		1 7/9/96 1515-1615	2 7/9/96 1730-1900	3 7/9/96 1955-2055	
PROCESS CONDITIONS	**UNITS**				**AVERAGE**
Press Production Rate	tph	19.4	19.4	19.4	19.4
SAMPLE CONDITIONS					
Meter Volume	dscf	41.1	42.6	42.6	42.1
Isokinesis	%	95.3	98.1	99.7	97.7
Filterable Particulate Catch	mg	2.6	1.0	0.8	1.5
STACK CONDITIONS					
Stack Gas Flowrate	dscf/min	63,946	64,445	63,461	63,951
Average Stack Temperature	°F	258	257	256	257
Water Vapor in Stack Gas	% v/v	23.0	22.8	23.2	23.0
CO_2 in Stack Gas	%	3.7	5.9	4.5	4.7
O_2 in Stack Gas	%	16.5	16.1	15.9	16.0
MEASURED EMISSIONS					
Particulate Concentration	gr/dscf	9.77E-04	3.62E-04	2.90E-04	5.43E-04
Mass Emission Rate	lb/hr	0.54	0.20	0.16	0.30

Revised 8/30/96

Three 60-minute tests were performed on 9 July 1996 to determine emission concentrations of PM under press operating conditions which yielded 19.43 tons per hour or 90% of the maximum operating capacity. The emission concentration in grain per dry standard cubic feet (gr/dscf) averaged 5.43E-04 gr/dscf, below the 0.02 gr/dscf emission standard. The results for the three tests were 0.54, 0.20, and 0.16, pounds per hour (lb/hr) respectively. The average of the three tests was calculated to be 0.30 lb/hr. This represents 5.4 % of the total allowed emission rate of 15.66 lb/hr.

The oxygen levels varied from 3.7 % to 5.9 % for all three of the tests. Oxygen concentrations averaged 4.7 % for the entire test program. Emissions data summaries and copies of the Method 5 sheets as recorded during the test program are presented in Appendix C.

All three tests performed were within the 100% ± 10% isokinetics acceptable range as required by the reference method. Both the sampling and pitot leak checks were acceptable at less than 0.02 cfm.

The US EPA Clean Air Act Consent Decree entered into with Louisiana-Pacific on 30 September 1993 requires that the results be reported as total PM. Total PM was determined to have an emission rate of 4.64 lb/hr and a PM concentration of 8.47E-03 gr/dscf based on the average of Test Runs 2 and 3. Test Run 1 was discarded due to contamination as described below.

As seen in the tables below, Test Run 1 seems to be an outlier in the fact that total PM results are 4 times the average of Test Runs 2 and 3. The Run 1 condensable sample underwent further analysis by infrared (IR) scan to determine that silicone lubricant contamination contributed to the high results. Therefore, Run 1 is not included in the average reported CPM results. The Interpoll Laboratory's analytical data is presented in Appendix G.

A summary of each of the additional condensable PM results is presented in Tables 2-2 and 2-3. All associated field data and detailed summaries are presented in Appendix B of this report.

2.2 VOC Emissions and RTO Capture Efficiencies

This section presents a discussion of test data collected during each VOC emission test. APCC performed three 60 minute tests on the RTO stack and the outlets from the surface and core dryer primary cyclones which served as the inlets to the RTO for the calculation of the RTO's CE. These tests were performed at the same time as the PM tests under the same operating conditions as described above, detailed in Section 3 and presented in Appendix E, pages 2 and 3. A results summary for each test run is presented in Table 2-4. Complete tabulated data for each test is presented in Appendix B.

Table 2-2

Data Summary for Filterable PM Containing Organic Condensables

Louisiana-Pacific
Houlton, Maine

TEST NUMBER:		*1*	2	3	
DATE:		*7/9/96*	7/9/96	7/9/96	
TIME:		*1515-1615*	1730-1900	1955-2055	
PROCESS CONDITIONS	**UNITS**				**AVERAGE**
Press Production Rate	tph	*19.4*	19.4	19.4	19.4
SAMPLE CONDITIONS					
Meter Volume	dscf	*41.1*	42.6	42.6	42.6
Isokinesis	%	*95.3*	98.1	99.7	98.9
Condensable PM Catch	mg	*92.0*	23.0	22.0	22.5
STACK CONDITIONS					
Stack Gas Flowrate	dscf/min	*63,946*	64,445	63,461	63,953
Average Stack Temperature	°F	*258*	257	256	257
Water Vapor in Stack Gas	% v/v	*23.0*	22.8	23.2	23.0
CO_2 in Stack Gas	%	*3.7*	5.9	4.5	5.2
O_2 in Stack Gas	%	*16.5*	16.1	15.9	16.0
MEASURED EMISSIONS					
Particulate Concentration	gr/dscf	*3.46E-02*	8.33E-03	7.96E-03	8.15E-03
Mass Emission Rate	lb/hr	*18.93*	4.60	4.33	4.46

Note: Average includes only test Runs 2 and 3. See Section 2.1 for details.

Table 2-3

Data Summary for Total PM (M-5 & 202)

Louisiana-Pacific
Houlton, Maine

TEST NUMBER:		*1*	2	3	
DATE:		*7/9/96*	7/9/96	7/9/96	
TIME:		*1515-1615*	1730-1900	1955-2055	
PROCESS CONDITIONS	**UNITS**				**AVERAGE**
Press Production Rate	tph	*19.4*	19.4	19.4	19.4
SAMPLE CONDITIONS					
Meter Volume	dscf	*41.1*	42.6	42.6	42.6
Isokinesis	%	*95.3*	98.1	99.7	98.9
Total Particulate Catch	mg	*94.6*	24.0	22.8	22.5
STACK CONDITIONS					
Stack Gas Flowrate	dscf/min	*63,946*	64,445	63,461	63,953
Average Stack Temperature	°F	*258*	257	256	257
Water Vapor in Stack Gas	% v/v	*23.0*	22.8	23.2	23.0
CO_2 in Stack Gas	%	*3.7*	5.9	4.5	5.2
O_2 in Stack Gas	%	*16.5*	16.1	15.9	16.0
MEASURED EMISSIONS					
Particulate Concentration	gr/dscf	*3.55E-02*	8.69E-03	8.25E-03	8.47E-03
Mass Emission Rate	lb/hr	*19.47*	4.80	4.49	4.64

Note: Average includes only test Runs 2 and 3. See Section 2.1 for details.

Table 2-4

Data Summary for VOC Emissions and CE
Louisiana-Pacific, Houlton, Maine

	EMISSION RATES INLET SITE 1 lbs/hr	INLET SITE 2 lbs/hr	INLET 1 & 2 lbs/hr	OUTLET SITE 4 lbs/hr*	CAPTURE EFFICIENCY (CE) %
Test 1 Average	9.7	15.6	25.3	0.7	97.4
Test 2 Average	9.2	13.1	22.4	1.5	93.4
Test 3 Average	10.9	16.5	27.4	0.7	97.5
TEST PROGRAM AVERAGES			25.0	0.9	96.1
VOC Limit = 5.61 lbs/hr*					

The average test program VOC emission rate at the RTO stack outlet was determined to be 0.9 lb/hr, which is 16% of the ME DEP permitted emission standard of 5.61 lb/hr. The VOC concentrations at the RTO stack ranged from 0.4 ppm to 18.2 ppm, while the test program average was 4.6 ppm.

The following equation was used to calculate VOC lbs/hr emissions.

lbs/hr = (ppm)* (Conversion Factor)*(Qs, scfm)*(60 min. /hr)

where: Conversion Factor = THC as methane = 4.149E-08
Qs = standard flow, scf/min

The sum of the results from Sites 1 and 2, after the primary cyclones were used to determine the VOC contribution from the dryers. The CE of the pollution control system , the RTO was calculated as follows:

VOC EFFICIENCY = 1- ((VOC @ Site 4)/ (VOC @ Site 1 + VOC @ Site 2)) * 100

As can be seen from the table presented above the test program average CE was calculated to be 96.1%. The three test averages were 97.4, 93.4, and 97.5 % for tests 1, 2, and 3 respectively.

3.0 PROCESS AND OPERATIONS

The Louisiana-Pacific facility in Houlton Maine is an oriented strand board manufacturing facility that produces structural panel used for various construction applications. The facility is identified by the Standard Industrial Classification Code 2493. A complete process flow diagram is presented in Appendix A.

The plant purchases logs that are debarked and fed to a waferizer. The bark is used for fuel in the thermal oil heater. The waferizer flakes the logs into thin pieces, which are approximately three inches long by one inch wide by 1/32 inch thick. The freshly cut pieces have a moisture content of approximately 50%. The wet flakes go through a rotary dryer which reduces the moisture content to between four and eight percent. The flakes are then captured by the primary cyclone and the exhaust gas passes through a wet electrostatic precipitator (ESP) followed by a regenerative thermal oxidizer (RTO).

The flakes collected by the primary cyclone drop into a rotary screen, which separates the correctly sized flakes for further processing. The material passing through the screen is used as fuel in the dryer. Wax and resin are mixed with the flakes in rotary blenders. Formers then evenly distribute the flakes onto a moving conveyer. A separate former is used to orient the bottom, core and top layers of the board. The continuous mat of flakes is separated into press size segments by the flying cut-off saw.

The loader loads the boards into the press and with the combination of heat (supplied by the thermal oil heater) and pressure, the wafer mats are turned into solid boards. These boards are unloaded and cut by the trim saw to the desired sizes. The dust formed by this operation is collected and used as fuel in the wafer dryer.

The facility operates several pollution control devices to control emissions. As mentioned above, the rotary dryer exhaust is controlled by a wet ESP and the RTO. Emissions generated by the thermal oil heater pass through a cyclone and ESP. Emissions from the board press are controlled by a RTO.

3.1 Process Equipment Description and Operating Conditions

The description of the process equipment that was tested is two MEC model 1248 T triple pass rotary drum wafer dryers with rated capacities of 230 tons per hour (tph) of wafers at six percent moisture. The primary burners are McConnell model 48 wood fired cyclonic suspension burners with rated capacities of 40 MM Btu/hr.

The dryers were operated at a rate sufficient to maintain press production within 90% of the maximum rate of 21.6 tph of finished product. The actual press production rate was maintained at 90 % with a rate of 19.4 tph.

The dryers' McConnell burners used dry fines as fuel during the testing. The fuel counts were recorded during the test program and are presented in Appendix E. The counts were factored based on the current quarterly fuel calibration to obtain the pounds of fuel burned. Wafers were dried to 4.5% - 5.5% moisture by weight. The dryer operating parameters were recorded at ten minute intervals and are presented in detail in Appendix D. Dryer production rate in pounds of dry furnish per hour was determined based on the press production plus screened fines and board trim using the following formula:

$$\text{lb Dryer Production/Hr} = \frac{\text{(Tons press production/Hr)/ 2000)}}{1 - (0.07 + 0.08)}$$

where: Board trim = 7 % of finished product weight
screened fines = 8 % of finished product weight

3.2 Control Equipment Description and Operating Conditions

Emissions from the dryers are controlled by a wet electrostatic precipitator (ESP) manufactured by Geoenergy model 1013-378 2 T/R GEOENERGY E-Tube® followed by a Wheelabrator Clean Air Systems Inc. model No. 9220-7-95-04/96 regenerative thermal oxidizer (RTO). Operating specifications of the wet ESP include:

- Primary and secondary volts > 40 KV;
- Primary and secondary amperes 150-300 mA;
- Number of fields on line: 2;
- Flue gas conditioning: Saturation of gas stream; and
- Voltages, amperes flush cycles, and blowdown information.

Operating specifications of the RTO include:

- Combustion temperature: >1500 °F; and
- Primary fuel: Propane.

The test program averages are presented in Table 3-1 and further detailed in Appendix E, pages 2 and 3.

Table 3-1
Process Data Summary
Louisiana-Pacific, Houlton, Maine

PROCESS CONDITION	UNITS	PROGRAM AVERAGE
Press Production Rate	tph	19.43
Dryers' Production Rate	lb/hr	44,597
Total Fuel Burned	tph	2.87
Incoming Moisture	%	33.05
Dry Moisture	%	6.17
Inlet Temperature	°F	1,168
RTO Temperature No. 1	°F	1,507
RTO Temperature No. 2	°F	1,510
RTO Temperature No. 3	°F	1,510

4.0 SAMPLING AND ANALYTICAL METHODOLOGY

APCC mobilized two Environmental Monitoring Laboratories (EML) and other test equipment at the test site. Upon arrival, APCC met with the project management supervisor and site coordinator familiarizing themselves with the facility, safety procedures, and process operations. The following sections present brief descriptions of the sampling and analytical methodologies.

4.1 Continuous Emission Monitoring

APCC performed continuous emission monitoring to determine emissions of carbon dioxide (CO_2), oxygen (O_2), and Volatile Organic Compounds (VOC) in accordance with EPA Methods 3A and 25A. All CEM data was recorded using Tracor/Westronics 3000 automatic digital data loggers. Copies of the strip chart recordings are presented in Appendix D.

The CEM systems housed in the APCC EMLs were located at the base of the RTO stack and below Sites 1 and 2. In each system stack gas was drawn through an in-stack filter, a heated stainless steel heated probe, heated Teflon sample line (320°F nominal), the VOC sample was drawn directly from the heated sample line into the VOC analyzer for analysis on a wet basis. A portion of the sample was split at the back of the VOC analyzer and drawn through a Peltier-type sample conditioner by a leakless Teflon diaphragm pump. The sample was then pumped through a manifold under slightly positive pressure with a bypass to atmosphere. CO_2 and O_2 samples were continuously drawn from this manifold to their respective analyzers. The VOC sample bypassed the condenser system and was passed directly to the analyzer. A schematic of the APCC's instrument reference method (IRM) monitoring systems is presented in the Figure 4-1.

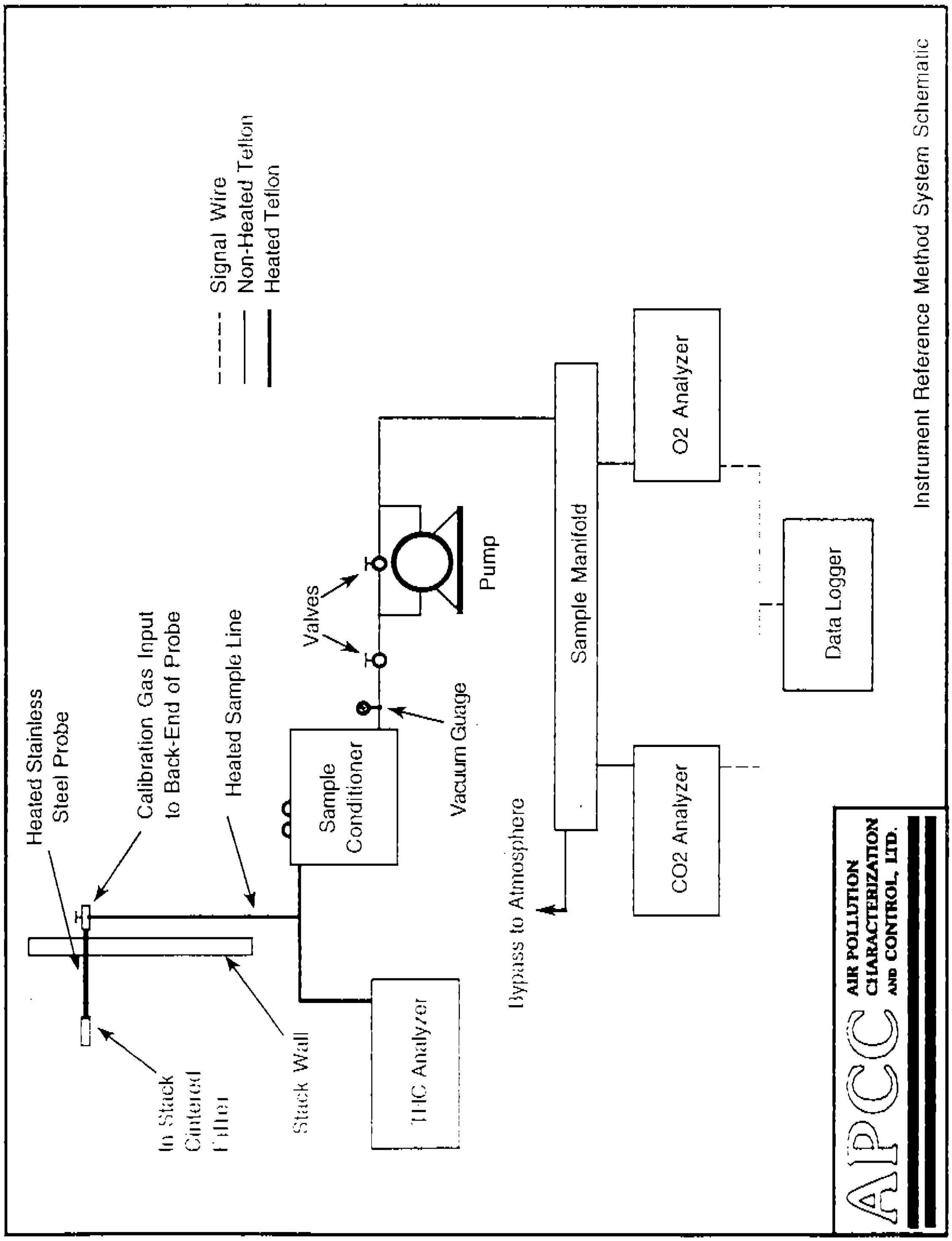
4.1.1 Volatile Organic Compound Analyzers

A VIG Industries dual channel total hydrocarbon analyzer, which utilizes two flame ionization detectors (FIDs) to measure, as methane, hydrocarbons C_1 through C_{18}; was used to sample from the outlets of Sites 1 and 2 the surface and core dryers simultaneously with the TECO Model 51 Total Hydrocarbon Analyzer. Approximately 5.0 lpm of sample gas is drawn from the sample locations through Teflon sample line heated to 350°F (nominal). The sample gas is drawn through a heated filter and valving by a heated pump. The sample gas then enters the heated detector bench which contains the FID.

4.1.2 Oxygen Analyzers

A Westinghouse/Maihak OXIGOR O_2 analyzer calibrated on the 0-25% scale was used to monitor concentrations of oxygen in the exhaust stream. This instrument utilizes the magnetic dumbbell sphere (paramagnetic) principle, which comparatively measures the magnetic susceptibility of a gas volume by the force acting upon a non-magnetic test body suspended in a disproportionate magnetic field. Output current is linearly proportional to the oxygen concentration.

Figure 4-1 APCC IRM System Schematic



A Teledyne 326RA series analyzer was also used in the other EML to monitor O_2 concentrations in a gas stream. This instrument utilizes a micro fuel cell to measure oxygen content. Output voltage is linearly proportional to the oxygen concentration in the sample stream. This analyzer was calibrated on the 0-25% scale.

4.1.3 Carbon Dioxide Analyzers

A Westinghouse/Maihak FINOR CO_2 analyzer was used to monitor carbon dioxide emissions in EML No. 1. This instrument operates on the principle of carbon dioxide having a known characteristic absorption spectra in the infrared range.

In addition, a Westinghouse Model UNOR 6N non-dispersive infrared gas analyzer was used to measure CO_2 concentrations. The analyzer operates on the measurement principle based on CO_2 having a known characteristic absorption spectra in the infrared range. It contains an infrared detector that uses the non-dispersive single beam technique with alternative modulation of the sample and reference cells. Radiation absorbed by CO_2 in the sample cell produces a capacitance change in the detector which is proportional to the CO_2 concentration. Both the CO_2 were calibrated on the 0-25% scale.

4.1.4 Calibration

Four point (zero, low, mid and span) calibrations for hydrocarbons and three point (zero, mid and span) calibrations for other parameters were performed on the analytical instrumentation at the beginning of the test program to establish instrument linearity. A zero and span calibration on each instrument was performed before and after each test. The system was also leak and bias checked prior to the test program. EPA Protocol 1 gases were used for all calibrations.

4.1.5 Data Acquisition and Handling

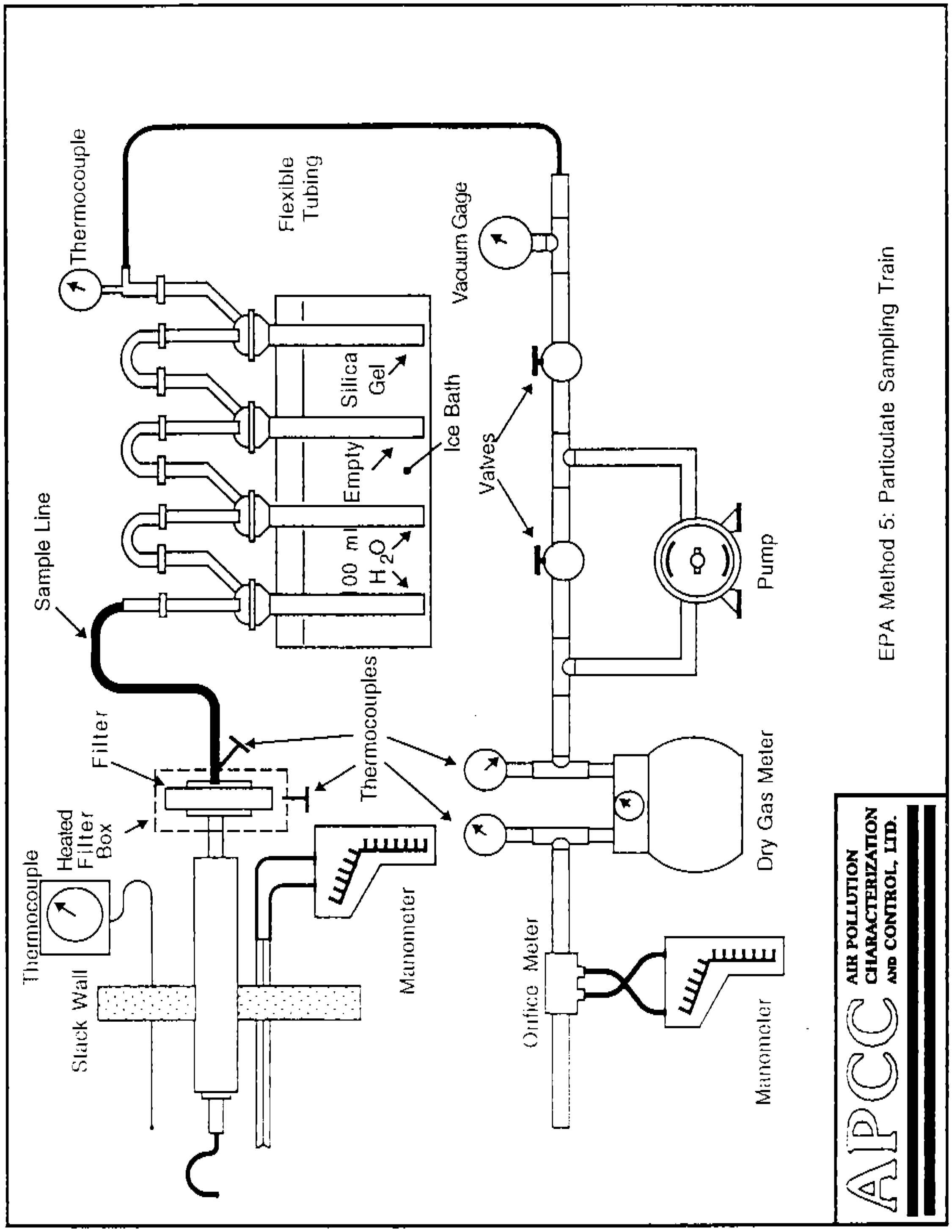
All CEM data was monitored by a Tracor/Westronics 3000 digital data loggers which recorded on a strip charts using its integral color printer. Trends were monitored using the strip chart mode with averages printed digitally for 10-minute intervals. Emission data are "viewed" by the data logger at 5-second intervals. This enables real-time emission data to be available on-site.

4.2 Particulate Emission Measurements

Particulate sampling was performed in accordance with EPA Method 5, as described in the July 1, 1995 edition of the *Code of Federal Regulations* (CFR). In addition, NSPS Test Method 202 for front half PM (Method 5) and filterable PM including organic condensable (Method 202) was completed. Triplicate 60-minute tests were performed at all three sites. However, for the purposes of this compliance report only the Site 4 PM data is reported.

A schematic of the sampling train similar to the one that was used during testing is presented in Figure 4-2. The RTO stack particulate sampling was performed in

Figure 4-2 EPA Method 5 Sampling Train



EPA Method 5: Particulate Sampling Train accordance with a EPA Method 5, as described in the July 1, 1995 edition of the *Code of Federal Regulations* (CFR). The particulate sampling train consisted of a nozzle attached to a glass-lined probe which is heated to prevent condensation. Whatman EPM 2000 fiberglass filter paper supported in a 4-1/2 inch glass filter holder was used as the collection media. The filter assembly will be enclosed in a heated box to maintain temperatures at 248°F ± 25°F. A thermocouple located inside the back half of the filter holder, was used to monitor the gas stream temperature and verify that the temperature is kept at 248°F ± 25°F.

An ice bath containing four impingers was attached to the back end of the filter via a flexible umbilical tube. The first, third, and fourth impingers were of modified Greenburg-Smith design, while the second will be the standard Greenburg-Smith design. The first two impingers contained 100 ml distilled water, the third is dry, and the fourth contains 200 grams of indicating silica gel to remove any remaining moisture. Flexible tubing, vacuum gauge, needle valves, leakless vacuum pump, bypass valve, dry gas meter, calibration orifice and inclined manometer complete the sampling train. The stack velocity pressure was measured using a pitot tube and inclined manometer in accordance with EPA Method 2. The stack temperature was monitored using a calibrated K-type thermocouple connected to a potentiometer.

A nomograph was used to quickly determine the orifice pressure drop required for a pitot velocity pressure and stack temperature in order to maintain isokinetic sampling conditions. Sampling flow was adjusted by means of the bypass valve. Before and after each particulate test run, the sampling train was leak checked and acceptable at less than 0.02 cubic feet per minute (cfm). The moisture content of the exhaust gases was determined during each test in accordance with EPA Method 4. Test data was recorded on field data sheets as presented in Appendix C of this report.

Sample Recovery:

At the end of each test, three sample containers were used as follows:

Container No. 1	Filter
Container No. 2	Acetone wash of probe and front half of filter. The probe and nozzle will be washed and brushed three times.
Container No. 3	Silica gel from the fourth impinger.

Sample Analysis:

The samples were transported to the laboratory and the following analyses performed:

Container No. 1	Transfer the filter and any loose particulate matter from the sample container into a desiccator and dry for approximately 24 hours. The sample is then weighed to a constant weight. Reported results to the nearest 0.1 mg.

Container No. 2 — The acetone washing will be transferred to a tared beaker and evaporated to dryness. Desiccated and dried to a constant weight. Reported results to the nearest 0.1 mg.

Container No. 3 — Silica gel will be weighed to the nearest 0.5 g. The weight of the moisture entrapped in the silica gel, along with the volume of moisture which condensed in the impingers, will be used to calculate the moisture content of the flue gas.

A computer program developed for the Macintosh was used to calculate emission rates in grains per dry standard cubic foot (gr/dscf) and pounds per hour (lb/hr). The program was also calculate percent moisture, molecular weight of the stack gas at stack conditions, and the percent isokinesis.

4.3 Volumetric Flow Rate Determination and Sampling Locations

Exhaust gas volumetric flow rate was determined at the inlets and outlet of the RTO in conjunction with each of the VOC emission tests in accordance with EPA Methods 1 and 2 which were performed in conjunction with the PM tests completed at all three locations.

Two sample ports at Site 1 are located at 90° of one another in the exhaust from the surface dryer 25 ft or 7.1 diameters upstream and 45 ft or 12.6 diameters downstream from the nearest respective flow disturbances in the 42 inch diameter duct.

Two sample ports at 90° of one another in the 42 inch diameter core dryer duct at Site 2 are located at 29 ft or 8.3 diameters upstream and 29 ft or 8.3 diameters downstream from the nearest disturbances.

In accordance with EPA Method 1, 12 traverse points were measured at Sites 1 and 2 to determine stack gas velocity and temperature.

The RTO stack sampling location was on the platform at the 60 ft elevation. The two sampling ports are located in the 82 inch stack at 36 ft or 5.3 diameters upstream and 40 ft or 5.6 diameters downstream from the nearest disturbances. Therefore, in accordance with EPA Method 1, 20 traverse points were measured to determine stack gas velocity and temperature.

Appendix A presents diagrams of each sampling location. Appendix C details the velocity and Method 5 traverse points used at each sampling location.

5.0 QUALITY ASSURANCE

The project manager is responsible for implementation of the quality assurance program as applied to the project.

5.1 Sampling Quality Assurance

Generally, implementation of quality assurance procedures for source measurement programs is designed so that the work is done:

1. By competent, trained individuals experienced in the specific methodologies being used.

2. Using properly calibrated equipment.

3. Using approved procedures for sample handling and documentation.

Measurement devices, pitot tubes, dry gas meters, thermocouples, etc. are uniquely identified and calibrated with documented procedures and acceptance criteria before and after each field effort. Records of all calibration data are maintained in the files.

Data are recorded on standard forms. Bound field notebooks are used to record observations and miscellaneous elements affecting data, calculations, or evaluation.

Specific details of APCC's QA program for stationary air pollution sources may be found in "Quality Assurance Handbook for Air Pollution Measurement Systems", Volume III (EPA-600/4-7-027b).

5.2 Equipment Calibration

The CEM system was calibrated at the beginning and end of each test day as well as leak and biased checked before and after each test . All calibration gases were EPA Protocol 1. Multi-point calibrations were performed to established linearity prior to sampling and throughout the test program. Appendix B presents the EML CEM work sheets which include all of the calibration data and bias corrections. All of the calibrations met the specifications of EPA Method 6C Section 8.

5.3 Data Reduction and Reporting

The Project Engineer developed a data reduction system to conform to the collection of field data to be reduced and quantitative results for the final report. The methods for data reduction were specified and presented to the Program Manager before the field effort. Raw data recorded on field data sheets, bound laboratory books, and data logger strip charts are presented in the Appendix of this report.

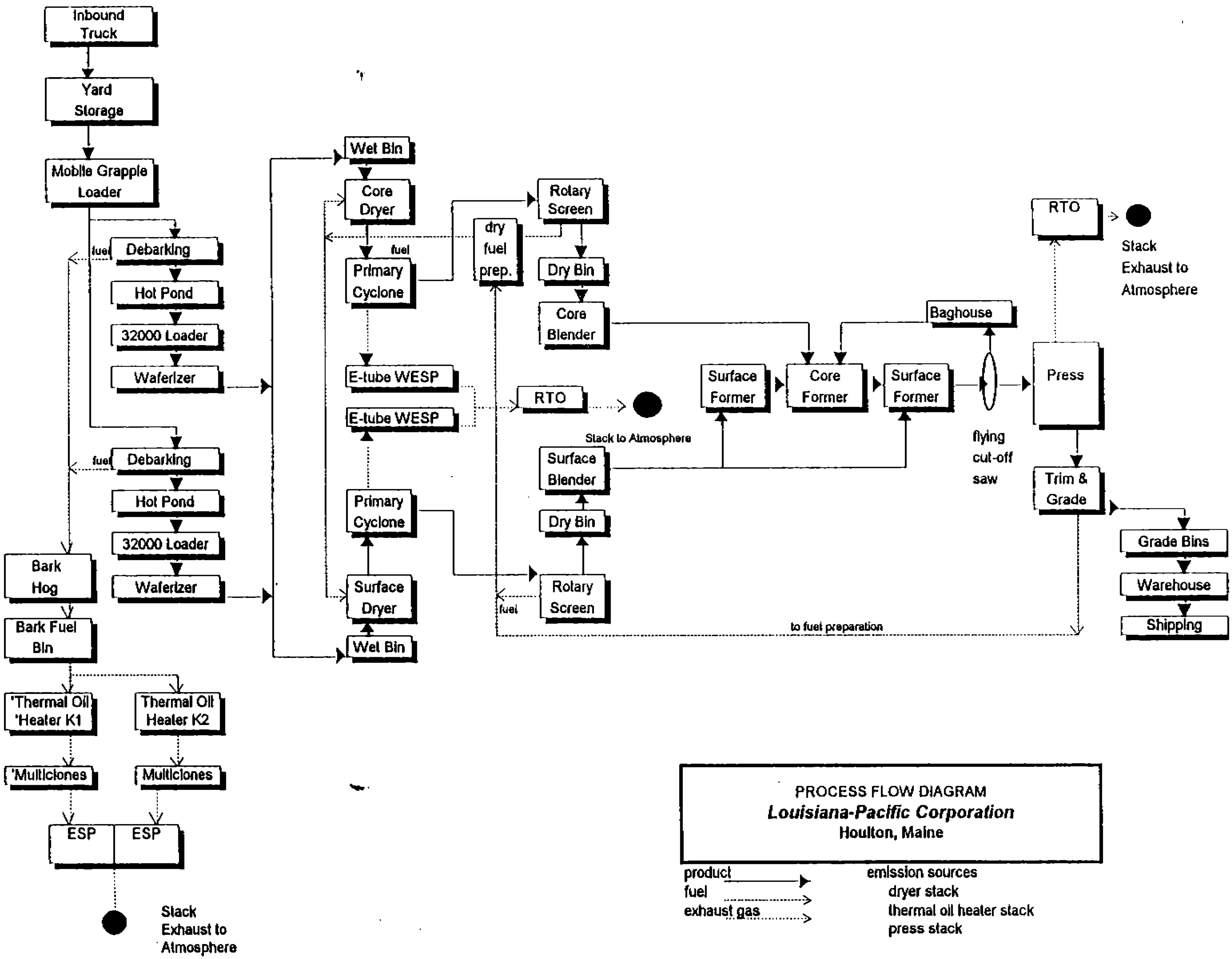
5.4 Data Validation

Validation of data were reviewed by the Manager of Engineering and Company President against the QA/QC criteria of the specific methods. The data were assessed to the quality and accuracy as required to meet the objectives of the sampling program. Hand calculations were performed with raw data separate from the reported calculations and results. All documentation was checked for correctness, completeness and verified as checked.

A data assessment of sampling results was also performed during scheduled time periods to ensure quality data is collected and processed. Corrective action was implemented if warranted to ensure QA/QC procedures are met. No corrective actions were necessary.

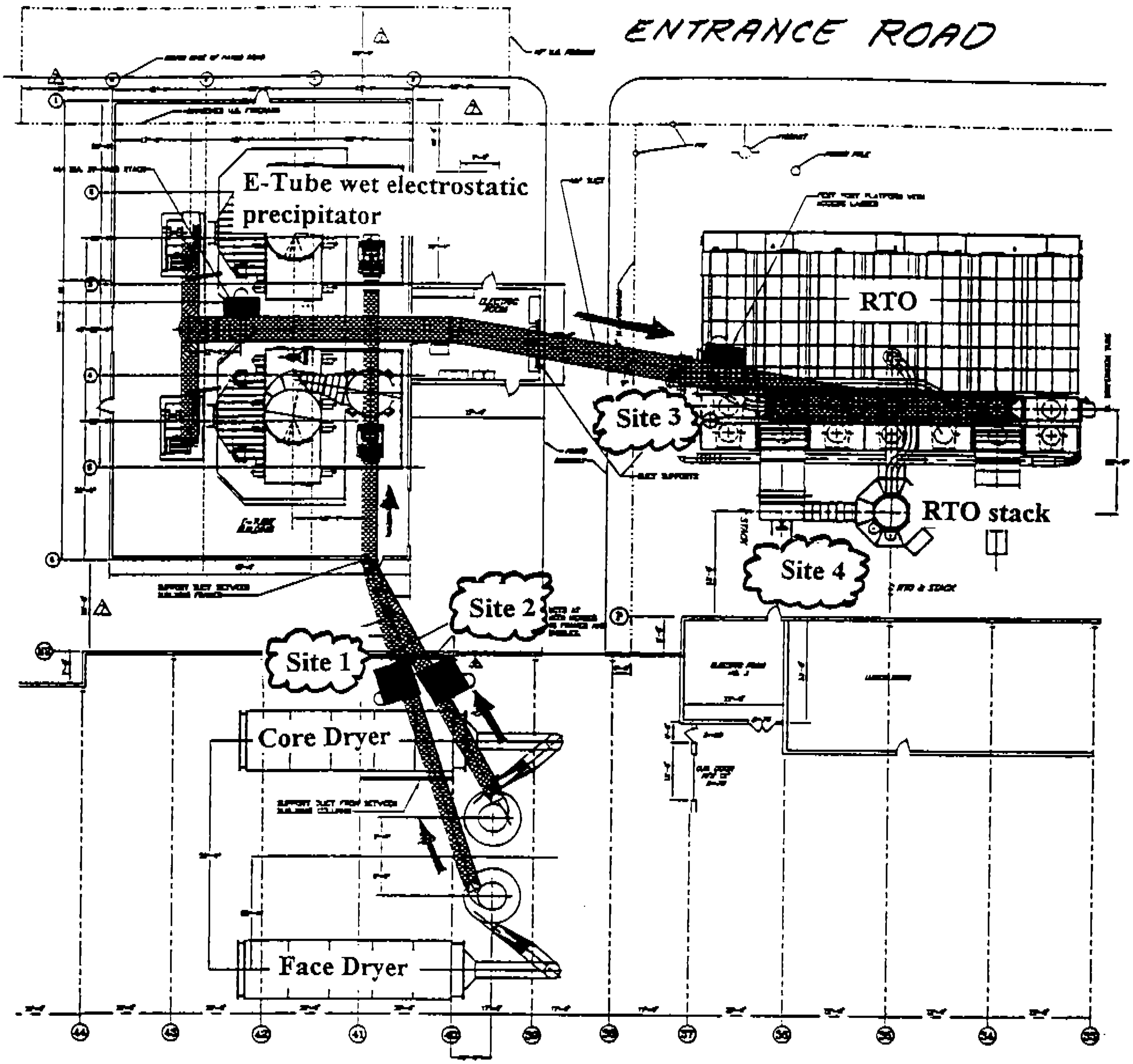
APPENDIX A

Process Flow Chart
&
Sampling Location Diagrams

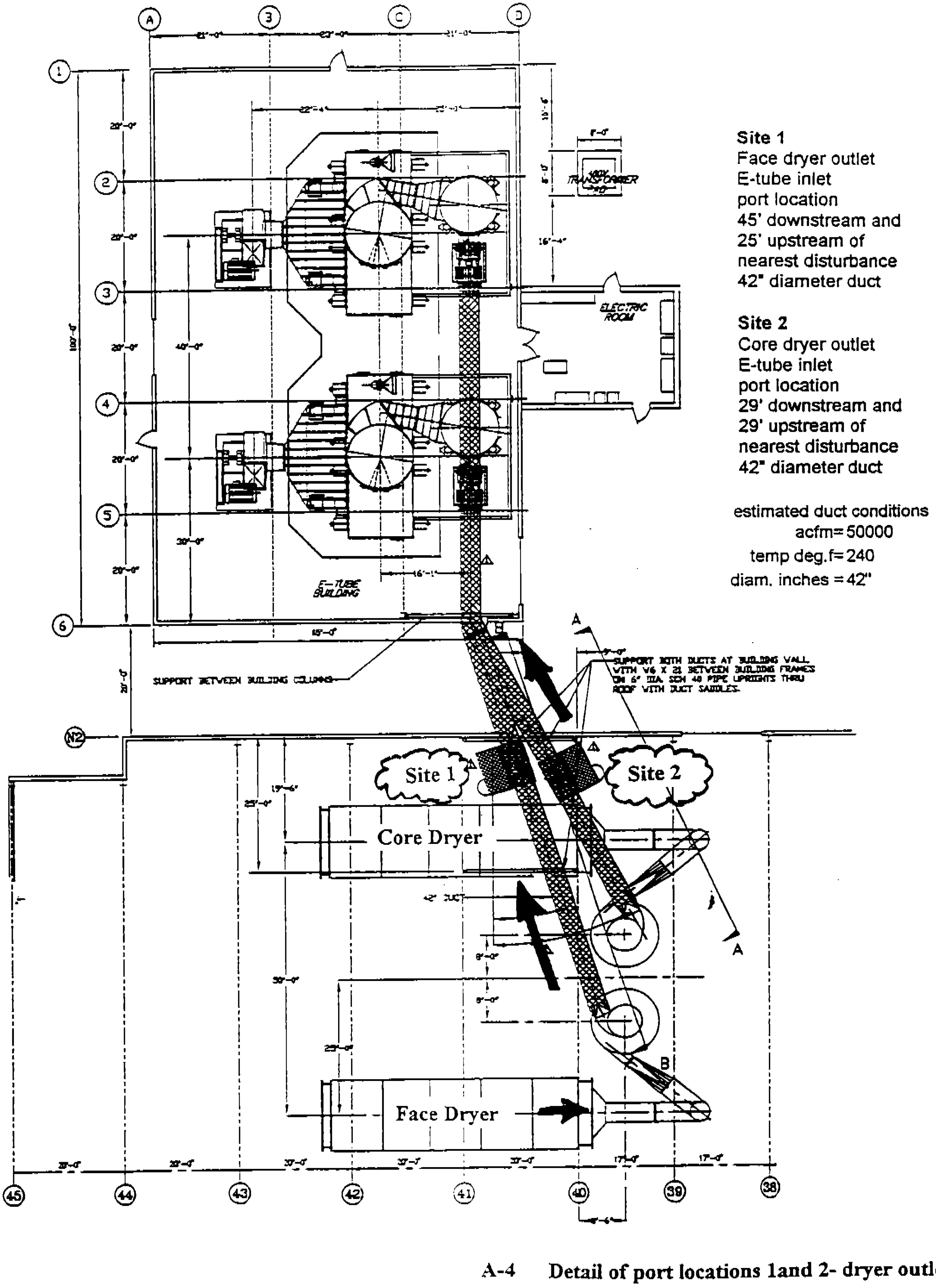


04/29/96 revised 4-29-96 HOFLO1.WK4

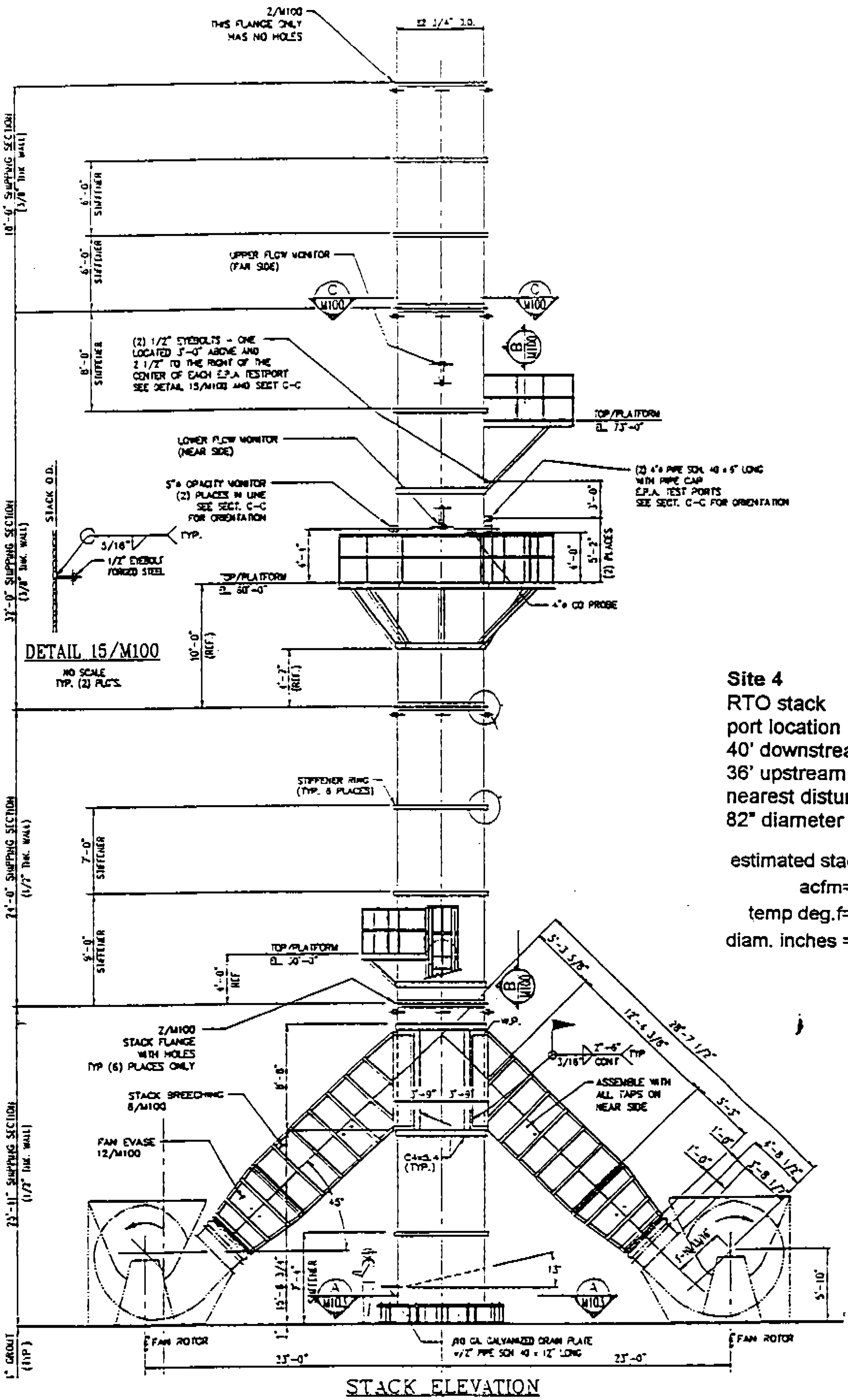
A-2 process flow diagram.



A-3 Plan view of dryer, control equipment and test port locations



A-4 Detail of port locations 1and 2- dryer outlets



Site 4
RTO stack
port location
40' downstream and
36' upstream of
nearest disturbance
82" diameter stack

estimated stack conditions
acfm= 146000
temp deg.f= 220
diam. inches = 82"

A-5 Detail of port location 4 - RTO stack

APPENDIX B

Results Summaries

APCC AIR POLLUTION CHARACTERIZATION AND CONTROL, LTD.

CLIENT:						
LOCATION:	LOUISIANA PACIFIC					
PROJECT NUMBER:	SITE 4 (RTO STACK)					
TEST NUMBER:	96053		1	2	3	AVERAGE
DATE:			7/9/96	7/9/96	7/9/96	
TIME :			1515-1615	1730-1900	1955-2055	
TEST DATA INPUT	**SYMBOL**	**UNITS**				
Barometric Pressure	Pbar	in. Hg	29.88	29.88	29.88	
Stack Area	A	ft2	36.7	36.7	36.7	
Nozzle Diameter (in.)	Dn	in.	0.275	0.275	0.275	
Total Sampling Time	Ø	min.	60	60	60	
Calibration Factor	Y	-	1	1	1	
Pitot Coefficient	Cp	-	0.84	0.84	0.84	
Average Square Root of Velocity Head	√ΔPavg	in. H2O	0.753	0.76	0.749	
Average Orifice Pressure Drop	ΔH	in. H2O	2.01	2.04	2	
Average Meter Temperature	Tm	°F	84	80	78	
Average Stack Pressure	Pg	in. H2O	0.57	0.56	0.57	
Average Stack Temperature	Ts	°F	258	257	256	
Meter Volume @ Meter Conditions	Vm	ft3	42.16	43.41	43.28	
Total Water Collected	Vlc	ml	261	267	274	
CO2 in Stack Gas	CO2	%	3.7	5.9	4.5	
O2 in Stack Gas	O2	%	16.5	16.1	15.9	
CO in Stack Gas	CO	%	0	0	0	
Total Filtered Particulate Catch	PMt	mg	2.6	1.0	0.8	**1.5**
CALCULATED VALUES						
Meter Volume	Vmstd	dscf	41.1	42.6	42.6	42.1
Water Vapor in Stack Gas	Bws	%	23.03	22.78	23.23	23.01
Molecular Weight of Stack Gas (dry)	Md	g/g-mole	29.3	29.6	29.4	29.4
Molecular Weight of Stack Gas (wet)	Ms	g/g-mole	26.7	26.9	26.7	26.8
Average Velocity of Stack Gas	Vs	ft/min	3,078	3,088	3,054	3,073
Actual Stack Gas Flowrate	Q	acf/min	112,963	113,326	112,086	112,792
Stack Gas Flowrate	Qsd	dscf/min	63,946	64,445	63,461	63,951
Isokinetics	I	%	95.3	98.1	99.7	97.7
EMISSION CONCENTRATION						
Particulate Emission Concentration	PCgr	gr/acf	7.18E-04	2.67E-04	2.14E-04	4.00E-04
Particulate Emission Concentration	PCgrsd	gr/dscf	9.77E-04	3.62E-04	2.90E-04	**5.43E-04**
Particulate Emission Concentration	PClbsd	lb/dscf	1.39E-07	5.17E-08	4.13E-08	7.75E-08
Particulate Emission Concentration	PCμgm	μg/dscm	2237	829	663	1243
EMISSION RATE						
Particulate Emission Rate	PER	lbs/hr	0.54	0.20	0.16	**0.30**

Rev 2/96 ECD

APCC AIR POLLUTION CHARACTERIZATION AND CONTROL, LTD.

