DCN No.: 92-275-026-66-05
Radian No.: 275-026-66
EPA No.: 68-D9-0054

# Determination of VOC, Ethanol, and Acetaldehyde Emissions from Commercial Bakeries

Site 2 Test Report

Prepared for:

Mr. Solomon Ricks
Emission Measurement Branch
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

Prepared by:

Charles R. Parrish
Radian Corporation
P. O. Box 13000
Research Triangle Park, NC 27709

September 1992

## Radian Report Certification

This report has been reviewed by the following Radian personnel and is a true representation of the results obtained from the sampling program conducted at four commercial bakeries on behalf of the U.S. Environmental Protection Agency. The testing was conducted from May through July, 1992, except where noted, sampling and analytical methods were performed in accordance with U.S. EPA reference procedures.

APPROVAL:

Raymond G. Merrill — 9/29/92

Raymond G. Merrill, Program Manager — Date

Charles R. Parrish — 9/30/92

Charles R. Parrish, Project Director — Date

Susan Stamey-Hall — 9/30/92

Susan Stamey-Hall, Peer Review — Date

# TABLE OF CONTENTS

## TABLE OF CONTENTS - (Continued)

## LIST OF FIGURES

## LIST OF FIGURES - (Continued)

# LIST OF TABLES

Page

## LIST OF TABLES - (Continued)

## 1.0 EXECUTIVE SUMMARY

Radian was contracted by The U.S. Environmental Protection Agency, Emissions Measurement Branch, to conduct Volatile Organic Compound (VOC) emissions testing at four commercial bakeries. This test report will present the results from the Site 2 test program. Tests were conducted on a variety of bakery ovens while baking different product types. The test procedures used were the U.S. EPA Stationary Source Testing Method 25A for VOCs and Method 18 for methane, ethanol and acetaldehyde determinations. Method 25A was used to quantify total hydrocarbons (THC). Method 18 was employed to quantify methane and two of the most prevalent VOC compounds (acetaldehyde and ethanol) in the bakery emission stream. Flow rates were measured using U.S. EPA Methods 1-4 and were used to calculate emission rates of the above gas stream components.

As a part of the test program, process conditions were monitored by a separate U.S. EPA contractor. Research Triangle Institute (RTI) monitored parameters such as product type, production rates, yeast concentration, proofing time and others. This report will only present the emissions data collected by Radian and will not include any process information. A separate report completed by RTI will incorporate the emission values presented in this report with the specific bakery process information.

Two sets of emission data were calculated. The first set presents VOC as ethanol emissions calculated using the Method 25A and Method 18 methane test results. (Ethanol concentrations typically made up over 98% of the total ethanol and acetaldehyde concentrations). The second data set presents emission rates of ethanol and acetaldehyde calculated from the Method 25A and the Method 18 ethanol and acetaldehyde test results.

VOC as ethanol emissions were determined by first averaging concentrations of THC over the respective test period. Non-methane hydrocarbon concentrations were then determined by removing the methane concentration from the THC values. VOC as ethanol concentrations were determined by dividing the non-methane hydrocarbon concentration by the ethanol carbon equivalent correction factor (CECF). The CECF was empirically determined during and following the test program. The VOC as ethanol concentrations were then multiplied by the respective stack gas flow rates to determine VOC as ethanol emission rates.

Separate emissions rates of ethanol and acetaldehyde were calculated using both the Method 25A THC and Method 18 test results. The average ethanol-to-THC ratio was multiplied times the average THC concentration to determine an average ethanol concentration and formulate a larger averaging data base within the testing time period. Average acetaldehyde concentrations were calculated in the same manner. This procedure assumed that the proportion of ethanol to THC and acetaldehyde to THC remained constant throughout the test period. This assumption did not prove always to be true; however, concentrations determined in this manner were very similar to concentrations determined by averaging the Method 18 results alone. Results from both calculation methods are presented. Ethanol and acetaldehyde emission rates were then calculated by multiplying the average concentrations by the stack gas flow rates.

## 1.1 VOC as Ethanol Emissions

The Site 2 emissions ranged from 6.9 - 11.5 lbs/hr from Line 2, 17.8 lbs/hr from Line 1 and 40.9 lbs/hr from Line 3. A complete listing of all test results is given in Section 3.0 and in the attached Appendices.

## 1.2 Ethanol and Acetaldehyde Emissions

The Site 2 ethanol emissions ranged from 8.1 - 14.8 lbs/hr for Line 1 oven, 22.2 lbs/hr for the Line 2 oven, and 64.6 lbs/hr for the Line 3 oven. The corresponding acetaldehyde rates were 0.24 - 0.42 lbs/hr for Line 1, 0.81 lbs/hr for Line 2, and 2.5 lbs/hr for Line 3.

## 1.3 Data Quality Assurance

The majority of reference method QA acceptance criteria were met during this test program. There were 10 days of testing using two THC monitoring systems . Method 25A daily calibration drift did not exceed the criterion of ±3% on any of the Site 2 test days. Over 150 Method 25A calibration error checks were performed during the test program. The majority of these calibration error checks met the Method 25A criterion of ±5% of the gas concentration. Method 25A sample bias checks, as well as $O_2$ leak checks were also completed.

Method 18 QA/QC procedures were also followed. Initial and final calibrations were performed. Calibrations for ethanol and acetaldehyde were all completed using 3 to 5 calibration points. Multi-point calibrations were also performed on methane for low concentrations on all of the test days (< 900 ppmC). On the second Site 2 test day, a single point calibration was used on higher methane values. This procedure was not expected to effect data quality.

Sample bias checks were routinely conducted on the Method 18 sampling system and the majority verified acceptable non-biased sampling. However, some checks revealed sample bias caused by the loss of heat in the heated sample tubing adjacent to the gas chromatograph (GC). These data points were invalid and testing was discontinued until the problem was remedied and a successful bias check had been completed. More is discussed on this matter in Section 6.0.

## 1.4 Recommendations for Further Work

Further work is recommended to further characterize bakery emissions and to improve the test method. Compounds other than ethanol and acetaldehyde were not detected by the Method 18 analyses. However, trace (<10 ppmv) levels of other compounds may be present in the bakery stream and although these compounds would not be expected to increase VOC emission rates, it would be interesting to identify them.

Another area which could be further examined is the comparison of Method 18 GC results to the Method 25A THC results. It was expected that the concentration of THC detected by the Method 25A analyzer would exceed the concentrations of the three targeted VOC compounds. However, throughout this test program, a higher concentration of compounds was determined by the GC than by the THC monitor. Comparisons were made by first correcting concentrations of each compound determined from the GC analysis from parts per million by volume (ppmv) to ppmv as Carbon (ppmC). This was done using the previously mentioned CECF of 1.42 for ethanol, 1.23 for acetaldehyde, and 1 for methane. The sum of the three corrected GC concentrations were then divided by the THC concentration. Typically, comparisons resulted in values of 120-140% of GC vs THC values. This error may be a result of inaccuracy in the CECF as it was applied to the sample gas matrix. Matrix effects may have somehow lowered the THC response (CECF) for ethanol as compared to the ethanol response in a dry, nitrogen calibration gas. Further work examining this Method 18 and Method 25A results comparison could be examined.

## 2.0 INTRODUCTION

### 2.1 Overview

The U.S. Environmental Protection Agency (U.S. EPA) has been requested to develop an alternative control technique (ACT) guidance document for controlling Volatile Organic Carbon (VOC) emissions from commercial baking operations. Interest has also been expressed in recalculating the AP-42[1] emission factors for bakery VOC emissions. Ethanol ($C_2H_5OH$) is the primary pollutant emitted from commercial bakeries.[2] Ethanol along with Carbon Dioxide ($CO_2$) is produced during the yeast metabolic process. Previous test data from bakeries has also revealed the presence of acetaldehyde ($CH_3CHO$).[2] Therefore, in conjunction with the development of an ACT document and new AP-42 emission factors, the U.S. EPA has contracted Radian Corporation to perform emissions testing of several commercial bakeries in order to gather the necessary background emissions data. This report will present the results of the U.S. EPA Bakeries test program for Site 2.

The test procedures used were the U.S. EPA Stationary Source Testing Method 25A for VOCs and Method 18 for methane, ethanol and acetaldehyde determinations. Method 25A was used to quantify total hydrocarbons (THC). Method 18 was employed to quantify methane and two of the most prevalent VOC compounds (acetaldehyde and ethanol) in the bakery emission stream. By combining both procedures, the VOC emissions were fully characterized.

As a part of this data gathering phase, U.S. EPA contracted Research Triangle Institute (RTI) to monitor the baking process parameters during the emissions

---

[1]Compilation of Air Pollutant Emission Factors, Section 6.13, U.S. EPA (1972).

[2]Background Documentation for AP-42, Section 6.13, Bakeries, PES for U.S. EPA (1972).

tests. Items such as dough mixing process, fermentation (proofing) time, yeast concentration, production rates and others were monitored. However, this report will only present emissions data, that will be used with the process and production rate data to develop emission factors that will be presented in a separate document.

## 2.2 Test Objectives

The objectives of this test program was to determine VOC emission rates as well as ethanol and acetaldehyde emission rates. The data could then be used to determine of which air pollution control techniques would be effective for the bakery industry. As discussed above, it was also desirable to correlate the emissions data with process data to update and/or verify the emission factors for commercial bakeries.

## 2.3 Test Methods

Because each oven had at least two stacks, concentrations of THC were continuously and simultaneously monitored on each stack using two THC continuous emissions monitoring systems (CEMS). The THC data was typically recorded on every 10 seconds a computer disk. The resulting THC data were then averaged over each period of time corresponding to a distinct segment of the process operation (i.e., 30 minute sandwich bread baking process). Methane, ethanol and acetaldehyde concentrations were measured semi-continuously using discrete analyses by a Gas Chromatograph/Flame Ionization Detector (GC/FID). One GC/FID analyzer was used for this test program. One analysis of methane, acetaldehyde, and ethanol could be completed every 10 minutes; therefore, a full oven characterization could be completed every 20 minutes (2 stacks per oven).

Method 25A and Method 18 required extracting a sample stream of the gas from the stack through a heated Teflon® tube. A portion of the sample was directed to a THC analyzer which quantified THC on a real-time basis by a Flame Ionization

Detector (FID). The THC analyzer processes unconditional gas samples; therefore, concentrations are characterized ppmv, on a wet basis. A portion of the remaining gas stream was directed to the Method 18 gas chromatograph. The GC column separated individual hydrocarbons which were quantified with the FID.

Gas flow rate was determined by using the U.S. EPA Method 2. This method called for measuring the velocity of the gas stream and by multiplying it by the stack cross-sectional area, a volumetric flow rate was determined. Method 2 also called for point location determination to be made by Method 1, $CO_2$ and $O_2$ concentrations by Method 3 and moisture content by Method 4.

## 2.4 Data Reduction

As previously discussed, two sets of emission data were calculated. The first set presents VOC as ethanol emissions calculated using the Method 25A and the Method 18 methane test results. The second data set presents emission rates of ethanol and acetaldehyde calculated from the Method 25A and the Method 18 ethanol and acetaldehyde test results. The data reduction methods used are summarized in the following paragraphs.

Method 25A requires THC data to be reported in units of parts per million as Carbon (ppmC). Preliminary THC concentrations in units of ppmv as the calibration compound (i.e., propane) are multiplied by that respective compound's carbon equivalent correction factor (CECF) to correct the units to ppmC. The CECF for methane, ethane and propane are 1, 2 and 3, respectively. For example, if the Method 25A monitor was calibrated with propane, all resulting concentrations would be multiplied by the propane CECF of 3 to correct the concentration from ppmv as propane to ppmC. The THC values can be converted to ppmv of the compound of interest if 1) the specific CECF is known, and 2) the compound proportion of THC is known. For this test program, the THC monitors were calibrated with methane which has a CECF of 1, so the resulting

THC data was already in units of ppmC. However, correcting the THC concentration to VOC as ethanol concentration did require dividing the average non-methane THC concentration by the ethanol CECF. This process assumed that the non-methane hydrocarbons were made up entirely of ethanol. The resulting VOC as ethanol concentrations were then multiplied by the stack gas flow rates in order to determine VOC as ethanol emission rates.

Ethanol and acetaldehyde emissions were also calculated. Average ethanol and acetaldehyde concentrations were calculated by averaging the multiple Method 18 analytical results. However, only three Method 18 data points (per compound) were typically acquired per hour. In order to increase the number of data points in a given time period, the continuous Method 25A data was also used. An average ethanol-to-THC proportion from the above three analyses was calculated and then multiplied by the average THC value to calculate an average ethanol concentration. This method assumes that the ethanol-to-THC proportion is constant throughout the test run. Acetaldehyde calculations were performed in the same manner.

All data reduction procedures are fully explained in Section 7.0

## 2.6 Report Organization

A summary of the test results is presented in Section 3, a description of typical Oven Configurations and Sampling Locations is given in Section 4, and Sampling and Analytical Procedures are discussed in Section 5. Quality Assurance (QA) is presented in Section 6, and Data Reduction Procedures in Section 7. All field data and supporting calculations are included in the Appendices.

## 3.0 EMISSIONS RESULTS SUMMARY

This section will present the final results for the U.S. EPA Bakery Site 2 emissions test program. All raw data and calculations are included in the Appendices.

### 3.1 Test Program Summary

Four test sites were tested using Method 25A for THC determinations and Method 18 for methane, ethane, ethanol and acetaldehyde concentrations determinations. One of the test objectives was to quantify the VOC emissions which represent only the photochemically reactive volatile organic compounds. Non-reactive compounds such as methane and ethane are subtracted from the THC concentrations for determining VOC concentrations. The VOC concentrations and emissions for this test report were calculated by assuming that all of the non-methane hydrocarbons detected by the Method 25A tests were comprised of ethanol. This was consistently observed at all four test sites as ethanol concentrations determined from the Method 18 analyses typically made up over 98% of the total ethanol and acetaldehyde concentrations (target VOCs).

In Section 3, two sets of emissions data are given. The first data set presents emissions of VOC as ethanol as discussed above. The VOC concentration as ethanol was calculated by dividing the non-methane hydrocarbon concentration in units of ppmC by the ethanol THC Carbon Equivalent Correction Factor. The CECF was determined by observing the response of the THC analyzer to known concentrations of ethanol. The second data set presents emissions of ethanol and acetaldehyde emissions determined from the Method 18 ethanol and acetaldehyde results and the THC results. Emissions were calculated by multiplying the respective stack gas concentrations by the stack gas flow rate by the methods discussed above. All calculations are shown in Section 7.0.

Methane concentrations were higher than expected during the test program which did not allow for the resolution of the ethane GC peak at three of the test sites. However, ethane concentrations were expected to be fairly low and so the error in determining VOC is expected to be minimal.

The emissions of both direct- and indirect-fired ovens were measured (see Section 4.1.2) while baking a variety of bakery products. Production rate is the most critical factor related to the quantity of bakery VOC emissions. However, as discussed in the previous section, no product information or process data will be given in this report. The general category of ovens tested will be identified, differentiating direct-fired from indirect-fired and bread from bun ovens.

Thirty test runs were conducted for a typical sample period of 1 hour. Some of the runs were shorter than an hour due to the stoppage of the product being baked. Emissions was measured from only a single product at one time. Time periods when the ovens were in transient conditions, either from start up/shut down occurrences or from product changes or gaps in the product feed, were not included in the reported data base. However, all of the field data is included in the Appendices.

A general description of the commercial baking process and bakery ovens along with the types of ovens tested at each test site is given in Section 4. A total of two or three stacks were tested simultaneously from each oven. The total oven emissions were calculated by totaling the emissions from each of the stacks. Emissions from comfort hood stacks (see Figure 4-1) were not originally intended to be tested. However, it was noticed during the Site 2 test program that these emissions represented a significant portion of the total oven emission rates and from that point on, comfort hood emissions were tested.

## 3.2 Site 2 Test Results

A small bun oven, a small bread oven and a larger bread oven were tested at Site 2. These ovens were identified as Lines 1, 2, and 3, respectively. The first two ovens were tested with the CEM trailer location; however, the trailer had to be moved test the third oven (Bread, Line 3).

All of the ovens tested at Site 2 had comfort hoods which were exhausted by an axial fan roof ventilator. There were no duct work following the fan; therefore, the U.S. EPA Method 1 specifications were not met. Flow measurements had to be taken directly at or after the fan since the gas was vented to atmosphere (see Figure 4-6). Therefore, the resulting emission rates may have a higher degree of measurement error.

The oven on Line 1 predominantly bakes buns. There was a front and rear stack as well as a comfort hood vent. The comfort hood fan was not operating during the test and may not have operated for sometime. Gas flow was induced strictly by natural drafting of the hot gases at velocities of 50-300 fpm and at temperatures of approximately 150°F.

The Line 2 was an indirect-fired unit. The oven gases were vented from a stack located in the front of the oven with the burner stack in the rear. As with the Bun oven, there was a comfort hood which was vented by a axial fan roof ventilator. There was no gas ductwork following the fan; therefore, the flow measurement could not be made at a location in accordance with U.S. EPA Method 1 procedures. Flows were estimated using both velocity pressure measurements and hot-wire anemometer measurements.

The Line 3 bread oven was a direct-fired unit with two stacks located approximately 90 feet apart and a comfort hood. The front stack and comfort hood were alternately sampled using the same sample system and THC monitor.

### 3.2.1 Site 2 Test Log

Seven emissions test runs (Runs 6-12) were conducted on June 17 and 18, 1992. Runs 6 and 10 were conducted on the Line 2 Bread oven, Run 7 was conducted on the Line 1 Bun oven, Runs 8,9 and 11 were conducted on the Line 1 and 2 comfort hoods, and Run 12 was conducted on the Line 3 bread oven stack. Five of the seven test runs were conducted on two ovens. Table 3-1 presents a summary of the Site 2 sampling activities.

### 3.2.2 Site 2 VOC as Ethanol Emissions Test Results

Table 3-2 presents the VOC as ethanol test results. The table presents THC concentrations (including methane) as well as VOC concentrations derived by removing the methane concentrations from the THC values (ppmC/wet). Concentrations of VOCs are also given in ppmv as ethanol, calculated as discussed above. Emission rates from each stack are calculated from the VOC as ethanol concentrations. The total oven VOC emissions are then calculated by totaling the emissions from both vent stacks.

### 3.2.3 Site 2 Ethanol and Acetaldehyde Emission Test Results

Table 3-3 presents the emission rates of ethanol and acetaldehyde and concentrations determined in two ways. The first method reports the ethanol concentration determined by averaging the results of the Method 18 analyses. The second method multiplies the average ethanol-to-THC ratio by the average THC value to determine average ethanol concentrations. The second method assumes a constant ethanol-to-THC proportion and by using the continuous THC data base (THC values every minute), incorporates a much larger data base for averaging. Ethanol emissions are calculated from concentrations determined by both methods. However, the total oven emissions were determined from concentrations using the THC data. Acetaldehyde

## Table 3-1

## Site 2 Bakery VOC Emissions Test Log EPA Bakeries (1992)

| Run | Date | Sampling Time | Oven & Product Designation | Number of GC injections | |
|---|---|---|---|---|---|
| | | | | Front | Rear |
| 6 | 6/17/92 | 11:33-13:00 | Bread E | 3 | 0 |
| 7 | 6/17/92 | 15:17-16:14 | Bun F | 4 | 3 |
| 8 | 6/17/92 | 16:22-16:26 | Bun Comfort Hood Only | 1 | NA[a] |
| 9 | 6/17/92 | 16:40-16:43 | Bread Comfort Hood Only | 0 | NA |
| 10 | 6/17/92 | 16:47-17:47 | Bread G | 3 | 4 |
| 11 | 6/17/92 | 18:36-18:44 | Bun/Bread Comfort Hood Only | 0 | 0 |
| 12 | 6/18/92 | 15:22-19:13 | Bread H | 5 | 10 |

[a]NA = Runs 8 and 9 were conducted on a single stack (comfort hood) for each run.

## Table 3–2. VOC Emissions Assuming 100 % Ethanol EPA Bakeries, Site 2 (1992)

| **Run** | **Run 6** | | **Run 7** | | **Run 8** | **Run 9** | **Run 10** | |
|---|---|---|---|---|---|---|---|---|
| **Stack Location** | **Front** | **Burner** | **Front** | **Rear** | **Comfort** [e] | **Comfort** [e] | **Front** | **Burner** |
| THC Conc. (ppmC/wet) | 1637.5 | 52.7 | 1724.3 | 1398.3 | 1157.5 | 120.9 | 669.8 | 48.8 |
| **Methane Concentrations** | | | | | | | | |
| Methane Conc. (ppmv/wet) [1] | 3.8 | NO GC | 33.1 | 28.5 | 13.2 | NO GC | 13.2 | 13.2 |
| Methane/THC Ratio | 0.003 | NO GC | 0.019 | 0.019 | 0.011 | NO GC | 0.004 | 0.047 |
| Methane Conc. (ppmC/wet) [2] | 4.913 | 0 [d] | 32.762 | 26.568 | 12.733 | 0 [d] | 2.679 | 2.294 |
| **VOC Emissions** | | | | | | | | |
| VOC Conc. (ppmC/wet) [3] | 1632.6 | 52.7 | 1691.5 | 1371.7 | 1144.8 | 120.9 | 667.1 | 46.5 |
| VOC Conc. as Ethanol (ppmv/wet) [4] | 1149.7 | 37.1 d | 1191.2 | 966.0 | 806.2 | 85.1 d | 469.8 | 32.8 |
| VOC Emission Rate as Ethanol (lb/hr) [4] | 7.73 | 0.20 | 6.96 | 8.71 | 2.16 | 3.19 | 3.16 | 0.17 |
| Total VOC Emissions as Ethanol (lbs/hr) [4] | 11.489 [b] | | 17.750 [c] | | 2.156 | 3.195 | 6.894 [b] | |

1 Values calculated from average methane concentrations determined from multiple GC analyses.

-- Values calculated from average Methane to THC ratios (CH4/THC) incorporating both GC and THC analyses:

2 Methane Conc. = Avg ($CH4_i$ / $THC_i$) * (Avg THC)

3 VOC Conc. = Avg (1 – $CH4_i$ / $THC_i$) * (Avg THC)

4 VOC Conc. as Ethanol = (VOC Conc) / 1.42 VOC Emissions as Ethanol = (VOC Conc. as Ethanol) * Flow; where 1.42 is the empirically derived carbon equivalent correction factor

a Assumed value taken from similar location.

b Incorporated average Line 2 C.H. emissions of 3.56 ethanol Runs 9 & 11

c Incorporated average Line 1 C.H. emissions of 2.08 ethanol from Runs 8 & 11

d GC analyses was not performed for this location therefore the VOC concentration was assumed to be 100 % of the THC conc.

e Runs 8 & 9 were conducted on the Line 1 and Line 2 Comfort Hood stacks only.

## Table 3–2. VOC Emissions Assuming 100 % Ethanol, (cont.) EPA Bakeries, Site 2 (1992)

| Run | Run 11A | Run 11B | Run 12 | | |
|---|---|---|---|---|---|
| **Stack Location** | **L1 C.H. [b]** | **L2 C.H. [b]** | **Front** | **Comfort** | **Rear** |
| THC Conc. (ppmC/wet) | 1067.6 | 148.7 | 4114.2 | 638.9 | 2992.1 |
| **Methane Concentrations** | | | | | |
| Methane Conc. (ppmv/wet) [1] | NO GC | NO GC | 1193 | NO GC | 1776.5 |
| Methane/THC Ratio | NO GC | NO GC | 0.402 | NO GC | 0.542 |
| Methane Conc. (ppmC/wet) [2] | 0 [a] | 0 [a] | 1653.9 | 0 [a] | 1621.7 |
| **VOC Emissions** | | | | | |
| VOC Conc. (ppmC/wet) [3] | 1068 [a] | 148.7 [a] | 2460.3 | 638.9 [a] | 1370.4 |
| VOC Conc. as Ethanol (ppmv/wet) [4] | 751.8 | 104.7 | 1732.6 | 449.9 | 965.1 |
| VOC Emission Rate as Ethanol (lb/hr) [4] | 2.0 | 3.93 | 25.17 | 2.26 | 13.51 |
| Total VOC Emissions as Ethanol (lbs/hr) [4] | 2.011 | 3.929 | 40.94 | | |

1 Values calculated from average methane concentrations determined from multiple GC analyses.

-- Values calculated from average Methane to THC ratios (CH4/THC) incorporating both GC and THC analyses:

2 Methane Conc. = Avg $(CH4_i / THC_i)$ * (Avg THC)

3 VOC Conc. = Avg $(1 - CH4_i / THC_i)$ * (Avg THC)

4 VOC Conc. as Ethanol = (VOC Conc) / 1.42 VOC Emissions as Ethanol = (VOC Conc. as Ethanol) * Flow; where 1.42 is the empirically derived carbon equivalent correction factor

a GC analyses was not performed for this location; therefore, the VOC concentration was assumed to be 100 % of the THC conc.

b Tests were done on the Line 1 and line 2 Comfort Hood stacks.

## Table 3–3. Ethanol and Acetaldehyde Emissions Test Results EPA Bakeries, Site 3 (1992)

| Run | Run 6 | | Run 7 | | Run 8 [d] | Run 9 [d] | Run 10 | |
|---|---|---|---|---|---|---|---|---|
| **Stack Location** | **Front** | **Burner** | **Front** | **Rear** | **Comfort** | **Comfort** | **Front** | **Burner** |
| THC Conc. (ppmC/wet) | 1637.5 | 52.7 | 1724.3 | 1398.3 | 1157.5 | 120.9 | 669.8 | 48.8 |
| **Ethanol Emissions** | | | | | | | | |
| Ethanol Conc. (ppmv/wet) [1] | 1286.7 | NO GC | 1462.5 | 1190 | 1041 | NO GC | 509 | S |
| Ethanol Conc. (ppmv/wet) [2] | 1498.3 | 48.2 | 1446.7 | 1230.5 | 1026.7 | 107.2 | 505.7 | 36.8 |
| Ethanol/THC Ratio | 0.915 | 0.915 [a] | 0.839 | 0.88 | 0.887 | 0.887 [a] | 0.755 | 0.755 [a] |
| Ethanol Emission Rate (lb/hr) [1] | 8.65 | NO GC | 8.55 | 10.73 | 2.78 | NO GC | 3.42 | S |
| Ethanol Emission Rate (lb/hr) [2] | 10.08 | 0.26 | 8.46 | 11.09 | 2.75 | 4.02 | 3.40 | 0.20 |
| Total Ethanol Emission Rate (lbs/hr) [2] | 14.819 [b] | | 22.187 [c] | | 2.746 | 4.024 | 8.083 [b] | |
| **Acetaldehyde Emissions** | | | | | | | | |
| Acetaldehyde Conc. (ppmv/wet) [1] | 39.10 | NO GC | 60.10 | 46.20 | 26.60 | NO GC | 16.00 | 5.36 |
| Acetaldehyde Conc. (ppmv/wet) [2] | 46.51 | 1.50 | 59.49 | 47.40 | 26.28 | 2.74 | 15.94 | 5.22 |
| Acetaldehyde/THC Ratio | 0.028 | 0.028 [a] | 0.035 | 0.034 | 0.023 | 0.023 [a] | 0.024 | 0.107 |
| Acetaldehyde Emission Rate (lb/hr) [1] | 0.252 | NO GC | 0.336 | 0.398 | 0.068 | NO GC | 0.103 | 0.027 |
| Acetaldehyde Emission Rate (lb/hr) [2] | 0.299 | 0.008 | 0.333 | 0.4[illegible] | 0.067 | 0.099 | 0.103 | 0.027 |
| Total Acetaldehyde Emission Rate (lbs/hr) [2] | 0.417 [b] | | 0.806 [c] | | 0.067 | 0.099 | 0.239 [b] | |

1 Values calculated from average concentrations determined from multiple GC analyses.

2 Values calculated from average Ethanol/THC and Acetaldehyde/THC ratios (ETOH/THC and AA/THC) incorporating both GC and THC analyses: ETOH Conc. = Avg ($ETOH_i/THC_i$) * (Avg THC): ETOH Emissions = (Avg ETOH Conc.) * Flow

AA Conc. = Avg ($AA_i/THC_i$) * (Avg THC): AA Emissions = (Avg AA Conc.) * Flow

a Assumed value taken from similar location.

b Incorporated average Line 2 C.H. emissions of 4.49 ethanol and 0.110 acetaldehyde from Runs 9 & 11

c Incorporated average Line 1 C.H. emissions of 2.64 ethanol and 0.065 acetaldehyde from Runs 8 & 11

d Comfort Hood flow rates for this site were estimated based on velocity pressures or hot wire anemometer velocity measurements. Measurement locations did not meet EPA 1 specifications.

S Suspect GC ethanol results.

## Table 3–3. Ethanol and Acetaldehyde Emissions Test Results (cont.) EPA Bakeries, Site 2 (1992)

| **Run** | **Run 11 [b]** | | **Run 12** | | |
|---|---|---|---|---|---|
| **Stack Location** | **L1 C.H.** | **L2 C.H.** | **Front** | **Comfort** | **Rear** |
| THC Conc. (ppmC/wet) | 1067.6 | 148.7 | 4114.2 | 638.9 | 2992.1 |
| **Ethanol Emissions** | | | | | |
| Ethanol Conc. (ppmv/wet) [1] | NO GC | NO GC | 2777.5 | NO GC | 1651 |
| Ethanol Conc. (ppmv/wet) [2] | 947.0 | 131.9 | 2686.6 | 566.7 | 1621.7 |
| Ethanol/THC Ratio | 0.887 [a] | 0.887 [a] | 0.653 | 0.887 [a] | 0.542 |
| Ethanol Emission Rate (lb/hr) [1] | NO GC | NO GC | 40.35 | NO GC | 23.11 |
| Ethanol Emission Rate (lb/hr) [2] | 2.53 | 4.95 | 39.03 | 2.85 | 22.70 |
| Total Ethanol Emission Rate (lbs/hr) [2] | 2.533 | 4.949 | | 64.577 | |
| **Acetaldehyde Emissions** | | | | | |
| Acetaldehyde Conc. (ppmv/wet) [1] | NO GC | NO GC | 112.40 | NO GC | 71.80 |
| Acetaldehyde Conc. (ppmv/wet) [2] | 24.23 | 3.38 | 107.79 | 14.50 | 70.31 |
| Acetaldehyde/THC Ratio | 0.023 [a] | 0.023 [a] | 0.026 | 0.023 [a] | 0.024 |
| Acetaldehyde Emission Rate (lb/hr) [1] | NO GC | NO GC | 1.562 | NO GC | 0.961 |
| Acetaldehyde Emission Rate (lb/hr) [2] | 0.062 | 0.121 | 1.498 | 0.070 | 0.941 |
| Total Acetaldehyde Emission Rate (lbs/hr) [2] | 0.062 | 0.121 | | 2.509 | |

1 Values calculated from average concentrations determined from multiple GC analyses.

2 Values calculated from average Ethanol/THC and Acetaldehyde/THC ratios (ETOH/THC and AA/THC) incorporating both GC and THC analyses: ETOH Conc. = Avg ($ETOH_i$ /$THC_i$) * (Avg THC): ETOH Emissions = (Avg ETOH Conc.) * Flow
AA Conc. = Avg ($AA_i$ /$THC_i$) * (Avg THC): AA Emissions = (Avg AA Conc.) * Flow

a Assumed value taken from similar location.

b Comfort Hood flow rates for this site were estimated based on velocity pressures or hot wire anemometer velocity measurements. Measurement locations did not meet EPA 1 specifications.

values were calculated similarly. All data reduction procedures is given in Section 7.

### 3.2.4 Site 2 Method 25A and Method 18 Results

This section presents the results from the Method 18 analyses. The Method 25A THC concentrations are given for same time period that the GC injections were made. Typically, three injections were made during a test run at a specific sample location. The concentrations were then averaged. Some GC injections were made that did not fall into the test run time-frame. Results from these analyses are presented in the tables but are not included in the averages. Ethanol-to-THC and acetaldehyde-to-THC ratios were calculated for each injection as well. The ethanol and acetaldehyde values were not corrected to ppmC for this calculation; therefore, these values cannot be considered volumetric proportions of the THC stream. Their purpose was to be multiplied by the average THC value to calculate average methane, ethanol, and acetaldehyde concentrations. This allowed ethanol and acetaldehyde concentrations to be calculated without incorporating the additional methane analysis.

Finally, a comparison of the total concentration of the three target compounds detected by the GC was made with the THC values for each discrete injection. This parameter is not required by the reference method QA procedures, but it was originally thought to be an indication what proportion of THC the three target compounds represented. It was expected that the sum of the GC concentrations would be somewhat lower that the total THC concentration taking into account trace concentrations of organics in the gas stream that were not detected by the GC analyses. However, this comparison may not be sufficiently accurate. The average ratio is calculated as follows:

$$\overline{\left(\frac{GC}{THC}\right)} = \frac{\sum_{i=1}^{N} \frac{GC_i}{THC_i}}{N} \times 100$$

where:

| | | |
|---|---|---|
| $THC_i$ | = | THC concentrations determined from the Method 25A monitor at the same time as the GC injection (ppmC) |
| N | = | Number of GC injectors in the time period. |

The units from the GC analyses have to be corrected to the same units as the THC concentrations (ppmC) as follows:

$$GC_i = \left(\frac{[ETOH]_i}{1.42} + \frac{[AA]_i}{1.23} + [CH_4]_i\right)$$

where:

| | | |
|---|---|---|
| $[ETOH]_i$ | = | Ethanol concentration determined from a single GC analysis (ppmv/wet) |
| 1.42 | = | Ethanol THC Carbon Equivalent Correction Factor (empirically derived) |
| $[AA]_i$ | = | Acetaldehyde concentration determined from a single GC analysis (ppmv/wet) |
| 1.23 | = | Acetaldehyde THC Carbon Equivalent Correction Factor (empirically derived) |
| $[CH_4]_i$ | = | Methane concentration determined from a single GC analysis (ppmv/wet). NOTE: The methane CECF is 1.0. |

The CECFs used for this test program were determined by challenging the THC analyzer with known, certified concentrations of ethanol and acetaldehyde and recording the response. For example, if a 200 ppmv ethanol gas standard responded as 300 ppmC THC, then the ethanol CECF was 1.5. The CECFs were determined over the entire range of concentrations observed during the test program. It is difficult to predict whether the THC analyzer responded to the ethanol in the bakery sample gas matrix the same (quantitatively) as to ethanol in a clean, dry calibration gas. Both sample gas moisture levels and $O_2$ levels were different than the calibration gas matrix (dry, $N_2$ balance). The unexpected high GC/THC ratios (> 100%) may have resulted from a variability in the actual sample CECF.

Tables 3-4 and 3-5 present the Method 25A and Method 18 analytical results from the oven stacks and burner stacks, respectively. The ethanol-to-THC proportions for the Line 1 and Line 2 oven front stacks were approximately 0.8-0.9.

The Method 25A and Method 18 results for Site 2 are presented graphically in Figures 3-1 through 3-7, respectively. Method 18 concentrations have been corrected to ppmC for these plots.

### 3.2.5 Stack Gas Flow Rates

Table 3-6 presents the stack gas flow rates determined for the Site 2 oven stacks. Flows were not corrected to a dry basis since Method 25A and 18 concentrations were determined on a wet basis and emissions calculations required both flows and concentrations be consistently on the same basis (wet or dry). Moisture content values are included in the Appendix.

## Table 3-4. Method 25A and Method 18 Emissions Tests Results, Front Stack, EPA Bakeries, Site 2 (1992).

| FRONT/OVEN STACK | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| RUN | TIME | METHOD 25A THC RESULTS[a] (ppmC/wet) | METHOD 18 GC RESULTS | | | GC/THC RATIO[b] (%) | THC PROPORTIONS[c] | | |
| | | | ETHANOL (ppmv/wet) | METHANE[d] (ppmv/wet) | ACET-ALDEHYDE (ppmv/wet) | | ETH/THC RATIO | CH4/THC RATIO | AA/THC RATIO |
| 6 | 11:32:49 | 1042.9 | 1062 | 0.00/0.83 | 37.8 | 149.223 | 1.018 | 0.002 | 0.036 |
| 6 | 11:45:49 | 1647.3 | 1338 | 3.60/0.67 | 29.6 | 117.849 | 0.812 | 0.003 | 0.018 |
| 6 | 11:55:49 | 1594.4 | 1460 | 2.30/1.26 | 49.8 | 134.172 | 0.916 | 0.003 | 0.031 |
| **6** | **AVG** | **1637.5** | **1286.7** | **3.8** | **39.1** | **133.7** | **0.915** | **0.003** | **0.028** |
| | 12:06:49 | 1696.8 | 1201 | 6.5 | 7.86 | 101.462 | 0.708 | 0.000 | 0.005 |
| 7 | 15:17:30 | 1778.2 | 1490 | 4.82/17.1 | 62.5 | 125.506 | 0.838 | 0.022 | 0.035 |
| 7 | 15:35:54 | 1590.6 | 1300 | 3.54/12.4 | 53.2 | 121.951 | 0.817 | 0.018 | 0.033 |
| 7 | 15:54:54 | 1801.3 | 1530 | 4.72/19.0 | 65.1 | 127.428 | 0.849 | 0.024 | 0.036 |
| 7 | 16:13:54 | 1792.9 | 1530 | 4.75/8.80 | 59.5 | 126.507 | 0.853 | 0.012 | 0.033 |
| **7** | **AVG** | **1724.3** | **1462.5** | **33.1** | **60.1** | **125.3** | **0.839** | **0.019** | **0.034** |
| 8 | 16:24:34 | 1173.9 | 1041 | 1.80/5.70 | 26.6 | 129.835 | 0.887 | 0.011 | 0.023 |
| **8** | **AVG** | **1157.5** | **1041.0** | **13.2** | **26.6** | **129.8** | **0.887** | **0.011** | **0.023** |
| 10 | 16:56:39 | 681.0 | 550 | 2.28/0.21 | 17.1 | 118.173 | 0.808 | 0.004 | 0.025 |
| 10 | 17:15:09 | 646.2 | 532 | 2.34/0.20 | 17 | 120.564 | 0.823 | 0.004 | 0.026 |
| 10 | 17:34:09 | 701.2 | 445 | 2.54/0.00 | 14 | 92.9283 | 0.635 | 0.004 | 0.020 |
| **10** | **AVG** | **669.8** | **509.0** | **2.7** | **16.0** | **110.6** | **0.755** | **0.004** | **0.024** |

[a] THC averages calculated from the full CEM data base (not just the above entries)

[b] GC/THC RATIO = (ETOH/1.42+AA/1.23+CH4)/THC * 100 where: 1.42 = Ethanol CECF
1.23 = Acetaldehyde CECF

[c] THC proportions were calculated as: ETH/THC = ppmv ethanol/ppmC THC, CH4/THC = ppmv CH4/ pmC THC,

[d] Methane/Ethane Values are reported here. Averages are in units of ppmC. AA/THC = ppmv acetaldehyde/ ppmC THC

Table 3-4. Method 25A and Method 18 Emissions Tests Results (cont), Front Stacks; EPA Bakeries, Site 2 (1992).

| FRONT/OVEN STACK | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| RUN | TIME | METHOD 25A THC RESULTS[a] | METHOD 18 GC RESULTS | | | GC/THC RATIO[b] | THC PROPORTIONS[c] | | |
| | | | ETHANOL | METHANE | ACET-ALDEHYDE | | ETH/THC RATIO | CH4/THC RATIO | AA/THC RATIO |
| | | (ppmC/wet) | (ppmv/wet) | (ppmv/wet) | (ppmv/wet) | (%) | | | |
| NA | 16:21:55 | 813.4 | 2900 | 491 | 97.7 | 609.9 | 3.565 | 0.604 | 0.120 |
| 12 | 16:03:46 | 4250.1 | 3290 | 826 | 125 | 133.0 | 0.774 | 0.194 | 0.029 |
| 12 | 18:23:16 | 3907.5 | 2590 | 1411 | 91.4 | 133.1 | 0.663 | 0.361 | 0.023 |
| 12 | 18:42:16 | 4588.5 | 2390 | 1540 | 131 | 111.0 | 0.521 | 0.336 | 0.029 |
| 12 | 19:01:16 | 4320.7 | 2840 | 1330 | 102 | 127.0 | 0.657 | 0.308 | -0.024 |
| **12** | **AVG** | **4114.2** | **2777.5** | **1193.0** | **105.5** | **126.0** | **1.352** | **0.402** | **0.049** |

[a] THC averages calculated from the full CEM data base (not just the above entries)

[b] GC/THC RATIO = (ETOH/1.42+AA/1.23+CH4)/THC * 100 where: 1.42 = Ethanol CECF
1.23 = Acetaldehyde CECF

[c] THC proportions were calculated as:ETH/THC = ppmv ethanol/ppmC THC, CH4/THC = ppmv CH4/ pmC THC,
AA/THC = ppmv acetaldehyde/ ppmC THC

Table 3-5. Method 25A and Method 18 Emissions Tests Results, Rear Stack, EPA Bakeries, Site 2 (1992).

| REAR/BURNER STACK | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| RUN | TIME | METHOD 25A THC RESULTS[a] (ppmC/wet) | METHOD 18 GC RESULTS | | | GC/THC RATIO[b] (%) | THC PROPORTIONS[c] | | |
| | | | ETHANOL (ppmv/wet) | METHANE[d] (ppmv/wet) | ACET-ALDEHYDE (ppmv/wet) | | ETH/THC RATIO | CH4/THC RATIO | AA/THC RATIO |
| 7 | 15:27:54 | 1763.4 | 1200.0 | 3.76/13.9[d] | 50.1 | 101.918 | 0.834 | 0.018 | 0.035 |
| 7 | 15:45:54 | 1475.7 | 1250.0 | 4.10/14.8 | 49.9 | 126.723 | 0.847 | 0.023 | 0.034 |
| 7 | 16:03:54 | 1166.1 | 1120.0 | 2.57/8.80 | 38.5 | 142.170 | 0.960 | 0.017 | 0.033 |
| 7 | AVG | 1398.3 | 1190.0 | 28.5 | 46.2 | 123.6 | 0.880 | 0.019 | 0.034 |
| 10 | 16:48:09 | 56.3 | 85.7 | 2.02/.53 | 4.63 | 231.935 | 1.523 | 0.055 | 0.082 |
| 10 | 17:06:09 | 57.2 | 195.0 | 3.85/ND | 7.24 | 499.841 | 3.410 | 0.067 | 0.127 |
| 10 | 17:24:39 | 38.0 | 97.8 | 2.54/ND | 4.6 | 380.360 | 2.574 | 0.067 | 0.121 |
| 10 | 17:44:09 | 51.8 | 115.0 | 1.96/0.59 | 4.96 | 333.332 | 2.222 | 0.061 | 0.096 |
| 10 | AVG | 384.0 | 123.4 | 3.2 | 5.4 | 361.4 | 2.432 | 0.062 | 0.106 |

[a] THC averages calculated from the full CEM data base (not just the above entries)

[b] GC/THC RATIO = (ETOH/1.42+AA/1.23+CH4)/THC * 100 where: 1.42 = Ethanol CECF
1.23 = Acetaldehyde CECF

[c] THC proportions were calculated as:ETH/THC = ppmv ethanol/ppmC THC, CH4/THC = ppmv CH4/ pmC THC, AA/THC = ppmv acetaldehyde/ ppmC THC

[d] Methane/Ethane values reported here. Averages in units ppmC.

ND = Not detected

Table 3–5. Method 25A and Method 18 Emissions Tests Results (cont), Rear Stacks, EPA Bakeries, Site 2 (1992).

| REAR/BURNER STACK | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| RUN | TIME | METHOD 25A THC RESULTS[a] | METHOD 18 GC RESULTS | | | GC/THC RATIO [b] | THC PROPORTIONS [c] | | |
| | | (ppmC/wet) | ETHANOL (ppmv/wet) | METHANE (ppmv/wet) | ACET-ALDEHYDE (ppmv/wet) | (%) | ETH/THC RATIO | CH4/THC RATIO | AA/THC RATIO |
| 12 | 15:54 | 3146.6 | 1710.0 | 1980.0 | 78.4 | 143.2 | 0.543 | 0.629 | 0.025 |
| 12 | 16:12:46 | 3105.4 | 1750.0 | 1550.0 | 82.0 | 133.2 | 0.564 | 0.499 | 0.026 |
| 12 | 16:30:46 | 2944.3 | 1820.0 | 1970.0 | 78.2 | 158.0 | 0.618 | 0.669 | 0.027 |
| 12 | 16:49:16 | 2900.5 | 1580.0 | 185.0 | 19.0 | 84.5 | 0.545 | 0.064 | 0.007 |
| 12 | 17:22:46 | 3040.4 | 1220.0 | 1990.0 | 72.3 | 125.4 | 0.401 | 0.655 | 0.024 |
| 12 | 17:52:46 | 2974.9 | 1390.0 | 2050.0 | 74.3 | 138.3 | 0.467 | 0.689 | 0.025 |
| 12 | 18:04:16 | 2798.2 | 1480.0 | 2030.0 | 66.7 | 150.6 | 0.509 | 0.698 | 0.023 |
| 12 | 18:33:16 | 2934.0 | 1660.0 | 1960.0 | 76.9 | 150.4 | 0.566 | 0.668 | 0.026 |
| 12 | 18:51:46 | 3177.2 | 1850.0 | 1940.0 | 83.4 | 147.0 | 0.582 | 0.611 | 0.026 |
| 12 | 19:10:16 | 3259.6 | 2050.0 | 2110.0 | 86.4 | 157.3 | 0.629 | 0.647 | 0.027 |
| **12** | **AVG** | **2992.1** | **1651.0** | **1776.5** | **71.8** | **138.8** | **0.542** | **0.583** | **0.024** |

[a] THC averages calculated from the full CEM data base (not just the above entries)

[b] GC/THC RATIO = (ETOH/1.42+AA/1.23+CH4)/THC * 100 where: 1.42 = Ethanol CECF
1.23 = Acetaldehyde CECF

[c] THC proportions were calculated as:ETH/THC = ppmv ethanol/ppmC THC, CH4/THC = ppmv CH4/ pmC THC,
AA/THC = ppmv acetaldehyde/ ppmC THC

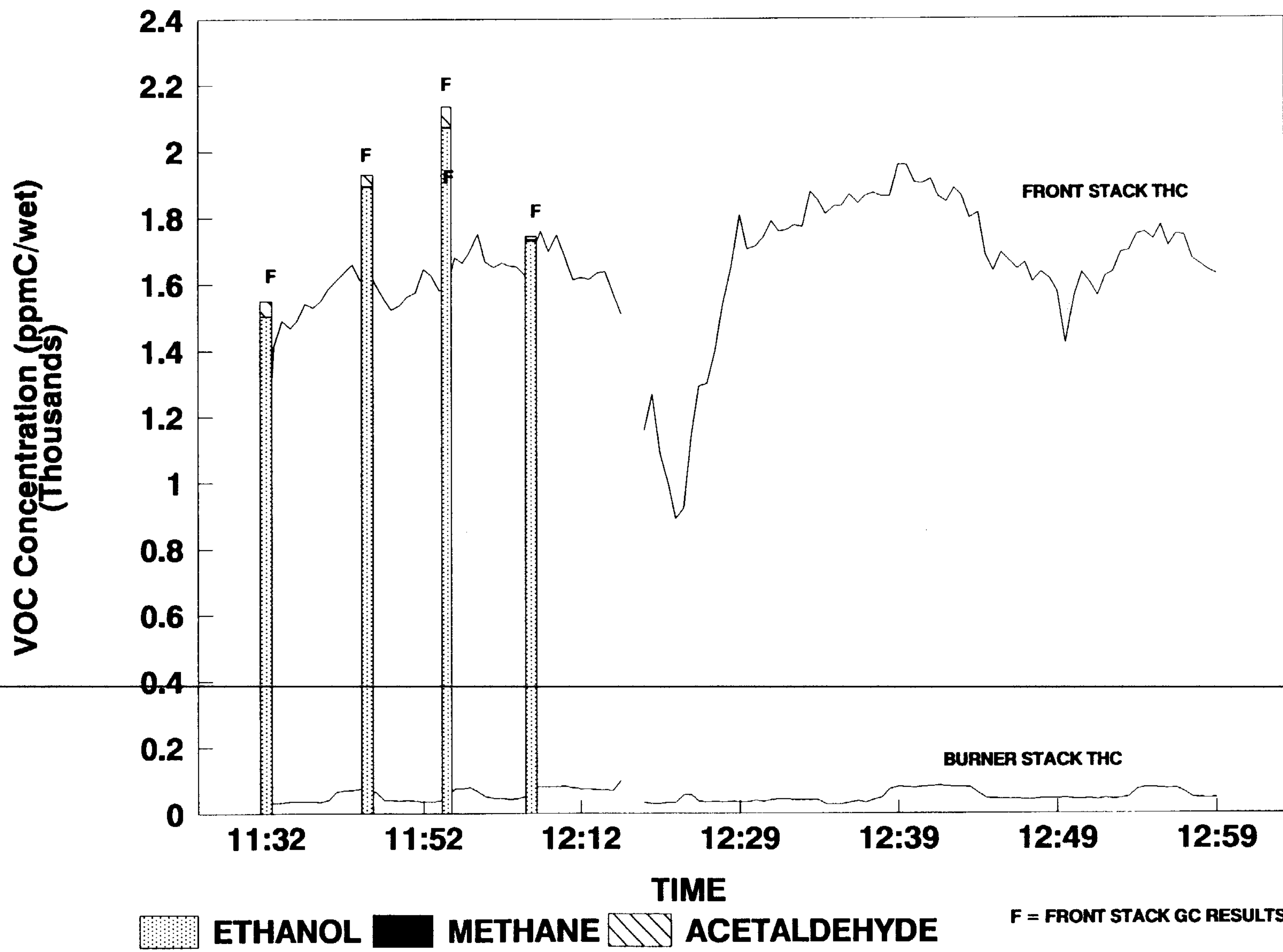



Figure 3-1. Run 6 Method 25A and Method 18 Results (adjusted to ppmC) .