Revised 8/28/96

CLIENT:	LOUISIANA PACIFIC					
LOCATION:	SITE 4 (RTO STACK)					
PROJECT NUMBER:	96053					
TEST NUMBER:			1	2	3	AVERAGE
DATE:			7/9/96	7/9/96	7/9/96	
TIME :			1515-1615	1730-1900	1955-2055	
TEST DATA INPUT	**SYMBOL**	**UNITS**				
Barometric Pressure	Pbar	in. Hg	29.88	29.88	29.88	
Stack Area	A	ft2	36.7	36.7	36.7	
Nozzle Diameter (in.)	Dn	in.	0.275	0.275	0.275	
Total Sampling Time	Ø	min.	60	60	60	
Calibration Factor	Y	-	1	1	1	
Pitot Coefficient	Cp	-	0.84	0.84	0.84	
Average Square Root of Velocity Head	√ΔPavg	in. H2O	0.753	0.76	0.749	
Average Orifice Pressure Drop	ΔH	in. H2O	2.01	2.04	2	
Average Meter Temperature	Tm	°F	84	80	78	
Average Stack Pressure	Pg	in. H2O	0.57	0.56	0.57	
Average Stack Temperature	Ts	°F	258	257	256	
Meter Volume @ Meter Conditions	Vm	ft3	42.16	43.41	43.28	
Total Water Collected	Vlc	ml	261	267	274	
CO2 in Stack Gas	CO2	%	3.7	5.9	4.5	
O2 in Stack Gas	O2	%	16.5	16.1	15.9	
CO in Stack Gas	CO	%	0	0	0	
Total Condensible PM Catch	PMt	mg	92.0	23.0	22.0	**22.5**
CALCULATED VALUES						
Meter Volume	Vmstd	dscf	41.1	42.6	42.6	42.6
Water Vapor in Stack Gas	Bws	%	23.03	22.78	23.23	23.0
Molecular Weight of Stack Gas (dry)	Md	g/g-mole	29.3	29.6	29.4	29.5
Molecular Weight of Stack Gas (wet)	Ms	g/g-mole	26.7	26.9	26.7	26.8
Average Velocity of Stack Gas	Vs	ft/min	3,078	3,088	3,054	3071.0
Actual Stack Gas Flowrate	Q	acf/min	112,963	113,326	112,086	112706.2
Stack Gas Flowrate	Qsd	dscf/min	63,946	64,445	63,461	63952.9
Isokinetics	I	%	95.3	98.1	99.7	98.9
EMISSION CONCENTRATION						
Particulate Emission Concentration	PCgr	gr/acf	2.54E-02	6.13E-03	5.87E-03	6.00E-03
Particulate Emission Concentration	PCgrsd	gr/dscf	3.46E-02	8.33E-03	7.96E-03	**8.15E-03**
Particulate Emission Concentration	PClbsd	lb/dscf	4.93E-06	1.19E-06	1.14E-06	1.16E-06
Particulate Emission Concentration	PCμgm	μg/dscm	79161	19078	18237	18657.4
EMISSION RATE						
Particulate Emission Rate	PER	lbs/hr	18.93	4.60	4.33	**4.46**

NOTE: Average includes only Runs 2 and 3.

APCC AIR POLLUTION CHARACTERIZATION AND CONTROL, LTD.

Revised 8/28/96

CLIENT:	LOUISIANA PACIFIC					
LOCATION:	SITE 4 (RTO STACK)					
PROJECT NUMBER:	96053					
TEST NUMBER:			*1*	2	3	**AVERAGE**
DATE:			*7/9/96*	7/9/96	7/9/96	
TIME :			*1515-1615*	1730-1900	1955-2055	
TEST DATA INPUT	**SYMBOL**	**UNITS**				
Barometric Pressure	Pbar	in. Hg	*29.88*	29.88	29.88	
Stack Area	A	ft2	*36.7*	36.7	36.7	
Nozzle Diameter (in.)	Dn	in.	*0.275*	0.275	0.275	
Total Sampling Time	Ø	min.	*60*	60	60	
Calibration Factor	Y	-	*1*	1	1	
Pitot Coefficient	Cp	-	*0.84*	0.84	0.84	
Average Square Root of Velocity Head	√ΔPavg	in. H2O	*0.753*	0.76	0.749	
Average Orifice Pressure Drop	ΔH	in. H2O	*2.01*	2.04	2	
Average Meter Temperature	Tm	°F	*84*	80	78	
Average Stack Pressure	Pg	in. H2O	*0.57*	0.56	0.57	
Average Stack Temperature	Ts	°F	*258*	257	256	
Meter Volume @ Meter Conditions	Vm	ft3	*42.16*	43.41	43.28	
Total Water Collected	Vlc	ml	*261*	267	274	
CO2 in Stack Gas	CO2	%	*3.7*	5.9	4.5	
O2 in Stack Gas	O2	%	*16.5*	16.1	15.9	
CO in Stack Gas	CO	%	*0*	0	0	
Total Particulate Catch (PM & CPM)	PMt	mg	*94.6*	24.0	22.8	**23.4**
CALCULATED VALUES						
Meter Volume	Vmstd	dscf	*41.1*	42.6	42.6	42.6
Water Vapor in Stack Gas	Bws	%	*23.03*	22.78	23.23	23.0
Molecular Weight of Stack Gas (dry)	Md	g/g-mole	*29.3*	29.6	29.4	29.5
Molecular Weight of Stack Gas (wet)	Ms	g/g-mole	*26.7*	26.9	26.7	26.8
Average Velocity of Stack Gas	Vs	ft/min	*3,078*	3,088	3,054	3071.0
Actual Stack Gas Flowrate	Q	acf/min	*112,963*	113,326	112,086	112706.2
Stack Gas Flowrate	Qsd	dscf/min	*63,946*	64,445	63,461	63952.9
Isokinetics	I	%	*95.3*	98.1	99.7	98.9
EMISSION CONCENTRATION						
Particulate Emission Concentration	PCgr	gr/acf	*2.61E-02*	6.40E-03	6.09E-03	6.24E-03
Particulate Emission Concentration	PCgrsd	gr/dscf	*3.55E-02*	8.69E-03	8.25E-03	**8.47E-03**
Particulate Emission Concentration	PClbsd	lb/dscf	*5.07E-06*	1.24E-06	1.18E-06	1.21E-06
Particulate Emission Concentration	PCμgm	μg/dscm	*81398*	19907	18900	19403.7
EMISSION RATE						
Particulate Emission Rate	PER	lbs/hr	*19.47*	4.80	4.49	**4.64**

NOTE: Average includes only Runs 2 and 3.

Rev 2/96 ECD

CAPTURE EFFICIENCY
DATA
LOUISIANA-PACIFIC
9 JULY 1996

	CONCENTRATIONS			FLOW			EMISSION RATES				CAPTURE EFFICIENCY
	VOC IN SITE 1 ppm	VOC IN SITE 2 ppm	VOC OUT SITE 4 ppm	INLET SITE 1 scfm	INLET SITE 2 scfm	OUTLET SITE 4 scfm	INLET SITE 1 lbs/hr	INLET SITE 2 lbs/hr	INLET 1 & 2 lbs/hr	OUTLET SITE 4 lbs/hr	%
Test 1 Average	114.8	184.9	3.3	33,900	33,751	81,266	9.7	15.6	25.3	0.7	97.4
Test 2 Average	94.9	152.9	7.2	39,100	34,488	82,031	9.2	13.1	22.4	1.5	93.4
Test 3 Average	107.0	192.1	3.4	40,844	34,464	80,984	10.9	16.5	27.4	0.7	97.5

TEST PROGRAM AVERAGE	96.1

EML
CEM SHEET

SOURCE:	Louisiana-Pacific Corp.	TEST:	1
DATE:	7/9/96	COLLECTED	
METHOD:	3A, 7E, 10, & 25A	BY:	ED
UNIT:	Thermal Oxidizer Inlet Site 1	WITNESSED	
FUEL:	Propane	BY:	N/A
LOAD:	N/A		

STEP	DESCRIPTION	LIMIT	THC	NOx	CO	O2	CO2
1	RANGE		1000	250	1000	25.0	25.0
2	CAL GAS						
	ZERO		0	0	0	0	0
	LOW		283				
	MID	(bias cal. gas)	513	99	498	12.80	12.60
	SPAN		901	241	883	22.6	19.7
3	INT. LOCAL CAL		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		1.8	0.2	3.3	0.1	-0.1
	% ERROR	±2 (±5% for THC)	0.2%	0.1%	0.3%	0.4%	-0.4%
	LOW (PPM OR %)		284.0				
	% ERROR	±2 (±5% for THC)	0.1%				
	MID (PPM OR %)		512.5	97.5	512.5	13.0	12.7
	% ERROR	±2 (±5% for THC)	-0.1%	-0.6%	1.5%	0.8%	0.4%
	HIGH (PPM OR %)		908.9	242.7	882.9	22.5	19.6
	% ERROR	±2 (±5% for THC)	0.8%	0.7%	0.0%	-0.4%	-0.4%
4	INT. BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO		1.8	0.6	2.8	0.1	0.0
	CAL BIAS	±5%	0.0%	0.2%	-0.1%	0.0%	0.4%
	UPSCALE		284.0	97.0	512.3	12.8	12.6
	CAL BIAS	±5%	0.0%	-0.2%	0.0%	-0.8%	-0.4%
5	RESP. TIME (SEC)		30.0	30.0	15.0	15.0	10.0
6	FINAL BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		9.6	1.0	4.0	0.1	0.0
	DRIFT	±3%	0.8%	0.2%	0.1%	0.0%	0.0%
	CAL BIAS	±5%	0.8%	0.3%	0.1%	0.0%	0.4%
	UPSCALE (MID) (PPM OR %)		283.8	100.0	510.0	12.8	12.5
	DRIFT	±3%	0.0%	1.2%	-0.2%	0.0%	-0.4%
	CAL BIAS	±5%	0.0%	1.0%	-0.3%	-0.8%	-0.8%
7	AVG SYSTEM BIAS		THC	NOx	CO	O2	CO2
	ZERO		5.7	0.8	3.4	0.1	0.0
	UPSCALE		283.9	98.5	511.2	12.8	12.6

Test 1	Integrated Avg	THC	NOx	CO	O2	CO2
1515-1615						
	5	99.4	22.1	171.0	16.9	3.9
	10	91.7	23.9	168.5	17.0	3.8
	15	98.6	21.9	202.5	16.8	3.9
	20	105.7	21.1	212.4	16.8	3.9
	25	98.6	22.5	176.2	16.9	3.9
	30	121.3	19.7	247.0	16.6	4.2
	35	122.8				
	40	128.0				
	45	114.0				
	50	137.4				
	55	130.0				
	60	122.0				

RESULTS	THC (ppmwv as CH4)	NOx (ppmdv)	CO (ppmdv)	O2 (%)	CO2 (%)
TEST AVERAGE	114.1	21.9	196.3	16.8	3.9
BIAS CORRECTED	114.8	21.3	189.2	16.9	3.9
FLOWRATE (dscfm)	26,114				
FLOWRATE (scfm)	33900				
lbs/hr	9.70	4.00	21.55		

EML
CEM SHEET

SOURCE:	Louisiana-Pacific Corp.	TEST:	2
DATE:	7/9/96	COLLECTED	
METHOD:	3A, 7E, 10, & 25A	BY:	ED
UNIT:	Thermal Oxidizer Inlet Site 1	WITNESSED	
FUEL:	Propane	BY:	N/A
LOAD:	N/A		

STEP	DESCRIPTION	LIMIT	THC	NOx	CO	O2	CO2
1	RANGE		1000	250	1000	25.0	25.0
2	CAL GAS						
	ZERO		0	0	0	0	0
	LOW		283				
	MID	(bias cal. gas)	513	99	498	12.80	12.60
	SPAN		901	241	883	22.6	19.7
3	INT. LOCAL CAL		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		1.8	0.2	3.3	0.1	-0.1
	% ERROR	±2 (±5% for THC)	0.2%	0.1%	0.3%	0.4%	-0.4%
	LOW (PPM OR %)		284.0				
	% ERROR	±2 (±5% for THC)	0.1%				
	MID (PPM OR %)		512.5	97.5	512.5	13.0	12.7
	% ERROR	±2 (±5% for THC)	-0.1%	-0.6%	1.5%	0.8%	0.4%
	HIGH (PPM OR %)		908.9	242.7	882.9	22.5	19.6
	% ERROR	±2 (±5% for THC)	0.8%	0.7%	0.0%	-0.4%	-0.4%
4	INT. BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO		9.6	1.0	4.0	0.1	0.0
	CAL BIAS	±5%	0.8%	0.3%	0.1%	0.0%	0.4%
	UPSCALE		283.8	100.0	510.0	12.8	12.5
	CAL BIAS	±5%	0.0%	1.0%	-0.3%	-0.8%	-0.8%
5	RESP. TIME (SEC)		30.0	30.0	15.0	15.0	10.0
6	FINAL BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		11.3	0.4	2.3	0.2	0.1
	DRIFT	±3%	0.2%	-0.2%	-0.2%	0.4%	0.4%
	CAL BIAS	±5%	1.0%	0.1%	-0.1%	0.4%	0.8%
	UPSCALE (MID) (PPM OR %)		285.6	99.2	509.8	12.8	12.6
	DRIFT	±3%	0.2%	-0.3%	0.0%	0.0%	0.4%
	CAL BIAS	±5%	0.2%	0.7%	-0.3%	-0.8%	-0.4%
7	AVG SYSTEM BIAS		THC	NOx	CO	O2	CO2
	ZERO		10.5	0.7	3.2	0.2	0.1
	UPSCALE		284.7	99.6	509.9	12.8	12.6

Test 2	Integrated Avg	THC	NOx	CO	O2	CO2
1730-1905						
	5	110.5	25.4	206.3	16.7	4.0
	10	110.0	25.5	218.1	16.7	4.1
	15	61.6	24.1	104.4	17.4	3.3
	20	68.7	23.9	135.2	17.3	3.4
	25	78.7	23.0	157.8	17.1	3.5
	30	81.8				
	35	98.6				
	40	96.0				
	45	107.3				
	50	110.1				
	55	105.2				
	60	117.7				

RESULTS

	THC (ppmwv as CH4)	NOx (ppmdv)	CO (ppmdv)	O2 (%)	CO2 (%)
TEST AVERAGE	95.5	24.4	164.4	17.0	3.7
BIAS CORRECTED	94.9	23.7	158.4	17.1	3.6
FLOWRATE (dscfm)	30,687				
FLOWRATE (scfm)	39,100				
lbs/hr	9.25	5.21	21.21		

EML
CEM SHEET

SOURCE:	Louisiana-Pacific Corp.	TEST:	3
DATE:	7/9/96	COLLECTED	
METHOD:	3A, 7E, 10, & 25A	BY:	ED
UNIT:	Thermal Oxidizer Inlet Site 1	WITNESSED	
FUEL:	Propane	BY:	N/A
LOAD:	N/A		

STEP	DESCRIPTION	LIMIT	THC	NOx	CO	O2	CO2
1	RANGE		1000	250	1000	25.0	25.0
2	CAL GAS						
	ZERO		0	0	0	0	0
	LOW		283				
	MID	(bias cal. gas)	513	99	498	12.80	12.60
	SPAN		901	241	883	22.6	19.7
3	INT. LOCAL CAL		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		1.8	0.2	3.3	0.1	-0.1
	% ERROR	±2 (±5% for THC)	0.2%	0.1%	0.3%	0.4%	-0.4%
	LOW (PPM OR %)		284.0				
	% ERROR	±2 (±5% for THC)	0.1%				
	MID (PPM OR %)		512.5	97.5	512.5	13.0	12.7
	% ERROR	±2 (±5% for THC)	-0.1%	-0.6%	1.5%	0.8%	0.4%
	HIGH (PPM OR %)		908.9	242.7	882.9	22.5	19.6
	% ERROR	±2 (±5% for THC)	0.8%	0.7%	0.0%	-0.4%	-0.4%
4	INT. BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO		11.3	0.4	2.3	0.2	0.1
	CAL BIAS	±5%	1.0%	0.1%	-0.1%	0.4%	0.8%
	UPSCALE		285.6	99.2	509.8	12.8	12.6
	CAL BIAS	±5%	0.2%	0.7%	-0.3%	-0.8%	-0.4%
5	RESP. TIME (SEC)		30.0	30.0	15.0	15.0	10.0
6	FINAL BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		8.7	0.9	1.9	0.1	0.0
	DRIFT	±3%	-0.3%	0.2%	0.0%	-0.4%	-0.4%
	CAL BIAS	±5%	0.7%	0.3%	-0.1%	0.0%	0.4%
	UPSCALE (MID) (PPM OR %)		285.5	100.5	513.0	12.8	12.7
	DRIFT	±3%	0.0%	0.5%	0.3%	0.0%	0.4%
	CAL BIAS	±5%	0.2%	1.2%	0.1%	-0.8%	0.0%
7	AVG SYSTEM BIAS		THC	NOx	CO	O2	CO2
	ZERO		10.0	0.7	2.1	0.2	0.1
	UPSCALE		285.6	99.9	511.4	12.8	12.7

Test 3	Integrated Avg	THC	NOx	CO	O2	CO2
1955-2055						
	5	99.7	18.9	168.9	17.2	3.5
	10	86.7	19.2	180.5	17.1	3.6
	15	88.3	21.1	141.7	17.4	3.4
	20	103.1	20.1	189.9	17.1	3.7
	25	101.3	19.7	194.1	17.0	3.8
	30	111.8				
	35	110.3				
	40	121.4				
	45	112.4				
	50	121.5				
	55	134.4				
	60	103.1				

RESULTS	THC (ppmwv as CH4)	NOx (ppmdv)	CO (ppmdv)	O2 (%)	CO2 (%)
TEST AVERAGE	107.8	19.8	175.0	17.2	3.6
BIAS CORRECTED	107.0	19.1	169.1	17.2	3.6
FLOWRATE (dscfm)	32,465				
FLOWRATE (scfm)	40,844				
lbs/hr	10.89	4.45	23.95		

EML
CEM SHEET

SOURCE:	Louisiana-Pacific Corp.	TEST:	1
DATE:	7/9/96	COLLECTED	
METHOD:	3A, 7E, 10, & 25A	BY:	ED
UNIT:	Thermal Oxidizer Inlet Site 2	WITNESSED	
FUEL:	Propane	BY:	N/A
LOAD:	N/A		

STEP	DESCRIPTION	LIMIT	THC	NOx	CO	O2	CO2
1	RANGE		1000	250	1000	25.0	25.0
2	CAL GAS						
	ZERO		0	0	0	0	0
	LOW		283				
	MID	(bias cal. gas)	513	99	498	12.80	12.60
	SPAN		901	241	883	22.6	19.7
3	INT. LOCAL CAL		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		6.2	0.2	3.3	0.1	-0.1
	% ERROR	±2 (±5% for THC)	0.6%	0.1%	0.3%	0.4%	-0.4%
	LOW (PPM OR %)		291.0				
	% ERROR	±2 (±5% for THC)	0.8%				
	MID (PPM OR %)		523.3	97.5	512.5	13.0	12.7
	% ERROR	±2 (±5% for THC)	1.0%	-0.6%	1.5%	0.8%	0.4%
	HIGH (PPM OR %)		906.9	242.7	882.9	22.5	19.6
	% ERROR	±2 (±5% for THC)	0.6%	0.7%	0.0%	-0.4%	-0.4%
4	INT. BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO		6.2	1.3	3.1	0.1	0.1
	CAL BIAS	±5%	0.0%	0.4%	0.0%	0.0%	0.8%
	UPSCALE		291.0	97.6	512.3	12.7	12.5
	CAL BIAS	±5%	0.0%	0.0%	0.0%	-1.2%	-0.8%
5	RESP. TIME (SEC)		30.0	30.0	15.0	15.0	10.0
6	FINAL BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		8.6	1.0	3.7	0.1	0.0
	DRIFT	±3%	0.2%	-0.1%	0.1%	0.0%	-0.4%
	CAL BIAS	±5%	0.2%	0.3%	0.0%	0.0%	0.4%
	UPSCALE (MID) (PPM OR %)		289.0	100.8	510.6	12.8	12.6
	DRIFT	±3%	-0.2%	1.3%	-0.2%	0.4%	0.4%
	CAL BIAS	±5%	-0.2%	1.3%	-0.2%	-0.8%	-0.4%
7	AVG SYSTEM BIAS		THC	NOx	CO	O2	CO2
	ZERO		7.4	1.2	3.4	0.1	0.1
	UPSCALE		290.0	99.2	511.5	12.8	12.6

Test 1	Integrated Avg	THC	NOx	CO	O2	CO2
1515-1615						
	5	149.3				
	10	145.7				
	15	194.6				
	20	174.3				
	25	209.2				
	30	209.7				
	35	196.6	15.8	1046.3	17.2	3.5
	40	215.4	17.8	389.2	17.2	3.5
	45	193.8	17.7	490.5	17.1	3.6
	50	178.3	16.5	418.0	17.2	3.4
	55	171.6	15.5	380.2	17.3	3.3
	60	173.4	16.3	363.1	17.4	3.3

RESULTS	THC (ppmwv as CH4)	NOx (ppmdv)	CO (ppmdv)	O2 (%)	CO2 (%)
TEST AVERAGE	184.3	16.6	514.6	17.2	3.4
BIAS CORRECTED	184.9	15.6	501.0	17.3	3.4
FLOWRATE (dscfm)	25,865				
FLOWRATE (scfm)	33,751				
lbs/hr	15.56	2.89	56.54		

EML
CEM SHEET

SOURCE:	Louisiana-Pacific Corp.	TEST:	2
DATE:	7/9/96	COLLECTED	
METHOD:	3A, 7E, 10, & 25A	BY:	ED
UNIT:	Thermal Oxidizer Inlet Site 2	WITNESSED	
FUEL:	Propane	BY:	N/A
LOAD:	N/A		

STEP	DESCRIPTION	LIMIT	THC	NOx	CO	O2	CO2
1	RANGE		1000	250	1000	25.0	25.0
2	CAL GAS						
	ZERO		0	0	0	0	0
	LOW		283				
	MID	(bias cal. gas)	513	99	498	12.80	12.60
	SPAN		901	241	883	22.6	19.7
3	INT. LOCAL CAL		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		6.2	0.2	3.3	0.1	-0.1
	% ERROR	±2 (±5% for THC)	0.6%	0.1%	0.3%	0.4%	-0.4%
	LOW (PPM OR %)		291.0				
	% ERROR	±2 (±5% for THC)	0.8%				
	MID (PPM OR %)		523.3	97.5	512.5	13.0	12.7
	% ERROR	±2 (±5% for THC)	1.0%	-0.6%	1.5%	0.8%	0.4%
	HIGH (PPM OR %)		906.9	242.7	882.9	22.5	19.6
	% ERROR	±2 (±5% for THC)	0.6%	0.7%	0.0%	-0.4%	-0.4%
4	INT. BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO		8.6	1.0	3.7	0.1	0.0
	CAL BIAS	±5%	0.2%	0.3%	0.0%	0.0%	0.4%
	UPSCALE		289.0	100.8	510.6	12.8	12.6
	CAL BIAS	±5%	-0.2%	1.3%	-0.2%	-0.8%	-0.4%
5	RESP. TIME (SEC)		30.0	30.0	15.0	15.0	10.0
6	FINAL BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		3.1	1.0	1.6	0.1	-0.1
	DRIFT	±3%	-0.6%	0.0%	-0.2%	0.0%	-0.4%
	CAL BIAS	±5%	-0.3%	0.3%	-0.2%	0.0%	0.0%
	UPSCALE (MID) (PPM OR %)		285.0	100.4	507.8	12.8	12.5
	DRIFT	±3%	-0.4%	-0.2%	-0.3%	0.0%	-0.4%
	CAL BIAS	±5%	-0.6%	1.2%	-0.5%	-0.8%	-0.8%
7	AVG SYSTEM BIAS		THC	NOx	CO	O2	CO2
	ZERO		5.9	1.0	2.7	0.1	-0.1
	UPSCALE		287.0	100.6	509.2	12.8	12.6

Test 2	Integrated Avg		THC	NOx	CO	O2	CO2
1730-1900							
1735	5		117.1				
1740	10		125.4				
1745	15	Stop Test 1745	168.9				
1820	20	Restart Test 1815	184.4				
	25		157.6				
	30		147.1	15.6	208.9	17.7	3.0
	35		180.3	16.3	416.3	17.2	3.5
	40		180.3	16.7	421.8	17.2	3.5
	45		153.9	15.9	342.7	17.4	3.3
	50		161.5	15.8	373.7	17.3	3.4
	55		138.3	15.9	312.6	17.5	3.2
1900	60		143.5	15.9	329.3	17.4	3.2

RESULTS

	THC (ppmwv as CH4)	NOx (ppmdv)	CO (ppmdv)	O2 (%)	CO2 (%)
TEST AVERAGE	154.9	16.0	343.6	17.4	3.3
BIAS CORRECTED	152.9	14.9	335.2	17.4	3.4
FLOWRATE (dscfm)	25,862				
FLOWRATE (scfm)	34,488				
lbs/hr	13.15	2.77	37.82		

EML
CEM SHEET

SOURCE:	Louisiana-Pacific Corp.	TEST:	3
DATE:	7/9/96	COLLECTED	
METHOD:	3A, 7E, 10, & 25A	BY:	ED
UNIT:	Thermal Oxidizer Inlet Site 2	WITNESSED	
FUEL:	Propane	BY:	N/A
LOAD:	N/A		

STEP	DESCRIPTION	LIMIT	THC	NOx	CO	O2	CO2
1	RANGE		1000	250	1000	25.0	25.0
2	CAL GAS						
	ZERO		0	0	0	0	0
	LOW		283				
	MID	(bias cal. gas)	513	99	498	12.80	12.60
	SPAN		901	241	883	22.6	19.7
3	INT. LOCAL CAL		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		6.2	0.2	3.3	0.1	-0.1
	% ERROR	±2 (±5% for THC)	0.6%	0.1%	0.3%	0.4%	-0.4%
	LOW (PPM OR %)		291.0				
	% ERROR	±2 (±5% for THC)	0.8%				
	MID (PPM OR %)		523.3	97.5	512.5	13.0	12.7
	% ERROR	±2 (±5% for THC)	1.0%	-0.6%	1.5%	0.8%	0.4%
	HIGH (PPM OR %)		906.9	242.7	882.9	22.5	19.6
	% ERROR	±2 (±5% for THC)	0.6%	0.7%	0.0%	-0.4%	-0.4%
4	INT. BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO		3.1	1.0	1.6	0.1	-0.1
	CAL BIAS	±5%	-0.3%	0.3%	-0.2%	0.0%	0.0%
	UPSCALE		285.0	100.4	507.8	12.8	12.5
	CAL BIAS	±5%	-0.6%	1.2%	-0.5%	-0.8%	-0.8%
5	RESP. TIME (SEC)		30.0	30.0	15.0	15.0	10.0
6	FINAL BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		3.1	1.0	1.6	0.1	-0.1
	DRIFT	±3%	0.0%	0.0%	0.0%	0.0%	0.0%
	CAL BIAS	±5%	-0.3%	0.3%	-0.2%	0.0%	0.0%
	UPSCALE (MID) (PPM OR %)		285.0	100.4	507.8	12.8	12.5
	DRIFT	±3%	0.0%	0.0%	0.0%	0.0%	0.0%
	CAL BIAS	±5%	-0.6%	1.2%	-0.5%	-0.8%	-0.8%
7	AVG SYSTEM BIAS		THC	NOx	CO	O2	CO2
	ZERO		3.1	1.0	1.6	0.1	-0.1
	UPSCALE		285.0	100.4	507.8	12.8	12.5

Test 3	Integrated Avg	THC	NOx	CO	O2	CO2
1955-2055						
	5	176.9				
	10	191.8				
	15	214.8				
	20	191.4				
	25	178.8				
	30	180.9				
	35	189.5	16.4	216.9	17.7	3.1
	40	194.4	15.2	411.5	17.3	3.4
	45	180.1	15.2	376.0	17.4	3.3
	50	199.7	15.4	483.4	17.3	3.4
	55	213.1	15.6	520.8	17.1	3.6
	60	214.6	15.9	516.0	17.0	3.7

RESULTS	THC (ppmwv as CH4)	NOx (ppmdv)	CO (ppmdv)	O2 (%)	CO2 (%)
TEST AVERAGE	193.8	15.6	420.8	17.3	3.4
BIAS CORRECTED	192.1	14.6	412.4	17.3	3.5
FLOWRATE (dscfm)	25,314				
FLOWRATE (scfm)	34,464				
lbs/hr	16.50	2.64	45.54		

EML
CEM SHEET

SOURCE:	Louisiana-Pacific Corp.	TEST:	1
DATE:	7/9/96	COLLECTED	
METHOD:	3A, 7E, 10, & 25A	BY:	BH
UNIT:	Site #4	WITNESSED	
FUEL:	Propane	BY:	N/A
LOAD:	N/A		

STEP	DESCRIPTION	LIMIT	THC	NOx	CO	O2	CO2
1	RANGE		100	250	1000	25.0	25.0
2	CAL GAS						
	ZERO		0	0	0	0	0
	LOW		16				
	MID	(bias cal. gas)	49	120	498	12.40	12.30
	SPAN		101	237	884	22.1	19.9
3	INT. LOCAL CAL		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		0.0	0.0	-1.1	0.3	0.3
	% ERROR	±2 (±5% for THC)	0.0%	0.0%	-0.1%	1.2%	1.2%
	LOW (PPM OR %)		14.7				
	% ERROR	±2 (±5% for THC)	-1.6%				
	MID (PPM OR %)		51.3	124.6	514.8	12.7	12.7
	% ERROR	±2 (±5% for THC)	2.4%	1.8%	1.7%	1.2%	1.6%
	HIGH (PPM OR %)		97.0	240.6	872.1	22.0	19.9
	% ERROR	±2 (±5% for THC)	-4.0%	1.4%	-1.2%	-0.4%	0.0%
4	INT. BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO		0.0	-0.8	-0.6	0.3	0.3
	CAL BIAS	±5%	0.0%	-0.3%	0.1%	0.0%	0.0%
	UPSCALE		14.7	123.3	492.0	12.7	12.7
	CAL BIAS	±5%	0.0%	-0.5%	-2.3%	0.0%	0.0%
5	RESP. TIME (SEC)		30.0	30.0	30.0	15.0	20.0
6	FINAL BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		0.0	0.4	16.3	0.1	0.3
	DRIFT	±3%	0.0%	0.5%	1.7%	-0.8%	0.0%
	CAL BIAS	±5%	0.0%	0.2%	1.7%	-0.8%	0.0%
	UPSCALE (MID) (PPM OR %)		17.6	116.2	470.6	12.5	12.0
	DRIFT	±3%	2.9%	-2.8%	-2.1%	-0.8%	-2.8%
	CAL BIAS	±5%	2.9%	-3.4%	-4.4%	-0.8%	-2.8%
7	AVG SYSTEM BIAS		THC	NOx	CO	O2	CO2
	ZERO		0.0	-0.2	7.9	0.2	0.3
	UPSCALE		16.2	119.8	481.3	12.6	12.4

Test 1	Integrated Avg	THC	NOx	CO	O2	CO2
1515-1615						
	5	1.0	16.8	51.7	16.7	3.8
	10	0.4	16.7	46.1	16.6	4.0
	15	0.5	16.6	54.3	16.6	3.9
	20	0.5	16.0	63.7	16.8	3.8
	25	0.8	17.3	60.6	16.7	3.8
	30	0.9	15.8	72.3	16.6	4.0
	35	1.1				
	40	3.4				
	45	3.3				
	50	4.4				
	55	5.1				
	60	15.2				

RESULTS	THC (ppmwv as CH4)	NOx (ppmdv)	CO (ppmdv)	O2 (%)	CO2 (%)
TEST AVERAGE	3.1	16.5	58.1	16.7	3.9
BIAS CORRECTED	3.3	16.7	52.9	16.5	3.7
FLOWRATE (dscfm)	62553				
FLOWRATE (scfm)	81266				
lbs/hr	0.66	7.50	14.43		

EML
CEM SHEET

SOURCE:	Louisiana-Pacific Corp.	TEST:	2
DATE:	7/9/96	COLLECTED	
METHOD:	3A, 7E, 10, & 25A	BY:	BH
UNIT:	Site #4	WITNESSED	
FUEL:	Propane	BY:	N/A
LOAD:	N/A		

STEP	DESCRIPTION	LIMIT	THC	NOx	CO	O2	CO2
1	RANGE		100	250	1000	25.0	25.0
2	CAL GAS						
	ZERO		0	0	0	0	0
	LOW		16				
	MID	(bias cal. gas)	49	120	498	12.40	12.30
	SPAN		101	237	884	22.1	19.9
3	INT. LOCAL CAL		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		0.0	0.0	-1.1	0.3	0.3
	% ERROR	±2 (±5% for THC)	0.0%	0.0%	-0.1%	1.2%	1.2%
	LOW (PPM OR %)		14.7				
	% ERROR	±2 (±5% for THC)	-1.6%				
	MID (PPM OR %)		51.3	124.6	514.8	12.7	12.7
	% ERROR	±2 (±5% for THC)	2.4%	1.8%	1.7%	1.2%	1.6%
	HIGH (PPM OR %)		97.0	240.6	872.1	22.0	19.9
	% ERROR	±2 (±5% for THC)	-4.0%	1.4%	-1.2%	-0.4%	0.0%
4	INT. BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO		0.0	-0.8	-0.6	0.3	0.3
	CAL BIAS	±5%	0.0%	-0.3%	0.1%	0.0%	0.0%
	UPSCALE		17.6	116.2	470.6	12.5	12.0
	CAL BIAS	±5%	2.9%	-3.4%	-4.4%	-0.8%	-2.8%
5	RESP. TIME (SEC)		30.0	30.0	30.0	15.0	20.0
6	FINAL BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		0.0	0.3	2.7	0.2	0.2
	DRIFT	±3%	0.0%	0.4%	0.3%	-0.4%	-0.4%
	CAL BIAS	±5%	0.0%	0.1%	0.4%	-0.4%	-0.4%
	UPSCALE (MID) (PPM OR %)		17.0	116.7	485.8	12.7	11.4
	DRIFT	±3%	-0.6%	0.2%	1.5%	0.8%	-2.4%
	CAL BIAS	±5%	2.3%	-3.2%	-2.9%	0.0%	-5.2%
7	AVG SYSTEM BIAS		THC	NOx	CO	O2	CO2
	ZERO		0.0	-0.3	1.1	0.3	0.3
	UPSCALE		17.3	116.5	478.2	12.6	11.7

Test 2	Integrated Avg	THC	NOx	CO	O2	CO2
1730-1910						
	5	6.2				
	10	7.5				
	15	7.3				
	20	16.9				
	25	18.2				
	30	14.7				
	35	5.6	6.7	31.7	17.1	3.3
	40	0.9	18.2	57.1	16.3	5.9
	45	1.1	17.5	55.1	16.0	6.0
	50	0.8	17.1	59.0	16.0	6.5
	55	1.0	18.0	60.7	16.2	6.5
	60	1.0	15.1	44.4	16.1	6.2

RESULTS	THC (ppmwv as CH4)	NOx (ppmdv)	CO (ppmdv)	O2 (%)	CO2 (%)
TEST AVERAGE	6.8	15.4	51.3	16.3	5.7
BIAS CORRECTED	7.2	16.1	52.5	16.1	5.9
FLOWRATE (dscfm)	63344				
FLOWRATE (scfm)	82031				
lbs/hr	1.48	7.32	14.50		

EML
CEM SHEET

SOURCE:	Louisiana-Pacific Corp.	TEST:	3
DATE:	7/9/96	COLLECTED	
METHOD:	3A, 7E, 10, & 25A	BY:	BH
UNIT:	Site #4	WITNESSED	
FUEL:	Propane	BY:	N/A
LOAD:	N/A		

STEP	DESCRIPTION	LIMIT	THC	NOx	CO	O2	CO2
1	RANGE		100	250	1000	25.0	25.0
2	CAL GAS						
	ZERO		0	0	0	0	0
	LOW		16				
	MID	(bias cal. gas)	49	120	498	12.40	12.30
	SPAN		101	237	884	22.1	19.9
3	INT. LOCAL CAL		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		0.0	0.0	-1.1	0.3	0.3
	% ERROR	±2 (±5% for THC)	0.0%	0.0%	-0.1%	1.2%	1.2%
	LOW (PPM OR %)		14.7				
	% ERROR	±2 (±5% for THC)	-1.6%				
	MID (PPM OR %)		51.3	124.6	514.8	12.7	12.7
	% ERROR	±2 (±5% for THC)	2.4%	1.8%	1.7%	1.2%	1.6%
	HIGH (PPM OR %)		97.0	240.6	872.1	22.0	19.9
	% ERROR	±2 (±5% for THC)	-4.0%	1.4%	-1.2%	-0.4%	0.0%
4	INT. BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO		0.0	-0.8	-0.6	0.3	0.3
	CAL BIAS	±5%	0.0%	-0.3%	0.1%	0.0%	0.0%
	UPSCALE		17.0	116.7	485.8	12.7	11.4
	CAL BIAS	±5%	2.3%	-3.2%	-2.9%	0.0%	-5.2%
5	RESP. TIME (SEC)		30.0	30.0	30.0	15.0	20.0
6	FINAL BIAS CHECK		THC	NOx	CO	O2	CO2
	ZERO (PPM OR %)		0.0	3.6	3.5	0.3	0.3
	DRIFT	±3%	0.0%	1.8%	0.4%	0.0%	0.0%
	CAL BIAS	±5%	0.0%	1.4%	0.5%	0.0%	0.0%
	UPSCALE (MID) (PPM OR %)		16.3	118.2	479.0	12.6	12.0
	DRIFT	±3%	-0.7%	0.6%	-0.7%	-0.4%	2.4%
	CAL BIAS	±5%	1.6%	-2.6%	-3.6%	-0.4%	-2.8%
7	AVG SYSTEM BIAS		THC	NOx	CO	O2	CO2
	ZERO		0.0	1.4	1.5	0.3	0.3
	UPSCALE		16.7	117.5	482.4	12.7	11.7

Test 3	Integrated Avg	THC	NOx	CO	O2	CO2
1955-2055						
	5	7.3				
	10	7.0				
	15	7.1				
	20	7.1				
	25	7.0				
	30	8.0				
	35	6.9	NA	NA	NA	NA
	40	1.5	15.7	63.1	16.4	5.0
	45	1.3	16.9	63.9	16.1	4.5
	50	1.6	16.8	69.2	16.1	4.6
	55	1.2	15.9	68.0	16.6	4.2
	60	0.8	16.3	42.2	15.6	4.0

RESULTS

	THC (ppmwv as CH4)	NOx (ppmdv)	CO (ppmdv)	O2 (%)	CO2 (%)
TEST AVERAGE	4.7	16.3	61.3	16.2	4.5
BIAS CORRECTED	3.4	15.4	62.0	15.9	4.5
FLOWRATE (dscfm)	62173				
FLOWRATE (scfm)	80984				
lbs/hr	0.70	6.87	16.80		

APPENDIX C

Field Data

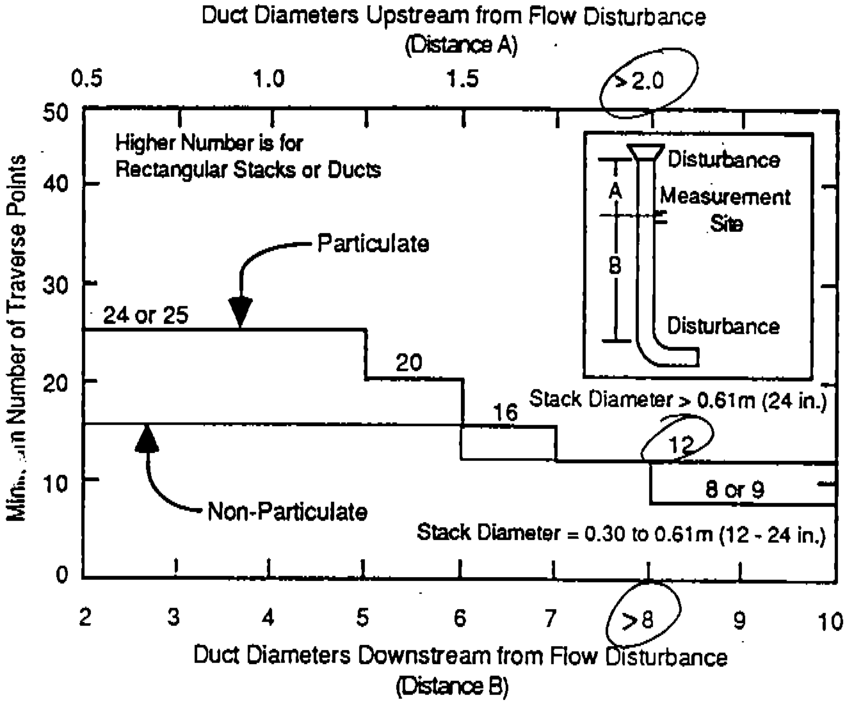
APCC AIR POLLUTION CHARACTERIZATION AND CONTROL, LTD.

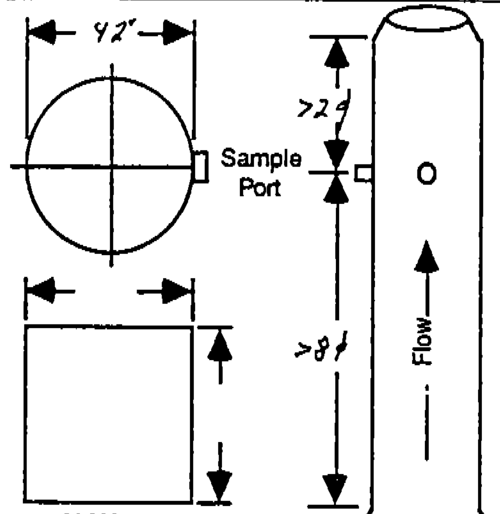
EPA Method 1

Sample and Velocity Traverse for Stationary Sources

Firm	LOUISIANA PACIFIC CORP	Total Traverse Points Required	12
Date	9 JULY 96 — Project No. 96053	Number of Ports	2
Location	#1	Points Per Port	6
Diameters Upstream	> 2Ø	Probe Traverses: Horizontal	X
Diameters Downstream	>8Ø	Vertical	X

MINIMUM NUMBER OF TRAVERSE POINTS FOR PARTICULATE AND NON-PARTICULATE TRAVERSES





$$D_{eq} = \frac{2LW}{L+W} = \_\_\_\_$$

Cross-Sectional Layout For Rectangular Stacks	
Traverses	Matrix
9	3x3
12	4x3
16	4x4
20	5x4
25	5x5

Point On A Diameter	Location of Traverse Points in Circular Stacks* Number of Traverse Points on a Diameter: 4	6	8	10	12	Traverse Point Location: Distance From Wall	Nipple Size	Total Distance
1	6.7	4.4	3.2	2.6	2.1	1.85	6"	7.9
2	25.0	14.6	10.5	8.2	6.7	6.13	↓	12.1
3	75.0	29.6	19.4	14.6	11.8	12.43	↓	18.4
4	93.3	70.4	32.3	22.6	17.7	29.57	↓	35.6
5		85.4	67.7	34.2	25.0	35.87	↓	41.9
6		95.6	80.6	65.8	35.6	40.15	↓	46.2
7			89.5	77.4	64.4			
8			96.8	85.4	75.0			
9				91.8	82.3			
10				97.4	88.2			
11					93.3			
12					97.9			

*Percent of Stack Diameter from Inside Wall to Traverse Point

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APCC AIR POLLUTION CHARACTERIZATION AND CONTROL, LTD.

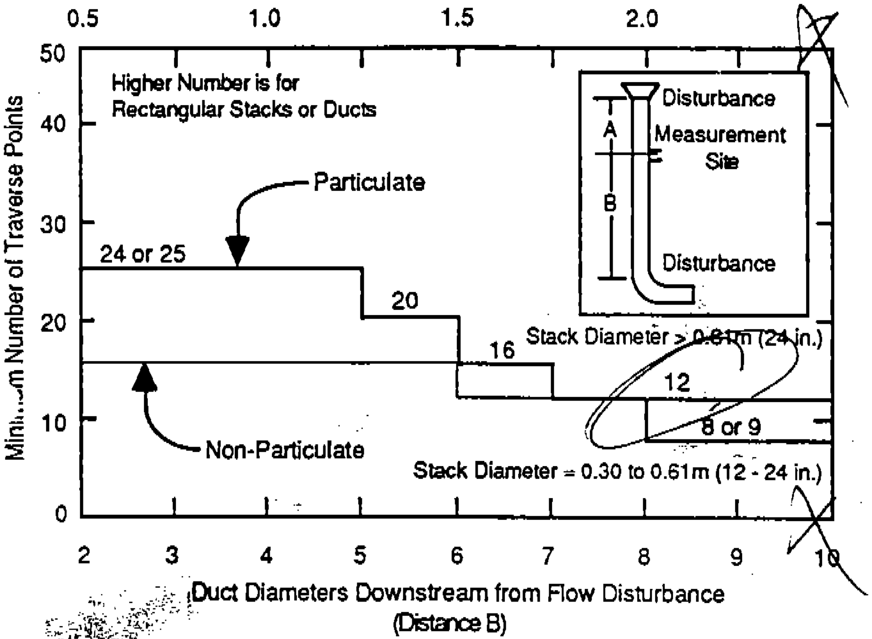
EPA Method 1

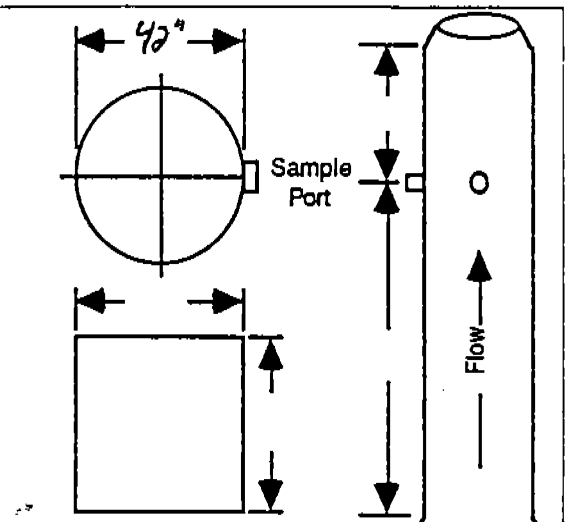
Sample and Velocity Traverse for Stationary Sources

Firm LOUISIANA - PACIFIC
Date 7/9/96 Project No. 96053
Location #2
Diameters Upstream 3'
Diameters Downstream 10'

Total Traverse Points Required 12
Number of Ports 2
Points Per Port 6
Probe Traverses: Horizontal YES 1 of 2
Vertical YES 1 of 2

MINIMUM NUMBER OF TRAVERSE POINTS FOR PARTICULATE AND NON-PARTICULATE TRAVERSES





$D_{eq} = \frac{2LW}{L+W} =$ ______

Cross-Sectional Layout For Rectangular Stacks	
Traverses	Matrix
9	3x3
12	4x3
16	4x4
20	5x4
25	5x5

Point On A Diameter	Location of Traverse Points in Circular Stacks* Number of Traverse Points on a Diameter 4	6	8	10	12	Traverse Point Location Distance From Wall	Nipple Size	Total Distance
1	6.7	4.4	3.2	2.6	2.1	1.85	6"	7.9
2	25.0	14.6	10.5	8.2	6.7	6.13		12.1
3	75.0	29.6	19.4	14.6	11.8	12.43		18.4
4	93.3	70.4	32.3	22.6	17.7	29.57		35.6
5		85.4	67.7	34.2	25.0	35.87		41.9
6		95.6	80.6	65.8	35.6	40.15		46.2
7			89.5	77.4	64.4			
8			96.8	85.4	75.0			
9				91.8	82.3			
10				97.4	88.2			
11					93.3			
12					97.9			

*Percent of Stack Diameter from Inside Wall to Traverse Point

APCC AIR POLLUTION CHARACTERIZATION AND CONTROL, LTD.

EPA Method 1

Sample and Velocity Traverse for Stationary Sources

Firm LP

Date 7-9-96 Project No. 96053

Location STACK

Diameters Upstream 5.85

Diameters Downstream 5.27

Total Traverse Points Required 20

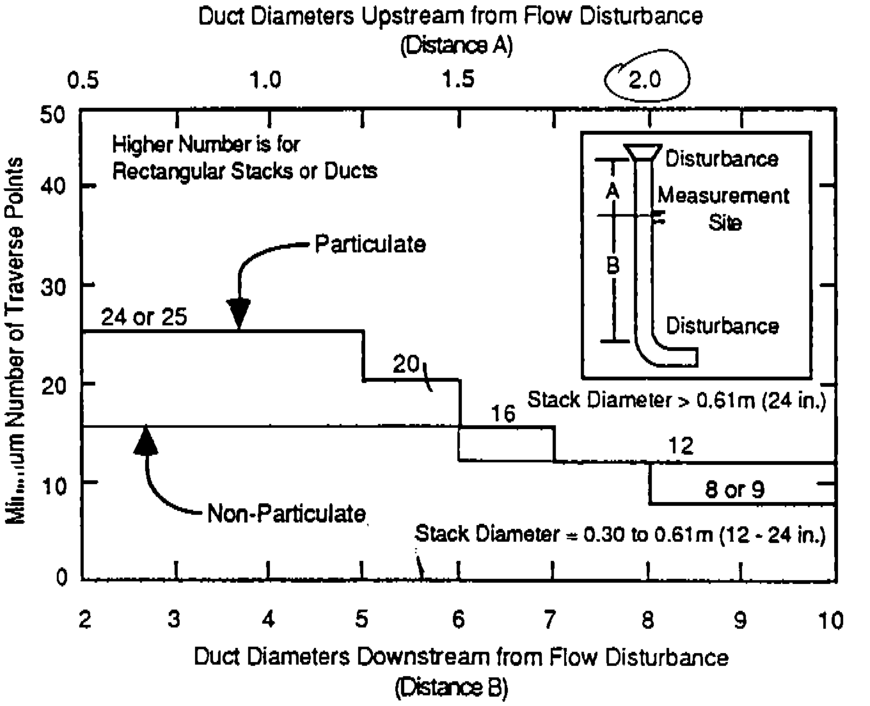
Number of Ports 2

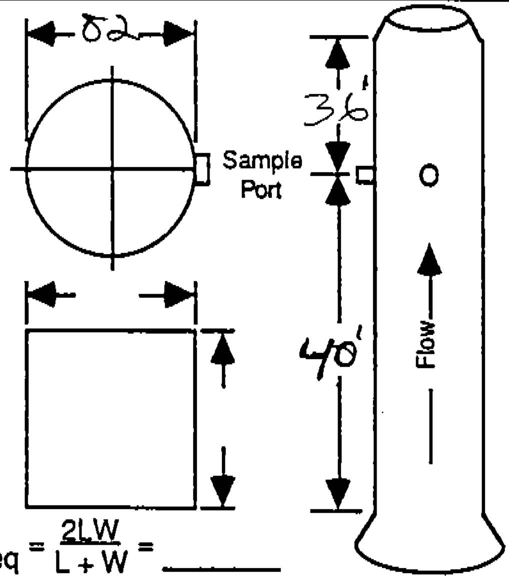
Points Per Port 10

Probe Traverses: Horizontal ✓

Vertical

MINIMUM NUMBER OF TRAVERSE POINTS FOR PARTICULATE AND NON-PARTICULATE TRAVERSES





$D_{eq} = \frac{2LW}{L+W} =$ ________

Cross-Sectional Layout For Rectangular Stacks

Traverses	Matrix
9	3x3
12	4x3
16	4x4
20	5x4
25	5x5

Point On A Diameter	Location of Traverse Points in Circular Stacks* Number of Traverse Points on a Diameter 4	6	8	10	12	Traverse Point Location Distance From Wall	Nipple Size	Total Distance
1	6.7	4.4	3.2	2.6	2.1	2.13	6	8.13
2	25.0	14.6	10.5	8.2	6.7	6.7		12.7
3	75.0	29.6	19.4	14.6	11.8	11.9		17.9
4	93.3	70.4	32.3	22.6	17.7	18.5		24.5
5		85.4	67.7	34.2	25.0	28		34
6		95.6	80.6	65.8	35.6	54		60
7			89.5	77.4	64.4	63.5		69.5
8			96.8	85.4	75.0	70		76
9				91.8	82.3	75.3		81.3
10				97.4	88.2	79.8		85.8
11					93.3			
12					97.9			

*Percent of Stack Diameter from Inside Wall to Traverse Point

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APCC AIR POLLUTION CHARACTERIZATION AND CONTROL, LTD.

EPA Method 2

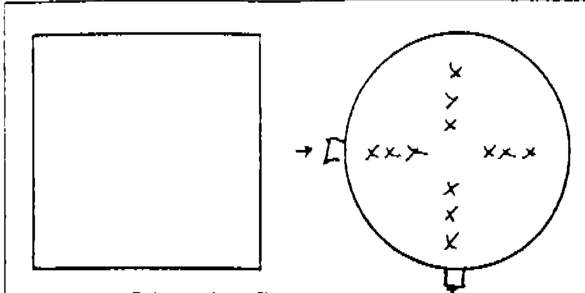
Velocity Traverse and Flow Rate Determination

Firm: LOUISIANA PACIFIC CORP
Date: 9 JULY 96 Project No.: 96053
Location: INLET #1

Round Stack or Duct:
Diameter (in): 42" Area: 9.62 ft^2

Rectangular Stack or Duct:
Stack Length (in): – Area: – ft^2
Stack Width (in): –

Barometric Pressure; Pb = 29.95 in. Hg
Stack Static Pressure; Pg = -10.2 "H_2O ~~in. Hg~~
Stack Gas Moisture Content; % H2O = 20%
Stack Gas Molecular Weight; (wet) Mw = 28
Pitot Tube No. 601 Cp = 0.84
Field Tester(s): MM PO
Test Start Time: 0945 Finish: 0950



Schematic of Traverse Point Locations

Cyclonic Flow Angle: + Ø Clockwise
- Ø Counterwise

0.221 CALC NOZZLE 0.244 ACTUAL NOZZLE

PORT	POINT	ΔP (Inch H2O)	√ΔP	Ts (°F)	± Ø	Pitots Reversed for Negative Flow?	RADIANS	√ΔP*cosØ
1(V)	1	1.8	1.342	220	0°	–	0	
	2	1.7	1.304	219	↓	–	↓	
	3	1.7	1.304	220		–		
	4	1.7	1.304	219		–		
	5	1.7	1.304	219		–		
	6	1.8	1.342	220		–		
2(H)	1	1.6	1.265	220		–		
	2	1.9	1.378	220		–		
	3	1.8	1.342	219		–		
	4	1.7	1.304	220		–		
	5	1.6	1.265	221		–		
	6	0.99	0.995	207		–		
	AVG	1.666						
		AVERAGE	1.287	218.7			AVERAGE	

Absolute Gas Temperature; Tst = Ts + 460° — 678.7 °R
Absolute Gas Pressure; Ps = Pb + Pg/13.6 — 29.2 In. Hg
Gas Velocity; Vs = (85.49)Cp(√ΔP*cosØ)avg√(Tst avg/(Ps*Mw)) — ~~34.206~~ ft/sec 8304
Actual Gas Flow Rate; Qa = (Vs)(60)(A) — ~~48,600~~ acfm 47,928
Standard Gas Flow Rate; Qs~~a~~= Qa(528°R/Tst)(Ps/29.92) — ~~36,900~~ scfm 36,573
Dry Standard Gas Flow Rate; Qsd = Qa~~(528°R/Tst)(Ps/29.92)~~((100-%H2O)/100) — ~~29,520~~ dscfm @ 0.20 ...
29,098 PAA with

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APCC AIR POLLUTION CHARACTERIZATION AND CONTROL, LTD.

EPA Method 2

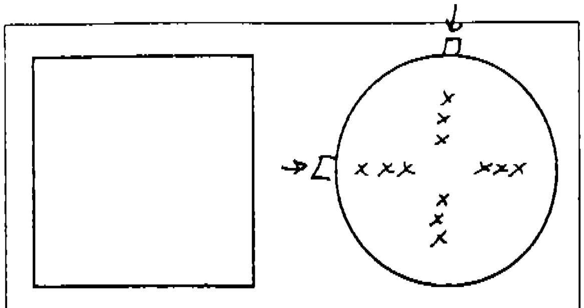
Velocity Traverse and Flow Rate Determination

Firm: Louisiana Pacific Corp.
Date: 9 July 96 Project No. 96053
Location: Inlet #2

Round Stack or Duct:
Diameter (in): 42" Area: 9.62 ft^2

Rectangular Stack or Duct:
Stack Length (in): – Area: – ft^2
Stack Width (in): –

Barometric Pressure; Pb = 29.95 in. Hg
Stack Static Pressure; Pg = -8" H_2O ~~in. Hg~~
Stack Gas Moisture Content; % H2O = 20% (assumed)
Stack Gas Molecular Weight; (wet) Mw =
Pitot Tube No.: 401 Cp = 0.84
Field Tester(s): MM TC PO
Test Start Time: 0930 Finish: 0939



Schematic of Traverse Point Locations

Cyclonic Flow Angle: +Ø Clockwise; -Ø Counterwise

PORT	POINT	ΔP (Inch H2O)	√ΔP	Ts (°F)	±Ø	Pitots Reversed for Negative Flow?	RADIANS	√ΔP*cosØ
1 (H)	1	1.2	1.095	251	0°	–	0	
	2	1.5	1.225	252	↓	–	↓	
	3	1.6	1.265	251		–		
	4	1.5	1.225	250		–		
	5	1.4	1.183	248		–		
	6	1.1	1.049	240		–		
2 (V)	1	1.2	1.095	240		–		
	2	1.4	1.183	247		–		
	3	1.5	1.225	250		–		
	4	1.6	1.265	249		–		
	5	1.5	1.225	247		–		
	6	1.1	1.049	243	↓	–	↓	
		1.383						
		AVERAGE	1.072	247.3			AVERAGE	

Absolute Gas Temperature; Tst = Ts + 460° — 707.3 °R
Absolute Gas Pressure; Ps = Pb + Pg/13.6 — 29.36 in. Hg
Gas Velocity; Vs = (85.49)Cp(√ΔP*cosØ)avg√(Tst avg/(Ps*Mw)) — ~~71.90~~ ft/sec 77.04
Actual Gas Flow Rate; Qa = (Vs)(60)(A) — ~~41,214~~ acfm 44,466
Standard Gas Flow Rate; Qs = Qa(528°R/Tst)(Ps/29.92) — ~~30,110~~ scfm 32,589
Dry Standard Gas Flow Rate; Qsd = Qa(~~528°R/Tst)(Ps/29.92~~)((100-%H2O)/100) — ~~24,150~~ dscfm 26,071
~~25,995~~

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APCC AIR POLLUTION CHARACTERIZATION AND CONTROL, LTD.

EPA Method 2

Velocity Traverse and Flow Rate Determination

Firm: LOUISIANA PACIFIC
Date: 9 JULY 96 Project No. 96053
Location: STACK
Round Stack or Duct:
Diameter (in) 82" Area ______ ft^2
Rectangular Stack or Duct:
Stack Length (in) – Area – ft^2
Stack Width (in) –
Barometric Pressure; Pb = 29.92 in. Hg
Stack Static Pressure; Pg = -.26 in. H2O
Stack Gas Moisture Content; % H2O = 20 (Assumed)
Stack Gas Molecular Weight; (wet) Mw = 28 (Assumed)
Pitot Tube No. 902 Cp = 0.84
Field Tester(s) MM DK DT
Test Start Time: 11:15 Finish: 11:30

Schematic of Traverse Point Locations

Cyclonic Flow Angle: +Ø Clockwise, -Ø Counterwise

CALC NOSSLE .273 ACTUAL .275

PORT	POINT	ΔP (Inch H2O)	√ΔP	Ts (°F)	±Ø	Pitots Reversed for Negative Flow?	RADIANS	√ΔP*cosØ
	1	.58	0.762	257				
	2	.63	0.794	258				
	3	.63	0.794	260				
	4	.64	0.8	261				
	5	.63	0.794	262				
	6	.58	0.762	254				
	7	.61	0.781	255				
	8	.61	0.781	257				
	9	.59	0.768	259				
	10	.50	0.707	259				
	1	.57	0.755	258				
	2	.57	0.755	255				
	3	.61	0.781	254				
	4	.60	0.775	252				
	5	.61	0.781	253				
	6	.59	0.768	254				
	7	.59	0.768	255				
	8	.58	0.762	257				
	9	.57	0.755	261				
	10	.52	0.721	259				
		.56						
		AVERAGE	0.768	257			AVERAGE	

66.38

Absolute Gas Temperature; Tst = Ts + 460°	717.1 °R
Absolute Gas Pressure; Ps = Pb + Pg/13.6	29.77 in. Hg
Gas Velocity; Vs = (85.49)Cp(√ΔP*cosØ)avg√(Tst avg/(Ps*Mw))	50.99 ft/sec
Actual Gas Flow Rate; Qa = (Vs)(60)(A)	112,193 acfm
Standard Gas Flow Rate; Qs = Qa(528°R/Tst)(Ps/29.92)	82,745 scfm
Dry Standard Gas Flow Rate; Qsd = Qa(528°R/Tst)(Ps/29.92)((100-%H2O)/100)	66,196 dscfm

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APCC AIR POLLUTION CHARACTERIZATION AND CONTROL, LTD.

EPA Method 5

Particulate Test Data Sheet

Client/Firm: LP
Location: STACK
Project No.: 16053 Test Number: 1
Testers Initials: DT DK Test Date: 7-9-96
Test Time(min): 60 Start Time: 1515
Min Per Point: 3 End Time: 1616

Assumed Moisture: 20 (%)
Pb = 29.88 (in Hg)
Nozzle Size: .275
Nozzle No.:
C/K Factor: 3.57

Module No.: 98
ΔH@ = 2.03
Cp = 0.84
Y = 1.00
Probe No.: 902
Pitot No.: 902
Filter No.: 31968

Signature of Train Operator: Dan Kott

Rectangular Stack: Length (in) NA Width (in) NA
Circular Stack: Diameter (in) 82 in Area (ft^2) 36.67
Train Leak Checks: Pre-Test 0.0 cfm 10 in Hg
Post-Test 0.0 cfm 10 in Hg
Orsat Leak Check: Pre-Test NA Post-Test NA
Pitot Leak Check: Pre-Test ✓ Post-Test ✓
Final Orsat Analysis: CEM O2% CEM CO2%

Port	Point	Time (min)	Meter Volume (ft^3)	ΔP (In H2O)	ΔH (In H2O)	Stack (°F)	Probe (°F)	Htr Box (°F)	Filter (°F)	Cond Out (°F)	Module Meter In (°F)	Module Meter Out (°F)	Vacuum (In Hg)	Comments
			483.000	.52	1.85	255	246	232		42	79	78	4	Static Pressure: In H2O
A	1		485.6	.57	2.05	256	246	231		43	81	78	4	
	2		488.0	.59	2.1	255	247	233		45	84	79	5	
	3		490.0	.60	2.1	253	247	237		48	85	79	5	
	4		492.3	.60	2.1	259	247	237		50	86	80	5	
	5		494.6	.57	2.0	259	247	238		52	86	80	5	
	6		496.9	.57	2.0	256	247	238		53	86	80	5	
	7		499.1	.56	1.99	253	246	237		53	87	81	5	
	8		501.4	.55	1.96	258	246	236		53	86	81	5	
	9		503.6	.53	1.89	260	246	236		53	86	81	5	
B	10		506.2	.75										
			[illegible]											
	1		508.0	.53	1.89	252	244	235		53	85	81	5	
	2		510.1	.57	2.0	253	244	235		52	85	81	5	
	3		512.2	.59	2.1	253	245	235		52	86	81	5	
	4		514.3	.60	2.1	260	246	234		52	86	81	5	
	5		515.2	.58	2.07	255	246	235		53	86	81	5	
	6		517.1	.58	2.07	262	246	235		52	86	81	5	
	7		519.4	.57	2.0	260	246	235		52	86	81	5	
	8		521.6	.57	2.0	255	245	236		52	86	82	5	
	9		523.2	.57	2.0	262	246	232		53	86	81	5	
	10		526.96	0.57	1.89	259	245	233		53	86	81	5	

Final Reading: | ΔH 2.01 | Stack 258 | Average | Module Meter 83.5 | Average of In & Out Meter Temperatures 261

Total Volume: 42.16 | .753 Avg Square Root ΔP

Impinger Recovery

Impinger Number	Vol or Wt Initial	Vol or Wt Final	Total Catch
1	100	324	224
2	100	134	34
3	0	3	3
4			
Other(s)			
Silica Gel			

29.88

Total Moisture Catch: ______

Calculated Moisture Content: ______

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EPA Method 5

APCC AIR POLLUTION CHARACTERIZATION AND CONTROL, LTD.

Particulate Test Data Sheet

Signature of Train Operator:

Client/Firm	LP	Assumed Moisture	20 (%)	Module No.	98
Location	STACK	Pb =	29.89 (In Hg)	ΔH@ =	2.03
Project No.	3653	Test Number	2	Cp=	0.84
Testers Initials	DF, DK	Test Date	7-9-96	Y =	1.00
Test Time(min)	60	Start Time	1730	Nozzle Size	.275
Min Per Point	3	End Time	1910	Nozzle No.	
		C/K Factor	3.57	Probe No.	702
				Pitot No.	702
				Filter No.	31969

Rectangular Stack: Length (in)	NA	Width (in)	NA
Circular Stack: Diameter (in)	82	Area (ft^2)	36.67
Train Leak Checks: Pre-Test	0.0 cfm	10	in Hg
Post-Test	0.0 cfm	10	in Hg
Orsat Leak Check: Pre-Test	NA	Post-Test	NA
Pitot Leak Check: Pre-Test	✓	Post-Test	✓
Final Orsat Analysis	CEM O2%	CEM CO2%	

Port	Point	Time (min)	Meter Volume (ft^3)	ΔP (in H2O)	ΔH (in H2O)	Stack (°F)	Probe (°F)	Htr Box (°F)	Filter (°F)	Cond Out (°F)	Module Meter In (°F)	Module Meter Out (°F)	Vacuum (in Hg)	Comments
			527.300	.										Static Pressure: In H2O
A	1	3	529.0	.56	1.99	250	245	235		47	78	78	4	
	2	6	531.3	.60	2.14	257	246	238		44	79	79	5	
	3	9	533.8	.60	2.14	258	247	237		52	81	79	5	
	4	12	536.2	.62	2.21	254	247	238		56	83	79	5	
	5	15	538.4	.61	2.18	254	248	237		54	83	79	6	
	6	18	541.1	.61	2.18	262	247	240		54	83	79	6	STOP RUN
	7	21	543.4	.57	2.03	260	247	238		45	72	78	6	RE-START
	8	24	545.7	.54	1.93	261	247	240		49	78	78	6	
	9	27	547.9	.53	1.89	255	246	235		53	79	78	5	
	10	30	550.0	.48	1.71	252	245	242		54	80	78	5	
			[illegible]	76								7		
B	1		552.1	.52	1.85	257	246	242		55	80	78	5	
	2		554.4	.60	2.14	254	246	241		55	81	78	5	
	3		556.6	.62	2.21	260	247	240		58	82	78	6	
	4		559.1	.63	2.25	259	248	241		61	83	78	6	
	5		561.6	.60	2.14	255	248	241		64	83	78	6	
	6		563.9	.59	2.10	255	248	241		59	84	79	6	
	7		566.2	.58	2.07	263	248	241		54	84	79	6	
	8		568.5	.60	2.14	260	247	240		50	84	79	6	
	9		570.3	.53	1.89	254	247	241		48	84	79	6	
	10		572.810	.46	1.64	257	246	240		48	83	79	6	

Impinger Number	Vol or Wt Initial	Vol or Wt Final	Total Catch
1	100	335	235
2	100	130	30
3	0	2	2
4			
Other(s)			
Silica Gel			

Final Reading: ΔH 2.04 Stack 257 Average; Meter 85 Average of In & Out Meter Temperatures 267

Total Volume: 43.41 .76 Avg Square Root ΔP

Total Moisture Catch: ______ Calculated Moisture Content: ______

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APCC AIR POLLUTION CHARACTERIZATION AND CONTROL, LTD.

EPA Method 5

Particulate Test Data Sheet

Signature of Train Operator: [signature]

Client/Firm	LP	Assumed Moisture	20 (%)	Module No.	98
Location	STACK	Pb =	29.98 (in Hg)	ΔH@ =	2.03
Project No.	6053	Test Number	3	Cp=	0.84
Testers Initials	DK	Test Date	2-7-96	Nozzle Size	0.275
Test Time(min)	30	Start Time	1930	Nozzle No.	
Min Per Point	3	End Time	2000	C/K Factor	3.57
Y =	1.00	Probe No.	702	Pitot No.	702
Filter No.	31970				

Rectangular Stack: Length (in) NA Width (in) NA
Circular Stack: Diameter (in) 82 Area (ft^2) 36.36
Train Leak Checks: Pre-Test 0.0 cfm 10 in Hg; Post-Test 0.0 cfm 10 in Hg
Orsat Leak Check: Pre-Test NA Post-Test NA
Pitot Leak Check: Pre-Test ✓ Post-Test ✓
Final Orsat Analysis CEM O2% CEM CO2%

Port	Point	Time (min)	Meter Volume (ft^3)	ΔP (in H2O)	ΔH (in H2O)	Stack (°F)	Probe (°F)	Htr Box (°F)	Filter (°F)	Cond Out (°F)	Module Meter In (°F)	Module Meter Out (°F)	Vacuum (in Hg)	Comments
			573.000											Static Pressure: in H2O
A	1	3	575.3	.55	1.96	253	248	270		46	75	76	3	
	2	6	577.6	.57	2.03	258	247	274		48	74	76	3	
	3	9	579.9	.60	2.14	260	248	257		53	74	75	3	
	4	12	582.2	.63	2.25	255	249	258		51	75	75	3	
	5	15	584.6	.61	2.17	255	249	260		49	75	75	3	
	6	18	586.7	.58	2.07	263	249	261		49	76	74	3	
	7	21	589.3	.57	2.03	258	249	260		49	77	74	3	
	8	24	591.4	.56	1.99	255	248	260		48	77	74	3	
	9	27	593.7	.52	1.85	256	248	260		48	78	74	3	
	10	30	595.5	.46	1.64	261	247	260		50	78	74	3	
			22.5	.751		~~252~~	~~245~~	~~261~~		~~50~~	~~77~~	~~74~~	~~3~~	
B	1		598.0	.52	1.85	252	245	261		50	77	74	3	
	2		600.5	.57	2.03	253	247	259		49	78	73	3	
	3		602.5	.59	2.10	260	247	260		48	79	74	3	
	4		605.2	.58	2.07	254	248	260		50	80	74	3	
	5		607.3	.54	1.93	254	247	259		51	80	74	3	
	6		609.8	.57	2.03	263	247	259		52	80	74	3	
	7		612.0	.58	2.07	261	247	258		53	80	74	3	
	8		614.3	.58	2.07	261	247	259		53	80	74	3	
	9		616.4	.55	1.96	254	246	258		52	79	74	3	
	10		618.78	0.50	1.78	256	246	259		53	79	74	3	

Impinger Number	Vol or Wt Initial	Vol or Wt Final	Total Catch
1	100	345	245
2	100	129	29
3			
4			
Other(s)			
Silica Gel			

Final Reading: ΔH 2.00, Stack 256 Average; 78 Average of In & Out Meter Temperatures; 274

Total Volume: 43.28; .749 Avg Square Root ΔP

Total Moisture Catch: ______ Calculated Moisture Content: ______

Rev 9/95 TMC

7C

LABORATORY ANALYSIS REPORT

Environmental Health Laboratory
a division of CIGNA Loss Control Services, Inc.
100 Sebethe Drive, Suite A-5
Cromwell, CT 06416
(800) 243-4903
Cromwell (203) 635-6475

Laboratories in Macon, GA and Cromwell, CT

CIGNA

To: Tony Saltis
Air Pollution Characterization & Control
60 Industrial Park Road West
Tolland, CT 06084

Report No.: 96G1087

P. O. No.: 2896

Date Received: 7/12/96

Date Reported: 7/25/96

Analysis: Determination of Condensible Particulate Emissions from Stationary Sources
Analytical Method: EPA Method 202

Sample Number	mg Inorganic Condensible Particulate Matter	mg Organic Condensible Particulate Matter	mg Total Condensible Particulate Matter
S1 Run 1	80	48	128
S1 Run 2	59	32	91
S1 Run 3	61	32	93
S3 Run 1	71	34	105
S3 Run 2	19	77	96
S3 Run 3	19	19	38
S4 Run 1	18	74	92
S4 Run 2	11	12	23
S4 Run 3	7.5	15	22

A blank was not provided for the analysis. We recommend that a blank control be submitted with each set of samples so that the sampling media can be checked for possible contamination.

As per the method, all inorganic fractions were checked for the possibility of a positive Ammonium Ion interference. All samples except S4 Run 1 indicated that this interference may exist . Further analysis by ion chromatography would be able to determine the amount of this interference, and samples could be corrected if necessary.

Analyst: David Torzillo and Marjorie Luzzi Date: 7/25/96

< = Less than

1084

Faxed Results 9661087 7/25/96. DT

APCC CHAIN OF CUSTODY

60 INDUSTRIAL PARK ROAD WEST
TOLLAND CT, 06084
203-871-8557

Tony Saltis

PROJECT DESCRIPTION Lowie P   PROJECT NO. 96053   PROJECT NAME Lowie P

FIELD SAMPLE NUMBER	DATE	TIME	COMPOSITE OR GRAB	ANALYSIS REQUIRED	SAMPLING TRAIN	SAMPLE DESCRIPTION	SPECIAL NOTES	SEND TO:
✓ S1Run3DI	7/4/96			Method 202		DI H_2O		
✓ S1Run3 m	↓		↓	↓		meth Cl		
✓ S1Run2 m		1930				"		
✓ S1Run1 m						"		
✓ S1Run1DI						DI H_2O		
✓ S1Run1Imp						↓		
✓ S1Run2DI		1930						
✓ S1Run2Imp	↓	1930	↓	↓		↓		

RECEIVED HARTFORD EHL JUL 12 1996 REC'D AND CHECKED IN BY LG

Relinquished by: (Signature)	DATE/TIME	Received by:(Signature)	DATE/TIME	
Relinquished by: (Signature)	DATE/TIME	Received by:(Signature)	DATE/TIME	
Relinquished by: (Signature)	DATE/TIME	Received by:(Signature)	DATE/TIME	
Relinquished by: (Signature)	DATE/TIME	Received by:(Signature)	DATE/TIME	

2-34

9661087

APCC CHAIN OF CUSTODY

60 INDUSTRIAL PARK ROAD WEST

TOLLAND CT, 06084

203-871-8557

PROJECT DESCRIPTION Lowle P   PROJECT NO. 96053   PROJECT NAME Lowie P

FIELD SAMPLE NUMBER	DATE	TIME	COMPOSITE ~~OR GRAB~~	ANALYSIS REQUIRED	SAMPLING TRAIN	SAMPLE DESCRIPTION	SPECIAL NOTES	SEND TO:
✓ S3Run1m	7/9/96			method 202		meth Cl		EHL
✓ S3Run1DI						DI H_2O		
✓ S3Run2m						meth Cl		
✓ S3Run2DI						DI H_2O		
✓ S3Run3m						meth Cl		
✓ S3Run3DI						DI H_2O		

Relinquished by: (Signature)	DATE/TIME	Received by:(Signature)	DATE/TIME	
Relinquished by: (Signature)	DATE/TIME	Received by:(Signature)	DATE/TIME	
Relinquished by: (Signature)	DATE/TIME	Received by:(Signature)	DATE/TIME	
Relinquished by: (Signature)	DATE/TIME	Received by:(Signature)	DATE/TIME	

204

9661087

APCC CHAIN OF CUSTODY

60 INDUSTRIAL PARK ROAD WEST
TOLLAND CT, 06084
203-871-8557

PROJECT DESCRIPTION Lowie P

PROJECT NO. 96053

PROJECT NAME Lowie P

FIELD SAMPLE NUMBER	DATE	TIME	COMPOSITE OR GRAB	ANALYSIS REQUIRED	SAMPLING TRAIN	SAMPLE DESCRIPTION	SPECIAL NOTES	SEND TO:
✓ S4 Run 1m	7/9/96		↓	Method 202		Meth Cl		EHL
✓ S4 Run 1DI	↓		↓	↓		.DI H_2O		↓
✓ S4 Run 2m	↓		↓	↓		Meth Cl		↓
✓ S4 Run 2DI	↓		↓	↓		DI		↓
✓ S4 Run 3m	↓		↓	↓		Meth		↓
✓ S4 Run 3DI	↓		↓	↓		DI		↓

Relinquished by: (Signature)	DATE/TIME	Received by:(Signature)	DATE/TIME	
Relinquished by: (Signature)	DATE/TIME	Received by:(Signature)	DATE/TIME	
Relinquished by: (Signature)	DATE/TIME	Received by:(Signature)	DATE/TIME	
Relinquished by: (Signature)	DATE/TIME	Received by:(Signature)	DATE/TIME	

APPENDIX D

IRM Strip Charts

*** RESET AVERAGE 07:40:08 26 1.2 PPM IN2 AVG ***
*** RESET AVERAGE 07:40:04 25 .7 PPM IN1 AVG ***
*** RESET AVERAGE 07:40:07 24 .3 PPM NOX AVG ***
*** RESET AVERAGE 07:40:07 23 -7.6 PPM CO AVG ***
*** RESET AVERAGE 07:40:01 22 -.0 PCT CO2 AVG ***
*** RESET AVERAGE 07:40:01 21 19.2 PCT O2 AVG ***

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 07:39:45 *** ENDS AT 07:39:45 JUL 09/96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	19.2	PCT		O2	02	-.0	PCT		CO2	03	-7.5	PPM		CO	04	.3	PPM		NOX
05	.7	PPM		THC IN 1	06	1.8	PPM		THC IN 2										

THC RACK ZERO

*** RESET AVERAGE 07:37:11 26 19.2 PPM IN2 AVG ***
*** RESET AVERAGE 07:37:10 25 19.2 PPM IN1 AVG ***
*** RESET AVERAGE 07:37:10 24 19.2 PPM NOX AVG ***
*** RESET AVERAGE 07:37:10 23 .5 PPM CO AVG ***
*** RESET AVERAGE 07:37:04 22 .5 PCT CO2 AVG ***
*** RESET AVERAGE 07:37:04 21 .5 PCT O2 AVG ***

*** SYSTEM [illegible] (32) 07:38:33 JUL 09/96
*** [illegible] 09:47 [illegible] JUL 09/96 ***

LP-[illegible]
hav[illegible]
960[illegible]
Sites [illegible]

0.0 25.0 50.0 75.0 100.0 125.0 150.0 175.0 200.0 225.0 250.0 PPM

*** RESET AVERAGE 07:55:04	26	11.9	PPM	IN2 AVG	***
*** RESET AVERAGE 07:55:04	25	70.9	PPM	IN1 AVG	***
*** RESET AVERAGE 07:55:04	24	[illegible]	PPM	NOX AVG	***
*** RESET AVERAGE 07:55:04	23	-8.1	PPM	CO AVG	***
*** RESET AVERAGE 07:55:04	22	-.[illegible]	PCT	CO2 AVG	***
*** RESET AVERAGE 07:55:03	21	19.2	PCT	O2 AVG	***

*** RESET AVERAGE 07:50:04	26	7.8	PPM	IN2 AVG	***
*** RESET AVERAGE 07:50:04	25	7.8	PPM	IN1 AVG	***
*** RESET AVERAGE 07:50:04	24	[illegible]	PPM	NOX AVG	***
*** RESET AVERAGE 07:50:03	[illegible]	[illegible]	PPM	CO AVG	***
*** RESET AVERAGE 07:50:03	22	-.[illegible]	PCT	CO2 AVG	***
*** RESET AVERAGE 07:50:03	21	[illegible]	PCT	O2 AVG	***

0.0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0

*** UNIT 01 *** STARTS AT 07:45:50 *** ENDS AT 07:45:51

*** RESET AVERAGE 07:45:04	26	[illegible]	PPM	IN2 AVG	***
*** RESET AVERAGE 07:45:04	25	[illegible]	PPM	IN1 AVG	***
*** RESET AVERAGE 07:45:03	24	.1	PPM	NOX AVG	***
*** RESET AVERAGE 07:45:03	23	-7.9	PPM	CO AVG	***
*** RESET AVERAGE 07:45:03	22	-.0	PCT	CO2 AVG	***
*** RESET AVERAGE 07:45:03	21	19.2	PCT	O2 AVG	***

*** RESET AVERAGE 07:40:08	26	1.2	PPM	IN2 AVG	***
*** RESET AVERAGE 07:40:08	25	.7	PPM	IN1 AVG	***
*** RESET AVERAGE 07:40:07	24	.1	PPM	NOX AVG	***
*** RESET AVERAGE 07:40:03	23	-7.6	PPM	CO AVG	***

THC CHI RACK 3??

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 08:09:4? *** ENDS AT 08:[illegible]

AT	DATA	UNITS	ST	LEGEND	AT	DATA	UNITS	ST	LEGEND	AT	DATA	UNITS	ST	LEGEND	AT	DATA
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	02	-1	PCT		CO2	03	-7.8	PPM		CO	04	[illegible]
[illegible]	[illegible]	[illegible]		THC IN [illegible]	06	115	PPM		THC IN 2							

0.0 100.0 200.0 300.0 400.0 500.0 600.0 700.0 800.0 900.0 1000.0

THC CHI RACK 3?

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 08:05:40 *** ENDS AT 08:05:[illegible]

AT	DATA	UNITS	ST	LEGEND	AT	DATA	UNITS	ST	LEGEND	AT	DATA	UNITS	ST	LEGEND	AT	DATA
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	02	-1	PCT		CO2	03	-7.8	PPM		CO	04	[illegible]
[illegible]	[illegible]	[illegible]		THC IN [illegible]	06	3.4	PPM		THC IN 2							

*** RESET AVERAGE 08:05:0? 26 9.1 PPM IN2 AVG **
*** RESET AVERAGE 08:05:0? 25 419.7 PPM IN1 AVG **
*** RESET AVERAGE 08:05:0? 24 [illegible] PPM NOX AVG **
*** RESET AVERAGE 08:05:0? 23 -7.8 PPM CO AVG **

*** RESET AVERAGE 08:05:0? 22 [illegible] PCT CO2 AVG **
*** RESET AVERAGE 08:05:0? 21 12.[illegible] PCT O2 AVG **

THC CHI RACK 601

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 08:03:27 *** ENDS AT 08:03:[illegible]

AT	DATA	UNITS	ST	LEGEND	AT	DATA	UNITS	ST	LEGEND	AT	DATA	UNITS	ST	LEGEND	AT	DATA
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	02	-1	PCT		CO2	03	-7.7	PPM		CO	04	[illegible]
[illegible]	[illegible]	[illegible]		THC IN [illegible]	06	3.4	PPM		THC IN 2							

*** RESET AVERAGE 08:02:4? 25 1053.5 PPM IN1 AVG **

01
CAL SCAN
12.00 [illegible]
08:00 [illegible]
JUL 09 96

*** RESET AVERAGE 08:00:0? 26 18.[illegible] PPM IN2 AVG **
*** RESET AVERAGE 08:00:0? 25 501.5 PPM IN1 AVG **
*** RESET AVERAGE 08:00:04 24 3 PPM NOX AVG **
*** RESET AVERAGE 08:00:04 23 -7.7 PPM CO AVG **
*** RESET AVERAGE 08:00:04 22 -.8 PCT CO2 AVG **
*** RESET AVERAGE 08:00:04 21 19.2 PCT O2 AVG **

*** RESET AVERAGE 07:59:14 25 496.9 PPM IN1 AVG **

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 07:58:44 *** ENDS AT 07:58:44 JUL 09 96 ***

AT	DATA	UNITS	ST	LEGEND	AT	DATA	UNITS	ST	LEGEND	AT	DATA	UNITS	ST	LEGEND	AT	DATA	UNITS	ST	LEGEND
01	19.2	PCT		O2	02	-.1	PCT		CO2	03	-8.2	PPM		CO	04	3	PPM		NOX
05	[illegible]	PPM		THC IN 1	06	10.2	PPM		THC IN 2										

THC CH2 RACK 283

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
					02	1	PCT		CO2	03	-7.4	PPM		CO
					06	270.[illegible]	PPM		THC IN 2					

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 08 21:21 *** ENDS AT 08 21:[illegible]

THC CH2 RACK 3?

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
00	[illegible]	PCT		[illegible]	02	1	PCT		CO2	03	-7.4	PPM		CO
05	341	PPM		THC IN 1	06	516.[illegible]	PPM		THC IN 2					

*** RESET AVERAGE 08:20:04 26 787.9 PPM IN2 AVG ***
*** RESET AVERAGE 08:20:04 25 133.1 PPM IN1 AVG ***
*** RESET AVERAGE 08:20:04 24 .1 PPM NOX AVG ***
*** RESET AVERAGE 08:20:04 23 -7.5 PPM CO AVG ***
*** RESET AVERAGE 08:20:04 22 1.1 PCT CO2 AVG ***
*** RESET AVERAGE 08:20:04 21 19.3 PCT O2 AVG ***

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 08 18:54 *** ENDS AT 08 18:57 JUL 09 96 ***

THC CH2 RACK 2?

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
00	[illegible]	PCT		[illegible]	02	1	PCT		CO2	03	-7.6	PPM		CO
05	[illegible]	PPM		THC IN 1	06	98.7	PPM		THC IN 2					

2.5 5.0 7.5 10.0 12.5 15.0 17.5

*** RESET AVERAGE 08:15:04 26 179.3 PPM IN2 AVG ***
*** RESET AVERAGE 08:15:04 25 70.7 PPM IN1 AVG ***
*** RESET AVERAGE 08:15:04 24 .1 PPM NOX AVG ***
*** RESET AVERAGE 08:15:04 23 -7.9 PPM CO AVG ***
*** RESET AVERAGE 08:15:04 22 .1 PCT CO2 AVG ***
*** RESET AVERAGE 08:15:04 21 11.1 PCT O2 AVG ***

*** RESET AVERAGE 08:10:04 26 10.4 PPM IN2 AVG ***
*** RESET AVERAGE 08:10:04 25 342.6 PPM IN1 AVG ***
*** RESET AVERAGE 08:10:04 24 1.3 PPM NOX AVG ***
*** RESET AVERAGE 08:10:04 23 -7.8 PPM CO AVG ***
*** RESET AVERAGE 08:10:04 22 -.1 PCT CO2 AVG ***
*** RESET AVERAGE 08:10:04 21 19.2 PCT O2 AVG ***

THC CH1 RACK 283

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 08 09:47 *** ENDS AT 08 09:53 JUL 09 96 ***

PT DATA UNITS ST LEGEND PT DATA UNITS ST LEGEND PT DATA UNITS ST LEGEND PT DATA UNITS ST LEGEND

110 RACE 241

*** RESET AVERAGE 08:35:04	26	41.1	PPM	IN2 AVG	**
*** RESET AVERAGE 08:35:05	25	138.5	PPM	IN1 AVG	**
*** RESET AVERAGE 08:35:05	24	40.1	PPM	NOX AVG	**
*** RESET AVERAGE 08:35:04	23	392.6	PPM	CO AVG	**
*** RESET AVERAGE 08:35:04	22	-.1	PCT	CO2 AVG	**
*** RESET AVERAGE 08:35:04	21	1.3	PCT	O2 AVG	**

04

CO2 RACE 478

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 08:32:23 *** ENDS AT 08:[illegible]

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	[illegible]	PCT		O1	02	.1	PCT		CO2	03	518.5	PPM		CO	04	[illegible]	PPM		NOX
05	[illegible]	PPM		THC IN 1	06	12.0	PPM		THC IN 2										

CO RACE 283

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 08:36:44 *** ENDS AT 08:[illegible]

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	[illegible]	PCT		O1	02	.1	PCT		CO2	03	882.5	PPM		CO	04	[illegible]	PPM		NOX
05	[illegible]	PPM		THC IN 1	06	[illegible]	PPM		THC IN 2										

*** RESET AVERAGE 08:33:04	26	[illegible]	PPM	IN2 AVG	**
*** RESET AVERAGE 08:33:04	25	153.6	PPM	IN1 AVG	**
*** RESET AVERAGE 08:30:04	24	.1	PPM	NOX AVG	**
*** RESET AVERAGE 08:30:04	23	930.7	PPM	CO AVG	**
*** RESET AVERAGE 08:30:04	22	-.1	PCT	CO2 AVG	**
*** RESET AVERAGE 08:30:04	21	8.0	PCT	O2 AVG	**
*** RESET AVERAGE 08:29:44	23	915.8	PPM	CO AVG	**

1.0 0.0 25.0 50.0 75.0 100.0 125.0 150.0 175.0 200.0 225.0 250.0 PPM

04

*** RESET AVERAGE 08:25:05	26	302.3	PPM	IN2 AVG	**
*** RESET AVERAGE 08:25:05	25	286.5	PPM	IN1 AVG	**
*** RESET AVERAGE 08:25:05	24	.1	PPM	NOX AVG	**
*** RESET AVERAGE 08:25:05	23	-7.7	PPM	CO AVG	**
*** RESET AVERAGE 08:25:04	22	-.1	PCT	CO2 AVG	**
*** RESET AVERAGE 08:25:04	21	19.3	PCT	O2 AVG	**

THC CH2 RACE 283

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 08:23:54 *** ENDS AT 08:23:55 JUL 09, 96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	19.3	PCT		O1	02	.1	PCT		CO2	03	-7.4	PPM		CO	04	.1	PPM		NOX
05	305	PPM		THC IN 1	06	278.2	PPM		THC IN 2										

*** RESET AVERAGE	08:45:04	[illegible]	141.0	PPM	IN1 AVG
*** RESET AVERAGE	08:45:04	24	[illegible]	PPM	NOX AVG
*** RESET AVERAGE	08:45:04	23	3.0	PPM	CO AVG
*** RESET AVERAGE	08:45:04	22	2.5	PCT	CO2 AVG
*** RESET AVERAGE	08:45:04	21	19.3	PCT	O2 AVG

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 08:40:17 *** ENDS AT 08:40:18 JUL 09/96 ***

CO2/O2 RACK 12.0/12.8

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	[illegible]	PCT		O2	02	12.7	PCT		CO2	03	1.3	PPM		CO
05	[illegible]	PPM		THC IN 1	06	117	PPM		THC IN 2	04	[illegible]	PPM		NOX

*** RESET AVERAGE	08:40:04	26	[illegible]	PPM	IN2 AVG
*** RESET AVERAGE	08:40:04	25	142.0	PPM	IN1 AVG
*** RESET AVERAGE	08:40:04	24	42.6	PPM	NOX AVG
*** RESET AVERAGE	08:40:04	23	2.5	PPM	CO AVG
*** RESET AVERAGE	08:40:04	22	10.4	PCT	CO2 AVG
*** RESET AVERAGE	08:40:04	21	14.2	PCT	O2 AVG

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 08:38:43 *** ENDS AT 08:38:44 JUL 09/96 ***

CO2/O2 RACK 19.7/.08

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	[illegible]	PCT		O2	02	19.6	PCT		CO2	03	2.0	PPM		CO
05	[illegible]	PPM		THC IN 1	06	34.0	PPM		THC IN 2	04	[illegible]	PPM		NOX

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 08:36:13 *** ENDS AT 08:36:15 JUL 09/96 ***

NOx RACK 89

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	.1	PCT		O2	02	-.1	PCT		CO2	03	3.5	PPM		CO	04	87.5	PPM		NOX
05	146.[illegible]	PPM		THC IN 1	06	36.0	PPM		THC IN 2										

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 08:35:32 *** ENDS AT 08:35:34 JUL 09/96 ***

NOx RACK 241

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	.1	PCT		O2	02	-.1	PCT		CO2	03	3.3	PPM		CO	04	242.7	PPM		NOX
05	145.4	PPM		THC IN 1	06	38.2	PPM		THC IN 2										

*** RESET AVERAGE	08:35:05	26	42.1	PPM	IN2 AVG	***
*** RESET AVERAGE	08:35:05	25	138.5	PPM	IN1 AVG	***
*** RESET AVERAGE	08:35:05	24	49.[illegible]	PPM	NOX AVG	***

THC BIAS CH2 513

[illegible]

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 14:11:22 *** ENDS AT [illegible]

THC BIAS CH2 90

[illegible]

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 14:12:41 *** ENDS AT [illegible]

CO2/O2 12.4/20 BIAS

[illegible]

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 14:11:49 *** ENDS AT [illegible]

CO BIAS CH2

[illegible]

*** RESET AVERAGE 14:10:04 21 4.6 PCT 02 AVG

Site 2 NOx BIAS CH2

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 14:09:37 *** ENDS AT 14:09:37 JUL 09 96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	.1	PCT		O2	02	.1	PCT		CO2	03	3.1	PPM		CO	04	97.6	PPM		NOX
05	.7	PPM		THC IN 1	06	5.1	PPM		THC IN 2										

Cha

-1C 0.0 25.0 50.0 75.0 100.0 125.0 150.0 175.0 200.0 225.0 250.0 PPM

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 14:24:[illegible] *** ENDS AT 14:24:[illegible] JUL 09,[illegible] ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	PCT		[illegible]	03	4.5	PPM		CO
[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	PPM		THC DIL2					

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 14:23:[illegible] *** ENDS AT 14:[illegible] JUL 09,[illegible] ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
[illegible]	[illegible]	[illegible]		[illegible]	02	[illegible]	PCT		CO2	03	512.5	PPM		CO
[illegible]	[illegible]	[illegible]		[illegible]	06	[illegible]	PPM		THC DIL2					

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 14:21:48 *** ENDS AT 14:[illegible] JUL 09,[illegible] ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
[illegible]	[illegible]	[illegible]		[illegible]	02	[illegible]	PCT		CO2	03	1.5	PPM		CO
[illegible]	[illegible]	[illegible]		[illegible]	06	[illegible]	PPM		THC DIL2					

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 14:20:[illegible] *** ENDS AT 14:20:35 JUL 09,[illegible] ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
[illegible]	[illegible]	[illegible]		[illegible]	02	[illegible]	PCT		CO2	03	[illegible]	PPM		CO
[illegible]	[illegible]	[illegible]		[illegible]	06	[illegible]	PPM		THC DIL2					

[illegible] AVERAGE 14:[illegible] [illegible] PPM THC AVG

[illegible] AVERAGE 14:[illegible] [illegible] PPM [illegible] AVG

[illegible] AVERAGE 14:[illegible] [illegible] PPM [illegible] AVG

[illegible] AVERAGE 14:[illegible] [illegible] PPM [illegible] AVG

[illegible] AVERAGE 14:[illegible] [illegible] PCT CO2 AVG

[illegible] AVERAGE 14:[illegible] [illegible] PCT O2 AVG

0.0 100.0 200.0 300.0 400.0 500.0 600.0 700.0 800.0 900.0 1000.0 PPM

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 14:17:44 *** ENDS AT 14:17:45 JUL 09,86 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	.1	PCT		O2	02	0	PCT		CO2	03	2.8	PPM		CO	04	.4	PPM		NOX
05	2.8	PPM		THC DIL1	06	291.9	PPM		THC DIL2										

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 14:16:20 *** ENDS AT 14:16:24 JUL 09,86 ***

- 1.F

*** RESET AVERAGE 14:15:0[illegible]	[illegible] 113.8	PPM	IN2 AVG	***
*** RESET AVERAGE 14:15:0[illegible]	[illegible] 59.7	PPM	IN1 AVG	***
*** RESET AVERAGE 14:15:0[illegible]	24 14.2	PPM	NOX AVG	***
*** RESET AVERAGE 14:15:0[illegible]	2[illegible] 201.9	PPM	CO AVG	***
*** RESET AVERAGE 14:15:0[illegible]	2[illegible] 2.2	PCT	CO2 AVG	***
*** RESET AVERAGE 14:15:0[illegible]	2[illegible] 14.1	PCT	O2 AVG	***

*** RESET AVERAGE [illegible]	[illegible]	PPM	IN2 AVG	***
*** RESET AVERAGE [illegible]	[illegible] 163.8	PPM	IN1 AVG	***
*** RESET AVERAGE [illegible]	[illegible]	PPM	NOX AVG	***
*** RESET AVERAGE [illegible]	[illegible]	PPM	CO AVG	***
*** RESET AVERAGE [illegible]	2[illegible] 1.4	PCT	CO2 AVG	***
*** RESET AVERAGE [illegible]	21 1[illegible]	PCT	O2 AVG	***

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 14:25:37 *** ENDS AT 14:2[illegible] JUL 09,[illegible] ***

THC
Bir
5/13
C.H.

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 14:25:37 *** ENDS AT [illegible] ***

THC
B/R
5/13
C.H.