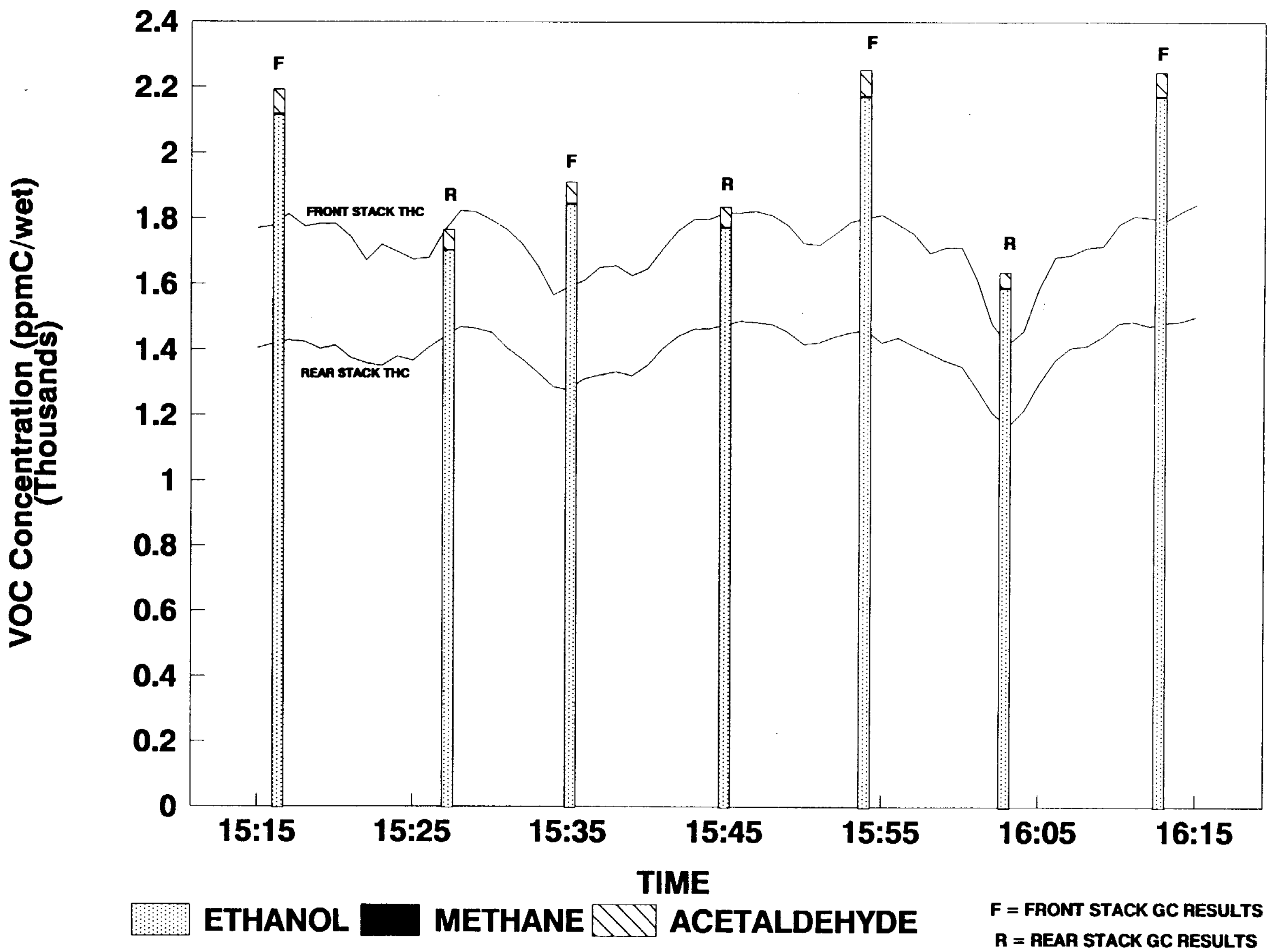



Figure 3-2. Run 7 Method 25A and Method 18 Results (adjusted to ppmC) .

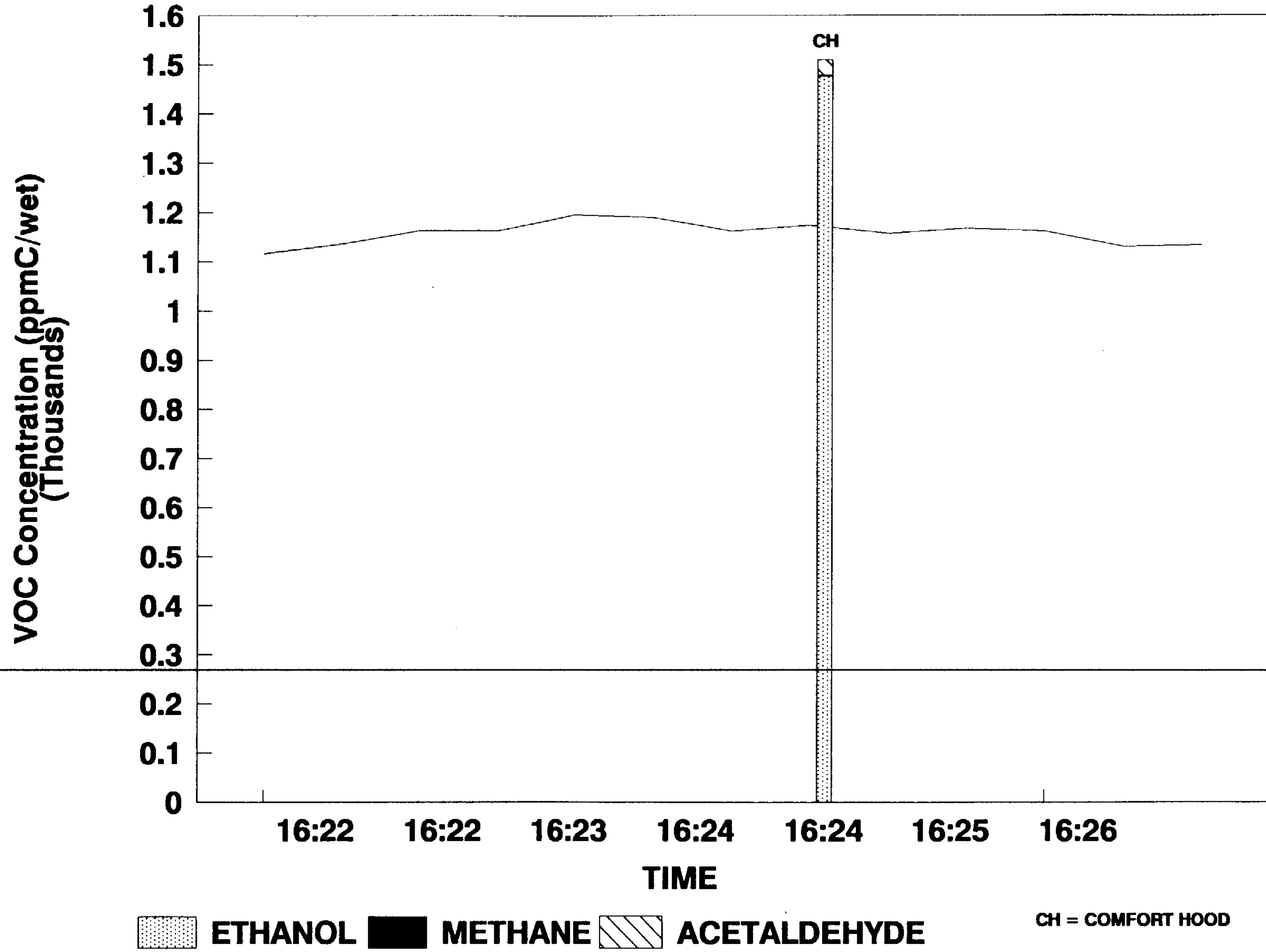



Figure 3-3. Run 8 Method 25A and Method 18 Results (adjusted to ppmC) .

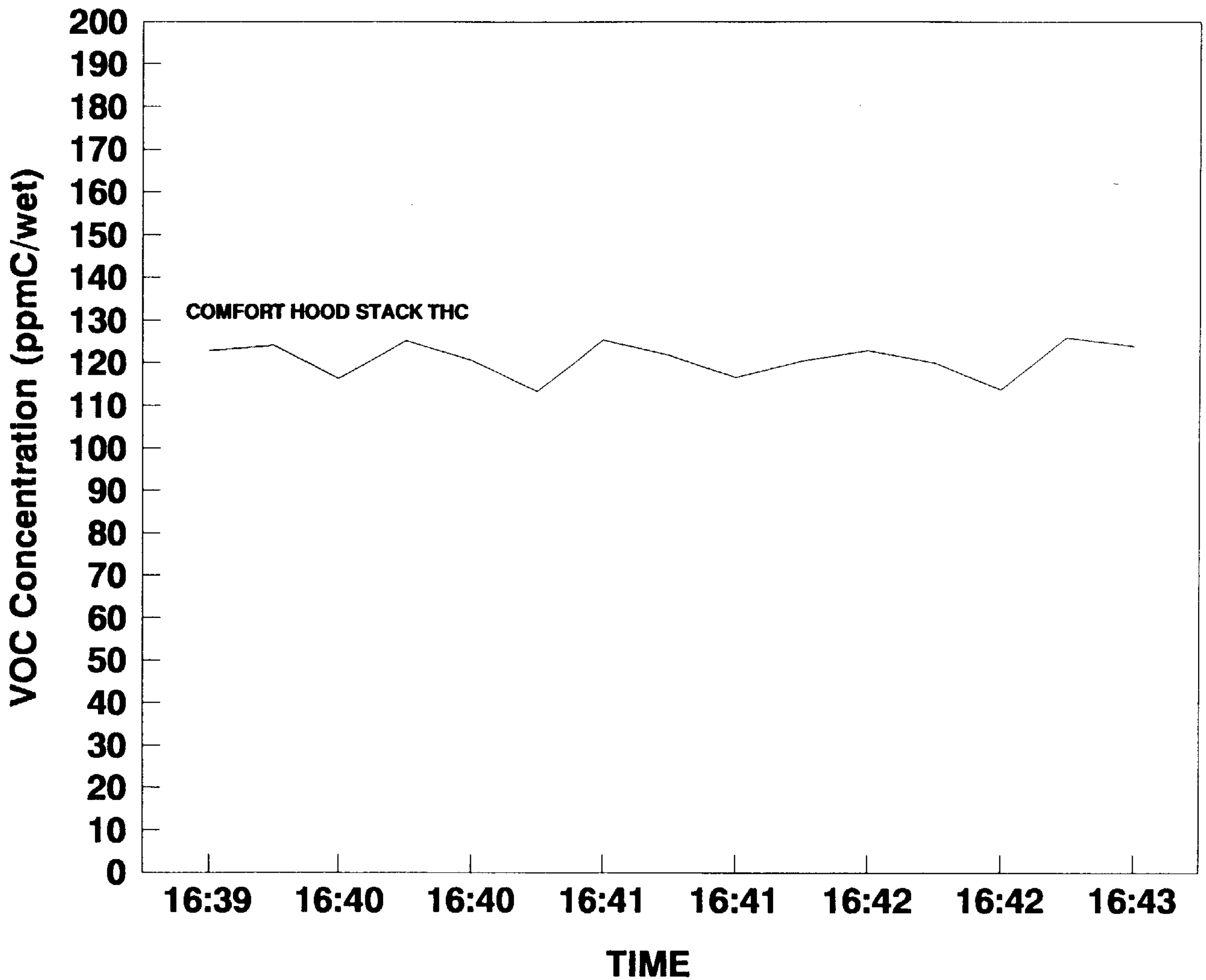



Figure 3-4. Run 8 Method 25A and Method 18 Results (adjusted to ppmC) .

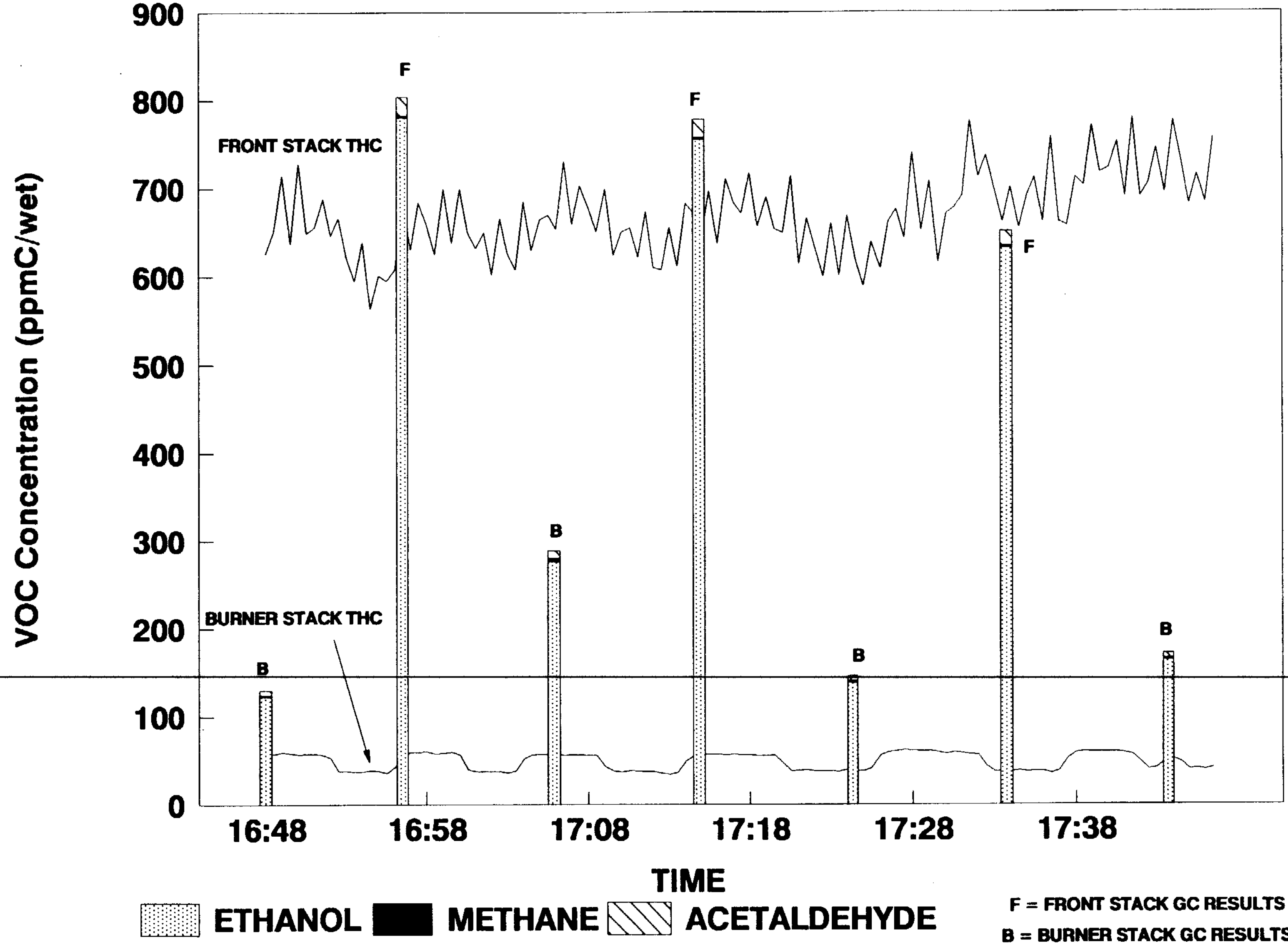



Figure 3-5. Run 10 Method 25A and Method 18 Results (adjusted to ppmC) .

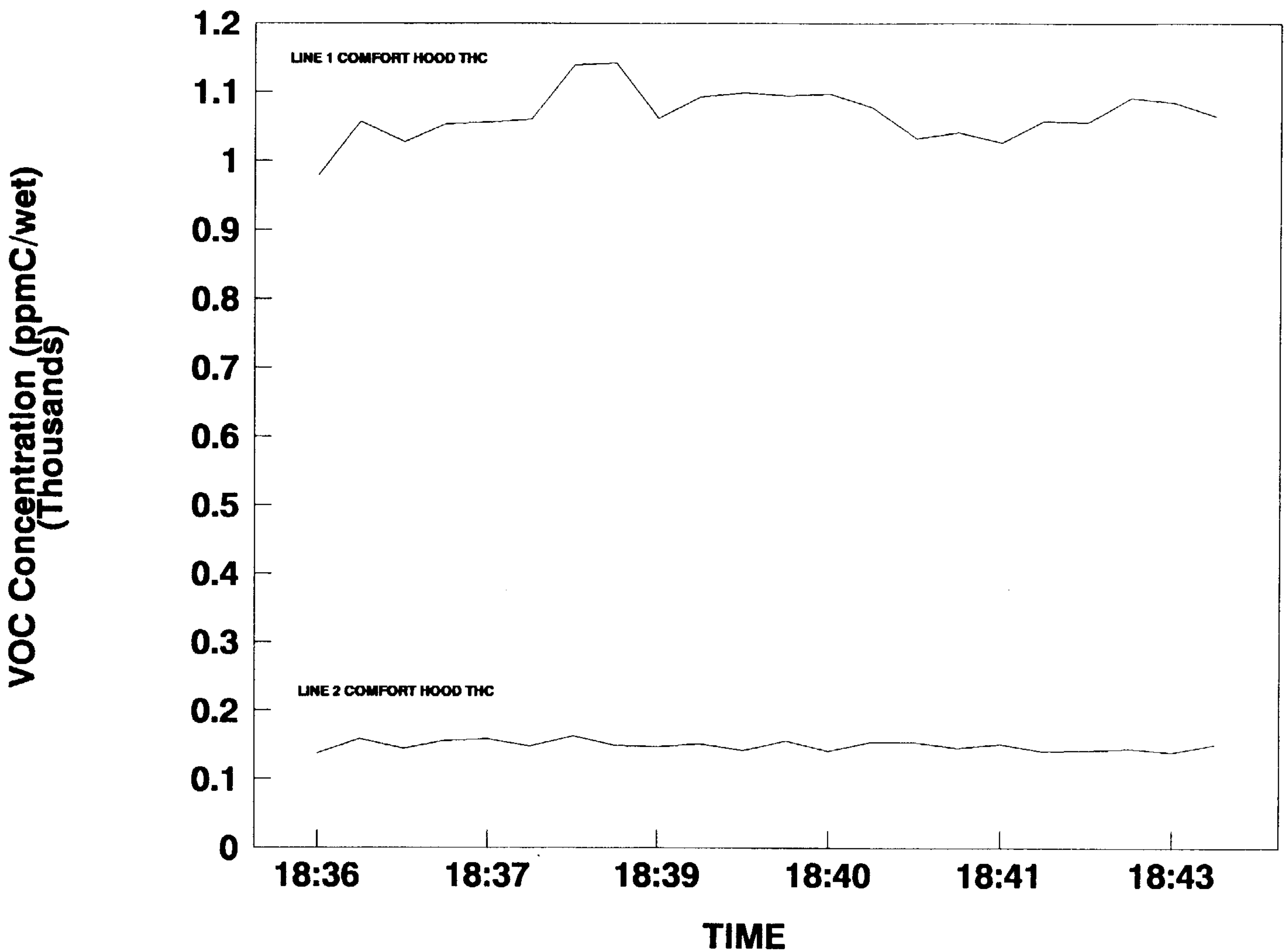



Figure 3-6. Run 11 Method 25A Results (adjusted to ppmC) .

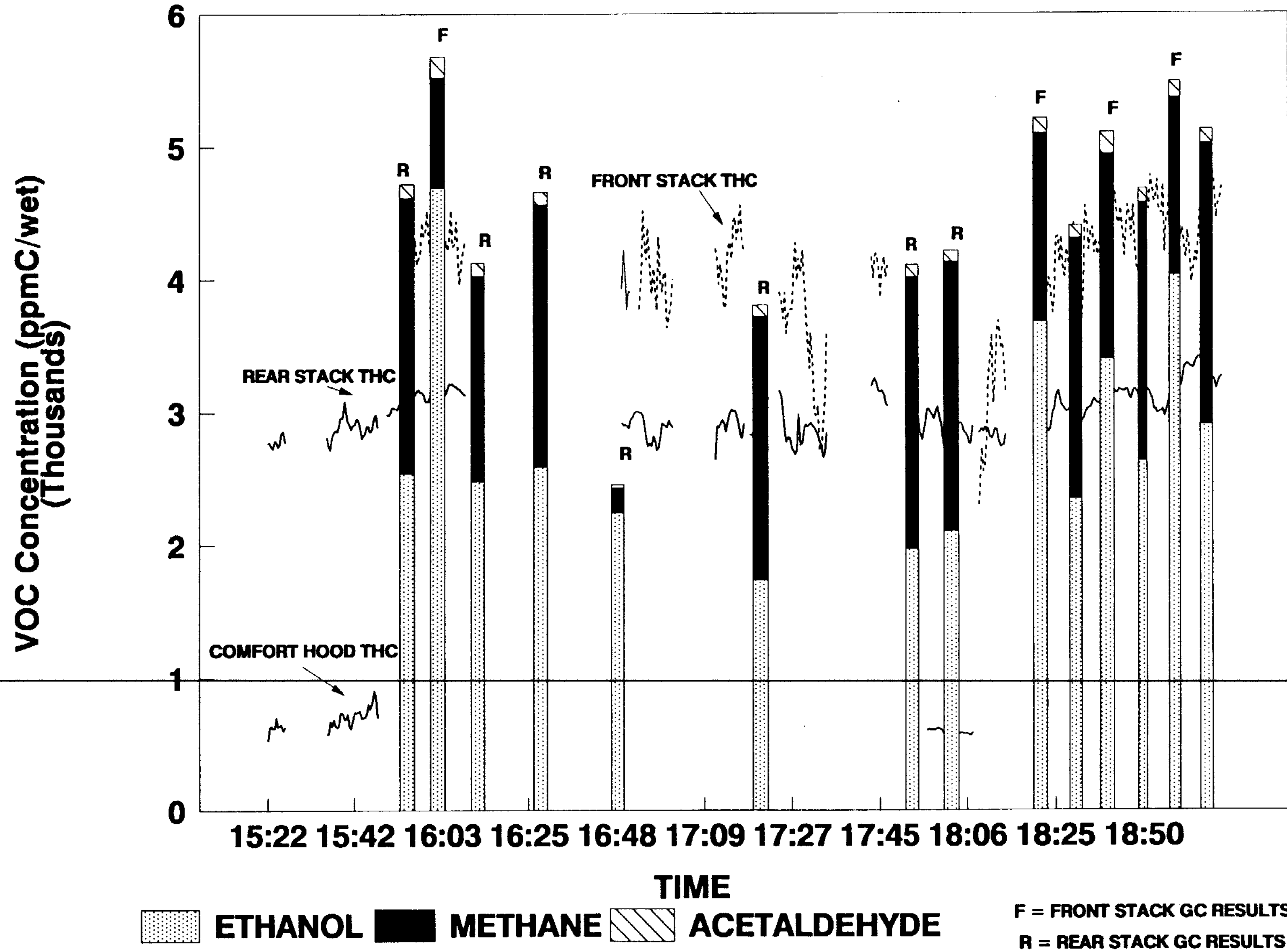



Figure 3-7. Run 12 Method 25A and Method 18 Results (adjusted to ppmC) .

Table 3-6. Summary of Flue Gas Sampling Parameters
Site 2 (1992)

| Run Number | Location | Stack Gas Temperature (deg F) | Barometric Pressure (in. Hg) | Stack Gas Static Pressure (in H2O) | Volumetric Flow Rate (acfm) | Volumetric Flow Rate (scfm) |
|---|---|---|---|---|---|---|
| Run 6 | Front | 230 | 30.21 | −0.1 | 1,216 | 939 |
| | Burner | 316 | 30.21 | −0.05 | 1,083 | 744 |
| Run 7 | Front | 269 | 30.21 | −0.1 | 1,116 | 811 |
| | Rear | 309 | 30.21 | −0.2 | 1,816 | 1,251 |
| Run 8 | Comfort | 207 | 30.21 | 0 | 467 | 371 |
| Run 9 | Comfort | 108 | 30.21 | 0 | 5,585 | 5,242 |
| Run 10 | Front | 230 | 30.21 | −0.1 | 1,216 | 939 |
| | Burner | 316 | 30.21 | −0.2 | 1,083 | 744 |
| Run 11 | L1 C.H. | 207 | 30.21 | 0 | 467 | 371 |
| | L2 C.H. | 108 | 30.21 | 0 | 5,585 | 5,242 |
| Run 12 | Front | 216 | 30.01 | −0.25 | 2,593 | 2,013 |
| | Comfort | 100 | 30.01 | 0 | 742.45 | 702.12 |
| | Rear | 214 | 29.75 | −0.15 | 2512.22 | 1,957 |

## 3.3 Carbon Equivalent Correction Factor Determination

Table 3-7 presents the ethanol carbon equivalent correction factor (CECF) determination. As discussed before, the CECF is the relative response of the THC analyzer in units of ppmC to known concentrations of ethanol. The CECF was determined for both ethanol and acetaldehyde by observing the response of the THC analyzer in units of ppmC to known gas concentrations of the two target compounds. The observed response was divided by the known concentration to determine the CECF value. This was done both in the field and in the laboratory. Ethanol challenges were made in the field at only one concentration (typically 200 ppmv); therefore, it was decided to develop the ethanol CECF over a much wider range of concentrations that were encountered in the field. The CECF value used for this test program was determined in the laboratory using a wide range of ethanol concentration. The average CECF for ethanol was determined to be 1.42. The on-site ethanol QC challenges are presented in Section 6.0.

Table 3-8 presents the acetaldehyde CECF determination. This procedure was performed in the field with a single concentration of acetaldehyde. Only relatively low sample concentrations were observed during the test program (< 50 ppmv); therefore, extensive CECF development did not need to be completed. The acetaldehyde CECF used for this test program was 1.23.

Table 2-7. In-House Ethanol Carbon Equivalent Corretion Factor Determination. EPA BAkeries (1992)

| Ethanol QC Gas Conc. (ppmC) | Instrument Response (ppmC) | Carbon Equivalent Correction Factor |
|---|---|---|
| 498 | 628 | 1.26 |
| 1000 | 1294 | 1.29 |
| 1470 | 2055 | 1.40 |
| 2000 | 2773 | 1.39 |
| 1470 | 2022 | 1.38 |
| 1470 | 2097 | 1.43 |
| 498 | 732 | 1.47 |
| 1000 | 1499 | 1.50 |
| 1470 | 2287 | 1.56 |
| 2000 | 2997 | 1.50 |
| | AVG | 1.42 |

Table 2-8. Acetaldehyde Carbon Equivalent Correction Factor Determination. EPA BAkeries (1992)

| Site | Test Day | Ethanol QC Gas Conc. (ppmC) | System 1 THC Instrument Response (ppmC) | System 1 Carbon Equivalent Correction Factor | System 2 THC Instrument Response (ppmC) | System 2 Carbon Equivalent Correction Factor |
|---|---|---|---|---|---|---|
| 1 | 2 | 82.5 | 101.5 | 1.23 | 103.5 | 1.25 |
| 3 | 2 | 82.5 | 98.9 | 1.20 | 101 | 1.22 |
| 4 | 3 | 82.5 | 103.5 | 1.25 | 107 | 1.30 |
| 4 | 4 | 82.5 | DOWN | | 100.5 | 1.22 |
| | | | AVG | 1.23 | AVG | 1.26 |

## 4.0 OVEN CONFIGURATIONS AND SAMPLING LOCATIONS

This section presents a general discussion of the oven stack locations, sampling port locations, and flow traverse point locations. Specific information is given for the Site 2 test program. The U.S. EPA Method 1 guidelines were used to determine the majority of test locations measuring gas flow rates. Method 25A and 18 samples were taken from the same port that the flow measurements were made. The sample point was located near the centroid of the duct (centrally located 10% area of the stack cross-section). All locations were at least 2 diameters upstream from the gas discharge to the atmosphere as required in Method 25A.

### 4.1 General Process Description

The following sections present a general description of the baking process and commercial baking ovens. It is not within the scope of this document to present detailed process information or production rates; therefore, these descriptions are only meant to familiarize the reader of the general principles and equipment used in the commercial baking industry.

#### 4.1.1 Baking Process Description[1]

Bread baking at large commercial bread bakeries is a highly-mechanized process consisting of high-speed production lines with ovens capable of baking 20,000 pounds or more of bread per hour. The process starts with the mixing of flour, water, sugar, and yeast to form dough, thereby initiating a long series of complex biochemical changes which ends in the oven where the bread is baked.

[1] Compilation of Air Pollutant Emission Factors (AP-42), Chapter 13.01, Bread Baking (Final Draft 1991)

There are four basic types of dough mixing processes: sponge dough, straight dough, brew, and continuous mix ("no-time"). These processes vary in the manner in which the various dough ingredients are mixed which determines the fermentation time available. Fermentation time can vary from 20 minutes or less for the continuous mix or "no-time" process, to 5 hours or more in the sponge dough process. The continuous mix or "no-time" process consists of mixing all of the dough ingredients at the same time; therefore, the fermentation time is minimized by using processing agents and higher temperatures. Sponge dough is formed when two-thirds of the flour, part of the water and the yeast are initially mixed and allowed to ferment before the remaining ingredients are added.

The baking process actually occurs in the oven which causes expansion of the loaf to final volume, crust formation, yeast and enzymatic activity inactivation, coagulation of dough proteins, partial gelatinization of starch, and reduction of loaf moisture. All of these processes are necessary to produce high quality, saleable bread products. To accomplish all of these product and process effects in the proper sequence, commercial bread ovens have between three and eight temperature gradient zones which are maintained in critical balance. Oven rise, which determines the final loaf volume and internal texture, occurs during the first 5-6 minutes of baking. Thermal degradation of the yeast occurs when the internal bread temperature reaches 140-145°F which stops the fermentation process. Protein is denatured between 140-180°F. At the end of the process, browning and crust color develop while ethanol and moisture are evaporated to cool the loaf and prevent the internal temperature from reaching the boiling point of water.[2]

---

[2]J. W. Stitley, Baking Technology, Oven Emissions and Control Devices, American Institute of Baking, Manhattan, KS (1986).

There are three fundamental oven types: tunnel, tray, and spiral. Tunnel ovens, as shown in Figure 4-1 are long horizontal ovens where dough enters at one end and is conveyed to the opposite end where it exits as bread. Tray ovens as shown in Figure 4-2 are also horizonal; however, the dough enters the oven and exits on the same side after being conveyed the length of the oven. The tray is lowered to a second level and then conveyed to the exit near where it entered. In spiral ovens, dough enters at the top corner of the oven and is conveyed in a downward spiral to the bottom corner of the oven where it exits through an opening diagonally lower from where it entered the oven. No spiral ovens were tested during this test program. Tunnel and tray ovens typically contain three to five exhaust stacks with one stack typically used for purging the oven of natural gas during ignition and the remaining stacks used during normal baking operations. In contrast, spiral ovens usually contain just one stack which is used during both purging and normal operations.[3]

### 4.1.2 Oven Heating Systems[4]

Ovens may be divided into two general categories according to the manner in which they are heated, namely, direct-fired ovens and indirect-fired ovens. A third category makes use of semi-direct heating. In direct-fired ovens, the burners are located directly within the baking chamber and are usually ribbon type and burn natural gas. Modern ovens normally feature banks of ribbon burners located both above and below the baking surface, across the path of travel of the baking trays or oven band. Most such ovens are equipped with an external forced-air agitation system to augment the naturally formed convection currents within the baking chamber.

[3]BAAQMD Staff Report Supporting Adoption of Rule 8-42 (July 1988).

[4] The Science of Baking, Lesson 26 Bakery Ovens, American Institute of Baking (no date)

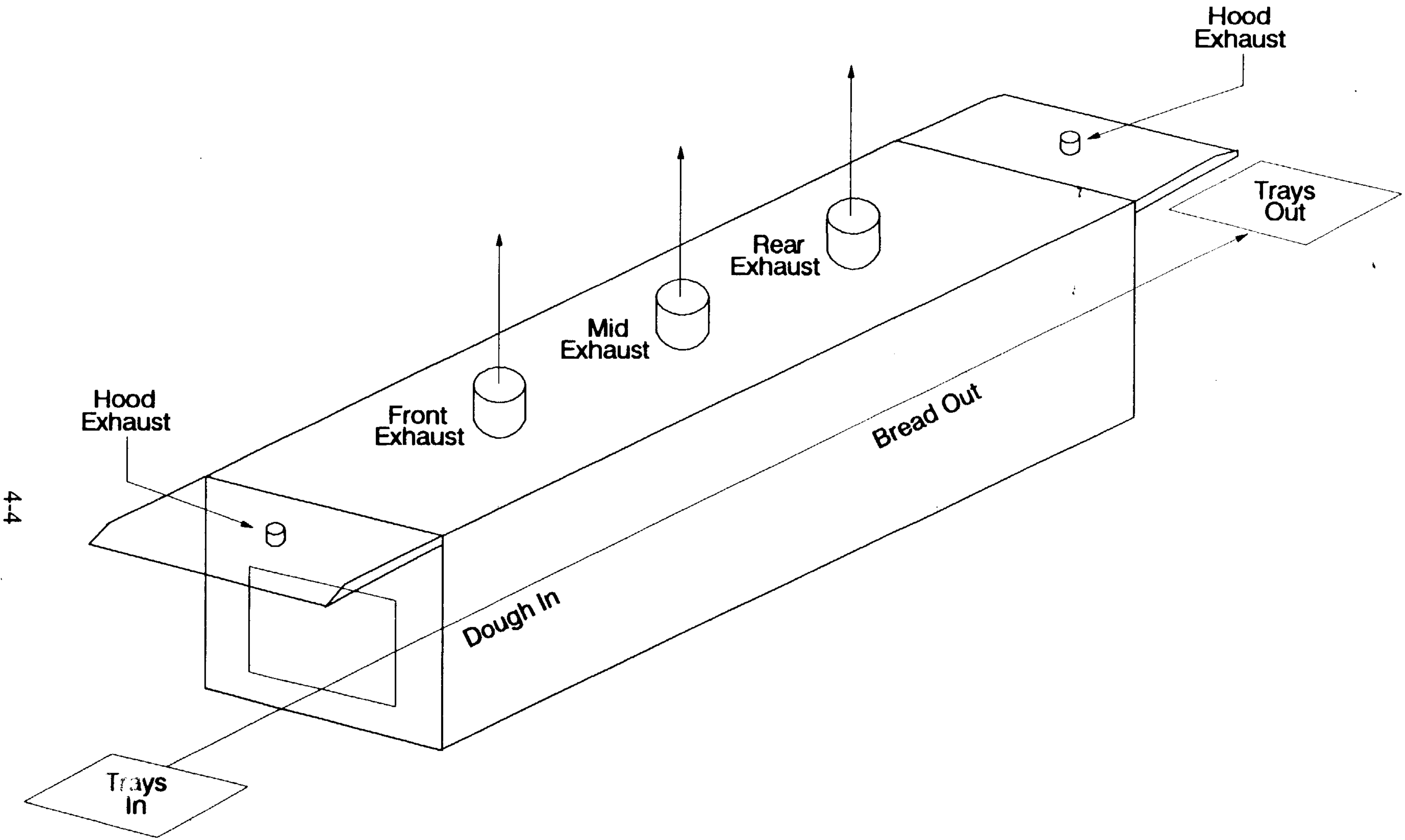



**Figure 4-1. Generalized Schematic of a "Tunnel" Type Baking Oven EPA Bakeries (1992)**

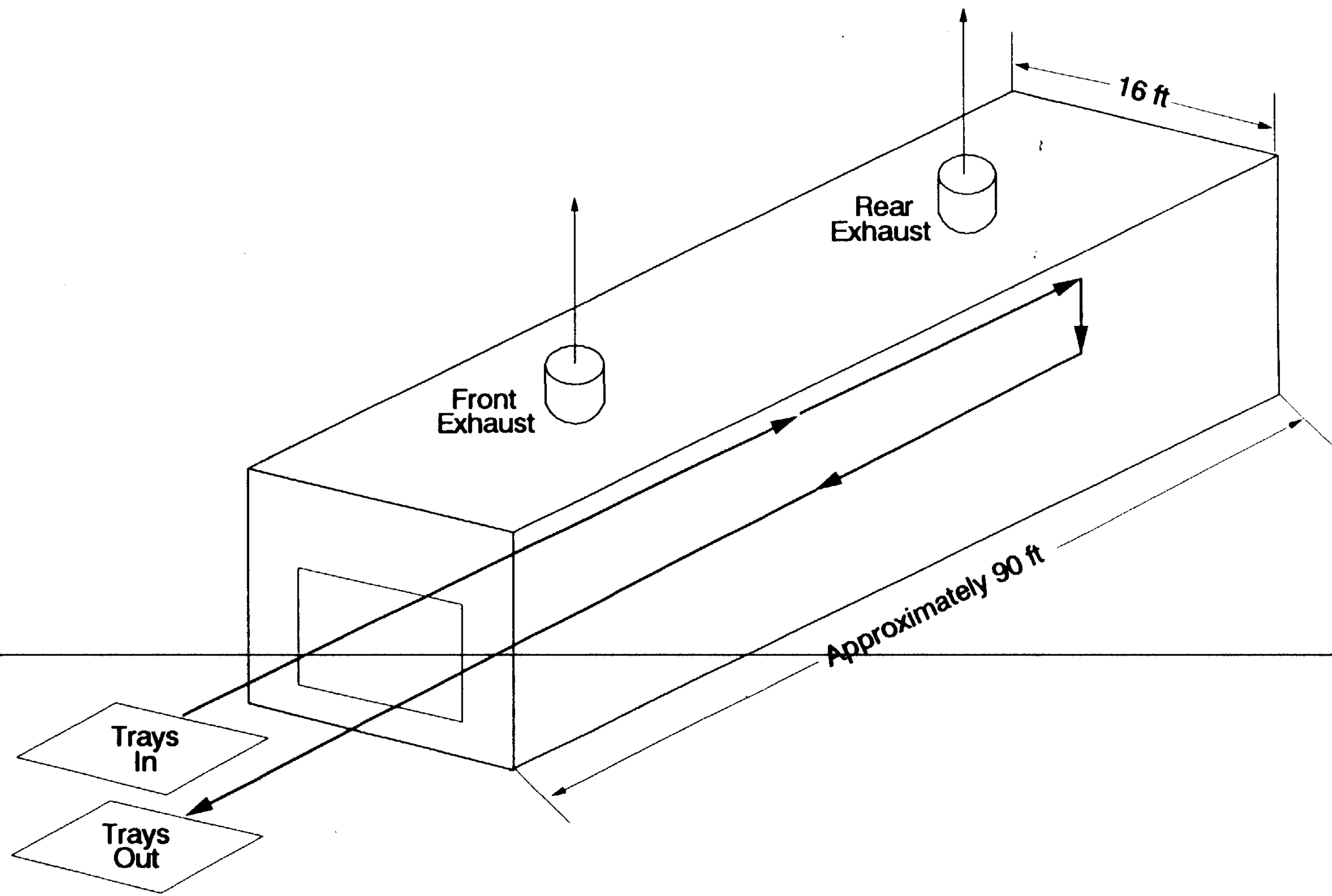



**Figure 4-2. Generalized Schematic of a "Tray" Type Baking Oven EPA Bakeries (1992)**

In indirect-fired ovens, the combustion chamber is isolated from the baking chamber. The heat is transferred from the hot combustion gases to the baking chamber by means of flues or radiator tubes. In these ovens, the products of combustion do not enter the baking chamber and thus do not come into direct contact with the baking products. The heat is generated by single high-capacity burners (one burner for each oven zone) and radiant heat is supplied by the flues and radiators within the baking chambers. Forced air agitation systems and improved oven efficiency are a general feature of indirect-fired ovens.

Semi-direct fired ovens (which are also referred to as semi-indirect fired ovens) closely resemble indirect-fired ovens in their use of separate combustion chambers and of radiator tubes for the heat transfer. In their case, however, the radiator tubes have either thin slots or small holes that allow the hot combustion gases to enter the baking chamber. These gases create convection currents whose intensity can be controlled by means of baffles. Thus, semi-direct fired ovens combine the advantages of both convection and radiant heat transfers.

## 4.2 Test Program Overview

This section will present a general discussion of the oven types and sample locations from all four sites. However, specific information will only be presented for the Site 2 facility.

This test program involved measuring the emissions from both direct- and indirect-fired ovens. Some of the indirect fired units had their heat exchanger tubes drilled out to promote better heating efficiency. However, maintenance records were incomplete and plant personnel were uncertain whether this had been completed or not. In some instances, maintenance personnel stated that their indirect-fired ovens had not been drilled out and yet high concentrations of unburned methane (>1000 ppmv) were detected in the stack gases. So a strict direct/ indirect firing classification was not always possible.

Another important facet of the test program was that during steady-state operation, the gas flow in some of the stacks would almost be completely shut off with a flow damper to prevent oven heat loss. The Method 25A and 18 tests would detect fairly high concentrations of THC (>1000 ppmC) while flow rates would be minimal (< 100 cfm), resulting in fairly low emissions rates. The flow damper positions were always verified to ensure they were the same during both flow measurement tests and the Method 25A and 18 tests.

The majority of ovens tested had two stacks venting exhaust gases. If both stacks vented oven (baking) gases (i.e., direct-fired), they were referred to as the front stack and the rear stack depending on their respective location. Front stacks were located near the end of the oven where the bread dough entered, and the rear stacks were on the opposite end.

Indirect-fired ovens also typically had two stacks with one stack exhausting the oven gases and the other exhausting the burner gases. Gases from the burner stack were expected to be comprised mainly of unburned hydrocarbons (i.e. methane). However as previously mentioned, oven maintenance records were sometimes incomplete and what was expected to be purely a burner exhaust gas stream, was sometimes comprised of significant portions of gases from the baking processes (i.e. ethanol and acetaldehyde).

Three sites had a third stack (typically referred to as comfort hoods) venting the gases, which was either adjacent to the oven entrance or to the exit. (See Figure 4-1). Their purpose was to remove fugitive oven heat from worker areas. Gases were pulled from these locations through a ventilation hood configuration, typically spanning the width of the oven (10-15 feet) and 1 - 3 feet in length. Exhausts from the Site 2 comfort hoods were pulled through roof ventilator fans which had very little ductwork downstream of an axial fan. This made determining flow rates inaccurate since measurement locations could not be located in accordance with the U.S. EPA Method guidelines.

The majority of stacks were small roof vent ducts with an inside diameter (ID) ranging from 12 to 16 inches. As shown in Figures 4-1 and 4-2, the stacks were typically arranged in a straight line (i.e., in line with the orientation of the oven). Most had rain caps installed over the opening which was typically 6-15 feet above the roof. All stacks were accessed from the roofs of the facilities and sample ports were located from 2-6 feet above the roof line. A 1.75 inch hole in the duct walls allowed for full insertion of the Method 25A and 18 sample probe. Two ports were located 90° apart at the same elevation. The sample port that was not being used was always capped off to prevent any ambient air from diluting the sample stream.

Approximately 100 to 150 feet of heated Teflon® tubing was used to transport the gas sample from the stack to the mobile continuous emissions monitoring (CEM) vehicle that was typically parked adjacent to the bakery wall. In cases where there were three stacks originating from the oven, one sampling probe/heat trace system would be alternated from the second and third stack.

A general description of sample locations for the Site 2 test program is presented according to the respective test site in the following section.

## 4.3 Site 2 Sample Locations

A small bun oven, a small bread oven and a large bread oven were tested at the Site 2. These ovens were also identified as Lines 1 through 3, respectively. Line 1 and 2 ovens were tested with the CEM trailer parked in the same parking location. The trailer had to be moved to test the third oven (Line 3).

The oven on Line 1 had two stacks and a comfort hood; however, neither stack had a rain cap. The sampling locations are shown in Figure 4-3. The front stack and comfort hood were sampled alternately using a 150-foot length of heat-traced sample line. The location of the rear stack necessitated a 200 foot length. Both the front and rear stacks had a 12-inch ID. Ports were located approximately 9-feet (9 diameters) downstream and 2-feet (2 diameters) upstream of the nearest flow disturbances. Flow was measured at 8 traverse points.

All of the comfort hoods at Site 2 were exhausted by axial fan roof ventilator (Dayton Model 3C276-A). There was no ductwork following the fan; therefore, U.S. EPA Method 1 specifications were not met. Flow measurements had to be taken directly after the fan as it was exhausted to atmosphere. The general configuration is shown in Figure 4-4. Six traverse points were located as shown.

The comfort hood fan on Line 1 was not operating during the test and had evidently not operated for some time. Gas flow was induced by strictly natural drafting of the hot gases at velocities of 50-300 fpm and at temperatures of 150°F.

The Line 2 was an indirect-fired unit and the oven gases were vented from a stack located in the front of the oven and the burner stack was located in the rear. As with the Bun oven, there was a comfort hood that was vented by a axial fan roof ventilator. There was no gas duct work following the fan; therefore, the flow measurement could not be made at a location in accordance with the U.S. EPA Method 1 procedures. Flows were estimated by both velocity pressure measurements and hot-wire anemometer measurements.

The sampling locations on Line 2 are shown in Figure 4-5. The oven (front) stack was 11.5-inch ID with a rain cap. Ports were located 5.5-feet (5.7 diameters) downstream and 1.0-feet (1.0 diameters) upstream of the nearest flow disturbances. Flow was measured at 16 traverse points.

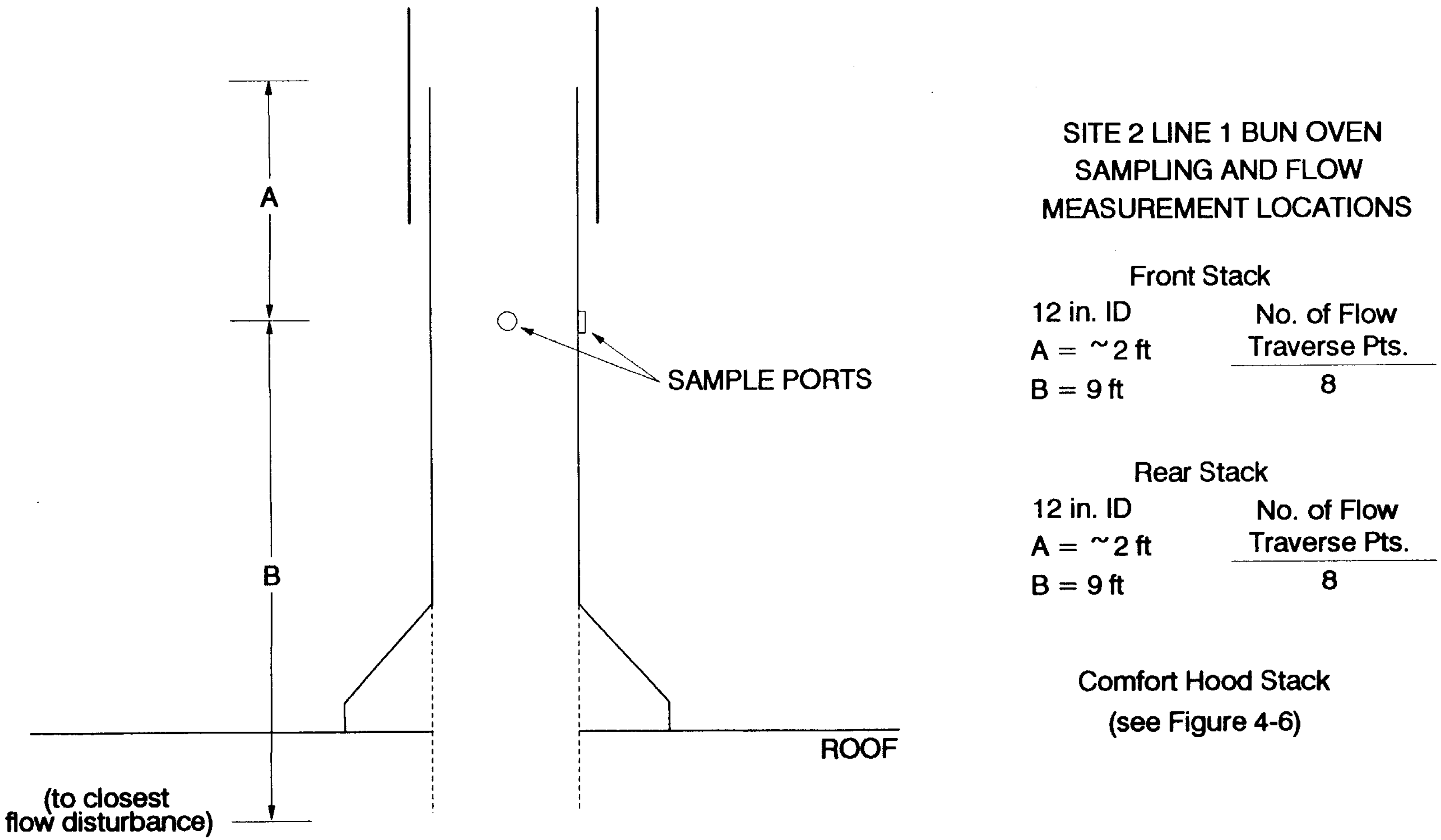



**FIGURE 4-3. SITE 2 LINE 1 BUN OVEN STACK CONFIGURATION EPA BAKERIES (1992)**

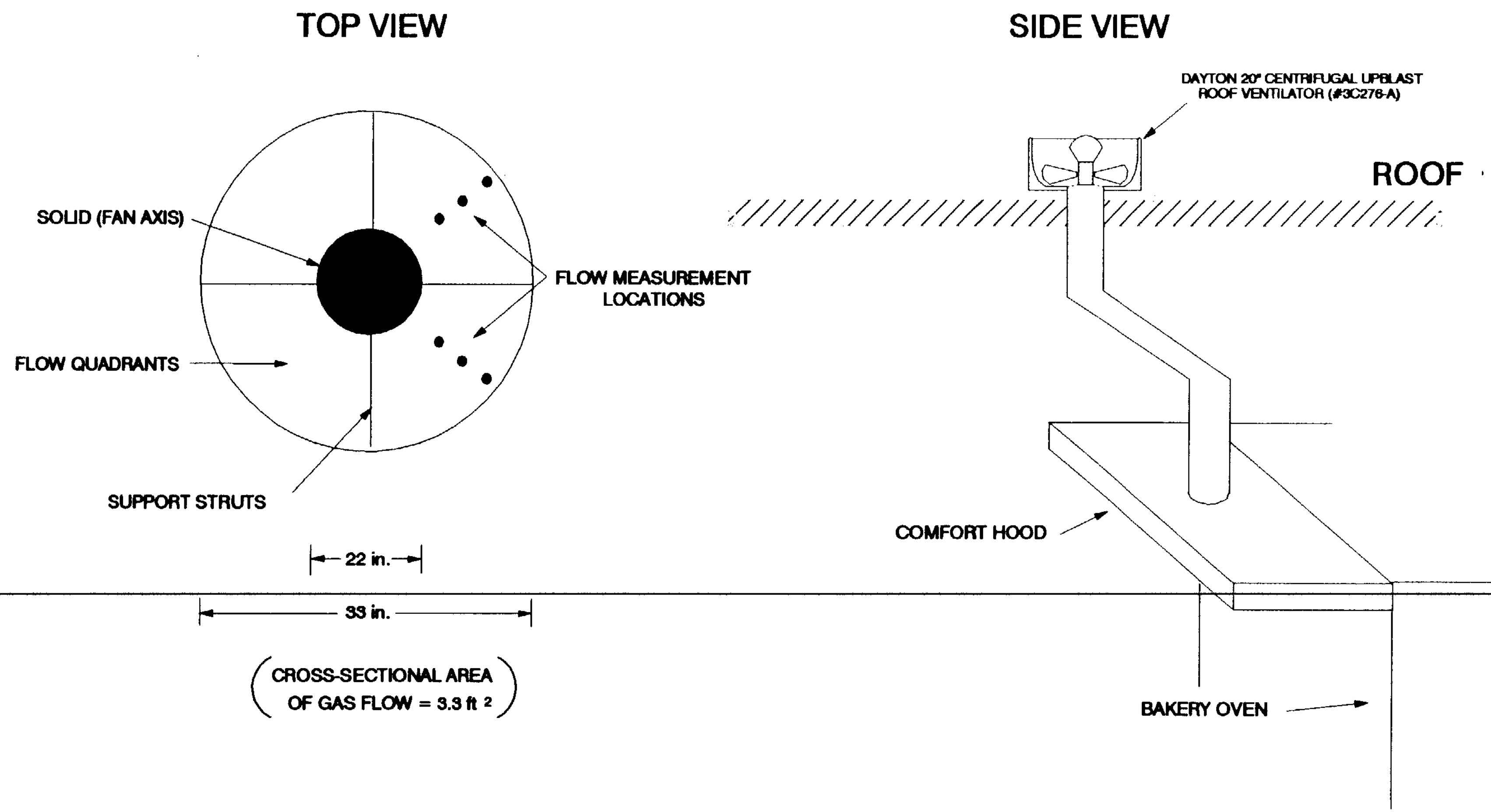
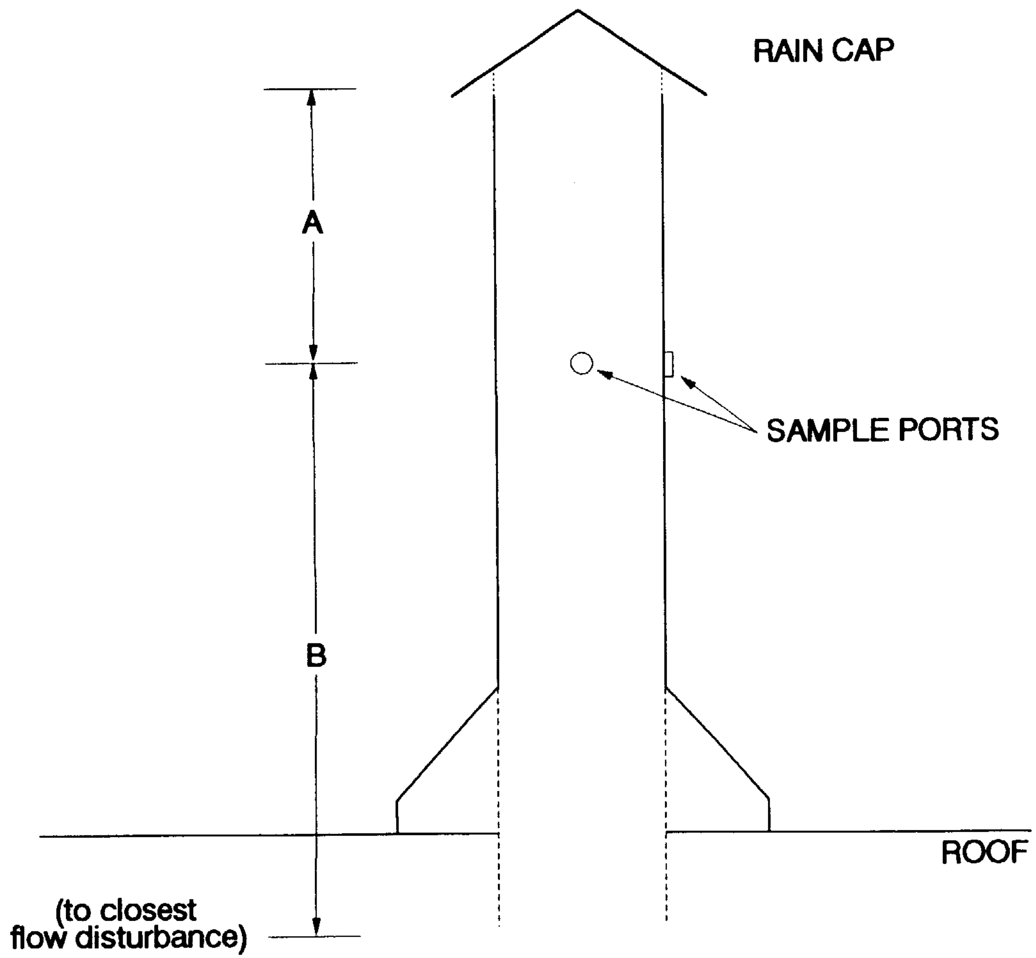



**FIGURE 4-4. GENERAL SCHEMATIC OF THE SITE 2 COMFORT HOOD EXHAUST FANS EPA BAKERIES (1992)**




SITE 2 LINE 2 BREAD OVEN
SAMPLING AND FLOW
MEASUREMENT LOCATIONS

Front Stack

| 11.5 in. ID | No. of Flow Traverse Pts. |
|---|---|
| A = ~1 ft | |
| B = ~5.5 ft | 16 |

Rear Stack (Burner)*

| 16 in. ID | No. of Flow Traverse Pts. |
|---|---|
| A = 2 ft | |
| B = 4 ft | 16 |

* Rear stack did not have rain cap.

Comfort Hood Stack
(see Figure 4-6)

**FIGURE 4-5. SITE 2 LINE 2 BREAD OVEN STACK CONFIGURATION EPA BAKERIES (1992)**

The burner stack on Line 2 had a 16-inch ID without a rain cap. Ports were located approximately 4-feet (3.0 diameters) downstream and 2-feet (1.5 diameters) upstream of the nearest flow disturbances. Flow was measured at 16 traverse points.

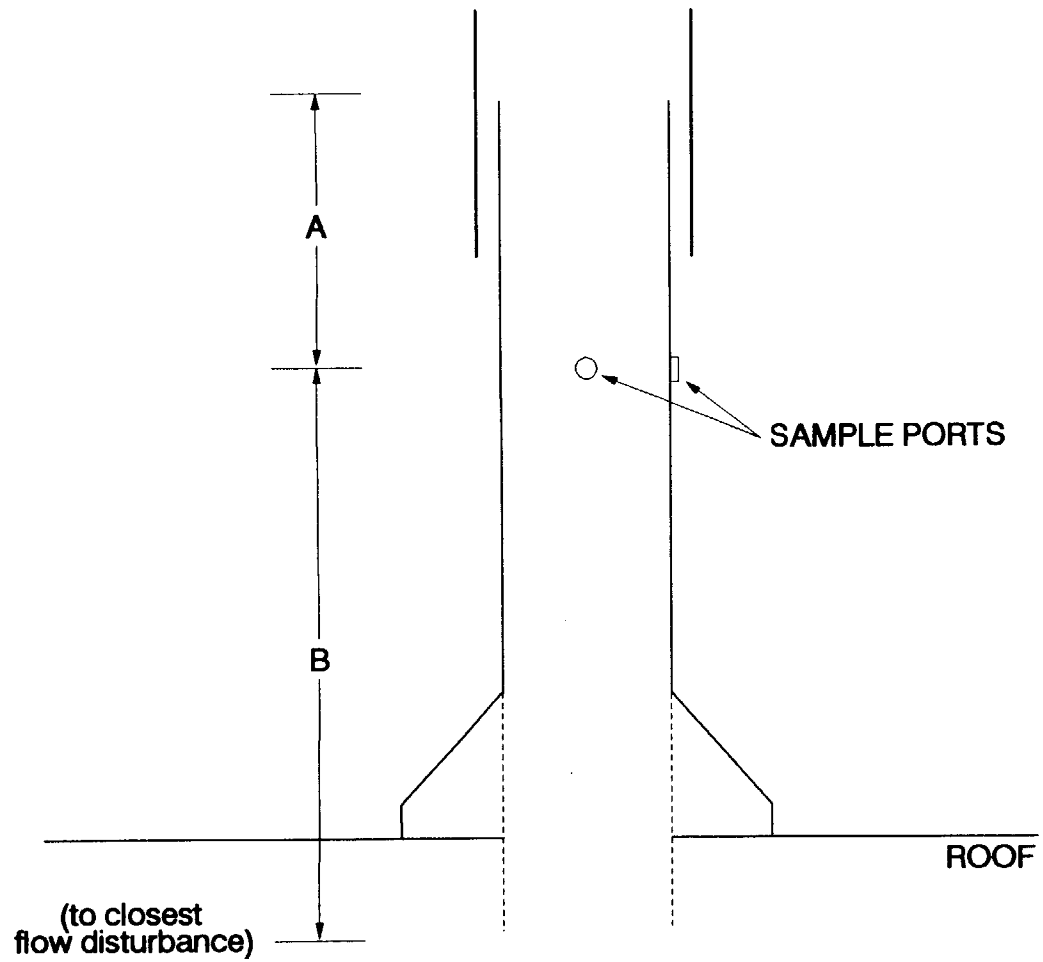
The comfort hood on Line 2 was identical to that described except that the fan was operating. Flows were measured as described above.

The Bread oven on Line 3 was a direct-fired unit with stacks located approximately 90 feet apart. There were 2 oven stacks and a comfort hood. The front stack and comfort hood were alternately sampled using a 100-foot section of heat-traced tubing. The rear stack was sampled using a 150-foot section.

The sampling locations on Line 3 are shown in Figure 4-6. The front stack had a 13.75-inch ID. Rain caps were not present on any of the Line 3 stacks. Ports on the front stack were located 11-feet (9.6 diameters) downstream and 2.5-feet (2.2 diameters) upstream of the nearest flow disturbances. Flow was measured at 8 traverse points.

The rear stack on Line 3 had a 15.5-inch ID. Ports were located approximately 11-feet (8.9 diameters) downstream and 2.5-feet (1.9 diameters) upstream of the nearest flow disturbances. Flow was measured at 8 traverse points.

The comfort hood on Line 3 was identical to that described and the fan was operating. Flows were measured as described above.




SITE 2 LINE 3 BREAD OVEN
SAMPLING AND FLOW
MEASUREMENT LOCATIONS

Front Stack

| | No. of Flow Traverse Pts. |
|---|---|
| 13.75 in. ID | |
| A = 2.5 ft | |
| B = 11 ft | 8 |

Rear Stack

| | No. of Flow Traverse Pts. |
|---|---|
| 15.5 in. ID | |
| A = 2.5 ft | |
| B = 11 ft | 8 |

Comfort Hood Stack
(see Figure 4-6)

**FIGURE 4-6. SITE 2 LINE 3 BREAD OVEN STACK CONFIGURATION EPA BAKERIES (1992)**

## 5.0 SAMPLING AND ANALYTICAL METHODS

This section briefly summarizes the procedures used for sampling and analysis. Procedures are presented for Method 25A testing in Section 5.1, Method 18 procedures in Section 5.2, and Methods 1-4 procedures in Section 5.3. The detailed protocols can be found in the U.S. EPA reference methods located in the appendices.

### 5.1 Method 25A Sampling and Analysis for THC

Total hydrocarbon concentration was determined on a continuous basis using the U.S. EPA Method 25A procedure. Procedures incorporate QA/QC protocols stipulated as "Measurement System Performance Specifications" in the reference methods. The QA parameters will be reported in Section 6.0 while the QC procedures are fully detailed in the test plan written for this test program.

The following discussion presents Sample Extraction Equipment and Procedures in Section 5.1.1, THC Analyzers and Operating Principal in Section 5.1.2, Data Acquisition Procedures in Section 5.1.3, Instrument Calibration in Section 5.1.4, and an Example Daily Operating Procedure in Section 5.1.5.

#### 5.1.1 Sample Extraction Equipment and Procedure

A continuous gas sample was extracted from the stack and transported to the analyzer through a heated Teflon® sample line (heat trace). The gas only came into contact with inert materials such as stainless steel, glass, or teflon. The sample gas temperature was maintained above 100°C (212°F) so that there was no condensation of moisture or hydrocarbons in the tubing. A generalized schematic of a typical extractive system is shown in Figure 5-1.

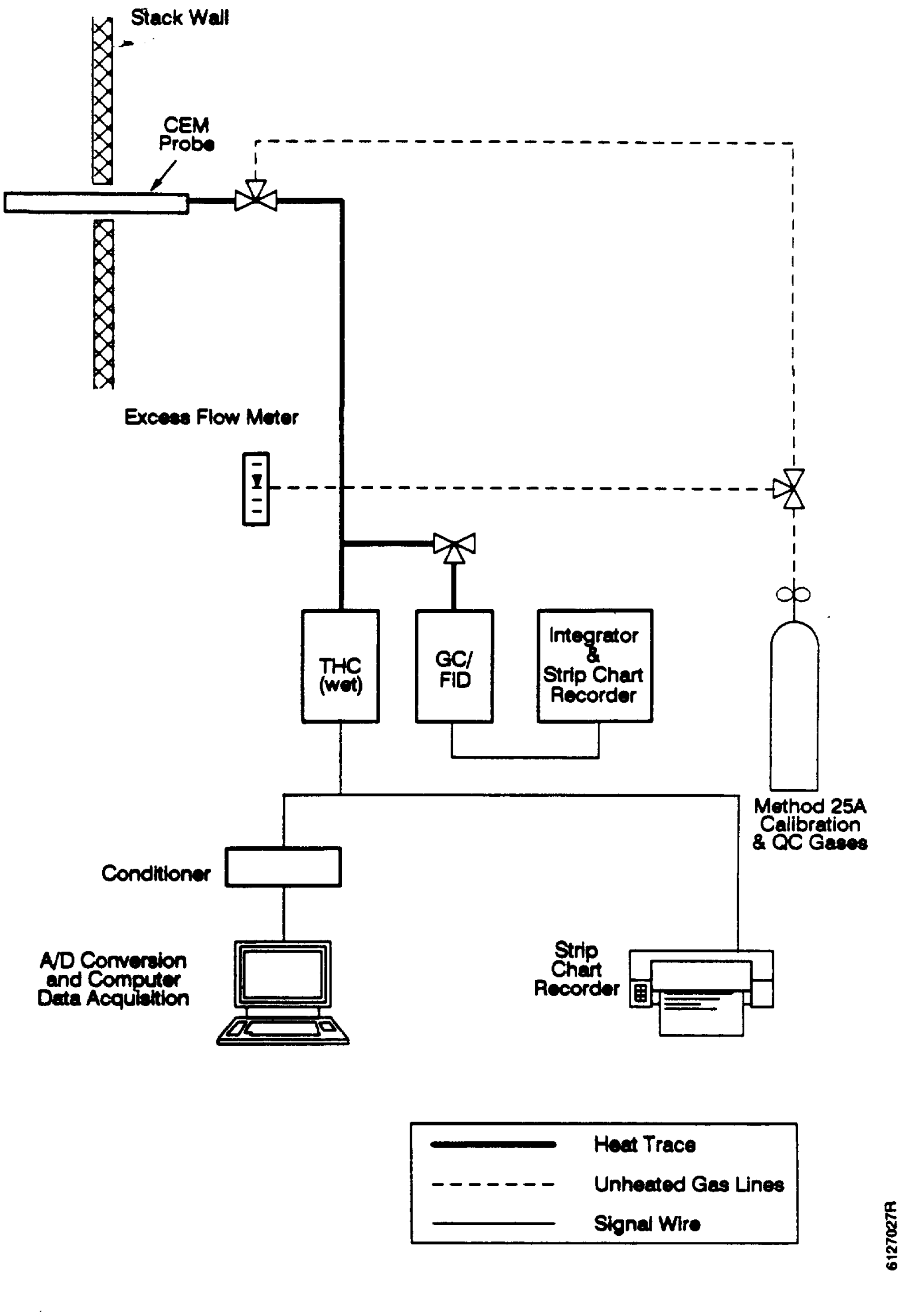



**Figure 5-1. General Schematic of Method 18/25A Extractive Stack Gas Sampling System**

The probe was used to extract gas from the stack was constructed of a short length of stainless steel or teflon tubing. The gas was extracted using a heated head pump that was placed just upstream of the THC analyzer. An excess flow dump was also upstream from the analyzer, so that the gas in the analyzer would not be under any back pressure created by the sample pump.

In addition to one heated sample tube for sample gas extraction, a separate tube was run from the calibration gas cylinders to the probe. This tube was connected to the system with a 3-way valve (calibration valve) at the junction of the probe and the heat trace. This allowed for leak checks, sample bias checks and calibration drift checks to be completed, as was discussed in Section 6. These procedures required a calibration or QC gas be directed to the probe and back through the entire sampling system. The difference between the resulting values and the values observed when the gas was passed directly to the instrument is referred to as sample bias. When the bias was above acceptable limits, corrective actions were implemented.

### 5.1.2 THC Analyzers and Analytical Principles

The THC analyzers used in Method 25A procedures employ a flame ionization detector (FID) to quantify the quantity of THC. As the flue gas enters the detection chamber, the hydrocarbons are combusted in a hydrogen flame. The ions and electrons formed in the flame enter an electron gap, decrease the gas resistance, and permit a flow in an electric circuit. The resulting current is proportional to the instantaneous concentration of the total hydrocarbons. These analyzers are not selective between species; however, different hydrocarbon species respond differently in the FID. Straight chain hydrocarbons (alkanes), alkenes, and aromatics respond in proportion to the number of carbons atoms in the molecule. For example, 100 ppmv propane ($C_3H_8$) responds approximately the same as 300 ppm methane ($CH_4$). When measuring THC of these type of compounds, there are no substantial inaccuracies in reporting THC as ppmv as methane. However, oxygenated compounds such as ethanol ($CH_3CH_2OH$) and acetaldehyde ($CH_3CHO$) have a depressed response so that what appears to be 300 ppmv as methane may actually be 1200 ppmv ethanol. The resulting THC concentrations as ppmC were adjusted to ppmv ethanol or ppmv acetaldehyde based on the results of the Method 18 analysis.

### 5.1.3 Data Acquisition

The signal from the analyzer is typically an analog voltage response (i.e., 0-5 volts). The meter panel on the front of the instrument usually translates the voltage signal to concentration units (i.e., ppmv). However for long term data acquisition, the voltage signals coming from the electrical output leads need to be translated to actual concentration data. The system used to perform this function is known as the data acquisition system or DAS. This process will either be accomplished with the use of a strip chart recorder (SCR) or a computerized system. A SCR is the simplest procedure; howeverc additional man hours were needed to reduce the SCR trace to individual readings (i.e., 1/minute). If a computerized version is used, the analog signal is converted to a digital signal and directed to a computer so that the signal was translated to concentration units and saved to magnetic media. For this test program, a computerized DAS was used and a SCR was used as a back-up system.

### 5.1.4 Instrument Calibration

Calibrations were performed by passing known concentrations of a hydrocarbon gas standard through the instrument and recording the associated response. A response factor was then calculated and used to adjust sample gas responses to concentration units. Typical calibration calculations were completed as shown in Section 7. The THC instrument was calibrated twice daily. The first calibration was used to determine the response factor, and the second calibration was performed after completing the test runs so that calibration drift can be determined and the test data corrected for drift (if necessary). Calibrations were completed on a two point basis:

zero gas (generally $N_2$), and a high-range or "span" gas. Methane was used as the calibration gas, and the concentrations were reported as ppmv methane which are the same as ppmv Carbon (ppmC). The gas was certified by the manufacturer guaranteeing the concentration within ±2% accuracy.

Other QC operations were also performed to verify the accuracy of the data produced. These operations included calibration drift and calibration error determinations. Additional procedures such as linearity check, sample bias, leak checks, and gas stratification were also performed. These are further discussed in Section 6.

**5.1.5 Example Daily Operating Procedure**

The following is a detailed standard operating procedure for calibrating and operating the CEMS:

1. Turn on computer and printer, put printer on-line, and load the DAS program. Be sure that the THC instrument has been on with the FID flame lit for several hours.

2. Synchronize watch with sample location leaders.

3. Turn on strip chart recorders (SCR) and make appropriate notes on charts and in logbook (write down all procedures and observations in logbook and on SCRs as the day progresses).

4. Open all calibration gas cylinders so that they may be introduced to the instruments.

5. Perform daily pre-test leak check on CEMs as discussed in Section 6. If a zero gas is used for this procedure, zero all instruments at this time. Enter these values in the computer calibration routine. Be sure to check and maintain all flows throughout calibration and operation.

6. Introduce the THC span gas.

7. Make adjustments to the THC instrument as required and enter the value into the computer calibration routine.

8. Introduce QC gases to instruments to determine calibration error. Record at least one minute of data for each. If the QC gas response is not within $\pm 5\%$ of the calibration gas valve, the operator will recalibrate the instrument, or perform other corrective actions.

9. Begin sampling routine, with the computer on standby.

10. Start the data acquisition system when signaled by radio that system is in stack.

11. Carefully check all flows and pressures durir the operation of the instruments and watch for apparent problen n any of the instruments, such as unusual readings or unreasonable fluctuations.

12. Stop the data acquisition system at the end of the test when signaled.

13. Perform the final calibration (Repeat Steps 5-8) except make no adjustments to the system. This procedure was completed through the calibration valve so that gas is extracted through the entire system.

15. Calculate calibration drift.

All QA/QC procedures are fully explained in Section 6.

## 5.2 Method 18 for Determining Ethanol and Acetaldehyde Concentrations

The following sections summarizes the sampling and analytical protocols for Method 18 testing procedures targeted for ethanol and acetaldehyde.

### 5.2.1 Sample Collection

A slip stream of sample gas was taken off the main heat trace line and directed to the GC injection loop as shown in Figure 5-2. Discrete GC injections were made to quantify the gas phase concentration of the two target analytes. This was accomplished by first allowing the gas to vent through the injection loop. Then the injection valve was turned so that the sample gas in the loop is directed into the GC/FID. The number of sample injections in a given testing time frame was determined based on how long it takes for the target compounds to elute from the GC column to the detector. This period of time is known as the retention time (RT). If other compounds are contained in the gas which elute at much longer RT than the target species, they may interfere with the later analyses and the column may have to be periodically cleaned. This is done by raising the oven temperature for a period of time. Cleaning the column decreases the number of GC injections that can be performed during the run time.

### 5.2.2 Sample Analysis

The U.S. EPA Method 18 analysis is performed using a GC/FID to separate hydrocarbon species present in the exhaust gas stream. The FID employed in the GC works in a similar manner to that discussed in Section 5.1.2. By using a column filled with a sorbent, the various hydrocarbons in a given gas stream were separated so that the instantaneous concentrations measured relate to a specific hydrocarbon. Before sampling the source gas, the GC/FID system was calibrated with standard gas mixtures containing the hydrocarbons of interest. The calibration procedure established both calibration curves (response factors) and retention times for the hydrocarbons. The retention times were used to identify similar compounds in the source samples and the calibration curve was used to quantify the concentrations of the hydrocarbons.

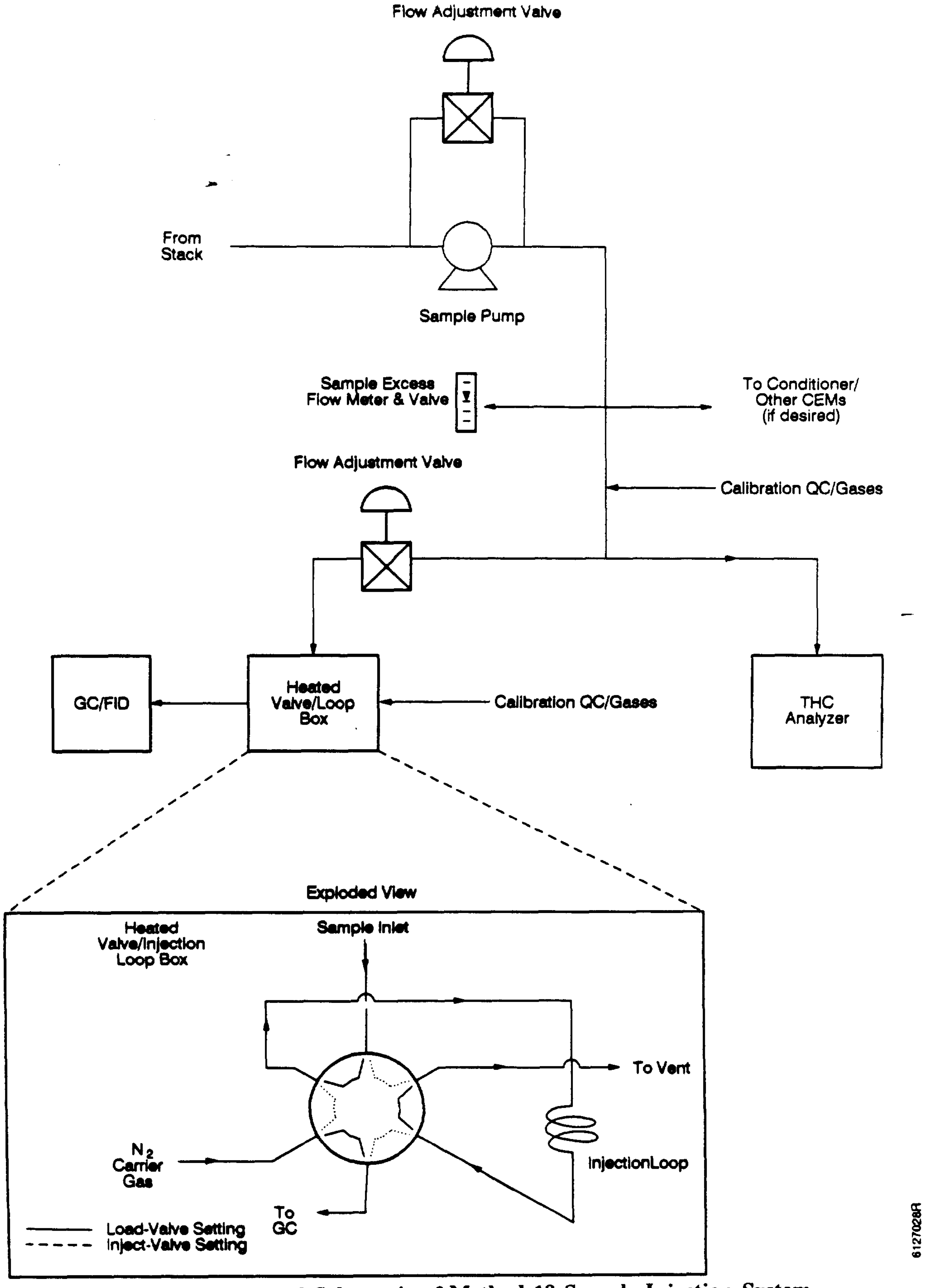



Figure 5-2. General Schematic of Method 18 Sample Injection System

To use Method 18 effectively, standards were prepared to include concentrations over the entire range expected. For ethanol, a suitable collection of standards for bakery emissions concentrations are 0, 200, 800, 2000 and 8000 ppmv ethanol. If stack concentrations are higher than the highest standard, then either higher standards need to be prepared or purchased or the sample needs to be diluted with a gas tight syringe. Levels of acetaldehyde were expected to be less than 100 ppmv, therefore, standards of 0, 20, and 80 ppmv acetaldehyde were used.

The response and retention times of the individual hydrocarbons were recorded on a strip chart recorder. An integrator was used to measure peak areas and compile retention times and area counts. The peaks on the integrator recording were identified from the established retention times for each hydrocarbon of interest and the associated concentrations determined using the calibration curve as a reference.

The column and conditions were as follows:

- Column - 80/120 Carbopack B AW/6.6% Carbowax 20M;
- Carrier Gas - $N_2$; and
- Temperature - 30°C (isothermal).

## 5.3 Determination of Volumetric Gas Flow Rates

Determination of gas flow rate incorporates the designation of traverse points by the U.S. EPA Method 1, the measurement of average duct gas velocity by Method 2, the measurement of gas molecular weight by Method 3, and the determination of gas moisture content by Method 4. The following sections discusses those procedures, and the U.S. EPA methods are included in the Appendices.

### 5.3.1 Method 2 Flow Rate by Pitot Tube

Methods 2 calls for flow determination by measuring the velocity pressure with either an S type pitot or a standard pitot. The following discussion presents the principals of a Method 2 flow determination.

The pitot tube measurements in the ducts were obtained by moving the pitot tube and thermocouple to each of the traverse points designated in Method 1. The velocity pressure and temperature readings at each of those points were recorded. A static duct pressure determined at a single sample point was usually sufficient. This was accomplished by first rotating the pitot tube perpendicular to the flow (as in the cyclonic flow check) until the pressure reading was zero. One leg of the tubing was then disconnected from the manometer and the static pressure was compared against ambient pressure. If the positive tube was left attached to the manometer and the reading was positive, then the overall static was positive. If the negative leg was left attached, and the reading was positive, then the static was negative. The average duct gas velocity and volumetric flow rate was then calculated as shown in Section 7.

### 5.3.2 Method 3 Molecular Weight Determination

The U.S. EPA Method 3 describes the procedures for obtaining the molecular weight of gas being sampled, which was necessary for the flow calculation. The composite molecular weight of the gas was determined from the relative amounts of individual constituents of the gas stream. In most cases, these principal constituents are oxygen, nitrogen, and carbon dioxide. Some stack gases, however, contain a significant amount of volatile organic or other compounds which can be included in the calculation.

The concentrations of $O_2$ and $CO_2$ were determined by a Fyrite analyzer. The molecular weights of such compounds were multiplied by their relative concentrations as shown in Section 7. The products were summed to give the dry molecular weight of the gas being emitted. The final wet molecular weight calculation required gas moisture content values.

### 5.3.3 Method 4 Stack Gas Moisture Content

Method 4 is the U.S. EPA method for establishing the moisture content of a stack gas. There are two recognized ways to obtain this moisture content. The first measures the amount of direct condensation of gas moisture in an impinger train. An alternate approximation technique used for stack gases with a temperature lower than 59°C (138°F) employs a wet-bulb/dry-bulb measurement.

Method 4 explains how a sample of the gas is drawn into impingers and condensed using an ice bath. Following the condensation impingers is a desiccant impinger (filled with silica gel) which removes the remaining non-condensed moisture from the gas stream. At the end of the test, the volume of the gas was measured with a dry gas meter and recorded; the impinger weights and silica gel weights were also measured and recorded. These data were used to calculate the percent moisture in the gas stream.

It is important to perform sampling train leak checks at the start and finish of sampling as well as before and after a port change. The method only calls for a post-test leak check but completion of a pre-test leak check indicates that the post-test check was successful as well. To leak check the assembled train, the nozzle end was capped off and a vacuum was pulled in the system of 1 inch Hg higher than the highest measured vacuum. When the system is evacuated, the volume of gas flowing through the system was timed for 60 seconds. The leak rate was required to be less than 4% of the sample rate or 0.02 cfm, whichever was less. After the leak rate was determined, the cap was slowly removed from the nozzle end until the vacuum drops off, and then the pump was turned off.

If the leak rate requirement is not met, the train can be systematically checked by first capping the train at the filter, at the first impinger, etc., until the leak is located and corrected. In the event that a final leak rate is found to be above the minimum acceptable rate upon removal from a port, the run may be rejected.

When the sampling train was ready for operation, the leak rates and sampling stop/start times were recorded on the sampling test log. Other events that occur during sampling, such as pitot cleaning, thermocouple malfunctions, or any other unusual occurrences, were recorded on the test log.

# 6.0 QUALITY ASSURANCE/QUALITY CONTROL

Specific Quality Assurance/Quality Control (QA/QC) procedures were completed during the test program to ensure the production of useful and valid data throughout the course of the project.

Section 6.1 presents a summary of the QA program and parameters attained. The definitions of the terminology used in conjunction with QA/QC information is presented in Section 6.2. Section 6.3 presents the QA parameters for Method 25A tests. Section 6.4 presents the QA parameters for the Method 18 analyses. Section 6.5 presents a discussion of the carbon equivalent correction factors as well as a comparison of the two methods.

## 6.1 QA Summary

The majority of reference method QA acceptance criteria were met during this test program. There were 10 days of testing using two THC monitoring systems (20 system days). Method 25A daily calibration drift did not exceed the criterion of $\pm 3\%$ on nineteen of the twenty system days. The Site 1, Day 1 Method 25A test data exhibited calibration drift of 3.2% and the drift was corrected by assuming linear drift between the initial and final calibration. Method 25A calibration error was determined extensively over the course of the test program. Over 150 calibration error checks were performed during the test program and the majority these checks met the Method 25A criterion of $\pm 5\%$ of the gas concentration. Method 25A sample bias checks, as well as $O_2$ leak checks, were also completed. The majority of these QA parameters met the acceptance limits.

Extensive Method 18 QA/QC procedures were also followed. Initial and final calibrations were performed. Calibrations for ethanol and acetaldehyde were all completed using from 3 to 5 calibration points. Multi-point calibrations were also performed on methane for low concentrations on all of the test days (< 900 ppmC). On five of the test days, a single point calibration was used on higher methane values. This was due to the detector "overranging". After checking the methane values determined from a single point calibration against a multi-point calibration curve, no substantial difference was found.

Sample bias checks were also extensively conducted on the Method 18 sampling system. The majority of checks verified acceptable non-biased sampling. However, some bias checks revealed sample bias caused by the loss of heat in the heated tubing adjacent to the GC. These data points were invalid and testing was not continued until the problem was remedied and a successful bias check had been completed.

## 6.2 Definitions

The overall QA/QC objective was to ensure precision, accuracy, completeness, comparability, and representativeness for each major measurement parameter called for in this test program. The terms used to define the QA/QC objectives are designed as follows:

- Data Quality: The characteristics of a product (measurement data) that bear on its ability to satisfy a given purpose. These characteristics are defined as follows:
    - Precision - A measure of mutual agreement among individual measurements of the same property, usually under prescribed similar conditions. Precision can be expressed in terms of the standard deviation (or the relative standard deviation).
    - Accuracy - The degree of agreement of a measurement (or an average of measurements of the same thing), X, with an accepted reference or true value, T, usually expressed as the difference between two values, X-T, or the difference as a percentage of the reference or true value, 100 (X-T)/T, and

sometimes expressed as a ratio, X/T. Accuracy is a measure of the bias in a system.

- Completeness - A measure of the amount of valid data obtained from a measurement system compared with the amount that was expected to be obtained under prescribed test conditions.

- Comparability - A measure of the confidence with which one data set can be compared with another.

- Representativeness - The degree to which data accurately and precisely represent a characteristic of a population, variations of a parameter at a sampling point, or an environmental condition.

- Quality Control: The overall system of activities whose purpose is to provide a quality product or service: for example, the routine application of procedures for obtaining prescribed standards of performance in the monitoring and measurement process.

- Quality Assurance: A system of activities whose purpose is to provide assurance that the overall quality control is being done effectively. The completion of QA procedures generates indicating parameters that are a measurement of the general quality of the data.

## 6.3 Method 25A Sampling and Analytical QA Parameters

### 6.3.1 Calibration Drift

The Method 25A Calibration drift values are given in Table 6-1.

### 6.3.2 Calibration Error

The calibration error checks are presented in Table 6-2. Table 6-3 presents on-site response THC response to ethanol QC challenges.

## Table 6-1

## Method 25A Calibration Drift EPA Bakeries (1992)

| Site | Day | System 1 Drift (% of Range) | | System 2 Drift (% of range) | |
|---|---|---|---|---|---|
| | | Zero Drift | Span Drift | Zero Drift | Span Drift |
| 1 | 1 | 0.04 | 3.22 | 0.03 | -0.69 |
| 1 | 2 | -0.01 | -0.01 | 0.16 | 0.39 |
| 2 | 1 | 0.09 | -0.13 | 0.04 | -0.2 |
| 2 | 2 | ND | -1.34 | ND | -2.57 |
| 3 | 1 | 0.07 | 0.02 | -0.14 | -0.61 |
| 3 | 2 | ND | -0.06 | ND | -0.2 |
| 4 | 1 | 0.17 | -0.08 | -0.01 | 0.16 |
| 4 | 2 | 0.08 | 0.04 | 0.04 | -0.47 |
| 4 | 3 | 0.03 | -0.13 | 0.04 | 0.14 |
| 4 | 4 | -0.09 | -0.05 | -0.01 | -0.24 |

Note: Full range of analyzer was 0-10,000 ppmC. All calibrations performed with methane.

ND = Not determined

Table 6-2. **Method 25A Calibration Error Results.**
**EPA Bakeries, Site 1 (1992)**

| Methane QC Gas Conc. (ppmC) | System 1 | | System 2 | |
|---|---|---|---|---|
| | THC Instrument Response (ppmC) | Calibration Error (%) | THC Instrument Response (ppmC) | Calibration Error (%) |
| SITE 1 - DAY 1 | | | | |
| 2000 | 2039 | 2.0 | 2124 | 6.2 |
| 803 | 805 | 0.2 | GC DOWN | NA |
| 80.2 | 81.9 | 2.1 | GC DOWN | NA |
| 199.1 | 198.4 | -0.4 | GC DOWN | NA |
| 0 | 4.3 | NA | 20.3 | NA |
| 0 | 2.7 | NA | 12.9 | NA |
| 2000 | 1982 | -0.9 | 1963 | -1.9 |
| 199.1 | 199.5 | 0.2 | 209.3 | 5.1 |
| 2000 | 1981 | -1.0 | 2089 | 4.5 |
| 803 | 804.2 | 0.1 | 853.5 | 6.3 |
| 199.1 | 204.3 | 2.6 | 224 | 12.5 |
| SITE 1 - DAY 2 | | | | |
| 2000 | 2014 | 0.7 | 1980 | -1.0 |
| 803 | 801 | -0.2 | 807 | 0.5 |
| 199.1 | 197 | -1.1 | 210 | 5.5 |
| 80.2 | 77.3 | -3.6 | 89.6 | 11.7 |
| 2000 | 2003 | 0.2 | 1937 | -3.2 |
| 0 | 3.7 | NA | 14 | NA |
| 2000 | 1990 | -0.5 | 1986 | -0.7 |
| 803 | 805 | 0.2 | 803 | 0.0 |
| 199.1 | 202 | 1.5 | 206 | 3.5 |

Table 6-2. Method 25A Calibration Error Results, (cont).
EPA Bakeries, Site 2 (1992)

| Methane QC Gas Conc. (ppmC) | System 1 THC Instrument Response (ppmC) | System 1 Calibration Error (%) | System 2 THC Instrument Response (ppmC) | System 2 Calibration Error (%) |
|---|---|---|---|---|
| SITE 2 – DAY 1 | | | | |
| 1490 | 1512.6 | 1.5 | 1514.2 | 1.6 |
| 798 | 812.9 | 1.9 | 814.2 | 2.0 |
| 199.1 | 213.6 | 7.3 | 217.6 | 9.3 |
| 3980 | 3979.6 | −0.0 | 4013.4 | 0.8 |
| 199.1 | 215.9 | 8.4 | 204.9 | 2.9 |
| 798 | 807.6 | 1.2 | 748.6 | −6.2 |
| 1490 | 1496.5 | 0.4 | 1436.1 | −3.6 |
| 3980 | 3931.3 | −1.2 | 3752.8 | −5.7 |
| 1490 | 1493.1 | 0.2 | 1515.3 | 1.7 |
| 80.2 | 90.9 | 13.3 | 92.5 | 15.3 |
| 80.2 | 89.7 | 11.8 | 87.5 | 9.1 |
| 80.2 | 89 | 11.0 | 88.5 | 10.3 |
| 0 | 11.1 | NA | 1.5 | NA |
| 80.2 | 90 | 12.2 | 86.8 | 8.2 |
| 798 | 809.7 | 1.5 | 772.4 | −3.2 |
| 199.1 | 212 | 6.5 | 217.9 | 9.4 |
| 1490 | 1505.1 | 1.0 | 1524.3 | 2.3 |
| 3980 | 3966.9 | −0.3 | 3953.9 | −0.7 |
| 0 | 9.2 | NA | 4.1 | NA |
| SITE 2 – DAY 2 | | | | |
| 199.1 | 209.3 | 5.1 | 206.3 | 3.6 |
| 798 | 782.6 | −1.9 | 801.2 | 0.4 |
| 1490 | 1467.5 | −1.5 | 1488.9 | −0.1 |
| 2000 | 2041.4 | 2.1 | 1936.4 | −3.2 |
| 2000 | 2099.5 | 5.0 | 1937.6 | −3.1 |
| 3980 | 3924 | −1.4 | 3836.6 | −3.6 |
| 80.2 | 97.7 | 21.8 | 86.8 | 8.2 |
| 199.1 | 159.4 | −19.9 | 102 | −48.8 |
| 798 | 81[illegible].2 | 1.9 | 754.8 | −5.4 |
| 1490 | 1481.1 | −0.6 | 1428.9 | −4.1 |
| 2000 | 2008 | 0.4 | 2031 | 1.6 |
| 3980 | 3846 | −3.4 | 3723 | −6.5 |

Table 6-2. Method 25A Calibration Error Results, (cont).
EPA Bakeries, Site 3 (1992)

| Methane QC Gas Conc. (ppmC) | System 1 THC Instrument Response (ppmC) | System 1 Calibration Error (%) | System 2 THC Instrument Response (ppmC) | System 2 Calibration Error (%) |
|---|---|---|---|---|
| SITE 3 - DAY 1 | | | | |
| 798 | 817 | 2.4 | 769.7 | -3.5 |
| 1490 | 1490 | 0.0 | 1390 | -6.7 |
| 0 | 1.9 | NA | 3.4 | NA |
| 1490 | 1490.3 | 0.0 | 1419 | -4.8 |
| 1490 | 1491.5 | 0.1 | 1429.2 | -4.1 |
| 2000 | 2030.7 | 1.5 | 2071.6 | 3.6 |
| 0 | 7.1 | NA | -14.1 | NA |
| SITE 3 - DAY 2 | | | | |
| 0 | 1.16 | NA | -1.5 | NA |
| 80.2 | 77.7 | -3.1 | 68.1 | -15.1 |
| 199.1 | 198 | -0.6 | 183 | -8.1 |
| 80.2 | 75.3 | -6.1 | 82.5 | 2.9 |
| 199.1 | 198.4 | -0.4 | 188.4 | -5.4 |
| 2000 | 2023 | 1.2 | 1909 | -4.6 |
| 2030 | 2011 | -0.9 | 1944 | -4.2 |
| 798 | 801.5 | 0.4 | 783.2 | -1.9 |
| 3960 | 3948 | -0.3 | 3849 | -2.8 |
| 80.2 | 77.2 | -3.7 | 81.5 | 1.6 |
| 199.1 | 197.5 | -0.8 | 189.7 | -4.7 |
| 798 | 798 | 0.0 | 789.4 | -1.1 |
| 2000 | 2016 | 0.8 | 1874 | -6.3 |
| 3960 | 3945 | -0.4 | 3847.2 | -2.8 |
| 0 | -1.97 | NA | 23.8 | NA |
| 1490 | 1484.5 | -0.4 | 1518.8 | 1.9 |

Table 6-2. Method 25A Calibration Error Results, (cont).
EPA Bakeries, Site 3 (1992)

| Methane QC Gas Conc. (ppmC) | System 1 THC Instrument Response (ppmC) | System 1 Calibration Error (%) | System 2 THC Instrument Response (ppmC) | System 2 Calibration Error (%) |
|---|---|---|---|---|
| SITE 4 - DAY 1 | | | | |
| 3960 | 3964 | 0.1 | 3966 | 0.2 |
| 80.2 | 72.9 | -9.1 | 64.4 | -19.7 |
| 199.1 | 180.7 | -9.2 | 179.9 | -9.6 |
| 80.2 | 60.1 | -25.1 | 60 | -25.2 |
| 0 | -21.8 | NA | -6.6 | NA |
| 798 | 810.2 | 1.5 | 801.9 | 0.5 |
| 1490 | 1507.4 | 1.2 | 1504.8 | 1.0 |
| 2000 | 2036 | 1.8 | 1939 | -3.1 |
| SITE 4 - DAY 2 | | | | |
| 3960 | 3954 | -0.2 | 3960.4 | 0.0 |
| 1490 | 1506.7 | 1.1 | 1506.1 | 1.1 |
| 0 | 2.1 | NA | 5.1 | NA |
| 80.2 | 84.5 | 5.4 | 75.2 | -6.2 |
| 199.1 | 207 | 4.0 | 192.6 | -3.3 |
| 798 | 804.9 | 0.9 | 804.8 | 0.9 |
| 1490 | 1499 | 0.6 | 1509 | 1.3 |
| 2000 | 2030.2 | 1.5 | 1943.2 | -2.8 |
| 3960 | 3938 | -0.6 | 3981 | 0.5 |
| 0 | 8.3 | NA | 4.05 | NA |
| 3960 | 3964 | 0.1 | 3912 | -1.2 |
| 200 | 201.6 | 0.8 | 192.2 | -3.9 |
| 200 | 205.1 | 2.5 | 194.3 | -2.8 |
| 80.2 | 83.8 | 4.5 | 82.9 | 3.4 |

Table 6-2. Method 25A Calibration Error Results, (cont).
EPA Bakeries, Site 3 (1992)

| Methane QC Gas Conc. (ppmC) | System 1 THC Instrument Response (ppmC) | System 1 Calibration Error (%) | System 2 THC Instrument Response (ppmC) | System 2 Calibration Error (%) |
|---|---|---|---|---|
| SITE 4 – DAY 3 | | | | |
| 3960 | 3963 | 0.1 | 3958 | −0.1 |
| 3960 | 3949 | −0.3 | 3873 | −2.2 |
| 0 | −0.7 | NA | −0.3 | NA |
| 3960 | 3954 | −0.2 | 3941 | −0.5 |
| 0 | 14.5 | NA | −0.2 | NA |
| 3960 | 3936.5 | −0.6 | 3930.6 | −0.7 |
| 0 | −0.96 | NA | −2.7 | NA |
| 3960 | 3967.2 | 0.2 | 3988.9 | 0.7 |
| 199.1 | 202 | 1.5 | 189.3 | −4.9 |
| 0 | 2.7 | NA | 3.8 | NA |
| 3960 | 3947 | −0.3 | 3974 | 0.4 |
| 3960 | 3964 | 0.1 | 3969 | 0.2 |
| 3960 | 3948 | −0.3 | 3990 | 0.8 |
| 798 | 796.5 | −0.2 | 808.9 | 1.4 |
| 1490 | 1486.6 | −0.2 | 1516.6 | 1.8 |
| 2030 | 2017.3 | −0.6 | 2019.1 | −0.5 |
| SITE 4 – DAY 4 | | | | |
| 199.1 | 202 | 1.5 | 187.7 | −5.7 |
| 798 | 803 | 0.6 | 799.7 | 0.2 |
| 2030 | 2034.8 | 0.2 | 2032.8 | 0.1 |
| 80.2 | 84.4 | 5.2 | 67.6 | −15.7 |
| 0 | 0.6 | NA | −10.8 | NA |
| 0 | −3.9 | NA | −4.6 | NA |
| 199.1 | 200.2 | 0.6 | 187.4 | −5.9 |
| 200 | 206.8 | 3.4 | 191.7 | −4.2 |
| 2030 | 2034.6 | 0.2 | 2047.5 | 0.9 |
| 0 | 5.3 | NA | −0.8 | NA |
| 199.1 | 199.6 | 0.3 | 193.7 | −2.7 |
| 80.2 | 766 | 855.1 | 76.3 | −4.9 |
| 0 | −2.4 | NA | −0.9 | NA |
| 80.2 | 77.8 | −3.0 | 75.5 | −5.9 |
| 199.1 | 196 | −1.6 | 183.8 | −7.7 |
| 798 | 793.2 | −0.6 | 774.6 | −2.9 |
| 80.2 | 83.5 | 4.1 | 75.1 | −6.4 |
| 199.1 | 202.6 | 1.8 | 187.1 | −6.0 |
| 798 | 796 | −0.3 | 794.9 | −0.4 |

**Table 6-3. On-Site Ethanol QC Challenges to the Method 25A THC Monitor EPA Bakeries (1992)**

| | | | System 1 | | System 2 | |
|---|---|---|---|---|---|---|
| Site | Test Day | Ethanol QC Gas Conc. (ppmC) | THC Instrument Response (ppmC) | Carbon Equivalent Correction Factor | THC Instrument Response (ppmC) | Carbon Equivalent Correction Factor |
| 1 | 1 | 200 | 267.5 | 1.34 | 238.4 | 1.19 |
| 1 | 1 | 200 | 275.5 | 1.38 | 280.5 | 1.40 |
| 1 | 2 | 10000 | 11862 | 1.19 | 13569 | 1.36 |
| 1 | 2 | 2000 | 2852 | 1.43 | 2948 | 1.47 |
| 1 | 2 | 2000 | 2421 | 1.21 | 2731 | 1.37 |
| 1 | 2 | 200 | 272 | 1.36 | 274 | 1.37 |
| | | | AVG | 1.32 | AVG | 1.36 |
| 2 | 1 | 200 | 305.9 | 1.53 | 295.5 | 1.48 |
| 2 | 1 | 200 | 310.6 | 1.55 | 259.9 | 1.30 |
| | | | AVG | 1.54 | AVG | 1.39 |
| 3 | 1 | 200 | 320 | 1.60 | 283 | 1.42 |
| 3 | 1 | 200 | 302.4 | 1.51 | 277 | 1.39 |
| 3 | 1 | 498 | 763.2 | 1.53 | 720 | 1.45 |
| 3 | 1 | 498 | 759.6 | 1.53 | 694.9 | 1.40 |
| 3 | 1 | 498 | 756.6 | 1.52 | 756.6 | 1.52 |
| 3 | 2 | 200 | 307 | 1.54 | 286.2 | 1.43 |
| 3 | 2 | 200 | 300.1 | 1.50 | 316 | 1.58 |
| 3 | 2 | 498 | 755.5 | 1.52 | 765.7 | 1.54 |
| | | | AVG | 1.53 | AVG | 1.46 |
| 4 | 1 | 200 | 313.5 | 1.57 | 299.1 | 1.50 |
| 4 | 3 | 200 | 309.1 | 1.55 | 307.6 | 1.54 |
| 4 | 3 | 200 | 313.4 | 1.57 | 306.3 | 1.53 |
| 4 | 3 | 200 | 300 | 1.50 | 302 | 1.51 |
| 4 | 4 | 200 | 304.6 | 1.52 | 307.9 | 1.54 |
| 4 | 4 | 200 | 312.8 | 1.56 | 304.1 | 1.52 |
| 4 | 4 | 200 | 297.8 | 1.49 | 298.9 | 1.49 |
| 4 | 4 | 200 | 296.8 | 1.48 | 304.4 | 1.52 |
| 4 | 4 | 200 | 308.4 | 1.54 | 297.2 | 1.49 |
| 4 | 4 | 200 | DOWN | | 300.2 | 1.50 |
| | | | AVG | 1.53 | AVG | 1.51 |

## 6.4 Method 18 QA Parameters

All calibration data from the Method 18 analyses is included in the Appendices. Both an initial and final calibration were performed on each day. Excessive drift was not found during any of the test days.