01	1	PCT	O2	02	0	PCT	CO2	03	3.5	PPM	CO	04	.5	PPM	NOX
05	511.6	PPM	THC IN 1	06	4.2	PPM	THC IN 2								

*** RESET AVERAGE 14:25:05	28 4.6	PPM	IN2 AVG	***
*** RESET AVERAGE 14:25:04	25 278.8	PPM	IN1 AVG	***
*** RESET AVERAGE 14:25:04	24 18.7	PPM	NOX AVG	***
*** RESET AVERAGE 14:25:04	21 159.8	PPM	CO AVG	***
*** RESET AVERAGE 14:25:04	22 3.2	PCT	CO2 AVG	***
*** RESET AVERAGE 14:25:04	21 3.5	PCT	O2 AVG	***

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 14:24:36 *** ENDS AT 14:24:37 JUL 09,98 ***

1A 0.0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 PCT

***	RESET	AVERAGE	15:25 02	26	145.7	PPM	IN2	AVG	***
***	RESET	AVERAGE	15:25 02	25	91.7	PPM	IN1	AVG	***
***	RESET	AVERAGE	15:25 02	24	21.9	PPM	NOX	AVG	***
***	RESET	AVERAGE	15:25 02	23	168.5	PPM	CO	AVG	***
***	RESET	AVERAGE	15:25 02	22	3.8	PCT	CO2	AVG	***
***	RESET	AVERAGE	15:25 02	21	17.0	PCT	O2	AVG	***

***	RESET	AVERAGE	15:20 02	26	149.3	PPM	IN2	AVG	***
***	RESET	AVERAGE	15:20 02	25	99.4	PPM	IN1	AVG	***
***	RESET	AVERAGE	15:20 02	24	22.1	PPM	NOX	AVG	***
***	RESET	AVERAGE	15:20 02	23	171.0	PPM	CO	AVG	***
***	RESET	AVERAGE	15:20 02	22	[illegible]	PCT	CO2	AVG	***
***	RESET	AVERAGE	15:20 02	21	[illegible]	PCT	O2	AVG	***

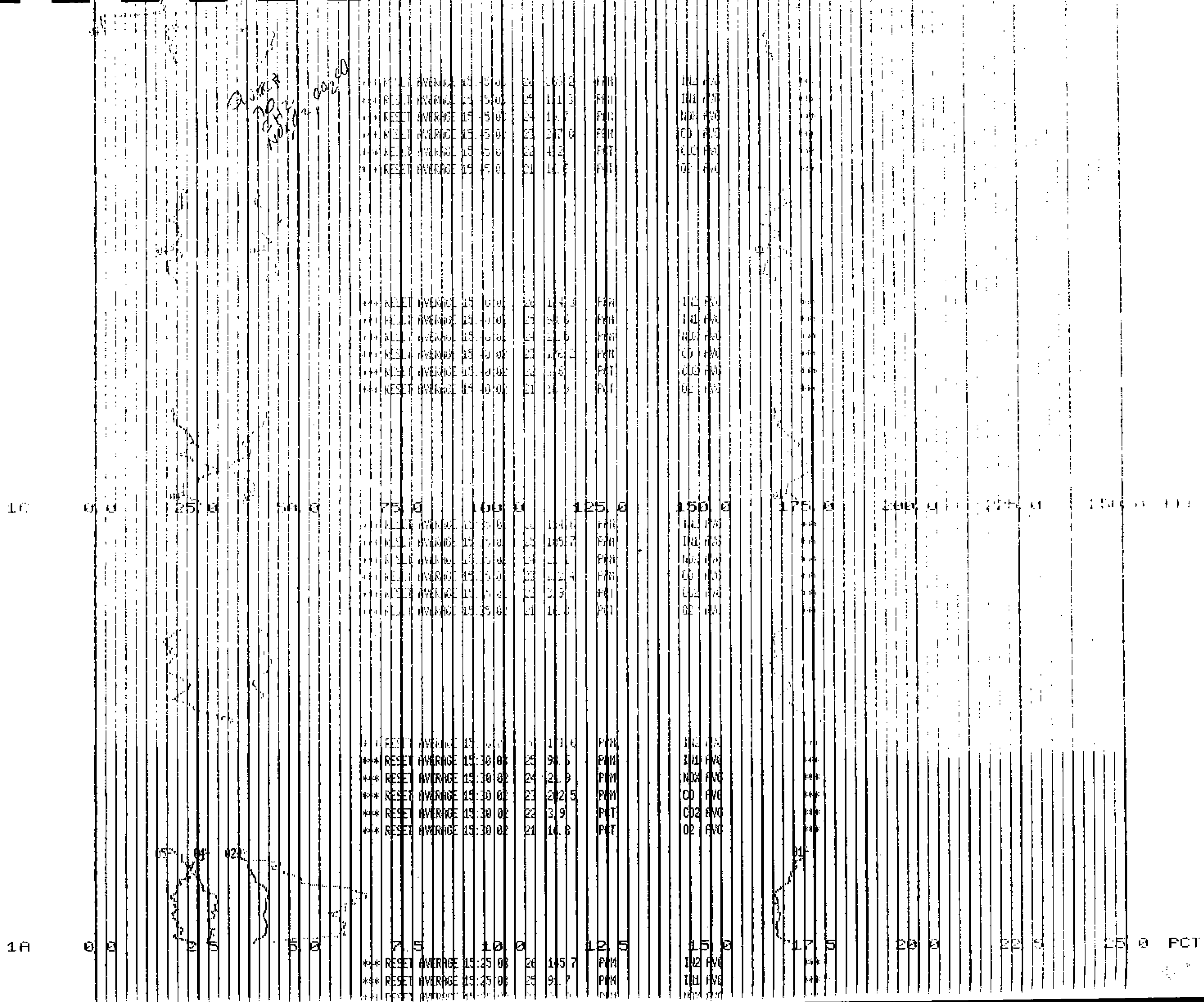
***	[illegible]	AVERAGE	[illegible]	[illegible]	[illegible]	[illegible]	IN2	AVG	***
***	[illegible]	AVERAGE	[illegible]	[illegible]	[illegible]	[illegible]	IN1	AVG	***
***	[illegible]	AVERAGE	[illegible]	[illegible]	[illegible]	[illegible]	NOX	AVG	***
***	[illegible]	AVERAGE	[illegible]	[illegible]	[illegible]	[illegible]	CO	AVG	***
***	[illegible]	AVERAGE	15:15	[illegible]	[illegible]	[illegible]	CO2	AVG	***
***	[illegible]	AVERAGE	15:15	[illegible]	[illegible]	[illegible]	O2	AVG	***

START
T-1
CHAMBER

1F 0.0 100.0 200.0 300.0 400.0 500.0 600.0 700.0 800.0 900.0 1000.0

RESET
CLOCK

***	[illegible]	AVERAGE	15:15	[illegible]	[illegible]	[illegible]	IN2	AVG	***
***	[illegible]	AVERAGE	15:15	[illegible]	[illegible]	[illegible]	IN1	AVG	***
***	[illegible]	AVERAGE	15:15	[illegible]	[illegible]	[illegible]	NOX	AVG	***
***	[illegible]	AVERAGE	15:15	[illegible]	[illegible]	[illegible]	CO	AVG	***
***	[illegible]	AVERAGE	15:15	[illegible]	[illegible]	[illegible]	CO2	AVG	***
***	[illegible]	AVERAGE	15:15	[illegible]	[illegible]	[illegible]	O2	AVG	***


1C 0.0 25.0 50.0 75.0 100.0 125.0 150.0 175.0 200.0 225.0
*** RESET AVERAGE 15:30 02 25 98.5 PPM IN1 AVG ***
*** RESET AVERAGE 15:30 02 24 21.8 PPM NOA AVG ***
*** RESET AVERAGE 15:30 02 21 202.5 PPM CO AVG ***
*** RESET AVERAGE 15:30 02 22 3.9 PCT CO2 AVG ***
*** RESET AVERAGE 15:30 02 21 16.8 PCT O2 AVG ***
1A 0.0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 PCT
*** RESET AVERAGE 15:25 08 26 145.7 PPM IN2 AVG ***
*** RESET AVERAGE 15:25 08 25 91.7 PPM IN1 AVG ***

1C 0.0 25.0 50.0 75.0 100.0 125.0 150.0 175.0 200.0 225.0 250.0 PPM

***	RESET AVERAGE	16:05:0[illegible]	26	[illegible]	PPM	IN2 AVG	***
***	RESET AVERAGE	16:05:0[illegible]	25	117.4	PPM	IN1 AVG	***
***	RESET AVERAGE	16:05:0[illegible]	24	15.5	PPM	NOX AVG	***
***	RESET AVERAGE	16:05:0[illegible]	23	418.8	PPM	CO AVG	***
***	RESET AVERAGE	16:05:0[illegible]	22	[illegible]	PCT	CO2 AVG	***
***	RESET AVERAGE	16:05:0[illegible]	21	17.2	PCT	O2 AVG	***

***	RESET AVERAGE	16:00:0[illegible]	26	205.4	PPM	IN2 AVG	***
***	RESET AVERAGE	16:00:0[illegible]	25	114.0	PPM	IN1 AVG	***
***	RESET AVERAGE	16:00:0[illegible]	24	[illegible]	PPM	NOX AVG	***
***	RESET AVERAGE	16:00:0[illegible]	23	490.9	PPM	CO AVG	***
***	RESET AVERAGE	16:00:02	22	[illegible]	PCT	CO2 AVG	***
***	RESET AVERAGE	16:00:0[illegible]	21	17.1	PCT	O2 AVG	***

***	RESET AVERAGE	15:55:0[illegible]	26	[illegible]	PPM	IN2 AVG	***
***	RESET AVERAGE	15:55:0[illegible]	25	[illegible]	PPM	IN1 AVG	***
***	RESET AVERAGE	15:55:0[illegible]	24	[illegible]	PPM	NOX AVG	***
***	RESET AVERAGE	15:55:02	23	[illegible]	PPM	CO AVG	***
***	RESET AVERAGE	15:55:0[illegible]	22	[illegible]	PCT	CO2 AVG	***
***	RESET AVERAGE	15:55:0[illegible]	21	17.2	PCT	O2 AVG	***

***	RESET AVERAGE	15:50:4[illegible]	23	914.1	PPM	CO AVG	***

***	RESET AVERAGE	15:50:03	26	209.7	PPM	IN2 AVG	***
***	RESET AVERAGE	15:50:03	25	122.8	PPM	IN1 AVG	***
***	RESET AVERAGE	15:50:03	24	15.6	PPM	NOX AVG	***
***	RESET AVERAGE	15:50:03	23	1045.3	PPM	CO AVG	***
***	RESET AVERAGE	15:50:02	22	3.5	PCT	CO2 AVG	***
***	RESET AVERAGE	15:50:02	21	17.2	PCT	O2 AVG	***

*** RESET AVERAGE 16:10:08	26	178.3	PPM	IN2 AVG	***
*** RESET AVERAGE 16:10:02	25	130.0	PPM	IN1 AVG	***
*** RESET AVERAGE 16:10:02	24	15.5	PPM	NOX AVG	***
*** RESET AVERAGE 16:10:02	23	300.2	PPM	CO AVG	***
*** RESET AVERAGE 16:10:02	22	3.3	PCT	CO2 AVG	***
*** RESET AVERAGE 16:10:02	21	17.3	PCT	O2 AVG	***

0.0 25.0 50.0 75.0 100.0 125.0 150.0 175.0 200.0 225.0 250.0

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 16:29:[illegible] *** ENDS AT 16:[illegible]

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 16:24:59 *** ENDS AT 16:[illegible] JUL [illegible]

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 16:[illegible] *** ENDS AT 16:[illegible] JUL [illegible]

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 16:22:16 *** ENDS AT 16:22:17 JUL 09,98 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	.4	PCT		O2	02	0	PCT		CO2	03	513.0	PPM		CO	04	.6	PPM		NOX
05	71.8	PPM		THC IN 1	06	908.2	PPM		THC IN 2										

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 16:21:40 *** ENDS AT 16:21:41 JUL 09,98 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	.2	PCT		O2	02	2	PCT		CO2	03	510.6	PPM		CO	04	.7	PPM		NOX
05	73.1	PPM		THC IN 1	06	6.5	PPM		THC IN 2										

[illegible]

CH1 THC B103 5/34

[illegible]

CH1 THC B1?? 7101

[illegible]

CH1 CO2 B105 4/8

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	03	530.0	PPM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
05	[illegible]	PPM		THC IN 1	06	115.1	PPM		THC IN 2										

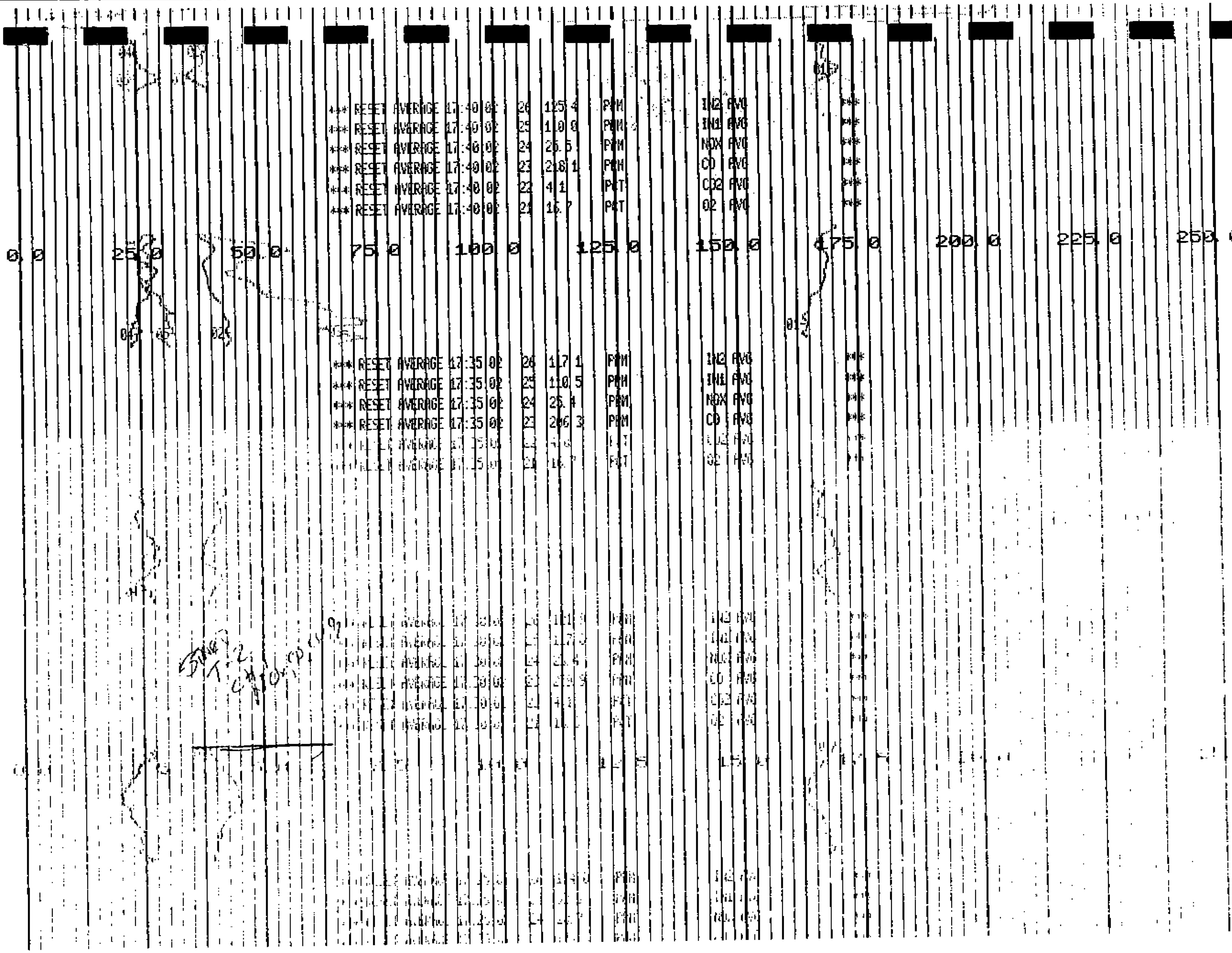
*** LOG GRP 1 *** UNIT 01 *** STARTS AT 16:30:58 *** ENDS AT 16:30:59 JUL 09,96 ***

CH1 CO2/O2 B105 ZERO

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	12.8	PCT		01	02	12.5	PCT		CO2	03	2.3	PPM		00	04	1.6	PPM		NOX
05	9.4	PPM		THC IN 1	06	103.1	PPM		THC IN 2										

*** RESET AVERAGE 16:30:01 26 173.6 PPM IN2 AVG ***
*** RESET AVERAGE 16:30:01 25 67.9 PPM IN1 AVG ***

*** RESET AVERAGE 17:40 02 26 125.4 PPM IN2 AVG ***
*** RESET AVERAGE 17:40 02 25 110.0 PPM IN1 AVG ***
*** RESET AVERAGE 17:40 02 24 26.5 PPM NOX AVG ***
*** RESET AVERAGE 17:40 02 23 218.1 PPM CO AVG ***
*** RESET AVERAGE 17:40 02 22 4.1 PCT CO2 AVG ***
*** RESET AVERAGE 17:40 02 21 16.7 PCT O2 AVG ***



*** RESET AVERAGE 17:35 02 26 117.1 PPM IN2 AVG ***
*** RESET AVERAGE 17:35 02 25 110.5 PPM IN1 AVG ***
*** RESET AVERAGE 17:35 02 24 25.4 PPM NOX AVG ***
*** RESET AVERAGE 17:35 02 23 206.3 PPM CO AVG ***
[illegible] CO2 AVG
[illegible] O2 AVG

[illegible] IN2 AVG
[illegible] IN1 AVG
[illegible] NOX AVG
[illegible] AVERAGE 17:30 02 23 [illegible] PPM CO AVG
[illegible] CO2 AVG
[illegible] O2 AVG

[illegible]

*** RESET AVERAGE [illegible]:00:02	26	112.0	PPM	IN2 AVG	***
*** RESET AVERAGE [illegible]:00:01	25	[illegible]	PPM	IN1 AVG	***
*** RESET AVERAGE [illegible]:00:01	24	[illegible]	PPM	NOX AVG	***
*** RESET AVERAGE [illegible]:00:01	23	11.1	PPM	CO AVG	***
*** RESET AVERAGE [illegible]:00:01	22	[illegible]	PCT	CO2 AVG	***
*** RESET AVERAGE [illegible]:00:01	21	17.[illegible]	PCT	O2 AVG	***

*** RESET AVERAGE 17:55:01	26	[illegible]	PPM	IN2 AVG	***
*** RESET AVERAGE 17:55:01	25	[illegible]	PPM	IN1 AVG	***
*** RESET AVERAGE 17:55:01	24	[illegible]	PPM	NOX AVG	***
*** RESET AVERAGE 17:55:01	23	105.7	PPM	CO AVG	***
*** RESET AVERAGE 17:55:01	22	[illegible]	PCT	CO2 AVG	***
*** RESET AVERAGE 17:55:01	21	[illegible]	PCT	O2 AVG	***

*** RESET AVERAGE 17:50:01	[illegible]	[illegible]	PPM	IN2 AVG	***
*** RESET AVERAGE 17:50:01	[illegible]	[illegible]	PPM	IN1 AVG	***
*** RESET AVERAGE 17:50:01	[illegible]	[illegible]	PPM	NOX AVG	***
*** RESET AVERAGE 17:50:01	23	[illegible]	PPM	CO AVG	***
*** RESET AVERAGE 17:50:01	22	[illegible]	PCT	CO2 AVG	***
*** RESET AVERAGE 17:50:01	[illegible]	[illegible]	PCT	O2 AVG	***

STOP TESTING

*** RESET AVERAGE 17:45:02	26	86.5	PPM	IN2 AVG	***
*** RESET AVERAGE 17:45:01	25	67.5	PPM	IN1 AVG	***
*** RESET AVERAGE 17:45:01	24	26.7	PPM	NOX AVG	***
*** RESET AVERAGE 17:45:01	23	205.0	PPM	CO AVG	***
*** RESET AVERAGE 17:45:01	22	2.7	PCT	CO2 AVG	***
*** RESET AVERAGE 17:45:01	21	16.1	PCT	O2 AVG	***

*** RESET AVERAGE 18:20:02	26	118.9	PPM	IN2 AVG	***
*** RESET AVERAGE 18:20:02	25	61.5	PPM	IN1 AVG	***
*** RESET AVERAGE 18:20:02	24	26.1	PPM	NOX AVG	***
*** RESET AVERAGE 18:20:02	23	104.4	PPM	CO AVG	***
*** RESET AVERAGE 18:20:02	22	3.3	PCT	CO2 AVG	***
*** RESET AVERAGE 18:20:02	21	17.4	PCT	O2 AVG	***

100.0 400.0 500.0 600.0 700.0 800.0

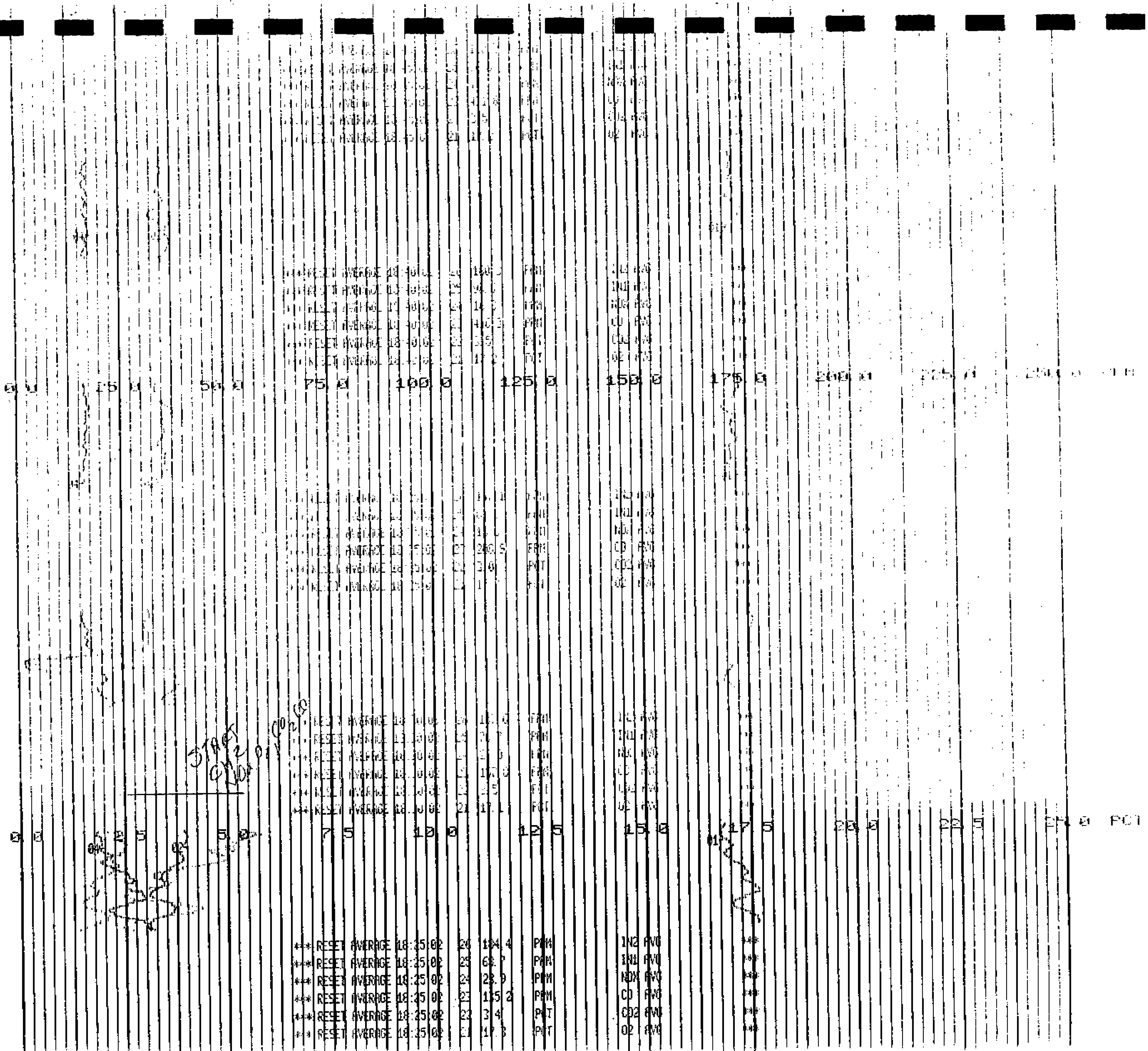
REDTRAY T-2 (CH)

*** RESET AVERAGE 18:15:02	26	110.0	PPM	IN2 AVG	***
*** RESET AVERAGE 18:15:02	25	61.1	PPM	IN1 AVG	***
*** RESET AVERAGE 18:15:02	24	[illegible]	PPM	NOX AVG	***
*** RESET AVERAGE 18:15:02	23	102.3	PPM	CO AVG	***
*** RESET AVERAGE 18:15:02	22	3.4	PCT	CO2 AVG	***
*** RESET AVERAGE 18:15:02	21	17.4	PCT	O2 AVG	***

*** RESET AVERAGE 18:10:02	26	114.9	PPM	IN2 AVG	***
*** RESET AVERAGE 18:10:02	25	65.1	PPM	IN1 AVG	***
*** RESET AVERAGE 18:10:02	24	25.5	PPM	NOX AVG	***
*** RESET AVERAGE 18:10:02	23	118.9	PPM	CO AVG	***
*** RESET AVERAGE 18:10:02	22	3.4	PCT	CO2 AVG	***
*** RESET AVERAGE 18:10:02	21	[illegible]	PCT	O2 AVG	***

0.0 25.0 50.0 75.0 100.0 125.0 150.0 175.0 200.0 225.0 250.0

*** RESET AVERAGE 18:05:02	26	137.3	PPM	IN2 AVG	***
*** RESET AVERAGE 18:05:02	25	73.5	PPM	IN1 AVG	***
*** RESET AVERAGE 18:05:02	24	24.8	PPM	NOX AVG	***
*** RESET AVERAGE 18:05:02	23	151.2	PPM	CO AVG	***
*** RESET AVERAGE 18:05:02	22	3.5	PCT	CO2 AVG	***
*** RESET AVERAGE 18:05:02	21	17.2	PCT	O2 AVG	***



*** RESET AVERAGE	18:25:02	26	104.4	PPM	IN2 AVG	***
*** RESET AVERAGE	18:25:02	25	68.?	PPM	IN1 AVG	***
*** RESET AVERAGE	18:25:02	24	28.9	PPM	NOX AVG	***
*** RESET AVERAGE	18:25:02	23	115.2	PPM	CO AVG	***
*** RESET AVERAGE	18:25:02	22	3.4	PCT	CO2 AVG	***
*** RESET AVERAGE	18:25:02	21	17.3	PCT	O2 AVG	***

*** RESET AVERAGE [illegible] [illegible] [illegible] [illegible] [illegible] AVG
*** RESET AVERAGE 1[illegible]:45 02 2[illegible] 1[illegible] PPM [illegible] AVG
*** RESET AVERAGE 1[illegible]:45 02 24 1[illegible] PPM NOX AVG
*** RESET AVERAGE 1[illegible]:45 02 2[illegible] [illegible] PPM CO AVG
*** RESET AVERAGE 1[illegible]:45 02 2[illegible] [illegible] PCT CO2 AVG
*** RESET AVERAGE 1[illegible]:45 02 21 17.4 PCT O2 AVG

*** RESET AVERAGE 19:00 02 26 1[illegible] PPM IN2 AVG
*** RESET AVERAGE 19:00 02 25 105.2 PPM IN1 AVG
*** RESET AVERAGE 1[illegible]:00 02 24 16.9 PPM NOX AVG
*** RESET AVERAGE 1[illegible]:00 02 2[illegible] [illegible] PPM CO AVG
*** RESET AVERAGE 1[illegible]:00 02 22 3.2 PCT CO2 AVG
*** RESET AVERAGE 19:00 02 21 17.5 PCT O2 AVG

*** RESET AVERAGE 18:[illegible] [illegible] [illegible] 1[illegible] PPM IN2 AVG
*** RESET AVERAGE 18:55 02 25 110.1 PPM IN1 AVG
*** RESET AVERAGE 18:55 02 2[illegible] 1[illegible] PPM NOX AVG
*** RESET AVERAGE 18:55 02 23 3[illegible] PPM CO AVG
*** RESET AVERAGE 18:55 02 22 3.4 PCT CO2 AVG
*** RESET AVERAGE 18:55 02 21 17.3 PCT O2 AVG

*** RESET AVERAGE 18:50 02 2[illegible] 1[illegible] PPM IN2 AVG
*** RESET AVERAGE 18:[illegible] 2[illegible] 1[illegible] PPM IN1 AVG
*** RESET AVERAGE 18:[illegible] [illegible] 1[illegible] PPM NOX AVG
*** RESET AVERAGE 18:50 02 23 342.7 PPM CO AVG
*** RESET AVERAGE 18:50 02 22 3.3 PCT CO2 AVG
*** RESET AVERAGE 18:50 02 21 17.4 PCT O2 AVG

*** RESET AVERAGE 18:45 02 26 180.3 PPM IN2 AVG
*** RESET AVERAGE 18:45 02 25 94.9 PPM IN1 AVG
*** RESET AVERAGE 18:45 02 24 16.7 PPM NOX AVG
*** RESET AVERAGE 18:45 02 23 411.8 PPM CO AVG

*** D3 GRP 1 *** UNIT 01 *** STARTS AT 19:15:00 *** [illegible]

[illegible]

CHZ THC [illegible]

*** D3 GRP 1 *** UNIT 01 *** STARTS AT 19:14:20 *** [illegible]

[illegible]

CHZ CO BIAS CA

*** D3 GRP 1 *** UNIT 01 *** STARTS AT 19:12:35 *** [illegible]

[illegible]

ZERO THC CH3OH [illegible] BIAS

*** D3 GRP 1 *** UNIT 01 *** STARTS AT 19:11:2[illegible] *** [illegible]

[illegible]

0.0 25.0 50.0 75.0 100.0 125.0 150.0 175.0 200.0 225.0 250.0

[illegible]

CHZ NOX BIAS CA

*** D3 GRP 1 *** UNIT 01 *** STARTS AT 19:09:41 *** ENDS AT 19:09:42 JUL 09,93 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	1	PCT		O2	02	-1	PCT		CO2	03	4.1	PPM		CO	04	100.4	PPM		NOX
05	40.5	PPM		THC IN 1	06	0.1	PPM		THC IN 2										

*** RESET AVERAGE [illegible] 193.5 PPM [illegible]

CH1 CO/O2 [illegible]

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 19:21:24 *** ENDS AT 19:[illegible] JUL [illegible] ***

CH1 NOx [illegible]

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 19:19:44 *** ENDS AT 19:[illegible] JUL [illegible] ***

CH2 THC BIAS [illegible]

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 19:15:2? *** ENDS AT 19:[illegible] JUL [illegible] ***

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 19:[illegible] *** ENDS AT 19:[illegible] JUL [illegible] ***

CO2 THC BIAS 513

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 19:15:26 *** ENDS AT 19:15:2? JUL [illegible] ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	11	PCT		O2	02	-0	PCT		CO2	03	4.5	PPM		CO	04	5	PPM		NOX
05	72.4	PPM		THC IN 1	06	516.7	PPM		THC IN 2										

*** RESET AVERAGE 19:15:19 26 370.5 PPM IN2 AVG ***
*** RESET AVERAGE 19:15:19 25 66.8 PPM IN1 AVG ***
*** RESET AVERAGE 19:15:16 24 4.0 PPM NOX AVG ***

*** RESET AVERAGE 19:15:14 23 1.2 1 PPM CO AVG ***
*** RESET AVERAGE 19:15:10 22 4.4 PCT CO2 AVG ***
*** RESET AVERAGE 19:15:01 21 4.7 PCT O2 AVG ***

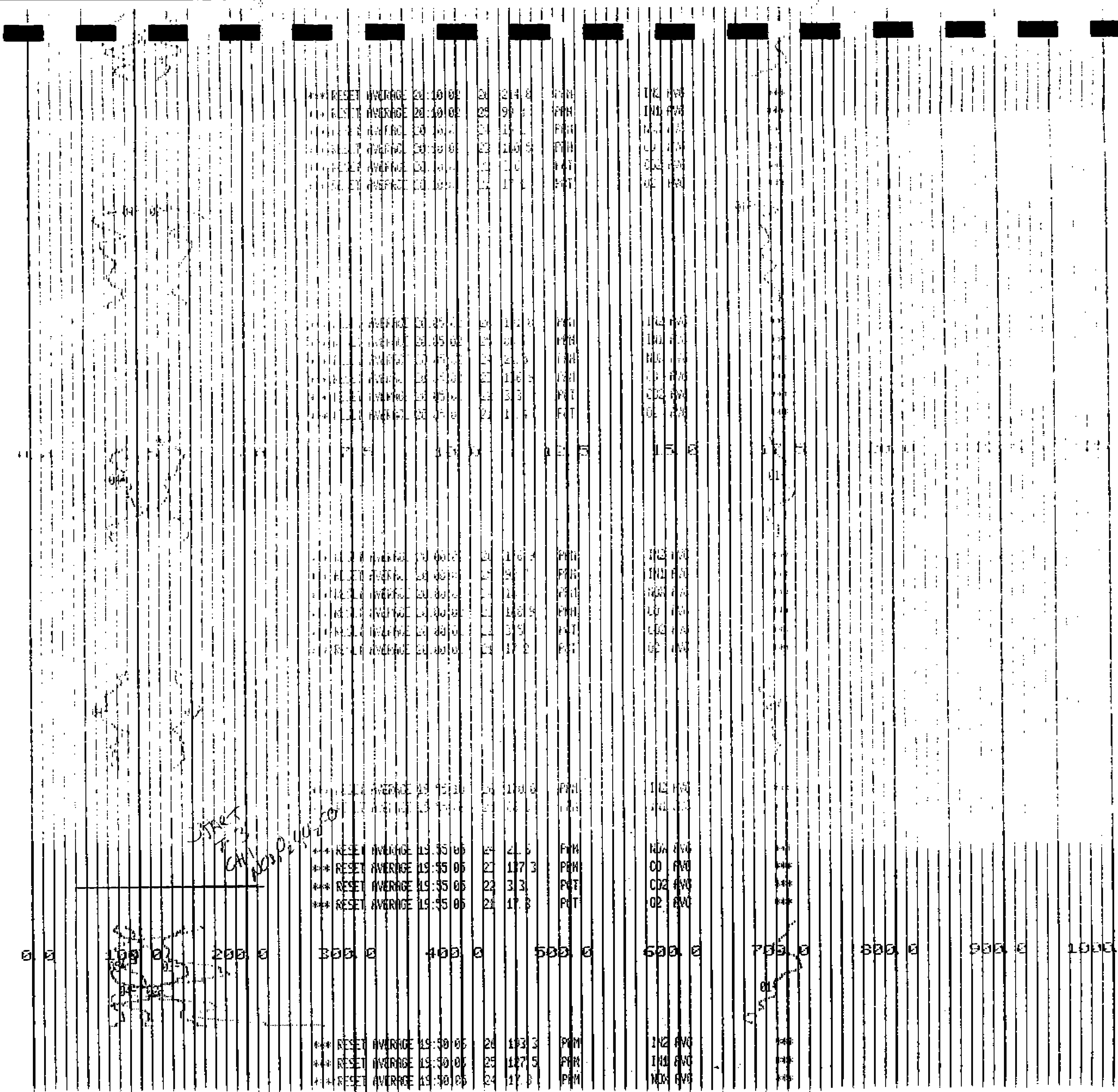
[illegible]

01	1	PCT		O2	02	0	PCT		CO2	03	51	PPM		[illegible]	04	[illegible]
05	49	PPM		THC IN 1	06	151.5	PPM		THC IN 2							

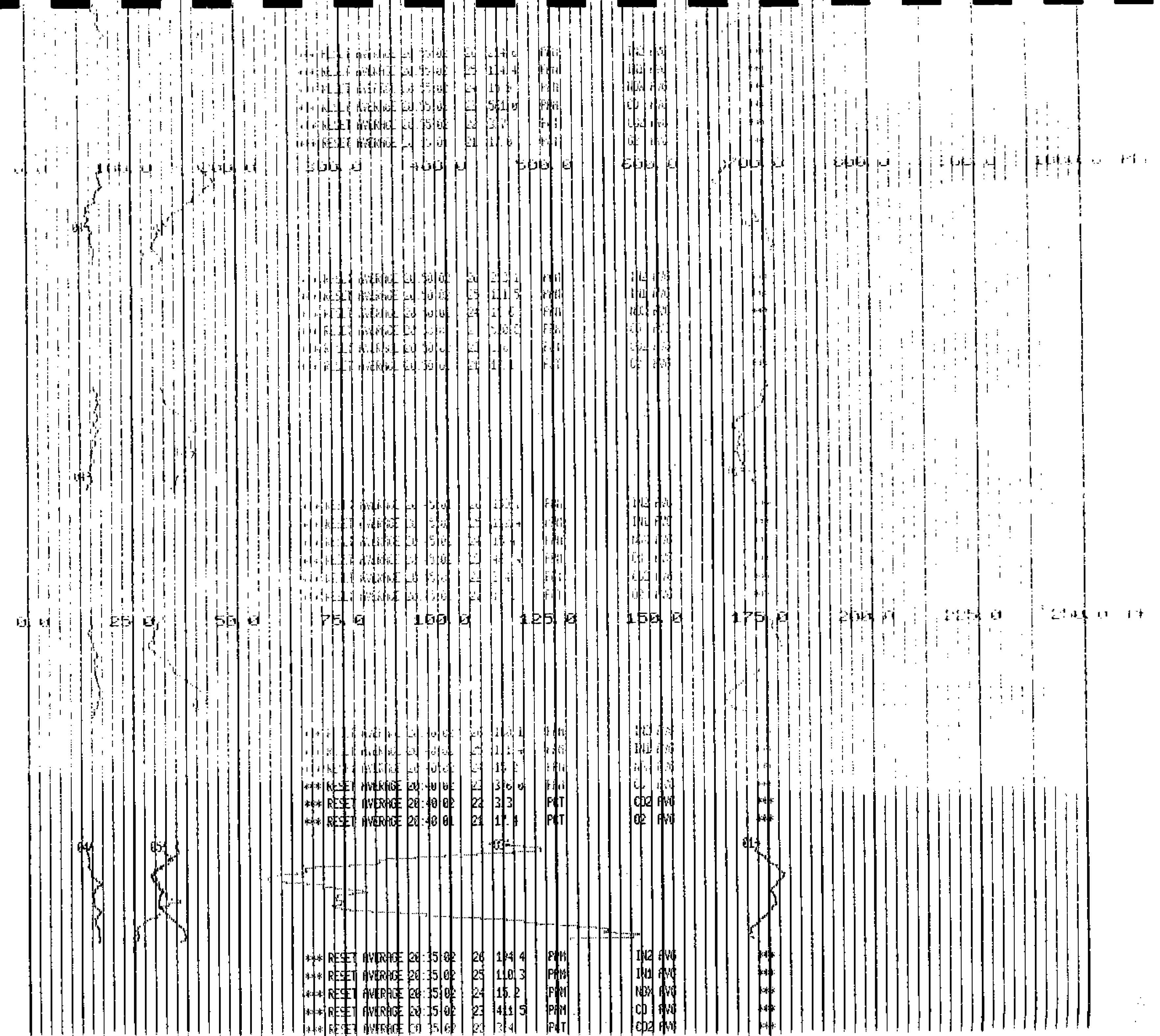
*** LOG GRP 1 *** UNIT 01 *** STARTS AT 19:22:20 *** ENDS AT 19:22:31 JUL 09, 96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	2	PCT		O2	02	1	PCT		CO2	03	509.8	PPM		CO	04	1.0	PPM		NOX
05	12.6	PPM		THC IN 1	06	151.5	PPM		THC IN 2										

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 19:21:04 *** ENDS AT 19:21:05 JUL 09, 96 ***


*** RESET AVERAGE 20:10:02 20 214.8 PPM IN2 AVG ***
*** RESET AVERAGE 20:10:02 25 IN1 AVG ***
*** RESET AVERAGE 19:55:06 24 21.6 PPM NOX AVG ***
*** RESET AVERAGE 19:55:06 27 137.3 PPM CO AVG ***
*** RESET AVERAGE 19:55:06 22 3.3 PCT CO2 AVG ***
*** RESET AVERAGE 19:55:06 21 17.8 PCT O2 AVG ***
-1F 0.0 100.0 200.0 300.0 400.0 500.0 600.0 700.0 800.0 900.0 1000.0 PPM
*** RESET AVERAGE 19:50:06 20 193.3 PPM IN2 AVG ***
*** RESET AVERAGE 19:50:06 25 127.5 PPM IN1 AVG ***
*** RESET AVERAGE 19:50:06 24 17.8 PPM NOX AVG ***

*** RESET AVERAGE	20:15 02	26	101.4	PPM	IN2 AVG	***
*** RESET AVERAGE	20:15 02	25	88.3	PPM	IN1 AVG	***
*** RESET AVERAGE	20:15 02	24	21.1	PPM	NOX AVG	***
*** RESET AVERAGE	20:15 02	23	141.7	PPM	CO AVG	***
*** RESET AVERAGE	20:15 02	22	3.4	PCT	CO2 AVG	***
*** RESET AVERAGE	20:15 01	21	17.4	PCT	O2 AVG	***



0.0 100.0 200.0 300.0 400.0 500.0 600.0 700.0 800.0
0.0 25.0 50.0 75.0 100.0 125.0 150.0 175.0
*** RESET AVERAGE 20:40:02 22 3.3 PCT CO2 AVG ***
*** RESET AVERAGE 20:40:01 21 17.4 PCT O2 AVG ***
*** RESET AVERAGE 20:15:02 26 104.4 PPM IN2 AVG ***
*** RESET AVERAGE 20:15:02 25 110.3 PPM IN1 AVG ***
*** RESET AVERAGE 20:15:02 24 15.2 PPM NOX AVG ***
*** RESET AVERAGE 20:15:02 23 411.5 PPM CO AVG ***

CH2

CH2

CH2

*** RESET AVERAGE	21:00:02	25	103.1	PPM	IN1 AVG	***
*** RESET AVERAGE	21:00:02	24	15.5	PPM	NOX AVG	***
*** RESET AVERAGE	21:00:01	23	337.2	PPM	CO AVG	***
*** RESET AVERAGE	21:00:01	22	3.2	PCT	CO2 AVG	***
*** RESET AVERAGE	21:00:01	21	17.4	PCT	O2 AVG	***

*** RESET AVERAGE	20:55:02	26	214.6	PPM	IN2 AVG	***
*** RESET AVERAGE	20:55:02	25	134.4	PPM	IN1 AVG	***

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 21:15:12 *** ENDS AT [illegible]

10   0.0   25.0   50.0   75.0   100.0   125.0   150.0   175.0   200.0   225.0   250.0

*** RESET AVERAGE	21:15:02	26	[illegible]	PPM	IN2 AVG	***
*** RESET AVERAGE	21:15:02	25	[illegible]	PPM	IN1 AVG	***
*** RESET AVERAGE	21:15:02	24	[illegible]	PPM	NOX AVG	***
*** RESET AVERAGE	21:15:02	23	[illegible]	PPM	CO AVG	***
*** RESET AVERAGE	21:15:02	22	[illegible]	PCT	CO2 AVG	***
*** RESET AVERAGE	21:15:01	21	[illegible]	PCT	O2 AVG	***

*** RESET AVERAGE	21:10:02	26	156.6	PPM	IN2 AVG	***
*** RESET AVERAGE	21:10:02	25	84.9	PPM	IN1 AVG	***
*** RESET AVERAGE	21:10:02	24	4.7	PPM	NOX AVG	***
*** RESET AVERAGE	21:10:02	23	271.7	PPM	CO AVG	***
*** RESET AVERAGE	21:10:01	22	3.7	PCT	CO2 AVG	***
*** RESET AVERAGE	21:10:01	21	3.8	PCT	O2 AVG	***

*** LOG GRP 1 *** UNIT 01 *** STARTS AT 21:09:45 *** ENDS AT 21:09:46 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	1	PCT		O2	02	0	PCT		CO2	03	30.1	PPM		CO	04	.5	PPM		NOX
05	97.8	PPM		THC IN 1	06	088.7	PPM		THC IN 2										

***	RESET AVERAGE	21:30:00	26	4.3	PPM	IN2 AVG	***
***	RESET AVERAGE	21:30:00	25	19.7	PPM	IN1 AVG	***
***	RESET AVERAGE	21:30:00	24	38.5	PPM	NOX AVG	***
***	RESET AVERAGE	21:30:00	23	138.0	PPM	CO AVG	***
***	RESET AVERAGE	21:30:00	22	4.3	PCT	CO2 AVG	***
***	RESET AVERAGE	21:30:00	21	4.8	PCT	O2 AVG	***

*** LOG GRF 1 *** UNIT 01 *** STARTS AT 21:18:13 *** ENDS AT 21:18:19 JUL 09, 96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND

CHART CAL

*** PRINTER OFF 09:12 [illegible] JUL 09 93 ***

*** [illegible] UNIT [illegible] *** STARTS AT 09:11 [illegible] *** ENDS AT 09:[illegible] JUL 09 [illegible] ***

1 OUTLET
Sys [illegible]
[illegible]

NO. 2000

[illegible] 300 [illegible] 400 [illegible] 500 [illegible] 600 [illegible]

*** [illegible] UNIT [illegible] *** STARTS AT 09:[illegible] *** ENDS AT 09:[illegible] ***

*** PRINTER ON 09:04 [illegible] JUL 09 [illegible] ***

*** PRINTER OFF 09:[illegible] JUL 09 [illegible] ***

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 09:01:25 *** ENDS AT 09:01:25 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	3	PCT		O2	02	3	PCT		CO2	03	506.6	PPM		CO	04	3.1	PPM		THC
05	0	PPM		NOX															

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 08:59:39 *** ENDS AT 08:59:45 JUL 09,96 ***

0 25.0 50.0 75.0 100.0 125.0 150.0 175.0 200.0 225.0 PE00.

CO 498

*** LOG GRP 1 *** UNIT 53000 *** STARTS AT 08:39:42 *** ENDS AT 08:39:43 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	[illegible]	PCT		O2	02	3	PCT		CO2	03	514.0	PPM		CO	04	4.3	PPM		THC
05	[illegible]	PPM		NOX															

*** LOG GRP 1 *** UNIT 53000 *** STARTS AT 08:37:25 *** ENDS AT 08:37:25 JUL 09,96 ***

CHART 1
SITES Nos. 3 & 4

[redacted]

CHART RECAL ↑

*** PRINTER OFF 09:22:14 JUL 09,96 ***

1.F 0 1 2.0 4.0 6.0 8.0 10.0 12.0 14.0 16.0 18.0 PC20.0

*** LOG GRP 1 *** UNIT 53000 *** STARTS AT 09:17:08 *** ENDS AT 09:17:09 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	3	PCT		O2	02	3	PCT		CO2	03	6.4	PPM		CO	04	7.4	PPM		THC
05	123.3	PPM		NOX															

NO. 120

496

*** LOG GRP 1 *** UNIT 53000 *** STARTS AT 09:15:19 *** ENDS AT 09:15:20 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	2	PCT		O2	02	3	PCT		CO2	03	492.0	PPM		CO	04	2.0	PPM		THC
05	9	PPM		NOX															

LO

*** PRINTER ON 09:14:30 JUL 09,96 ***

CHART RECALIBRATION

CHART 2
SITES NO6 32

*** LOG GRA 1 *** UNIT S3000 *** STARTS AT 09:32:15 *** ENDS AT 09:32:20 JUL 09 96 ***

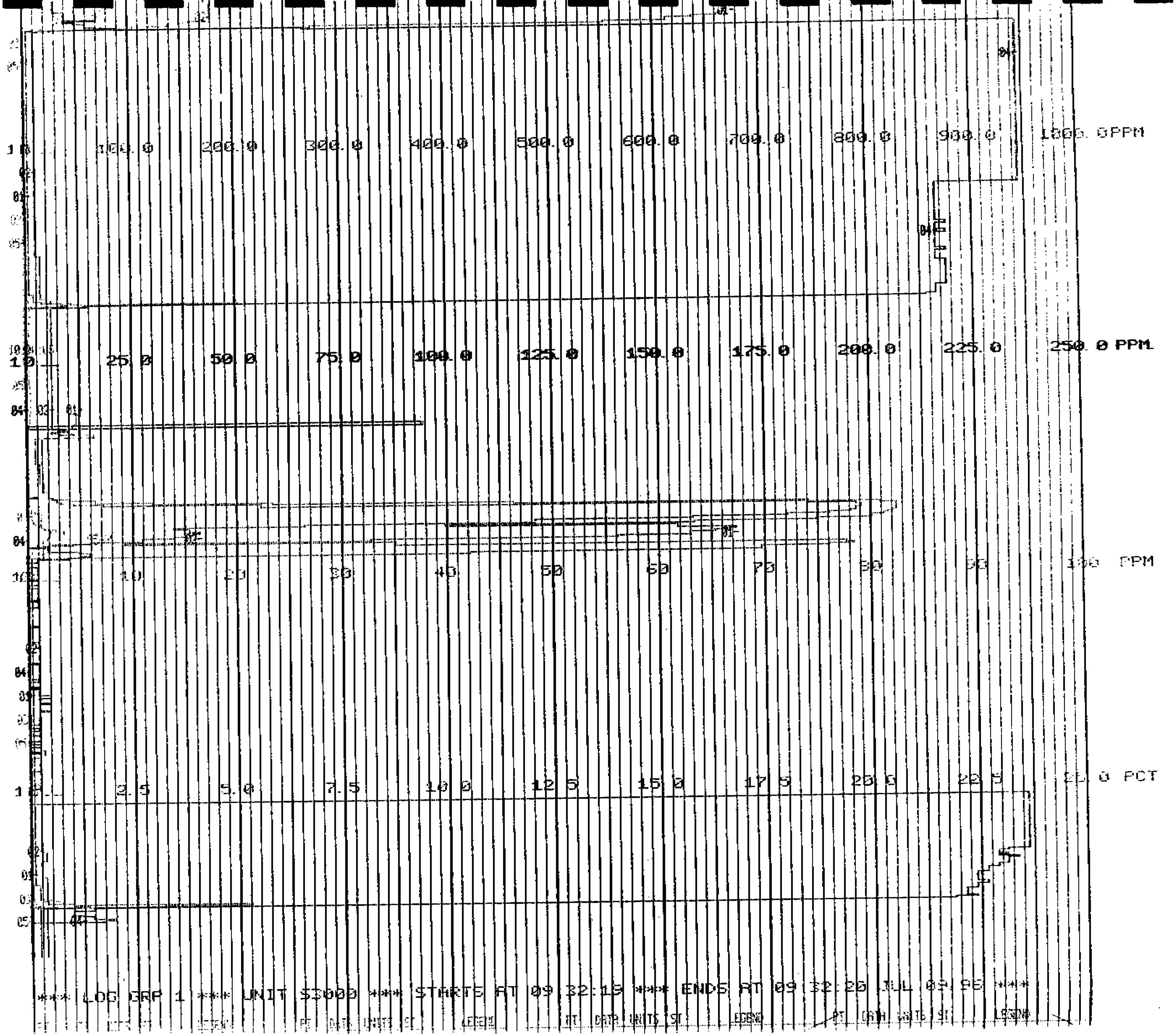
PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01		PCT		O2	02	13	PCT		CO2	03	12.2	PPM		CO	04				
05		PPM		NOX															

*** PRINTER ON 09:31:30 JUL 09,96 ***

THC Sys Bias Zero

CHART CAL

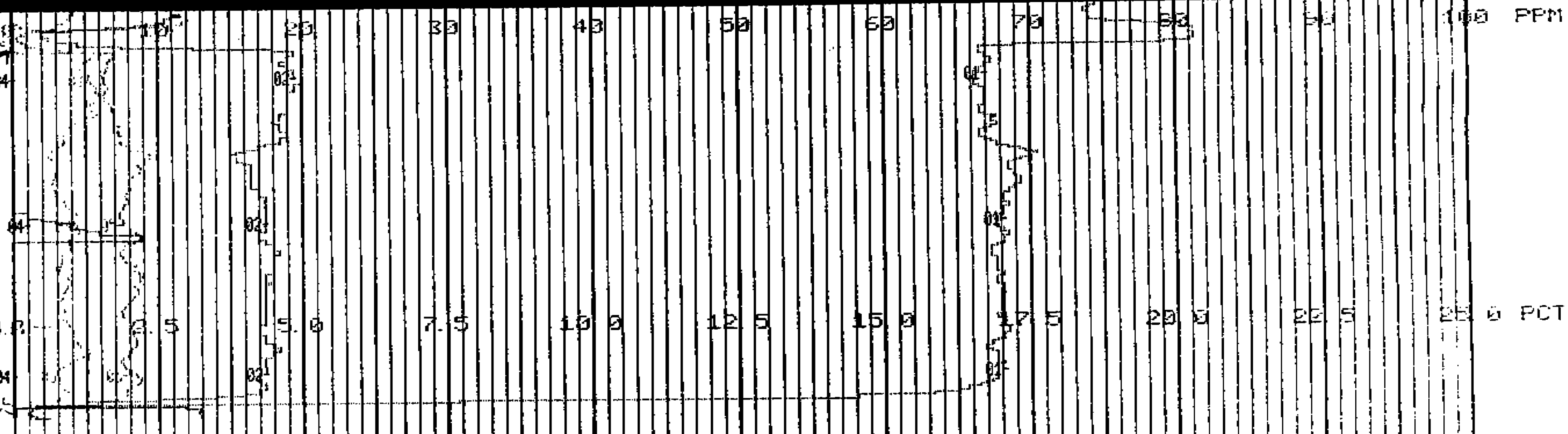
SITE



100.0 200.0 300.0 400.0 500.0 600.0 700.0 800.0 900.0 1000. GPPM
25.0 50.0 75.0 100.0 125.0 150.0 175.0 200.0 225.0 250.0 PPM
10 20 30 40 50 60 70 80 90 100 PPM
2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 PCT
*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 09:32:19 *** ENDS AT 09:32:20 JUL 09 96 ***

#3 In stack gas

#4 stack gas



*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 10:27:22 *** ENDS AT 10:27:23 JUL 09, 95 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	.5	PCT		O2	02	.3	PCT		CO2	03	4.3	PPM		CO	04	13.4	PPM		THC
05	.5	PPM		NOX															

THC

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 10:25:20 *** ENDS AT 10:25:20 JUL 09, 96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	.2	PCT		O2	02	.2	PCT		CO2	03	1.9	PPM		CO	04	51.3	PPM		THC
05	.5	PPM		NOX															

THC

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 10:23:16 *** ENDS AT 10:23:17 JUL 09, 96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	.2	PCT		O2	02	.2	PCT		CO2	03	2.4	PPM		CO	04	57.4	PPM		THC
05	.5	PPM		NOX															