### 6.4.1 Sample Bias

Table 6-4 presents the Method 18 sample bias checks for Sites 2-4. The Site 1 bias check results are included in the appendices.

## Table 6-4. Method 18 Sample Bias Checks EPA Bakeries (1992)

| INJ. NO | Site/Day | Oven Location | Stack/ System Location | GAS CONC.(ppm) | GC ANALYTICAL RESULT | (%) DIFF | COMMENTS |
|---|---|---|---|---|---|---|---|
| 190 | 4/1 | | Rack | 80.2 METHANE | 97.4 | 21 | |
| 191 | 4/1 | | Table | 80.2 METHANE | 84.7 | 5.6 | |
| 192 | 4/1 | | Rack | 199.1 METHANE | 200.5 | 0.7 | |
| 193 | 4/1 | | Table | 199.1 METHANE | 201.2 | 1 | |
| 194 | 4/1 | | Rack | 80.2 METHANE | 80 | −0.2 | |
| 195 | 4/1 | | Rack | 80.2 METHANE | 78.1 | −2.6 | |
| 196 | 4/1 | | Rack | 80.2 METHANE | 76.1 | −5.1 | |
| 208 | 4/1 | | Rack | 798 METHANE | 804 | 0.8 | SINGLE PT RUN 284 (6/30/92) |
| 209 | 4/1 | | Table | 798 METHANE | 810 | 1.5 | SINGLE PT RUN 284 (6/30/92) |
| 210 | 4/1 | | Rack | 1490 METHANE | 1502 | 0.8 | SINGLE PT RUN 286 (6/30/92) |
| 211 | 4/1 | | Table | 1490 METHANE | 1514 | 1.6 | SINGLE PT RUN 286 (6/30/92) |
| 212 | 4/1 | | Rack | 2000 METHANE | 2040 | 2 | SINGLE PT RUN 287 6/30/92) |
| | 4/1 | | | | | | |
| 213 | 4/1 | | Table | 2000 METHANE | 2003 | 0.1 | SINGLE PT RUN 287 6/30/92) |
| 233 | 4/1 | | Rack | 199.1 METHANE | 196.3 | −1.4 | SINGLE PT RUN 288 |
| 234 | 4/1 | | Table | 199.1 METHANE | 194 | −2.6 | SINGLE PT RUN 288 |
| 235 | 4/1 | | Table | 200 ETHANOL | 207 | 3.5 | |
| 255 | 4/2 | | Rack | 3980 METHANE | 3898 | −1.6 | |
| 256 | 4/2 | | Table | 3980 METHANE | 4026 | 1.2 | |
| 257 | 4/2 | | Rack | 1490 METHANE | 1499 | 0.6 | |
| 258 | 4/2 | | Table | 1490 METHANE | 1540 | 3.4 | |
| 269 | 4/2 | | Table | 80.2 METHANE | 64.9 | −19 | RUN ANOTHER CHECK AT SEVERAL LEVELS |
| 270 | 4/2 | | Rack | 199.1 METHANE | 194.8 | −2.2 | |
| 271 | 4/2 | | Table | 199.1 METHANE | 197.3 | −0.9 | |
| 272 | 4/2 | | Table | 798 METHANE | 788 | −1.2 | SINGLE PT RUN #284 |
| 273 | 4/2 | | Rack | 798 METHANE | 797 | −0.1 | SINGLE PT RUN #284 |
| 274 | 4/2 | | Table | 1490 METHANE | 1515 | 1.7 | SINGLE PT RUN #286 |
| 275 | 4/2 | | Rack | 1490 METHANE | 1534 | 3 | SINGLE PT RUN #286 |
| 276 | 4/2 | | Table | 2000 METHANE | 2037 | 1.9 | SINGLE PT RUN # 287 |
| 277 | 4/2 | | Rack | 2000 METHANE | 2014 | 0.7 | SINGLE PT RUN # 287 |
| 298 | 4/2 | | Table | 200 ETHANOL | 212 | 6 | |

## Table 6-4. Method 18 Sample Bias Checks (Cont) EPA Bakeries (1992)

| INJ. NO | Site/Day | Oven Location | Stack/ System Location | GAS CONC.(ppm) | GC ANALYTICAL RESULT | (%) DIFF | COMMENTS |
|---|---|---|---|---|---|---|---|
| 27 | 2/1 | | Front | 1490 METHANE | 14.89 | 0.1 | S.P.,COMPARISON TO SYRINGE INJECTION RUN 28 |
| 41 | 2/1 | | | N2 | 485.121 | NA | SMALL BACKGROUND < 15ppm |
| 45 | 2/1 | Bun | Rear | 80.2 METHANE | 77 | −3.9 | USED USED FINAL METHANE CAL. |
| 46 | 2/1 | Bun | Rear | 80.2 METHANE | 78.8 | −1.6 | |
| 47 | 2/1 | Bun | Front [a] | 80.2 METHANE | 43.2 | −46 | PROBLEM/CHECK REPLACE |
| 48 | 2/1 | Bun | Front [a] | 80.2 METHANE | 56.3 | −30 | PROBLEM/CHECK, RERUN/REPLACE |
| 49 | 2/1 | Bun | Front [a] | 80.2 METHANE | 77 | −3.9 | BETTER/CHECK/REPLACE |
| 50 | 2/1 | Bun | Front [a] | 80.2 METHANE | 78.8 | −1.7 | BETTER/CHECK/REPLACE |
| 51 | 2/1 | | b | | 78.7 | −1.9 | REPLACEMENT |
| 52 | 2/1 | | b | | 78.8 | −1.7 | REPLACEMENT O.K. |
| 68 | 2/1 | | Rear | 80.2 METHANE | 70.6 | −12 | |
| 70 | 2/1 | | Front | 798 METHANE | 771 | −3.4 | SINGLE PT. RUN #26 |
| 71 | 2/1 | | Rear | 199.1 METHANE | 189 | −5 | |
| 72 | 2/1 | | Front | 199.1 METHANE | 188 | −5.5 | |
| 73 | 2/1 | | Front | 200 ETHANOL | 204 | 2 | |
| 74 | 2/1 | | Rear | 200 ETHANOL | 209 | 4.5 | |
| 122 | 2/2 | | Front | 80.2 METHANE | 77.8 | −2.9 | |
| 123 | 2/2 | | Front | 80.2 METHANE | 78.9 | −1.6 | |
| 116 | 2/2 | | Front | 2000 METHANE | 1896 | −5.2 | SINGLE PT, CAL. UAING RUN 152 |
| 130 | 2/2 | | Front | 798 METHANE | 777 | −2.6 | SINGLE PT, CAL. USING RUN 151 |
| 135 | 2/2 | | Front | 2000 METHANE | 2099 | −5 | SINGLE PT, RUN 152 |
| 136 | 2/2 | | Rear | 2000 METHANE | 2012 | −0.6 | SINGLE PT |
| 137 | 2/2 | | Front | 3980 METHANE | 3975 | −0.1 | |
| 131 | 2/2 | | Rear | 798 METHANE | 779 | −2.4 | SINGLE PT, RUN 151 |

a Nitta Moore Heat Trace check.
New 1/4 inch H.T. jumper to replace Nitta Moore.

**Table 6-4. Method 18 Sample Bias Checks (Cont)**
**EPA Bakeries (1992)**

| INJ. NO | Site/Day | Oven Location | Stack/ System Location | GAS CONC.(ppm) | GC ANALYTICAL RESULT | (%) DIFF | COMMENTS |
|---|---|---|---|---|---|---|---|
| 20 | 3/1 | Bun | Burner | 798 METHANE | 799 | 0.1 | SINGLE PT, RUN #19 |
| 21 | 3/1 | Bun | Oven | 798 METHANE | 776 | −2.8 | SINGLE PT, RUN #19 |
| 26 | 3/1 | | Burner | 200 ETHANOL | 203 | 1.5 | INITIAL CAL. |
| 42 | 3/1 | | Oven | 1490 METHANE | 1512 | 1.5 | SINGLE PT, RUN #45 |
| | 3/1 | | | | | | |
| 43 | 3/1 | | Burner | 1490 METHANE | 1508 | 1.2 | SINGLE PT, RUN #45 |
| 65 | 3/1 | | Burner | 498 ETHANOL | 482 | −3.2 | |
| 66 | 3/1 | | Oven | 498 ETHANOL | 486 | −2.4 | |
| 67 | 3/1 | | | 80.2 METHANE | 88.6 | 10.5 | |
| 68 | 3/1 | | | 80.2 METHANE | 86.7 | 8.1 | |
| 69 | 3/1 | | | 199.1 METHANE | 214 | 7.5 | |
| 70 | 3/1 | | | 199.1 METHANE | 213 | 7 | |
| 104 | 3/2 | | Burner | 80.2METHANE | 73.1 | −8.9 | |
| 105 | 3/2 | | Oven | 80.2 METHANE | 82.6 | 3 | |
| 106 | 3/2 | | Burner | 199.1 METHANE | 168 | −15.6 | RERUN |
| 107 | 3/2 | | Burner | 199.1 METHANE | 196 | −1.5 | O.K. |
| 108 | 3/2 | | Oven | 199.1 METHANE | 205 | 3 | |
| 124 | 3/2 | | Burner | 80.2 METHANE | 80.6 | 0.5 | |
| 125 | 3/2 | | Oven | 199.1 METHANE | 198 | −0.5 | |
| 126 | 3/2 | | Burner | 199.1 METHANE | 199 | 0 | |
| 147 | 3/2 | | Burner | 80.2 METHANE | 89.9 | 12.1 | PEAK WIDTH SUSPECT |
| 148 | 3/2 | | Oven | 80.2 METHANE | 76.3 | −4.9 | |
| 149 | 3/2 | | Burner | 199.1 METHANE | 201 | 1 | |
| 150 | 3/2 | | Oven | 199.1 METHANE | 201 | 1 | |
| 151 | 3/2 | | Burner | 798 METHANE | 800 | 0.2 | SINGLE PT RUN #158 |
| 153 | 3/2 | | Burner | 798 METHANE | 705 | −11.6 | RUN MIOMER LEVELS |
| 154 | 3/2 | | Burner | 2000 METHANE | 2027 | 1.3 | SINGLE PT RUN #159 |
| 155 | 3/2 | | Oven | 2000 METHANE | 2027 | 1.3 | SINGLE PT RUN #159 |
| 156 | 3/2 | | Burner | 3960 METHANE | 3978 | 0.4 | SINGLE PT RUN #160 |
| 157 | 3/2 | | Oven | 3960 METHANE | 3973 | 0.3 | SINGLE PT RUN #160 |
| 161 | 3/2 | | Burner | 200 ETHANOL | 204 | 2 | |
| 162 | 3/2 | | Oven | 498 ETHANOL | 511 | 2.6 | RERUN |
| 163 | 3/2 | | Burner | 82.5 ACETALDEHYDE | 81.6 | −1.1 | |
| 164 | 3/2 | | Oven | 82.5 ACETALDEHYDE | 79.3 | −3.9 | |

## Table 6-4. Method 18 Sample Bias Checks (Cont)
## EPA Bakeries (1992)

| INJ. NO | Site/Day | Oven Location | Stack/ System Location | GAS CONC.(ppm) | GC ANALYTICAL RESULT | (%) DIFF | COMMENTS |
|---|---|---|---|---|---|---|---|
| 391 | 4/4 | | Table | 200 ETHANOL | 152 | −24 | |
| 398 | 4/4 | | Table | 200 ETHANOL | 175 | −13 | |
| 419 | 4/4 | | Table | 200 ETHANOL | 181 | −9.5 | |
| 421 | 4/4 | | Rack | 80.2 METHANOL | 82.7 | 3.1 | |
| 422 | 4/4 | | Table | 80.2 METHANE | 82.3 | 2.6 | |
| 423 | 4/4 | | Rack | 199.1 METHANE | 199.3 | 0.1 | |

## 7.0 DATA REDUCTION PROCEDURES

The following section details the calculations used for the U.S. EPA Bakeries test program.

### 7.1 <u>Emission Calculations</u>

The objective of the U.S. EPA Bakeries test program was to determine emissions of Total VOC as well as emissions of two of the primary VOC constituents, namely ethanol and acetaldehyde. The emission calculations were done using several methods. All rates are in units of lbs/hr.

#### 7.1.1 VOC Emissions

Emission rates of VOC as ethanol were calculated by multiplying the average VOC as ethanol concentration by the stack gas flow rate as follows:

$$\overset{o}{VOC}_{ETOH} = [\overline{VOC_{ETOH}}] \times Q_a \times \left(\frac{P_s}{T_s \times R \times 10^6}\right)$$

Where:

| | | |
|---|---|---|
| $Q_a$ | = | Volumetric flow of stack gas (acf/hr) |
| $P_s$ | = | Absolute stack Pressure (in Hg) |
| $T_s$ | = | Stack Gas Temperature (°R) |
| R | = | Universal Gas Constant (21.85 in Hg-cf/lb-mole-°R) |

7.1.2 **Ethanol and Acetaldehyde Emissions**

Ethanol and acetaldehyde emissions were calculated by multiplying the average concentration by the stack gas flow rates. Average concentrations were determined as shown in Section 7.2.2 through 7.2.5. Emission rates were calculated as follows:

$$\overset{o}{\mathrm{ETOH}} = [\overline{\mathrm{ETOH}}] \times Q_s \times \left(\frac{P_s}{T_s \times R \times 10^6}\right)$$

$$\overset{o}{\mathrm{AA}} = [\overline{\mathrm{AA}}] \times Q_s \times \left(\frac{P_s}{T_s \times R \times 10^6}\right)$$

## 7.2 Average VOC Concentration Calculations

The calculations used for determining concentrations are given in the following section.

### 7.2.1 Average VOC as Ethanol Concentration

The average VOC as ethanol concentration (ppmV as ethanol) was calculated as follows:

$$[\overline{\mathrm{VOC}}]_{\mathrm{ETOH}} = \frac{[\overline{\mathrm{NMHC}}]}{1.42}$$

where:

1.42 = Ethanol Carbon Equivalent Correction Factor (i.e., 10 ppmv ethanol = 14 ppmC THC)

The average non-methane hydrocarbon concentration (ppmC/wet) was calculated as follows:

$$[\overline{NMHC}] = \left(1 - \left[\frac{\overline{CH_4}}{THC}\right]\right) \times [\overline{THC}]$$

The average $CH_4$ to THC ratios (dimensionless) were calculated as follows:

$$\left[\frac{\overline{CH_4}}{THC}\right] = \frac{\sum_{i=1}^{N}\left(\frac{[CH_4]_i}{[THC]_i}\right)}{N}$$

where:

N = Number of GC injections during test period

$[CH_4]_i$ = $CH_4$ concentration at the time of the GC injection (ppmC/wet)

$[THC]_i$ = THC concentration at the time of the GC injection (ppmC/wet)

The average THC concentration (ppmC/wet) was calculated as follows:

$$[\overline{THC}] = \frac{\sum_{i=1}^{n}[THC]_i}{n}$$

where:

n = Number of THC readings during the test period

### 7.2.2 Average Ethanol Concentration

The average ethanol concentration (ppmV/wet) using both the Method 18 ethanol and Method 25A THC results was calculated as follows:

$$[\overline{ETOH}]_{THC} = \left[\overline{\frac{ETOH}{THC}}\right] \times [\overline{THC}]$$

The average ethanol-to-THC ratios (ppmV/ppmC) were calculated as follows:

$$\left[\overline{\frac{ETOH}{THC}}\right] = \frac{\sum_{i=1}^{N}\left(\frac{[ETOH]_i}{[THC]_i}\right)}{N}$$

where:

$[ETOH]_i$ = Ethanol Concentration from GC analysis (ppmv/wet)

N = Number of GC injections

### 7.2.3 Average Ethanol Concentration By GC Only

The average ethanol concentrations (ppmV/wet) determined from the Method 18 analyses were calculated as follows:

$$[\overline{ETOH}]_{GC} = \frac{\sum_{i=1}^{N} [ETOH]_i}{N}$$

### 7.2.4 Acetaldehyde Concentration By GC and THC

The average acetaldehyde concentration (ppmV/wet) determined using both the Method 18 acetaldehyde and Method 25A THC results was calculated as follows:

$$[\overline{AA}]_{THC} = \left[\frac{\overline{AA}}{THC}\right] \times \overline{[THC]}$$

The average acetaldehyde to THC ratios (ppmV/ppmC) were calculated as follows:

$$\left[\frac{\overline{AA}}{THC}\right] = \frac{\sum_{i=1}^{N} \left(\frac{[AA]_i}{[THC]_i}\right)}{N}$$

### 7.2.5 Average Acetaldehyde Concentration By GC Only

The average acetaldehyde concentration (ppmV/wet) determined from the Method 18 analyses was calculated as follows:

$$\overline{[AA]}_{GC} = \frac{\sum_{i=1}^{N} [AA]_i}{N}$$

### 7.2.6 Comparison Of GC And THC Results

The comparison of the corrected sum of ethanol, acetaldehyde, and methane Method 18 concentrations to the THC concentration was determined as follows:

$$\left(\frac{\overline{GC}}{THC}\right) = \frac{\sum_{i=1}^{N} \frac{GC_i}{THC_i}}{N} \times 100$$

where:

$THC_i$ = THC concentrations determined from the Method 25A monitor at the same time as the GC injection (ppmC).

$$GC_i = \left(\frac{[ETOH]_i}{1.42} + \frac{[AA]_i}{1.23} + [CH_4]_i\right)$$

where:

$[ETOH]_i$ = Ethanol concentration determined from a single GC analysis (ppmv/wet)

$[AA]_i$ = Acetaldehyde concentration determined from a single GC analysis (ppmv/wet)

$[CH_4]_i$ = Methane concentration determined from a single GC analysis (ppmv/wet)

## 7.3 Method 25A Calculations

This section briefly summarizes calculations used for the Method 25A analysis. The computer controlled data acquisition system scanned each channel approximately 1800 times per minute and stored periodic averages on disk and hard copy. The averaging computer period varied throughout the test program ranging from 10 seconds to 1 minute. Pre-test calibration, post-test calibration drift checks, and calibration error checks were saved on disk. Instrument drift was evaluated after the post-test calibration with an acceptable criterion of $\pm 3$. The computer DAS reported THC concentrations calculated as follows:

$$C_{sample} = RSP_{sample} \times RFAC + C_{rsp=0}$$

where:

$C_{sample}$ = Observed concentration of sample gas (ppmv or %v, dry)

$RSP_{sample}$ = Observed instrument sample voltage response (volts)

$C_{rsp=0}$ = Calculated concentration corresponding to an instrument response of 0 volts ( Y intercept)

RFAC = Calibration response factor (slope)

$$RFAC = \frac{(SPAN - ZERO)}{(RSP_{span} - RSP_{zero})}$$

where:

SPAN = Concentration of high (span) calibration gas (ppmv)

ZERO = Concentration of low (zero) calibration gas (ppmv)

$RSP_{span}$ = Observed instrument voltage response to the span calibration gas (volts)

$RSP_{zero}$ = Observed instrument voltage response to the zero calibration gas (volts)

Span and zero calibration drifts are calculated as follows:

$$\text{Drift} = \frac{(C_F - C_I)}{FULL\ RANGE} \times 100$$

where:

Drift = Span calibration drift (% of Scale)

Full Range = Full Range of the Instrument (i.e. 0-500 ppmv)

$C_F$ = Observed concentration predicted by the final calibration - (ppmv)

$C_I$ = Observed concentration predicted by the initial calibration (ppmv)

Average concentrations of THC were calculated for the test duration of interest.

### 7.3.1 Method 18 Data Reduction

The concentration of ethanol, acetaldehyde, methane and ethane in the stack gas was determined directly as parts per million by volume (ppmv) on a wet basis. An electronic integrator would convert the GC electrical peak signals to a peak area value. A linear regression was completed using calibration gas concentration versus peak area response. Sample responses (peak areas) were then used in the calibration regression to determine the respective concentration.

### 7.3.2 Manual Gas Sampling Methods

Calculations for determining flow rate, moisture content, and gas molecular weight are described in Figures 7-1 and 7-2.

# RADIAN SOURCE TEST
# EPA METHODS
# DEFINITION OF TERMS

| Parameter | Units | Definition |
|---|---|---|
| $t$ | min. | Total Sampling Time |
| $D_n$ | in. | Sampling Nozzle Diameter |
| $V_m$ | $ft^3$ | Absolute Volume of Gas Sample Measured by DGM (uncorrected) |
| $M_w$ | g | Total Mass of Water Collected |
| $M_p$ | g | Total Mass of Particulate Collected |
| $P_m$ | in. Hg | Absolute Meter Pressure |
| $\Delta H$ | in. $H_2O$ | Average Static Pressure of DGM |
| $T_m$ | °F | Average Temperature of DGM |
| $P_{bar}$ | in. Hg | Barometric Pressure |
| $\%CO_2$ | % vol-dry | Carbon Dioxide Content of Flue Gas |
| $\%O_2$ | % vol-dry | Oxygen Content of Flue Gas |
| $\%N_2$ | % vol-dry | Nitrogen Content of Flue Gas (by difference) |
| $A_s$ | $ft^3$ | Cross-sectional Area of Stack (Duct) |
| $T_s$ | °F | Temperature of Stack |
| $P_s$ | in. Hg | Absolute Stack Gas Pressure |
| Static | in. $H_2O$ | Stack Static Pressure |
| $V_{m(std)}$ | dscf | Volume of Gas Sampled at Standard, Dry Conditions[a] |
| $V_w$ | scf | Volume of Water Vapor in Gas Sample, Std |

**Figure 7-1. Definition of Terms for Method 1-4 Calculations**

## RADIAN SOURCE TEST
## EPA METHODS
## DEFINITION OF TERMS
## (Continued)

| Parameter | Units | Definition |
|---|---|---|
| $B_{ws}$ | | Fraction of Water Vapor in Stack Gas |
| $M_d$ | | Fraction by Volume of Dry Gas in Gas Sample (1-$B_{ws}$) |
| $MW_d$ | lb/lb mole | Molecular Weight of Dry Stack Gas, Dry Basis |
| $MW_s$ | lb/lb mole | Molecular Weight of Stack Gas, Wet Basis |
| $C_p$ | | Pitot Coefficient (typically 0.84) |
| $C_s$ | grains/ft$^3$ | Concentration of Particulate in Flue Gas |
| E | lb/hr | Emission Rate of Particulate |
| $Q_{sd}$ | dry, ft$^3$/min. | Average Stack Dry Volumetric Flow Rate |
| $V_s$ | ft/sec | Velocity of Stack Gas |
| Y | | Test Meter Calibration Coefficient |
| $\Delta P$ | in. $H_2O$ | Stack Gas Velocity Pressure |

**Figure 7-1. Continued**

# RADIAN SOURCE TEST
# EPA METHOD 2 - 5
# SAMPLE CALCULATION

1) Volume of dry gas sampled at standard conditions (68°F, 29.92 in. Hg):

$$V_{m(std)} = \frac{Y \times V_m \times 528 \times [P_{bar} + (\Delta H/13.6)]}{29.92 \times (T_m + 460)}$$

2) Volume of water vapor at standard conditions:

$$V_w = \frac{0.04715\,ft^3}{g \times M_w}$$

3) Fractional moisutre content in stack gas:

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

4) Mole fraction of dry stack gas:

$$M_d = 1 - B_{ws}$$

5) Absolute stack gas pressure:

$$P_s = P_{bar} + \frac{Static}{13.6}$$

**Figure 7-2. Example of Method 1-4 Calculations**

6) Average molecular weight of dry stack gas:

$$\text{Dry}: MW_d = (0.32 \times \%O_2) + (0.44 \times \%CO_2) + [0.28 \times (100 - (\%O_2 + \%CO_2))]$$

7) Stack gas velocity at stack conditions:

$$V_s = 85.49 \times 0.84 \times \sqrt{\Delta P} \times \sqrt{\frac{T_s + 460}{P_s \times MW_s}}$$

8) Average stack gas volumetric flow at dry, standard conditions:

$$Q_{sd} = V_s \times A_s \times M_d \times \frac{528 \times P_m}{T_s \times 29.92} \times \frac{60\,sec}{min}$$

**Figure 7-2. Continued**

# APPENDIX B

## Site 2

| | |
|---|---|
| **B.1** | **Method 25A (THC) Log** |
| **B.2** | **Method 25A (THC) Data** |
| **B.3** | **Method 18 Analytical Summary** |
| **B.4** | **Method 18 Chromatogram** |
| **B.5** | **Field Flow Measurements Data Sheets** |
| **B.6** | **Field $H_2O$ Data Sheets** |
| **B.7** | **Flow Calculations** |
| **B.8** | **Test Log** |
| **B.9** | **Method 25A SCR Copies** |

Method B.1

Method 25A (THC) Log

**RADIAN CORPORATION**

# CALCULATION SHEET

CALC. NO. ______

SIGNATURE ______ DATE ______ CHECKED ______ DATE ______

PROJECT EPA EMB Bakeware - Norristown JOB NO. ______

SUBJECT THC Log SHEET ______ OF ______ SHEETS

SITE 2

TEST DATE 6/17 - DAY 1

| TIME | EVENT | | | RESULT |
|---|---|---|---|---|
| 10:14 | CAL | | | 3980 ppm $C_1$ : 0 |
| 1020 | 1490 QC | (Tank) | T | 1512.6 |
| | | (Rack) | R | 1514.2 |
| 1023 | 798 QC | | T | 812.9 |
| | | | R | 814.2 |
| 1027 | 199 QC | | T | 213.6 |
| | | | R | 217.6 |
| | 3980 QC | | T | 3979.6 |
| | | | R | 4013.4 |
| 1037.50 | RECAL (0617B.CAL) | | | |
| 1056 | RECAL (0617C.CAL) | | | |
| 1132:49 - 1259:49 | SAMPLE | T = FRONT<br>R = Rear | | |
| 1217 | $N_2$ up the Line | | | |
| 1309 | 199.1 QC | | T | 215.9 |
| | | | R | 204.9 |
| 1317 | 798 QC | | T | 807.6 |
| | | | R | 748.6 |
| 1320 | 1490 QC | | T | 1496.5 |
| | | | R | 1436.1 |
| 1324 | 3980 QC<br>(RE-CAL ON R) | | T | 3931.3 |
| | | | R | 3752.8 |
| 1345:54 - 1422 | SAMPLE - | T = Rear<br>R = Front | | |

4-81-3361

**RADIAN CORPORATION**

# CALCULATION SHEET

CALC. NO. ______

SIGNATURE ______ DATE ______ CHECKED ______ DATE ______

PROJECT ______ JOB NO. ______

SUBJECT ______ SHEET ______ OF ______ SHEETS

SITE 2 — DAY 1 (cont) (6/17/92)

| TIME | EVENT | RESULT |
|---|---|---|
| 1430 | 1490 QC | T : 1493.1<br>R : 1515.3 |
| 1432 | 80.2 QC | T : 90.9 n=4<br>R : 92.5 n=3 |
| 14~~3~~0 | 80.2 QC | T : 89.7 n=11<br>R : 87.5 n=11 |
| | | TWA T=90.0 R=88.6 |
| 1451-1513 | 80.2 QC (trying to iron out GC problems) | T = 89.0 n=14<br>R = 88.5 n=13 |
| 1517-1615 | Sample | Rear = T<br>Front = R |
| 1615 | 0 GAS QC ⇒ SCR only ⇒ OK | |
| 1622-1626 | LINE 1 COMFORT HOOD on T = 1113 ppmC | |
| 1640 | LINE 2 COMFORT HOOD on T = 121.1 ppmC | |
| 1647-1747 | LINE 2 Bread Sample; combustion stack | Front: T = 669.4<br>Rear = R = 48.4 |
| 1753-1755 | 0 GAS QC | T = 11.1<br>R = 1.5 |
| 1756-1759 | 80.2 QC | T : 90.0<br>R : 86.8 |
| 18:00-1804 | 798 QC | T : 809.7<br>R : 772.4 |

4-81-3361

**RADIAN CORPORATION**

CALCULATION SHEET

CALC. NO. ______

SIGNATURE ______ DATE ______ CHECKED ______ DATE ______

PROJECT ______ JOB NO. ______

SUBJECT ______ SHEET ______ OF ______ SHEETS

SITE 2 - DAY 1 (cont) 7/17/92

| TIME | EVENT | RESULT |
|---|---|---|
| 1805 - 1809 | 199.1 QC | T: 212.0<br>R: 217.9 |
| 1811 - 1814 | 200 Ethanol | T: 305.9<br>R 295.5 |
| 1815 - 1818 | 1490 QC | T: 1505.1<br>R: 1524.3 |
| 1819 - 1820 | 3980 QC | T: 3966.9<br>R: 3953.9 |
| 1822 - 1824 | 200 Ethanol | T: 310.6<br>R: 295.9 |
| 1834 - 1835 | 0 Gas QC | T 9.2<br>R: 8.1 |
| 1836 - 1844 | LINE 1 Comfort 1600<br>LINE 2 Comfort 1600 | 1072.3<br>149.2 |

4-81-3361

**RADIAN CORPORATION**

# CALCULATION SHEET

CALC. NO. ______

SIGNATURE ______ DATE ______ CHECKED ______ DATE ______

PROJECT ______ JOB NO. ______

SUBJECT ______ SHEET ______ OF ______ SHEETS

SITE 2 DAY 2 (6/18/92)

| TIME | EVENT | RESULT |
|---|---|---|
| 14:56 | CAL | 0 & 2000ppm |
| 1501 - 1503 | 199.1 QC | T = 209.3<br>R = 206.3 |
| 1506 - 1507 | 798 QC | T = 782.6<br>R = 801.2 |
| 1509 - 1510 | 1490 QC | T = 1467.5<br>R = 1488.9 |
| 1522 - 1527 | LINE 3 C.H. = R | Rear: T = 2781.6 |
| 1529 3980 QC | T = 3724<br>R = 3836.6 | CH = R = 626.4 n = 10 |
| 1535 - ~~1615~~ ~~1623~~ 1646 | LINE 3 - Rear | Rear = ~~R~~ = |
| 1535 - 1549 | LINE 3 CH | C.H = R = 707.4 n = 29 |
| 1552 - 1609 | LINE 3 FRONT | F = R = |
| 1609 - 1642 | LINE 3 FRONT trouble shoot (apparent noise) (misc QC's) | |
| 1644 - 1647 | 2000 QC | T = 2041.4<br>Front = R = 1936.4 |
| 1648 - 1652 | LINE 3 FRONT | |
| 1654 - 1703 | LINE 3 FRONT | |
| 1648 - 1703 | LINE 3 Rear | |
| 1700~~4~~ - 1707 | 2000 QC | T = 2099.5<br>R 1937.6 |

4-81-3361

**RADIAN CORPORATION**

# CALCULATION SHEET

CALC. NO. ______

SIGNATURE ______ DATE ______ CHECKED ______ DATE ______

PROJECT ______ JOB NO. ______

SUBJECT ______ SHEET ______ OF ______ SHEETS

SITE 2 - DAY 2 (cont)

| TIME | EVENT | RESULT |
|---|---|---|
| 1709-1717 | LINE 3 FRONT | Front Rack = |
| 1709-1737 | LINE 3 Rear | R = Table = |
| 1722-1737 | LINE 3 FRONT | F = Rack - |
| 1735 - 1808 | LINE CH | ? |
| 1750-1815 | LINE 3 Rear | R - Table : |
| 1818-1822 | 80.2 QC | T 97.7<br>R : 86.8 (H) |
| 1823-1911 | LINE 3 | FRONT = R :<br>Rear = T : |
| 1915-1917 | 199.1 QC | T : 159.4 ?<br>R = 102 ? |
| 1919-1921 | 798 QC | T : 813.2<br>R , 754.8 (L) |
| 1927-1930 | 1490 QC | T 1481<br>R = 1428.9 (L) |
| 1934-1935 | 2000 QC | T : 2008.5<br>R : 2031.9 (H) |
| 1940-1942 | 3980 QC | T : 3846.4 (L)<br>R : 3723.7 (L) |
| -0.79 | ⇐ SPAN DRIFT<br>Calc @ 3980 | → -1.17 |

4-81-3361

# Appendix B.2

# Method 25A (THC) Data

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 14:58:46 | 1943.976 | 1644.847 | | | | : | | | |
| 14:59:46 | 271.2307 | 209.8175 | | ETH/THC | CH4/THC | AA/THC : | | | |
| 15:00:46 | 223.4724 | 210.7397 | | | | : | | | |
| 15:01:01 | 211.7186 | 206.8361 | | | | : | | | |
| 15:01:16 | 211.0331 | 208.2457 | | | | : | | | |
| 15:01:31 | 210.7684 | 207.0617 | | | | : | | | |
| 15:01:46 | 208.7186 | 207.0169 | | | | : | | | |
| 15:02:01 | 208.3118 | 205.9635 | | | | : | | | |
| 15:02:16 | 207.8076 | 206.0426 | | | | : | | | |
| 15:02:31 | 208.8938 | 204.1604 | | | | : | | | |
| 15:02:46 | 207.4395 | 204.7147 | | | | : | | | |
| 15:03:01 | 205.9644 | 144.3826 | | | | : | | | |
| 15:03:16 | 83.55556 | 15.86107 | | | | : | ETH/THC | CH4/THC | AA/THC |
| 15:03:31 | 44.56439 | 590.0475 | | | | : | | | |
| 15:03:46 | 667.9737 | 708.1881 | | | | : | | | |
| 15:04:01 | 768.6145 | 726.632 | | | | : | | | |
| 15:04:16 | 777.8843 | 732.4269 | | | | : | | | |
| 15:04:31 | 780.0513 | 720.4459 | | | | : | | | |
| 15:04:46 | 781.2154 | 729.6679 | | | | : | | | |
| 15:05:01 | 780.9995 | 771.1944 | | | | : | | | |
| 15:05:16 | 781.7652 | 800.8113 | | | | : | | | |
| 15:05:31 | 781.3041 | 803.6083 | | | | : | | | |
| 15:05:46 | 781.1827 | 806.4679 | | | | : | | | |
| 15:05:56 | 783.1445 | 802.5641 | | | | : | | | |
| 15:06:06 | 782.7897 | 798.1838 | | | | : | | | |
| 15:06:16 | 782.7065 | 793.6049 | | | | : | | | |
| 15:06:26 | 783.2715 | 808.9261 | | | | : | | | |
| 15:06:36 | 783.4602 | 776.2615 | | | | : | | | |
| 15:06:46 | 782.0455 | 800.3516 | | | | : | | | |
| 15:06:56 | 780.8074 | 655.7911 | | | | : | | | |
| 15:07:06 | 606.0389 | 175.7626 | | | | : | | | |
| 15:07:16 | 112.7545 | 1310.974 | | | | : | | | |
| 15:07:26 | 786.3737 | 1387.016 | | | | : | | | |

06-18-1992 SITE 2 DAY 2

| | THC 2 | THC 2 | | FRONT | | | | REAR | | |
|---|---|---|---|---|---|---|---|---|---|---|
| TIME | (table) | (rack) | | ETH-OH | CH4 | ACETALDEHYDE: | | ETH-OH | CH4 | ACETALDEHYDE |
| | (ppmC) | (ppmC) | Comments | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | : | (ppmV/wet | (ppmV/wet | (ppmV/wet) |
| 15:07:36 | 1059.945 | 1416.867 | | | | | : | | | |
| 15:07:46 | 1129.225 | 1496.055 | | | | | : | | | |
| 15:07:56 | 1402.788 | 1462.717 | | | | | : | | | |
| 15:08:06 | 1444.08 | 1488.8 | | | | | : | | | |
| 15:08:16 | 1449.553 | 1473.248 | | | | | : | | | |
| 15:08:26 | 1448.807 | 1491.162 | | | | | : | | | |
| 15:08:36 | 1451.758 | 1472.384 | | | | | : | | | |
| 15:08:46 | 1467.175 | 1464.984 | | | | | : | | | |
| 15:08:58 | 1466.342 | 1482.532 | | | | | : | | | |
| 15:09:06 | 1468.398 | 1523.317 | | | | | : | | | |
| 15:09:16 | 1468.642 | 1476.158 | | | | | : | | | |
| 15:09:26 | 1467.896 | 1480.766 | | | | | : | | | |
| 15:09:36 | 1468.293 | 1468.851 | | | | | : | | | |
| 15:09:46 | 1466.438 | 1509.188 | | | | | : | | | |
| 15:09:56 | 1466.63 | 1481.202 | | | | | : | | | |
| 15:10:06 | 1469.702 | 1467.766 | | | | | : | | | |
| 15:10:16 | 1466.674 | 1460.997 | | | | | : | | | |
| 15:10:26 | 1385.767 | 1792.144 | | | | | : | | | |
| 15:10:36 | 1453.781 | 2112.945 | | | | | : | | | |
| 15:10:46 | 1957.926 | 2129.275 | | | | | : | | | |
| 15:10:56 | 1991.585 | 2136.169 | | | | | : | | | |
| 15:11:06 | 2006.345 | 2117.886 | | | | | : | | | |
| 15:11:16 | 2007.011 | 2126.896 | | | | | : | | | |
| 15:11:26 | 2013.084 | 2081.63 | | | | | : | | | |
| 15:11:36 | 2019.19 | 2028.353 | | | | | : | | | |
| 15:11:46 | 2024.628 | 2034.119 | | | | | : | | | |
| 15:11:56 | 2019.65 | 2046.688 | | | | | : | | | |
| 15:12:06 | 2023.042 | 1948.711 | | | | | : | | | |
| 15:12:16 | 2025.332 | 1967.364 | | | | | : | | | |
| 15:12:26 | 2026.607 | 1971.07 | | | | | : | | | |
| 15:12:36 | 2028.15 | 1980.634 | | | | | : | | | |
| 15:12:46 | 2025.949 | 1975.602 | | | | | : | | | |
| 15:12:56 | 2026.069 | 1973.941 | | | | | : | | | |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) | : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 15:13:06 | 2026.483 | 1976.645 | | | | | : | | | |
| 15:13:16 | 2028.145 | 1968.135 | | | | | : | | | |
| 15:13:26 | 2024.93 | 1980.453 | | | | | : | | | |
| 15:13:36 | 2026.39 | 1976.434 | | | | | : | | | |
| 15:13:46 | 2027.102 | 1970.321 | | | | | : | | | |
| 15:14:57 | 2024.755 | 1974.269 | | | | | : | | | |
| 15:14:57 | 2024.755 | 1974.269 | | | | | : | | | |
| 15:14:57 | 2024.755 | 1974.269 | | | | | : | | | |
| 15:14:58 | 2024.755 | 1974.269 | | | | | : | | | |
| 15:14:58 | 2024.755 | 1974.269 | | | | | : | | | |
| 15:14:58 | 2024.755 | 1974.269 | | | | | : | | | |
| 15:14:59 | 2024.755 | 1974.269 | | | | | : | | | |
| 15:15:06 | 1476.579 | 1357.619 | | | | | : | | | |
| 15:15:16 | 1473.048 | 1342.564 | | | | | : | | | |
| 15:15:26 | 1470.725 | 1388.994 | | | | | : | | | |
| 15:15:36 | 1469.957 | 1362.338 | | | | | : | | | |
| 15:15:46 | 1473.474 | 1337.353 | | | | | : | | | |
| 15:15:56 | 1466.22 | 1351.184 | | | | | : | | | |
| 15:16:06 | 1467.493 | 1440.789 | | | | | : | | | |
| 15:16:16 | 1469.328 | 1450.26 | | | | | : | | | |
| 15:16:26 | 1467.912 | 1439.354 | | | | | : | | | |
| 15:16:36 | 1470.163 | 1463.688 | | | | | : | | | |
| 15:16:46 | 1467.416 | 1478.292 | | | | | : | | | |
| 15:16:56 | 1468.274 | 1486.526 | | | | | : | | | |
| 15:17:26 | 1469.922 | 1450.883 | | | | | : | | | |
| 15:17:56 | 1478.771 | 1731.643 | | | | | : | | | |
| 15:18:26 | 1951.486 | 2138.999 | | | | | : | | | |
| 15:18:56 | 2013.933 | 2142.138 | | | | | : | | | |
| 15:19:26 | 2020.438 | 2147.646 | | | | | : | | | |
| 15:19:56 | 2022.512 | 2077.066 | | | | | : | | | |
| 15:20:29 | 2026.032 | 2035.543 | | | | | : | | | |
| 15:20:29 | 2026.032 | 2035.543 | | | | | : | | | |
| 15:20:29 | 2026.032 | 2035.543 | | | | | : | | | |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) | : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 15:20:36 | 2024.974 | 2027.843 | | | | | | : | | | |
| 15:20:46 | 2025.202 | 2039.197 | | | | | | : | | | |
| 15:20:56 | 2025.846 | 2029.526 | | | | | | : | | | |
| 15:21:06 | 2025.983 | 2036.491 | | | | | | : | | | |
| 15:21:16 | 2025.898 | 2041.826 | | | | | | : | | | |
| 15:21:57 | 2021.512 | 1500.184 | | | | | | : | | | |
| | | | | | | | | : | | | |
| | REAR | | COMFORT | | | | | : | | | |
| | | | HOOD | | | | | : | | | |
| | | | | SAMPLE | | | | : | | | |
| 15:22:16 | 2771.563 | | 529.4875 | | | | | : | | | |
| 15:22:46 | 2779.288 | | 627.1813 | | | | | : | | | |
| 15:23:16 | 2744.91 | | 639.5832 | | | | | : | | | |
| 15:23:46 | 2729.335 | | 618.4581 | | | | | : | | | |
| 15:24:16 | 2791.507 | | 623.8492 | | | | | : | | | |
| 15:24:46 | 2781.733 | | 703.6897 | | | | | : | | | |
| 15:25:16 | 2742.532 | | 631.322 | | | | | : | | | |
| 15:25:46 | 2762.241 | | 636.342 | | | | | : | | | |
| 15:26:16 | 2849.168 | | 651.4839 | | | | | : | | | |
| 15:26:46 | 2864.143 | | 602.6091 | | | | | : | | | |
| AVG | 2781.642 | | 626.4006 | 10 | | | | : | | | |
| | | | | END | | | | : | | | |
| | | | | | | | | : | | | |
| | | | | | | | | : | | | |
| 15:27:17 | | | | | | | | 991.5475 | | | |
| 15:27:46 | | | | | | | | 3592.08 | | | |
| 15:28:16 | | | | | | | | 3597.806 | | | |
| 15:28:46 | | | | | | | | 3618.306 | | | |
| 15:29:16 | | | | | | | | 3668.472 | | | |
| 15:29:46 | | | | | | | | 3836.605 | | | |
| 15:30:16 | | | | | | | | 3029.141 | | | |
| 15:30:46 | | | | | | | | 2186.53 | | | |
| 15:31:16 | | | | | | | | 2176.065 | | | |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) | : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 15:31:46 | | | | | | | 2174.158 | | | |
| 15:32:16 | | | | | | | 2128.842 | | | |
| 15:32:46 | | | | | | | 2064.535 | | | |
| 15:33:16 | | | | | | | 187.7636 | | | |
| 15:33:46 | | | | | | | 15.06306 | | | |
| 15:34:16 | | | | | | | 531.7414 | | | |
| | | | | | | | : | | | |
| | | | | | | | : | | | |
| | | | | REAR | | | : | | | |
| | | | | | | | : | | | |
| | | | SAMPLE | | | | : | | | |
| 15:34:57 | 2816.961 | 579.7957 | | | | | : | | | |
| 15:35:16 | 2746.707 | 579.4509 | | | | | : | | | |
| 15:35:46 | 2723.444 | 677.3429 | | | | | : | | | |
| 15:36:16 | 2814.428 | 634.7269 | | | | | : | | | |
| 15:36:46 | 2855.104 | 685.1783 | | | | | : | | | |
| 15:37:16 | 2868.365 | 638.0857 | | | | | : | | | |
| 15:37:53 | 2856.638 | 628.3115 | | | | | : | | | |
| ~~15:38:29~~ | ~~2895.32~~ | ~~638.3364~~ | | | | | : | | | |
| 15:39:27 | 2962.732 | 735.1356 | | | | | : | | | |
| 15:39:28 | 2962.732 | 735.1356 | | | | | : | | | |
| 15:39:46 | 3087.749 | 691.0191 | | | | | : | | | |
| 15:40:16 | 3009.593 | 691.7719 | | | | | : | | | |
| 15:40:46 | 2934.627 | 729.1828 | | | | | : | | | |
| 15:41:16 | 2915.588 | 631.7565 | | | | | : | | | |
| 15:41:46 | 2879.072 | 619.1533 | | | | | : | | | |
| 15:42:16 | 2906.247 | 683.5627 | | | | | : | | | |
| 15:42:46 | 2910.014 | 743.3297 | | | | | : | | | |
| 15:43:16 | 2960.489 | 734.718 | | | | | : | | | |
| 15:43:46 | 2947.689 | 744.0379 | | | | | : | | | |
| 15:44:16 | 2905.591 | 750.3389 | | | | | : | | | |
| 15:44:46 | 2809.4 | 694.6087 | | | | | : | | | |
| 15:45:16 | 2822.866 | 700.1744 | | | | | : | | | |

06-18-1992 SITE 2 DAY 2

| | THC 2 | THC 2 | | | | FRONT | | | | REAR | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | (table) | (rack) | | | ETH-OH | CH4 | ACETALDEHYDE: | | ETH-OH | CH4 | ACETALDEHYDE |
| | (ppmC) | (ppmC) | Comments | | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | : | (ppmV/wet | (ppmV/wet | (ppmV/wet) |
| | | | | | ======== | ======== | ======== | = | ======== | ======== | ======== |
| 15:45:46 | 2850.687 | | 700.9904 | | | | | : | | | |
| 15:46:16 | 2900.24 | | 727.1694 | | | | | : | | | |
| 15:46:46 | 2901.281 | | 804.1381 | | | | | : | | | |
| 15:47:16 | 2859.222 | | 767.6116 | | | | | : | | | |
| 15:47:46 | 2880.203 | | 811.9131 | | | | | : | | | |
| 15:48:16 | 2967.107 | | 902.6684 | | | | | : | | | |
| 15:48:46 | 2988.367 | | 853.7667 | | | | | : | | | |
| AVG | 2894.429 | | 707.3590 | 29 | | | | : | | | |
| | REAR | | | END COMFORT | | | | : | | | |
| | (cont) | | | HOOD | | | | : | | | |
| | | | | | | | | : | | | |
| 15:49:16 | 2986.68 | | | | | | | 178.1494 | | | |
| 15:49:46 | 2982.872 | | | | | | | 15.9634 | | | |
| 15:50:16 | 2997.226 | | | | | | | 12.9656 | | | |
| 15:50:46 | 3042.19 | | | | | | | 12.68983 | | | |
| 15:51:16 | 3039.821 | | | | | | | 77.36836 | | | |
| 15:51:46 | 3032.455 | | | | | | | 3527.847 | | | |
| 15:52:16 | 3025.591 | | | | | | | 3806.654 | | | |
| 15:52:46 | 3062.125 | | | | | | | 3977.829 | | | |
| | | | | | | FRONT | | | | REAR | |
| | | | | | ETH-OH | CH4 | ACETALDEHYDE: | | ETH-OH | CH4 | ACETALDEHYDE |
| | | | | SAMPLE | REAR | FRONT | (ppmV/wet) | : | (ppmV/wet | (ppmV/wet | (ppmV/wet) |
| | | | | | (cont) | | ======== | = | ======== | ======== | ======== |
| 15:53:16 | 3062.043 | 4106.216 | | | | | | : | | | |
| 15:53:46 | 3057.768 | 4084.392 | | | | | | : | | | |
| 15:54:16 | 3126.671 | 4218.578 | | | | | | : | | | |
| 15:54:46 | 3146.596 | 4078.046 | | | | | | : | 1710 | 1980 | 78.4 |
| 15:55:16 | 3138.681 | 4317.232 | | | | | | : | ETH/THC | CH4/THC | AA/THC |
| 15:55:46 | 3171.753 | 4125.537 | | | | | | : | 54.34444 | 62.92514 | 2.491581378 |
| 15:56:16 | 3178.059 | 4168.84 | | | | | | : | | | |
| 15:56:46 | 3156.203 | 4175.098 | | | | | | : | | | |
| 15:57:16 | 3157.481 | 4436.521 | | | | | | : | | | |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) | : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 15:57:46 | 3139.084 | 4333.136 | | | | | : | | | |
| 15:58:16 | 3092.338 | 4349.911 | | | | | : | | | |
| 15:58:46 | 3082.853 | 4522.271 | | | | | : | | | |
| 15:59:16 | 3092.099 | 4345.289 | | | | | : | | | |
| 15:59:46 | 3120.508 | 4218.676 | | | | | : | | | |
| 16:00:16 | 3162.707 | 4414.49 | | | | | : | | | |
| 16:00:46 | 3105.712 | 4241.556 | | | | | : | | | |
| 16:01:16 | 3070.81 | 4639.898 | | | | | : | | | |
| 16:01:46 | 3024.938 | 4524.827 | | | | | : | | | |
| 16:02:16 | 3037.371 | 4757.162 | | | | | : | | | |
| 16:02:46 | 3027.384 | 4415.563 | | | | | : | | | |
| 16:03:16 | 3066.947 | 4315.403 | | | | | : | | | |
| 16:03:46 | 3131.128 | 4250.123 | | 3290 | 826 | 125 | : | | | |
| 16:04:16 | 3148.569 | 4299.882 | | ETH/THC | CH4/THC | AA/THC | : | | | |
| 16:04:46 | 3186.586 | 4223.482 | | 77.40952438 | 19.43473165 | 2.941091351 | : | | | |
| 16:05:16 | 3221.043 | 4295.285 | | | | | : | | | |
| 16:05:46 | 3213.316 | 4530.658 | | | | | : | | | |
| 16:06:16 | 3222.069 | 4251.827 | | | | | : | | | |
| 16:06:46 | 3200.063 | 4272.474 | | | | | : | | | |
| 16:07:16 | 3199.175 | 4442.177 | | | | | : | | | |
| 16:07:46 | 3183.497 | 4216.242 | | | | | : | | | |
| 16:08:16 | 3182.526 | 3967.62 | | | | | : | | | |
| 16:08:46 | 3161.026 | 4135.291 | | | | | : | | | |
| 16:09:16 | 3144.58 | 4233.419 | | | | | : | | | |
| AVG | 3133.684 | 4300.215 | 33 | | | | : | | | |
| | | | END | REAR | | | : | | | |
| | | | FRONT | (cont) | | | : | | | |
| | | | | | | | : | | | |
| 16:09:46 | | | | | | | | | | |
| 16:10:16 | | | | | | | | | | |
| 16:10:46 | | | | | | | | | | |
| 16:11:16 | | | | | | | | | | |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) | : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 16:11:46 | | | | | | | | | | |
| 16:12:16 | | | | | | | | | | |
| 16:12:46 | | | | | | | | 1750 | 1550 | 82 |
| 16:13:16 | | | | | | | | ETH/THC | CH4/THC | AA/THC |
| 16:13:46 | | | | | | | | 56.35281 | 49.91249 | 2.640531841 |
| 16:14:16 | | | | | | | | | | |
| 16:14:46 | | | | | | | | | | |
| 16:15:16 | | | | | | | | | | |
| 16:15:46 | | | | | | | | | | |
| 16:16:16 | | | | | | | | | | |
| 16:16:46 | | | | | | | | | | |
| 16:17:16 | | | | | | | | | | |
| 16:17:46 | | | | | | | | | | |
| 16:18:16 | | | | | | | | | | |
| 16:18:46 | | | | | | | | | | |
| 16:19:16 | | | | | | | | | | |
| 16:19:46 | | | | | | | | | | |
| 16:20:16 | | | | | | | | | | |
| 16:20:46 | | | | | | | | | | |
| 16:21:16 | | | | | | | | | | |
| 16:21:55 | | | | 2900 | 491 | 97.7 | 813.4313 | 2900 | 491 | 97.7 |
| 16:22:28 | | | | ETH/THC | CH4/THC | AA/THC | 875.1298 | ETH/THC | CH4/THC | AA/THC |
| 16:22:46 | | | | 356.5144345 | 60.36158185 | 12.01084836 | 847.821 | 88.67384 | 15.01339 | 2.987391191 |
| 16:23:16 | | | | | | | 889.0707 | | | |
| 16:23:46 | | | | | | | 814.7026 | | | |
| 16:24:16 | | | | | | | -339.692 | | | |
| 16:24:46 | | | | | | | 3191.635 | | | |
| 16:25:16 | | | | | | | 1037.256 | | | |
| 16:25:46 | | | | | | | 648.6523 | | | |
| 16:26:16 | | | | | | | 656.5995 | | | |
| 16:26:46 | | | | | | | 2026.474 | | | |
| 16:27:16 | | | | | | | 2712.847 | | | |
| 16:27:46 | | | | | | | 1860.57 | | | |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 16:28:16 | | | | | | 839.0237 | | | |
| 16:28:46 | | | | | | 170.6055 | | | |
| 16:29:16 | | | | | | 513.0793 | | | |
| 16:29:46 | | | | | | 1596.031 | | | |
| 16:30:16 | | | | | | 4058.852 | | | |
| 16:30:46 | | | | | | 2827.736 | 1820 | 1970 | 78.2 |
| 16:31:16 | | | | | | 1846.87 | ETH/THC | CH4/THC | AA/THC |
| 16:31:46 | | | | | | 164.6906 | 61.80106 | 66.89456 | 2.655408459 |
| 16:32:16 | | | | | | 1380.047 | | | |
| 16:32:46 | | | | | | 2236.477 | | | |
| 16:33:16 | | | | | | 1982.732 | | | |
| 16:33:46 | | | | | | 789.797 | | | |
| 16:34:16 | | | | | | 36.3135 | | | |
| 16:34:46 | | | | | | 17.75572 | | | |
| 16:35:16 | | | | | | 132.4754 | | | |
| 16:35:46 | | | | | | 201.7341 | | | |
| 16:36:16 | | | | | | 203.0156 | | | |
| 16:36:46 | | | | | | 202.6795 | | | |
| 16:37:16 | | | | | | 1146.619 | | | |
| 16:37:46 | | | | | | 1973.024 | | | |
| 16:38:16 | | | | | | 862.3318 | | | |
| 16:38:46 | | | | | | 23.88713 | | | |
| 16:39:16 | | | | | | 19.24692 | | | |
| 16:39:46 | | | | | | 19.4103 | | | |
| 16:40:16 | | | | | | 21.00238 | | | |
| 16:40:46 | | | | | | 20.15888 | | | |
| 16:41:16 | | | | | | 22.34725 | | | |
| 16:41:46 | | | | | | 22.01925 | | | |
| 16:42:16 | | | | | | 19.17829 | | | |
| 16:42:46 | | | | | | 17.74096 | | | |
| 16:43:16 | | | | | | 3489.432 | | | |
| 16:43:46 | | | | | | 4449.579 | | | |
| 16:44:16 | | | | | | 4459.884 | | | |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) | : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 16:44:46 | | | | | | 4221.034 | | | | |
| 16:45:16 | | | | | | 3766.179 | | | | |
| 16:45:46 | | | | | | 3077.505 | | | | |
| | | | | | | | : | | | |
| | | | END/QC | | | | : | | | |
| | | | | | | | : | | | |
| 16:46:16 | | | | | | 1963.499 | | | | |
| 16:46:46 | | | | | | 1940.693 | | | | |
| 16:47:16 | | | | | | 1932.12 | | | | |
| 16:47:46 | | | | | | 2268.156 | | | | |
| 16:48:16 | | | | | | 4138.9 | | | | |
| | | | | FRONT | | | | REAR | | |
| | | | | ETH-OH | CH4 | ACETALDEHYDE: | | ETH-OH | CH4 | ACETALDEHYDE |
| | | | SAMPLE | REAR | FRONT | (ppmV/wet) | : | (ppmV/wet | (ppmV/wet | (ppmV/wet) |
| | | | | (cont) | | | | | | |
| 16:48:46 | 2924.409 | 3930.063 | | | | | : | | | |
| 16:49:16 | 2900.515 | 4226.927 | | | | | : | 1580 | 185 | 19 |
| 16:49:46 | 2913.202 | 4030.321 | | | | | : | ETH/THC | CH4/THC | AA/THC |
| 16:50:16 | 2898.52 | 3770.563 | | | | | : | 54.47308 | 6.378177 | 0.655056084 |
| 16:50:46 | 2883.448 | 3917.265 | | | | | : | | | |
| 16:51:16 | 2948.563 | 3899.9 | | | | | : | | | |
| 16:51:46 | 2964.069 | | | | | | : | | | |
| 16:52:16 | 2997.005 | | | | | | : | | | |
| 16:52:46 | 3008.089 | | | | | | : | | | |
| 16:53:16 | 3008.762 | | | | | | : | | | |
| 16:53:46 | 3004.804 | 3785.085 | | | | | : | | | |
| 16:54:16 | 3001.25 | 4036.466 | | | | | : | | | |
| 16:54:46 | 2977.876 | 4517.995 | | | | | : | | | |
| 16:55:16 | 2902.421 | 4288.684 | | | | | : | | | |
| 16:55:46 | 2814.193 | 4153.781 | | | | | : | | | |
| 16:56:16 | 2749.149 | 4388.5 | | | | | : | | | |
| 16:56:46 | 2772.622 | 4076.197 | | | | | : | | | |
| 16:57:16 | 2748.302 | 3896.67 | | | | | : | | | |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 16:57:46 | 2823.935 | 4089.77 | | | | | : | | | |
| 16:58:16 | 2794.231 | 3943.55 | | | | | : | | | |
| 16:58:46 | 2718.978 | 3770.307 | | | | | : | | | |
| 16:59:16 | 2733.45 | 4320.49 | | | | | : | | | |
| 16:59:46 | 2824.534 | 3970.463 | | | | | : | | | |
| 17:00:16 | 2925.133 | 3912.589 | | | | | : | | | |
| 17:00:46 | 2909.038 | 4043.539 | | | | | : | | | |
| 17:01:16 | 2903.354 | 4051.093 | | | | | : | | | |
| 17:01:46 | 2891.535 | 3639.604 | | | | | : | | | |
| 17:02:16 | 2940.557 | 3725.387 | | | | | : | | | |
| 17:02:46 | 2910.829 | 3790.492 | | | | | : | | | |
| AVG | 2889.405 | 4007.028 | | 30 | | | : | | | |
| | | | | | | | : | | | |
| | | | END | | | | : | | | |
| | | | | | | | : | | | |
| 17:03:16 | | | | | | | 3636.542 | | | |
| 17:03:46 | | | | | | | 3195.435 | | | |
| 17:04:16 | | | | | | | 1942.577 | | | |
| 17:04:46 | | | | | | | 1934.818 | | | |
| 17:05:16 | | | | | | | 2115.768 | | | |
| 17:05:46 | | | | | | | 1945.159 | | | |
| | | | | | | | : | | | |
| 17:06:16 | | | | | | | 1936.704 | | | |
| 17:06:46 | | | | | | | 1939.294 | | | |
| 17:07:16 | | | | | | | 1938.694 | | | |
| 17:07:46 | | | | | | | 1936.298 | | | |
| 17:08:16 | | | | | | | 1936.298 | | | |
| 17:08:46 | | | | | | | 1930.557 | | | |
| 17:09:16 | | | | | | | 1983.76 | | | |

| | FRONT | | | REAR | |
|---|---|---|---|---|---|
| ETH-OH | CH4 | ACETALDEHYDE: | ETH-OH | CH4 | ACETALDEHYDE |
| (ppmV/wet) | (ppmV/wet) | (ppmV/wet) : | (ppmV/wet | (ppmV/wet | (ppmV/wet) |
| REAR | FRONT | ========== | ========== | ========== | ========== |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) | : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | SAMPLE | | | | : | | | |
| | | | | | | | : | | | |
| 17:09:46 | 2650.64 | 4235.67 | | | | | : | | | |
| 17:10:16 | 2900.216 | 4165.244 | | | | | : | | | |
| 17:10:46 | 2886.014 | 3968.108 | | | | | : | | | |
| 17:11:16 | 2910.821 | 4114.321 | | | | | : | | | |
| 17:11:46 | 2946.593 | 3989.214 | | | | | : | | | |
| 17:12:16 | 2924.648 | 3783.726 | | | | | : | | | |
| 17:12:46 | 2860.789 | 3808.729 | | | | | : | | | |
| 17:13:16 | 2922.774 | 4208.97 | | | | | : | | | |
| 17:13:46 | 2996.174 | 4284.788 | | | | | : | | | |
| 17:14:16 | 3023.736 | 4160.253 | | | | | : | | | |
| 17:14:46 | 3011.76 | 4444.805 | | | | | : | | | |
| 17:15:16 | 3016.106 | 4470 | | | | | : | | | |
| 17:15:46 | 2980.461 | 4303.129 | | | | | : | | | |
| 17:16:16 | 2932.749 | 4384.769 | | | | | : | | | |
| 17:16:46 | 2840.866 | 4557.491 | | | | | : | | | |
| 17:17:16 | 2810.168 | 4310.309 | | | | | : | | | |
| AVG | 2913.407 | 4199.345 | 16 | | | | : | | | |
| | | | | | | | : | | | |
| | | | END FRONTREAR | | | | : | | | |
| | | | (cont) | | | | : | | | |
| 17:17:46 | 2832.193 | | | | | | 896.7455 | | | |
| 17:18:16 | 2824.374 | | | | | | 54.39735 | | | |
| 17:18:46 | 2872.461 | | | | | | 50.7317 | | | |
| 17:19:16 | 2870.588 | | | | | | 25.98809 | | | |
| 17:19:46 | 2887.147 | | | | | | 24.50575 | | | |
| 17:20:16 | 2917.498 | | | | | | 28.08529 | | | |
| 17:20:46 | 2935.014 | | | | | | 28.66184 | | | |
| 17:21:16 | 2921.737 | | | | | | 823.7865 | | | |
| 17:21:46 | 2954.74 | | | | | | 3371.755 | | | |
| 17:22:16 | 2973.558 | | | | | | 3232.028 | | | |
| 17:22:46 | 3040.405 | | | | | | 3412.676 | 1220 | 1990 | 72.3 |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 17:23:16 | 3108.18 | | | | | 3490.91 | ETH/THC | CH4/THC | AA/THC |
| | | | | | | | 40.12623 | 65.45180 | 2.377972671 |
| | | | SAMPLE | FRONT ETH-OH REAR (cont) | CH4 FRONT | ACETALDEHYDE: (ppmV/wet) : | REAR ETH-OH (ppmV/wet | CH4 (ppmV/wet | ACETALDEHYDE (ppmV/wet) |
| 17:23:46 | 3166.132 | 3907.732 | | | | : | | | |
| 17:24:16 | 3121.638 | 3839.351 | | | | : | | | |
| 17:24:46 | 3006.246 | 3707.778 | | | | : | | | |
| 17:25:16 | 2870.223 | 3901.071 | | | | : | | | |
| 17:25:46 | 2780.466 | 3594.903 | | | | : | | | |
| 17:26:16 | 2816.794 | 3765.306 | | | | : | | | |
| 17:26:46 | 2810.917 | 3774.719 | | | | : | | | |
| 17:27:16 | 2724.283 | 3781.819 | | | | : | | | |
| 17:27:46 | 2712.519 | 4114.367 | | | | : | | | |
| 17:28:16 | 2685.548 | 4276.58 | | | | : | | | |
| 17:28:46 | 2709.733 | 3994.06 | | | | : | | | |
| 17:29:16 | 2990.676 | 4158.607 | | | | : | | | |
| 17:29:46 | 2753.491 | 4059.636 | | | | : | | | |
| 17:30:16 | 2770.663 | 4222.394 | | | | : | | | |
| 17:30:46 | 2882.125 | 3976.181 | | | | : | | | |
| 17:31:16 | 2912.431 | 3760.662 | | | | : | | | |
| 17:31:46 | 2893.981 | 3560.941 | | | | : | | | |
| 17:32:16 | 2912.332 | 3334.742 | | | | : | | | |
| 17:32:46 | 2922.649 | 3599.795 | | | | : | | | |
| 17:33:16 | 2902.529 | 3354.443 | | | | : | | | |
| 17:33:46 | 2885.504 | 3036.571 | | | | : | | | |
| 17:34:16 | 2865.906 | 2973.979 | | | | : | | | |
| 17:34:46 | 2834.179 | 3044.876 | | | | : | | | |
| 17:35:16 | 2787.992 | 2722.668 | | | | : | | | |
| 17:35:46 | 2735.944 | 2714.479 | | | | : | | | |
| 17:36:16 | 2661.176 | 2924.77 | | | | : | | | |
| 17:36:46 | 2698.582 | 3093.406 | END | | | : | | | |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) | : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| AVG | 2844.987 | 3599.845 | 27 | | | | | | | |
| 17:37:16 | | | | | | | 3268.449 | | | |
| 17:37:46 | | | | | | | 3222.834 | | | |
| | | | | | | | : | | | |
| | | | END | PROBES SWITCHED | | | : | | | |
| | | | | | REAR | | : | | | |
| 17:38:16 | | | | | | | 2035.387 | | | |
| 17:38:46 | | | | | | | 2415.714 | | | |
| 17:39:16 | | | | | | | 3002.969 | | | |
| 17:39:46 | | | | | | | 3030.228 | | | |
| 17:40:16 | | | | | | | 3030.053 | | | |
| 17:40:46 | | | | | | | 2994.479 | | | |
| 17:41:16 | | | | | | | 3022.697 | | | |
| 17:41:46 | | | | | | | 3057.873 | | | |
| 17:42:16 | | | | | | | 3114.552 | | | |
| 17:42:46 | | | | | | | 3188.125 | | | |
| | | | | | | | : | | | |
| | | | | | | | : | | | |
| | | | | PROBES SWITCHED | | | : | | | |
| | | | | rear-rack | front-table | | : | | | |
| 17:43:16 | 3198.486 | 4171.358 | | | | | : | | | |
| 17:43:46 | 3240.892 | 4013.097 | | | | | : | | | |
| 17:44:16 | 3256.811 | 4177.865 | | | | | : | | | |
| 17:44:46 | 3225.114 | 4194.965 | | | | | : | | | |
| 17:45:16 | 3159.437 | 4095.214 | | | | | : | | | |
| 17:45:46 | 3152.553 | 3861.357 | | | | | : | | | |
| 17:46:16 | 3171.222 | 4071.077 | | | | | : | | | |
| 17:46:46 | 3136.638 | 4166.959 | | | | | : | | | |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) | : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 17:47:16 | 3068.692 | 4017.734 | | | | | : | | | |
| 17:47:46 | 3049.868 | 4104.956 | | | | | : | | | |
| | | | | | | | : | | | |
| | | | | | | | : | | | |
| | | | | | | | : | | | |
| | | | | | | | : | | | |
| 17:48:16 | | | | | | 2347.253 | | | | |
| 17:48:46 | | | | | | 3391.118 | | | | |
| 17:49:16 | | | | | | 1535.588 | | | | |
| 17:49:46 | | | | | | 34.40333 | | | | |
| 17:50:16 | | | | | | 35.14402 | | | | |
| | | | | FRONT | | | | REAR | | |
| | | | | ETH-OH | CH4 | ACETALDEHYDE: | | ETH-OH | CH4 | ACETALDEHYDE |
| | | | | PROBES SWITCHED BACK | | (ppmV/wet) | : | (ppmV/wet | (ppmV/wet | (ppmV/wet) |
| | | | | REAR | ??? | ================ | | ================ | | |
| | | | | | | | : | | | |
| 17:50:46 | 3141.947 | | | | | | : | | | |
| 17:51:16 | 3117.182 | | | | | | : | | | |
| 17:51:46 | 3020.123 | | | | | | : | | | |
| 17:52:16 | 2995.351 | | | | | | : | | | |
| 17:52:46 | 2974.904 | | | | | | : | 1390 | 2050 | 74.3 |
| 17:53:16 | 2860.76 | | | | | | : | ETH/THC | CH4/THC | AA/THC |
| 17:53:46 | 2798.155 | | | | | | : | 46.72419 | 68.90978 | 2.497559585 |
| 17:54:16 | 2865.021 | | | | | | : | | | |
| 17:54:46 | 2928.2 | | | | | | : | | | |
| 17:55:16 | 3022.83 | | 602.6726 | | | | : | | | |
| 17:55:46 | 3022.853 | | 615.4163 | | | | : | | | |
| 17:56:16 | 2996.629 | | 605.7041 | | | | : | | | |
| 17:56:46 | 2980.398 | | 609.0621 | | | | : | | | |
| 17:57:16 | 2952.051 | | 601.1946 | | | | : | | | |
| 17:57:46 | 3004.879 | | 612.0377 | | | | : | | | |
| 17:58:16 | 3043.046 | | 621.1059 | | | | : | | | |
| 17:58:46 | 2970.35 | | 615.6436 | | | | : | | | |
| 17:59:16 | 2903.884 | | 603.5606 | | | | : | | | |

06-18-1992 SITE 2 DAY 2

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | THC 2 | THC 2 | | | | FRONT | | | | REAR | |
| TIME | (table) | (rack) | | | ETH-OH | CH4 | ACETALDEHYDE: | | ETH-OH | CH4 | ACETALDEHYDE |
| | (ppmC) | (ppmC) | Comments | | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | : | (ppmV/wet | (ppmV/wet | (ppmV/wet) |
| 17:59:46 | 2786.782 | | 591.7236 | | | | | : | | | |
| 18:00:16 | 2702.792 | | 566.2424 | | | | | : | | | |
| 18:00:46 | 2769.421 | | 566.5542 | | | | | : | | | |
| 18:01:16 | 2784.412 | | 566.3031 | | | | | : | | | |
| 18:01:46 | 2799.693 | | 568.2486 | | | | | : | | | |
| 18:02:16 | 2814.09 | | 568.0712 | | | | | : | | | |
| 18:02:46 | 2757.321 | | 569.2544 | | | | | : | | | |
| 18:03:16 | 2765.154 | | 562.4448 | | | | | : | | | |
| 18:03:46 | 2827.04 | | 570.1789 | | | | | : | | | |
| 18:04:16 | 2907.814 | | 575.1313 | | | | | | 1480 | 2030 | 66.7 |
| 18:04:46 | 2926.451 | | 586.5651 | | | | | : | ETH/THC | CH4/THC | AA/THC |
| 18:05:16 | 2911.401 | | 584.205 | | | | | : | 50.89734 | 69.81189 | 2.293819343 |
| 18:05:46 | 2861.591 | | 576.6274 | | | | | : | | | |
| 18:06:16 | 2842.337 | | 578.6799 | | | | | : | | | |
| 18:06:46 | 2824.325 | | 577.2324 | | | | | : | | | |
| 18:07:16 | 2768.551 | | 570.361 | | | | | : | | | |
| 18:07:46 | 2762.035 | | 566.321 | | | | | : | | | |
| AVG | 2897.422 | | 585.7900 | 35 | | | | : | | | |
| | | | | | | | | : | | | |
| | | | | | REAR | FRONT | | : | | | |
| | | | | | | | | : | | | |
| 18:08:16 | 2848.645 | 2303.775 | | | | | | : | | | |
| 18:08:46 | 2879.718 | 2728.938 | | | | | | : | | | |
| 18:09:16 | 2859.489 | 2556.372 | | | | | | : | | | |
| 18:09:46 | 2890.44 | 2607.902 | | | | | | : | | | |
| 18:10:16 | 2881.295 | 2814.372 | | | | | | : | | | |
| 18:10:46 | 2874.321 | 3273.104 | | | | | | : | | | |
| 18:11:16 | 2820.809 | 3397.391 | | | | | | : | | | |
| 18:11:46 | 2804.385 | 3587.195 | | | | | | : | | | |
| 18:12:16 | 2830.558 | 3075.4 | | | | | | : | | | |
| 18:12:46 | 2875.023 | 3226.874 | | | | | | : | | | |
| 18:13:16 | 2870.182 | 3660.602 | | | | | | : | | | |
| 18:13:46 | 2790.28 | 3688.223 | | | | | | : | | | |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) | : | | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 18:14:16 | 2745.425 | 3492.054 | | | | | : | | | | |
| 18:14:46 | 2750.279 | 3521.674 | | | | | : | | | | |
| 18:15:16 | 2758.196 | 3384.235 | | | | | : | | | | |
| | 2831.936 | 3154.540 | 15 | | | | : | | | | |
| | | | END | | | | : | | | | |
| | | | | | | | : | | | | |
| | | | | | | | : | | | | |
| 18:15:46 | | | | | | | | 1606.834 | | | |
| 18:16:16 | | | | | | | | 160.5331 | | | |
| 18:16:46 | | | | | | | | 128.0684 | | | |
| 18:17:16 | | | | | | | | 125.9753 | | | |
| 18:17:46 | | | | | | | | 106.91 | | | |
| 18:18:16 | | | | | | | | 96.9524 | | | |
| 18:18:46 | | | | | | | | 91.6314 | | | |
| 18:19:16 | | | | | | | | 90.90985 | | | |
| 18:19:46 | | | | | | | | 89.66291 | | | |
| 18:20:16 | | | | | | | | 86.75656 | | | |
| 18:20:46 | | | | | | | | 86.17577 | | | |
| 18:21:16 | | | | | | | | 85.75092 | | | |
| 18:21:46 | | | | | | | | 85.55063 | | | |
| 18:22:16 | | | | | | | | 2923.611 | | | |

| TIME | REAR | FRONT | SAMPLE | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) | : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | : | | | |
| 18:22:46 | 2880.956 | 3989.504 | | | | | : | | | |
| 18:23:16 | 2873.086 | 3907.535 | | 2590 | 1411 | 91.4 | : | | | |
| 18:23:46 | 2856.618 | 4016.318 | | ETH/THC | CH4/THC | AA/THC | : | | | |
| 18:24:16 | 2892.731 | 3933.137 | | 66.28219580 | 36.10972134 | 2.339070539 | : | | | |
| 18:24:46 | 3002.427 | 3751.498 | | | | | : | | | |
| 18:25:16 | 3032.445 | 3882.373 | | | | | : | | | |
| 18:25:46 | 3127.19 | 4315.188 | | | | | : | | | |
| 18:26:16 | 3167.691 | 4325.199 | | | | | : | | | |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE (ppmV/wet) | : | REAR ETH-OH (ppmV/wet) | REAR CH4 (ppmV/wet) | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 18:26:46 | 3114.099 | 4129.723 | | | | | : | | | |
| 18:27:16 | 3062.249 | 4325.542 | | | | | : | | | |
| 18:27:46 | 3041.269 | 4066.168 | | | | | : | | | |
| 18:28:16 | 3021.512 | 4026.959 | | | | | : | | | |
| 18:28:46 | 3007.612 | 4233.613 | | | | | : | | | |
| 18:29:16 | 3014.276 | 4173.358 | | | | | : | | | |
| 18:29:46 | 3029.308 | 4021.944 | | | | | : | | | |
| 18:30:16 | 3062.783 | 4174.524 | | | | | : | | | |
| 18:30:46 | 3038.136 | 4433.809 | | | | | : | | | |
| 18:31:16 | 2992.207 | 4281.006 | | | | | : | | | |
| 18:31:46 | 2985.836 | 4124.846 | | | | | : | | | |
| 18:32:16 | 3029.013 | 4166.287 | | | | | : | | | |
| 18:32:46 | 2951.915 | 3895.399 | | | | | : | | | |
| 18:33:16 | 2934.01 | 3690.308 | | | | | : | 1660 | 1960 | 76.9 |
| 18:33:46 | 2952.376 | 3951.9 | | | | | : | ETH/THC | CH4/THC | AA/THC |
| 18:34:16 | 2994.42 | 4555.959 | | | | | : | 56.57785 | 66.80277 | 2.620986295 |
| 18:34:46 | 3030.901 | 4411.406 | | | | | : | | | |
| 18:35:16 | 3032.032 | 4226.694 | | | | | : | | | |
| 18:35:46 | 3045.045 | 4378.013 | | | | | : | | | |
| 18:36:16 | 3082.534 | 4395.369 | | | | | : | | | |
| 18:36:46 | 3102.094 | 4199.604 | | | | | : | | | |
| 18:37:16 | 3080.072 | 4303.096 | | | | | : | | | |
| 18:37:46 | 3069.91 | 4179.546 | | | | | : | | | |
| 18:38:16 | 3073.908 | 4291.055 | | | | | : | | | |
| 18:38:46 | 3071.431 | 4223.798 | | | | | : | | | |
| 18:39:16 | 3005.503 | 4584.064 | | | | | : | | | |
| 18:39:46 | 2916.143 | 4462.451 | | | | | : | | | |
| 18:40:16 | 2988.747 | 4237.475 | | | | | : | | | |
| 18:40:46 | 3072.797 | 4162.728 | | | | | : | | | |
| 18:41:16 | 3124.871 | 4416.288 | | | | | : | | | |
| 18:41:46 | 3158.302 | 4498.099 | | | | | : | | | |
| 18:42:16 | 3181.904 | 4588.507 | | 2390 | 1540 | 131 | : | | | |
| 18:42:46 | 3148.418 | 4664.046 | | ETH/THC | CH4/THC | AA/THC | : | | | |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE (ppmV/wet) | : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 18:43:16 | 3150.436 | 4443.941 | | 52.08665912 | 33.56211508 | 2.854959140 | : | | | |
| 18:43:46 | 3180.822 | 4422.763 | | | | | : | | | |
| 18:44:16 | 3168.212 | 4541.276 | | | | | : | | | |
| 18:44:46 | 3163.137 | 4367.647 | | | | | : | | | |
| 18:45:16 | 3158.801 | 4184.413 | | | | | : | | | |
| 18:45:46 | 3175.945 | 4343.411 | | | | | : | | | |
| 18:46:16 | 3173.449 | 4559.877 | | | | | : | | | |
| 18:46:46 | 3119.278 | 4483.246 | | | | | : | | | |
| 18:47:16 | 3106.163 | 4321.026 | | | | | : | | | |
| 18:47:46 | 3167.997 | 4557.874 | | | | | : | | | |
| 18:48:16 | 3177.981 | 4254.963 | | | | | : | | | |
| 18:48:46 | 3163.388 | 4098.399 | | | | | : | | | |
| 18:49:16 | 3138.348 | 4052.168 | | | | | : | | | |
| 18:49:46 | 3131.747 | 4468.989 | | | | | : | | | |
| 18:50:16 | 3135.133 | 4549.21 | | | | | : | | | |
| 18:50:46 | 3125.054 | 4449.696 | | | | | : | | | |
| 18:51:16 | 3127.012 | 4676.39 | | | | | : | | | |
| 18:51:46 | 3177.154 | 4650.754 | | | | | : | 1850 | 1940 | 83.4 |
| 18:52:16 | 3168.432 | 4529.797 | | | | | : | ETH/THC | CH4/THC | AA/THC |
| 18:52:46 | 3141.889 | 4786.65 | | | | | : | 58.22821 | 61.06093 | 2.624990793 |
| 18:53:16 | 3096.68 | 4682.288 | | | | | : | | | |
| 18:53:46 | 3026.438 | 4591.033 | | | | | : | | | |
| 18:54:16 | 3029.514 | 4617.334 | | | | | : | | | |
| 18:54:46 | 2996.076 | 4749.428 | | | | | : | | | |
| 18:55:16 | 3003.734 | 4505.72 | | | | | : | | | |
| 18:55:46 | 3007.306 | 4500.131 | | | | | : | | | |
| 18:56:16 | 3022.229 | 4715.73 | | | | | : | | | |
| 18:56:46 | 2972.14 | 4206.72 | | | | | : | | | |
| 18:57:16 | 3013.294 | 4477.867 | | | | | : | | | |
| 18:57:46 | 3060.891 | 4474.124 | | | | | : | | | |
| 18:58:16 | 3114.996 | 4718.222 | | | | | : | | | |
| 18:58:46 | 3147.354 | 4479.313 | | | | | : | | | |
| 18:59:16 | 3218.114 | 4209.51 | | | | | : | | | |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) | : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 18:59:46 | 3264.961 | 4329.954 | | | | | : | | | |
| 19:00:16 | 3276.326 | 4137.172 | | | | | : | | | |
| 19:00:46 | 3270.512 | 4450.273 | | | | | : | | | |
| 19:01:16 | 3198.005 | 4320.734 | | 2840 | 1330 | 102 | : | | | |
| 19:01:46 | 3259.049 | 4396.458 | | ETH/THC | CH4/THC | AA/THC | : | | | |
| 19:02:16 | 3341.899 | 4235.844 | | 65.72957279 | 30.78180698 | 2.360710009 | : | | | |
| 19:02:46 | 3357.828 | 4171.342 | | | | | : | | | |
| 19:03:16 | 3365.156 | 4365.912 | | | | | : | | | |
| 19:03:46 | 3353.609 | 4213.065 | | | | | : | | | |
| 19:04:16 | 3339.235 | 3979.064 | | | | | : | | | |
| 19:04:46 | 3334.263 | 4090.972 | | | | | : | | | |
| 19:05:16 | 3374.886 | 4206.842 | | | | | : | | | |
| 19:05:46 | 3401.559 | 4135.803 | | | | | : | | | |
| 19:06:16 | 3415.524 | 4327.869 | | | | | : | | | |
| 19:06:46 | 3410.492 | 4546.446 | | | | | : | | | |
| 19:07:16 | 3388.509 | 4345.594 | | | | | : | | | |
| 19:07:46 | 3405.86 | 4426.286 | | | | | : | | | |
| 19:08:16 | 3414.088 | 4758.852 | | | | | : | | | |
| 19:08:46 | 3353.068 | 4775.074 | | | | | : | | | |
| 19:09:16 | 3289.587 | 4631.96 | | | | | : | | | |
| 19:09:46 | 3239.151 | 4598.569 | | | | | : | | | |
| 19:10:16 | 3259.584 | 4815.456 | | | | | : | 2050 | 2110 | 86.4 |
| 19:10:46 | 3245.136 | 4686.014 | | | | | : | ETH/THC | CH4/THC | AA/THC |
| 19:11:16 | 3181.05 | 4463.931 | | | | | : | 62.89146 | 64.73218 | 2.650644990 |
| 19:11:46 | 3218.786 | 4571.443 | | | | | : | | | |
| 19:12:16 | 3255.484 | 4588.406 | | | | | : | | | |
| 19:12:46 | 3266.618 | 4696.474 | | | | | : | | | |
| | 3133.546 | 4351.782 | 101 | | | | : | | | |
| | | | END | | | | : | | | |
| | | | | | | | : | | | |
| PROBES IN FRONT STACK | | | | | | | : | | | |
| | FRONT | FRONT | SAMPLE | | | | : | | | |
| 19:57:06 | 655.0957 | 654.3395 | | | | | : | | | |

06-18-1992 SITE 2 DAY 2

| TIME | THC 2 (table) (ppmC) | THC 2 (rack) (ppmC) | Comments | FRONT ETH-OH (ppmV/wet) | FRONT CH4 (ppmV/wet) | FRONT ACETALDEHYDE: (ppmV/wet) : | REAR ETH-OH (ppmV/wet | REAR CH4 (ppmV/wet | REAR ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 19:58:06 | 635.8655 | 625.3951 | | | | : | | | |
| 19:59:06 | 634.7297 | 631.1142 | | | | : | | | |
| 20:00:06 | 635.4781 | 633.527 | | | | : | | | |
| 20:01:06 | 643.2603 | 654.9675 | | | | : | | | |
| 20:02:06 | 706.4955 | 732.9196 | | | | : | | | |
| 20:03:06 | 734.2877 | 781.7604 | | | | : | | | |
| 20:04:06 | 834.2021 | 872.818 | | | | : | | | |
| 20:05:06 | 944.9283 | 1012.063 | | | | : | | | |
| 20:06:06 | 1173.659 | 1275.422 | | | | : | | | |
| 20:07:06 | 1408.282 | 1588.23 | | | | : | | | |
| 20:08:06 | 1705.889 | 1935.15 | | | | : | | | |
| 20:09:06 | 2108.292 | 2449.26 | | | | : | | | |
| 20:10:06 | 2680.383 | 2958.52 | | | | : | | | |
| 20:11:06 | 2937.173 | 3300.674 | | | | : | | | |
| 20:12:06 | 3436.265 | 3823.128 | | | | : | | | |
| 20:13:06 | 3740.343 | 3997.332 | | | | : | | | |
| 20:14:06 | 3557.354 | 3830.674 | | | | : | | | |
| 20:15:06 | 3714.861 | 4004.346 | | | | : | | | |
| 20:16:06 | 3620.39 | 3857.153 | | | | : | | | |
| 20:17:06 | 3643.444 | 3886.207 | | | | : | | | |
| 20:18:06 | 3605.41 | 3902.047 | | | | : | | | |
| 20:19:06 | 3712.749 | 3928.857 | | | | : | | | |
| 20:20:06 | 3742.865 | 4109.281 | | | | : | | | |
| 20:21:06 | 3776.126 | 3971.901 | | | | : | | | |
| 20:22:06 | 3790.215 | 3971.828 | | | | : | | | |
| 20:23:06 | 3709.615 | 3980.841 | | | | : | | | |
| 20:24:06 | 3706.063 | 3903.103 | | | | : | | | |
| 20:25:06 | 3633.346 | 3840.364 | | | | : | | | |
| 20:26:06 | 3513.443 | 3749.316 | | | | : | | | |
| 20:27:06 | 3479.935 | 3670.18 | | | | : | | | |
| 20:28:06 | 3474.626 | 3781.054 | | | | : | | | |
| 20:29:06 | 3529.363 | 3734.221 | | | | : | | | |
| 20:30:06 | 3546.61 | 3827.716 | | | | : | | | |

CALIBRATION SUMMARY
06-17-1992 10:14:08
CALIBRATION FILE NAME =C:\CEMDATA\0617A.CAL

| Chan. | Name | Units | Zero Conc. | Zero Resp. | Span Conc. | Span Resp. | Slope | Int. |
|---|---|---|---|---|---|---|---|---|
| 1 | THC1 | PPM | 0.00 | -.0046 | 3980.00 | 3.980 | 998.822 | 4.55 |
| 2 | O2 | % | 0.00 | 0.0004 | 20.90 | 0.085 | 247.868 | -0.11 |
| 3 | THC2 | PPM | 0.00 | -.0011 | 3980.00 | 3.966 | 1003.280 | 1.12 |
| 4 | | PPM | 0.00 | 0.0000 | 0.00 | 0.000 | 1.000 | 0.00 |

Site 2
Day 1

Press Shift-PrtSc to Print Out Table
Press (C) to Continue

CEM INSTRUMENT DRIFT SUMMARY
06-17-1992 10:14:23

| Chan. | Name | Units | Zero Conc. Actual | Zero Conc. Observed | Span Actual | Span Observed | Drift % of Scale Zero | Drift % of Scale Span |
|---|---|---|---|---|---|---|---|---|
| 1 | THC1 | PPM | 0.000 | %-3.844 | 3980.00 | 4000.88 | -0.04 | 0.21 |
| 2 | O2 | % | 0.000 | 0.160 | 20.90 | 0.00 | 0.64 | -83.60 |
| 3 | THC2 | PPM | 0.000 | %-1.426 | 3980.00 | 3977.52 | -0.01 | -0.02 |
| 4 | | PPM | 0.000 | 0.000 | 0.00 | 0.00 | 0.00 | 0.00 |

Press Shift-PrtSc to Print Out Table
Press <C> to Continue

RADIAN CORPORATION 0617 QC 1490 798 199

Field Testing and Process Engineering Dept.
Continuous Emissions Monitoring Data
BAKERIES
,PA
Performed for:
Date Printed = 06-17-1992 Current Time = 10:17:12
File Name = C:\CEMDATA\061792.PRN Calibration File:C:\CEMDATA\0617A.CAL

| 06-17-1992 Time | Table THC1 PPM | O2 % | Rack THC2 PPM | PPM |
|---|---|---|---|---|
| 10:17:22 | 3938.7 | 0.1 | 4012.6 | -3.7 |
| 10:18:28 | 3261.9 | 0.1 | 2998.2 | -3.7 |
| 10:18:28 | 3261.9 | 0.1 | 2998.2 | -3.7 |
| 10:18:29 | 3261.9 | 0.1 | 2998.2 | -3.7 |
| 10:18:42 | 1525.9 | -0.1 | 1531.0 | -3.7 |
| 10:19:02 | 1516.3 | 0.2 | 1513.6 | -3.7 |
| 10:19:22 | 1513.1 | 0.1 | 1512.3 | -3.7 |
| 10:19:42 | 1512.9 | 0.3 | 1510.4 | -3.7 |
| 10:20:02 | 1510.3 | 0.0 | 1511.8 | -3.7 |
| 10:20:22 | 1511.3 | 0.1 | 1509.7 | -3.7 |
| 10:20:42 | 1510.2 | 0.2 | 1518.9 | -3.7 |
| 10:21:02 | 1516.7 | 0.1 | 1522.5 | -3.7 |
| 10:21:22 | 1509.5 | 0.2 | 1509.5 | -3.7 |
| 10:21:42 | 1509.9 | 0.1 | 1475.7 | -3.7 |
| 10:22:02 | 1220.5 | 0.2 | 921.9 | -3.7 |
| 10:22:22 | 824.2 | 0.5 | 820.1 | -3.7 |
| 10:22:42 | 816.5 | 0.0 | 813.6 | -3.7 |
| 10:23:02 | 814.1 | 0.0 | 814.0 | -3.7 |
| 10:23:22 | 813.6 | 0.0 | 815.5 | -3.7 |
| 10:23:42 | 813.4 | -0.0 | 813.2 | -3.7 |
| 10:24:02 | 812.9 | 0.0 | 813.6 | -3.7 |
| 10:24:22 | 812.4 | 0.0 | 814.7 | -3.7 |
| 10:24:42 | 812.3 | 0.0 | 813.9 | -3.7 |
| 10:25:02 | 811.8 | -0.0 | 814.6 | -3.[illegible] |
| 10:25:22 | 811.4 | 0.3 | 80[illegible] | -3.7 |
| 10:25:42 | 591.2 | 0.1 | [illegible]39.2 | -3.[illegible] |
| 10:26:02 | 221.1 | 1.7 | 218.7 | -3.7 |
| 10:26:22 | 21[illegible] | 14.7 | 217.2 | -3.7 |
| 10:26:42 | [illegible] | 19.[illegible] | 217.2 | -3.7 |
| 10:27:02 | [illegible] | 21.2 | 21[illegible] | -3.7 |
| 10:27:22 | [illegible] | 21.4 | 21[illegible].7 | -3.7 |
| 10:27:42 | [illegible] | 21.4 | 217.3 | -3.7 |
| 10:28:02 | 213.2 | 21.5 | 218.3 | -3.7 |
| 10:28:22 | 213.6 | 21.[illegible] | 217.[illegible] | -3.7 |
| Avg.= | 11[illegible]3.[illegible] | 4.3 | 1155.6 | -3.7 |

| | THC 2 | THC 1 |
|---|---|---|
| 1490 QC | 1514.2 | 1512.6 |
| 798 QC | 814.2 | 812.9 |
| 199.1 QC | 217.6 | 213.6 |

RADIAN CORPORATION SPAN 3980

Field Testing and Process Engineering Dept.
Continuous Emissions Monitoring Data
BAKERIES
,PA
Performed for:
Date Printed = 06-17-1991 Current [illegible]
File Name = C:\CEMDATA\0617-2.PRN Calibration File:C:\CEMDATA\0617A.CAL

| 06-17-1991 Time | THC1 PPM | O2 % | THC2 PPM | PPM |
|---|---|---|---|---|
| 10:30:35 | 3979.6 | 0.1 | 3985.7 | -3.7 |
| 10:30:42 | 3978.9 | 0.2 | 4032.1 | -3.7 |
| 10:31:02 | 3979.2 | 0.1 | 3986.7 | -3.7 |
| 10:31:22 | 3982.0 | 0.1 | 4008.5 | -3.7 |
| 10:31:42 | 3979.4 | 0.1 | 4025.6 | -3.7 |
| 10:32:02 | 3978.8 | 0.2 | 4202.7 | -3.7 |
| 10:32:12 | 3976.3 | 0.2 | 3982.2 | -3.7 |
| 10:32:22 | 3977.9 | 0.1 | 4013.1 | -3.7 |
| 10:32:32 | 3977.6 | 0.1 | 4063.4 | -3.7 |
| 10:32:42 | 3979.5 | 0.1 | 4005.8 | -3.7 |
| 10:32:52 | 3979.9 | 0.2 | 4016.1 | -3.7 |
| 10:33:02 | 3981.2 | 0.0 | 4047.5 | -3.7 |
| 10:33:12 | 3979.5 | 0.2 | 4011.0 | -3.8 |
| 10:33:22 | 3982.8 | 0.2 | 4206.9 | -3.7 |
| Avg.= | 3979.6 | 0.1 | 4013.4 | -3.7 |

Channel 3 on Das going bad
Volts jumping
will re-cal.
6u/

CALIBRATION SUMMARY
06-17-1992 10:37:50
CALIBRATION FILE NAME =C:\CEMDATA\06170.CAL

| Chan. | Name | Units | Zero Conc. | Zero Resp. | Span Conc. | Span Resp. | Slope | Int. |
|---|---|---|---|---|---|---|---|---|
| 1 | THC1 | PPM | 0.00 | -.0046 | 3980.00 | 3.979 | 999.006 | 4.55 |
| 2 | O2 | % | 0.00 | 0.0004 | 20.90 | 0.085 | 247.898 | -0.11 |
| 3 | THC2 | PPM | 0.00 | -.0011 | 3980.00 | 3.880 | 1025.571 | 1.14 |
| 4 | | PPM | 0.00 | 0.0000 | 0.00 | 0.000 | 1.000 | 0.00 |

Press Shift-PrtSc to Print Out Table
Press <C> to Continue

CEM INSTRUMENT DRIFT SUMMARY
06-17-1992 10:37:59

| Chan. | Name | Units | Zero Conc. Actual | Zero Conc. Observed | Span Actual | Span Observed | Drift % of Scale Zero | Drift % of Scale Span |
|---|---|---|---|---|---|---|---|---|
| 1 | THC1 | PPM | 0.000 | 0.000 | 3980.00 | 3979.27 | 0.00 | -0.21 |
| 2 | O2 | % | 0.000 | 0.000 | 20.90 | 0.00 | 0.00 | -83.60 |
| 3 | THC2 | PPM | 0.000 | 0.000 | 3980.00 | 3693.49 | 0.00 | -0.27 |
| 4 | | PPM | 0.000 | 0.000 | 0.00 | 0.00 | 0.00 | 0.00 |