THC

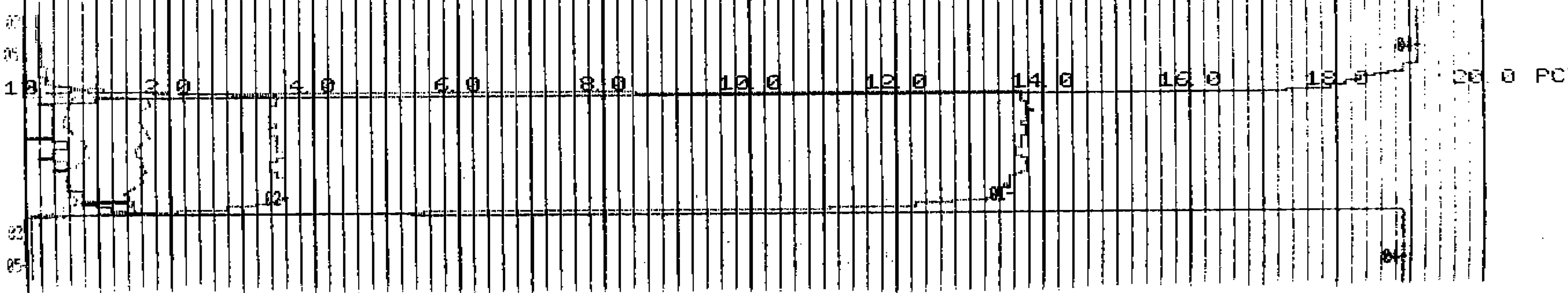


CHART 4
SITE Nos. 3 & 4

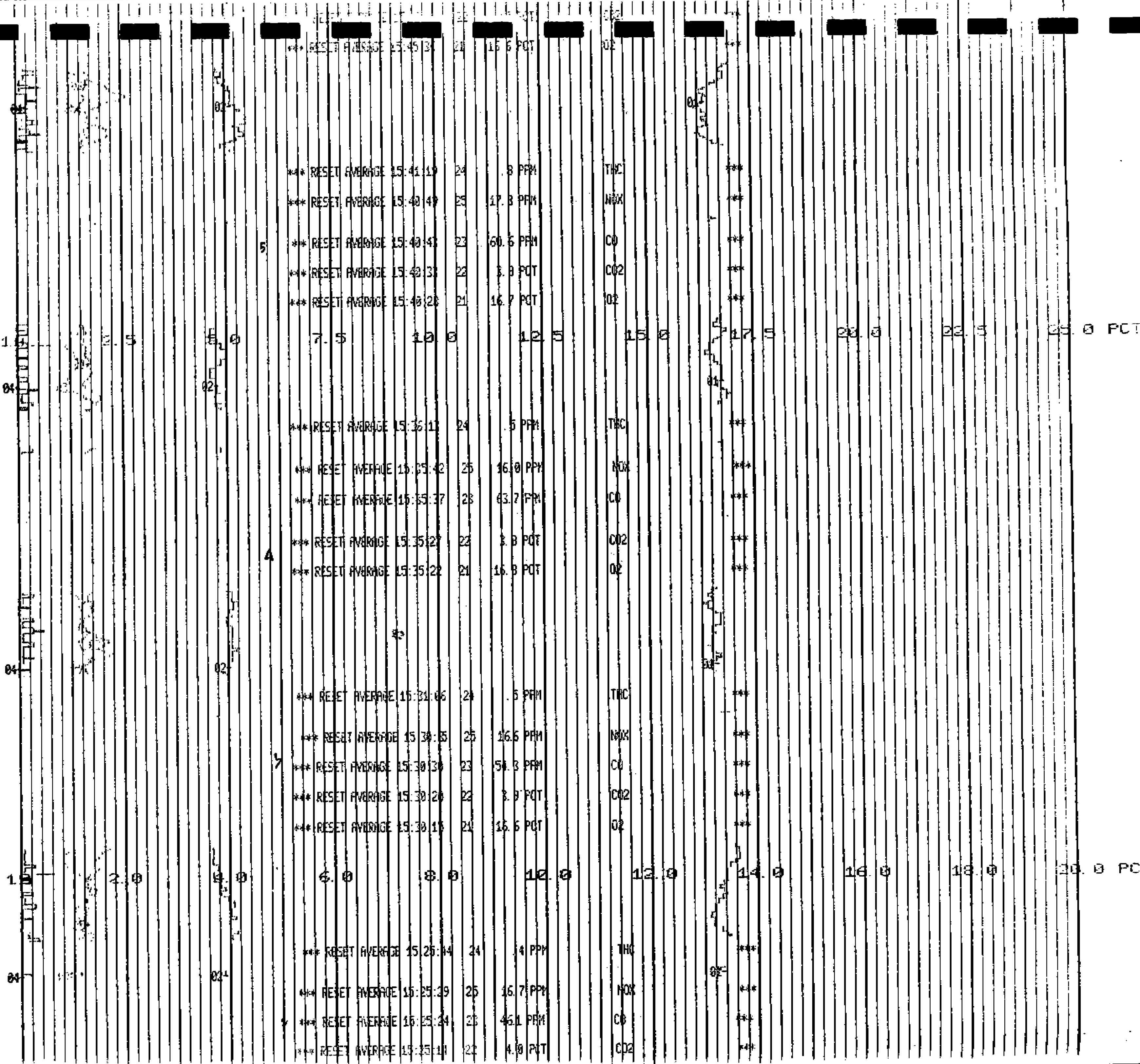
*** RESET AVERAGE 15:2[illegible] 25 [illegible] PPM NOX
*** RESET AVERAGE 15:25:24 23 46.1 PPM CO
*** RESET AVERAGE 15:25:14 22 4.0 PCT CO2
*** RESET AVERAGE 15:25:08 21 16.6 PCT O2

*** RESET AVERAGE 15:20:38 24 1.0 PPM THC
*** RESET AVERAGE 15:20:32 25 16.8 PPM NOX
*** RESET AVERAGE 15:20:17 23 51.7 PPM CO
*** RESET AVERAGE 15:20:07 22 3.8 PCT CO2
*** RESET AVERAGE 15:20:02 21 15.7 PCT O2

100.0 200.0 300.0 400.0 500.0 600.0 700.0 800.0 900.0 1000.0PPM

*** RESET AVERAGE 15:15:31 24 1.8 PPM THC
*** RESET AVERAGE 15:15:17 25 17.1 PPM NOX
*** RESET AVERAGE 15:15:17 25 17.1 PPM NOX
*** RESET AVERAGE 15:15:11 23 76.7 PPM CO
*** RESET AVERAGE 15:15:04 23 49.5 PPM CO
*** RESET AVERAGE 15:15:01 22 3.6 PCT CO2
*** RESET AVERAGE 15:14:56 21 16.9 PCT O2

START RUN 1 30 min @ #4 OUTLET 1515



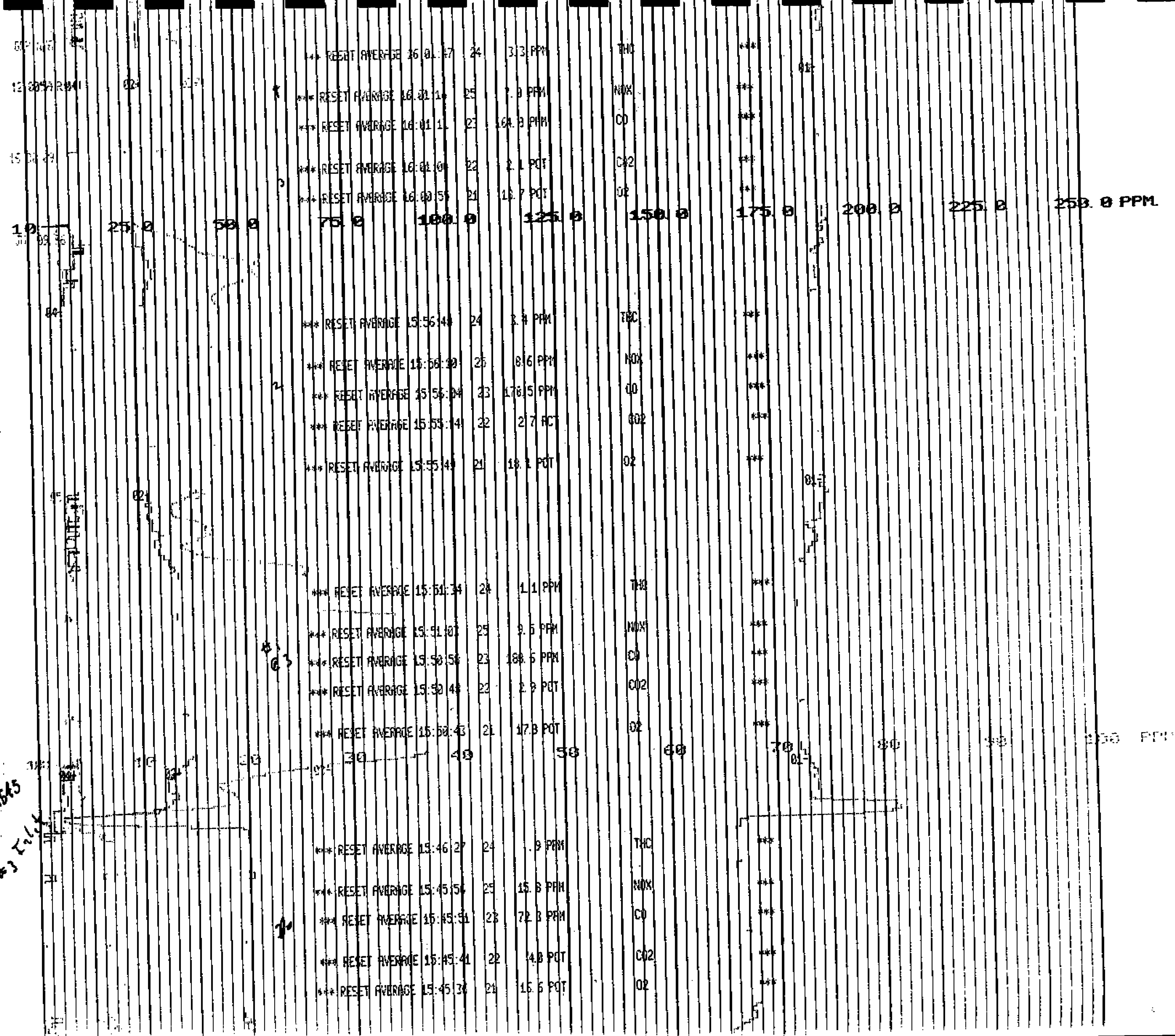
*** RESET AVERAGE 15:45:31 21 16.6 PCT O2

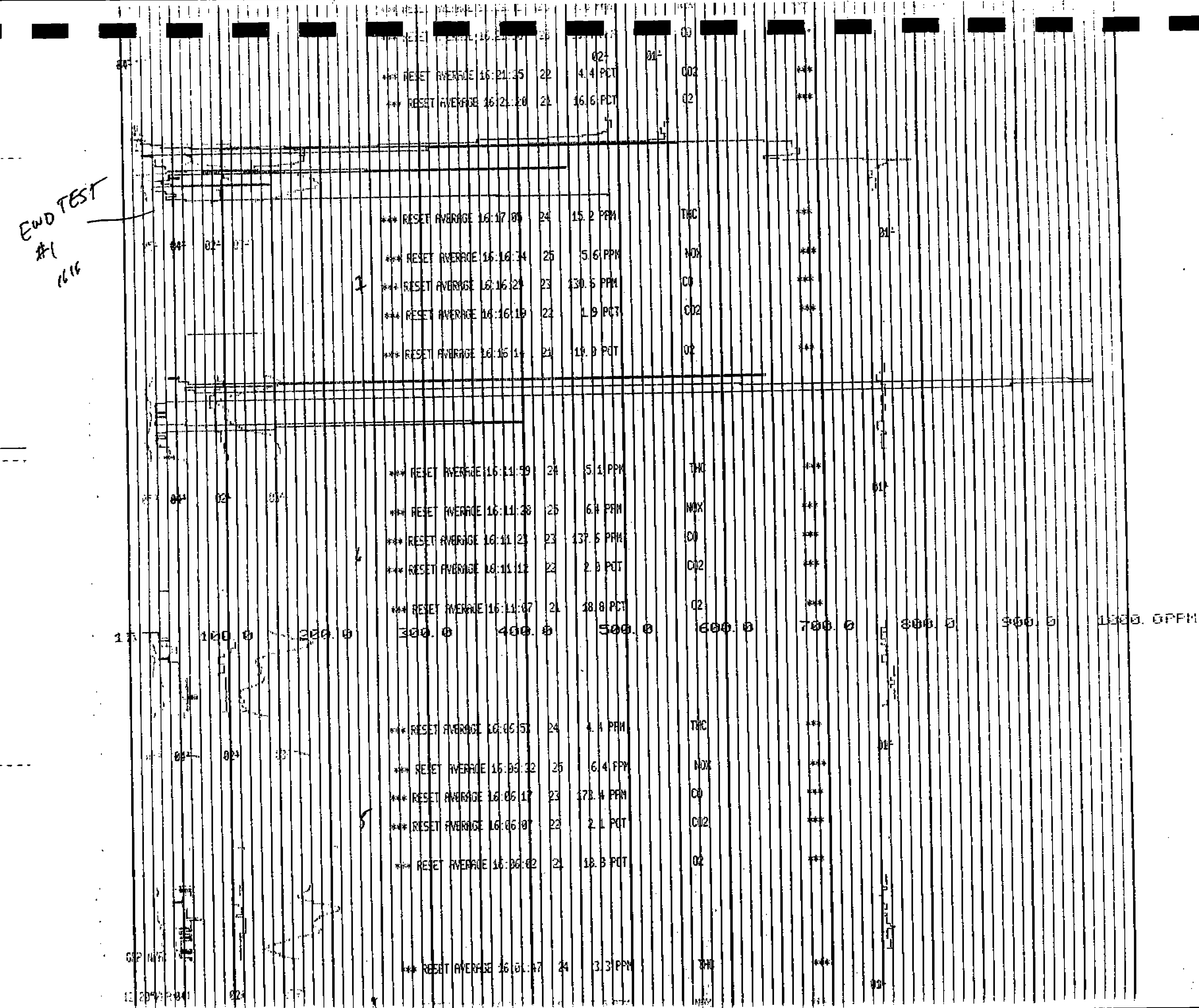
*** RESET AVERAGE 15:41:19 24 .8 PPM THC ***
*** RESET AVERAGE 15:40:49 25 17.8 PPM NOX ***
*** RESET AVERAGE 15:40:41 23 60.6 PPM CO ***
*** RESET AVERAGE 15:40:31 22 3.8 PCT CO2 ***
*** RESET AVERAGE 15:40:26 21 16.7 PCT O2 ***

*** RESET AVERAGE 15:36:11 24 .5 PPM THC ***
*** RESET AVERAGE 15:35:42 25 16.0 PPM NOX ***
*** RESET AVERAGE 15:35:37 23 63.7 PPM CO ***
*** RESET AVERAGE 15:35:27 22 3.8 PCT CO2 ***
*** RESET AVERAGE 15:35:22 21 16.8 PCT O2 ***

*** RESET AVERAGE 15:31:06 24 .5 PPM THC ***
*** RESET AVERAGE 15:30:35 25 16.5 PPM NOX ***
*** RESET AVERAGE 15:30:30 23 54.3 PPM CO ***
*** RESET AVERAGE 15:30:20 22 3.9 PCT CO2 ***
*** RESET AVERAGE 15:30:15 21 16.6 PCT O2 ***

*** RESET AVERAGE 15:25:44 24 .4 PPM THC ***
*** RESET AVERAGE 15:25:29 25 16.7 PPM NOX ***
*** RESET AVERAGE 15:25:24 23 46.1 PPM CO ***
*** RESET AVERAGE 15:25:10 22 4.0 PCT CO2 ***


*** RESET AVERAGE 16:01:47 24 3.3 PPM THC ***
*** RESET AVERAGE 16:01:14 25 7.0 PPM NOX ***
*** RESET AVERAGE 16:01:11 23 64.9 PPM CO ***
*** RESET AVERAGE 16:01:04 22 2.1 PCT CO2 ***
*** RESET AVERAGE 16:00:55 21 16.7 PCT O2 ***
10 25.0 50.0 75.0 100.0 125.0 150.0 175.0 200.0 225.0 250.0 PPM
*** RESET AVERAGE 15:56:48 24 3.4 PPM THC ***
*** RESET AVERAGE 15:56:30 25 8.6 PPM NOX ***
*** RESET AVERAGE 15:56:04 23 176.5 PPM CO ***
*** RESET AVERAGE 15:55:14 22 2.7 RCT CO2 ***
*** RESET AVERAGE 15:55:49 21 18.1 PCT O2 ***
*** RESET AVERAGE 15:51:34 24 1.1 PPM THC ***
*** RESET AVERAGE 15:51:03 25 9.5 PPM NOX ***
*** RESET AVERAGE 15:50:56 23 188.6 PPM CO ***
*** RESET AVERAGE 15:50:48 22 2.9 PCT CO2 ***
*** RESET AVERAGE 15:50:43 21 17.8 PCT O2 ***
10 20 30 40 50 60 70 80 90 100 PPM
*** RESET AVERAGE 15:46:27 24 .9 PPM THC ***
*** RESET AVERAGE 15:45:54 25 15.8 PPM NOX ***
*** RESET AVERAGE 15:45:51 23 72.8 PPM CO ***
*** RESET AVERAGE 15:45:41 22 4.8 PCT CO2 ***
*** RESET AVERAGE 15:45:34 21 16.6 PCT O2 ***
1545
Switch to #3 Inlet


*** RESET AVERAGE 16:21:35 22 4.4 PCT CO2 ***
*** RESET AVERAGE 16:21:20 21 16.6 PCT O2 ***
END TEST #1 1616
*** RESET AVERAGE 16:17:08 24 15.2 PPM THC ***
*** RESET AVERAGE 16:16:34 25 5.6 PPM NOX ***
*** RESET AVERAGE 16:16:24 23 130.5 PPM CO ***
*** RESET AVERAGE 16:16:19 22 1.9 PCT CO2 ***
*** RESET AVERAGE 16:15:14 21 19.0 PCT O2 ***
*** RESET AVERAGE 16:11:59 24 5.1 PPM THC ***
*** RESET AVERAGE 16:11:38 25 6.4 PPM NOX ***
*** RESET AVERAGE 16:11:23 23 137.5 PPM CO ***
*** RESET AVERAGE 16:11:12 22 2.0 PCT CO2 ***
*** RESET AVERAGE 16:11:07 21 18.8 PCT O2 ***
100.0 200.0 300.0 400.0 500.0 600.0 700.0 800.0 900.0 1000.0PPM
*** RESET AVERAGE 16:06:53 24 4.4 PPM THC ***
*** RESET AVERAGE 16:06:32 25 6.4 PPM NOX ***
*** RESET AVERAGE 16:06:17 23 173.4 PPM CO ***
*** RESET AVERAGE 16:06:07 22 2.1 PCT CO2 ***
*** RESET AVERAGE 16:06:02 21 18.3 PCT O2 ***
*** RESET AVERAGE 16:01:47 24 3.3 PPM THC ***

NOX

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 16:33:24 *** ENDS AT 16:33:25 JUL 09 96 ***

CO

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	4	PCT		O2	02	5	PCT		CO2	03	474.5	PPM		CO	04	.3	PPM		THC
05	.0	PPM		NOX															

1.0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 PCT

*** RESET AVERAGE 16:32:20 24 .6 PPM THC ***

*** RESET AVERAGE 16:31:50 25 2.5 PPM NOX ***

*** RESET AVERAGE 16:31:45 23 261.4 PPM CO ***

*** RESET AVERAGE 16:31:35 22 5.5 PCT CO2 ***

*** RESET AVERAGE 16:31:10 21 5.9 PCT O2 ***

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 16:28:04 *** ENDS AT 16:28:05 JUL 09 96 ***

#4 SysBias CAL/02

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	12.7	PCT		O2	02	12.0	PCT		CO2	03	16.3	PPM		CO	04	.0	PPM		THC
05	4.1	PPM		NOX															

*** RESET AVERAGE 16:27:16 24 1.7 PPM THC ***

*** RESET AVERAGE 16:26:46 25 11.0 PPM NOX ***

*** RESET AVERAGE 16:26:41 23 46.0 PPM CO ***

*** RESET AVERAGE 16:26:30 22 7.1 PCT CO2 ***

*** RESET AVERAGE 16:26:25 21 15.0 PCT O2 ***

*** RESET AVERAGE 16:22:11 24 5.4 PPM THC ***

1.0 2.0 4.0 6.0 8.0 10.0 12.0 14.0 16.0 18.0 20.0 PCT

*** RESET AVERAGE 16:21:41 25 7.5 PPM NOX ***

*** RESET AVERAGE 16:21:36 23 99.4 PPM CO ***

*** RESET AVERAGE 16:21:35 22 4.4 PCT CO2 ***

*** LOG GRP 1 *** UNIT 53000 *** STARTS AT 16:47:24 *** ENDS AT 16:__ JUL 09,__ ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	2	PCT		O2	02	13.7	PCT		CO2	03	14.9	PPM		CO	04	2.5	PPM		THC
05	3	PPM		NOX															

*** RESET AVERAGE 16:47:08 25 31.5 PPM NOX ***

*** RESET AVERAGE 16:47:03 23 23.9 PPM CO ***

*** RESET AVERAGE 16:46:52 22 5.8 PCT CO2 ***

*** RESET AVERAGE 16:46:47 21 11.0 PCT O2 ***

20 30 40 50 60 70 80 90 100 PPM

*** RESET AVERAGE 16:42:30 24 6.8 PPM THC ***

*** RESET AVERAGE 16:42:08 25 3.3 PPM NOX ***

*** RESET AVERAGE 16:41:56 23 14.1 PPM CO ***

*** RESET AVERAGE 16:41:45 22 4.7 PCT CO2 ***

*** RESET AVERAGE 16:41:40 21 4.6 PCT O2 ***

*** LOG GRP 1 *** UNIT 53000 *** STARTS AT 16:38:13 *** ENDS AT 16:38:16 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	2	PCT		O2	02	3	PCT		CO2	03	2.6	PPM		CO	04	12.6	PPM		THC
05	0	PPM		NOX															

*** RESET AVERAGE 16:37:21 24 6.2 PPM THC ***

*** RESET AVERAGE 16:36:54 25 46.8 PPM NOX ***

*** RESET AVERAGE 16:36:49 23 208.0 PPM CO ***

*** RESET AVERAGE 16:36:39 22 .5 PCT CO2 ***

*** RESET AVERAGE 16:36:34 21 1.0 PCT O2 ***

*** LOG GRP 1 *** UNIT 53000 *** STARTS AT 16:35:14 *** ENDS AT 16:35:14 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	1	PCT		O2	02	3	PCT		CO2	03	4.0	PPM		CO	04	0	PPM		THC
05	186	PPM		NOX															

30/02

#354 5 Bias

THC

NOX

*** RESET AVERAGE 17:00:45 22 3.9 PCT CO2 ***

*** RESET AVERAGE 17:00:33 21 16.5 PCT O2 ***

*** RESET AVERAGE 16:57:51 24 4.0 PPM THC ***

*** RESET AVERAGE 16:57:20 25 42.1 PPM NOX ***

*** RESET AVERAGE 16:57:15 23 187.7 PPM CO ***

*** RESET AVERAGE 16:57:05 22 1.9 PCT CO2 ***

*** RESET AVERAGE 16:57:00 21 9.8 PCT O2 ***

10 25.0 50.0 75.0 100.0 125.0 150.0 175.0 200.0 225.0 250.0 PPM.

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 16:53:34 *** ENDS AT 16:53:34 JUL 09,98 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	[illegible]	PCT		O2	02	.3	PCT		CO2	03	11.1	PPM		CO	04	3.3	PPM		THC
05	[illegible]	PPM		NOX															

co2/o2 2nd
NOx

*** RESET AVERAGE 16:52:44 24 3.6 PPM THC ***

*** RESET AVERAGE 16:52:23 25 .9 PPM NOX ***

*** RESET AVERAGE 16:52:08 23 365.4 PPM CO ***

*** RESET AVERAGE 16:51:58 22 4.1 PCT CO2 ***

*** RESET AVERAGE 16:51:52 21 3.7 PCT O2 ***

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 16:49:23 *** ENDS AT 16:49:28 JUL 09,98 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	4	PCT		O2	02	.3	PCT		CO2	03	485.4	PPM		CO	04	2.3	PPM		THC
05	.9	PPM		NOX															

CO

*** RESET AVERAGE 16:47:38 24 1.6 PPM THC ***

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 16:47:24 *** ENDS AT 16:47:25 JUL 09,98 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	[illegible]	[illegible]		O2	02	13.7	PCT		CO2	03	19.9	PPM		CO	04	2.5	PPM		THC

CO2/O2

*** RESET AVERAGE 17:16:07 25 13.3 PPM NOX ***

*** RESET AVERAGE 17:16:05 24 7.4 PPM THC ***
*** RESET AVERAGE 17:16:05 24 7.4 PPM THC ***

*** RESET AVERAGE 17:16:00 22 3.8 PCT CO2 ***

*** RESET AVERAGE 17:15:55 21 16.7 PCT O2 ***

*** RESET AVERAGE 17:11:02 25 14.7 PPM NOX ***

*** RESET AVERAGE 17:11:00 24 3.4 PPM THC ***
*** RESET AVERAGE 17:11:00 24 3.4 PPM THC ***

*** RESET AVERAGE 17:10:55 22 3.8 PCT CO2 ***

*** RESET AVERAGE 17:10:50 21 16.7 PCT O2 ***

*** RESET AVERAGE 17:05:57 25 14.5 PPM NOX ***

*** RESET AVERAGE 17:05:55 24 11.7 PPM THC ***
*** RESET AVERAGE 17:05:55 24 11.7 PPM THC ***

*** RESET AVERAGE 17:05:50 23 3.7 PCT CO2 ***

*** RESET AVERAGE 17:05:45 21 16.8 PCT O2 ***

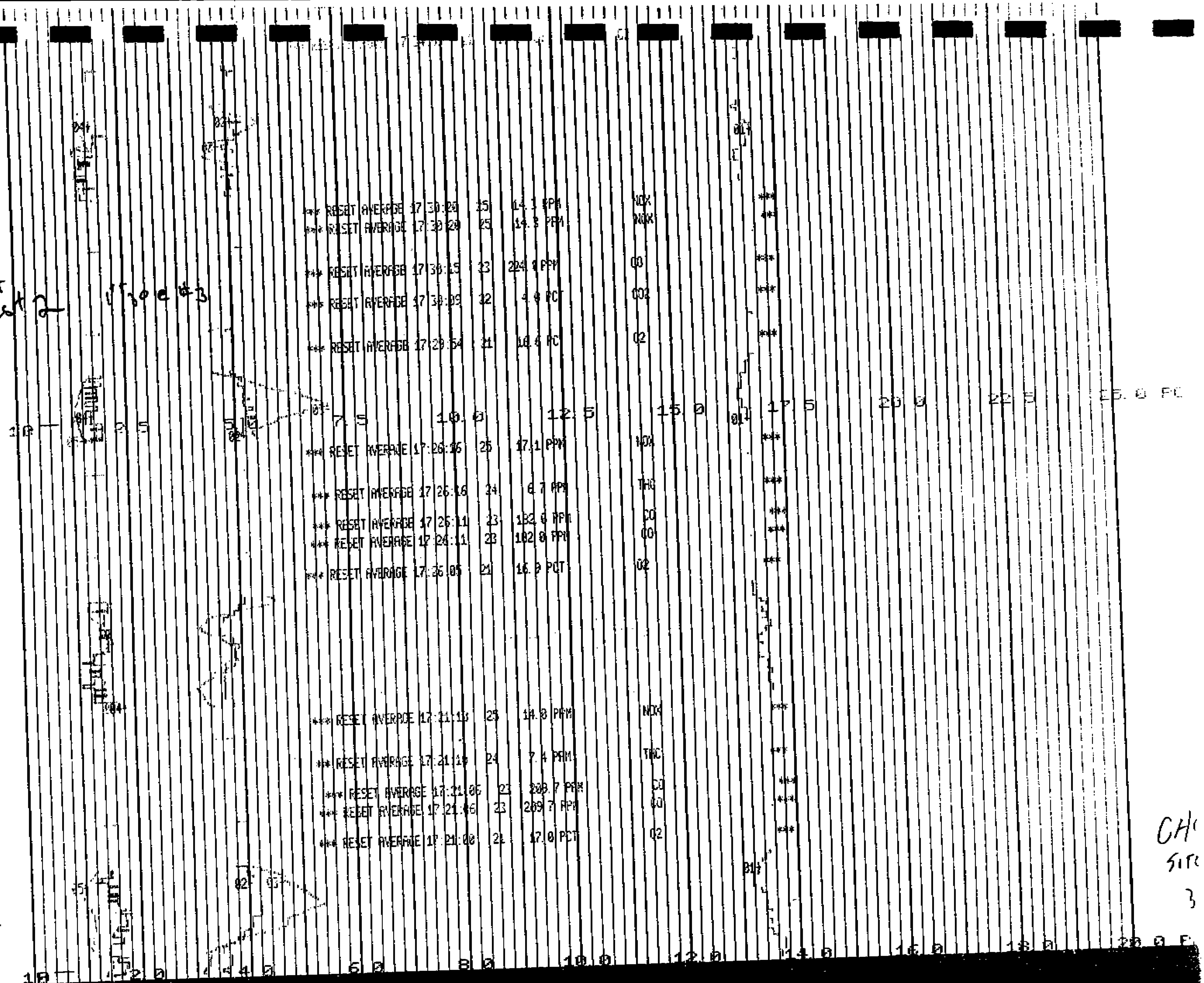
100.0 200.0 300.0 400.0 500.0 600.0 700.0 800.0 900.0 1000.0PPM

*** RESET AVERAGE 17:00:51 25 14.2 PPM NOX ***
*** RESET AVERAGE 17:00:51 25 14.2 PPM NOX ***
*** RESET AVERAGE 17:00:50 24 3.8 PPM THC ***

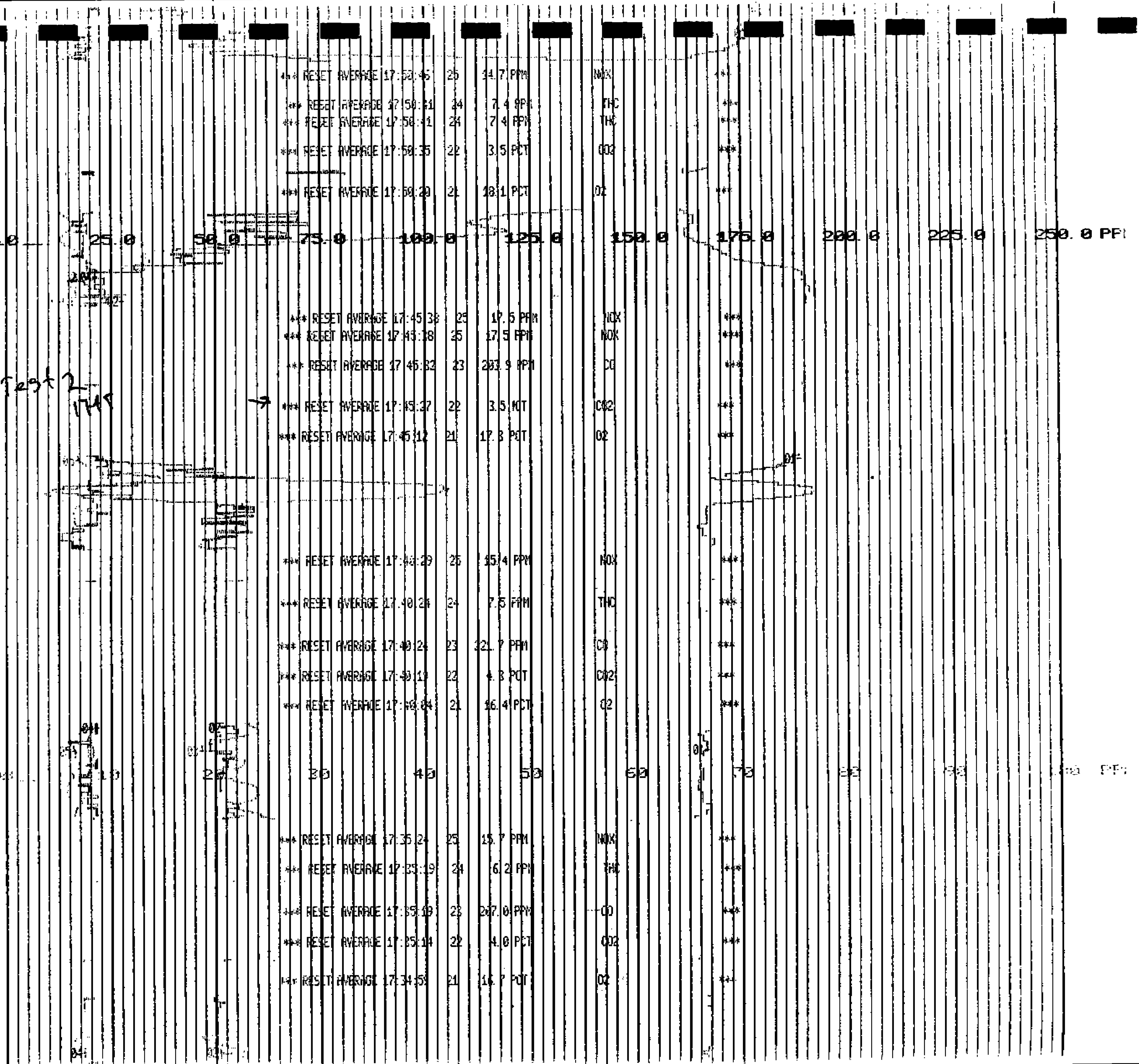
*** RESET AVERAGE 17:00:45 22 3.9 PCT CO2 ***

*** RESET AVERAGE 17:00:37 21 16.5 PCT O2 ***

START Test 2 1730 @ #3



CH
Site
3



STOP Test 2 1745
Power Dump
Computer

*** RESET AVERAGE 18:[illegible] 25 240.9 PPM CO

*** RESET AVERAGE 18:26:24 25 18.6 PPM NOX

*** RESET AVERAGE 18:25:24 24 18.2 PPM THC

*** RESET AVERAGE 18:26:19 22 9.5 PCT CO2

*** RESET AVERAGE 18:25:03 21 16.7 PCT O2

*** RESET AVERAGE 18:22:45 23 339.3 PPM CO

*** RESET AVERAGE 18:21:38 25 18.8 PPM NOX

*** RESET AVERAGE 18:21:38 24 16.9 PPM THC
*** RESET AVERAGE 18:21:18 24 16.9 PPM THC

*** RESET AVERAGE 18:21:13 22 5.4 PCT CO2

*** RESET AVERAGE 18:20:54 21 16.5 PCT O2

10.0 12.5 15.0 17.5 20.0 22.5 25.0 PC

*** RESET AVERAGE 18:16:14 25 18.5 PPM NOX

*** RESET AVERAGE 18:16:33 24 7.1 PPM THC

*** RESET AVERAGE 18:16:08 23 262.2 PPM CO

*** RESET AVERAGE 18:15:04 22 5.1 PCT CO2

*** RESET AVERAGE 18:15:54 21 16.6 PCT O2

Restart Test 2 1815

**** PRINTER ON 18:13:16 JUL 09,96 ****
**** PRINTER OFF 17:55:18 JUL 09,96 ****

*** RESET AVERAGE 17:58:45 25 14.7 PPM NOX

*** RESET AVERAGE [illegible] 24 3.4 PPM THC

10.0 / 12.0 / 14.0 / 16.0 / 18.0 / 20.0 PC

*** RESET AVERAGE 19:01:39 22 5.5 PCT CO2 ***
*** RESET AVERAGE 19:01:28 23 18.0 PPM NOX ***
*** RESET AVERAGE 19:01:23 24 1.0 PPM THC ***
*** RESET AVERAGE 19:01:18 23 60.7 PPM CO ***
*** RESET AVERAGE 19:01:18 21 16.2 PCT O2 ***
*** RESET AVERAGE 18:56:32 22 6.5 PCT CO2 ***
*** RESET AVERAGE 18:56:17 25 17.1 PPM NOX ***
*** RESET AVERAGE 18:56:17 24 .8 PPM THC ***
*** RESET AVERAGE 18:56:11 23 59.0 PPM CO ***
*** RESET AVERAGE 18:56:11 21 16.0 PCT O2 ***

100.0 200.0 300.0 400.0 500.0 600.0 700.0 800.0 900.0 1000.0 DF

*** RESET AVERAGE 18:51:26 22 6.0 PCT CO2 ***
*** RESET AVERAGE 18:51:10 25 17.5 PPM NOX ***
*** RESET AVERAGE 18:51:10 24 1.1 PPM THC ***
*** RESET AVERAGE 18:51:05 23 55.1 PPM CO ***
*** RESET AVERAGE 18:51:05 23 55.1 PPM CO ***
*** RESET AVERAGE 18:51:05 21 16.0 PCT O2 ***
*** RESET AVERAGE 18:46:11 24 .9 PPM THC ***
*** RESET AVERAGE 18:47:56 23 57.1 PPM CO ***
*** RESET AVERAGE 18:46:50 25 18.2 PPM NOX ***
*** RESET AVERAGE 18:46:50 25 18.2 PPM NOX ***
*** RESET AVERAGE 18:46:44 22 5.9 PCT CO2 ***
*** RESET AVERAGE 18:46:19 21 16.3 PCT O2 ***

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 19:15:00 *** ENDS AT 19:15:01 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	3.7	[illegible]		O2	02	.5	PCT		CO2	03	4.0	PPM		CO	04	[illegible]	PPM		THC
05	116.7	PPM		NOX															

NOx

2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 PCT

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 19:13:38 *** ENDS AT 19:13:39 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	[illegible]	PCT		O2	02	1.3	PCT		CO2	03	485.8	PPM		CO	04	.8	PPM		THC
05	.3	PPM		NOX															

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 19:12:05 *** ENDS AT 19:12:05 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	42.7	PCT		O2	02	11.4	PCT		CO2	03	16.3	PPM		CO	04	.5	PPM		THC
05	.3	PPM		NOX															

Sys Bias No. 4 co/co2 co Bias NOx Zero ~~THC Zero~~

*** RESET AVERAGE 19:11:51 22 7.0 PCT CO2 ***

*** RESET AVERAGE 19:11:16 25 12.6 PPM NOX ***

*** RESET AVERAGE 19:11:36 24 1.8 PPM THC ***

*** RESET AVERAGE 19:11:31 23 48.6 PPM CO ***

*** RESET AVERAGE 19:11:31 21 15.8 PCT O2 ***

End Test 2

*** RESET AVERAGE 19:06:45 22 5.2 PCT CO2 ***

*** RESET AVERAGE 19:06:30 25 15.1 PPM NOX ***

*** RESET AVERAGE 19:06:30 24 1.8 PPM THC ***

*** RESET AVERAGE 19:06:25 23 44.4 PPM CO ***

*** RESET AVERAGE 19:06:25 21 16.1 PCT O2 ***

1.0 2.0 4.0 6.0 8.0 10.0 12.0 14.0 16.0 18.0 20.0 PCT

*** RESET AVERAGE 19:01:39 22 5.5 PCT CO2 ***

*** RESET AVERAGE 19:01:[illegible] 25 [illegible] PPM NOX ***

5-17
No. 3

*** RESET AVERAGE 19:27:16 22 5.8 PCT CO2 ***

*** RESET AVERAGE 19:26:55 25 12.9 PPM NOX ***

*** RESET AVERAGE 19:26:55 24 .1 PPM THC ***

*** RESET AVERAGE 19:26:50 23 54.3 PPM CO ***

*** RESET AVERAGE 19:25:50 21 16.1 PCT O2 ***

10 20 30 40 50 60 70 80 90 100 PPM

*** RESET AVERAGE 19:22:53 22 5.1 PCT CO2 ***

*** RESET AVERAGE 19:21:48 25 10.7 PPM NOX ***

*** RESET AVERAGE 19:21:48 24 4.1 PPM THC ***

*** RESET AVERAGE 19:21:43 23 40.2 PPM CO ***

*** RESET AVERAGE 19:21:43 21 12.0 PCT O2 ***

*** LOG GRP 1 *** UNIT 53000 *** STARTS AT 19:17:25 *** ENDS AT 19:17:26 JUL 09, 96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	.2	PCT		O2	02	.2	PCT		CO2	03	2.7	PPM		CO	04	17.8	PPM		THC
05	.1	PPM		NOX															

*** RESET AVERAGE 19:16:57 22 2.7 PCT CO2 ***

*** RESET AVERAGE 19:16:42 25 32.4 PPM NOX ***

*** RESET AVERAGE 19:16:42 24 4.9 PPM THC ***

*** RESET AVERAGE 19:16:37 23 153.4 PPM CO ***

*** RESET AVERAGE 19:16:37 21 3.0 PCT O2 ***

*** LOG GRP 1 *** UNIT 53000 *** STARTS AT 19:15:00 *** ENDS AT 19:15:01 JUL 09, 96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
							PCT		CO2	03	4.0	PPM		CO	04		PPM		THC

*** RESET AVERAGE 19:17:09 24 3.7 PPM THC ***

*** RESET AVERAGE 19:37:04 21 4.4 PCT O2 ***

100.0	25.0	50.0	75.0	100.00	125.0	150.0	175.0	200.0	225.0	250.0 PPM

*** LOG GRP 1 *** UNIT 53000 *** STARTS AT 19:35:41 *** ENDS AT 19:35:42 JUL 09, 96 ***

CO

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	1	PCT		O2	04	.7	PCT		CO2	03	484.3	PPM		CO	04	4.2	PPM		THC
05	1	PPM		NOX															

*** LOG GRP 1 *** UNIT 53000 *** STARTS AT 19:33:45 *** ENDS AT 19:33:46 JUL 09, 96 ***

NOx

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	5	PCT		O2	02	7	PCT		CO2	03	1.4	PPM		CO	04	3.9	PPM		THC
05	116.1	PPM		NOX															

*** RESET AVERAGE 19:32:17 22 9.6 PCT CO2 ***

*** LOG GRP 1 *** UNIT 53000 *** STARTS AT 19:32:01 *** ENDS AT 19:32:08 JUL 09, 96 ***

combo

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	11.5	PCT		O2	02	12.5	PCT		CO2	03	2	PPM		CO	04	3.8	PPM		THC
05	3	PPM		NOX															

*** RESET AVERAGE 19:32:02 24 2.5 PPM THC ***

*** RESET AVERAGE 19:31:57 23 116.0 PPM NO ***

*** RESET AVERAGE 19:31:57 21 19.0 PCT O2 ***

*** LOG GRP 1 *** UNIT 53000 *** STARTS AT 19:28:09 *** ENDS AT 19:28:09 JUL 09, 96 ***

Nox Gen

5-13 Bin No. 3

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	11.7	PCT		O2	02	12.4	PCT		CO2	03	5.8	PPM		CO	04	2.9	PPM		THC
05	2	PPM		NOX															

*** RESET AVERAGE 19:27:19 22 5.8 PCT CO2 ***

START test 3 @ ...

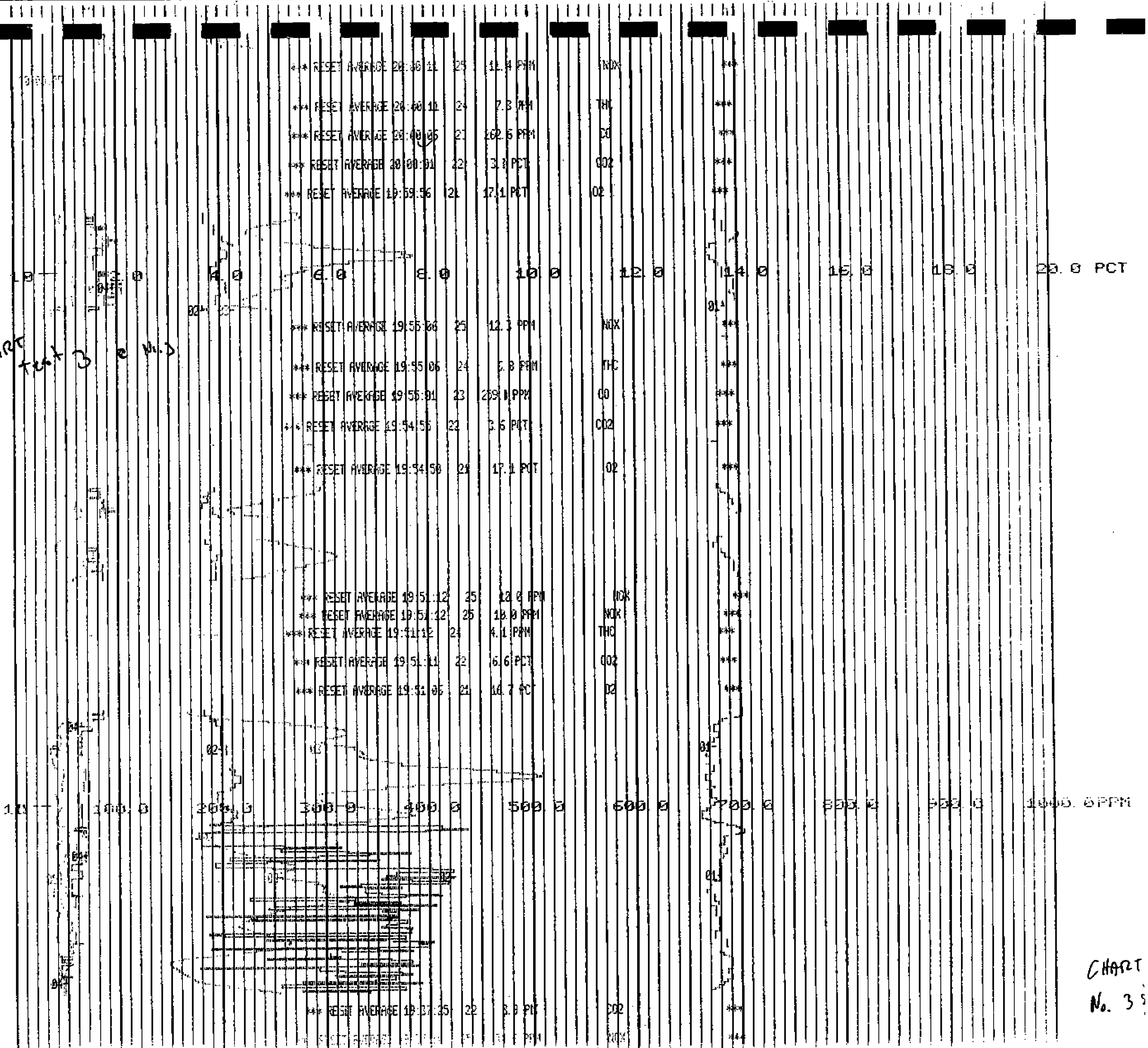


CHART No. 3

*** RESET AVERAGE 20:[illegible] 21 [illegible] PPM

*** RESET AVERAGE 20:20:22 21 3.8 PCT CO2

*** RESET AVERAGE 20:2[illegible]:17 21 17.[illegible] PCT O2

10 20 30 40 50 60 70 80 90 100 PPM

*** RESET AVERAGE 20:15:27 25 12.8 PPM NOX

*** RESET AVERAGE 20:15:27 24 7.1 PPM THC

*** RESET AVERAGE 20:15:22 23 270.1 PPM CO

*** RESET AVERAGE 20:15:17 23 3.4 PCT CO2

*** RESET AVERAGE 20:15:12 21 17.3 PCT O2

*** RESET AVERAGE 20:10:22 25 12.2 PPM NOX

*** RESET AVERAGE 20:10:22 25 12.2 PPM NOX

*** RESET AVERAGE 20:10:16 23 322.7 PPM CO

*** RESET AVERAGE 20:10:11 22 3.8 PCT CO2

*** RESET AVERAGE 20:10:05 23 17.0 PCT O2

2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 PCT

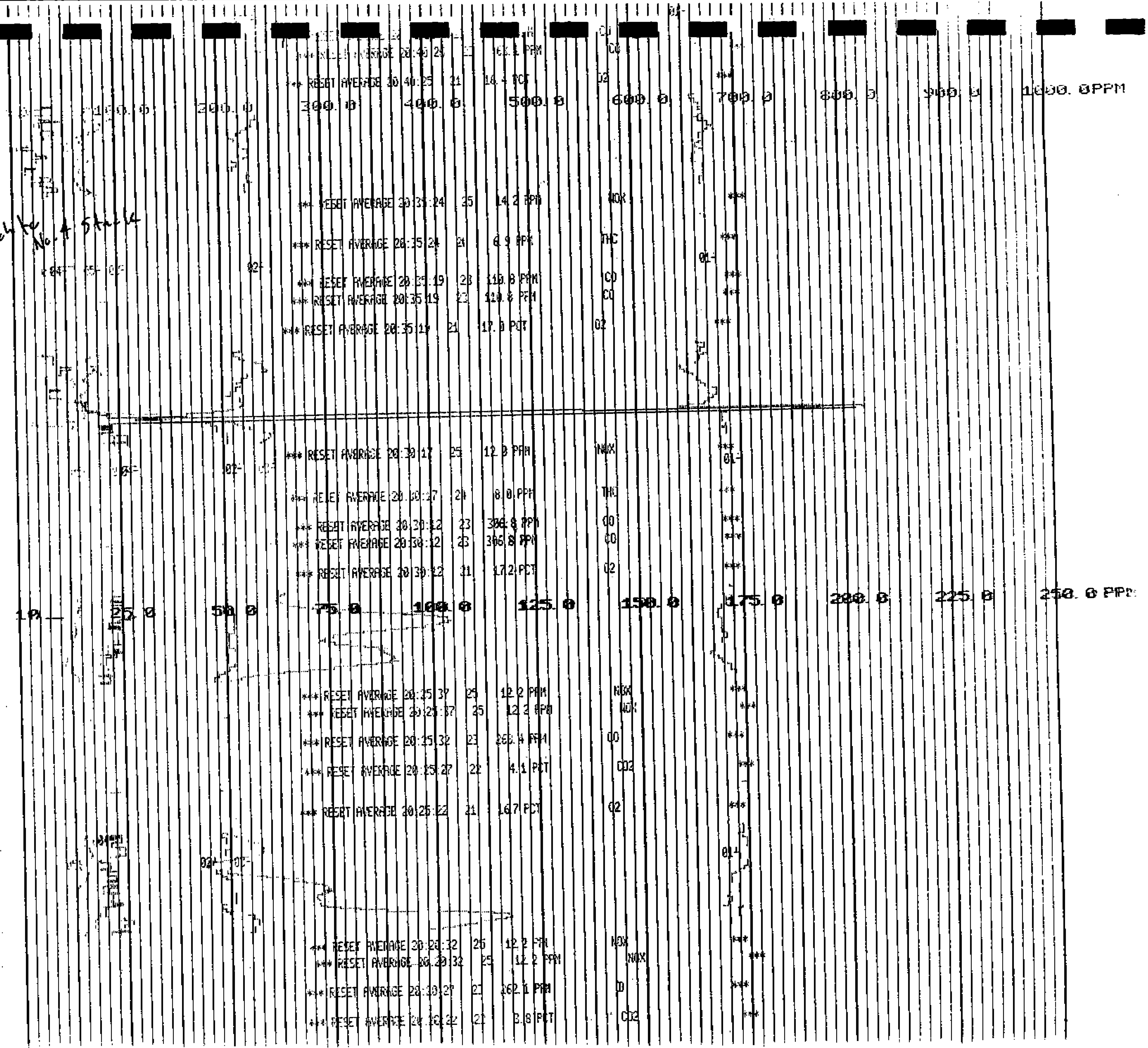
*** RESET AVERAGE 20:05:16 25 12.5 PPM NOX