EAP

RADIAN CORPORATION span 3990

Field Testing and Process Engineering Dept.
Continuous Emissions Monitoring Data
BAKERIES
,PA
Performed for:
Date Printed = 06-17-1992 Current Time = 10:40:54
File Name = C:\CEMDATA\061792.PRN Calibration File:C:\CEMDATA\0617B.CAL

| 06-17-1992 Time | THC1 PPM | O2 % | THC2 PPM | PPM |
|---|---|---|---|---|
| 10:41:06 | 4000.7 | 0.2 | 4091.9 | -3.8 |
| 10:41:10 | 3988.3 | 0.3 | 4104.9 | -3.8 |
| 10:41:20 | 3980.9 | 0.1 | 4110.0 | -3.7 |
| 10:41:30 | 3983.6 | 0.2 | 4126.5 | -4.1 |
| 10:41:40 | 3978.5 | 0.1 | 4104.8 | -3.7 |
| 10:41:50 | 3981.7 | 0.2 | 4107.0 | -3.7 |
| 10:42:00 | 3980.2 | 0.1 | 4090.8 | -3.7 |
| 10:42:10 | 3976.2 | 0.1 | 4113.2 | -3.7 |
| 10:42:20 | 3977.7 | 0.1 | 4082.2 | -3.7 |
| 10:42:30 | 3980.0 | 0.1 | 4100.0 | -3.7 |
| 10:42:40 | 3979.3 | 0.1 | 4103.1 | -3.7 |
| 10:42:50 | 3982.7 | 0.1 | 4131.3 | -3.7 |
| 10:43:00 | 3982.9 | 0.1 | 4116.4 | -3.7 |
| 10:43:10 | 3983.9 | 0.0 | 4117.4 | -3.7 |
| 10:43:20 | 3979.9 | 0.1 | 4124.1 | -3.7 |
| 10:43:30 | 3981.6 | 0.1 | 4054.1 | -3.7 |
| 10:43:40 | 3982.6 | 0.0 | 4128.4 | -3.7 |
| 10:43:50 | 3982.8 | 0.0 | 4120.7 | -3.7 |
| 10:44:00 | 3971.1 | 0.3 | 532.4 | -3.7 |
| 10:44:10 | 3973.5 | 0.3 | -278.1 | -3.7 |
| 10:44:20 | 3976.2 | 0.0 | 2478.2 | -3.7 |
| 10:44:30 | 3975.2 | 0.1 | 4108.2 | -3.7 |
| 10:44:40 | 3974.3 | 0.2 | 4108.6 | -3.7 |
| 10:44:50 | 3980.5 | 0.1 | 4093.7 | -3.7 |
| Avg.= | 3980.6 | 0.1 | 3707.2 | -3.7 |

Ch 3 failing

CALIBRATION SUMMARY
06-17-1992   10:56:13
CALIBRATION FILE NAME =C:\CEMDATA\0617C.CAL

| Chan. | Name | Units | Zero Conc. | Zero Resp. | Span Conc. | Span Resp. | Slope | Int. |
|---|---|---|---|---|---|---|---|---|
| 1 | THC1 | PPM | 0.00 | -.0046 | 3980.00 | 3.979 | 999.806 | 4.55 |
| 2 | O2 | % | 0.00 | 0.0004 | 20.90 | 0.085 | 247.888 | -0.11 |
| 3 | THC2 | PPM | 0.00 | -.0011 | 3980.00 | 3.772 | 1054.814 | 1.18 |
| 4 | | PPM | 0.00 | 0.0000 | 0.00 | 0.000 | 1.000 | 0.00 |

Press Shift-PrtSc to Print Out Table
Press <C> to Continue

RADIAN CORPORATION RUN01 BC

Field Testing and Process Engineering Dept.
Continuous Emissions Monitoring Data
BAKERIES
,PA
Performed for:
Date Printed = 06-17-1992 Current Time = 13:08:42
File Name = C:\CEMDATA\061792.FRN Calibration File:C:\CEMDATA\0617D.CAL

199ppm

| 06-17-1992 Time | THC1 PPM | 02 % | THC2 PPM | PPM |
|---|---|---|---|---|
| 13:08:42 | 218.8 | 19.1 | -3413.8 | 206.0 |
| 13:08:49 | 216.3 | 19.2 | -5235.8 | 205.1 |
| 13:08:59 | 216.2 | 19.3 | -52[illegible].6 | 204.8 |
| 13:09:09 | 216.5 | 19.3 | -524[illegible].5 | 203.1 |
| 13:09:19 | 215.3 | 19.4 | -52[illegible].9 | 204.6 |
| 13:09:29 | 214.6 | 19.4 | -52[illegible].5 | 205.2 |
| 13:09:39 | 214.4 | 19.4 | -52[illegible]1.3 | 205.1 |
| 13:09:49 | 215.1 | 19.4 | -5214.6 | 205.5 |
| Avg.= | 215.9 | 19.3 | -4592.5 | 204.9 |

RADIAN CORPORATION      RUN01 GC 798

Field Testing and Process Engineering Dept.
Continuous Emissions Monitoring Data
BAKERIES
.PA
Performed for:
Date Printed = 06-17-1992  Current Time = 13:15:51
File Name = C:\CEMDATA\061792.PRN   Calibration File:C:\CEMDATA\0617D.CAL

| 06-17-1992 | THC1 | O2 | THC2 | |
|---|---|---|---|---|
| Time | PPM | % | PPM | PPM |
| 13:15:52 | 807.0 | -0.5 | -3977.9 | 749.4 |
| 13:15:59 | 809.8 | -0.3 | -4484.1 | 740.7 |
| 13:16:09 | 808.7 | -0.5 | -4039.6 | 751.0 |
| 13:16:19 | 806.6 | -0.5 | -4001.6 | 740.9 |
| 13:16:29 | 807.2 | -0.5 | -4028.4 | 745.8 |
| 13:16:39 | 806.6 | -0.5 | -4024.6 | 759.4 |
| 13:16:49 | 807.6 | -0.3 | -3988.6 | 751.0 |
| 13:16:59 | 808.8 | -0.5 | -3980.2 | 751.9 |
| 13:17:09 | 807.8 | -0.5 | -3988.5 | 756.2 |
| 13:17:19 | 808.0 | -0.4 | -4055.1 | 746.6 |
| 13:17:29 | 807.8 | -0.4 | -4043.2 | 742.8 |
| 13:17:39 | 806.3 | -0.4 | -4046.4 | 747.2 |
| 13:17:49 | 806.0 | -0.4 | -3927.2 | 1[illegible] |
| Avg.= | 807.6 | -0.5 | -4044.9 | ~~794.4~~ 748.6 |

RADIAN CORPORATION      RUN01 GC 1490

Field Testing and Process Engineering Dept.
Continuous Emissions Monitoring Data
BAKERIES
,PA
Performed for:
Date Printed = 06-17-1992  Current Time = 13:19:13
File Name = C:\CEMDATA\061792.PRN   Calibration File:C:\CEMDATA\0617D.CAL

| 06-17-1992 | THC1 | O2 | THC2 | |
|---|---|---|---|---|
| Time | PPM | % | PPM | PPM |
| 13:19:13 | 1281.1 | 2.2 | -2242.6 | 1426.7 |
| 13:19:14 | 1281.1 | 2.2 | -2242.6 | 1426.7 |
| 13:19:14 | 1281.1 | 2.2 | -2242.6 | 1426.7 |
| 13:19:14 | 1281.1 | 2.2 | -2242.6 | 1426.7 |
| 13:19:19 | 1496.9 | -0.2 | -1754.9 | 1438.2 |
| 13:19:34 | 1494.9 | -0.1 | -1812.4 | 1437.8 |
| 13:19:49 | 1492.1 | 0.2 | -971.6 | 1446.9 |
| 13:20:04 | 1497.7 | 0.1 | -1059.4 | 1429.2 |
| 13:20:19 | 1498.3 | -0.0 | -1131.8 | 1435.1 |
| 13:20:34 | 1498.7 | -0.1 | -1017.1 | 1432.2 |
| 13:20:49 | 1496.9 | 0.0 | -1040.4 | 1432.9 |
| Avg.= | ~~1418.2~~ | 0.8 | -1557.1 | ~~1432.7~~ |

1496.5      1436.1

RADIAN CORPORATION RUN QC 3980

Field Testing and Process Engineering Dept.
Continuous Emissions Monitoring Data
BAKERIES
, PA
Performed for:
Date Printed = 06-17-1992 Current Time = 13:21:59
File Name = C:\CEMDATA\061792.PRN Calibration File:C: CEMDATA\06170.CAL

THC1 = FRONT
~~TOT~~ REAR
ppm =

| 06-17-1992 Time | THC1 PPM | O2 % | THC2 PPM | PPM |
|---|---|---|---|---|
| 13:22:00 | 1488.7 | 0.4 | -988.4 | ~~1127.8~~ |
| 13:22:04 | 3681.2 | 2.4 | -1363.4 | 3683.0 |
| 13:22:19 | 3839.4 | 1.2 | -328.4 | 3745.0 |
| 13:22:34 | 3913.5 | 0.4 | -90.1 | 3753.1 |
| 13:22:49 | 3936.4 | -0.1 | -282.6 | 3647.3 |
| 13:23:04 | 3935.5 | 0.1 | -100.2 | 3780.2 |
| 13:23:19 | 3939.9 | 0.1 | -36.7 | 3738.2 |
| 13:23:34 | 3935.8 | -0.0 | -19.6 | 3763.7 |
| 13:23:49 | 3935.0 | 0.1 | 596.4 | 3734.5 |
| 13:24:04 | 3938.1 | 0.5 | 745.5 | 3851.9 |
| 13:24:19 | 3943.5 | -0.0 | 1080.1 | 3764.3 |
| 13:24:34 | 3942.9 | 0.1 | 1378.1 | 3793.9 |
| 13:24:49 | 3946.1 | -0.0 | 1448.7 | 3777.9 |
| 13:25:04 | 3943.1 | 0.1 | 1488.6 | 3783.1 |
| 13:25:19 | 3945.9 | -0.1 | 1686.0 | 37[illegible].7 |
| 13:25:34 | 3943.6 | 0.0 | 1656.0 | 3953.2 |
| Avg.= | ~~3783.0~~ | 0.3 | 427.4 | 3653.9 |

3980
QC

Span Adj.

3931.7

RADIAN CORPORATION POST BUN RUN GC CHECK

Field Testing and Process Engineering Dept.
Continuous Emissions Monitoring Data
BAKERIES
,PA
Performed for:
Date Printed = 06-17-1992 Current Time = 16:19:35
File Name = C:\CEMDATA\061792.PRN Calibration File:C:\CEMDATA\06170.CAL

| 06-17-1992 Time | THC1 PPM | O2 % | THC2 PPM | PPM |
|---|---|---|---|---|
| 16:19:54 | 9.2 | 19.7 | -3520.5 | 11.6 |
| 16:20:54 | 8.6 | 19.6 | -3508.0 | 10.9 |
| 16:21:49 | 868.2 | 19.7 | -3319.8 | 66.3 |
| 16:21:49 | 868.2 | 19.7 | -3319.8 | 66.3 |
| 16:21:54 | 1098.2 | 19.6 | -3352.8 | 64.1 |
| 16:22:14 | 1116.7 | 19.8 | -3147.6 | 63.4 |
| 16:22:34 | 1136.5 | 19.8 | -3147.6 | 63.4 |
| 16:22:54 | 1153.0 | 19.8 | -3185.5 | 60.9 |
| 16:23:14 | 1162.2 | 19.8 | -3174.8 | 60.9 |
| 16:23:34 | 1195.7 | 19.8 | -3228.5 | 58.6 |
| 16:23:54 | 1189.3 | 19.7 | -3305.1 | 47.9 |
| 16:24:14 | 1161.4 | 19.7 | -3332.4 | 44.5 |
| 16:24:34 | 1173.9 | 19.7 | -3044.0 | 43.6 |
| 16:24:54 | 1157.1 | 19.7 | -3336.5 | 43.0 |
| 16:25:14 | 1167.0 | 19.7 | -3312.4 | 43.2 |
| 16:25:34 | 1161.9 | 19.7 | -3319.6 | 41.6 |
| 16:25:54 | 1129.6 | 19.7 | -3320.8 | 40.8 |
| 16:26:14 | 1133.9 | 19.7 | -3312.5 | 42.0 |
| 16:26:34 | 1101.7 | 19.7 | -3316.7 | 41.4 |
| 16:26:54 | 1050.4 | 19.7 | -3292.1 | 42.4 |
| Avg.= | 1002.6 | 19.7 | -3289.8 | 47.8 |

Charlie @ Stack

Comfort Hood @ THC 1 line 1

$\bar{x} = 1113$

RADIAN CORPORATION      CONFORT HOOD LINE 2

Field Testing and Process Engineering Dept.
Continuous Emissions Monitoring Data
BAKERIES
.PA
Performed for:
Date Printed = 06-17-1992  Current Time = 15:39:34
File Name = C:\CEMDATA\061792.PRN   Calibration File:C:\CEMDATA\06170.CAL

| 06-17-1992 Time | THC1 PPM | O2 % | THC2 PPM | PPM |
|---|---|---|---|---|
| 16:39:54 | 122.8 | 19.8 | -3705.4 | 55.4 |
| 16:40:09 | 124.0 | 19.8 | -3708.4 | 57.0 |
| 16:40:24 | 116.4 | 19.7 | -3713.3 | 57.5 |
| Avg.= | 121.1 | 19.8 | -3709.0 | 56.7 |

ADIAN CORPORATION POST TEST QC

ield Testing and Process Engineering Dept.
ontinuous Emissions Monitoring Data
BAKERIES
,PA
erformed for:
Date Printed = 06-17-1992 Current Time = 17:50:41
File Name = C:\CEMDATA\061792.PRN Calibration File:C:\CEMDATA\06172.CAL

| 06-17-1992 Time | THC1 PPM | O2 % | THC2 PPM | PPM |
|---|---|---|---|---|
| 17:50:43 | 43.0 | 19.7 | -3315.5 | 1.5 |
| 17:50:43 | 43.0 | 19.7 | -3315.5 | 1.5 |
| 17:50:49 | 35.6 | 19.5 | -3452.6 | 1.5 |
| 17:50:59 | 31.8 | 19.7 | -3218.5 | 2.7 |
| 17:51:09 | 32.3 | 19.7 | -3388.7 | 2.2 |
| 17:51:19 | 29.7 | 19.7 | -3401.8 | 2.7 |
| 17:51:29 | 28.2 | 19.7 | -3316.3 | 2.8 |
| 17:51:39 | 26.3 | 19.8 | -3291.7 | 2.9 |
| 17:52:09 | 25.4 | 19.8 | -3345.4 | 2.8 |
| 17:52:39 | 25.2 | 19.9 | -3276.1 | 2.8 |
| 17:52:57 | 17.3 | 19.9 | -3364.0 | 2.9 |
| 17:52:59 | 10.0 | 19.4 | -3432.4 | 5.0 |
| 17:53:09 | 12.9 | 20.0 | -3353.8 | 2.1 |
| 17:53:19 | 12.9 | 20.1 | -3331.9 | 2.0 |
| 17:53:29 | 13.8 | 20.3 | -3444.3 | 0.7 |
| 17:53:39 | 10.7 | 19.7 | -3329.4 | 2.5 |
| 17:53:49 | 10.8 | 19.9 | -3369.5 | 1.6 |
| 17:53:59 | 10.6 | 19.8 | -3399.9 | 1.2 |
| 17:54:09 | 9.0 | 19.9 | -3333.4 | 1.6 |
| 17:54:19 | 9.3 | 19.7 | -3405.3 | 1.6 |
| 17:54:29 | 10.6 | 19.8 | -3376.3 | 0.6 |
| 17:55:29 | 451.8 | 19.7 | -3816.2 | 58.2 |
| 17:56:12 | 100.2 | 19.8 | -4029.0 | 99.1 |
| 17:56:12 | 100.2 | 19.8 | -4029.0 | 89.1 |
| 17:56:14 | 92.8 | 19.5 | -4277.3 | 93.4 |
| 17:56:29 | 91.5 | 19.5 | -4143.5 | 94.5 |
| 17:56:44 | 90.8 | 19.6 | -3986.2 | 87.4 |
| 17:56:59 | 90.7 | 19.5 | -3968.8 | 85.8 |
| 17:57:14 | 90.2 | 19.5 | -4013.2 | 86.6 |
| 17:57:29 | 90.9 | 19.5 | -4042.1 | 87.8 |
| 17:57:44 | 89.9 | 19.5 | -3990.1 | 87.2 |
| 7:57:59 | 90.5 | 19.5 | -4009.7 | 86.3 |
| 7:58:14 | 89.7 | 19.6 | -4011.5 | 87.9 |
| 7:58:29 | 89.1 | 19.6 | -3952.5 | 85.6 |
| 7:58:44 | 89.1 | 19.6 | -4016.3 | 86.5 |
| 7:58:59 | 88.8 | 19.6 | -4005.1 | 87.0 |
| 7:59:14 | 88.4 | 19.6 | -3980.1 | 86.9 |
| 3:00:11 | 591.4 | 19.7 | -3893.2 | 513.4 |
| 3:00:11 | 591.4 | 19.7 | -3893.2 | 513.4 |
| 3:00:14 | 802.9 | 19.6 | -4402.2 | 764.2 |
| 3:00:34 | 803.5 | 19.7 | -3703.4 | 771.4 |
| :00:54 | 810.0 | 19.7 | -3692.9 | 772.1 |
| :01:14 | 810.0 | 19.8 | -3698.6 | 774.9 |
| 3:01:34 | 806.4 | 19.8 | -3670.4 | 772.4 |
| 3:01:54 | 807.2 | 19.7 | -3691.6 | 774.0 |
| :02:14 | 812.6 | 19.8 | -3039.5 | 771.2 |

zero

T = 11.1 n=10
R = 1.5 n=9

80 ppm

T = 90.0
R = 86.8

798 ppm

798 Oxf Conc

| 06-17-1992 Time | THC1 PPM | O2 % | THC2 PPM | PPM |
|---|---|---|---|---|
| 18:02:34 | 811.1 | 19.7 | -3692.1 | 770.2 |
| 18:02:44 | 810.4 | 19.6 | -4066.1 | 775.2 |
| 18:02:54 | 811.9 | 19.7 | -3780.3 | 770.4 |
| 18:03:04 | 810.3 | 19.7 | -3706.2 | 775.8 |
| 18:03:14 | 811.4 | 19.7 | -3782.5 | 770.[illegible] |
| 18:03:24 | 811.6 | 19.8 | -3724.4 | 771.4 |
| 18:03:34 | 809.8 | 19.7 | -3744.2 | 770.3 |
| 18:03:44 | 806.4 | 19.7 | -3741.4 | 756.5 |
| 18:03:54 | 750.9 | 19.7 | -4283.0 | 113.4 |
| 18:04:04 | 623.7 | 19.7 | -3772.2 | 61.7 |
| 18:04:14 | 347.4 | 19.8 | -3876.1 | 69.3 |
| 18:04:24 | 456.8 | 19.7 | -4483.7 | 558.0 |
| 18:04:34 | 233.1 | 19.7 | -5195.5 | 235.1 |
| 18:04:44 | 218.6 | 19.7 | -5186.3 | 229.8 |
| 18:04:54 | 215.6 | 19.6 | -5199.9 | 225.3 |
| 18:05:14 | 213.5 | 19.7 | -5217.5 | 223.[illegible] |
| 18:05:34 | 212.3 | 19.7 | -3712.2 | 225.3 |
| 18:05:54 | 211.4 | 19.7 | -5185.8 | 218.6 |
| 18:06:14 | 210.8 | 19.7 | -5211.7 | 218.4 |
| 18:06:34 | 210.3 | 19.6 | -5207.2 | 217.8 |
| 18:06:54 | 210.7 | 19.6 | -5211.8 | 218.0 |
| 18:07:14 | 210.9 | 19.6 | -5214.6 | 217.7 |
| 18:07:34 | 211.6 | 19.6 | -5217.1 | 217.7 |
| 18:07:54 | 212.2 | 19.7 | -5221.9 | 217.2 |
| 18:08:14 | 212.0 | 19.6 | -5216.8 | 217.7 |
| 18:08:34 | 212.5 | 19.6 | -5206.6 | 218.2 |
| 18:08:54 | 213.1 | 19.7 | -5199.5 | 217.8 |
| 18:09:14 | 213.1 | 19.7 | -5197.1 | 217.7 |
| 18:09:34 | 212.9 | 19.7 | -5179.0 | 217.4 |
| 18:09:54 | 282.5 | 19.7 | -4637.4 | 154.9 |
| 18:10:14 | 853.2 | 19.7 | -3777.4 | 50.4 |
| 18:10:34 | 825.9 | 19.7 | -3756.2 | 57.5 |
| 18:10:54 | 526.8 | 19.7 | -4939.2 | 186.5 |
| 18:11:14 | 309.1 | 19.7 | -5186.5 | 267.2 |
| 18:11:34 | 303.8 | 19.7 | -5158.9 | 279.3 |
| 18:11:53 | 304.9 | 19.7 | -5182.3 | 284.3 |
| 18:12:04 | 306.2 | 19.6 | -5192.1 | 287.7 |
| 18:12:19 | 305.3 | 19.7 | -5183.7 | 290.1 |
| 18:12:34 | 304.0 | 19.7 | -5172.5 | 292.2 |
| 18:12:49 | 304.2 | 19.7 | -5182.0 | 290.8 |
| 18:13:04 | 304.9 | 19.7 | -5170.6 | 292.7 |
| 18:13:19 | 307.2 | 19.7 | -5174.9 | 293.3 |
| 18:13:34 | 307.5 | 19.7 | -5174.5 | 294.3 |
| 18:13:49 | 307.4 | 19.7 | -5180.2 | 294.4 |
| 18:14:04 | 379.4 | 19.7 | -4720.7 | 275.8 |
| 18:14:19 | 911.8 | 19.8 | -3982.1 | 110.1 |
| 18:14:34 | 924.0 | 19.8 | -3209.8 | 347.5 |
| 18:14:49 | 1126.0 | 20.1 | -2256.5 | 1501.4 |
| 18:15:04 | 1491.9 | 20.2 | -1956.2 | 1520.7 |
| 18:15:19 | 1503.8 | 20.3 | -1835.1 | 1527.7 |
| 18:15:34 | 1505.7 | 20.3 | -1834.3 | 1523.3 |
| 18:15:49 | 1506.4 | 20.3 | -1821.9 | 1518.5 |
| 18:16:04 | 1509.9 | 20.3 | -1019.0 | 1519.0 |
| 18:16:19 | 1508.1 | 20.3 | -1004.7 | 1523.1 |
| 18:16:34 | 1507.3 | 20.2 | -1078.4 | 1518.9 |
| 18:16:49 | 1507.6 | 20.2 | -954.1 | 1522.2 |

T = 809.7
R = 772.4

199

T = 212.0
R = 217.9

200 ~~e~~thanol

T = 305.9
R = 295.5

1490

T = 1505.1
R = 1524.3

| 06-17-1992 Time | THC1 PPM | O2 % | THC2 PPM | PPM |
|---|---|---|---|---|
| 18:17:04 | 1536.6 | 20.2 | -1423.0 | 1527.1 |
| 18:17:19 | 1505.9 | 20.3 | -1235.6 | 1527.0 |
| 18:17:34 | 1525.1 | 20.2 | -396.9 | 1535.3 |
| 18:17:49 | 1505.7 | 20.3 | -1122.8 | [illegible] |
| 18:18:04 | 1503.5 | 20.3 | -1124.[illegible] | [illegible] |
| 18:18:19 | 1502.0 | 22.3 | [illegible] | [illegible] |
| 18:18:34 | 1406.1 | 22.1 | [illegible] | [illegible] |
| 18:18:49 | [illegible] | 22.4 | [illegible] | [illegible] |
| [illegible] | [illegible] | 22.5 | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | 22.5 | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | 75.2 |
| [illegible] | [illegible] | [illegible] | [illegible] | 69.7 |
| [illegible] | [illegible] | 19.8 | -3579.5 | 67.5 |
| [illegible] | 978.6 | 19.7 | -3083.3 | 67.1 |
| [illegible] | 965.3 | 19.7 | -3484.2 | 65.1 |
| 18:27:44 | 989.7 | 19.8 | -3316.9 | 62.9 |
| 18:28:44 | 973.6 | 19.8 | -3367.9 | 61.5 |
| 18:29:44 | 860.8 | 19.8 | -3442.9 | 59.2 |
| 18:30:44 | 326.9 | 19.8 | -4726.7 | 286.5 |
| 18:31:44 | 326.1 | 19.7 | -5163.1 | 288.5 |
| 18:32:44 | 279.7 | 19.8 | -4708.0 | 497.0 |
| 18:33:36 | 93.9 | 19.8 | -3770.3 | 190.6 |
| 18:33:37 | 93.9 | 19.8 | -3770.3 | 190.6 |
| 18:33:44 | 8.8 | 19.8 | -3470.9 | 6.4 |
| 18:34:04 | 10.0 | 19.6 | -3436.8 | 4.4 |
| 18:34:24 | 8.9 | 19.5 | -3437.8 | 3.9 |
| 18:34:44 | 9.4 | 19.5 | -3611.7 | 79.4 |
| 18:35:04 | 121.9 | 19.3 | -3634.3 | 988.2 |
| 18:35:24 | 147.2 | 19.8 | -3488.1 | 1029.0 |
| 18:35:44 | 145.1 | 19.8 | -3446.4 | 1006.5 |
| 18:36:04 | 134.5 | 19.8 | -3498.0 | 954.3 |
| 18:36:24 | 137.8 | 19.8 | -3501.3 | 978.4 |
| Avg.= | 681.5 | 19.8 | -3522.2 | 609.8 |

1490

3980

T 3966.9
R 3953.9

Ethanol
= p ¢

T = 310.6
R, 295.9

zero
T: 9.2
R: 4.1

RADIAN CORPORATION      CONFORT HOOD

Field Testing and Process Engineering Dept.
Continuous Emissions Monitoring Data
BAKERIES
, PA
Performed for:
Date Printed = 06-17-1992  Current Time = 18:36:44
File Name = C:\CEMDATA\061792.PRN   Calibration File: C:\CEMDATA\0617D.CAL

Inlet   Exhaust

Q

| 06-17-1992 Time | THC1 PPM LINE 2 | O2 % | THC2 PPM | PPM LINE 1 |
|---|---|---|---|---|
| 18:36:45 | 157.9 | 19.9 | -3671.1 | 1056.7 |
| 18:37:04 | 144.8 | 19.8 | -3528.6 | 1026.9 |
| 18:37:24 | 155.2 | 19.8 | -3534.5 | 1053.1 |
| 18:37:44 | 158.9 | 19.9 | -3552.2 | 1056.1 |
| 18:38:04 | 147.5 | 19.9 | -3528.5 | 1060.3 |
| 18:38:24 | 162.8 | 19.8 | -3678.2 | 1139.5 |
| 18:38:44 | 148.8 | 19.9 | -3623.3 | 1141.9 |
| 18:39:04 | 146.8 | 19.8 | -3553.0 | 1062.4 |
| 18:39:24 | 152.0 | 19.8 | -3579.6 | 1092.9 |
| 18:39:44 | 142.0 | 19.8 | -3571.6 | 1098.6 |
| 18:40:04 | 155.9 | 19.8 | -3575.6 | 1094.5 |
| 18:40:24 | 141.3 | 19.8 | -3547.3 | 1097.5 |
| 18:40:44 | 153.9 | 19.8 | -3543.6 | 1077.3 |
| 18:41:04 | 153.6 | 19.8 | -3534.6 | 1032.5 |
| 18:41:24 | 145.4 | 19.7 | -3545.1 | 1040.5 |
| 18:41:54 | 150.7 | 19.8 | -3549.0 | 1026.5 |
| 18:42:24 | 141.3 | 19.8 | -3512.1 | 1057.2 |
| 18:42:54 | 141.8 | 19.8 | -3531.1 | 1055.5 |
| 18:43:24 | 143.9 | 19.8 | -3561.1 | 1091.2 |
| 18:43:54 | 139.6 | 19.8 | -3568.6 | 1084.1 |
| Avg.= | 149.2 | 19.8 | -3564.4 | 1072.3 |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10:57:11 | 4006.787 | | MISC. | | | | : | | | |
| 10:57:21 | 3977.121 | | | | | | | | | |
| 10:57:31 | 3976.694 | | | | | | | | | |
| 10:57:41 | 3974.307 | | | | | | : | | | |
| 10:57:51 | 3981.442 | | | | | | : | | | |
| 10:58:01 | 3980.657 | | | | | | : | | | |
| 10:58:11 | 3979.615 | | | | | | : | | | |
| 10:58:21 | 3977.827 | | | | | | : | | | |
| 10:58:31 | 3981.71 | | | | | | : | | | |
| 10:58:41 | 3984.747 | | | | | | : | | | |
| 10:58:51 | 3980.237 | | | | | | : | | | |
| 10:59:01 | 3978.998 | | | | | | : | | | |
| 10:59:11 | 3977.921 | | | | | | : | | | |
| 10:59:21 | 3981.13 | | | | | | : | | | |
| 10:59:31 | 3952.94 | | | | | | : | | | |
| 10:59:41 | 3952.204 | | | | | | : | | | |
| 10:59:51 | 3805.703 | | | | | | : | | | |
| 11:00:01 | 2817.113 | | | | | | : | | | |
| 11:00:11 | 2275.551 | | | | | | : | | | |
| 11:00:21 | 1594.169 | | | | | | : | | | |
| 11:00:31 | 1537.706 | | | | | | : | | | |
| 11:00:41 | 1521.905 | | | | | | : | | | |
| 11:00:51 | 1518.286 | | | | | | : | | | |
| 11:01:01 | 1512.359 | | | | | | : | | | |
| 11:01:11 | 1511.693 | | | | | | : | | | |
| 11:01:21 | 1509.81 | | | | | | : | | | |
| 11:01:31 | 1508.906 | | | | | | : | | | |
| 11:01:41 | 1508.282 | | | | | | : | | | |
| 11:01:51 | 1509.852 | | | | | | : | | | |
| 11:02:01 | 1507.443 | | | | | | : | | | |
| 11:02:11 | 1507.615 | | | | | | : | | | |
| 11:02:21 | 1505.522 | | | | | | : | | | |
| 11:02:31 | 1502.224 | | | | | | : | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 11:02:41 | 1499.428 | | | | | : | | | |
| 11:02:51 | 1508.356 | | | | | : | | | |
| 11:03:01 | 1507.287 | | | | | : | | | |
| 11:03:11 | 1508.181 | | | | | : | | | |
| 11:03:21 | 1505.782 | | | | | : | | | |
| 11:03:31 | 1507.357 | | | | | : | | | |
| 11:03:41 | 1487.182 | | | | | : | | | |
| 11:03:51 | 1301.82 | | | | | : | | | |
| 11:04:01 | 1512.111 | | | | | : | | | |
| 11:04:11 | 1511.207 | | | | | : | | | |
| 11:04:21 | 1501.282 | | | | | : | | | |
| 11:04:31 | 1500.557 | | | | | : | | | |
| 11:04:41 | 1514.969 | | | | | : | | | |
| 11:04:51 | 1509.369 | | | | | : | | | |
| 11:05:01 | 1506.611 | | | | | : | | | |
| 11:05:11 | 1504.148 | | | | | : | | | |
| 06-17-199 | THC1 | | | | | : | | | |
| TIME | PPM | | | | | : | | | |
| 11:14:29 | 4015.029 | | | | | : | | | |
| 11:14:39 | 3979.846 | | | | | : | | | |
| 11:14:49 | 3974.238 | | | | | : | | | |
| 11:14:59 | 3972.744 | | | | | : | | | |
| 11:15:09 | 3975.31 | | | | | : | | | |
| 11:15:19 | 3969.643 | | | | | : | | | |
| 11:15:29 | 3969.032 | | | | | : | | | |
| 11:15:39 | 3978.644 | | | | | : | | | |
| 11:15:49 | 3976.934 | | | | | : | | | |
| 11:15:59 | 3975.507 | | | | | : | | | |
| 11:16:09 | 3973.393 | | | | | : | | | |
| 11:16:19 | 3968.319 | | | | | : | | | |
| 11:16:29 | 3969.144 | | | | | : | | | |
| 11:16:39 | 3964.912 | | | | | : | | | |
| 11:16:56 | 3951.24 | | | | | : | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 11:16:59 | 1558.528 | | | | | | | | |
| 11:17:09 | 1683.253 | | | | | | | | |
| 11:17:19 | 1834.161 | | | | | | | | |
| 11:17:29 | 1749.094 | | | | | | | | |
| 11:17:39 | 1595.502 | | | | | | | | |
| 11:17:49 | 1698.836 | | | | | | | | |
| 11:17:59 | 1797.818 | | | | | | | | |
| 11:18:09 | 1557.119 | | | | | | | | |
| 11:18:19 | 1710.023 | | | | | | | | |
| 11:18:29 | 1801.931 | | | | | | | | |
| 11:18:39 | 2481.014 | | | | | | | | |
| 11:18:49 | 307.5312 | | | | | | | | |
| 11:18:59 | 72.31554 | | | | | | | | |
| 11:19:09 | 44.30549 | | | | | | | | |
| 11:19:19 | 33.70531 | | | | | | | | |
| 11:19:29 | 24.29119 | | | | | | | | |
| 11:19:39 | 13.31205 | | | | | | | | |
| 11:19:49 | 13.55807 | | | | | | | | |
| 11:19:59 | 13.37257 | | | | | | | | |
| 11:20:09 | 13.24747 | | | | | | | | |
| 11:20:19 | 12.81451 | | | | | | | | |
| 11:20:29 | 243.1574 | | | | | | | | |
| 11:20:39 | 1492.326 | | | | | | | | |
| 11:20:49 | 1595.507 | | | | | | | | |
| 11:20:59 | 1693.293 | | | | | | | | |
| 11:21:09 | 729.9363 | | | | | | | | |
| 11:21:19 | 248.1037 | | | | | | | | |
| 11:21:29 | 229.6311 | | | | | | | | |
| 11:21:39 | 222.5666 | | | | | | | | |
| 11:21:49 | 219.6807 | | | | | | | | |
| 11:21:59 | 217.8639 | | | | | | | | |
| 11:22:09 | 216.9873 | | | | | | | | |
| 11:22:19 | 215.538 | | | | | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 | THC2 | FRONT GC RESULTS | | | | | REAR GC RESULTS | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (table) | (rack) | ETH-OH | CH4 | C2H6 | ACETALDEHYDE: | | ETH-OH | CH4 | C2H6 |
| | (ppmC) | (ppmC) | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | : | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) |
| 11:22:29 | 215.5169 | | | | | | : | | | |
| 11:22:39 | 215.2729 | | | | | | : | | | |
| 11:22:49 | 214.0847 | | | | | | : | | | |
| 11:22:59 | 213.3313 | | | | | | : | | | |
| 11:23:09 | 211.8443 | | | | | | : | | | |
| 11:23:19 | 213.5367 | | | | | | : | | | |
| 11:23:29 | 213.7536 | | | | | | : | | | |
| 11:23:39 | 213.4966 | | | | | | : | | | |
| 11:23:49 | 786.2083 | | | | | | : | | | |
| 11:23:59 | 1295.133 | | | | | | : | | | |
| 11:24:09 | 859.7892 | | | | | | : | | | |
| 11:24:19 | 1396.318 | | | | | | : | | | |
| 11:24:29 | 1494.944 | | | | | | : | | | |
| 11:24:39 | 1503.341 | | | | | | : | | | |
| 11:24:49 | 1504.116 | | | | | | : | | | |
| 11:24:59 | 1510.001 | | | | | | : | | | |
| 11:25:09 | 1506.89 | | | | | | : | | | |
| 11:25:19 | 1507.263 | | | | | | : | | | |
| 11:25:29 | 1504.807 | | | | | | : | | | |
| 11:25:39 | 1500.303 | | | | | | : | | | |
| 11:25:49 | 1507.016 | | | | | | : | | | |
| 11:25:59 | 1505.433 | | | | | | : | | | |
| 11:26:09 | 1502.12 | | | | | | : | | | |
| 11:26:19 | 1503.415 | | | | | | : | | | |
| 11:26:29 | 1473.353 | | | | | | : | | | |
| 11:26:39 | 1334.422 | | | | | | : | | | |
| 11:26:49 | 1451.667 | | | | | | : | | | |
| 11:26:59 | 1119.23 | | | | | | : | | | |
| 11:27:09 | 99.34795 | | | | | | : | | | |
| 11:27:19 | 35.16846 | | | | | | : | | | |
| 11:27:29 | 23.25802 | | | | | | : | | | |
| 11:27:39 | 11.61383 | | | | | | : | | | |
| 11:27:49 | 10.31933 | | | | | | : | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) | : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 11:27:59 | 10.49756 | | | | | | : | | | |
| 11:28:09 | 10.87808 | | | | | | : | | | |
| 11:28:19 | 10.45465 | | | | | | : | | | |
| 11:28:29 | 9.672779 | | | | | | : | | | |
| 11:28:39 | 9.875825 | | | | | | : | | | |
| 11:28:49 | 9.733643 | | | | | | : | | | |
| 11:28:59 | 9.560152 | | | | | | : | | | |
| 11:29:09 | 8.699469 | | | | | | : | | | |
| 11:29:19 | 8.691087 | | | | | | : | | | |
| 11:29:29 | 7.716141 | | | | | | : | | | |
| 11:29:39 | 7.061555 | | | | | | : | | | |
| 11:29:49 | 8.185887 | | | | | | : | | | |
| 11:29:59 | 6.220094 | | | | | | : | | | |
| 11:30:09 | 6.698687 | | | | | | : | | | |
| 11:30:19 | 6.610427 | | | | | | : | | | |
| 11:30:29 | 7.459379 | | | | | | : | | | |
| 11:30:39 | 6.967408 | | | | | | : | | | |
| 11:30:49 | 7.023473 | | | | | | : | | | |
| 11:30:59 | 5.980845 | | | | | | : | | | |
| 11:31:09 | 6.10041 | | | | | | : | | | |
| 11:31:19 | 6.521301 | | | | | | : | | | |
| 11:31:29 | 5.810229 | | | | | | : | | | |
| 11:31:39 | 5.624887 | | | | | | : | | | |
| 11:31:49 | 4.990615 | | | | | | | | | |

| TIME | FRONT | REAR | ITALIAN SAMPLE | FRONT ETH-OH B(ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) | : |
|---|---|---|---|---|---|---|---|---|
| 11:32:49 | 1042.862 | 29.39402 | | 1062 | | 0.83 | 37.8 | : |
| 11:33:49 | 1414.083 | 34.2084 | | | | | | : |
| 11:34:49 | 1490.96 | 34.50138 | | | | | | : |
| 11:35:49 | 1467.786 | 36.12374 | | | | | | : |
| 11:36:49 | 1491.193 | 37.23773 | | | | | | : |
| 11:37:49 | 1542.576 | 36.77304 | | | | | | : |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 | THC2 | FRONT GC RESULTS | | | | | REAR GC RESULTS | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (table) | (rack) | ETH-OH | CH4 | C2H6 | ACETALDEHYDE | : | ETH-OH | CH4 | C2H6 |
| | (ppmC) | (ppmC) | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | : | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) |
| 11:38:49 | 1530.38 | 36.57618 | | | | | : | | | |
| 11:39:49 | 1550.659 | 35.67297 | | | | | : | | | |
| 11:40:49 | 1588.506 | 41.74496 | | | | | : | | | |
| 11:41:49 | 1611.51 | 65.52142 | | | | | : | | | |
| 11:42:49 | 1636.956 | 69.7119 | | | | | : | | | |
| 11:43:49 | 1661.46 | 70.95698 | | | | | : | | | |
| 11:44:49 | 1612.144 | 72.72072 | | | | | : | | | |
| 11:45:49 | 1647.274 | 69.27358 | 1338 | 3.6 | 0.67 | 29.6 | : | | | |
| 11:46:49 | 1597.756 | 63.67231 | | | | | : | | | |
| 11:47:49 | 1556.852 | 40.36945 | | | | | : | | | |
| 11:48:49 | 1524.049 | 41.1626 | | | | | : | | | |
| 11:49:49 | 1534.923 | 37.51579 | | | | | : | | | |
| 11:50:49 | 1563.872 | 40.54655 | | | | | : | | | |
| 11:51:49 | 1573.515 | 38.26907 | | | | | : | | | |
| 11:52:49 | 1647.053 | 36.60846 | | | | | : | | | |
| 11:53:49 | 1624.323 | 36.0976 | | | | | : | | | |
| 11:54:49 | 1580.709 | 37.9423 | | | | | : | | | |
| 11:55:49 | 1594.424 | 55.01956 | 1460 | 2.3 | 1.26 | 49.8 | : | | | |
| 11:56:49 | 1681.554 | 75.47709 | | | | | : | | | |
| 11:57:49 | 1664.469 | 75.89907 | | | | | : | | | |
| 11:58:49 | 1700.236 | 78.98765 | | | | | : | | | |
| 11:59:49 | 1751.779 | 65.71471 | | | | | : | | | |
| 12:00:49 | 1666.432 | 50.95728 | | | | | : | | | |
| 12:01:49 | 1650.976 | 45.96999 | | | | | : | | | |
| 12:02:49 | 1664.422 | 45.84506 | | | | | : | | | |
| 12:03:49 | 1656.515 | 42.98654 | | | | | : | | | |
| 12:04:49 | 1652.378 | 44.52901 | | | | | : | | | |
| 12:05:49 | 1628.099 | 51.4452 | | | | | : | | | |
| 12:06:49 | 1696.77 | 78.58185 | 1201 | 6.5 | | 7.86 | : | | | |
| 12:07:49 | 1761.214 | 80.85557 | | | | | : | | | |
| 12:08:49 | 1697.731 | 80.99433 | | | | | : | | | |
| 12:09:49 | 1749.408 | 80.71996 | | | | | : | | | |
| 12:10:49 | 1686.202 | 81.80733 | | | | | : | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | FRONT GC RESULTS CH4 (ppmV/wet) | FRONT GC RESULTS C2H6 (ppmV/wet) | FRONT GC RESULTS ACETALDEHYDE: (ppmV/wet) | REAR GC RESULTS ETH-OH (ppmV/wet) | REAR GC RESULTS CH4 (ppmV/wet) | REAR GC RESULTS C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 12:11:49 | 1613.438 | 77.44265 | | | | | | | |
| 12:12:49 | 1619.937 | 73.33865 | | | | | | | |
| 12:13:49 | 1616.101 | 72.79445 | | | | | | | |
| 12:14:49 | 1635.107 | 70.9634 | | | | | | | |
| 12:15:49 | 1637.347 | 70.18611 | | | | | | | |
| 12:16:49 | 1573.965 | 69.50216 | | | | | | | |
| 12:17:49 | 1510.245 | 100.6866 | | | | | | | |
| 12:18:49 | | | 361.4832 | 32.89311 | | | | | |
| 12:19:49 | | | 21.28378 | 5.127889 | | | | | |
| 12:20:49 | 1158.068 | 33.7184 | | | | | | | |
| 12:21:49 | 1269.681 | 29.86975 | | | | | | | |
| 12:22:49 | 1087.291 | 29.84524 | | | | | | | |
| 12:23:49 | 1001.511 | 32.66129 | | | | | | | |
| 12:24:49 | 891.5979 | 33.73835 | | | | | | | |
| 12:25:49 | 922.9741 | 56.84198 | | | | | | | |
| 12:26:49 | 1146.596 | 56.32072 | | | | | | | |
| 12:27:19 | 1292.044 | 36.27996 | | | | | | | |
| 12:27:49 | 1300.143 | 35.64198 | | | | | | | |
| 12:28:19 | 1397.836 | 36.00331 | | | | | | | |
| 12:28:49 | 1536.229 | 34.91889 | | | | | | | |
| 12:29:19 | 1652.659 | 36.18098 | | | | | | | |
| 12:29:49 | 1808.089 | 35.74922 | | | | | | | |
| 12:30:19 | 1706.216 | 35.50997 | | | | | | | |
| 12:30:49 | 1713.329 | 38.99809 | | | | | | | |
| 12:31:19 | 1739.357 | 37.03702 | | | | | | | |
| 12:31:49 | 1789.889 | 42.13118 | | | | | | | |
| 12:32:19 | 1757.148 | 43.24084 | | | | | | | |
| 12:32:49 | 1762.063 | 43.39158 | | | | | | | |
| 12:33:19 | 1776.11 | 41.46397 | | | | | | | |
| 12:33:49 | 1770.028 | 41.51437 | | | | | | | |
| 12:34:19 | 1877 | 40.69119 | | | | | | | |
| 12:34:49 | 1852.557 | 42.40943 | | | | | | | |
| 12:35:19 | 1808.696 | 29.30888 | | | | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 12:35:49 | 1834.508 | 29.24157 | | | | : | | | |
| 12:36:19 | 1834.365 | 28.81687 | | | | : | | | |
| 12:36:49 | 1868.067 | 34.14518 | | | | : | | | |
| 12:37:19 | 1841.417 | 38.55045 | | | | : | | | |
| 12:37:49 | 1864.824 | 34.212 | | | | : | | | |
| 12:38:19 | 1873.072 | 40.68833 | | | | : | | | |
| 12:38:49 | 1863.624 | 48.67173 | | | | : | | | |
| 12:39:19 | 1863.452 | 74.06374 | | | | : | | | |
| 12:39:49 | 1957.54 | 80.45522 | | | | : | | | |
| 12:40:19 | 1957.951 | 79.95548 | | | | : | | | |
| 12:40:49 | 1903.973 | 77.71337 | | | | : | | | |
| 12:41:19 | 1902.655 | 81.13132 | | | | : | | | |
| 12:41:49 | 1916.533 | 81.78783 | | | | : | | | |
| 12:42:19 | 1864.176 | 83.52328 | | | | : | | | |
| 12:42:49 | 1846.994 | 81.81888 | | | | : | | | |
| 12:43:19 | 1889.343 | 80.8882 | | | | : | | | |
| 12:43:49 | 1866.011 | 81.30882 | | | | : | | | |
| 12:44:19 | 1798.043 | 80.08022 | | | | : | | | |
| 12:44:49 | 1813.955 | 59.53167 | | | | : | | | |
| 12:45:19 | 1688.348 | 45.43704 | | | | : | | | |
| 12:45:49 | 1641.001 | 44.92567 | | | | : | | | |
| 12:46:19 | 1694.681 | 43.06486 | | | | : | | | |
| 12:46:49 | 1669.407 | 43.48089 | | | | : | | | |
| 12:47:19 | 1644.064 | 42.60461 | | | | : | | | |
| 12:47:49 | 1662.349 | 42.48032 | | | | : | | | |
| 12:48:19 | 1605.49 | 42.30225 | | | | : | | | |
| 12:48:49 | 1633.577 | 44.61112 | | | | : | | | |
| 12:49:19 | 1615.895 | 45.01712 | | | | : | | | |
| 12:49:49 | 1576.208 | 45.00491 | | | | : | | | |
| 12:50:19 | 1421.196 | 45.11719 | | | | : | | | |
| 12:50:49 | 1562.22 | 42.55563 | | | | : | | | |
| 12:51:19 | 1632.059 | 43.13315 | | | | : | | | |
| 12:51:49 | 1602.228 | 43.80753 | | | | : | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 12:52:19 | 1562.783 | 41.91368 | | | | : | | | |
| 12:52:49 | 1621.381 | 45.7454 | | | | : | | | |
| 12:53:19 | 1634.258 | 43.03591 | | | | : | | | |
| 12:53:49 | 1692.989 | 44.4625 | | | | : | | | |
| 12:54:19 | 1698.29 | 50.17965 | | | | : | | | |
| 12:54:49 | 1747.649 | 72.49113 | | | | : | | | |
| 12:55:19 | 1753.669 | 76.70416 | | | | : | | | |
| 12:55:49 | 1734.983 | 77.0721 | | | | : | | | |
| 12:56:19 | 1776.372 | 75.18401 | | | | : | | | |
| 12:56:49 | 1714.169 | 74.23149 | | | | : | | | |
| 12:57:19 | 1747.235 | 75.5872 | | | | : | | | |
| 12:57:49 | 1745.876 | 64.36565 | | | | : | | | |
| 12:58:19 | 1675.333 | 48.44009 | | | | : | | | |
| 12:58:49 | 1659.554 | 46.06833 | | | | : | | | |
| 12:59:19 | 1641.468 | 44.52185 | | | | : | | | |
| 12:59:49 | 1628.246 | 47.10246 | | | | : | | | |
| AVG | 1637.485 | 52.72272 | | | | | | | |