*** RESET AVERAGE 20:05:16 24 7.0 PPM THC

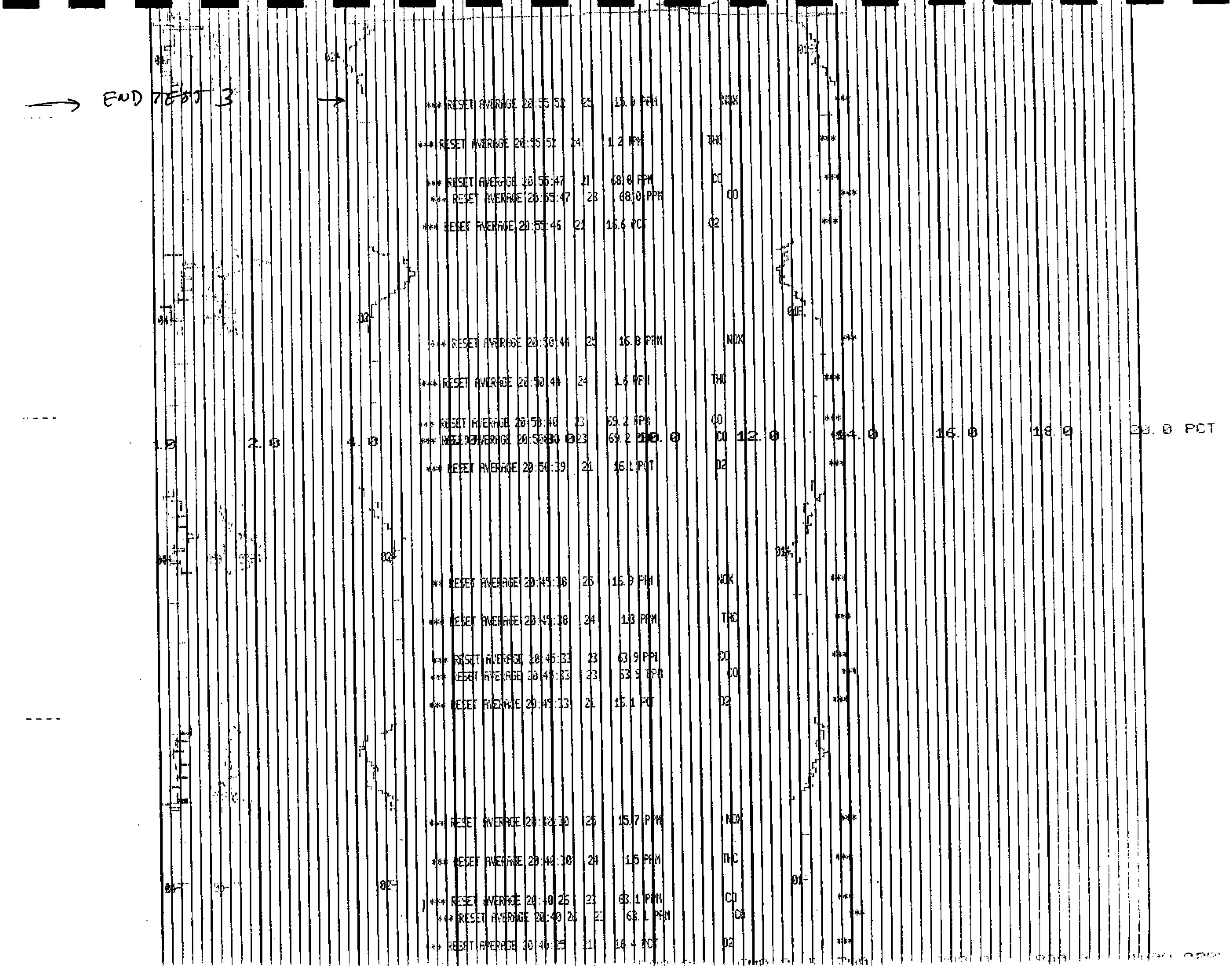
*** RESET AVERAGE 20:05:11 23 268.1 PPM CO

*** RESET AVERAGE 20:05:06 22 3.6 PCT CO2

*** RESET AVERAGE 20:05:01 21 17.1 PCT O2



*** RESET AVERAGE 20:40:25 21 18.4 PCT O2
100.0 200.0 300.0 400.0 500.0 600.0 700.0 800.0 900.0 1000.0PPM
*** RESET AVERAGE 20:35:24 25 14.2 PPM NOX
*** RESET AVERAGE 20:35:24 21 6.9 PPM THC
*** RESET AVERAGE 20:35:19 23 110.8 PPM CO
*** RESET AVERAGE 20:35:19 23 110.8 PPM CO
*** RESET AVERAGE 20:35:14 21 17.0 PCT O2
*** RESET AVERAGE 20:30:17 25 12.0 PPM NOX
*** RESET AVERAGE 20:30:27 21 8.0 PPM THC
*** RESET AVERAGE 20:30:12 23 306.8 PPM CO
*** RESET AVERAGE 20:30:12 23 306.8 PPM CO
*** RESET AVERAGE 20:30:12 21 17.2 PCT O2
10 25.0 50.0 75.0 100.0 125.0 150.0 175.0 200.0 225.0 250.0 PPM
*** RESET AVERAGE 20:25:37 25 12.2 PPM NOX
*** RESET AVERAGE 20:25:37 25 12.2 PPM NOX
*** RESET AVERAGE 20:25:32 23 268.4 PPM CO
*** RESET AVERAGE 20:25:27 22 4.1 PCT CO2
*** RESET AVERAGE 20:25:22 21 16.7 PCT O2
*** RESET AVERAGE 20:20:32 25 12.2 PPM NOX
*** RESET AVERAGE 20:20:32 25 12.2 PPM NOX
*** RESET AVERAGE 20:20:27 23 162.1 PPM CO
*** RESET AVERAGE 20:20:22 21 3.8 PCT CO2
Switch to No. 4 Stack



END TEST 3
*** RESET AVERAGE 20:55:52 25 15.6 PPM NOX
*** RESET AVERAGE 20:55:52 24 1.2 PPM THC
*** RESET AVERAGE 20:55:47 21 68.0 PPM CO
*** RESET AVERAGE 20:55:47 23 68.0 PPM CO
*** RESET AVERAGE 20:55:46 21 16.6 PCT O2
*** RESET AVERAGE 20:50:44 25 16.8 PPM NOX
*** RESET AVERAGE 20:50:44 24 1.6 PPM THC
*** RESET AVERAGE 20:50:40 23 69.2 PPM CO
*** RESET AVERAGE 20:50:40 23 69.2 PPM CO
*** RESET AVERAGE 20:50:39 21 16.1 PCT O2
*** RESET AVERAGE 20:45:38 25 15.9 PPM NOX
*** RESET AVERAGE 20:45:38 24 1.3 PPM THC
*** RESET AVERAGE 20:45:33 23 63.9 PPM CO
*** RESET AVERAGE 20:45:33 23 63.9 PPM CO
*** RESET AVERAGE 20:45:33 21 15.1 PCT O2
*** RESET AVERAGE 20:40:30 25 15.7 PPM NOX
*** RESET AVERAGE 20:40:30 24 1.5 PPM THC
*** RESET AVERAGE 20:40:26 21 63.1 PPM CO
*** RESET AVERAGE 20:40:26 23 63.1 PPM CO
*** RESET AVERAGE 20:40:25 21 16.4 PCT O2
1.0
2.0
4.0
10.0
12.0
14.0
16.0
18.0
20.0 PCT

No. 3 Sys Bias cal/pt

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 21:08:06 *** ENDS AT 21:08:07 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	13.[illegible]	PCT		O2	02	12.8	PCT		CO2	03	.3	PPM		CO	04	5.2	PPM		THC
05	[illegible]	PPM		NOX															

*** RESET AVERAGE 21:08:08 22 2.2 PCT CO2 ***

*** RESET AVERAGE 21:06:08 21 5.1 PCT O2 ***

THC

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 21:04:38 *** ENDS AT 21:04:39 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	[illegible]			O2	02	.1	PCT		CO2	03	3.5	PPM		CO	04	45.3	PPM		THC
05	[illegible]	PPM		NOX															

NOx

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 21:03:20 *** ENDS AT 21:03:21 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	.5	PCT		O2	02	.3	PCT		CO2	03	25.5	PPM		CO	04	0	PPM		THC
05	118.2	PPM		NOX															

CO

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 21:02:32 *** ENDS AT 21:02:33 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	.5	PCT		O2	02	.3	PCT		CO2	03	479.0	PPM		CO	04	.4	PPM		THC
05	1	PPM		NOX															

2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0

No. 4 Sys Bias cal/pt

*** LOG GRP 1 *** UNIT S3000 *** STARTS AT 21:00:56 *** ENDS AT 21:01:05 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	12.6	PCT		O2	02	12.0	PCT		CO2	03	19.4	PPM		CO	04	.9	PPM		THC
05	3.6	PPM		NOX															

*** RESET AVERAGE 21:00:57 24 .8 PPM THC ***

*** RESET AVERAGE 21:00:53 23 42.2 PPM CO ***

*** RESET AVERAGE 21:00:53 23 42.2 PPM CO ***

*** RESET AVERAGE 21:00:52 21 15.6 PCT O2 ***

21 ANALOG

*** SYSTEM RESTART 21:35:16 JUL 09,96 ***

*** PRINTER OFF 21:16:32 JUL 09,96 ***

*** RESET AVERAGE 21:16:16 25 45.8 PPM NOX ***

*** RESET AVERAGE 21:16:16 24 6.5 PPM THC ***

*** RESET AVERAGE 21:16:11 23 258.5 PPM CO ***

*** RESET AVERAGE 21:16:11 23 258.5 PPM CO ***

*** RESET AVERAGE 21:16:11 21 5.5 PCT O2 ***

*** LOG GRP 1 *** UNIT 53000 *** STARTS AT 21:13:34 *** ENDS AT 21:13:36 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	.0	PCT		O2	02	.2	PCT		CO2	03	3.7	PPM		CO	04	3.8	PPM		THC
05	118.5	PPM		NOX															

10 20 30 40 50 60 70 80 90 100

NOX

*** LOG GRP 1 *** UNIT 53000 *** STARTS AT 21:11:34 *** ENDS AT 21:11:35 JUL 09,96 ***

PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND	PT	DATA	UNITS	ST	LEGEND
01	.0	PCT		O2	02	13	PCT		CO2	03	461.9	PPM		CO	04	5.6	PPM		THC
05	3	PPM		NOX															

CO

*** RESET AVERAGE 21:11:10 25 1.5 PPM NOX ***

*** RESET AVERAGE 21:11:10 24 5.5 PPM THC ***

*** RESET AVERAGE 21:11:06 23 86.8 PPM CO ***

*** RESET AVERAGE 21:11:06 23 [illegible] PPM CO ***

*** RESET AVERAGE 21:11:06 21 14.4 PCT O2 ***

*** LOG GRP 1 *** UNIT 53000 *** STARTS AT 21:08:06 *** ENDS AT 21:08:07 JUL 09,96 ***

PT DATA UNITS ST LEGEND PT DATA UNITS ST LEGEND

DRYER JULY 9th, 1996
NOX,CO,VOC,CO2,O2

DATA TIME:	START=	15:10	END=	17:50	HOURS=	2.67	
	START=	18:10	END=	21:00	HOURS=	2.83	
					TOTAL=	5.50	

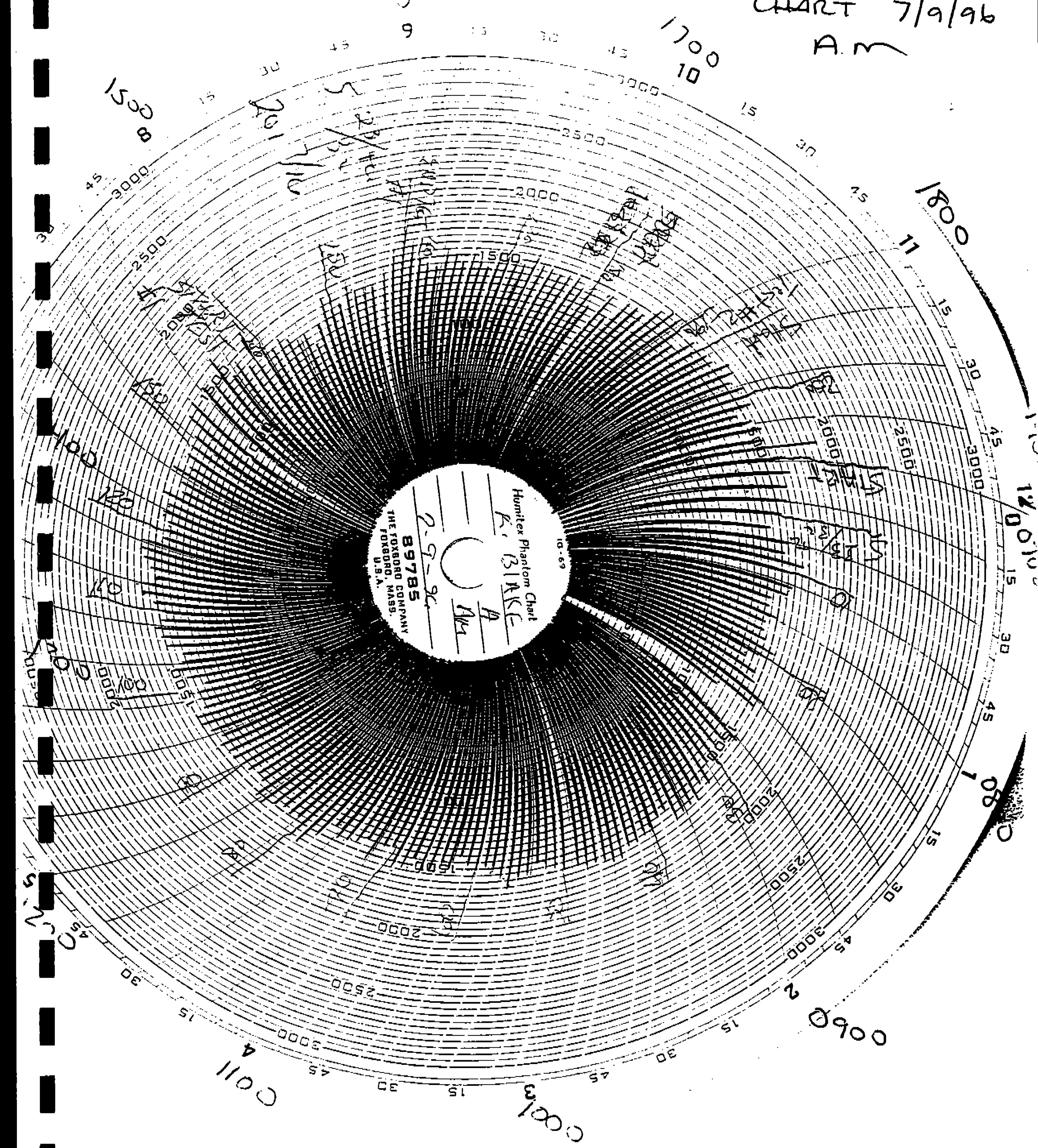
BOARD WEIGHTS - LBS
average weights determined by taking every 25th untrimmed board (from press tapes)

7/16"		201.6	lb= average untrimmed mat weight
per/peice	46.87		
per/ 8' x 16'	187.48		
		7.0%	=trim %

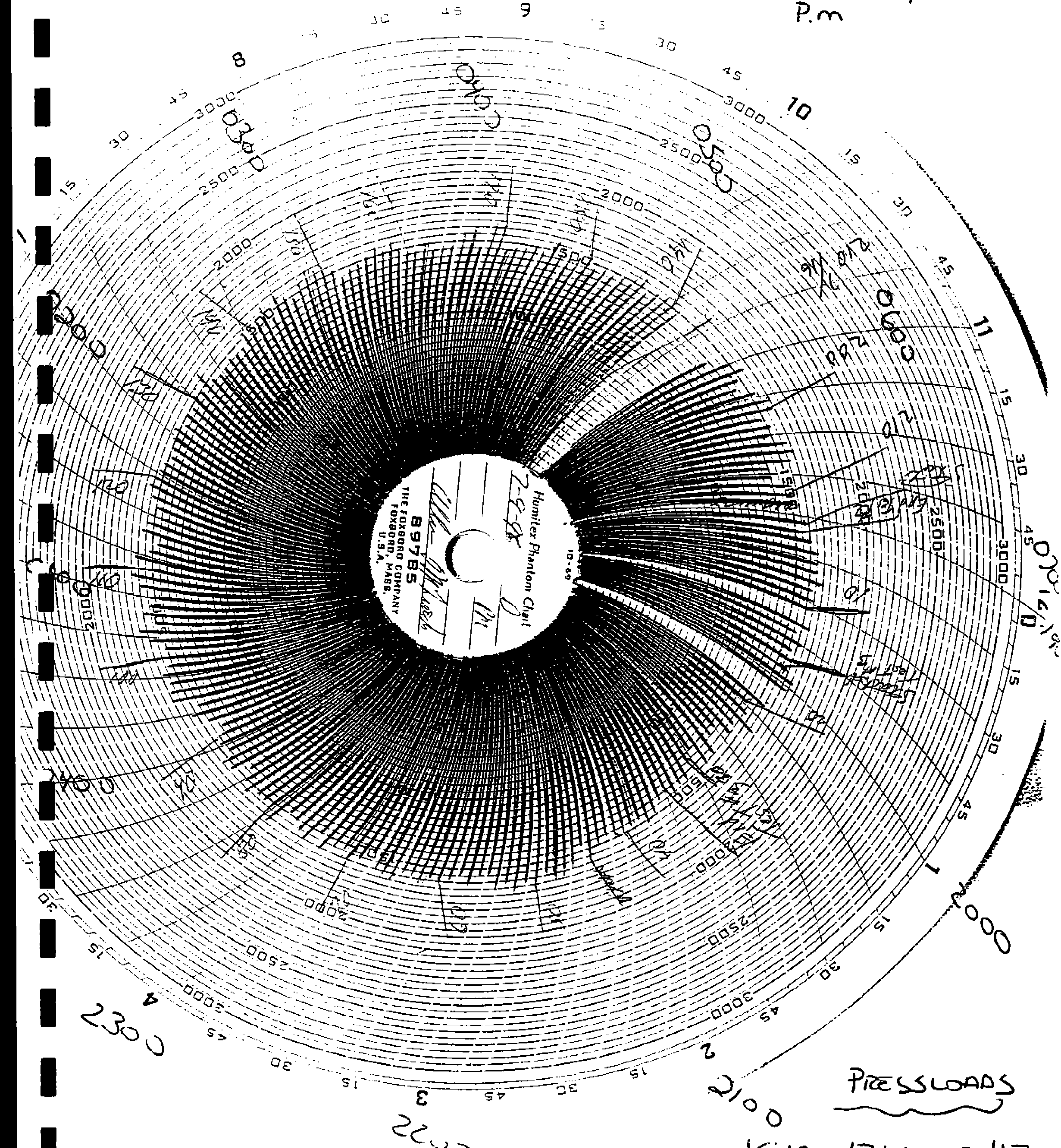
PLANT PRODUCTION RATE
5.50 =hours during testing
95 =pressloads
1,140 =no. of 8'x16' boards produced (pressloads x 12 boards per load)
145,920 =volume produced in surface footage (pressloads x 8'x16'x12 openings)
170,245 =volume produced 3/8" basis (pressloads x 8'x16'x 12 openings x 1.1667)
213,732 =lbs of finished product (boards produced x weight of finished board)
38,860 =lbs of finished product per hour (lbs of finshed product / hours)
19.43 =tons of finished product per hour (lbs of finshed product per hour / 2000 lb)

FUEL BURNING RATE ESTIMATED BY DRY FUEL INPUT
SURFACE
5.71 =SURFACE fuel calibration in pounds per count
2,811 =SURFACE counts during testing hours
16,051 =SURFACE lbs of fuel burned during testing
5.50 =hours during testing
2,918 =lbs of dry fuel burned per hour during testing (pounds of dry fuel / testing hours)
1.46 =tons of dry fuel burned per hour during testing (pounds of dry fuel / 2000 lbs)
8,500 =estimated BTU content per pound of dry fuel,
24.8 =estimated mmbtu input per hour (lbs of dry fuel per hour x btu content)
1,107 =average inlet temperature
33.05 =average incoming moisture percent
7.67 =average dry moisture percent
CORE
6.29 =CORE fuel calibration in pounds per count
2,464 =CORE counts during testing hours
15,499 =CORE lbs of fuel burned during testing
5.50 =hours during testing
2,818 =lbs of dry fuel burned per hour during testing (pounds of dry fuel / testing hours)
1.41 =tons of dry fuel burned per hour during testing (pounds of dry fuel / 2000 lbs)
8,500 =estimated BTU content per pound of dry fuel,
24.0 =estimated mmbtu input per hour (lbs of dry fuel per hour x btu content)
1,229 =average inlet temperature
33.05 =average incoming moisture percent
4.67 =average dry moisture percent

HOULTON PRESS
CHART 7/9/96
A.M



HOLTON PRESS
CHART 7/9/96
P.m



PRESSLOADS

15:10 - 17:50 = 47
18:10 - 21:00 = 48
95

LOUISIANA–PACIFIC CORP. PRESS REPORT

HOULTON, MAINE Surf. 68 60.12

OPERATOR K. Blake SHIFT (AM) PM CREW A DATE 7-9-96

LINE SPEED	FROM	TO	THICK-NESS	PRESS LOADS	PRESS TEMP	OVERALL TIMER	DECOMP. TIMER	REASON FOR LINESPEED CHANGE
40	700	725	23/32 TG	5	215	250	17.0	START
64	725	200	7/16	114	215	140	12.0	Scheduled 7/16
47	200	300	7/16	15	215	200	15.0	S-DRYER DOWN
60	300	435	7/16	29	215	149	15.0	DRYER UP TO SPEED
64	435	700	7/16	43	215	140	12.0	FULL SPEED AHEAD
						5 23/32 TG = 14720		
						201 7/16 = 360202		
TOTALS				206		(3/8" FOOTAGE) = 374,922		

FLKR STROKES 1549 TDT 15 mins PEAB OIL BRNR: 0 mins DEBARKER DT 3:36 SANDER DT 3:52

KONUS #1 0 KONUS #2 4288 SURFACE OIL BURNER 41 mins CORE OIL BURNER 0 mins

DOWNTIME FROM	DOWNTIME TO	M	E	O	QC	REASON FOR DOWN TIME
743	744		1			2nd Cut Feed drives No Go
836	844			8		Pulled FLT #11 Back out of the Press
1001	1002		2			Core spinnerhead #6 (Died)
242	245				3	Change wax nozzles in the Core blender
405	406				1	" "
			3	8	4	

(DOWNTIME(MINS) DEPARTMENTS: M, E, O, QC)

*** MAINTENANCE / LOCK–OUT LOG ***

MOTOR # LOCKED OUT	FROM	TO	BRIEF DESCRIPTION OF WORK BEING DONE	INITIALS OF PERSON LOCKING OUT
TEST #1	3:15 to	4:20		
TEST #2				

LOUISIANA-PACIFIC CORP. PRESS REPORT
HOULTON, MAINE

OPERATOR Allen McNeish SHIFT AM (PM) CREW D DATE 7-9-96

LINE SPEED	FROM	TO	THICKNESS	PRESS LOADS	PRESS TEMP	OVERALL TIMER	DECOMP. TIMER	REASON FOR LINESPEED CHANGE
64	200	700	7/16	210	215°	140	12	Start
TOTALS				210	(3/8" FOOTAGE) = ~~378,481~~ 376,331			

FLKR STROKES 1556 TDT 27 PEAB OIL BRNR: —— DEBARKER DT 1:57 SANDER DT 10:35

KONUS #1 —— KONUS #2 4217 SURFACE OIL BURNER —— CORE OIL BURNER ——

DOWNTIME FROM	DOWNTIME TO	DOWNTIME(MINS) DEPARTMENTS M	E	O	QC	REASON FOR DOWN TIME
732	735				3	Working on core wax
803	808				5	Working on core wax
541	600		19			Power bump
			19		8	

*** MAINTENANCE / LOCK-OUT LOG ***

MOTOR # LOCKED OUT	FROM	TO	BRIEF DESCRIPTION OF WORK BEING DONE	INITIALS OF PERSON LOCKING OUT

UISIANA-PACIFIC
ULTON, MAINE

SHIFT OPERATING REPORT

JPERVISOR Prescott SHIFT (AM) PM CREW A DATE 7-9-96

M.C. SC

RESS OPERATION:

ICKNESS	PRESSLOADS	3/8" ITG	DOWNTIME (Mins) M	E	O	QC
7/16	201	360202				
23/32T+G	5	14720				
TAL	206	374922		3	8	4

YARD OPERATIONS:

FIRE DUMP CLEANED 3 TIMES
TRUCKS USED DIRECT ______ TRUCKS
BARK TRUCKS LOADED ______ TRAILERS
MISCELLANEOUS ______

KONUS FURNACE	HRS. FUEL USAGE WOOD	HRS. FUEL USAGE OIL
#1	0	
#2	12 Hours	

RYER OPERATION:

	DRY FUEL USAGE LBS.	OIL FUEL USAGE HRS.	AVE. INLET TEMP	RUNNING TIME MINS.	DOWN TIME	AVG. WET MOISTURE	AVG. DRY MOISTURE	REASON FOR OIL USAGE
CORE	7,810	0	1153	718	2	43.4%	4.6%	None Use
RFACE	8,420	41 minutes	1115	705	15	47.8%	7.6%	water shor

# OF UNITS	1/4	5/16	3/8	7/16	15/32	1/2	19/32	23/32 T+G	OTHER
A				107				4+46 Pc	
A 1/2 UNITS									
U				17 Pc					
E & X				1 Pc					

LESS THAN 99.5%, WHY?

MAINTENANCE/LOCK-OUT LOG

MOTOR # LOCKED OUT	FROM	TO	BRIEF DESCRIPTION OF WORK BEING DONE	INITIALS OF PERSON LOCKING OUT

PERSONNEL COMMENTS/CONCERNS:

SENT/TARDY	REASON	EXTRA PERSONNEL	REASON
1			
2			
3			

8

OUISIANA-PACIFIC
OULTON, MAINE

SHIFT OPERATING REPORT

UPERVISOR T. Tower SHIFT AM ~~PM~~ CREW D DATE 7/9/96

PRESS OPERATION:

HICKNESS	PRESSLOADS	3/8" FTC	DOWNTIME (Mins) M	E	O	QC
7/16						
OTAL	210	376331	19			8

YARD OPERATIONS:

FIRE DUMP CLEANED 0 TIMES
TRUCKS USED DIRECT ____ TRUCKS
BARK TRUCKS LOADED ____ TRAILERS
MISCELLANEOUS ____

KONUS FURNACE	HRS. FUEL USAGE WOOD	HRS. FUEL USAGE OIL
#1	0	0
#2	12 hrs.	0

DRYER OPERATION:

	DRY FUEL USAGE LBS.	OIL FUEL USAGE HRS.	AVE. INLET TEMP	RUNNING TIME MINS.	DOWN TIME	AVG. WET MOISTURE	AVG. DRY MOISTURE	REASON FOR OIL USAGE
CORE	7720	0	1220	704	16	50.2%	5.0%	None used
URFACE	8880	0	1160	704	16	46.0%	7.7%	None used

# OF UNITS	1/4	5/16	3/8	7/16	15/32	1/2	19/32	23/32	OTHER
A				112					
A 1/2 UNITS									
U				3 pcs					
E & X				48 pcs					

F LESS THAN 99.5%, WHY?

MAINTENANCE/LOCK-OUT LOG

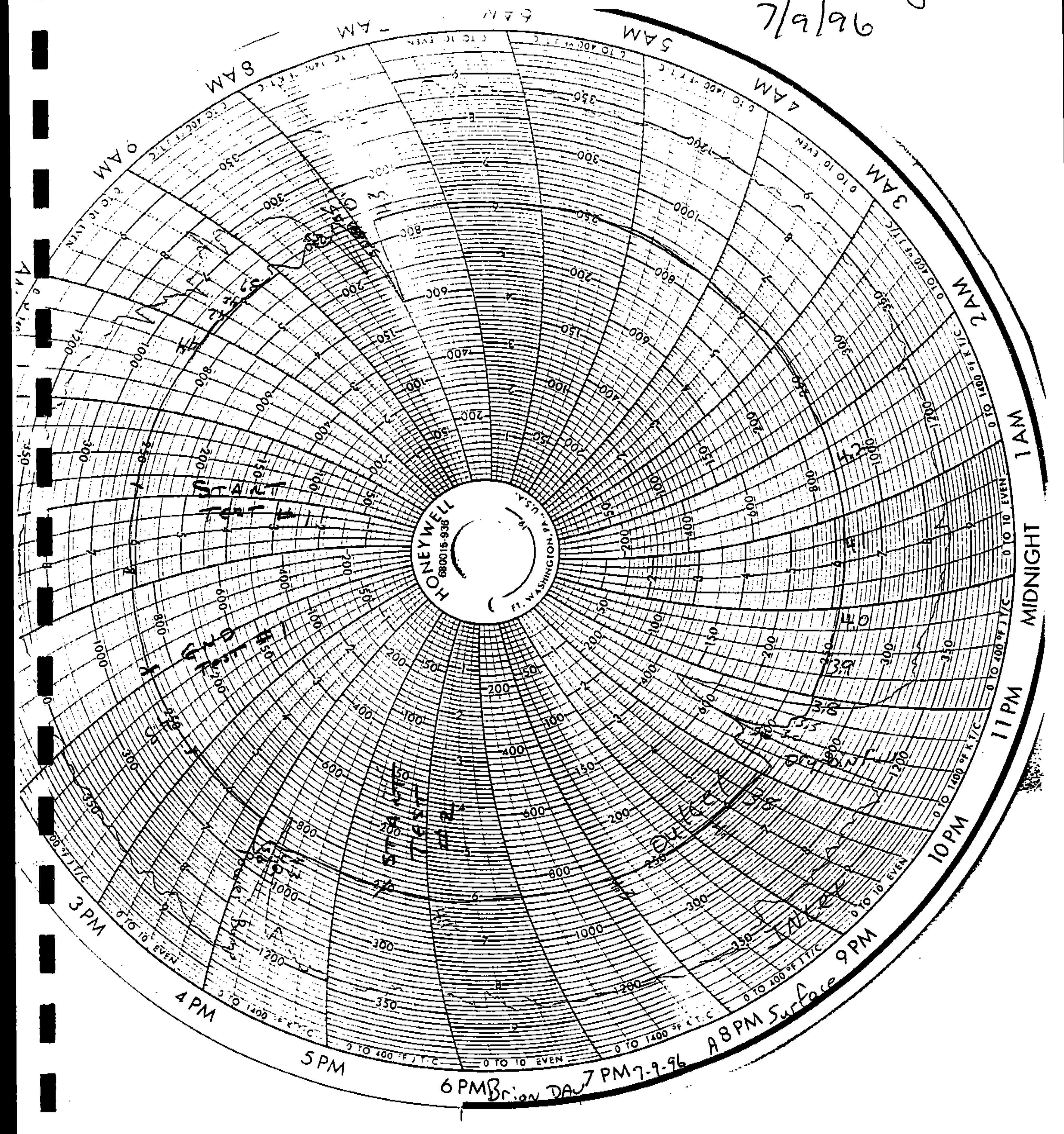
MOTOR # LOCKED OUT	FROM	TO	BRIEF DESCRIPTION OF WORK BEING DONE	INITIALS OF PERSON LOCKING OUT

PERSONNEL COMMENTS/CONCERNS:

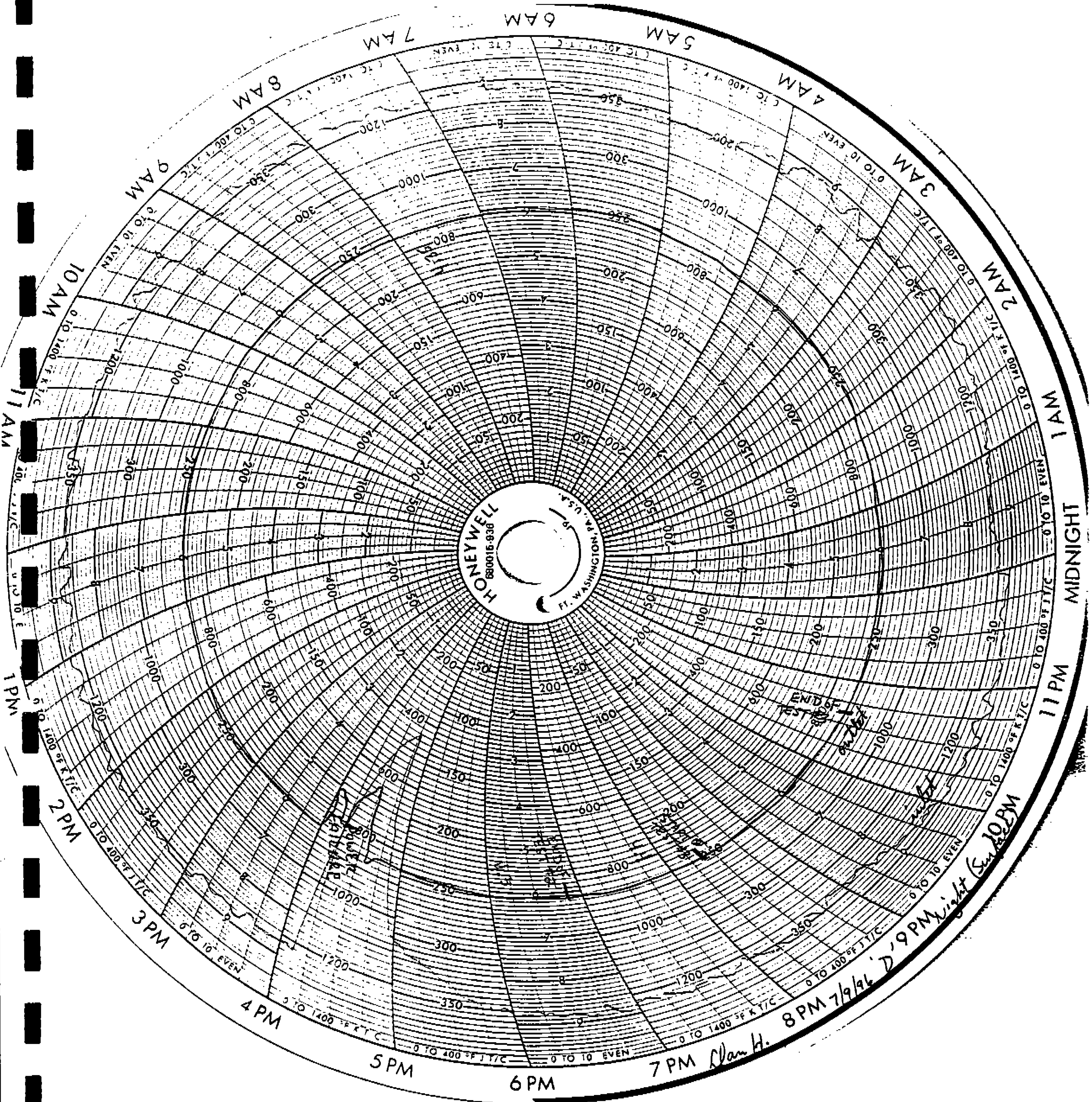
ABSENT/TARDY	REASON	EXTRA PERSONNEL	REASON
1.			

9

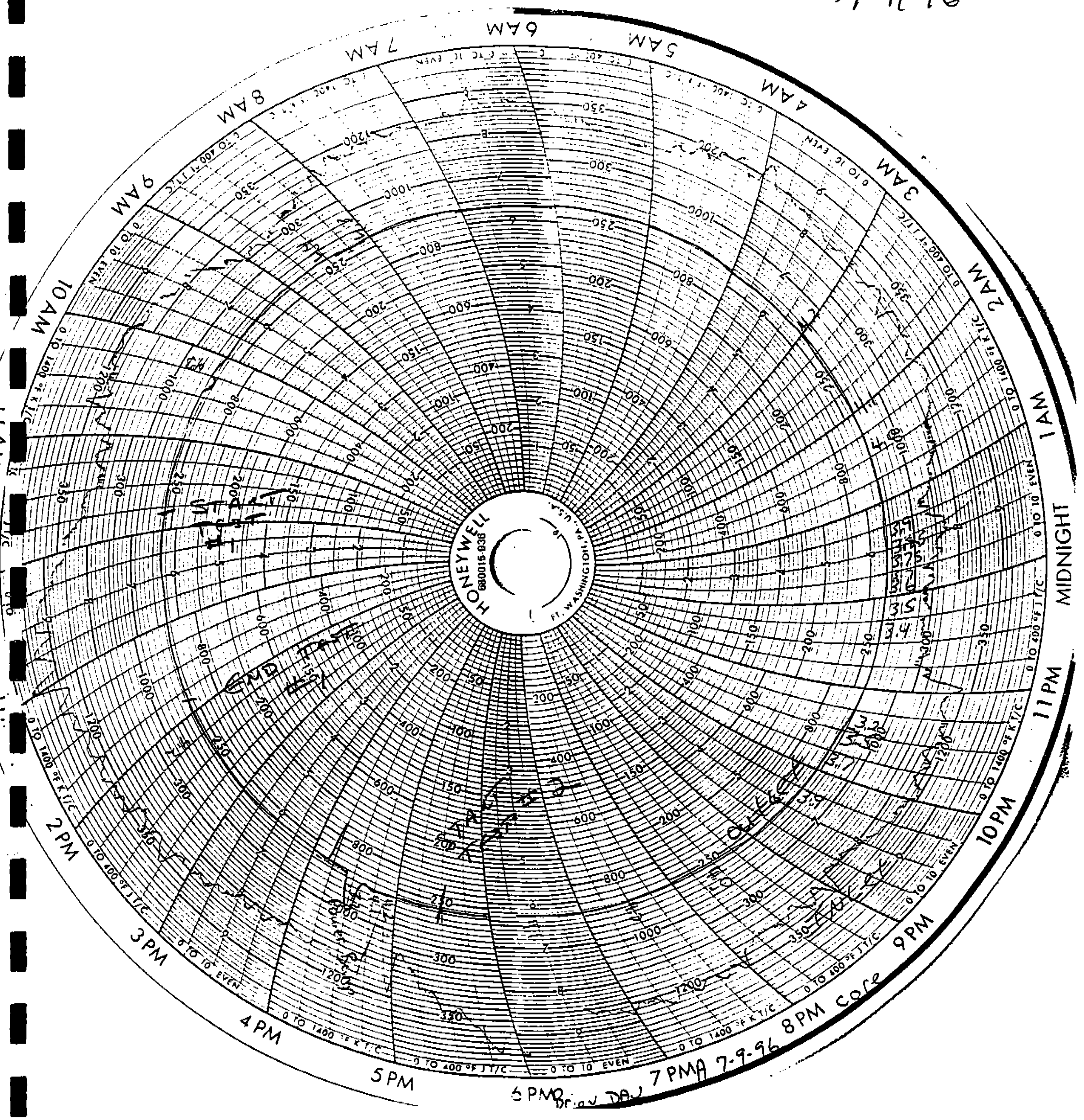
Houlton
Surface Dryer
7/9/96



Houlton
Surface Dryer
7/9/96

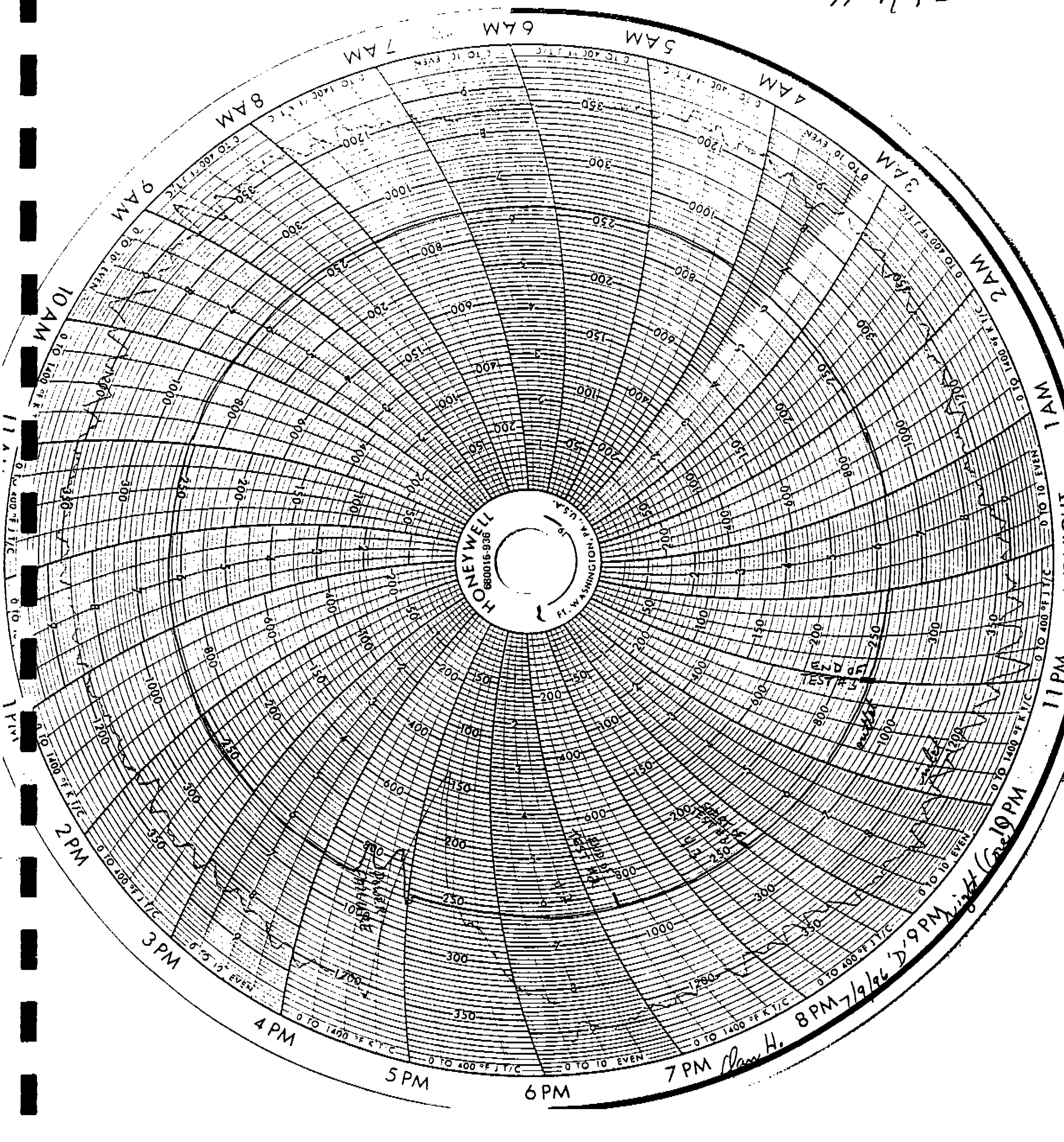


HOULTON
CORE DRYER
7/9/96



12

HOULTON
CORE DRYER
7/9/96



Brian/Lance 7-9-96 DRYER READINGS - HOULTON

10 min	FACE						CORE						DRY BIN LEVEL		EVERY HOUR FLAKE MOISTURE		
TIME	OUT. SET POINT	FEED RATE	INLET TEMP	OUTLET TEMP	FUEL COUNT	WET BIN LEVEL	OUT. SET POINT	FEED RATE	INLET TEMP	OUTLET TEMP	FUEL COUNT	WET BIN LEVEL	FACE	CORE	IN	FACE OUT	CORE OUT
8:00	242	4.3	1131	242.1	820	1/2+	261	4.0	1118	260.8	687	1/2+	3/4	3/4+	43.4%	4.1%	4.5%
8:10	242	4.3	1132	242.0	986	1/2+	261	4.0	1166	261.0	822	1/2+	3/4	3/4+			
8:20	242	4.1	1127	242.1	1096	1/2+	261	3.9	1193	261.0	931	1/2+	3/4	3/4+			
8:30	243.5	4.1	1096	243.8	1198	1/2	261	3.9	1166	261.3	1016	1/2+	3/4	3/4			
8:40	245	3.8	1136	244.5	1316	1/2-	262	3.7	1173	262.2	1172	1/2-	3/4	3/4			
8:50	DRYER		DOWN			1/2	264	3.5	1155	263.1	1160	1/2	full	full			
9:00	DRYER		DOWN			1/2+	266	3.2	1043	265.4	1308	1/2+	3/4	3/4			
9:10	245	3.6	1019	245.0	1519	1/2+	266	3.2	1029	266.1	1396	1/2+	3/4	3/4+	47.5%		4.4%
9:20	245	3.8	1050	245.3	1663	1/2+	266	3.2	1040	266.1	1523	1/2+	1/2+	3/4-			
9:30	245	3.9	1086	244.9	1774	1/2+	264.5	3.5	1052	264.3	1619	1/2+	1/2	1/2+			
9:40	245	4.0	1118	245.1	1849	3/4-	263	3.6	1038	263.9	1710	3/4-	1/2+	1/2+			
9:50	245	4.0	1140	245.1	1996	3/4-	263	3.9	1065	263.4	1793	3/4-	1/2+	1/2			
10:00	244	4.1	1112	244.2	2113	3/4-	263	3.9	1088	263.0	1878	3/4-	1/2+	1/2	42.4%	7.0%	5.5%
10:10	244	4.1	1101	243.9	2237	3/4+	263	3.9	1132	262.9	1991	3/4+	1/2	1/2			
10:20	244	4.1	1112	244.0	2360	3/4-	263	3.9	1135	263.0	2101	3/4-	1/2+	1/2			
10:30	244	4.1	1112	244.1	2490	3/4	263	4.0	1159	263.0	2222	3/4	1/2	1/2			
10:40	243	4.2	1143	243.4	2613	3/4	263	4.1	1168	263.2	2318	3/4	1/2+	1/2			
10:50	243	4.2	1156	243.0	2734	1/2+	263	4.1	1156	263.1	2418	1/2+	1/2+	1/2			
11:00	243	4.2	1148	242.9	2861	1/2	263	4.1	1147	262.8	2522	1/2	1/2+	1/2			
11:10	243	4.2	1160	243.0	2990	1/2	263	4.2	1172	262.6	2636	1/2	1/2+	1/2	44.6%	7.2%	5.2%
11:20	243	4.2	1188	243	3158	1/2	263	4.2	1170	262.5	2780	1/2	3/4	1/2			
11:30	243	4.2	1132	243.1	3268	1/2-	263	4.2	1207	263.7	2885	1/2	3/4	1/2			
11:40	243	4.2	1138	243.0	3381	1/2	263	4.2	1152	262.9	2983	1/2+	1/2+	1/2			
11:50	243	4.2	1141	243.1	3520	1/2	263	4.2	1138	262.9	3091	1/2+	1/2+	1/2			
12:00	243	4.2	1127	243.0	3640	1/2	263	4.2	1153	263.1	3175	1/2+	1/2+	1/2	44.2%	8.0%	4.4%
12:10	243	4.2	1117	243.1	3762	1/2+	263	4.2	1176	263.0	3306	1/2+	1/2+	1/2			
12:20	243	4.2	1107	242.8	3867	1/2	263	4.2	1203	262.8	3410	1/2	1/2+	1/2			
12:30	243	4.2	1144	242.8	4008	1/2	263	4.2	1217	263.7	3540	1/2	1/2+	1/2			
12:40	243	4.2	1139	242.8	4134	1/2-	263	4.2	1198	262.5	3661	1/2	1/2+	1/2			
12:50	243	4.2	1162	242.6	4270	1/2	263	4.2	1177	262.5	3761	1/2	1/2+	1/2			
1:00	243	4.2	1195	243.2	4430	1/2+	263	4.2	1190	263.3	3898	1/2	1/2+	1/2	43.8%	8.0%	4.8%
1:10	243	4.2	1165	243.0	4546	1/2+	263	4.2	1171	263.0	3998	1/2	1/2+	1/2			
1:20	243	4.2	1111	243.0	4645	1/2+	263	4.2	1166	263.0	4091	1/2	1/2+	1/2			
1:30	243	4.2	1142	243.0	4807	1/2+	263	4.2	1096	263.0	4221	1/2+	1/2	1/2-			
1:40	DRYER		DOWN			1/2+	263	4.2	1070	262.9	4353	1/2+	1/2	1/2-			
1:50	247	3.5	856	296	4862	3/4-	262	4.2	1053	261.9	4397	1/2+	1/2	1/2-			
2:00	247	4.0	912	243	4962	3/4-	262	4.4	1144	262.2	4503	3/4	1/2-	1/2-			

[redacted] 7 [redacted] 0

DRYER READINGS - HOULTON

10 min	FACE						CORE						DRY BIN LEVEL		EVERY HOUR FLAKE MOISTURE			
TIME	OUT. SET POINT	FEED RATE	INLET TEMP	OUTLET TEMP	FUEL COUNT	WET BIN LEVEL	OUT. SET POINT	FEED RATE	INLET TEMP	OUTLET TEMP	FUEL COUNT	WET BIN LEVEL	FACE	CORE	IN	FACE OUT	CORE OUT	
2:10	DRYER ON OIL					1/2+	262	4.4	1162	261.6	4612	1/2+	1/4	1/4	45.6%	9.0%	4.2%	
2:20	DRYER ON OIL				4893	1/2+	262	4.4	1198	262.2	4715	1/2+	1/4	1/4				
2:30	243	3.4	890	239	4931	1/2+	262	4.4	1198	262.0	4810	1/2+	1/4	1/4				
2:40	243	4.1	910	239.8	5047	1/2+	262	4.3	1195	261.2	4939	1/2+	1/4	1/4				
2:50	243	4.4	1058	243.3	5199	1/2+	262	4.3	1138	262.2	5051	1/2+	1/4+	1/2-				
3:00	243	4.4	1090	242.9	5310	1/2+	262	4.3	1104	261.9	5147	1/2+	1/2	1/2	42.0%	6.6%	4.6%	
3:10	243	4.4	1103	242.7	5444	1/2+	262	4.3	1150	262.2	5250	1/2+	1/2	1/2				
3:20	243	4.4	1113	243.3	5578	1/2+	262	4.3	1192	262.1	5373	1/2+	1/2	1/2				3:16 Start
3:30	243	4.4	1121	242.9	5716	1/2+	262	4.3	1253	261.7	5494	1/2+	1/2	1/2				
3:40	243	4.4	1137	242.8	5850	1/2+	262	4.3	1258	261.9	5606	1/2+	1/2	1/2				
3:50	243	4.4	1150	242.8	6030	1/2+	262	4.3	1278	262.0	5754	1/2+	1/2	1/2				
4:00	243	4.4	1151	242.8	6152	1/2+	262	4.3	1246	261.5	5858	1/2+	1/2	1/2	42.4%	6.6%	4.6%	
4:10	243	4.4	1154	242.6	6294	1/2	262	4.3	1250	262.0	5976	3/4-	1/2	1/2				
4:20	243	4.4	1145	243.0	6450	1/2	262	4.3	1222	261.8	6168	3/4-	1/2	1/2				4:19 End
4:30	243	4.4	1160	243.0	6549	1/2+	262	4.3	1186	262.2	6190	3/4-	1/2	1/2				
4:40	243	4.4	1155	242.9	6682	1/2	262	4.3	1196	261.4	6312	3/4	1/2+	3/4-				
4:50	243	4.4	1143	242.8	6816	1/2	262	4.3	1188	262.2	6434	1/2+	1/2+	1/2+				
5:00	243	4.4	1135	243.1	6945	1/2	262	4.2	1162	261.9	6537	1/2+	1/2+	1/2+				
5:10	243	4.3	1178	243.5	7099	1/2	262	4.2	1134	261.8	6662	1/2+	1/2+	1/2+	44.5%	7.0%	4.2%	Start #4
5:20	243	4.3	1151	243.4	7229	1/2	262	4.2	1115	261.6	6758	3/4-	1/2+	1/2+				
5:30	243	4.3	1181	242.9	7365	1/2	262	4.2	1121	261.8	6867	3/4-	1/2-	1/2-				5:31 SHC END
5:40	POWER BUMP						POWER BUMP											
5:50	245	4.2	1089	244.7	7652	1/2+	262	4.0	1141	264.1	7091	1/2+	1/2	1/2				
6:00	244.5	4.2	1118	244.1	7693		263	4.1	1142	262.8	7134	1						
6:10	243	4.3	1116	243.2	7838	1/2+	262	4.2	1241	261.9	7273	3/4	1/2	1/2	43.3%	8.6%	4.2%	6:16 Start #2
6:20	243	4.3	1141	242.8	7943	1/2	262	4.2	1271	262	7382	3/4	1/2	1/2				
6:30	243	4.3	1157	243.1	8070	1/2+	262	4.2	1287	262.4	7526	3/4-	1/2	1/2				
6:40	243	4.3	1161	243.2	8204	1/2+	262	4.2	1270	262.4	7622	3/4-	1/2	1/2		Dry Fuel Reading		
6:50	243	4.3	1172	243.0	8328	1/2+	262	4.2	1231	262	7726	3/4-	1/2	1/2		8420	7810	
7:00	243	4.3	1185	242.6	40	1/2+	262	4.2	1213	261.6	26	3/4-	1/2	1/2				
7:10	243	4.3	1161	240.5	196	1/2+	262	4.2	1195	261.6	163	1/2+	1/2	1/2	46.2%	7.6%	5.2%	7:10 End #2
7:20	243	4.3	1173	243.1	320	1/2+	262	4.2	1182	261.4	267	1/2+	1/2	1/2				
7:30	243	4.3	1183	243.2	442	1/2+	262	4.2	1176	262.5	367	1/2+	1/2	1/2				
7:40	243	4.3	1175	243.0	590	1/2+	262	4.2	1153	262.4	493	1/2+	1/2	1/2				
7:50	242	4.4	1140	242.2	710	1/2+	262	4.3	1236	261.8	597	1/2+	1/2	1/2				
8:00	242	4.4	1143	242.3	815	3/4-	262	4.3	1222	262.0	694	1/2+	1/2	1/2				7:54 Start #3
8:10	242	4.4	1121	242.2	946	3/4	262	4.3	1123	261.8	814	3/4-	1/2	1/2	46.0%	7.8%	5.2%	

15

Danny H. / Lance 7-9-96 DRYER READINGS - HOULTON

10 min	FACE						CORE						DRY BIN LEVEL		EVERY HOUR FLAKE MOISTURE		
TIME	OUT. SET POINT	FEED RATE	INLET TEMP	OUTLET TEMP	FUEL COUNT	WET BIN LEVEL	OUT. SET POINT	FEED RATE	INLET TEMP	OUTLET TEMP	FUEL COUNT	WET BIN LEVEL	FACE	CORE	IN	FACE OUT	CORE OUT
8:20	242	4.4	1165	241.8	1082	3/4	262	4.3	1241	262.1	930	3/4–	1/2+	1/2			
8:30	242	4.4	1213	241.8	1174	3/4	262	4.3	1203	261.7	1039	3/4	1/2+	1/2+			
8:40	242	4.4	1156	242.1	1356	3/4	262	4.3	1268	262.2	1161	3/4	1/2	1/2+			
8:50	242	4.4	1229	242.0	1520	3/4	262	4.3	1252	261.0	1282	3/4	1/2	1/2+			
9:00	242	4.4	1214	242.5	1657	3/4	263	4.3	1305	262.0	1404	3/4	1/2	1/2+	92.8%	70%	5.2%
9:10	241	4.4	1217	240.7	1780	3/4	262	4.3	1275	262.5	1507	3/4	1/2	1/2+			
9:20	241	4.4	1200	240.9	1920	3/4	262	4.3	1252	262.3	1620	3/4	1/2	1/2+			

9:00 End [illegible]

DRYER OPERATING REPORT

[illegible]ERATOR Brian CREW D

[illegible]IFT DAY DATE 7/9/96

SURFACE DRYER

TIME EVERY HOUR	INLET MOIST %	OUTPUT TEMP %	FEED SPEED	OUTLET MOIST CHAUS	INLET TEMP %	DRY FUEL REV.
7:00		241	4.45	8.0%	1130	
[illegible]00		242	4.3	7.4%	1139	814
[illegible]00		Just Started up				1387
[illegible]:00	47.8%	244	4.1	7.0%	1114	2096
[illegible]:00		243	4.2	7.2%	1148	2874
12:00		243	4.2	8.0%	1123	3610
[illegible]00		243	4.2	8.0%	1194	4381
[illegible]00		0:1 ~~247~~	~~4.0~~	~~9.0%~~	~~912~~	4862
[illegible]:00		243	4.4	6.6%	1082	5291
[illegible]00		243	4.4	6.6%	1152	6140
[illegible]:00		243	4.4	9.0%	1157	6914
[illegible]00		243	4.3	8.6%	1114	7720

10
3
2

CORE DRYER

TIME EVERY HOUR	INLET MOIST %	OUTPUT TEMP %	FEED SPEED %	OUTLET MOIST CHAUS	INLET TEMP %	DRY FUEL REV.	HAMMER MILL LOAD %
7:00		259	4.4	4.4%	1200		35%
8:00		261	4.0	4.8%	1122	683	55%
9:00		266	3.2	4.4%	1034	1298	40%
10:00	43.4%	263	3.9	5.8%	1092	1871	45%
11:00		263	4.1	5.2%	1165	2535	55%
12:00		263	4.2	4.4%	1141	3177	50%
1:00		263	4.2	4.8%	1189	3854	Full
2:00		262	4.4	4.2%	1190	4503	Full
3:00		262	4.3	4.6%	1134	5132	35%
4:00		262	4.3	4.6%	1248	5847	60%
5:00		262	4.2	4.2%	1170	6518	40%
6:00		262	4.2	4.2%	1149	7156	50%

2

[illegible]MMENTS AND REASONS FOR DOWNTIME:

8^{47} Surface dryer down, Dry bin full 8^{57} Started surface dryer

1^{40} Surface dryer down (3), woodfuel flame went out,

1^{43} Started surface on oil, run oil 41 minutes and then bac[illegible] on woodfuel

5^{40} Both dryers down, Power Bump, 5^{42} Both dryers RUNNING

DRYER OPERATING REPORT

[redacted]PERATOR Dan H. CREW D

[redacted]SHIFT Night DATE 7/9/96

SURFACE DRYER / CORE DRYER

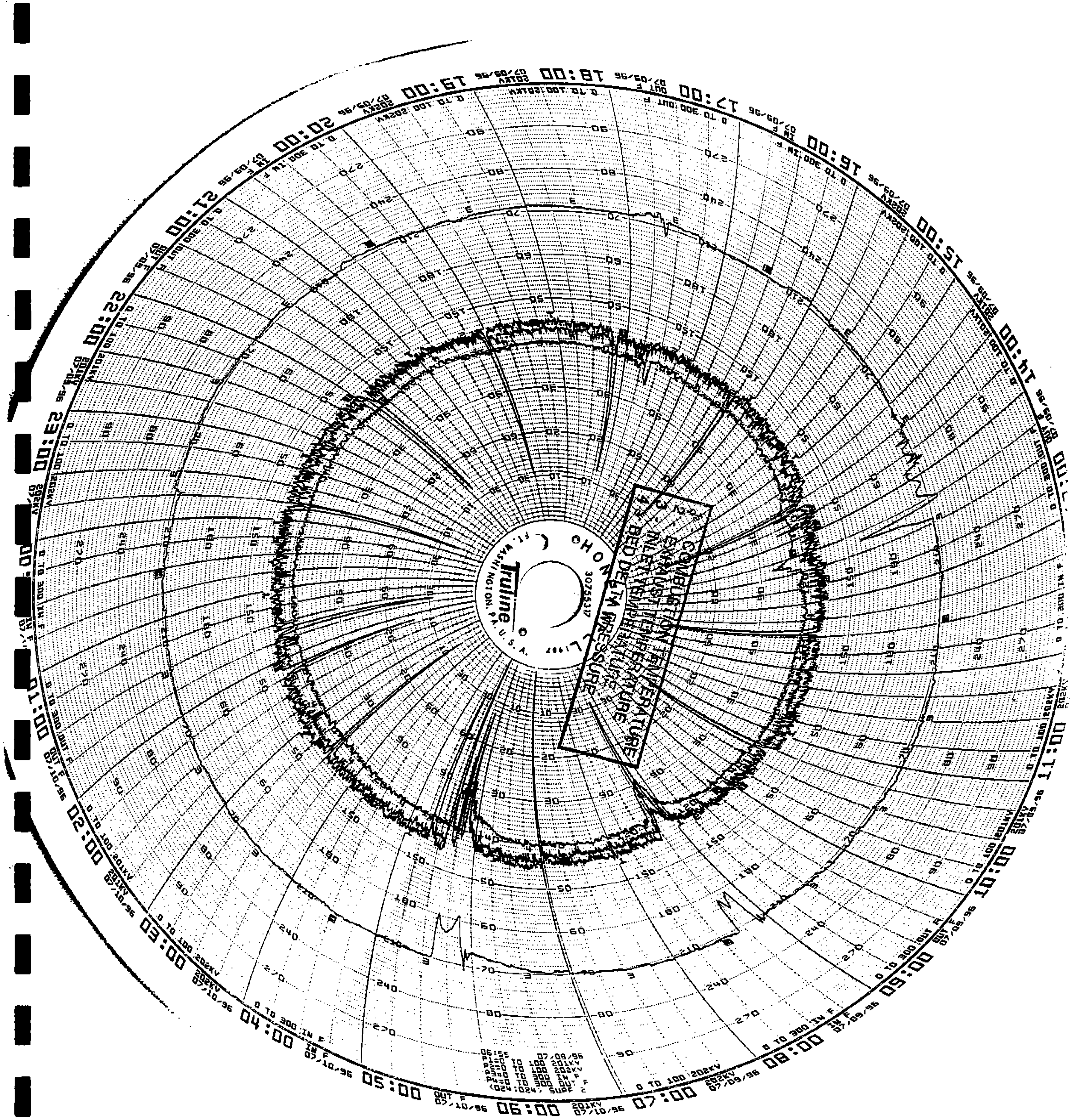
TI[redacted]E EV[redacted]Y HOUR	INLET MOIST %	OUTPUT TEMP %	FEED SPEED	OUTLET MOIST CHAUS	INLET TEMP %	DRY FUEL REV.	TIME EVERY HOUR	INLET MOIST %	OUTPUT TEMP %	FEED SPEED %	OUTLET MOIST CHAUS	INLET TEMP %	DRY FUEL REV.	HAMMER MILL LOAD %
:[redacted]	46.0%	243	4.3	7.6%	1180	0	7:00	50.2%	262	4.2	5.2%	1210	0	60%
:[redacted]		242	4.4	7.8%	1160	775	8:00		262	4.3	5.2%	1250	659	55%
:00		242	4.4	7.0%	1190	1558	9:00		262	4.3	5.2%	1330	1323	50%
0[redacted]0		241	4.4	8.0%	1140	2434	10:00		262	4.3	4.4%	1160	2056	50%
1[redacted]0		241	4.4	7.2%	1170	3099	11:00		261	4.3	5.2%	1230	2628	Full
2[redacted]0		238	4.3	8.0%	1130	4137	12:00		261	4.3	6.8%	1220	3511	50%
:[redacted]		238	4.3	8.2%	1170	4776	1:00		261	4.3	5.0%	1240	4059	55%
:00		237	4.35	7.8%	1140	5708	2:00		261	4.3	4.[illegible]%	1290	4895	55%
:[redacted]		237	4.35	7.6%	1160	6244	3:00		261	4.3	4.6%	1210	5364	50%
:[redacted]		237	4.35	8.0%	1170	7060	4:00		261	4.3	4.2%	1160	6102	55%
:00		237	4.35	7.6%	1170	7716	5:00		261	4.3	5.6%	1130	6665	55%
:[redacted]		STARTING BACK UP (POWERBUMP)					6:00		STARTING BACK UP (POWERBUMP)					50%
						16			16					

CO[redacted]ENTS AND REASONS FOR DOWNTIME:

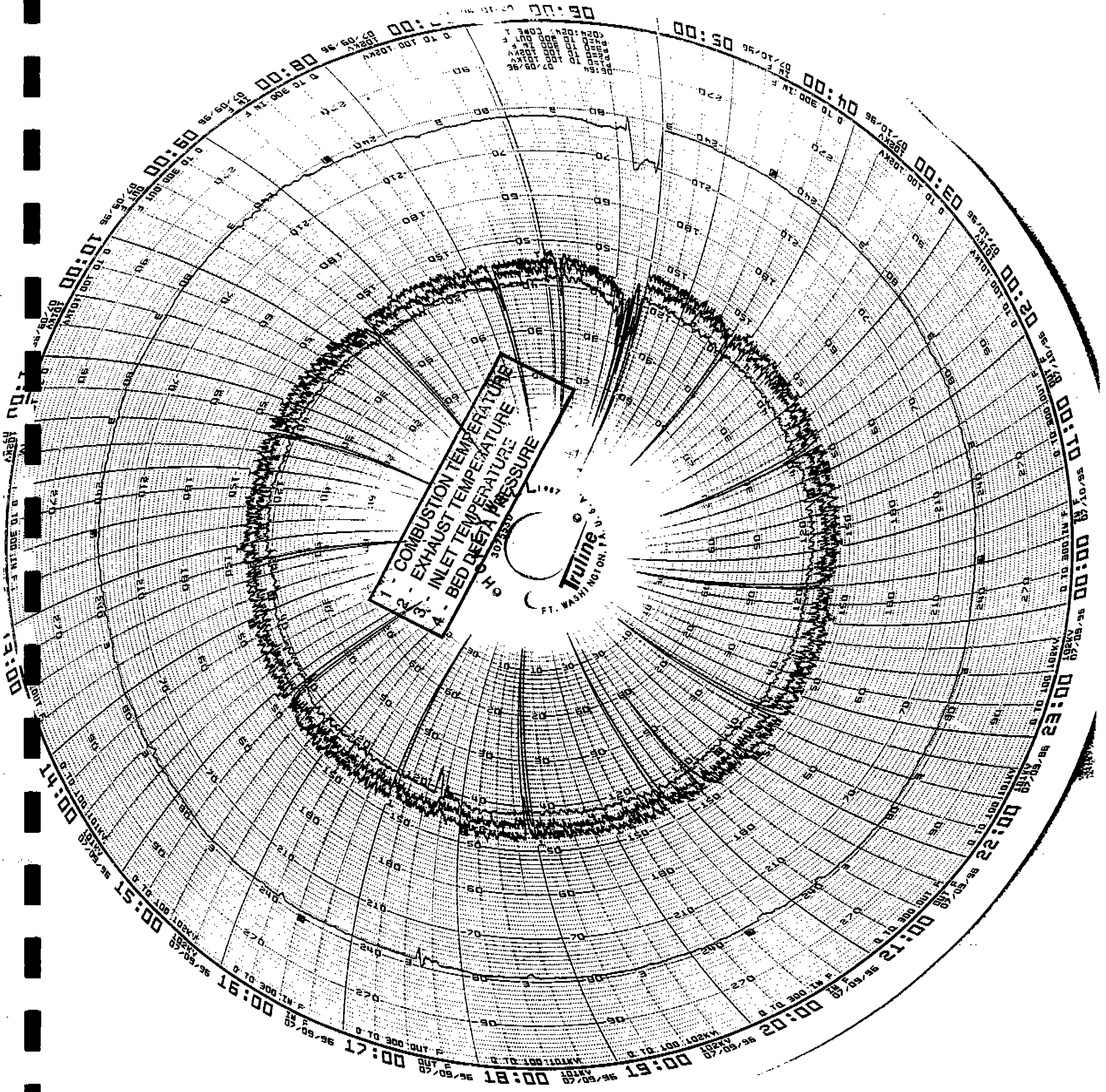
5:40 Powerbump, both dryers down.

5[redacted] Started both dryers.

HOULTON 7/9/96
SURFACE E-TUBE



HOULTON 7/9/96
CORE - E - TUBE



E-tube Data Sheet
Houlton, Maine

Operator Brent Carmichael

Date 2 / 9 / 1996

	Core Unit								Surface Unit								
	T/R Set #101			T/R Set #102 PRESS					T/R Set #201			T/R Set #202 PRESS					
Time	mA	Kv	Spk/min	mA	Kv	Spk/min	~~Quench~~ Inlet	~~Quench~~ Outlet	mA	Kv	Spk/min	mA	Kv	Spk/min	~~Quench~~ Inlet	~~Quench~~ Outlet	Flush Time
AM 10:00	280	47	14.9	150	47	15.0	9	27	200	46	14.9	180	46	14.9	10	25	
10:10	210	46	15.0	155	46	14.9	8	27	210	47	14.9	125	46	14.9	10	25	
10:20	270	44	14.8	170	46	14.9	8	27	195	47	14.9	160	46	14.9	10	24	
10:30	250	46	14.9	180	45	14.9	9	27	210	45	14.9	180	44	14.9	10	25	
10:40	285	46	14.9	155	43	14.9	8	27	190	44	15.0	190	42	14.9	10	25	10:48-surface
10:50	190	47	15.0	190	43	14.9	8	27	209	44	16.4	187	45	14.9	10	24	
11:00	220	47	15.0	200	44	14.9	8	27	200	45	14.9	184	45	14.8	10	25	
11:10	210	46	15.0	195	43	14.9	8	27	210	44	14.9	180	45	14.8	10	25	
11:20	220	45	14.9	160	42	14.9	9	27	195	46	14.8	190	43	14.8	10	25	
11:30	260	46	14.8	150	42	14.9	8	28	210	43	14.9	190	42	15.0	10	25	11:35-core
11:40	210	45	15.0	190	43	16.3	9	27	220	44	15.0	170	40	14.9	10	25	
11:50	200	46	14.9	190	43	14.7	8	27	225	43	14.8	150	42	14.9	10	25	
12:00	230	45	15.0	195	43	15.0	8	27	210	44	14.9	195	40	14.9	10	25	
PM 12:10	225	46	14.8	210	47	14.9	8	27	230	47	14.9	205	44	14.8	[illegible]	25	
12:20	240	47	14.9	170	42	15.0	8	27	230	45	14.7	200	44	15.0	10	25	
12:30	250	47	14.9	190	43	14.9	8	27	220	43	14.9	196	41	15.0	10	25	
12:40	270	47	14.9	165	44	15.0	8	27	190	43	14.9	130	43	17.1	10	25	12:42-surface
12:50	240	45	14.9	130	44	14.8	9	27	185	45	14.9	125	43	14.9	10	25	
1:00	245	46	14.9	190	43	14.9	8	27	220	43	14.9	195	43	14.9	10	25	
1:10	280	49	26.5	190	44	25.2	8	27	220	44	23.7	245	43	24.7	10	25	
1:20	260	47	29.7	180	43	29.9	8	27	240	45	29.9	220	44	29.8	10	25	1:26-core
1:30	240	46	30.5	210	44	29.8	8	27	210	43	29.8	200	44	30.0	10	25	
1:40	260	47	29.8	200	44	29.8	9	27	245	43	29.8	200	42	29.9	10	25	
1:50	300	49	29.8	220	45	29.9	8	27	400	48	29.7	260	43	29.6	10	26	

E-tube Data Sheet
Houlton, Maine

Operator Brent Carmichael

Date 7/9/1996

PM

	Core Unit								Surface Unit								
	T/R Set #101			T/R Set #102					T/R Set #201			T/R Set #202					
Time	mA	Kv	Spk/min	mA	Kv	Spk/min	Quench Inlet	Quench Outlet	mA	Kv	Spk/min	mA	Kv	Spk/min	Quench Inlet	Quench Outlet	Flush Time
2:00	260	48	29.9	170	43	30.0	8	27	360	43	29.9	320	43	29.8	10	25	
2:10	250	47	29.8	200	43	29.9	9	27	310	44	29.9	270	44	30.0	10	25	
2:20	235	48	29.8	260	43	29.8	8	27	340	46	29.6	340	45	29.9	10	25	
2:30	270	46	30.1	190	44	29.8	9	27	120	11	30.5	250	46	29.9	10	25	2:31 - surface
2:40	265	48	29.7	190	43	29.9	8	27	210	44	31.0	225	42	30.0	10	25	
2:50	300	49	29.8	185	42	29.8	8	27	240	46	29.8	260	42	29.8	10	25	
3:00	265	47	29.8	180	43	29.9	8	27	260	46	29.8	180	43	29.8	10	25	
3:10	270	46	29.8	230	43	30.6	9	27	240	43	29.9	250	42	29.9	10	25	3:15 core
3:20	280	48	30.0	240	45	30.8	9	27	240	45	29.8	200	43	29.8	10	25	
3:30	285	47	29.9	260	44	29.9	9	27	225	44	29.9	190	42	29.9	10	25	
3:40	280	47	29.7	220	45	29.8	9	27	270	43	29.9	180	43	30.0	10	25	
3:50	290	46	30.0	220	44	29.9	8	27	210	45	29.8	190	43	29.6	10	25	
4:00	270	48	29.8	170	45	29.9	8	27	250	44	30.0	190	44	29.8	10	25	
4:10	255	49	29.9	180	45	29.8	9	27	280	45	29.8	180	42	29.8	10	25	
4:20	260	47	29.7	220	46	29.8	8	27	220	44	29.8	240	47	29.7	10	25	4:24
4:30	265	50	29.7	220	43	29.9	8	27	215	45	29.7	180	44	31.0	10	25	
4:40	260	48	30.0	215	43	29.8	8	27	230	44	29.9	180	43	29.9	10	25	
4:50	225	47	30.0	190	45	30.0	9	27	190	44	29.8	240	44	30.0	10	25	
5:00	250	46	29.7	210	44	29.8	8	27	240	44	29.8	210	43	29.8	10	25	
5:10	280	46	30.8	200	44	29.8	8	28	240	45	29.9	200	44	29.9	10	25	
5:20	260	48	30.0	200	46	30.0	8	27	240	46	29.8	200	44	29.8	10	25	
5:30	220	46	29.7	200	45	29.8	8	27	250	45	29.8	200	46	29.9	10	25	
5:40	220	45	29.6	210	44	29.7	8	27	240	44	29.7	220	43	29.8	10	24	
5:50	280	50	29.9	240	46	29.8	8	27	220	46	29.8	220	47	29.9	10	24	

← TEST 1 3:15

← END TEST 1

← surface

← TEST 2 5:30 scrubbed

E-tube Data Sheet
Houlton, Maine

Operator ~~Brent Carmichael~~ JOE CHARETTE

Date 7 / 9 / 1996

PM

	Core Unit								Surface Unit									
	T/R Set #101			T/R Set #102					T/R Set #201			T/R Set #202						
Time	mA	Kv	Spk/ min	mA	Kv	Spk/ min	Quench Inlet	~~Quench~~ PRESS Outlet	mA	Kv	Spk/ min	mA	Kv	Spk/ min	Quench Inlet	Quench Outlet	Flush Time	
6:00	300	47	29.7	200	46	29.7	8	27	220	46	29.9	218	43	29.8	10	25		
6:10	290	50	29.7	220	46	29.7	8	27	230	44	30.0	240	46	29.8	10	25		< TEST 2 6:15PM
6:20	280	48	29.5	180	43	29.9	8	27	280	47	30.8	180	44	29.7	9	25		
6:30	260	50	29.8	190	46	29.8	8	27	240	47	29.9	200	45	29.9	9	25		
6:40	250	47	29.9	180	44	29.7	8	27	250	46	30.0	220	46	29.8	9	25		
6:50	260	47	29.8	220	46	29.8	8	27	200	44	29.8	200	44	29.8	9	25	658	CORE
7:06	280	50	30.1	170	42	31.8	9	27	200	45	29.9	260	46	29.7	10	25		
7:10	200	46	29.7	210	46	29.9	9	27	180	44	29.8	280	47	29.7	10	25		← 7:10
7:50	280	50	29.8	220	47	29.8	9	27	260	48	29.7	240	48	29.8	10	25		
8:00	260	48	29.7	180	45	30.1	9	27	260	45	29.9	220	47	30.0	10	25	8:05	- SURF
8:10	260	48	29.8	220	46	30.0	9	27	250	44	29.8	200	46	29.8	10	25		
8:20	280	47	30.0	210	47	29.8	9	27	220	46	29.9	220	42	29.7	10	25		
8:30	250	50	29.8	200	46	28.9	9	27	250	47	30.0	200	44	29.9	10	25		
8:40	280	49	29.8	190	46	29.9	9	27	240	47	29.8	260	46	29.8	10	25		
8:50	280	48	30.0	200	47	29.8	9	27	260	48	29.8	220	44	29.8	10	25		
7:00	320	49	33.8	200	46	29.8	9	27	280	49	29.9	200	43	29.8	10	25		

E-tube Data Sheet
Houlton, Maine

Operator Brian/Lance

Date 7 / 9 / 1996

10 min

Time	Core Unit: T/R Set #101 mA	Kv	Spk/ min	T/R Set #102 Pressure mA	Kv	Spk/ min	Quench Inlet	Quench Outlet	Surface Unit: T/R Set #201 mA	Kv	Spk/ min	T/R Set #202 Pressure mA	Kv	Spk/ min	Quench Inlet	Quench Outlet	Flush Time
8:00							8	28							9	24	
8:10							8	28							9	24	
8:20							8	28							9	24	
8:30							8	28							9	24	
8:40							7	28							9	25	
8:50							8	29							9	25	
9:00							8	28							9	24	
9:10							8	29							9	24	
9:20							8	28							9	24	
9:30							9	28							9	24	
9:40							8	28							9	24	
9:50							8	28							9	24	
10:00							8	28							9	24	
10:10							8	28							9	24	
10:20							8	28							9	24	
10:30							8	28							9	24	
10:40							8	28							9	24	
10:50							8	26							9	24	
11:00							8	28							9	24	
11:10							8	28							9	24	
11:20							8	28							9	24	
11:30							8	28							9	24	
11:40							8	28							9	24	
11:50							8	26							9	24	

E-tube Data Sheet
Houlton, Maine

Operator Brian/Lance

Date 7 / 9 / 1996

	Core Unit								Surface Unit								
	T/R Set #101			T/R Set #102 Pressure					T/R Set #201			T/R Set #202 Pressure					
Time	mA	Kv	Spk/ min	mA	Kv	Spk/ min	Quench Inlet	Quench Outlet	mA	Kv	Spk/ min	mA	Kv	Spk/ min	Quench Inlet	Quench Outlet	Flush Time
12:00							8	28							9	24	
12:10							8	28							9	24	
12:20							8	28							9	24	
12:30							8	28							9	24	
12:40							8	28							9	24	
12:50							8	28							9	24	
1:00							8	28							9	24	
1:10							8	29							9	24	
1:20							8	29							9	24	
1:30							8	28							9	24	
1:40							8	28							9	24	
1:50							8	28							9	24	
2:00							8	28							9	24	
2:10							8	28							9	24	
2:20							8	28							9	24	
2:30							8	28							9	25	
2:40							8	28							9	25	
2:50							8	28							9	24	
3:00							8	28							9	24	
3:10							8	28							9	24	
3:20							8	28							9	24	
3:30							8	28							9	24	
3:40							8	28							9	24	
3:50							8	28							9	24	

3:40 Start

E-tube Data Sheet
Houlton, Maine

Operator Brian / Lance

Date 7 / 9 / 1996

		Core Unit								Surface Unit								
		T/R Set #101			T/R Set #102 Pres					T/R Set #201			T/R Set #202					
	Time	mA	Kv	Spk/min	mA	Kv	Spk/min	Quench Inlet	Quench Outlet	mA	Kv	Spk/min	mA	Kv	Spk/min	Quench Inlet	Quench Outlet	Flush Time
	4:00							8	28							9	24	
	4:10							8	28							9	24	
End #1 4:19	4:20							8	28							9	24	
	4:30							8	28							9	24	
	4:40							8	28							9	24	
	4:50							8	28							8	24	
	5:00							8	28							9	24	
	5:10							8	28							9	24	
5:31 Start #?	5:20							8	28							9	24	
	5:30							8	28							9	24	
End #3	5:40							Power Bump								Power Bump		
	5:50							8	28							9	24	
	6:00							8	28							9	24	
6:10 Start #2?	6:10							8	28							9	24	
	6:20							8	26							9	24	
	6:30							8	24							9	24	
	6:40							8	28							9	24	
	6:50							8	28							9	24	
	7:00							8	26							9	24	
	7:10							8	28							9	24	
	7:20							8	28							9	24	
	7:30							8	28							9	24	
	7:40							8	28							8	24	
	7:50							8	28							9	24	

E-tube Data Sheet
Houlton, Maine

Operator Danny/Lance

Date 7 / 9 / 1996

	Core Unit								Surface Unit								
	T/R Set #101			T/R Set #102 Pressure					T/R Set #201			T/R Set #202 Pressure					
Time	mA	Kv	Spk/ min	mA	Kv	Spk/ min	Quench Inlet	Quench Outlet	mA	Kv	Spk/ min	mA	Kv	Spk/ min	Quench Inlet	Quench Outlet	Flush Time
8:00							8	28							9	24	
8:10							8	28							9	24	
8:20							8	28							9	24	
8:30							8	28							9	24	
8:40							8	28							9	24	
8:50							8	28							9	24	
9:00							8	28							9	24	
9:10							8	28							9	24	
9:20																	

E-tube Data Sheet
Houlton, Maine

Operator Brian/Lance

Date 7 / 9 / 1996

10 min.

Time	Core Unit: T/R Set #101 mA	T/R Set #101 Kv	T/R Set #101 Spk/min	T/R Set #102 Temp. mA	T/R Set #102 Kv	T/R Set #102 Spk/min	T/R Set #102 Quench Inlet	T/R Set #102 Quench Outlet	Surface Unit: T/R Set #201 mA	T/R Set #201 Kv	T/R Set #201 Spk/min	T/R Set #202 Temp. mA	T/R Set #202 Kv	T/R Set #202 Spk/min	T/R Set #202 Quench Inlet	T/R Set #202 Quench Outlet	Flush Time
8:00							227	164							222	148	
8:10							227	167							222	143	
8:20							229	168							222	148	
8:30							229	165							222	147	
8:40							231	162							201	113	
8:50							232	163							221	134	
9:00							232	162							220	141	
9:10							232	161							220	140	
9:20							232	162							220	141	
9:30							231	164							221	144	
9:40							231	160							221	147	
9:50							230	163							222	148	
10:00							230	164							222	147	
10:10							230	165							223	146	
10:20							231	165							221	147	
10:30							230	166							222	148	
10:40							229	167							222	150	
10:50							230	167							223	148	
11:00							230	168							223	148	
11:10							230	167							222	149	
11:20							231	169							223	147	
11:30							230	165							223	148	
11:40							230	167							222	150	
11:50							230	166							222	150	

E-tube Data Sheet
Houlton, Maine

Operator Brian/Lance

Date 7/19/1996

Time	Core Unit: T/R Set #101 mA	Kv	Spk/min	T/R Set #102 Temp mA	Kv	Spk/min	Quench Inlet	Quench Outlet	Surface Unit: T/R Set #201 mA	Kv	Spk/min	T/R Set #202 Temp mA	Kv	Spk/min	Quench Inlet	Quench Outlet	Flush Time
12:00							231	166							222	148	
12:10							231	167							221	147	
12:20							231	171							221	148	
12:30							231	168							220	150	
12:40							231	168							220	148	
12:50							231	167							220	150	
1:00							229	167							222	150	
1:10							229	164							221	146	
1:20							228	164							221	147	
1:30							228	164							220	147	
1:40							228	162							202	108	
1:50							229	164							213	141	
2:00							229	166							217	142	
2:10							229	168							213	143	
2:20							229	169							216	142	
2:30							230	166							219	141	
2:40							229	165							220	149	
2:50							229	165							221	148	
3:00							229	166							221	147	
3:10							229	166							222	150	
3:20							238	168							222	150	
3:30							231	172							222	150	
3:40							230	173							222	151	
3:50							230	164							222	152	

3:10 Start X

E-tube Data Sheet

Houlton, Maine

Operator Brian/Lance

Date 7 / 9 / 1996

Time	Core Unit – T/R Set #101 mA	T/R Set #101 Kv	T/R Set #101 Spk/min	Core Unit – T/R Set #102 Temp mA	T/R Set #102 Kv	T/R Set #102 Spk/min	T/R Set #102 Quench Inlet	T/R Set #102 Quench Outlet	Surface Unit – T/R Set #201 mA	T/R Set #201 Kv	T/R Set #201 Spk/min	Surface Unit – T/R Set #202 Temp mA	T/R Set #202 Kv	T/R Set #202 Spk/min	T/R Set #202 Quench Inlet	T/R Set #202 Quench Outlet	Flush Time
4:00							230	~~220~~ 170							228	154	
4:10							229	169							223	153	
4:20							228	167							223	151	
4:30							229	168							219	149	
4:40							229	167							219	149	
4:50							229	166							219	148	
5:00							229	167							219	149	
5:10							229	167							219	146	
5:20							228	165							222	149	
5:30							228	168							223	153	
5:40							Power	Bump							Power	Bump	
5:50							229	166							224	147	
6:00							229	167							223	146	
6:10							230	171							223	147	
6:20							230	172							222	148	
6:30							230	173							223	149	
6:40							229	171							223	150	
6:50							230	169							224	151	
7:00							230	170							224	151	
7:10							230	170							223	150	
7:20							231	169							223	150	
7:30							230	169							223	151	
7:40							230	171							221	147	
7:50							230	171							222	148	

End 4:15

Start 5:31 #2

5:40 End #1

Start 6:16 #2

7:10 End #2

7:54 Start #3

E-tube Data Sheet
Houlton, Maine

Operator Danny/Lance

Date 7/9/1996

	Core Unit								Surface Unit								
	T/R Set #101			T/R Set #102 Temp					T/R Set #201			T/R Set #202 Temp					
Time	mA	Kv	Spk/min	mA	Kv	Spk/min	Quench Inlet	Quench Outlet	mA	Kv	Spk/min	mA	Kv	Spk/min	Quench Inlet	Quench Outlet	Flush Time
8:00							230	171							222	149	
8:10							230	171							221	147	
8:20							229	167							222	150	
8:30							230	166							221	150	
8:40							230	172							223	152	
8:50							229	171							221	151	
9:00							230	170							219	152	
9:10							230	170							219	151	
9:20																	

900 End of 3

E-TUBE LOGSHEET

L P, HOULTON, MAINE

AM OPERATOR ________ PM OPERATOR SD DATE 7/9/96

Time	T/R Control Panel Readings Core Unit T/R Set # 101 mA	Kv	Spk/m	T/R Set # 102 mA	Kv	Spk/m	Mesh Pad	Zycom Quench Inlet Temp	Outlet Temp	Inlet Press in H2O	Outlet Press in H2O	Begin / End of Shift Reading Delta Press in H2O	Flush Water Gal	Make up Water Gal
7	280	45	15.0	150	40	14.9	.1	225	216	8	29	20		
11	~~290~~	~~50~~												
3														
7														
11	290	50	29.9	260	45	29.7	.1	228	170	8	28			
3	240	45	29.8	160	45	29.8	.1	229	169	8	28			

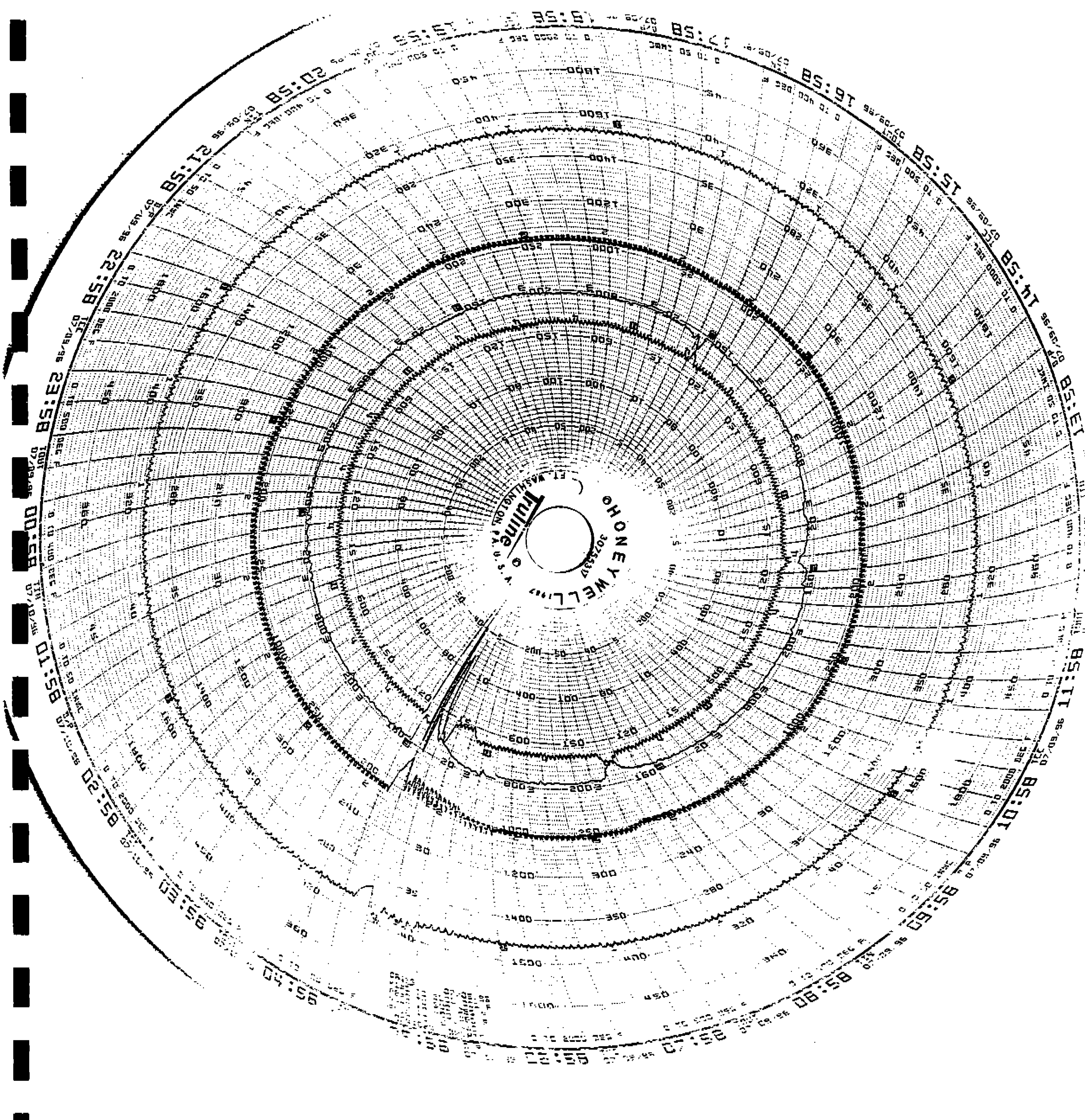
Time	Surface Unit T/R Set # 201 mA	Kv	Spk/m	T/R Set # 202 mA	Kv	Spk/m	Mesh Pad	Quench Inlet Temp	Outlet Temp	Inlet Press in H2O	Outlet Press in H2O	Delta Press in H2O	Flush Water Gal	Make up Water Gal
7	150	43	14.8	180	43	14.9	.1	229	191	9	24	14		
11														
3														
7														
11	220	45	29.8	200	45	29.8	.1	218	150	9	24			
3	220	45	29.9	230	45	29.7	.1	220	149	9	24			

Sample Times:		
Recycle Water % Solids:		
pH		

Recycle Blowdown Gallons:		

	Caustic	Defoamer
End:		
Start:		
Total:		

HOULTON DRYER RTO
7/9/96



9 / = GAL
36.39

RTO DATA SHEET
pressure @ 9 gals

HOULTON, MAINE

Operator Brent Carmichael   Press RTO ____   Dryer RTO X   Date 7 / 19 /1996

Time	RTO CHAMBER BEDS #1	#2	#3	#4	#5	#6	#7	P-V Inlet Press	BURNERS Burn #1	Burn #2	Burn #3	Inlet temp	Exh temp	Comb Temp	Δ Press Drop	CUFT Gas meter
10:00	369	344	392	405	393	361	385	1.1	1515	1518	1518	151	238	1521	16	6503521
10:10	368	343	397	405	391	363	387	0.9	1498	1505	1505	151	243	1523	15	6504014
10:20	369	346	393	402	394	363	385	1.0	1531	1516	1508	151	243	1521	15	6504488
10:30	369	344	398	406	392	364	388	1.0	1496	1504	1506	151	242	1526	15	6504972
10:40	369	346	394	402	395	364	386	1.0	1531	1517	1507	152	248	1529	16	6505449
10:50	368	344	399	403	392	365	388	1.1	1498	1511	1507	153	250	1520	15	6505867
11:00	368	344	399	404	392	365	388	1.0	1498	1509	1506	153	249	1524	15	6506213
11:10	369	345	399	403	393	365	388	1.0	1499	1511	1506	153	248	1523	15	6506734
11:20	370	347	394	403	395	365	388	1.0	1526	1518	1509	153	245	1526	16	6507401
11:30	370	346	399	402	393	366	388	1.1	1497	1511	1506	152	250	1523	15	6507889
11:40	371	347	393	405	396	364	388	1.1	1522	1519	1513	152	242	1526	15	6508369
11:50	371	345	399	405	393	365	390	0.9	1498	1504	1506	153	246	1524	16	6508843
12:00	370	347	394	403	396	364	388	0.9	1632	1518	1509	153	249	1530	15	6509298
12:10	370	345	399	404	393	365	390	0.9	1499	1504	1508	152	243	1531	15	6509777
12:20	370	345	398	406	393	365	390	1.0	1508	1516	1579	153	246	1531	16	6510303
12:30	370	346	399	402	394	366	389	1.0	1512	1509	1507	154	252	1522	16	6510814
12:40	371	346	397	407	394	364	391	0.9	1499	1501	1514	153	243	1520	15	6511339
12:50	371	348	395	402	396	365	388	1.0	1499	1513	1508	154	244	1524	15	6511225
1:00	372	347	393	406	397	364	390	0.9	1509	1514	1518	154	242	1517	16	6512249
1:10	370	348	398	401	396	366	389	1.0	1509	1510	1506	153	253	1520	16	6512748
1:20	372	347	395	409	396	363	390	1.0	1510	1512	1512	151	242	1515	15	6513218
1:30	369	347	398	401	395	365	389	1.0	1509	1506	1508	152	252	1518	16	6513230
1:40	371	346	395	409	394	362	390	1.0	[illegible]	1498	1511	145	241	1516	16	6514245
1:50	369	346	397	400	394	364	388	.9	1498	1507	1506	146	239	1515	16	6514664
2:00	368	344	397	403	392	362	388	0.9	1497	1507	1506	150	245	1524	15	6515284
2:10	368	346	393	400	394	362	386	1.1	1529	1514	1509	151	248	1529	16	6515759
2:20	370	344	394	407	393	361	389	1.0	1499	1504	1517	152	241	1512	16	6516189
2:30	370	345	392	405	395	361	388	1.1	1521	1516	1511	150	242	1521	16	6516729

AM

PM

RTO DATA SHEET
HOULTON, MAINE

Operator Brent Carmichael   Press RTO ______   Dryer RTO X   Date 7 / 9 /1996

Time	RTO CHAMBER BEDS #1	#2	#3	#4	#5	#6	#7	P-V Inlet Press	BURNERS Burn #1	Burn #2	Burn #3	Inlet temp	Exh temp	Comb Temp	Δ Press Drop	Gas meter
2:40	370	344	396	406	393	361	389	1.0	1499	1500	1511	152	241	1520	15	6517785
2:50	370	345	391	405	395	361	388	1.0	1521	1515	1512	152	243	1521	16	6517699
3:00	370	344	396	407	393	361	390	1.0	1500	1508	1515	153	242	1515	16	6518143
3:10	370	346	394	402	395	363	388	1.1	1529	1513	1508	153	250	1524	16	6518632
3:20	371	345	394	407	394	361	388	1.1	1515	1516	1515	154	243	1523	16	6519045
3:30	371	346	394	405	396	362	389	1.0	1526	1519	1511	155	246	1526	16	6519611
3:40	370	346	401	403	394	365	392	0.9	1497	1510	1507	157	250	1526	16	6520086
3:50	372	348	396	407	396	364	391	1.1	1522	1516	1511	155	246	1522	16	6520542
4:00	371	347	402	404	394	366	391	1.0	1508	1511	1509	156	254	1521	16	6521049
4:10	373	348	396	409	396	364	392	1.1	1518	1517	1514	155	243	1518	16	6521494
4:20	372	348	401	403	395	366	392	0.9	1498	1502	1507	155	244	1521	16	6521947
4:30	372	347	401	405	395	365	393	0.9	1497	1509	1506	154	250	1527	16	6522522
4:40	371	348	399	401	396	366	391	1.0	1512	1511	1507	154	252	1522	16	6522942
4:50	373	347	399	409	394	364	393	0.9	1501	1502	1515	153	243	1513	16	6523427
5:00	371	348	399	401	395	365	391	1.0	1504	1513	1508	153	254	1523	16	6523825
5:10	372	348	395	405	396	364	390	1.0	1521	1511	1509	153	254	1525	16	6524465
5:20	372	347	398	408	395	363	392	1.0	1511	1513	1513	153	248	1527	16	6524906
5:30	373	348	394	405	397	363	390	1.1	1523	1520	1507	155	254	1522	16	6525427
5:40	371	349	397	401	396	365	390	.9	1499	1509	1507	143	249	1524	17	6525979
5:50	370	348	399	400	395	366	391	.8	1497	1505	1505	151	243	1511	16	6526374
6:00	370	347	397	406	395	364	389	.9	1499	1502	1513	152	246	1514	16	6526851
6:10	371	349	398	401	394	363	391	.1	1499	1501	1511	151	241	1521	16	6527492
6:20	370	348	399	400	395	365	390	.9	1501	1505	1515	154	242	1519	16	6528070
6:30	371	348	396	402	395	365	389	1.0	1507	1506	1508	155	252	1514	16	6528460
6:40	371	349	395	403	396	364	390	1.0	1510	1508	1505	154	251	1520	16	6529020
6:50	373	348	396	406	396	365	391	1.0	1523	1510	1508	155	254	1521	16	6529254
7:00	371	348	400	401	395	367	391	1.0	1496	1509	1507	155	248	1523	16	6529771
7:10	373	347	399	407	395	365	393	1.0	1530	1517	1507	154	251	1523	16	6530442

PM

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RTO DATA SHEET
HOULTON, MAINE

Operator ~~Brent Carmichael~~ JOE CHARETTE   Press RTO ____   Dryer RTO X   Date 7 / 9 /1996

PM

	RTO CHAMBER BEDS								BURNERS							
Time	#1	#2	#3	#4	#5	#6	#7	Inlet Press	Burn #1	Burn #2	Burn #3	Inlet temp	Exh temp	Comb Temp	Press Drop	Gas meter
7:50	373	347	395	409	395	365	394	1.1	1519	1516	1511	155	253	1527	16	6532112
8:00	372	348	402	404	394	367	394	1.0	1499	1501	1512	154	244	1514	16	6532547
8:10	371	346	399	406	391	365		1.0	1498	1517	1517	156	248	1524	16	6533010
8:20	373	344	398	404	394	367		.9	1506	1505	1505	153	250	1515	16	6533496
8:30	371	348	401	401	354	367		1.1	1499	1509	1508	158	257	1528	16	6533914
8:40	372	346	400	403	395	369		1.0	1503	1506	1510	152	248	1578	16	6534450
8:50	371	347	402	404	395	355	392	1.0	1502	1516	1507	154	250	1520	16	6534825
9:00	372	349	402	404	396	368	393	1.0	1499	1512	1513	155	252	1527	16	6535343

RTO LOGSHEET

HOULTON, MAINE

Press ______ Dryer ✓

AM OPERATOR J. CHARETTE PM OPERATOR S.D. DATE 7 / 9 / 96

	7	11	3	7	11	3
BURNER #1 SETPOINT	15~~35~~10	1535	1535	1535	1535	1535
BURNER #1 TEMP	1525		1500		1520	1512
BURNER #1 OUTPUT	30.5		39.3		39.3	38.0
BURNER #2 SETPOINT	15~~35~~10	1535	1535	1535	1535	1535
BURNER #2 TEMP	1513		1499		1499	1510
BURNER #2 OUTPUT	14.5		25.2		25.2	19.3
BURNER #3 SETPOINT	15~~35~~10	1535	1535	1535	1535	1535
BURNER #3 TEMP	1507		1510		1510	1506
BURNER #3 OUTPUT	42.4		36.6		36.6	41.7
INLET TEMP	151				155	153
CHAMBER TEMP	1524				1525	1520
EXHAUST TEMP	249				244	251
INLET PRESS	1.0				1.1	1.1
DELTA PRESS	16				16	16
VFD #1 AMPS	365				350	350
VFD #1 RPM	1365				1339	1346
VFD #2 AMPS	360				340	358
VFD #2 RPM	1366				1335	1343
P/V SETPOINT	1.0				1.0	1.0
P/V OUTPUT	66.0				65.1	67.5
RECOV CH 1 TEMP	374				374	371
RECOV CH 2 TEMP	345				349	347
RECOV CH 3 TEMP	396				397	403
RECOV CH 4 TEMP	410				409	412
RECOV CH 5 TEMP	394				397	395
RECOV CH 6 TEMP	363				365	361
RECOV CH 7 TEMP	387				392	390
FAN #1 SHAFT BRG	72				82	94
FAN #1 FAN BRG	103				98	112
FAN #2 SHAFT BRG	90				82	91
FAN #2 FAN BRG	88				88	84
PURGE FAN RUNNING	YES				Yes	Yes
BTUE SYSTEM ON	No	No	No	No	No	No
RTO GAS INLET PRESS	8					
VAPORIZ WATER TEMP						
VAPORIZ INLET PRESS						
VAPORIZ OUTLET PRE						
GAS METER READING	(Last day of the Month)					

RTO OPERATOR'S LOG #1

HOULTON, ME. Date: 7-9-96

Shift Electrician inspect the RTO outside and take the following readings every two hours. Press Lineman to fill in when Electrician is busy.