END

| | | | |
|---|---|---|---|
| 13:00:49 | 1072.789 | 106.5716 | : |
| 13:01:17 | 282.3601 | 4.611707 | : |
| 13:01:29 | 38.62205 | 1.354882 | : |
| 13:01:41 | 30.26346 | 1.621442 | : |
| 13:01:49 | 25.50085 | 1.958055 | : |
| 13:01:59 | 24.25096 | 1.892638 | : |
| 13:02:09 | 23.42955 | 1.496656 | : |
| 13:02:19 | 21.61629 | 1.836668 | : |
| 13:02:29 | 19.22695 | 0.198332 | : |
| 13:02:39 | 14.41056 | -0.29192 | : |
| 13:02:49 | 12.76342 | -0.32870 | : |
| 13:02:59 | 16.8141 | -0.37501 | : |
| 13:03:09 | 16.98508 | -0.14182 | : |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 13:03:19 | 15.86139 | -0.30809 | | | | : | | | |
| 13:03:29 | 15.84753 | -0.24275 | | | | : | | | |
| 13:03:39 | 14.51408 | 0.851424 | | | | : | | | |
| 13:03:49 | 15.56318 | 0.021666 | | | | : | | | |
| 13:03:59 | 15.35984 | 0.444235 | | | | : | | | |
| 13:04:09 | 16.17255 | 0.113692 | | | | : | | | |
| 13:04:19 | 15.53276 | 0.291238 | | | | : | | | |
| 13:04:29 | 15.19018 | 0.111067 | | | | : | | | |
| 13:04:39 | 14.82277 | 0.082561 | | | | : | | | |
| 13:04:49 | 14.2579 | 0.235488 | | | | : | | | |
| 13:04:59 | 15.09802 | -0.44925 | | | | : | | | |
| 13:05:09 | 14.35928 | 0.020306 | | | | : | | | |
| 13:05:19 | 14.57484 | -0.32083 | | | | : | | | |
| 13:05:29 | 12.82906 | 0.374176 | | | | : | | | |
| 13:05:39 | 13.97013 | 0.379317 | | | | : | | | |
| 13:05:49 | 13.6896 | 0.017300 | | | | : | | | |
| 13:05:59 | 13.22921 | 0.599770 | | | | : | | | |
| 13:06:09 | 13.42063 | 0.072418 | | | | : | | | |
| 13:06:19 | 12.5994 | -0.38563 | | | | : | | | |
| 13:06:29 | 12.81038 | 172.6367 | | | | : | | | |
| 13:06:39 | 402.4097 | 1465.793 | | | | : | | | |
| 13:06:49 | 1400.726 | 1687.946 | | | | : | | | |
| 13:06:59 | 1531.328 | 1796.088 | | | | : | | | |
| 13:07:09 | 1554.078 | 1732.053 | | | | : | | | |
| 13:07:19 | 1538.207 | 1154.425 | | | | : | | | |
| 13:07:29 | 824.5981 | 211.3669 | | | | : | | | |
| 13:08:29 | 223.942 | 208.5792 | | | | : | | | |
| 13:08:30 | 223.942 | 208.5792 | | | | : | | | |
| 13:08:30 | 223.942 | 208.5792 | | | | : | | | |
| 13:08:30 | 223.942 | 208.5792 | | | | : | | | |
| 13:08:30 | 223.942 | 208.5792 | | | | : | | | |
| 13:08:31 | 223.942 | 208.5792 | | | | : | | | |
| 13:08:42 | 218.7821 | 205.959 | | | | : | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) | : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 13:08:49 | 216.3335 | 205.0622 | | | | | : | | | |
| 13:08:59 | 216.1746 | 204.7546 | | | | | : | | | |
| 13:09:09 | 216.547 | 203.1341 | | | | | : | | | |
| 13:09:19 | 215.2818 | 204.6445 | | | | | : | | | |
| 13:09:29 | 214.5812 | 205.2296 | | | | | : | | | |
| 13:09:39 | 214.4425 | 205.1376 | | | | | : | | | |
| 13:09:49 | 215.0672 | 205.5353 | | | | | : | | | |
| 13:09:59 | 216.0106 | 203.7748 | | | | | : | | | |
| 13:10:09 | 215.0372 | 203.8692 | | | | | : | | | |
| 13:10:19 | 213.6133 | 204.998 | | | | | : | | | |
| 13:10:29 | 215.0381 | 761.8077 | | | | | : | | | |
| 13:10:39 | 817.0169 | 1788.709 | | | | | : | | | |
| 13:10:49 | 1494.925 | 1582.247 | | | | | : | | | |
| 13:10:59 | 1061.797 | 612.0588 | | | | | : | | | |
| 13:11:09 | 685.4975 | 756.6094 | | | | | : | | | |
| 13:11:19 | 810.3105 | 748.8432 | | | | | : | | | |
| 13:11:29 | 811.4909 | 754.0825 | | | | | : | | | |
| 13:11:39 | 812.136 | 742.6591 | | | | | : | | | |
| 13:11:49 | 809.4355 | 755.2709 | | | | | : | | | |
| 13:11:59 | 808.6151 | 747.1154 | | | | | : | | | |
| 13:12:09 | 809.965 | 756.6021 | | | | | : | | | |
| 13:12:19 | 809.8234 | 755.682 | | | | | : | | | |
| 13:12:29 | 808.2613 | 749.6115 | | | | | : | | | |
| 13:12:39 | 809.1453 | 742.5555 | | | | | : | | | |
| 13:12:49 | 808.2839 | 755.3231 | | | | | : | | | |
| 13:12:59 | 809.0898 | 754.0073 | | | | | : | | | |
| 13:13:09 | 809.238 | 753.9104 | | | | | : | | | |
| 13:13:19 | 809.549 | 744.633 | | | | | : | | | |
| 13:13:29 | 808.321 | 744.2004 | | | | | : | | | |
| 13:13:39 | 807.9456 | 747.2714 | | | | | : | | | |
| 13:13:49 | 808.0755 | 749.3724 | | | | | : | | | |
| 13:13:59 | 809.1729 | 742.0062 | | | | | : | | | |
| 13:14:09 | 808.2324 | 748.2204 | | | | | : | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) | : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 13:14:19 | 808.1719 | 742.8021 | | | | | : | | | |
| 13:14:29 | 809.2661 | 753.649 | | | | | : | | | |
| 13:14:39 | 808.2669 | 750.0101 | | | | | : | | | |
| 13:14:49 | 807.4323 | 745.1548 | | | | | : | | | |
| 13:14:59 | 808.0364 | 755.2931 | | | | | : | | | |
| 13:15:09 | 808.5294 | 750.7493 | | | | | : | | | |
| 13:15:19 | 809.2736 | 747.8971 | | | | | : | | | |
| 13:15:29 | 808.2723 | 741.7552 | | | | | : | | | |
| 13:15:39 | 808.11 | 753.6313 | | | | | : | | | |
| 13:15:52 | 807.0104 | 749.3977 | | | | | : | | | |
| 13:15:59 | 809.8135 | 740.678 | | | | | : | | | |
| 13:16:09 | 808.7317 | 750.9661 | | | | | : | | | |
| 13:16:19 | 806.644 | 740.8857 | | | | | : | | | |
| 13:16:29 | 807.1852 | 745.824 | | | | | : | | | |
| 13:16:39 | 806.6326 | 759.382 | | | | | : | | | |
| 13:16:49 | 807.6148 | 751.0069 | | | | | : | | | |
| 13:16:59 | 808.7731 | 751.8873 | | | | | : | | | |
| 13:17:09 | 807.7873 | 756.1888 | | | | | : | | | |
| 13:17:19 | 807.9649 | 746.6207 | | | | | : | | | |
| 13:17:29 | 807.8412 | 742.8358 | | | | | : | | | |
| 13:17:39 | 806.2531 | 747.2026 | | | | | : | | | |
| 13:17:49 | 805.9938 | 1083.749 | | | | | : | | | |
| 13:18:04 | 1070.609 | 1362.208 | | | | | : | | | |
| 13:19:13 | 1281.085 | 1426.665 | | | | | : | | | |
| 13:19:14 | 1281.085 | 1426.665 | | | | | : | | | |
| 13:19:14 | 1281.085 | 1426.665 | | | | | : | | | |
| 13:19:14 | 1281.085 | 1426.665 | | | | | : | | | |
| 13:19:19 | 1496.898 | 1438.248 | | | | | : | | | |
| 13:19:34 | 1494.909 | 1437.828 | | | | | : | | | |
| 13:19:49 | 1492.088 | 1446.875 | | | | | : | | | |
| 13:20:04 | 1497.71 | 1429.649 | | | | | : | | | |
| 13:20:19 | 1498.253 | 1435.072 | | | | | : | | | |
| 13:20:34 | 1498.681 | 1432.16 | | | | | : | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 13:20:49 | 1496.928 | 1432.925 | | | | : | | | |
| 13:21:04 | 1496.061 | 1432.879 | | | | : | | | |
| 13:21:19 | 1496.137 | 1440.514 | | | | : | | | |
| 13:21:34 | 1493.764 | 1475.058 | | | | : | | | |
| 13:22:00 | 1488.718 | 1627.75 | | | | : | | | |
| 13:22:04 | 3681.247 | 3682.987 | | | | : | | | |
| 13:22:19 | 3839.446 | 3744.976 | | | | : | | | |
| 13:22:34 | 3913.467 | 3753.074 | | | | : | | | |
| 13:22:49 | 3936.354 | 3647.274 | | | | : | | | |
| 13:23:04 | 3935.5 | 3779.954 | | | | : | | | |
| 13:23:19 | 3939.92 | 3738.185 | | | | : | | | |
| 13:23:34 | 3935.843 | 3763.705 | | | | : | | | |
| 13:23:49 | 3934.979 | 3734.453 | | | | : | | | |
| 13:24:04 | 3938.135 | 3851.859 | | | | : | | | |
| 13:24:19 | 3943.537 | 3764.824 | | | | : | | | |
| 13:24:34 | 3942.899 | 3793.844 | | | | : | | | |
| 13:24:49 | 3946.111 | 3777.916 | | | | : | | | |
| 13:25:04 | 3943.141 | 3933.164 | | | | : | | | |
| 13:25:19 | 3945.885 | 3914.658 | | | | : | | | |
| 13:25:34 | 3943.561 | 3953.16 | | | | : | | | |
| 13:25:49 | 3946.077 | 3989.677 | | | | : | | | |
| 13:26:04 | 3933.916 | 3902.166 | | | | : | | | |
| 13:26:19 | 3637.206 | 2722.059 | | | | : | | | |
| 13:26:34 | 1724.214 | 1913.377 | | | | : | | | |
| 13:26:49 | 2138.66 | 1868.196 | | | | : | | | |
| 13:27:04 | 849.0496 | 45.26967 | | | | : | | | |
| 13:27:19 | 51.63179 | 18.06028 | | | | : | | | |
| 13:27:34 | 30.3059 | 12.72092 | | | | : | | | |
| 13:27:49 | 19.3924 | 8.976061 | | | | : | | | |
| 13:28:04 | 16.29148 | 5.43848 | | | | : | | | |
| 13:28:19 | 16.31548 | 4.563832 | | | | : | | | |
| 13:28:34 | 15.2391 | 3.743904 | | | | : | | | |
| 13:28:49 | 15.21998 | 3.163213 | | | | : | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 13:29:04 | 14.25889 | 2.22843 | | | | : | | | |
| 13:29:19 | 13.65504 | 2.701864 | | | | : | | | |
| 13:29:34 | 42.40237 | 876.3954 | | | | : | | | |
| 13:29:51 | 1823.81 | 3570.031 | | | | : | | | |
| 13:30:04 | 3768.705 | 3938.388 | | | | : | | | |
| 13:30:19 | 3881.112 | 3977.051 | | | | : | | | |
| 13:30:34 | 3917.367 | 3880.529 | | | | : | | | |
| 13:30:44 | 3933.202 | 3797.622 | | | | : | | | |
| 13:30:54 | 3937.292 | 3973.919 | | | | : | | | |
| 13:31:04 | 3940.816 | 3981.042 | | | | : | | | |
| 13:31:14 | 3942.771 | 4028.609 | | | | : | | | |
| 13:31:24 | 3941.266 | 4014.005 | | | | : | | | |
| 13:31:34 | 3945.452 | 3975.444 | | | | : | | | |
| 13:31:44 | 3943.696 | 3995.422 | | | | : | | | |
| 13:31:54 | 3937.354 | 3980.492 | | | | : | | | |
| 13:32:04 | 3943.143 | 3970.279 | | | | : | | | |
| 13:32:14 | 3944.708 | 3977.403 | | | | : | | | |
| 13:32:24 | 3944.19 | 3992.738 | | | | : | | | |
| 13:32:34 | 3945.426 | 3918.706 | | | | : | | | |
| 13:32:44 | 3934.099 | 3974.394 | | | | : | | | |
| 13:32:54 | 3929.99 | 3175.2 | | | | : | | | |
| 13:33:04 | 2569.345 | 1822.362 | | | | : | | | |
| 13:33:14 | 1458.469 | 1736.481 | | | | : | | | |
| 13:33:24 | 1354.819 | 1706.639 | | | | : | | | |
| 13:33:34 | 1347.781 | 1598.977 | | | | : | | | |
| 13:33:44 | 1327.669 | 1686.198 | | | | : | | | |
| 13:33:54 | 1338.955 | 1676.6 | | | | : | | | |
| 13:34:04 | 1334.68 | 2290.777 | | | | : | | | |
| 13:34:14 | 2300.811 | 620.881 | | | | : | | | |
| 13:34:24 | 478.123 | 117.4856 | | | | : | | | |
| 13:34:34 | 68.84455 | 38.61887 | | | | : | | | |
| 13:34:44 | 40.31632 | 17.11532 | | | | : | | | |
| 13:34:54 | 28.00314 | 12.65847 | | | | : | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 13:35:04 | 20.1203 | 9.743205 | | | | : | | | |
| 13:35:14 | 16.69067 | 7.573807 | | | | : | | | |
| 13:35:24 | 14.56262 | 6.153206 | | | | : | | | |
| 13:35:34 | 14.29635 | 6.835116 | | | | : | | | |
| 13:35:44 | 15.06107 | 5.977743 | | | | : | | | |
| 13:35:54 | 15.90812 | 5.412708 | | | | : | | | |
| 13:36:04 | 15.93148 | 5.311615 | | | | : | | | |
| 13:36:14 | 15.26119 | 3.82786 | | | | : | | | |
| 13:36:24 | 15.04067 | 5.157952 | | | | : | | | |
| 13:36:34 | 13.99906 | 3.453489 | | | | : | | | |
| 13:36:44 | 13.80126 | 4.063683 | | | | : | | | |
| 13:36:54 | 12.63249 | 4.792696 | | | | : | | | |
| 13:37:04 | 13.62309 | 3.714633 | | | | : | | | |
| 13:37:14 | 13.26846 | 3.249627 | | | | : | | | |
| 13:37:24 | 13.00579 | 4.594259 | | | | : | | | |
| 13:37:34 | 13.34566 | 2.458976 | | | | : | | | |
| 13:37:44 | 13.00905 | 3.261137 | | | | : | | | |
| 13:37:54 | 13.34089 | 2.941173 | | | | : | | | |
| 13:38:04 | 11.67922 | 4.514632 | | | | : | | | |
| 13:38:14 | 11.50085 | 3.879251 | | | | : | | | |
| 13:38:24 | 11.65623 | 2.844111 | | | | : | | | |
| 13:38:34 | 12.51189 | 2.40731 | | | | : | | | |
| 13:38:44 | 11.67494 | 3.200307 | | | | : | | | |
| 13:38:54 | 11.40698 | 2.314573 | | | | : | | | |
| 13:39:04 | 11.82771 | 2.306038 | | | | : | | | |
| 13:39:14 | 10.86656 | 3.157882 | | | | : | | | |
| 13:39:24 | 10.82043 | 1.897912 | | | | : | | | |
| 13:39:34 | 12.08174 | 2.467547 | | | | : | | | |
| 13:39:44 | 10.79829 | 2.245547 | | | | : | | | |
| 13:39:54 | 11.75324 | 2.741355 | | | | : | | | |
| 13:40:04 | 11.80704 | 1.853957 | | | | : | | | |
| 13:40:14 | 11.76955 | 2.388265 | | | | : | | | |
| 13:40:24 | 11.38982 | 1.403385 | | | | : | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 13:40:34 | 10.64768 | 1.403496 | | | | : | | | |
| 13:40:44 | 10.71064 | 1.38899 | | | | : | | | |
| 13:40:54 | 11.06937 | 1.70363 | | | | : | | | |
| 13:41:04 | 10.80771 | 0.708903 | | | | : | | | |
| 13:41:14 | 10.64732 | 1.252636 | | | | : | | | |
| 13:41:24 | 8.093731 | 417.3737 | | | | : | | | |
| 13:41:34 | 570.4186 | 1473.591 | | | | : | | | |
| 13:41:44 | 1183.638 | 1571.514 | | | | : | | | |
| 13:41:54 | 1255.419 | 1480.399 | | | | : | | | |
| 13:42:04 | 1275.998 | 1562.063 | | | | : | | | |
| 13:42:14 | 1320.653 | 1537.279 | | | | : | | | |
| 13:42:24 | 1300.927 | 1645.338 | | | | : | | | |
| 13:42:34 | 1333.872 | 1606.065 | | | | : | | | |
| 13:42:44 | 1331.476 | 1662.207 | | | | : | | | |
| 13:42:54 | 1358.485 | 1618.148 | | | | : | | | |
| 13:43:04 | 1367.811 | 1710.751 | | | | : | | | |
| 13:43:14 | 1387.469 | 1687.241 | | | | : | | | |
| 13:43:24 | 1397.04 | 1711.127 | | | | : | | | |
| 13:43:34 | 1394.61 | 1758.575 | | | | : | | | |
| 13:43:44 | 1368.634 | 1731.225 | | | | : | | | |
| 13:43:54 | 1355.862 | 1811.125 | | | | : | | | |
| 13:44:04 | 1427.529 | 1752.621 | | | | : | | | |
| 13:44:14 | 1422.415 | 1832.217 | | | | : | | | |
| 13:44:24 | 1478.921 | 1764.322 | | | | : | | | |
| 13:44:34 | 1466.411 | 1846.351 | | | | : | | | |
| 13:44:44 | 1503.765 | 1754.23 | | | | : | | | |
| 13:44:54 | 1475.289 | 1850.554 | | | | : | | | |
| 13:45:04 | 1497.264 | 1767.639 | | | | : | | | |
| 13:45:14 | 1482.05 | 1821.297 | | | | : | | | |
| 13:45:24 | 1483.021 | 1784.312 | | | | | | | |

| REAR | FRONT | BUN SAMPLE | FRONT ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : |
|---|---|---|---|---|---|---|

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 13:45:54 | 1498.176 | 1738.782 | | | | : | | | |
| 13:46:24 | 1468.369 | 1824.056 | | | | : | | | |
| 13:46:54 | 1470.537 | 1787.481 | | | | : | | | |
| 13:47:24 | 1499.821 | 1847.601 | | | | : | | | |
| 13:47:54 | 1514.652 | 1824.698 | | | | : | | | |
| 13:48:24 | 1529.859 | 1868.041 | | | | : | | | |
| 13:48:54 | 1596.799 | 1906.222 | | | | : | | | |
| 13:49:24 | 1630.094 | 1989.972 | | | | : | | | |
| 13:49:54 | 1655.305 | 1995.272 | | | | : | | | |
| 13:50:24 | 1653.863 | 2011.29 | | | | : | | | |
| 13:50:54 | 1635.043 | 2008.084 | | | | : | | | |
| 13:51:24 | 1613.896 | 1945.691 | | | | : | | | |
| 13:51:54 | 1566.765 | 1928.987 | | | | : | | | |
| 13:52:24 | 1528.744 | 1867.114 | | | | : | | | |
| 13:52:54 | 1497.478 | 1867.001 | | | | : | | | |
| 13:53:24 | 1470.607 | 1844.323 | | | | : | | | |
| 13:53:54 | 1453.932 | 1790.143 | | | | : | | | |
| 13:54:24 | 1444.795 | 1801.988 | | | | : | | | |
| 13:54:54 | 1462.873 | 1798.872 | | | | : | | | |
| 13:55:24 | 1482.424 | 1816.351 | | | | : | | | |
| 13:55:54 | 1492.202 | 1857.168 | | | | : | | | |
| 13:56:24 | 1512.002 | 1843.527 | | | | : | | | |
| 13:56:54 | 1518.74 | 1884.95 | | | | : | | | |
| 13:57:24 | 1479.597 | 1861.286 | | | | : | | | |
| 13:57:54 | 1516.528 | 1911.841 | | | | : | | | |
| 13:58:24 | 1519.228 | 1887.949 | | | | : | | | |
| 13:58:54 | 1524.397 | 1786.054 | | | | : | | | |
| 13:59:24 | 1559.621 | 1889.219 | | | | : | | | |
| 13:59:54 | 1591.812 | 1892.059 | | | | : | | | |
| 14:00:24 | 1620.811 | 1955.562 | | | | : | | | |
| 14:00:54 | 1596.347 | 1972.384 | | | | : | | | |
| 14:01:24 | 1600.427 | 1897.322 | | | | : | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) | : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 14:01:54 | 1568.983 | 1920.725 | | | | | : | | | |
| 14:02:24 | 1542.168 | 1870.965 | | | | | : | | | |
| 14:02:54 | 1506.259 | 1900.614 | | | | | : | | | |
| 14:03:24 | 1467.428 | 1834.266 | | | | | : | | | |
| 14:03:54 | 1464.683 | 1826.099 | | | | | : | | | |
| 14:04:24 | 1471.005 | 1807.578 | | | | | : | | | |
| 14:04:54 | 1477.453 | 1852.803 | | | | | : | | | |
| 14:05:24 | 1495.213 | 1837.678 | | | | | : | | | |
| 14:05:54 | 1505.493 | 1858.564 | | | | | : | | | |
| 14:06:24 | 1514.355 | 1882.239 | | | | | : | | | |
| 14:06:54 | 1462.606 | 1886.319 | | | | | : | | | |
| 14:07:24 | 1498.267 | 1890.771 | | | | | : | | | |
| 14:07:54 | 1491.844 | 1819.174 | | | | | : | | | |
| 14:08:24 | 1450.248 | 1807.849 | | | | | : | | | |
| 14:08:54 | 1430.411 | 1751.656 | | | | | : | | | |
| 14:09:24 | 1407.669 | 1745.4 | | | | | : | | | |
| 14:09:54 | 1401.985 | 1702.092 | | | | | : | | | |
| 14:10:24 | 1417.509 | 1758.928 | | | | | : | | | |
| 14:10:54 | 1396.024 | 1738.783 | | | | | : | | | |
| 14:11:24 | 1411.958 | 1779.602 | | | | | : | | | |
| 14:11:54 | 1426.392 | 1769.164 | | | | | : | | | |
| 14:12:24 | 1438.677 | 1802.907 | | | | | : | | | |
| 14:12:54 | 1471.542 | 1798.487 | | | | | : | | | |
| 14:13:24 | 1482.016 | 1852.046 | | | | | : | | | |
| 14:13:54 | 1504.002 | 1843.727 | | | | | : | | | |
| 14:14:24 | 1495.474 | 1867.456 | | | | | : | | | |
| 14:14:54 | 1483.998 | 1889.34 | | | | | : | | | |
| 14:15:24 | 1519.258 | 1886.684 | | | | | : | | | |
| 14:15:54 | 1493.88 | 1832.592 | | | | | : | | | |
| 14:16:24 | 1462.557 | 1849.599 | | | | | : | | | |
| 14:16:54 | 1434.156 | 1835.734 | | | | | : | | | |
| 14:17:24 | 1394.371 | 1760.42 | | | | | : | | | |
| 14:17:54 | 1409.201 | 1749.214 | | | | | : | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 14:18:24 | 1394.167 | 1790.111 | | | | : | | | |
| 14:18:54 | 1386.25 | 1784.531 | | | | : | | | |
| 14:19:24 | 1359.699 | 1800.776 | | | | : | | | |
| 14:19:54 | 1401.104 | 1805.312 | | | | : | | | |

END

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 14:20:24 | 1398.587 | 1760.885 | | | | : | | | |
| 14:20:54 | 1284.451 | 1721.861 | | | | : | | | |
| 14:21:24 | 1246.386 | 1679.437 | | | | : | | | |
| 14:21:54 | 1164.479 | 1548.691 | | | | : | | | |
| 14:22:24 | 1070.532 | 1448.444 | | | | : | | | |
| 14:22:54 | 962.4634 | 1294.997 | | | | : | | | |
| 14:23:24 | 851.8221 | 1143.297 | | | | : | | | |
| 14:23:54 | 755.832 | 1073.673 | | | | : | | | |
| 14:24:24 | 652.3893 | 892.5518 | | | | : | | | |
| 14:24:54 | 547.0892 | 714.1482 | | | | : | | | |
| 14:25:24 | 444.4109 | 619.4125 | | | | : | | | |
| 14:25:54 | 359.7599 | 507.0153 | | | | : | | | |
| 14:26:24 | 343.4171 | 421.0565 | | | | : | | | |
| 14:26:54 | 321.3966 | 358.4365 | | | | : | | | |
| 14:27:24 | 304.2171 | 339.4913 | | | | : | | | |
| 14:27:54 | 276.8226 | 363.6198 | | | | : | | | |
| 14:28:24 | 302.9322 | 395.0788 | | | | : | | | |
| 14:28:54 | 332.8347 | 417.2093 | | | | : | | | |
| 14:29:24 | 809.7207 | 1196.402 | | | | : | | | |
| 14:29:54 | 1486.797 | 1512.008 | | | | : | | | |
| 14:30:24 | 1496.252 | 1516.834 | | | | : | | | |
| 14:30:54 | 1496.097 | 1517.026 | | | | : | | | |
| 14:31:24 | 922.5669 | 728.6716 | | | | : | | | |
| 14:31:54 | 461.1092 | 367.3189 | | | | : | | | |
| 14:32:24 | 100.614 | 97.01382 | | | | : | | | |
| 14:32:54 | 93.14729 | 94.8696 | | | | : | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|
| 14:33:24 | 92.15985 | 92.89659 | | | | : | | | |
| 14:33:54 | 91.29941 | 94.00833 | | | | : | | | |
| 14:34:24 | 90.84695 | 91.73769 | | | | : | | | |
| 14:34:54 | 91.07748 | 91.84176 | | | | : | | | |
| 14:35:24 | 90.26055 | 103.591 | | | | : | | | |
| 14:35:54 | 199.5354 | 307.3006 | | | | : | | | |
| 14:36:24 | 224.3799 | 331.3313 | | | | : | | | |
| 14:36:54 | 245.1053 | 317.3661 | | | | : | | | |
| 14:37:24 | 307.887 | 322.108 | | | | : | | | |
| 14:37:54 | 335.2946 | 286.8743 | | | | : | | | |
| 14:38:24 | 106.1937 | 92.10699 | | | | : | | | |
| 14:38:54 | 90.6982 | 89.12624 | | | | : | | | |
| 14:39:24 | 89.66865 | 88.67318 | | | | : | | | |
| 14:39:54 | 90.43441 | 87.36819 | | | | : | | | |
| 14:40:24 | 90.05202 | 87.46663 | | | | : | | | |
| 14:40:54 | 90.33366 | 87.21962 | | | | : | | | |
| 14:41:24 | 89.73172 | 86.7821 | | | | : | | | |
| 14:41:54 | 89.27991 | 87.4389 | | | | : | | | |
| 14:42:24 | 88.9601 | 87.33456 | | | | : | | | |
| 14:42:54 | 89.11683 | 86.84642 | | | | : | | | |
| 14:43:54 | 89.13927 | 86.60008 | | | | : | | | |
| 14:44:54 | 88.81143 | 88.24014 | | | | : | | | |
| 14:46:29 | 88.9012 | 85.85589 | | | | : | | | |
| 14:46:54 | 1288.568 | 1575.159 | | | | : | | | |
| 14:47:54 | 1263.575 | 1537.521 | | | | : | | | |
| 14:48:54 | 1226.518 | 1539.094 | | | | : | | | |
| 14:49:54 | 1159.257 | 1455.683 | | | | : | | | |
| 14:50:54 | 970.9083 | 1295.791 | | | | : | | | |
| 14:51:54 | 837.5342 | 974.6697 | | | | : | | | |
| 14:52:54 | 249.2764 | 140.7001 | | | | : | | | |
| 14:53:54 | 92.81011 | 92.66132 | | | | : | | | |
| 14:54:54 | 90.90134 | 89.80783 | | | | : | | | |
| 14:55:54 | 89.92567 | 89.68206 | | | | : | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 14:55:54 | 89.92567 | 89.68206 | | | | : | | | | |
| 14:56:54 | 90.05106 | 88.20906 | | | | : | | | | |
| 14:57:54 | 89.63951 | 87.32652 | | | | : | | | | |
| 14:58:54 | 89.4286 | 88.90255 | | | | : | | | | |
| 14:59:54 | 89.88869 | 86.48393 | | | | : | | | | |
| 15:00:54 | 89.12128 | 86.54823 | | | | : | | | | |
| 15:01:54 | 88.26274 | 87.16266 | | | | : | | | | |
| 15:02:54 | 89.05706 | 87.06765 | | | | : | | | | |
| 15:03:54 | 1055.023 | 1508.498 | | | | : | | | | |
| 15:04:54 | 1397.954 | 1672.288 | | | | : | | | | |
| 15:05:54 | 1363.926 | 1661.862 | | | | : | | | | |
| 15:06:54 | 1333.971 | 1608.121 | | | | : | | | | |
| 15:07:54 | 402.9993 | 282.3545 | | | | : | | | | |
| 15:08:54 | 92.7411 | 93.20146 | | | | : | | | | |
| 15:09:54 | 89.32776 | 91.6059 | | | | : | | | | |
| 15:10:54 | 88.79375 | 89.35266 | | | | : | | | | |
| 15:11:54 | 87.37488 | 93.18111 | | | | : | | | | |
| 15:12:54 | 87.13413 | 88.84309 | | | | : | | | | |
| 15:13:54 | 87.07554 | 87.62646 | | | | : | | | | |
| 15:14:54 | 285.0155 | 532.0817 | | | | | | | | |

| | REAR ?? | FRONT | BUN SAMPLE | FRONT ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 15:15:54 | 1404.113 | 1771.647 | | | | | : | | | | |
| 15:17:30 | 1416.601 | 1778.153 | | 1490 | 4.82 | 17.1 | 62.5 : | | | | |
| 15:17:54 | 1428.192 | 1812.909 | | | | | : | | | | |
| 15:18:54 | 1423.691 | 1775.462 | | | | | : | | | | |
| 15:19:54 | 1402.024 | 1784.082 | | | | | : | | | | |
| 15:20:54 | 1413.664 | 1784.641 | | | | | : | | | | |
| 15:21:54 | 1375.417 | 1744.135 | | | | | : | | | | |
| 15:22:54 | 1358.179 | 1673.483 | | | | | : | | | | |
| 15:23:54 | 1350.488 | 1720.186 | | | | | : | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 15:24:54 | 1378.793 | 1698.703 | | | | | | | | |
| 15:25:54 | 1366.097 | 1675.724 | | | | | | | | |
| 15:26:54 | 1405.218 | 1679.154 | | | | | | | | |
| 15:27:54 | 1438.836 | 1763.352 | | | | | 1200 | 3.76 | 13.9 | 50.1 |
| 15:28:54 | 1469.473 | 1825.116 | | | | | | | | |
| 15:29:54 | 1465.053 | 1819.024 | | | | | | | | |
| 15:30:54 | 1452.781 | 1793.624 | | | | | | | | |
| 15:31:54 | 1405.127 | 1767.034 | | | | | | | | |
| 15:32:54 | 1370.62 | 1723.394 | | | | | | | | |
| 15:33:54 | 1330.265 | 1655.804 | | | | | | | | |
| 15:34:54 | 1287.856 | 1566.841 | | | | | | | | |
| 15:35:54 | 1277.234 | 1590.61 | 1300 | 3.54 | 12.4 | 53.2 | | | | |
| 15:36:54 | 1310.633 | 1611.664 | | | | | | | | |
| 15:37:54 | 1322.584 | 1650.985 | | | | | | | | |
| 15:38:54 | 1332.347 | 1656.38 | | | | | | | | |
| 15:39:54 | 1321.793 | 1627.787 | | | | | | | | |
| 15:40:54 | 1354.828 | 1648.912 | | | | | | | | |
| 15:41:54 | 1404.149 | 1709.055 | | | | | | | | |
| 15:42:54 | 1441.513 | 1763.321 | | | | | | | | |
| 15:43:54 | 1463.174 | 1798.086 | | | | | | | | |
| 15:44:54 | 1464.582 | 1799.121 | | | | | | | | |
| 15:45:54 | 1475.71 | 1818.093 | | | | | 1250 | 4.1 | 14.8 | 49.9 |
| 15:46:54 | 1487.983 | 1818.065 | | | | | | | | |
| 15:47:54 | 1485.072 | 1822.491 | | | | | | | | |
| 15:48:54 | 1478.01 | 1808.728 | | | | | | | | |
| 15:49:54 | 1453.904 | 1779.305 | | | | | | | | |
| 15:50:54 | 1417.298 | 1725.495 | | | | | | | | |
| 15:51:54 | 1422.289 | 1720.507 | | | | | | | | |
| 15:52:54 | 1440.221 | 1753.525 | | | | | | | | |
| 15:53:54 | 1453.292 | 1790.34 | | | | | | | | |
| 15:54:54 | 1459.595 | 1801.318 | 1530 | 4.72 | 19 | 65.1 | | | | |
| 15:55:54 | 1422.238 | 1810.917 | | | | | | | | |
| 15:56:54 | 1436.818 | 1783.678 | | | | | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 15:57:54 | 1412.919 | 1754.319 | | | | : | | | | |
| 15:58:54 | 1390.117 | 1695.102 | | | | : | | | | |
| 15:59:54 | 1366.504 | 1712.997 | | | | : | | | | |
| 16:00:54 | 1348.811 | 1711.587 | | | | : | | | | |
| 16:01:54 | 1282.987 | 1616.375 | | | | : | | | | |
| 16:02:54 | 1207.58 | 1479.693 | | | | : | | | | |
| 16:03:54 | 1166.149 | 1417.805 | | | | : | 1120 | 2.57 | 8.80237714 | 38.5 |
| 16:04:54 | 1215.733 | 1459.032 | | | | : | | | | |
| 16:05:54 | 1296.454 | 1585.31 | | | | : | | | | |
| 16:06:54 | 1368.024 | 1682.653 | | | | : | | | | |
| 16:07:54 | 1405.239 | 1689.202 | | | | : | | | | |
| 16:08:54 | 1412.548 | 1711.444 | | | | : | | | | |
| 16:09:54 | 1441.753 | 1716.317 | | | | : | | | | |
| 16:10:54 | 1482.461 | 1782.653 | | | | : | | | | |
| 16:11:54 | 1486.058 | 1807.33 | | | | : | | | | |
| 16:12:54 | 1473.795 | 1802.784 | | | | : | | | | |
| 16:13:54 | 1483.602 | 1792.884 | 1530 | 4.75 | 8.8 | 59.5 : | | | | |
| 16:14:54 | 1487.113 | 1820.681 | | | | : | | | | |
| 16:15:54 | 1501.439 | 1843.867 | | | | : | | | | |
| AVG | 1398.312 | 1724.309 | | | | | | | | |

END

| | | | |
|---|---|---|---|
| 16:16:54 | 409.3594 | 224.7001 | : |
| 16:18:02 | 17.68003 | 19.79696 | : |
| 16:18:54 | 9.648371 | 13.98247 | : |
| 16:19:54 | 9.202121 | 11.57869 | : |
| 16:20:54 | 8.594005 | 10.88564 | : |
| 16:21:49 | 868.1973 | 66.27567 | : |
| 16:21:49 | 868.1973 | 66.27567 | : |
| 16:21:54 | 1098.197 | 64.1273 | : |

LINE 1

| | FRONT | | |
|---|---|---|---|
| ETH-OH | CH4 | C2H6 | ACETALDEHYDE: |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) | : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | COMFORT HOOD | SAMPLE | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | : | | | | |
| 16:22:14 | 1116.72 | 63.42145 | | | | | : | | | | |
| 16:22:34 | 1135.547 | 63.36816 | | | | | : | | | | |
| 16:22:54 | 1163.007 | 60.8689 | | | | | : | | | | |
| 16:23:14 | 1162.203 | 60.91985 | | | | | : | | | | |
| 16:23:34 | 1195.674 | 58.83215 | | | | | : | | | | |
| 16:23:54 | 1189.272 | 47.93451 | | | | | : | | | | |
| 16:24:14 | 1161.423 | 44.46025 | | | | | : | | | | |
| 16:24:34 | 1173.901 | 43.62891 | 1041 | 1.8 | 5.7 | 26.6 | : | | | | |
| 16:24:54 | 1157.113 | 43.04488 | | | | | : | | | | |
| 16:25:14 | 1166.983 | 43.18311 | | | | | : | | | | |
| 16:25:34 | 1161.916 | 41.58257 | | | | | : | | | | |
| 16:25:54 | 1129.57 | 39.97136 | | | | | : | | | | |
| 16:26:14 | 1133.87 | 42.03884 | | | | | : | | | | |
| AVG | 1157.476 | | | | | | | | | | |
| | | END | | | | | | | | | |
| 16:26:34 | 1101.719 | 41.44409 | | | | | : | | | | |
| 16:26:54 | 1050.395 | 42.37951 | | | | | : | | | | |
| 16:27:54 | 388.6343 | 13.47557 | | | | | : | | | | |
| 16:28:54 | 11.65843 | 7.039453 | | | | | : | | | | |
| 16:29:54 | 9.161827 | 6.068379 | | | | | : | | | | |
| 16:30:54 | 13.72197 | 25.33464 | | | | | : | | | | |
| 16:31:54 | 13.92983 | 60.50518 | | | | | : | | | | |
| 16:32:54 | 10.7202 | 62.38114 | | | | | : | | | | |
| 16:33:54 | 46.484 | 59.74147 | | | | | : | | | | |
| 16:34:54 | 108.5433 | 53.33368 | | | | | : | | | | |
| 16:35:54 | 105.5316 | 40.75153 | | | | | : | | | | |
| 16:36:54 | 107.7621 | 39.33812 | | | | | : | | | | |
| 16:37:54 | 99.75694 | 39.85096 | | | | | : | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 16:38:54 | 117.0285 | 40.823 | | | | | | | | |

| | | | FRONT ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : |
|---|---|---|---|---|---|---|
| | LINE 2 COMFORT HOOD | SAMPLE | | | | |
| 16:39:54 | 122.7671 | 55.44074 | | | | : |
| 16:40:09 | 124.0163 | 56.98098 | | | | : |
| 16:40:24 | 116.3763 | 57.53741 | | | | : |
| 16:40:39 | 125.3041 | 60.82921 | | | | : |
| 16:40:54 | 120.6612 | 58.0351 | | | | : |
| 16:41:09 | 113.3846 | 57.70606 | | | | : |
| 16:41:24 | 125.4202 | 58.18852 | | | | : |
| 16:41:39 | 121.7216 | 58.34017 | | | | : |
| 16:41:54 | 116.602 | 57.59104 | | | | : |
| 16:42:09 | 120.49 | 57.82325 | | | | : |
| 16:42:24 | 123.0352 | 57.83029 | | | | : |
| 16:42:39 | 119.8497 | 58.48083 | | | | : |
| 16:42:54 | 113.63 | 58.01651 | | | | : |
| 16:43:09 | 125.9713 | 56.30906 | | | | : |
| 16:43:24 | 123.8972 | 51.82061 | | | | : |
| | 120.8751 | | | | | |
| | | END | | | | |
| 16:43:39 | 102.6479 | 45.89133 | | | | : |
| 16:43:54 | 316.2871 | 40.55352 | | | | : |
| 16:44:09 | 677.5265 | 37.96023 | | | | : |
| 16:44:24 | 629.6259 | 37.94843 | | | | : |
| 16:44:39 | 530.7304 | 37.46262 | | | | : |
| 16:44:54 | 681.8949 | 37.23357 | | | | : |
| 16:45:09 | 687.6758 | 37.14516 | | | | : |
| 16:45:24 | 554.2975 | 38.57404 | | | | : |
| 16:45:39 | 663.685 | 40.23904 | | | | : |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 | THC2 | | FRONT GC RESULTS | | | | REAR GC RESULTS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (table) | (rack) | | ETH-OH | CH4 | C2H6 | ACETALDEHYDE: | ETH-OH | CH4 | C2H6 | ACETALDEHYDE |
| | (ppmC) | (ppmC) | | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) : | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) |
| 16:45:54 | 681.6486 | 39.47442 | | | | | : | | | | |
| 16:46:38 | 661.835 | 37.72398 | | | | | : | | | | |
| 16:46:39 | 661.835 | 37.72398 | | | | | : | | | | |
| 16:46:39 | 694.0729 | 37.60699 | | | | | : | | | | |
| 16:47:09 | 599.2235 | 39.93898 | | | | | : | | | | |
| 16:47:39 | | 46.70284 | | FRONT | | | | | | | |
| | | | | ETH-OH | CH4 | C2H6 | ACETALDEHYDE: | ETH-OH | CH4 | C2H6 | ACETALDEHYDE |
| | FRONT | REAR | LITE RYE BREAD SAM | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) : | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) |
| 16:48:09 | 626.0633 | 56.25227 | | | | | : | 85.7 | 2.02 | 0.53 | 4.63 |
| 16:48:39 | 650.7016 | 57.9347 | | | | | : | | | | |
| 16:49:09 | 714.9216 | 59.46802 | | | | | : | | | | |
| 16:49:39 | 637.5718 | 58.52269 | | | | | : | | | | |
| 16:50:09 | 728.5926 | 57.4615 | | | | | : | | | | |
| 16:50:39 | 649.2714 | 57.65371 | | | | | : | | | | |
| 16:51:09 | 655.7234 | 57.68335 | | | | | : | | | | |
| 16:51:39 | 688.1528 | 56.86594 | | | | | : | | | | |
| 16:52:09 | 646.9548 | 52.72595 | | | | | : | | | | |
| 16:52:39 | 665.9782 | 38.20032 | | | | | : | | | | |
| 16:53:09 | 621.0528 | 38.02177 | | | | | : | | | | |
| 16:53:39 | 595.2332 | 37.14312 | | | | | : | | | | |
| 16:54:09 | 639.9388 | 37.90045 | | | | | : | | | | |
| 16:54:39 | 564.2653 | 38.64099 | | | | | : | | | | |
| 16:55:09 | 601.3074 | 38.07462 | | | | | : | | | | |
| 16:55:39 | 595.1424 | 35.65527 | | | | | : | | | | |
| 16:56:09 | 607.806 | 43.18403 | | | | | : | | | | |
| 16:56:39 | 680.974 | 55.45557 | | 550 | 2.28 | 0.21 | 17.1 : | | | | |
| 16:57:09 | 631.114 | 59.30193 | | | | | : | | | | |
| 16:57:39 | 683.6387 | 59.48767 | | | | | : | | | | |
| 16:58:09 | 660.5897 | 60.27737 | | | | | : | | | | |
| 16:58:39 | 625.8167 | 57.68938 | | | | | : | | | | |
| 16:59:09 | 699.8243 | 58.32999 | | | | | : | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16:59:39 | 638.6313 | 59.07639 | | | | | : | | | | |
| 17:00:09 | 699.9559 | 56.18863 | | | | | : | | | | |
| 17:00:39 | 651.117 | 40.36681 | | | | | : | | | | |
| 17:01:09 | 632.9659 | 37.90973 | | | | | : | | | | |
| 17:01:39 | 650.3009 | 37.10459 | | | | | : | | | | |
| 17:02:09 | 602.4631 | 37.88645 | | | | | : | | | | |
| 17:02:39 | 665.9803 | 37.16931 | | | | | : | | | | |
| 17:03:09 | 626.2248 | 36.09529 | | | | | : | | | | |
| 17:03:39 | 607.6958 | 38.00441 | | | | | : | | | | |
| 17:04:09 | 685.2701 | 51.87571 | | | | | : | | | | |
| 17:04:39 | 629.8644 | 56.62453 | | | | | : | | | | |
| 17:05:09 | 665.3479 | 57.24641 | | | | | : | | | | |
| 17:05:39 | 670.04 | 57.40655 | | | | | : | | | | |
| 17:06:09 | 654.3615 | 57.17914 | | | | | : | 195 | 3.85 | | 7.24 |
| 17:06:39 | 731.0815 | 56.05731 | | | | | | | | | |
| 17:07:09 | 659.9935 | 56.66292 | | | | | | | | | |
| 17:07:39 | 703.5674 | 56.64257 | | | | | : | | | | |
| 17:08:09 | 678.4631 | 55.79349 | | | | | : | | | | |
| 17:08:39 | 650.8192 | 55.69491 | | | | | : | | | | |
| 17:09:09 | 699.4058 | 43.38015 | | | | | : | | | | |
| 17:09:39 | 623.7826 | 38.35152 | | | | | : | | | | |
| 17:10:09 | 650.4582 | 36.74134 | | | | | : | | | | |
| 17:10:39 | 655.4919 | 38.5859 | | | | | : | | | | |
| 17:11:09 | 621.8656 | 38.22137 | | | | | : | | | | |
| 17:11:39 | 673.4471 | 37.19929 | | | | | : | | | | |
| 17:12:09 | 610.4166 | 37.44302 | | | | | : | | | | |
| 17:12:39 | 607.255 | 35.7978 | | | | | : | | | | |
| 17:13:09 | 655.9619 | 34.97104 | | | | | : | | | | |
| 17:13:39 | 611.6173 | 36.34014 | | | | | : | | | | |
| 17:14:09 | 682.8729 | 49.20992 | | | | | : | | | | |
| 17:14:39 | 671.8676 | 55.49044 | | | | | : | | | | |
| 17:15:09 | 646.2017 | 56.81381 | 532 | 2.34 | 0.2 | 17 | : | | | | |
| 17:15:39 | 697.1576 | 57.32027 | | | | | : | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 17:16:09 | 637.533 | 57.4795 | | | | | | | | |
| 17:16:39 | 711.3087 | 56.74813 | | | | | | | | |
| 17:17:09 | 684.1605 | 57.11704 | | | | | | | | |
| 17:17:39 | 671.8986 | 56.84385 | | | | | | | | |
| 17:18:09 | 717.4572 | 56.56672 | | | | | | | | |
| 17:18:39 | 656.9058 | 55.5421 | | | | | | | | |
| 17:19:09 | 690.0143 | 55.62309 | | | | | | | | |
| 17:19:39 | 654.3862 | 55.9239 | | | | | | | | |
| 17:20:09 | 649.9485 | 47.29885 | | | | | | | | |
| 17:20:39 | 714.14 | 38.13419 | | | | | | | | |
| 17:21:09 | 614.5846 | 38.69368 | | | | | | | | |
| 17:21:39 | 666.6631 | 39.15244 | | | | | | | | |
| 17:22:09 | 634.5128 | 38.28349 | | | | | | | | |
| 17:22:39 | 599.8585 | 38.41755 | | | | | | | | |
| 17:23:09 | 660.5477 | 38.34941 | | | | | | | | |
| 17:23:39 | 601.2413 | 37.30553 | | | | | | | | |
| 17:24:09 | 669.0643 | 40.1539 | | | | | | | | |
| 17:24:39 | 620.2026 | 37.99926 | | | | | 97.8 | 2.54 | | 4.6 |
| 17:25:09 | 589.0042 | 38.23737 | | | | | | | | |
| 17:25:39 | 639.7133 | 41.25425 | | | | | | | | |
| 17:26:09 | 609.1461 | 55.7198 | | | | | | | | |
| 17:26:39 | 661.7695 | 59.98919 | | | | | | | | |
| 17:27:09 | 676.5593 | 61.36253 | | | | | | | | |
| 17:27:39 | 643.7954 | 62.02855 | | | | | | | | |
| 17:28:09 | 740.913 | 61.68292 | | | | | | | | |
| 17:28:39 | 652.6617 | 60.97591 | | | | | | | | |
| 17:29:09 | 709.0215 | 60.7917 | | | | | | | | |
| 17:29:39 | 615.9484 | 59.19083 | | | | | | | | |
| 17:30:09 | 671.0632 | 58.03281 | | | | | | | | |
| 17:30:39 | 677.9738 | 59.165 | | | | | | | | |
| 17:31:09 | 691.6673 | 58.34163 | | | | | | | | |
| 17:31:39 | 776.2803 | 57.49446 | | | | | | | | |
| 17:32:09 | 713.0579 | 56.71746 | | | | | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 17:32:39 | 736.8845 | 43.3849 | | | | : | | | | |
| 17:33:09 | 698.3229 | 37.74192 | | | | : | | | | |
| 17:33:39 | 661.9335 | 38.03193 | | | | : | | | | |
| 17:34:09 | 701.2498 | 37.12423 | 445 | 2.54 | | 14 : | | | | |
| 17:34:39 | 655.426 | 38.83276 | | | | : | | | | |
| 17:35:09 | 690.9017 | 37.89458 | | | | : | | | | |
| 17:35:39 | 712.9224 | 38.39201 | | | | : | | | | |
| 17:36:09 | 661.9933 | 38.05943 | | | | : | | | | |
| 17:36:39 | 758.1708 | 35.87828 | | | | : | | | | |
| 17:37:09 | 661.8452 | 38.77887 | | | | : | | | | |
| 17:37:39 | 657.7046 | 52.38836 | | | | : | | | | |
| 17:38:09 | 712.0613 | 58.6278 | | | | : | | | | |
| 17:38:39 | 703.191 | 60.39643 | | | | : | | | | |
| 17:39:09 | 770.921 | 59.84307 | | | | : | | | | |
| 17:39:39 | 717.7374 | 60.01898 | | | | : | | | | |
| 17:40:09 | 722.3938 | 59.48373 | | | | : | | | | |
| 17:40:39 | 753.1239 | 59.34469 | | | | : | | | | |
| 17:41:09 | 691.03 | 58.23291 | | | | : | | | | |
| 17:41:39 | 779.9366 | 57.04627 | | | | : | | | | |
| 17:42:09 | 691.3047 | 48.56146 | | | | : | | | | |
| 17:42:39 | 705.1227 | 39.96888 | | | | : | | | | |
| 17:43:09 | 745.5781 | 41.13682 | | | | : | | | | |
| 17:43:39 | 694.8652 | 49.37172 | | | | : | | | | |
| 17:44:09 | 777.0125 | 51.76235 | | | | : | 115 | 1.96 | 0.59 | 4.96 |
| 17:44:39 | 731.4171 | 48.05511 | | | | : | | | | |
| 17:45:09 | 682.5397 | 39.99825 | | | | : | | | | |
| 17:45:39 | 715.243 | 40.70419 | | | | : | | | | |
| 17:46:09 | 684.2617 | 39.69753 | | | | : | | | | |
| 17:46:39 | 756.6442 | 41.61172 | | | | : | | | | |
| | 669.8078 | 48.77769 | | | | | | | | |