DataLiner:

	Recovery Chamber Temperatures 1	2	3	4	5	Inlet Press. W.C.	Inlet Temp	Comb. Chamber Temp.	Exh. Temp.
M	341	328	343	356	342	4.4	123	1537	237
2	346	332	345	355	343	4.3	126	1549	238
3	348	337	346	361	344	4.2	128	1550	241
M	348	333	353	347	349	4.3	128	1552	239
1	344	336	346	352	351	4.4	126	1548	235
3	341	334	346	350	350	4.1	125	1524	231

y Shift (at 12 AM): Propane tank #1 72 % Tank #2 64 %

og startup/shutdown times, problems, maintenance items, etc.:
se chartrecorder time)

38

RTO OPERATOR'S LOG #2

HOULTON, ME. Date: 7-9-96

Shift Electrician inspect the RTO outside and take the following readings every FOUR hours. Press Lineman to fill in when Electrician is busy. Propane readings: 3 X per shift, Vaporizer: 1 X per shift.

	RTO Delta P	Press. Inlet Duct	Burner Temperature #1	Burner Temperature #2	Burner Output % #1	Burner Output % #2	Motor Amps	Propane Pressures RTO	Propane Pressures Vaporizer In	Propane Pressures Vaporizer Out	Propane Temperature Vaporizer
M	17	4.5	1549	1552	9.0	1.1	113	7	90	8	135
2	18	4.3	1544	1552	2.0	0	108				
3	18	4.1	1532	1545	14.0	0	113				
M	17	4.3	1529	1531	42.2	54.6	111	7	120	8	134
1	17	4.2	1549	1554	0.4	2.2	111				
3	17	4.1	1538	1553	34.6	0.4	111				

Burner Setpoints: 1) 1535 BTUE SYSTEM: ON ___ OFF ✓

2) 1535

Readings taken by: DAY S. Trail

NITE S. D.

HOULTON BOARD WEIGHTS
(lbs./8x16 panel every 25th mat during test Times)
APPROXIMATE TIMES

	7/16" 07/09/96		07/10/96
KG	LBS	KG	LBS
90.80	200.21	85.70	188.97
90.60	199.77	90.70	199.99
79.10	174.42	90.10	198.67
92.10	203.08	89.30	196.91
92.40	203.74	88.10	194.26
85.90	189.41	89.10	196.47
90.50	199.55	90.60	199.77
93.00	205.07	92.90	204.84
94.10	207.49	88.60	195.36
91.30	201.32	89.50	197.35
89.00	196.25	92.90	204.84
89.00	196.25	92.50	203.96
88.10	194.26	90.60	199.77
88.90	196.02	90.10	198.67
91.60	201.98	90.30	199.11
91.60	201.98	91.70	202.20
90.40	199.33	90.30	199.11
87.20	192.28	90.90	200.43
88.60	195.36	93.10	205.29
86.50	190.73	94.10	207.49
89.60	197.57	91.10	200.88
88.90	196.02	93.20	205.51
89.40	197.13	93.10	205.29
89.90	198.23	93.00	205.07
89.70	197.79	93.50	206.17
90.30	199.11	93.70	206.61
86.80	191.39	91.80	202.42
93.30	205.73	94.40	208.15
89.50	197.35	93.50	206.17
93.60	206.39	93.20	205.51
92.70	204.40	88.40	194.92
93.10	205.29	90.30	199.11
91.10	200.88	90.00	198.45
92.40	203.74	89.80	198.01
93.80	206.83	92.20	203.30
100.10	220.72	89.90	198.23
96.90	213.66	92.10	203.08
95.60	210.80	92.90	204.84
96.40	212.56	93.50	206.17
95.00	209.48	90.20	198.89
93.70	206.61	91.30	201.32
98.00	216.09	94.10	207.49
94.80	209.03	94.30	207.93
95.60	210.80	92.30	203.52
92.80	204.62	91.60	201.98
91.90	202.64		0.00
92.80	204.62		0.00
90.20	198.89		0.00
91.30	201.32		0.00
	201.5955		**201.6105**
7% TRIM		7% TRIM	.
8x16 WT.	187.48	8x16 WT.	187.50
4x8 NET	46.87	4x8 NET	46.87

AIR POLLUTION SOURCE and
CONTROL EQUIPMENT LOGSHEET

Operator DAN H. Crew D AM (PM) Date 7/9/96

Log the start/stop, (open/shut) times of the following Sources & Control Equipment. Use the time displayed on the telephone.

Sources: Forming Line, Dryers, Thermal Oil Heaters, RTO's, RTO Bypass Stack Damper (open/shut).

Control Equipment: ESP's, E-tubes, RTO's (Press/Dryer), & Baghouses

Time	Item	Operation	Comment
5:40 Am	Lost ALL POWER	Stop	Everything Down
5:44 Am	#2 E.S.P. + #2 Konus	Start	Power is back
5:46 Am	Baghouse	Start	" " "
5:50 Am	E-Tubes (Both)	start	" " "
5:56 Am	R.T.O.	Start	" " "
5:56 Am	Both dryers	Start	" " "

Use Reverse side for additional space.

\FORMS\s-s_log

AIR POLLUTION SOURCE and
CONTROL EQUIPMENT LOGSHEET

Operator Brian Crew A (AM) PM Date 7-9-96

Log the start/stop, (open/shut) times of the following Sources & Control Equipment. Use the time displayed on the telephone.

Sources: Forming Line, Dryers, Thermal Oil Heaters, RTO's, RTO Bypass Stack Damper (open/shut).

Control Equipment: ESP's, E-tubes, RTO's (Press/Dryer), & Baghouses

Time	Item	Operation	Comment
8^47	SL dryer	STOP	Dry bin Full
8^57	SL dryer	Start	
1^40	SL dryer	stop	Woodfuel Flame went out
1^43	SL dryer	Start	started on oil, wood No go
5^40	SL + CL dryer	stop	Power Bump
5^42	SL + CL dryer	start	

Use Reverse side for additional space.

\FORMS\s-s_log

APPENDIX F

Equipment Calibration
&
CEMS Gas Certifications

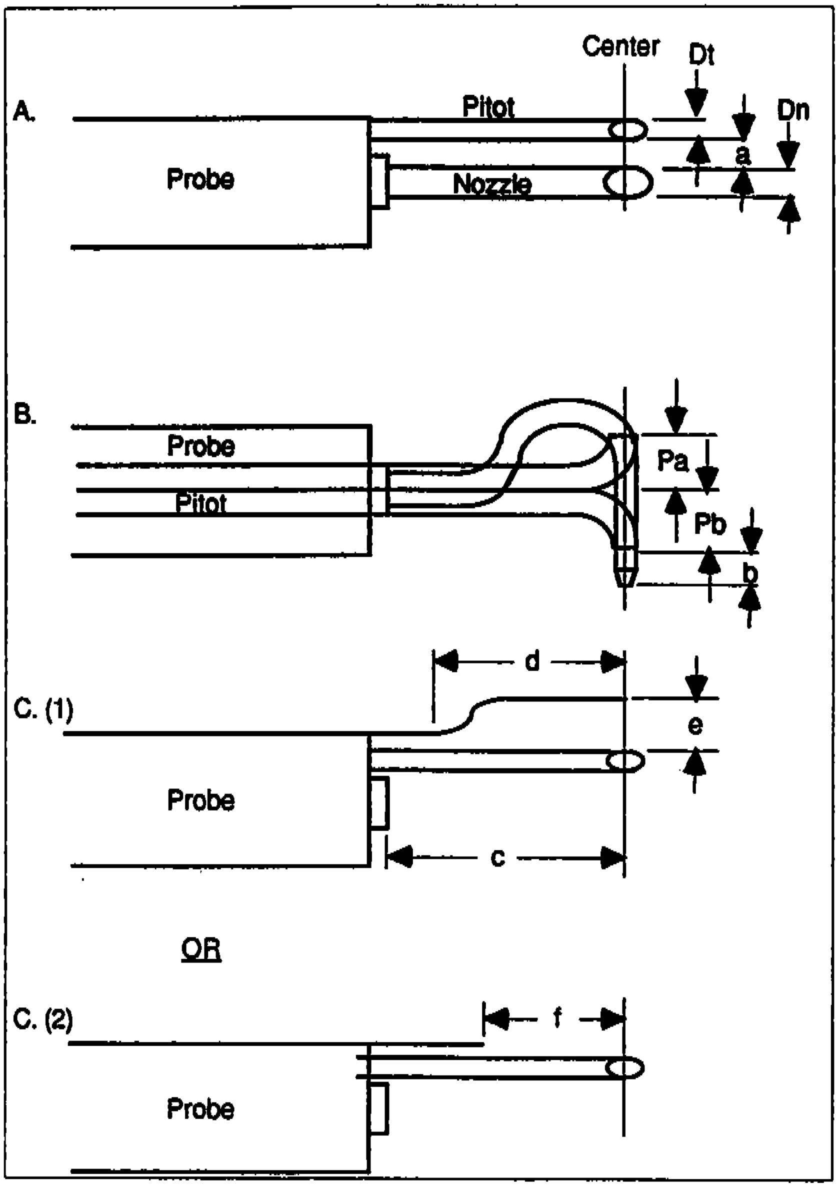
APCC AIR POLLUTION CHARACTERIZATION AND CONTROL, LTD.

S-Type Pitot Tube Geometric Calibration
Part 1 - Probe Configuration

Probe Identification 401 Pitot Identification 401

Technical Specialist E.MOST

Date 4/26/96



Dt 0.374
Dn 0.500
a 0.785

Pa 0.567
Pb 0.567
b 1.067

c 5.073
d 4.502
e 0.792

OR

c ______
f ______

Specifications (EPA Method 2)

Dt = 3/16" to 3/8"	c≥ 3"	Pa = Pb
Dn = 1/2"	d≥ 3"	
a≥ 3/4"	e≥ 3/4"	1.05 Dt ≤ P ≤ 1.50 Dt
b≥ 0	f≥ 2"	

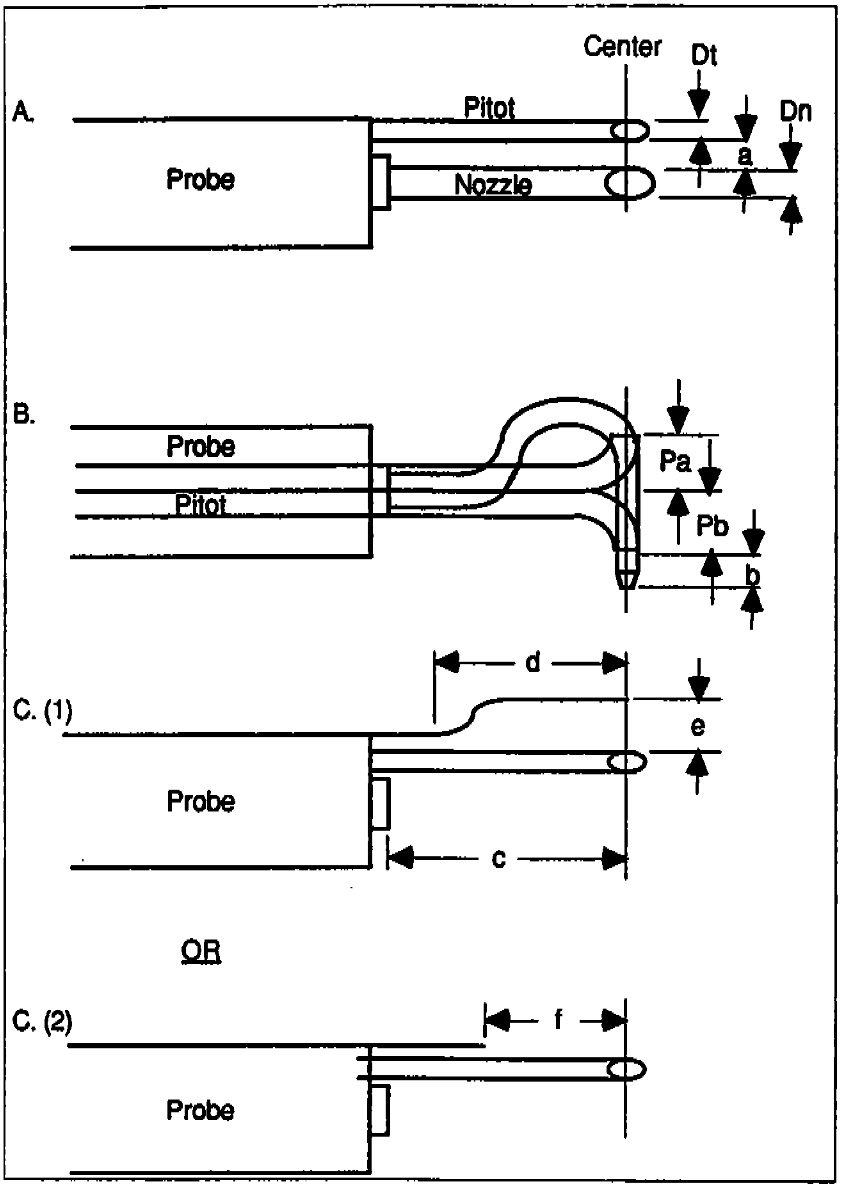
If these specifications are met, proceed with Part 2, Pitot alignment.

Rev 7/95 TMC

APCC AIR POLLUTION CHARACTERIZATION AND CONTROL, LTD.

S-Type Pitot Tube Geometric Calibration
Part 1 - Probe Configuration

Probe Identification 601   Pitot Identification 601
Technical Specialist E.MOST
Date 4/26/96



Dt	0.374
Dn	0.622
a	0.753
Pa	0.517
Pb	0.517
b	0.923
c	5.312
d	3.360
e	0.782

OR

c	
f	

Specifications (EPA Method 2)

Dt = 3/16" to 3/8"	c≥ 3"	Pa = Pb
Dn = 1/2"	d≥ 3"	
a≥ 3/4"	e≥ 3/4"	1.05 Dt ≤ P ≤ 1.50 Dt
b≥ 0	f≥ 2"	

If these specifications are met, proceed with Part 2, Pitot alignment.

APCC AIR POLLUTION CHARACTERIZATION AND CONTROL, LTD.

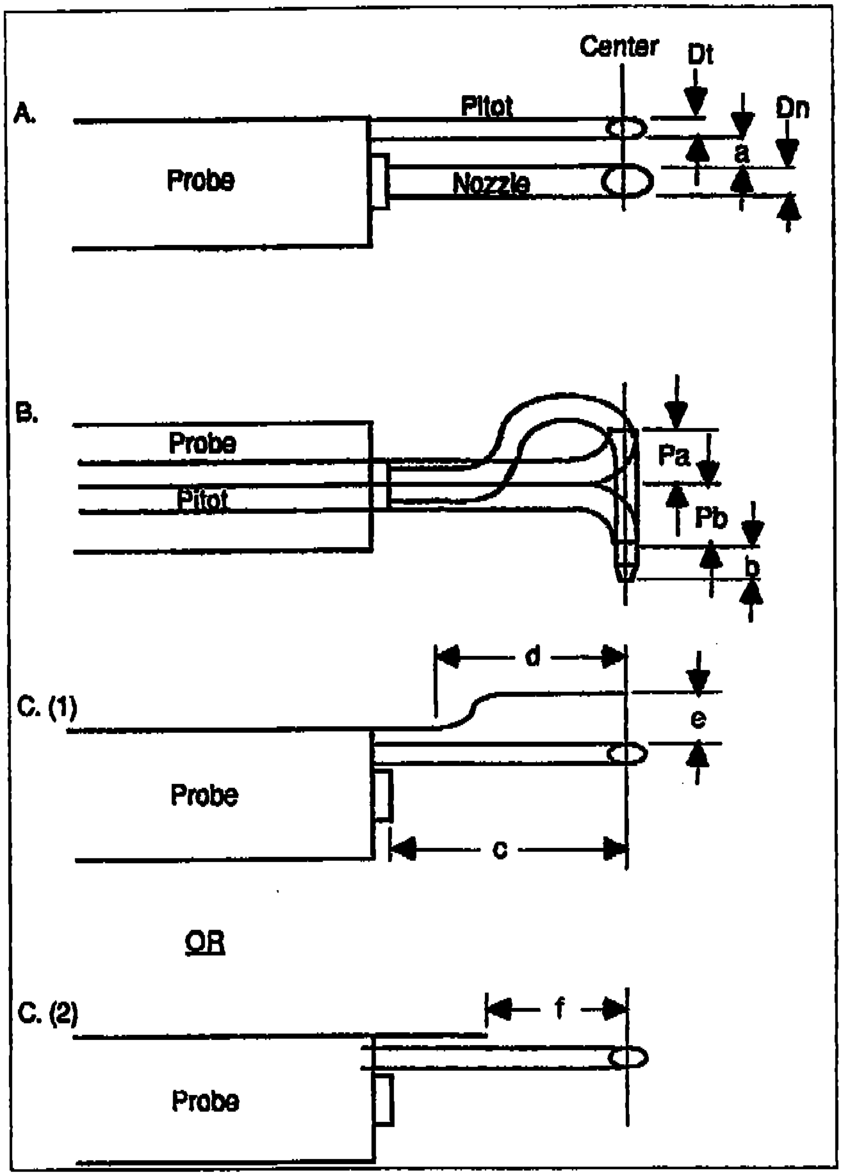
S-Type Pitot Tube Geometric Calibration
Part 1 - Probe Configuration

Probe Identification 902

Pitot Identification 902

Technical Specialist E.MOST

Date 4/26/96



Dt 0.0378
Dn 0.625
a 0.778

Pa 0.515
Pb 0.515
b 0.778

c 5.897
d 4.375
e 1.059

OR

c ______
f ______

Specifications (EPA Method 2)

Dt = 3/16" to 3/8"	c≥ 3"	Pa = Pb
Dn = 1/2"	d≥ 3"	
a≥ 3/4"	e≥ 3/4"	1.05 Dt ≤ P ≤ 1.50 Dt
b≥ 0	f≥ 2"	

If these specifications are met, proceed with Part 2, Pitot alignment.

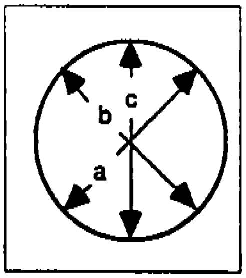
Rev 7/95 TMC

APCC AIR POLLUTION CHARACTERIZATION AND CONTROL, LTD.

Nozzle Calibration Worksheet

Nozzle Set Number #1 Tech Specialist E. MOST

Date Calibrated 4/11/96



Nozzle Number	Diameter*	a	b	c	Average**
1-1	3/16	0.177	0.178	0.178	0.178
1-2	1/4	0.252	0.253	0.252	0.252
1-3	9/32	0.276	0.274	0.274	0.275
1-4	3/8	0.374	0.373	0.375	0.374
1-5	13/32	0.406	0.406	0.407	0.406
1-6	1/2	0.492	0.493	0.493	0.493
1-7	5/16	0.313	0.314	0.314	0.314
1-8	7/32	0.208	0.208	0.209	0.208

*NOTE: Measure to the nearest 0.001".

**NOTE: The three measurements must be within 0.004" of each other.

Rev 7/95 TMC

CRITICAL ORIFICE METHOD 5 MODULE CALIBRATION

PUMP NUMBER: 3 MODULE NUMBER : 98 NAME: E. MOST

PRE-CAL ____

BAROMETRIC PRESSURE: 29.60 DATE: 4/8/96 STANDARD METER DGM-115 POST-CAL FROM ____

MODULE			ORIFICE		MODULE METER									CALIBRATIONS		
PUMP VACUUM* (In. Hg)	ΔH SETTING (In. H2O)	TEMP. Tamb (°F)	NUMBER	K'	VOLUME Vmi (cubic ft.)	VOLUME Vmf (cubic ft.)	VOLUME Vm (cubic ft.)	TEMP. Tmi (°F)	TEMP. Tmf (°F)	TEMP. Tm (°F)	TIME ∞ (min)	Vm (std)	Vcr (std)	Y	Variability	ΔH@
15	0.62	67	AC47	0.3146	501.27	503.39	2.12	66	66	66	5.00	2.11	2.03	0.96	-0.04	2.11
15	1.20	66	AC 55	0.4378	503.63	506.47	2.84	66	66	66	5.00	2.83	2.83	1.00	0.00	2.11
15	1.90	65	AC 63	0.5633	506.67	510.30	3.63	68	66	67	5.00	3.61	3.64	1.01	0.01	2.02
15	3.50	64	AC 73	0.7647	510.76	515.71	4.95	70	67	69	5.00	4.93	4.94	1.00	0.00	2.02
15	4.90	64	AC 81	0.9468	516.07	522.07	6.00	72	67	70	5.00	5.99	6.12	1.02	0.02	1.86
														1.00	0.00	2.03

*NOTE: Each orifice has a pre-calibrated critical vacuum of 14" Hg, set module vacuum at 1" to 2" above critical vacuum.

$$Vcr(std) = \frac{K Pbar \infty}{\sqrt{Tamb}}$$

$$Y = \frac{Vcr(std)}{Vm(std)}$$

$$Vm(std) = 17.64\ Vm \frac{(Pbar + \Delta H/13.6)}{(Tm + 460)}$$

$$\Delta H@ = 0.0319 \Delta H \frac{(Tm + 460)\ \infty^2}{Pbar\ (YVm)^2}$$

Module Leak Check: X
Pitot Leak Check: X

Probe Heat Control: X
Heater Box Control: X

T.C. Readout calibrated with: Hot / Cold Bath X
Constant Voltage Source

Matheson Gas Products
World Leader in Specialty Gases & Equipment

** CERTIFICATE OF ANALYSIS - EPA PROTOCOL MIXTURE **

CUSTOMER: ABCO WELDING & INDUSTRIAL SUPPLY
CYLINDER #: SX-37453
CYLINDER PRESSURE: 2,000 psig
LAST ANALYSIS DATE: 04-05-96
EXPIRATION DATE: 04-05-99

REFERENCE #: 109-48682
PROTOCOL: 1

DO NOT USE THIS CYLINDER WHEN THE PRESSURE FALLS BELOW 150 psig

REPLICATE CONCENTRATIONS

Component: CARBON DIOXIDE

Mean Conc: 12.6 PCT

Date: 04-05-96
12.6 PCT
12.6 PCT
12.6 PCT

COMPONENT: OXYGEN

Mean Conc: 12.8 PCT

Date: 04-05-96
12.8 PCT
12.8 PCT
12.8 PCT

Date:

BALANCE GAS: NITROGEN

REFERENCE STANDARDS

SRM #:	1674B	GMIS2659G
CYLINDER #:	CLM-6492	SX-30352
CONCENTRATION:	6.98 PCT	20.34 PCT

CERTIFICATION INSTRUMENTS

COMPONENT	CARBON DIOXIDE	OXYGEN
MAKE/MODEL	Horiba VIA 510	Rosemount 755
SERIAL NUMBER	850802052	2002832
MEASUREMENT PRINC.	NDIR	Paramagnetic
LAST CALIBRATION	03-19-96	04-01-96

THIS CERTIFICATION WAS PERFORMED ACCORDING TO EPA TRACEABILITY PROTOCOL FOR ASSAY & CERTIFICATION OF GASEOUS CALIBRATION STANDARDS REVISED SEPT. 1993, USING PROCEDURE G1 AND/OR G2. THE TOTAL ANALYTICAL UNCERTAINTY OF THIS MIXTURE IS ESTIMATED TO BE + OR - 1%.

ANALYST Thomas J Purdon DATE 4/10/96

1650 Enterprise Parkway
Twinsburg, Ohio 44087
Phone: (216) 425-4406
Toll Free: (800) 426-9427

Matheson Gas Products
World Leader in Specialty Gases & Equipment

** CERTIFICATE OF ANALYSIS - EPA PROTOCOL MIXTURE **

CUSTOMER: ABCO WELDING & INDUSTRIAL SUPPLY
CYLINDER #: SX-37445
CYLINDER PRESSURE: 2,000 psig
LAST ANALYSIS DATE: 04-05-96
EXPIRATION DATE: 04-05-99

REFERENCE #: 109-48682
PROTOCOL: 1

DO NOT USE THIS CYLINDER WHEN THE PRESSURE FALLS BELOW 150 psig

REPLICATE CONCENTRATIONS

Component: CARBON DIOXIDE

Mean Conc: 19.7 PCT

Date: 04-05-96
19.7 PCT
19.7 PCT
19.6 PCT

COMPONENT: OXYGEN

Mean Conc: 22.6 PCT

Date: 04-05-96
22.6 PCT
22.6 PCT
22.6 PCT

Date:

BALANCE GAS: NITROGEN

REFERENCE STANDARDS

SRM #:	1674B	GMIS2659G
CYLINDER #:	CLM-6492	SX-30352
CONCENTRATION:	6.98 PCT	20.34 PCT

CERTIFICATION INSTRUMENTS

COMPONENT	CARBON DIOXIDE	OXYGEN
MAKE/MODEL	Horiba VIA 510	Rosemount 755
SERIAL NUMBER	850802052	2002832
MEASUREMENT PRINC.	NDIR	Paramagnetic
LAST CALIBRATION	03-19-96	04-01-96

THIS CERTIFICATION WAS PERFORMED ACCORDING TO EPA TRACEABILITY PROTOCOL FOR ASSAY & CERTIFICATION OF GASEOUS CALIBRATION STANDARDS REVISED SEPT. 1993, USING PROCEDURE G1 AND/OR G2. THE TOTAL ANALYTICAL UNCERTAINTY OF THIS MIXTURE IS ESTIMATED TO BE + OR - 1%.

ANALYST Thomas J Purdon DATE 4/15/96

1650 Enterprise Parkway
Twinsburg, Ohio 44087
Phone: (216) 425-4406
Toll Free: (800) 426-9427

Scott Specialty Gases, Inc.
Shipped 2330 HAMILTON BOULEVARD
From: SOUTH PLAINFIELD NJ 07080
Phone: 908-754-7700 Fax: 908-754-7303

CERTIFICATE OF ANALYSIS

AIR POLLUTION CHARACTER
EARL HOST
AND CONTROL
60 INDUSTRIAL PK RD WEST
TOLLAND CT 06084

PROJECT #: 07-24580-004
PO#: CX1389
ITEM #: 07022751 4AL
DATE: 12/16/93

CYLINDER #: ALM008186 ANALYTICAL ACCURACY: +/- 2 %

BLEND TYPE : CERTIFIED MASTER GAS

COMPONENT	REQUESTED GAS CONC MOLES	ANALYSIS (MOLES)
METHANE	275. PPM	283. PPM
NITROGEN	BAL	BAL

CERTIFIED

ANALYST: _[signature]_
DONNA O'SHEA

RECEIVED JUL 2 - 1993

Scott Specialty Gases, Inc.

Shipped From: 2330 HAMILTON BOULEVARD
SOUTH PLAINFIELD NJ 07080
Phone: 908-754-7700 Fax: 908-754-7303

C E R T I F I C A T E O F A N A L Y S I S

AIR POLLUTION CHARACTER
EARL MOST
AND CONTROL
60 INDUSTRIAL PK RD WEST
TOLLAND CT 06084

PROJECT #: 07-21664-001
PO#: 1194 EM
ITEM #: 07022751 4AL
DATE: 6/24/93

CYLINDER #: [redacted] ANALYTICAL ACCURACY: +\- 2 %

BLEND TYPE : CERTIFIED MASTER GAS

COMPONENT	REQUESTED GAS CONC MOLES	ANALYSIS (MOLES)
METHANE	500. PPM	[redacted] PPM
NITROGEN	BAL	BAL

ANALYST: [signature] JOHN O'SHEA

APPROVED BY: [signature] ADELA SY

GREAT LAKES AIRGAS INC

****** CERTIFICATE OF ANALYSIS ******

Customer: Connecticut Airgas

June 21 1995

Test Report GM 48195

PRIMARY STANDARD GRADE

CYLINDER NUMBER	REQUESTED COMPOSITION		REPORTED COMPOSITION	
CC25728	900ppm Balance	Methane Nitrogen	911ppm Balance	Methane Nitrogen
CC97937	900ppm Balance	Methane Nitrogen	901ppm Balance	Methane Nitrogen

Approved for Release

CRYODYNE
technologies inc

67 Winthrop Road (Route145)
Chester, Connecticut . 06412

Telephone (203) 526-5000
Facsimile (203) 526-3199

ANALYTICAL REPORT

[illegible] Reported: [illegible]

[illegible] Order No: [illegible]

Purchase Order: [illegible]

[illegible] Connecticut [illegible]gas/Presto Div
44[illegible] Sackett Point Road
North Haven, CT 0647[illegible]
203-288-9381

Order No. 33879

Item Ordered: 100 ppm Methane/Nitrogen Primary Standard

Cylinder No:	Component	Specification	Concentration
[redacted]	methane Nitrogen	100 ppm Balance	[redacted]

Method of analysis: Gravimetric Preparation
Gas Chromatography

[illegible]

Principal Gas Analyst

This report states accurately the results of the investigation made upon materials submitted to the analytical laboratory. Every effort has been made to determine objectively the information requested. However, in connection with the rendering of this report, CRYODYNE TECHNOLOGIES, INC. shall have no liability in excess of the established charge for the service. Any use of this report or the information contained herein shall be at the sole risk of the user.

[illegible]

NATIONAL SPECIALTY GASES
630 UNITED DRIVE
DURHAM, NC 27713
(919)544-3772

CERTIFICATE OF ANALYSIS-EPA PROTOCOL MIXTURES

[redacted] CYL. PRESSURE:2000PSIG
[redacted]ALYSIS DATE:2/1/95
CUSTOMER: CONNECTICUT AIRGAS P.O.# 15645

METHOD: ANALYZED ACCORDING TO EPA TRACEABILITY PROTOCOL FOR ASSAY AND CERTIFICATION OF GASEOUS CALIBRATION STANDARDS-SEPTEMBER 1993:G-1

STANDARD:
SRM #: 1659A
CYL #: CLM3081
CONC.: 9.65PPM

INSTRUMENT:BECKMAN THC
MODEL #:400
SERIAL #:1003052
LAST CAL.:1/10/95

COMPONENT: [redacted]
REPLICATE CONC.
DATE:2/1/95 DATE:
16.2PPM
16.3PPM
16.3PPM

COMPONENT:
MEAN CONC:
REPLICATE CONC.
DATE: DATE:

COMPONENT:
MEAN CONC:
REPLICATE CONC.
DATE: DATE:

BALANCE GAS:N2

REPLICATE DATA

DATE:	2/1/95				
Z	0	R	348.0	C	584.2
R	348.1	Z	0	C	588.0
Z	0	C	588.2	R	348.2

COMPONENT:CH4

DATE:		
Z	R	C
R	Z	C
Z	C	R

REPLICATE DATA

DATE:		
Z	R	C
R	Z	C
Z	C	R

COMPONENT:

DATE:		
Z	R	C
R	Z	C
Z	C	R

REPLICATE DATA

DATE:		
Z	R	C
R	Z	C
Z	C	R

COMPONENT:

DATE:		
Z	R	C
R	Z	C
Z	C	R

Z=ZERO C=CANDIDATE R=REFERENCE

ANALYST: Gary A. Savage   APPROVED BY: [signature]

GREAT LAKES AIRGAS INC

****** CERTIFICATE OF ANALYSIS ******

Customer: Connecticut Airgas

May 16 1995

Test Report GM 35895

PRIMARY MIXTURE

CYLINDER NUMBER	REQUESTED COMPOSITION		REPORTED COMPOSITION	
[redacted]	50ppm Balance	Methane Nitrogen	[redacted]	Methane Nitrogen
[redacted]	50ppm Balance	Methane Nitrogen	[redacted]	Methane Nitrogen

Post-it® Fax Note 7671

To PETER		Date 6-9	# of pages 1
Co./Dept. APCC		From RAY	
Phone #		Co. AIRGAS	
Fax # 871-8675		Phone #	
		Fax #	

INV 72805

Ed Johnson

Approved for Release

GREAT LAKES AIRGAS INC

****** CERTIFICATE OF ANALYSIS ******

Customer: Connecticut Airgas

May 18 1995

Test Report GM 35995

PRIMARY MIXTURE

CYLINDER NUMBER	REQUESTED COMPOSITION		REPORTED COMPOSITION	
[redacted]	85ppm	Methane	[redacted]	Methane
	Balance	Nitrogen	Balance	Nitrogen
[redacted]	85ppm	Methane	[redacted]	Methane
	Balance	Nitrogen	Balance	Nitrogen

Ed Johnson

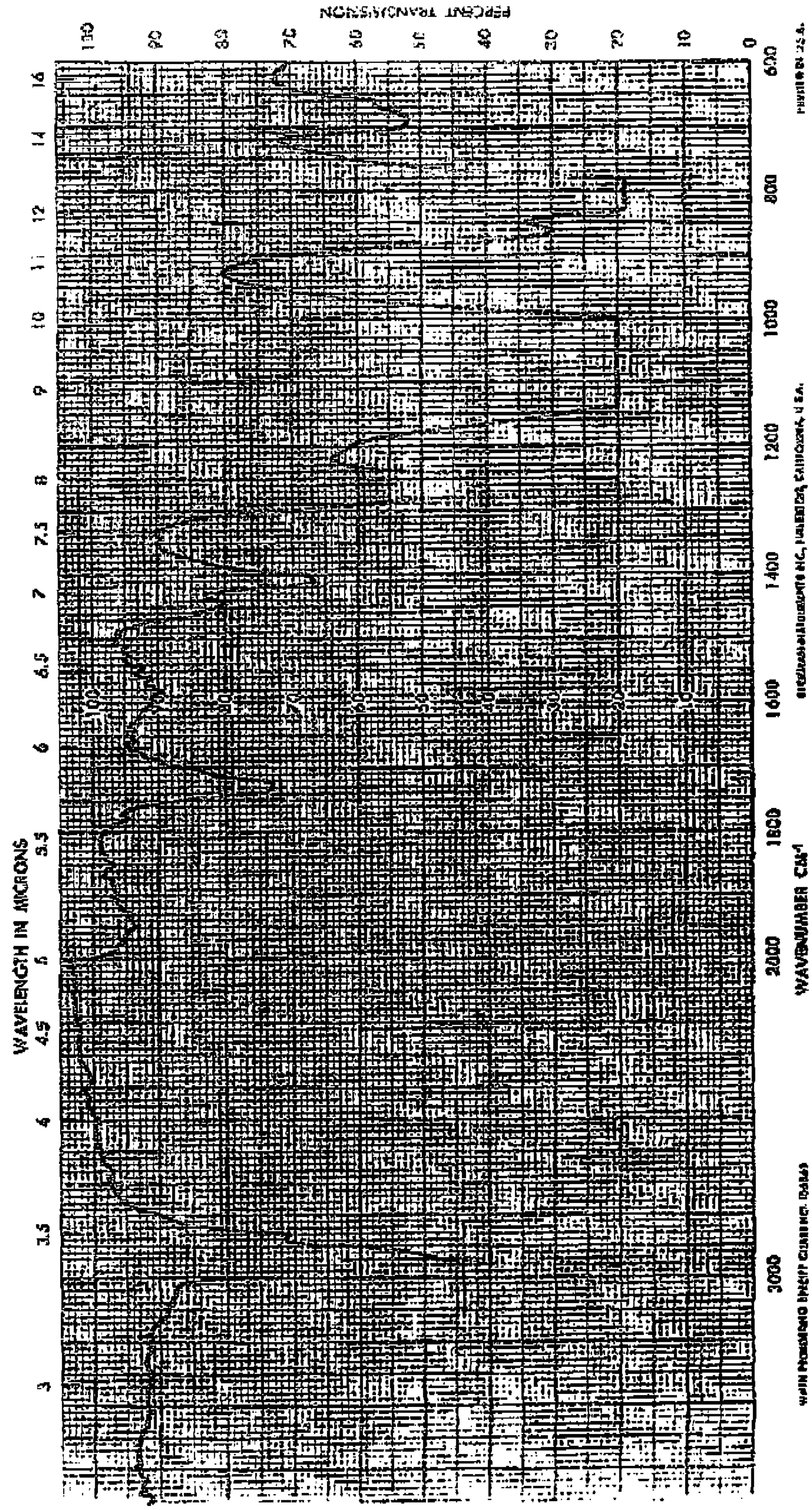
Approved for Release

APPENDIX G

Laboratory Data

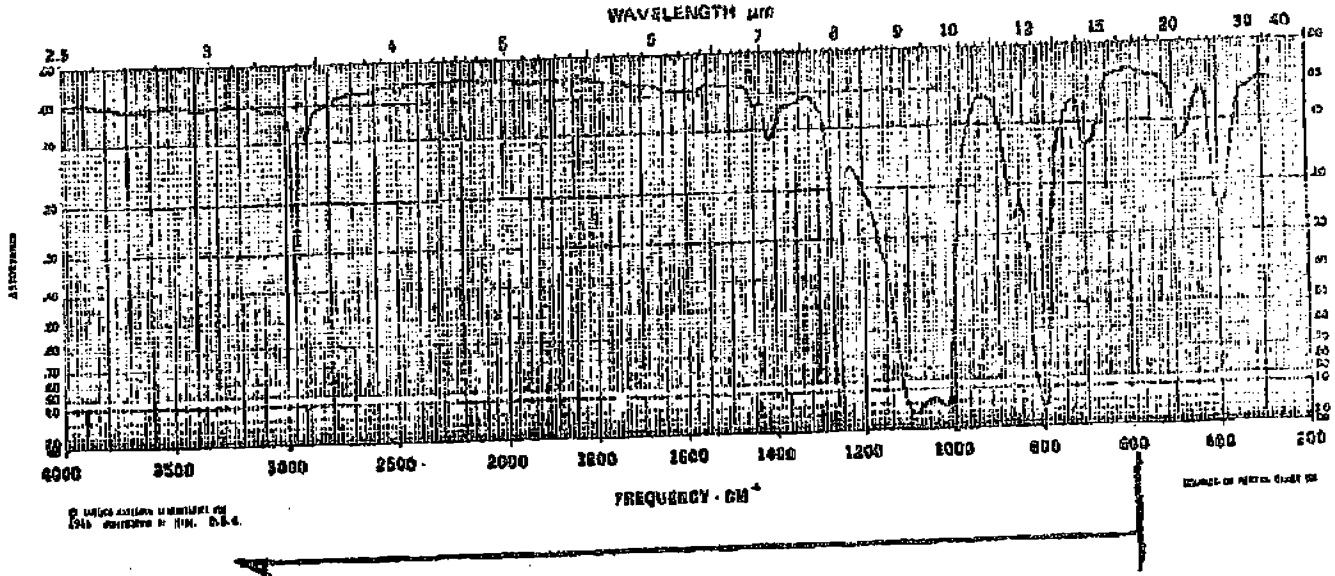
Thin film IR Scan

Test 4/Run 1 Organic

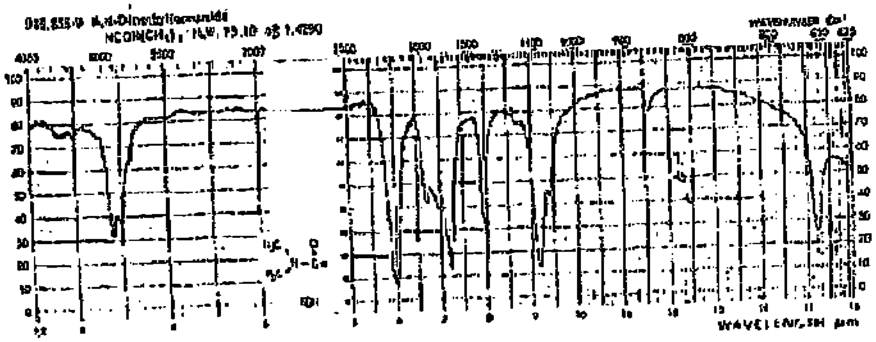


SILICONE LUBRICANT

Source: Dow Corning Corp.
Capillary Cell



III Scan starts @ 600



interpoll

INTERPOLL LABORATORIES, INC.
4500 BALL ROAD N.E.
CIRCLE PINES, MINNESOTA 55014-1819
TEL: 612/786-6020
FAX: 612/786-7854

August 30, 1996

Sue Somers
Louisiana-Pacific Corporation
Northern Division
Rt. 8, Box 8263
Hayward, Wisconsin 54843

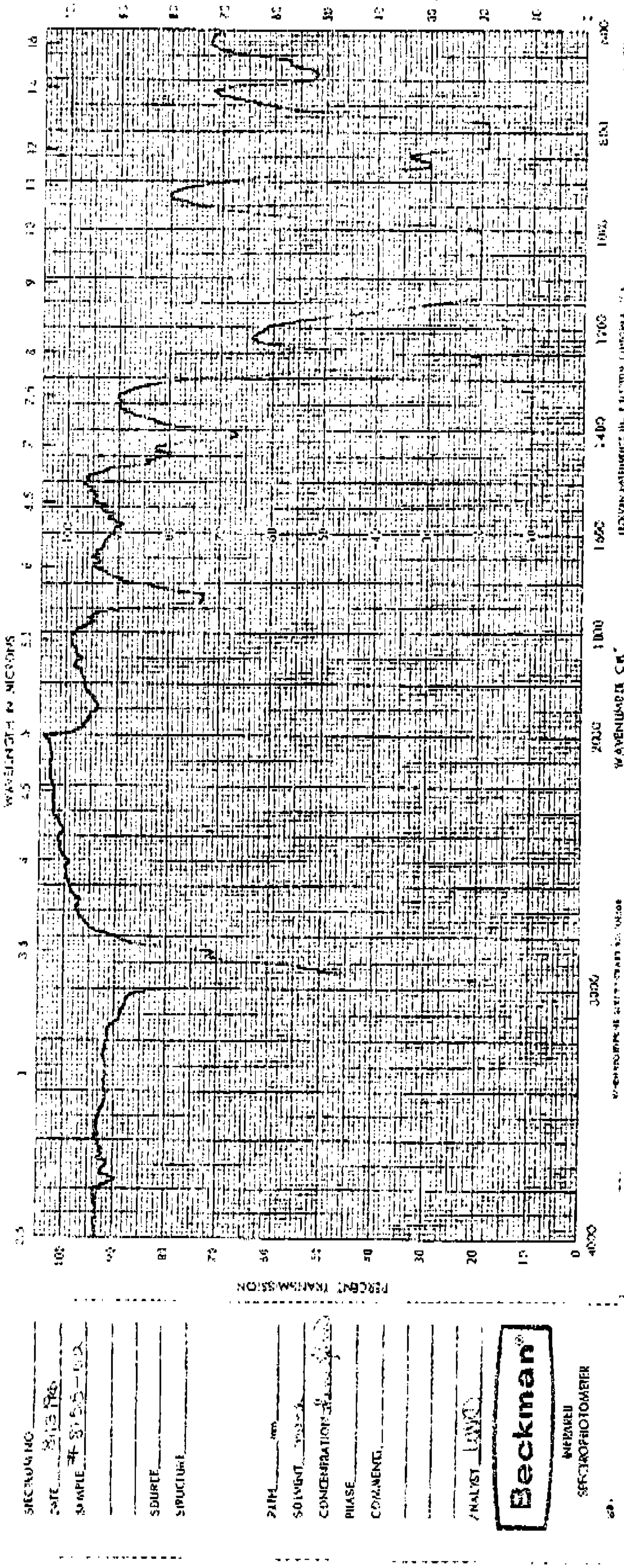
Dear Sue:

Interpoll Laboratories, Inc. received six (6) samples representing the organic and inorganic EPA Method 202 samples from Test 4, Runs 1-3. These samples were collected from the Dryer RTO Stack at the Louisiana-Pacific facility located in Houlton, Maine. The reason these samples were submitted to Interpoll Labs was the high organic fraction determined for Run 1 which appeared to be an outlier. The organic fraction of Run 1 was therefore resolubilized in methylene chloride and a thin film applied to a sodium chloride plate for infrared analysis. This technique was chosen as it is a nondestructive technique which would provide additional information as to the composition of the material. The instrument used in this work is a Beckman Microlab 600 Computing IR Spectrophotometer. The result of this IR scan is provided on the attachment. A tentative identification of this material was silicone grease, a common glass joint sealant used by most stack testing firms, however, use of this sealant is not recommended when performing EPA Method 202 as the methylene chloride does extract this compound from glass surfaces. A sample of Dow Corning silicone grease was therefore also run to provide a reference spectra, the result of that IR scan is shown below the sample run. A comparison of these two spectra indicate that the Test 4 Run 1 organic fraction does contain silicone grease. Note that this technique is not quantitative, therefore the exact amount of silicone grease cannot be determined, however, the "purity" of the spectra indicate that the sample contained a substantial quantity of silicone grease. Note that the other two organic fractions (Runs 2 & 3) were analyzed and found to contain silcone grease also.

Should you have any questions please do not hesitate to call me.

Sincerely,
INTERPOLL LABORATORIES, INC.

Daniel Despen,
Manager
Stationary Source Testing Department


WAVELENGTH IN MICRONS
PERCENT TRANSMISSION
SPECTRUM NO.
DATE
SAMPLE
SOURCE
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CONCENTRATION
PHASE
COMMENTS
ANALYST
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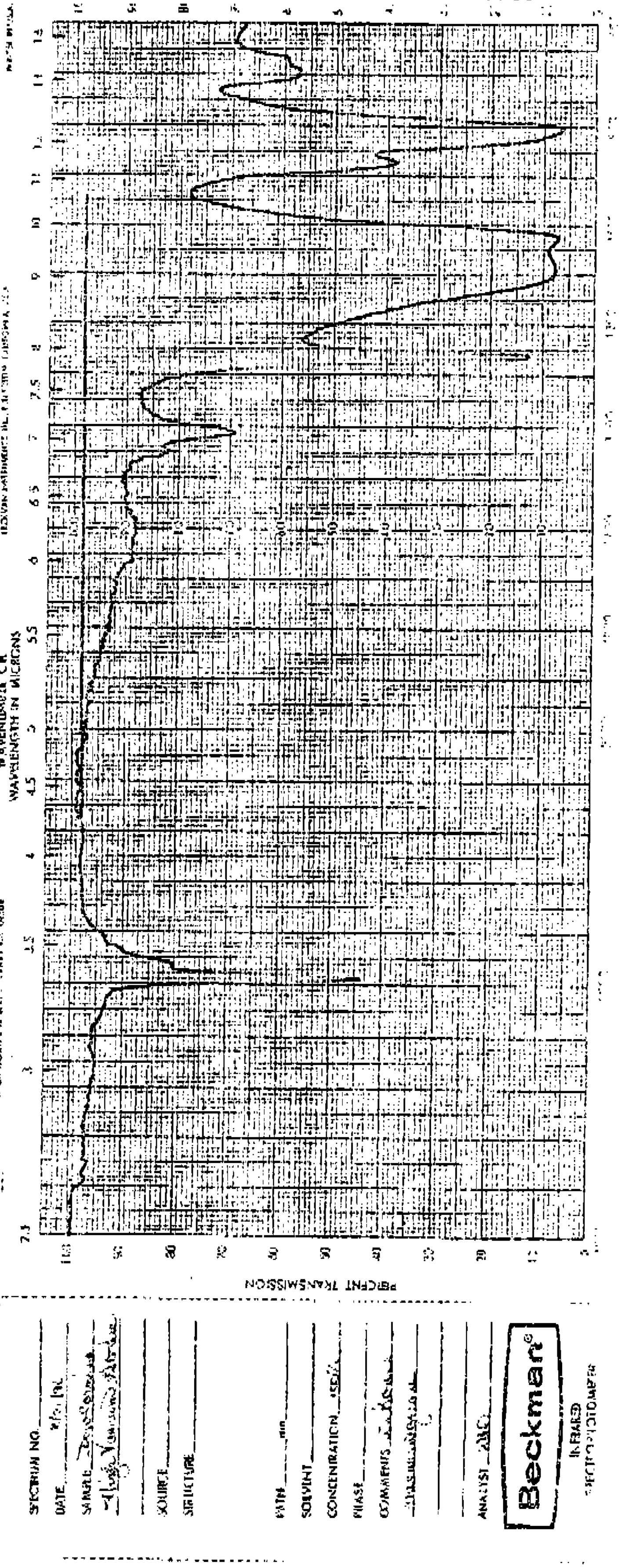
WAVENUMBER CM⁻¹
WAVELENGTH IN MICRONS
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