END

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 17:47:39 | 681.9285 | 55.09089 | | | | | | | | |
| 17:48:44 | 120.3074 | 2.781838 | | | | | | | | |
| 17:48:46 | 120.3074 | 2.781838 | | | | | | | | |
| 17:48:47 | 120.3074 | 2.781838 | | | | | | | | |
| 17:48:47 | 120.3074 | 2.781838 | | | | | | | | |
| 17:48:47 | 120.3074 | 2.781838 | | | | | | | | |
| 17:48:47 | 120.3074 | 2.781838 | | | | | | | | |
| 17:48:49 | 70.24654 | 0.661293 | | | | | | | | |
| 17:48:59 | 67.53784 | 1.400337 | | | | | | | | |
| 17:49:09 | 60.99543 | 1.642246 | | | | | | | | |
| 17:49:19 | 58.23168 | 1.560768 | | | | | | | | |
| 17:49:29 | 57.17003 | 1.803209 | | | | | | | | |
| 17:49:39 | 56.04511 | 1.811643 | | | | | | | | |
| 17:49:49 | 50.77974 | 2.011231 | | | | | | | | |
| 17:49:59 | 48.81985 | 1.359404 | | | | | | | | |
| 17:50:09 | 47.34634 | 1.19302 | | | | | | | | |
| 17:50:19 | 46.63055 | 0.979048 | | | | | | | | |
| 17:50:43 | 43.01279 | 1.490016 | | | | | | | | |
| 17:50:43 | 43.01279 | 1.490016 | | | | | | | | |
| 17:50:49 | 35.63415 | 1.465338 | | | | | | | | |
| 17:50:59 | 31.76541 | 2.72116 | | | | | | | | |
| 17:51:09 | 32.25847 | 2.245968 | | | | | | | | |
| 17:51:19 | 29.68945 | 2.347241 | | | | | | | | |
| 17:51:29 | 28.20407 | 2.843178 | | | | | | | | |
| 17:51:39 | 26.78161 | 2.909467 | | | | | | | | |
| 17:52:09 | 25.40624 | 2.842643 | | | | | | | | |
| 17:52:39 | 25.20817 | 2.784778 | | | | | | | | |
| 17:52:57 | 17.29054 | 2.854283 | | | | | | | | |
| 17:52:59 | 9.999088 | 5.03663 | | | | | | | | |
| 17:53:09 | 12.85792 | 2.129465 | | | | | | | | |
| 17:53:19 | 12.8681 | 2.016967 | | | | | | | | |
| 17:53:29 | 13.80963 | 0.670703 | | | | | | | | |
| 17:53:39 | 10.72025 | 2.505692 | | | | | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 17:53:49 | 10.83876 | 1.633 | | | | | | | | |
| 17:53:59 | 10.58895 | 1.195011 | | | | | | | | |
| 17:54:09 | 8.986586 | 1.640349 | | | | | | | | |
| 17:54:19 | 9.274217 | 1.57228 | | | | | | | | |
| 17:54:29 | 10.55985 | 0.588010 | | | | | | | | |
| 17:55:29 | 451.8296 | 58.2103 | | | | | | | | |
| 17:56:12 | 100.1822 | 89.05756 | | | | | | | | |
| 17:56:12 | 100.1822 | 89.05756 | | | | | | | | |
| 17:56:14 | 92.8154 | 93.44112 | | | | | | | | |
| 17:56:29 | 91.49847 | 94.46818 | | | | | | | | |
| 17:56:44 | 90.82996 | 87.44041 | | | | | | | | |
| 17:56:59 | 90.71393 | 85.75755 | | | | | | | | |
| 17:57:14 | 90.15969 | 86.60531 | | | | | | | | |
| 17:57:29 | 90.89558 | 87.7634 | | | | | | | | |
| 17:57:44 | 89.88288 | 87.18627 | | | | | | | | |
| 17:57:59 | 90.50361 | 86.27328 | | | | | | | | |
| 17:58:14 | 89.69139 | 87.89586 | | | | | | | | |
| 17:58:29 | 89.10184 | 85.6153 | | | | | | | | |
| 17:58:44 | 89.05611 | 86.53326 | | | | | | | | |
| 17:58:59 | 88.76582 | 87.02433 | | | | | | | | |
| 17:59:14 | 88.42382 | 86.92744 | | | | | | | | |
| 18:00:11 | 591.4034 | 513.3533 | | | | | | | | |
| 18:00:11 | 591.4034 | 513.3533 | | | | | | | | |
| 18:00:14 | 802.8655 | 764.2047 | | | | | | | | |
| 18:00:34 | 803.9227 | 771.3851 | | | | | | | | |
| 18:00:54 | 810.0183 | 772.1182 | | | | | | | | |
| 18:01:14 | 809.9528 | 774.9047 | | | | | | | | |
| 18:01:34 | 806.3943 | 772.4498 | | | | | | | | |
| 18:01:54 | 803.2319 | 773.9739 | | | | | | | | |
| 18:02:14 | 810.6462 | 772.1833 | | | | | | | | |
| 18:02:34 | 811.0723 | 770.2269 | | | | | | | | |
| 18:02:44 | 810.4399 | 775.2173 | | | | | | | | |
| 18:02:54 | 811.9366 | 770.4066 | | | | | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 18:03:04 | 810.3356 | 775.7841 | | | | : | | | | |
| 18:03:14 | 811.3689 | 770.1296 | | | | : | | | | |
| 18:03:24 | 811.6215 | 771.4312 | | | | : | | | | |
| 18:03:34 | 809.8089 | 770.296 | | | | : | | | | |
| 18:03:44 | 806.3568 | 756.5043 | | | | : | | | | |
| 18:03:54 | 750.8615 | 113.3816 | | | | : | | | | |
| 18:04:04 | 623.665 | 61.72632 | | | | : | | | | |
| 18:04:14 | 847.4092 | 69.30756 | | | | : | | | | |
| 18:04:24 | 456.7684 | 568.0385 | | | | : | | | | |
| 18:04:34 | 233.0896 | 235.0568 | | | | : | | | | |
| 18:04:44 | 218.5839 | 229.7705 | | | | : | | | | |
| 18:04:54 | 215.6121 | 225.2643 | | | | : | | | | |
| 18:05:14 | 213.5374 | 223.9262 | | | | : | | | | |
| 18:05:34 | 212.2685 | 225.3451 | | | | : | | | | |
| 18:05:54 | 211.4104 | 218.7863 | | | | : | | | | |
| 18:06:14 | 210.8054 | 218.418 | | | | : | | | | |
| 18:06:34 | 210.7571 | 217.8315 | | | | : | | | | |
| 18:06:54 | 210.6822 | 218.0175 | | | | : | | | | |
| 18:07:14 | 210.8186 | 217.6655 | | | | : | | | | |
| 18:07:34 | 211.5915 | 217.7046 | | | | : | | | | |
| 18:07:54 | 212.1565 | 217.2088 | | | | : | | | | |
| 18:08:14 | 211.9785 | 217.6663 | | | | : | | | | |
| 18:08:34 | 212.496 | 218.1896 | | | | : | | | | |
| 18:08:54 | 213.0918 | 217.8068 | | | | : | | | | |
| 18:09:14 | 213.08 | 217.6725 | | | | : | | | | |
| 18:09:34 | 212.8918 | 217.4072 | | | | : | | | | |
| 18:09:54 | 282.481 | 154.9094 | | | | : | | | | |
| 18:10:14 | 853.193 | 50.38786 | | | | : | | | | |
| 18:10:34 | 825.9102 | 57.47048 | | | | : | | | | |
| 18:10:54 | 526.7836 | 186.4901 | | | | : | | | | |
| 18:11:14 | 309.1061 | 267.2068 | | | | : | | | | |
| 18:11:34 | 303.7529 | 279.3057 | | | | : | | | | |
| 18:11:53 | 304.8595 | 284.279 | | | | : | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 | THC2 | FRONT GC RESULTS | | | | | REAR GC RESULTS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (table) | (rack) | ETH-OH | CH4 | C2H6 | ACETALDEHYDE | : | ETH-OH | CH4 | C2H6 | ACETALDEHYDE |
| | (ppmC) | (ppmC) | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | : | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) |
| 18:12:04 | 306.1873 | 287.685 | | | | | : | | | | |
| 18:12:19 | 305.3141 | 290.0695 | | | | | : | | | | |
| 18:12:34 | 303.9669 | 292.2198 | | | | | : | | | | |
| 18:12:49 | 304.177 | 290.7963 | | | | | : | | | | |
| 18:13:04 | 304.9 | 292.7295 | | | | | : | | | | |
| 18:13:19 | 307.1524 | 293.1521 | | | | | : | | | | |
| 18:13:34 | 307.5072 | 294.2939 | | | | | : | | | | |
| 18:13:49 | 307.394 | 294.3651 | | | | | : | | | | |
| 18:14:04 | 379.3589 | 276.7627 | | | | | : | | | | |
| 18:14:19 | 911.8297 | 110.0902 | | | | | : | | | | |
| 18:14:34 | 924.0176 | 347.5446 | | | | | : | | | | |
| 18:14:49 | 1125.983 | 1501.363 | | | | | : | | | | |
| 18:15:04 | 1491.935 | 1520.716 | | | | | : | | | | |
| 18:15:19 | 1503.841 | 1527.747 | | | | | : | | | | |
| 18:15:34 | 1505.735 | 1523.271 | | | | | : | | | | |
| 18:15:49 | 1506.401 | 1518.526 | | | | | : | | | | |
| 18:16:04 | 1508.946 | 1518.036 | | | | | : | | | | |
| 18:16:19 | 1508.109 | 1528.609 | | | | | : | | | | |
| 18:16:34 | 1507.276 | 1518.776 | | | | | : | | | | |
| 18:16:49 | 1507.557 | 1531.973 | | | | | : | | | | |
| 18:17:04 | 1506.585 | 1527.146 | | | | | : | | | | |
| 18:17:19 | 1505.945 | 1529.004 | | | | | : | | | | |
| 18:17:34 | 1505.072 | 1535.301 | | | | | : | | | | |
| 18:17:49 | 1505.68 | 1517.138 | | | | | : | | | | |
| 18:18:04 | 1503.496 | 1519.508 | | | | | : | | | | |
| 18:18:19 | 1505.034 | 1513.673 | | | | | : | | | | |
| 18:18:34 | 1406.092 | 2123.434 | | | | | : | | | | |
| 18:18:49 | 3466.067 | 3805.034 | | | | | : | | | | |
| 18:19:04 | 3899.812 | 3913.922 | | | | | : | | | | |
| 18:19:19 | 3946.385 | 3901.949 | | | | | : | | | | |
| 18:19:34 | 3962.67 | 3896.941 | | | | | : | | | | |
| 18:19:49 | 3966.923 | 3947.726 | | | | | : | | | | |
| 18:20:04 | 3968.708 | 3953.447 | | | | | : | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 18:20:19 | 3971.692 | 3955.667 | | | | : | | | | |
| 18:20:34 | 3964.281 | 3958.785 | | | | : | | | | |
| 18:20:49 | 2895.374 | 1564.922 | | | | : | | | | |
| 18:21:04 | 988.803 | 175.6846 | | | | : | | | | |
| 18:21:24 | 1501.501 | 1304.21 | | | | : | | | | |
| 18:21:44 | 342.6351 | 289.5609 | | | | : | | | | |
| 18:22:04 | 315.0948 | 291.3223 | | | | : | | | | |
| 18:22:24 | 311.5623 | 293.2198 | | | | : | | | | |
| 18:22:44 | 310.4233 | 299.3115 | | | | : | | | | |
| 18:23:04 | 307.934 | 297.2057 | | | | : | | | | |
| 18:23:24 | 308.7549 | 294.8399 | | | | : | | | | |
| 18:23:44 | 309.5914 | 295.0205 | | | | : | | | | |
| 18:24:14 | 638.7006 | 196.6595 | | | | : | | | | |
| 18:24:44 | 870.3237 | 75.19483 | | | | : | | | | |
| 18:25:14 | 926.0379 | 69.27288 | | | | : | | | | |
| 18:25:44 | 843.5894 | 67.47741 | | | | : | | | | |
| 18:26:14 | 978.637 | 67.0761 | | | | : | | | | |
| 18:26:44 | 865.2872 | 65.05154 | | | | : | | | | |
| 18:27:44 | 889.7471 | 62.94608 | | | | : | | | | |
| 18:28:44 | 878.6041 | 61.4699 | | | | : | | | | |
| 18:29:44 | 860.7574 | 59.26758 | | | | : | | | | |
| 18:30:44 | 626.9145 | 206.5238 | | | | : | | | | |
| 18:31:44 | 326.0761 | 288.8166 | | | | : | | | | |
| 18:32:44 | 279.6633 | 496.9912 | | | | : | | | | |
| 18:33:36 | 93.8543 | 190.6477 | | | | : | | | | |
| 18:33:37 | 93.8543 | 190.6477 | | | | : | | | | |
| 18:33:44 | 8.772214 | 6.406462 | | | | : | | | | |
| 18:34:04 | 9.972653 | 4.403459 | | | | : | | | | |
| 18:34:24 | 8.918718 | 3.865625 | | | | : | | | | |
| 18:34:44 | 9.398115 | 79.35545 | | | | : | | | | |
| 18:35:04 | 121.9198 | 988.1844 | | | | : | | | | |
| 18:35:24 | 147.208 | 1028.999 | | | | : | | | | |
| 18:35:44 | 145.1465 | 1006.545 | | | | : | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 18:36:04 | 154.4772 | 954.85 | | | | | | | | | |
| | LINE 2 COMFORT HOOD | LINE 1 COMFORT HOOD | SAMPLE | FRONT ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
| 18:36:24 | 137.7674 | 978.4221 | | | | | : | | | | |
| 18:36:45 | 157.9362 | 1056.665 | | | | | : | | | | |
| 18:37:04 | 144.8045 | 1026.923 | | | | | : | | | | |
| 18:37:24 | 155.1883 | 1053.149 | | | | | : | | | | |
| 18:37:44 | 158.9215 | 1056.118 | | | | | : | | | | |
| 18:38:04 | 147.4999 | 1060.253 | | | | | : | | | | |
| 18:38:24 | 162.7742 | 1139.527 | | | | | : | | | | |
| 18:38:44 | 148.7737 | 1141.887 | | | | | : | | | | |
| 18:39:04 | 146.8079 | 1062.371 | | | | | : | | | | |
| 18:39:24 | 151.9991 | 1092.89 | | | | | : | | | | |
| 18:39:44 | 141.9763 | 1098.642 | | | | | : | | | | |
| 18:40:04 | 155.9081 | 1094.477 | | | | | : | | | | |
| 18:40:24 | 141.3086 | 1097.459 | | | | | : | | | | |
| 18:40:44 | 153.9112 | 1077.32 | | | | | : | | | | |
| 18:41:04 | 153.6363 | 1032.455 | | | | | : | | | | |
| 18:41:24 | 145.4254 | 1040.491 | | | | | : | | | | |
| 18:41:54 | 150.7155 | 1026.461 | | | | | : | | | | |
| 18:42:24 | 141.3125 | 1057.238 | | | | | : | | | | |
| 18:42:54 | 141.7647 | 1055.542 | | | | | : | | | | |
| 18:43:24 | 143.8538 | 1091.152 | | | | | : | | | | |
| 18:43:54 | 139.5858 | 1084.117 | | | | | : | | | | |
| 18:44:24 | 150.4721 | 1064.071 | | | | | : | | | | |
| | 148.7428 | 1067.619 | | | | | | | | | |
| | | | END | | | | | | | | |
| 18:44:54 | 139.649 | 685.9791 | | | | | : | | | | |
| 18:45:24 | 15.14443 | 30.00577 | | | | | : | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE: (ppmV/wet) : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 18:45:54 | 5.178239 | 15.74595 | | | | : | | | | |
| 18:46:24 | 6.58869 | 5.870663 | | | | : | | | | |
| 18:46:54 | 6.038541 | 5.02869 | | | | : | | | | |
| 18:47:24 | 5.989203 | 3.62267 | | | | : | | | | |
| 18:47:54 | 7.756787 | 4.213714 | | | | : | | | | |
| 18:48:24 | 12.72295 | 3.274329 | | | | : | | | | |
| 18:48:54 | 11.26214 | 3.918955 | | | | : | | | | |
| 18:49:24 | 10.68609 | 3.90776 | | | | : | | | | |
| 18:49:54 | 12.12356 | 2.438648 | | | | : | | | | |
| 18:50:24 | 10.49041 | 10.07376 | | | | : | | | | |
| 18:50:54 | 10.19559 | 9.417857 | | | | : | | | | |
| 18:51:24 | 9.967722 | 9.605755 | | | | : | | | | |
| 18:51:54 | 10.12564 | 8.574289 | | | | : | | | | |
| 18:52:24 | 9.975859 | 14.97295 | | | | : | | | | |
| 18:52:54 | 9.773214 | 16.30111 | | | | : | | | | |
| 18:53:24 | 9.553326 | 15.78343 | | | | : | | | | |
| 18:53:54 | 9.322958 | 15.94985 | | | | : | | | | |
| 18:54:24 | 9.315223 | 16.34886 | | | | : | | | | |
| 18:54:54 | 9.114346 | 16.75189 | | | | : | | | | |
| 18:55:24 | 9.170609 | 15.81572 | | | | : | | | | |
| 18:55:54 | 8.756022 | 15.67152 | | | | : | | | | |
| 18:56:24 | 9.023675 | 15.54117 | | | | : | | | | |
| 18:56:54 | 8.733106 | 15.57214 | | | | : | | | | |
| 18:57:24 | 8.952236 | 15.87402 | | | | : | | | | |
| 18:57:54 | 9.628976 | 14.05409 | | | | : | | | | |
| 18:58:24 | 9.321131 | 15.03831 | | | | : | | | | |
| 18:58:54 | 9.292872 | 15.77618 | | | | : | | | | |
| 18:59:24 | 9.343784 | 17.04217 | | | | : | | | | |
| 18:59:54 | 9.147799 | 17.60257 | | | | : | | | | |
| 19:00:24 | 9.401756 | 16.53976 | | | | : | | | | |
| 19:00:54 | 9.049747 | 16.77811 | | | | : | | | | |
| 19:01:24 | 8.49761 | 17.52147 | | | | : | | | | |
| 19:01:54 | 8.286475 | 17.61579 | | | | : | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 19:02:24 | 8.6824 | 16.15211 | | | | | | | | |
| 19:02:54 | 8.343011 | 16.43673 | | | | | | | | |
| 19:03:24 | 8.336461 | 17.20231 | | | | | | | | |
| 19:03:54 | 8.856558 | 16.43602 | | | | | | | | |
| 19:04:24 | 8.293921 | 16.53472 | | | | | | | | |
| 19:04:54 | 8.255615 | 16.65649 | | | | | | | | |
| 19:05:24 | 7.838336 | 16.59431 | | | | | | | | |
| 19:05:54 | 7.574986 | 15.99384 | | | | | | | | |
| 19:06:24 | 7.658685 | 15.68118 | | | | | | | | |
| 19:06:54 | 7.288548 | 16.20261 | | | | | | | | |
| 19:07:24 | 7.891728 | 14.88964 | | | | | | | | |
| 19:07:54 | 8.292856 | 14.33759 | | | | | | | | |
| 19:08:24 | 7.843221 | 14.42201 | | | | | | | | |
| 19:08:54 | 8.176501 | 15.17377 | | | | | | | | |
| 19:09:24 | 9.332677 | 14.00873 | | | | | | | | |
| 19:09:54 | 8.350463 | 13.58108 | | | | | | | | |
| 19:10:24 | 8.688746 | 14.00756 | | | | | | | | |
| 19:10:54 | 8.372338 | 14.35222 | | | | | | | | |
| 19:11:24 | 7.818894 | 15.02003 | | | | | | | | |
| 19:11:54 | 7.459581 | 14.6134 | | | | | | | | |
| 19:12:24 | 8.321272 | 14.25297 | | | | | | | | |
| 19:12:54 | 7.736739 | 14.15343 | | | | | | | | |
| 19:13:24 | 7.072399 | 16.17689 | | | | | | | | |
| 19:13:54 | 7.396397 | 14.86033 | | | | | | | | |
| 19:14:24 | 7.16125 | 14.8829 | | | | | | | | |
| 19:14:54 | 7.245749 | 15.1684 | | | | | | | | |
| 19:15:24 | 7.233173 | 14.97965 | | | | | | | | |
| 19:15:54 | 6.355327 | 15.29974 | | | | | | | | |
| 19:16:24 | 6.475695 | 14.36567 | | | | | | | | |
| 19:16:54 | 6.767973 | 13.76901 | | | | | | | | |
| 19:17:24 | 124.5934 | 341.8776 | | | | | | | | |
| 19:17:54 | 7.241116 | 13.88786 | | | | | | | | |
| 19:18:24 | -205.767 | 13.10095 | | | | | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) | : | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 19:18:54 | 6.510637 | 14.37619 | | | | | : | | | | |
| 19:19:24 | 6.46212 | 14.78465 | | | | | : | | | | |
| 19:19:54 | 6.635694 | 14.83365 | | | | | : | | | | |
| 19:20:24 | 6.596586 | 14.60167 | | | | | : | | | | |
| 19:20:54 | 6.58477 | 13.14678 | | | | | : | | | | |
| 19:21:24 | 6.540378 | 14.07096 | | | | | : | | | | |
| 19:21:54 | 6.797896 | 13.90073 | | | | | : | | | | |
| 19:22:24 | 6.526254 | 14.50373 | | | | | : | | | | |
| 19:22:54 | 6.28041 | 13.77833 | | | | | : | | | | |
| 19:23:24 | 6.393483 | 14.11921 | | | | | : | | | | |
| 19:23:54 | 6.321751 | 13.88748 | | | | | : | | | | |
| 19:24:24 | 6.516293 | 13.88031 | | | | | : | | | | |
| 19:24:54 | 7.651951 | 10.1409 | | | | | : | | | | |
| 19:25:24 | 8.037458 | 8.36982 | | | | | : | | | | |
| 19:25:54 | 8.018306 | 8.292183 | | | | | : | | | | |
| 19:26:24 | 6.983796 | 9.67176 | | | | | : | | | | |
| 19:26:54 | 7.003756 | 10.03386 | | | | | : | | | | |
| 19:27:24 | 7.535196 | 9.4997 | | | | | : | | | | |
| 19:27:54 | 6.75662 | 10.28417 | | | | | : | | | | |
| 19:28:24 | 6.909178 | 9.355187 | | | | | : | | | | |
| 19:28:54 | 6.772536 | 10.24816 | | | | | : | | | | |
| 19:29:24 | 8.41389 | 5.326598 | | | | | : | | | | |
| 19:29:54 | 7.238598 | 9.126521 | | | | | : | | | | |
| 19:30:24 | 7.835766 | 8.78858 | | | | | : | | | | |
| 19:30:54 | 7.833635 | 9.23712 | | | | | : | | | | |
| 19:31:24 | 7.801762 | 13.14612 | | | | | : | | | | |
| 19:31:54 | 8.110219 | 13.00729 | | | | | : | | | | |
| 19:32:24 | 8.705564 | 12.0252 | | | | | : | | | | |
| 19:32:54 | 8.978779 | 10.62277 | | | | | : | | | | |
| 19:33:24 | 8.995471 | 8.357552 | | | | | : | | | | |
| 19:33:54 | 9.634267 | 7.13115 | | | | | : | | | | |
| 19:34:24 | 9.024113 | 7.612613 | | | | | : | | | | |
| 19:34:54 | 7.560564 | 7.748718 | | | | | : | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 (table) (ppmC) | THC2 (rack) (ppmC) | FRONT GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) | REAR GC RESULTS ETH-OH (ppmV/wet) | CH4 (ppmV/wet) | C2H6 (ppmV/wet) | ACETALDEHYDE (ppmV/wet) |
|---|---|---|---|---|---|---|---|---|---|---|
| 19:35:24 | 7.561777 | 6.707781 | | | | | | | | |
| 19:35:54 | 6.076474 | 7.383619 | | | | | | | | |
| 19:36:24 | 4.971339 | 9.782568 | | | | | | | | |
| 19:36:54 | 4.126477 | 13.25467 | | | | | | | | |
| 19:37:24 | 2.638254 | 4.314458 | | | | | | | | |
| 19:37:54 | 1.491814 | -5.36082 | | | | | | | | |
| 19:38:24 | 4.711289 | -4.37476 | | | | | | | | |
| 19:38:54 | 2.98436 | -4.53843 | | | | | | | | |
| 19:39:24 | 2.449214 | -5.10511 | | | | | | | | |
| 19:39:54 | 1.463189 | -5.13202 | | | | | | | | |
| 19:40:24 | 1.530494 | -5.37116 | | | | | | | | |
| 19:40:54 | 1.068961 | -5.15135 | | | | | | | | |
| 19:41:24 | 2.345182 | -5.03986 | | | | | | | | |
| 19:41:54 | 1.350661 | -5.27493 | | | | | | | | |
| 19:42:24 | 1.138724 | -5.78354 | | | | | | | | |
| 19:42:54 | 1.79735 | -5.38753 | | | | | | | | |
| 19:43:24 | 3.355201 | -4.32676 | | | | | | | | |
| 19:43:54 | 2.146829 | -5.5355 | | | | | | | | |
| 19:44:24 | 2.268527 | -4.85690 | | | | | | | | |
| 19:44:54 | 2.525471 | -4.95798 | | | | | | | | |
| 19:45:24 | 3.226761 | -5.05443 | | | | | | | | |
| 19:45:54 | 2.092649 | -4.80030 | | | | | | | | |
| 19:46:24 | 2.433929 | -4.85832 | | | | | | | | |
| 19:46:54 | 2.516906 | -4.56825 | | | | | | | | |
| 19:47:24 | 2.650885 | -4.85126 | | | | | | | | |
| 19:47:54 | 3.772402 | -4.32954 | | | | | | | | |
| 19:48:24 | 2.374555 | -5.52757 | | | | | | | | |
| 19:48:54 | 3.717001 | -4.16532 | | | | | | | | |
| 19:49:24 | 2.238339 | -4.75790 | | | | | | | | |
| 19:49:54 | 2.461461 | -4.41048 | | | | | | | | |
| 19:50:24 | 2.951044 | -4.51266 | | | | | | | | |
| 19:50:54 | 2.659294 | -4.32547 | | | | | | | | |
| 19:51:24 | 1.885306 | -4.82469 | | | | | | | | |

06-17-1992 SITE 2 DAY 1

| TIME | THC1 | THC2 | FRONT GC RESULTS | | | | | REAR GC RESULTS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (table) | (rack) | ETH-OH | CH4 | C2H6 | ACETALDEHYDE | : | ETH-OH | CH4 | C2H6 | ACETALDEHYDE |
| | (ppmC) | (ppmC) | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | : | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) | (ppmV/wet) |
| 19:51:54 | 2.348802 | -4.97562 | | | | | : | | | | |
| 19:52:24 | 0.830407 | -5.31980 | | | | | : | | | | |
| 19:52:54 | 2.314882 | -5.13503 | | | | | : | | | | |
| 19:53:24 | 3.360121 | -4.25623 | | | | | : | | | | |
| 19:53:54 | 2.690171 | -4.16376 | | | | | : | | | | |
| 19:54:24 | 2.371393 | -4.57017 | | | | | : | | | | |
| 19:54:54 | 3.300642 | -4.44474 | | | | | : | | | | |
| 19:55:24 | 2.130274 | -5.09518 | | | | | : | | | | |
| 19:55:54 | 3.296118 | -4.15433 | | | | | : | | | | |
| 19:56:24 | 1.727989 | -4.89303 | | | | | : | | | | |
| 19:56:54 | 2.64618 | -4.80947 | | | | | : | | | | |
| 19:57:24 | 3.831522 | -4.18755 | | | | | : | | | | |
| 19:57:54 | 3.805472 | -4.19625 | | | | | : | | | | |
| 19:58:24 | 3.093501 | -4.23947 | | | | | : | | | | |
| 19:58:54 | 4.261861 | -4.13070 | | | | | : | | | | |
| 19:59:24 | 24.38632 | -4.51164 | | | | | : | | | | |
| 19:59:54 | 0.507401 | -7.99708 | | | | | : | | | | |
| 20:00:24 | -2.73937 | -6.52642 | | | | | : | | | | |
| 20:00:54 | -1.87291 | -10.0269 | | | | | : | | | | |
| 20:01:24 | -2.45613 | -7.26911 | | | | | : | | | | |
| 20:01:54 | -2.92930 | -5.86568 | | | | | : | | | | |
| 20:02:24 | -2.55187 | -6.29291 | | | | | : | | | | |
| 20:02:54 | -1.85876 | -7.45107 | | | | | : | | | | |
| 20:03:24 | -0.58284 | -5.57371 | | | | | : | | | | |
| 20:03:54 | 818.3259 | -4.00321 | | | | | : | | | | |
| 20:04:24 | 1476.719 | -6.67082 | | | | | : | | | | |
| 20:04:54 | 1493.446 | -1.74835 | | | | | : | | | | |
| 20:05:24 | 1497.036 | 127.8066 | | | | | : | | | | |
| 20:05:54 | 1500.67 | 483.0247 | | | | | : | | | | |
| 20:06:24 | 1500.347 | 136.5479 | | | | | : | | | | |
| 20:06:54 | 1500.978 | 247.4286 | | | | | : | | | | |
| 20:07:24 | 1502.73 | 1457.905 | | | | | : | | | | |
| 20:07:54 | 1498.644 | 3550.698 | | | | | : | | | | |

[illegible]
[illegible] 14:56:13
CALIBRATION FILE NAME [illegible]

| Chan. | Name | Units | Zero Conc. | Zero Resp. | Span Conc. | Span Resp. | Slope | Int. |
|---|---|---|---|---|---|---|---|---|
| 1 | THC1 | PPM | 0.00 | .0120 | 2000.00 | 2.004 | 992.166 | 11.95 |
| 2 | O2 | % | 0.00 | 0.0066 | 20.90 | 0.085 | 267.378 | -1.74 |
| 3 | THC2 | PPM | 0.00 | %-2.9434 | 3980.00 | 3.772 | 592.660 | 1744.45 |
| 4 | | PPM | 0.00 | -.0056 | 2000.00 | 2.822 | 706.491 | 5.48 |

Press Shift-PrtSc to Print out Table
Press <C> to Continue

CEM INSTRUMENT DRIFT SUMMARY
06-18-1992 14:56:49

| han. | Name | Units | Zero Conc. Actual | Zero Conc. Observed | Span Actual | Span Observed | Drift % of Scale Zero | Drift % of Scale Span |
|---|---|---|---|---|---|---|---|---|
| 1 | THC1 | PPM | 0.000 | %-7.485 | 2000.00 | 2006.26 | -0.07 | 0.06 |
| 2 | O2 | % | 0.000 | 1.523 | 20.90 | 0.00 | 6.09 | -83.60 |
| 3 | THC2 | PPM | 0.000 | %-3103.583 | 980.00 | 0.00 | -31.04 | -39.80 |
| 4 | | PPM | 0.000 | %-5.013 | 2000.00 | 2001.72 | -0.05 | 0.02 |

* Ch3 disabled
Ch4 = THC2

Press Shift-PrtSc to Print Out Table
Press <C> to Continue

:IAN CORPORATION      0619 GC FRE TEST LINE 3 199PPM

..c Testing and Process Engineering Dept.
'tinuous Emissions Monitoring Data
:ERIES

.

'formed for:
:e Printed = 06-18-1992  Current Time = 15:30:28
.e Name = C:\CEMDATA\061892.PRN   Calibration File:C:\CEMDATA\0618A.CAL

| -18-1992 | THC1 | O2 | THC2 | |
|---|---|---|---|---|
| me | PPM | % | PPM | PPM |
| 00:46 | 223.5 | 20.2 | -699.5 | 212.7 |
| 01:01 | 211.7 | 20.2 | -1039.3 | 206.8 |
| 01:16 | 211.0 | 20.3 | -1148.3 | 208.2 |
| 01:31 | 210.8 | 20.3 | -1159.9 | 207.[illegible] |
| 01:46 | 208.7 | 20.3 | -1134.9 | 207.0 |
| 02:01 | 208.3 | 20.3 | -1154.2 | 206.2 |
| 02:16 | 207.8 | 20.2 | -865.0 | 206.0 |
| 02:31 | 208.9 | 20.3 | -1079.3 | 204.2 |
| 02:46 | 207.4 | 20.3 | -1197.2 | 204.7 |
| a.= | ~~210.9~~ 209.3 | 20.3 | -1053.0 | ~~206.8~~ 204.3 |

IAN CORPORATION     DC 799

.c Testing and Process Engineering Dept.
inuous Emissions Monitoring Data
ERIES

formed for:
e Printed = 06-18-1992  Current Time = 15:25:43
e Name = C:\CEMDATA\061892.PRN   Calibration File:C:\CEMDATA\0618A.CAL

| -18-1992 | THC1 | O2 | THC2 | |
|---|---|---|---|---|
| me | PPM | % | PPM | PPM |
| 15:46 | 781.2 | -2.1 | -459.3 | 806.5 |
| 15:56 | 783.1 | -2.2 | -527.8 | 801.6 |
| 16:06 | 782.8 | -2.0 | -353.9 | 798.2 |
| 16:16 | 782.7 | -1.9 | -338.5 | 793.6 |
| 16:26 | 783.3 | -2.0 | -327.5 | 803.9 |
| ..= | 782.6 | -2.0 | -401.4 | 801.9 |

IAN CORPORATION    BC 1498

ld Testing and Process Engineering Dept.
tinuous Emissions Monitoring Data
ERIES

formed for:
e Printed = 06-18-1992  Current Time = 15:08:56
e Name = C:\CEMDATA\061892.PRN   Calibration File:C:\CEMDATA\0618A.CAL

| -18-1992 | THC1 | O2 | THC2 | |
|---|---|---|---|---|
| te | PPM | % | PPM | PPM |
| 08:58 | 1466.3 | -1.4 | -271.4 | 1482.5 |
| 09:06 | 1466.4 | -1.8 | -311.2 | 1523.3 |
| 09:16 | 1463.6 | -1.7 | -242.4 | 1476.2 |
| 09:26 | 1467.9 | -1.6 | -274.3 | 1482.8 |
| 09:36 | 1468.3 | -1.6 | -299.7 | 1468.9 |
| 09:46 | 1466.4 | -1.6 | -246.4 | 1509.1 |
| 09:56 | 1466.6 | -1.7 | -255.7 | 1481.2 |
| g.= | 1467.5 | -1.6 | -271.6 | 1488.9 |

IAN CORPORATION    QC CHECK 179

Id Testing and Process Engineering Dept.
tinuous Emissions Monitoring Data
ERIES

formed for:
e Printed = 06-18-1992  Current Time = 19:15:03
e Name = C:\CEMDATA\CONFORT.PRN   Calibration File:C:\CEMDATA\0618A.CAL

| -18-1992<br>me | THC1<br>PPM | O2<br>% | THC2<br>PPM | PPM |
|---|---|---|---|---|
| 15:06 | 171.7 | 19.8 | -667.8 | 115.5 |
| 15:16 | 169.4 | 19.8 | -617.5 | 106.4 |
| 15:31 | 157.2 | 19.8 | -583.9 | 104.3 |
| 15:46 | 156.6 | 20.0 | -545.4 | 100.2 |
| 15:51 | 161.4 | 19.9 | -638.3 | 124.6 |
| 16:01 | 156.8 | 19.9 | -579.3 | 105.5 |
| 16:11 | 164.6 | 19.9 | -547.5 | 101.0 |
| 16:21 | 184.2 | 19.8 | -536.5 | 98.5 |
| 16:31 | 185.0 | 19.9 | -526.2 | 97.1 |
| 16:41 | 162.4 | 19.8 | -564.0 | 105.6 |
| 16:51 | 147.5 | 19.9 | -531.8 | 98.0 |
| 17:01 | 140.8 | 19.8 | -533.5 | 94.7 |
| 17:11 | 142.7 | 20.0 | -399.8 | 1489.2 |
| 17:21 | 139.9 | 20.6 | 1074.2 | 3922.2 |
| 17:31 | 2428.0 | 20.8 | 2010.5 | 4815.2 |
| 17:41 | 3122.0 | 20.7 | 2301.7 | 4231.5 |
| i.= | 486.3 | 20.0 | -117.8 | 980.6 |

T = 159.4  n=14
R = 102.15  n=10

IAN CORPORATION      QC 798

lo Testing and Process Engineering Dept.
tinuous Emissions Monitoring Data
ERIES

formed for:
e Printed = 06-18-1992  Current Time = 19:19:35
e Name = C:\CEMDATA\CONFORT.PRN   Calibration File:C:\CEMDATA\0618A.CAL

| -18-1992 me | THC1 PPM | O2 % | THC2 PPM | PPM |
|---|---|---|---|---|
| 19:38 | 814.3 | 19.5 | -860.6 | 757.3 |
| 19:41 | 818.0 | 19.2 | -760.5 | 765.4 |
| 19:54 | 817.1 | 19.9 | -471.3 | 757.4 |
| 20:01 | 820.6 | 19.8 | -569.8 | 759.1 |
| 20:11 | 816.2 | 19.8 | -481.5 | 758.5 |
| 20:21 | 814.3 | 19.8 | -486.3 | 756.1 |
| 20:31 | 811.4 | 19.8 | -528.0 | 753.9 |
| 20:41 | 807.3 | 19.9 | -457.4 | 754.7 |
| 20:51 | 806.9 | 19.9 | -486.5 | 751.9 |
| 21:01 | 805.2 | 19.9 | -502.5 | 751.4 |
| 21:11 | 811.8 | 19.9 | -521.4 | 749.9 |
| 21:21 | ~~856.9~~ | 19.9 | -486.8 | 750.0 |
| g.= | ~~816.8~~ | 19.8 | -551.0 | 754.8 |

813.2

IAN CORPORATION      [illegible]

eld Testing and Process Engineering Dept.
ntinuous Emissions Monitoring Data
SERIES
-4
rformed for:
te Printed = 06-18-1992  Current Time = 1?:27:11
le Name = C:\CEMDATA\061892.PRN   Calibration File:C:\CEMDATA\[illegible]

| -18-1992 | THC1 | O2 | THC2 | |
|---|---|---|---|---|
| me | PPM | % | PPM | PPM |
| 27:28 | 1497.6 | 20.2 | 618.9 | 1385.3 |
| 27:31 | 1490.9 | 19.9 | -471.5 | 1380.5 |
| 27:46 | 1492.2 | 19.9 | -256.8 | 1378.1 |
| 28:01 | 1489.1 | 19.9 | -225.8 | 1376.2 |
| 28:16 | 1485.4 | 19.9 | -210.? | 1370.2 |
| 28:31 | 1483.7 | 19.8 | -195.2 | 1375.7 |
| 28:46 | 1474.5 | 19.9 | -213.9 | 1373.2 |
| 29:01 | 1468.7 | 19.9 | -201.9 | 1371.7 |
| 29:16 | 1477.0 | 19.9 | -236.4 | 1422.0 |
| 29:31 | 1473.2 | 19.9 | -254.2 | 1433.8 |
| 29:46 | 1470.8 | 20.0 | -254.4 | 1431.9 |
| 30:01 | 1473.2 | 19.9 | -259.1 | 1432.2 |
| 30:16 | 1477.7 | 20.0 | -242.4 | 1424.5 |
| g.= | 1481.1 | 19.9 | -184.8 | 1396.6 |

T = 1481.1
R = 1428.9

IAN CORPORATION     at 2000 ppm

eld Testing and Process Engineering Dept.
ntinuous Emissions Monitoring Data
ERIES

rformed for:
te Printed = 06-18-1992  Current Time = 19:33:35
le Name = C:\CEMDATA\061892.PRN   Calibration File:C:\CEMDATA\0618A.CAL

| -18-1992 | THC1 | O2 | THC2 | |
|---|---|---|---|---|
| me | PPM | % | PPM | PPM |
| 33:43 | 2000.8 | 20.6 | 1395.4 | 2022.4 |
| 33:43 | 2000.8 | 20.6 | 1395.4 | 2022.4 |
| 33:46 | 2003.5 | 20.5 | 804.1 | 2014.1 |
| 33:56 | 2004.3 | 20.5 | 1312.8 | 2039.0 |
| 34:06 | 2004.4 | 20.6 | 1433.0 | 2039.4 |
| 34:16 | 2005.1 | 20.6 | 1445.8 | 2035.0 |
| 34:26 | 2005.5 | 20.6 | 1451.1 | 2039.4 |
| 34:36 | 2005.3 | 20.6 | 1435.0 | 2029.4 |
| 34:46 | 2007.2 | 20.6 | 1459.7 | 2034.8 |
| 34:56 | 2008.2 | 20.6 | 1461.4 | 2038.1 |
| 35:06 | 2020.6 | 20.6 | 1468.4 | 2033.8 |
| 35:16 | 2028.2 | 20.6 | 1455.0 | 2038.6 |
| g.= | 2008.5 | 20.6 | 1376.8 | 2031.9 |

-A CORPORATION      3992 ppm  oc

.c Testing and Process Engineering Dept.
tinuous Emissions Monitoring Data
ERIES

formed for:
e Printed = 06-18-1992  Current Time = 19:42:35
e Name = C:\CEMDATA\061992.PRN   Calibration File:C:\CEMDATA\0618A.CAL

| -18-1992 | THC1 | O2 | THC2 | |
|---|---|---|---|---|
| me | PPM | % | PPM | PPM |
| 40:36 | 3840.0 | 20.7 | 1529.4 | 3730.0 |
| 40:46 | 3840.9 | 20.6 | 1697.7 | 3706.9 |
| 40:56 | 3843.6 | 20.7 | 1617.0 | 3692.2 |
| 41:06 | 3872.7 | 20.7 | 1702.2 | 3750.7 |
| 41:16 | 3868.8 | 20.7 | 1702.9 | 3747.1 |
| 41:26 | 3837.6 | 20.6 | 1708.2 | 3720.7 |
| 41:36 | 3838.9 | 20.6 | 1710.5 | 3662.0 |
| 41:46 | 3837.2 | 20.7 | 1699.5 | 3740.7 |
| 41:56 | 3844.5 | 20.6 | 1703.0 | 3719.5 |
| 42:06 | 3839.6 | 20.8 | 1696.5 | 3745.2 |
| ..e | 3846.4 | 20.7 | 1676.4 | 3723.7 |

Appendix B.3

Method 18 Analytical Summary

**RADIAN CORPORATION**

# CALCULATION SHEET

SIGNATURE M.D. [illegible] DATE 6-17-92 CHECKED ____ DATE ____ CALC. NO. ____

PROJECT Stroehmann Bakeries JOB NO. ____

SUBJECT Initial Calibration 6-17-92 SHEET ____ OF ____ SHEETS

## ACETALDEHYDE:

| Run # | Conc. (ppm) | AREA |
|---|---|---|
| 12 | 4.43 | 146,859 |
| 13 | 8.86 | 259,823 |
| 14 | 22.2 | 688,684 |
| 15 | 44.3 | 1,316,867 |
| 16 | 82.5 | 2,953,533 |

r = 0.9955
m = 35,694
b = -85,064

## Ethanol:

| Run # | Conc. (ppm) | AREA |
|---|---|---|
| 17 | 249 | 719,551 |
| 18 | 498 | 1,475,122 |
| 19 | 1000 | 2,649,477 |
| ~~20~~ | ~~2000~~ | ~~3,111,581 (BAD injection)~~ |
| 21 | 4000 | 11,776,096 |

r = 0.9996
m = 2,959
b = -96,513

## METHANE:

| Run # | Conc. (ppm) | AREA |
|---|---|---|
| 24 | 80.2 | 3,109,558 |
| 25 | 199.1 | 7,840,528 |
| 26 | 798 | 24,739,728 |
| ~~27~~ | ~~1490 MB~~ | |

r = 0.9985
m = 29,313
b = 1,298,323

4-81-3361

**RADIAN CORPORATION**

# CALCULATION SHEET

CALC. NO. ______

SIGNATURE M.D. [signature] DATE 7-16-92 CHECKED ______ DATE ______

PROJECT Stroehmann Bakeries JOB NO. ______

SUBJECT 6-17-92 Data Review Bun Oven SHEET ______ OF ______ SHEETS

| Run # | TIME | LOCATION | ETHANE AREA/CONC. | Acetaldehyde AREA/CONC. | Ethanol AREA/CONC. | METHANE |
|---|---|---|---|---|---|---|
| 53 ~~54~~ | 15:16:59 ~~15:26:~~ | FRONT ~~REAR~~ | 1,139,122 17.1 | 1,948,856 62.5 | 4,270,717 1490 | 305,388 4.82 |
| 54 | 15:26:50 | REAR | 927,232 13.9 | 1,558,866 50.1 | 3,432,189 1,200 | 263,266 3.76 |
| 55 | 15:35:50 | FRONT | 830,736 12.4 | 1,656,815 53.2 | 3,731,862 1,300 | 254,716 3.54 |
| 56 | 15:45:10 | REAR | 990,225 14.8 | 1,554,421 49.9 | 3,579,010 1,250 | 276,721 4.10 |
| 57 | 15:54:30 | FRONT | 1,263,331 19.0 | 2,028,930 65.1 | 4,386,624 1,530 | 301,288 4.72 |
| 58 | 16:03:50 | REAR | 597,619 | 1,194,742 38.5 | 3,203,726 1,120 | 216,130 2.57 |
| 59 | 16:12:55 | FRONT | 1,121,578 8.80 | 1,854,586 59.5 | 4,385,379 1,530 | 302,400 4.75 |
| | | | | | | |
| 60 | 16:24:15 | COMFORT HOOD LINE #02 | 396,137 5.70 | 824,398 26.6 | 2,983,765 1,041 | 185,776 1.80 |

4-81-3361

**RADIAN CORPORATION**

## CALCULATION SHEET

CALC. NO. ____

SIGNATURE M.D. [illegible] DATE 6-17-92 CHECKED ____ DATE ____

PROJECT STROEHMANN BAKERIES JOB NO. ____

SUBJECT BREADLINE RERUN 6-17-92 SHEET ____ OF ____ SHEETS

| RUN # | TIME | METHANE AREA/CONC. | Ethane AREA/CONC. | Acetaldehyde AREA/CONC. | Ethanol AREA/CONC. |
|---|---|---|---|---|---|
| 61 REAR | ~~16:24:15~~ 16:47:30 | 136,082<br>2.02 | 60,283<br>0.53 | 135,340<br>4.63 | 224,729<br>85.7 |
| 62 FRONT | 16:56:30 | 152,985<br>2.28 | 39,659<br>0.21 | 524,631<br>17.1 | 1,567,012<br>550 |
| 63 REAR | 17:05:55 | 258,943<br>3.85 | ~~216,947~~ | 216,947<br>7.24 | 540,835<br>195 |
| 64 FRONT | 17:14:55 | 157,163<br>2.34 | 39,049<br>0.20 | 532,435<br>17.0 | 1,513,280<br>532 |
| 65 REAR | 17:24:30 | 116,636<br>1.73 | 69,248<br>0.67 | 134,431<br>4.60 | 259,520<br>97.8 |
| 66 FRONT | 17:33:51 | 170,653<br>2.54 | — | 427,778<br>14.6 | 1,263,085<br>445 |
| 67 REAR | 17:43:50 | 131,807<br>1.96 | 64,200<br>0.59 | 149,448<br>4.96 | 310,582<br>115 |

4-81-3361

**RADIAN CORPORATION**

# CALCULATION SHEET

CALC. NO. ______

SIGNATURE M.D. [signature] DATE 6-17-92 CHECKED ______ DATE ______

PROJECT STROEHMANN BAKERIES JOB NO. ______

SUBJECT FINAL CALIBRATION 6-17-92 SHEET ______ OF ______ SHEETS

METHANE:

| Run # | Conc. (ppm) | AREA |
|---|---|---|
| 82 | 4.88 | 328,098 |
| 80 | 9.76 | 475,650 |
| 77 | 20.05 | 941,458 |
| 78 | 40.1 | 1,657,864 |
| 79 | 80.2 | 3,304,614 |

r = 0.9996
m = 39,584
b = 114,525

ACETALDEHYDE:

| Run # | Conc. (ppmv) | AREA |
|---|---|---|
| 83 | 1.52 | 55,751 |
| 84 | 3.03 | 97,849 |
| 85 | 22.2 | 679,161 |
| 86 | 44.3 | 1,323,395 |
| 87 | 82.5 | 2,604,157 |

r = 0.9995
m = 31,319
b = -9,749

Ethanol:

| Run # | Conc. (ppm) | AREA |
|---|---|---|
| 88 | 50.0 | 273,178 |
| 89 | 200 | 531,901 |
| 90 | 498 | 1,440,716 |
| 91 | 4000 | 11,531,848 |

w/o Run 88
r = 0.9999
m = 2,889
b = -22,998

r = 0.9999
m = 2,873
b = 34,149

Ethane:

| Run # | Conc. (ppm) | AREA |
|---|---|---|
| 80 | 10.0 | 676,559 |
| 81 | 2.5 | 189,242 |
| 82 | 5.0 | 349,262 |

r = 0.9999
m = 64,952
b = 25,917

4-81-3361

**RADIAN CORPORATION**

# CALCULATION SHEET

SIGNATURE M.D. [signature] DATE 7-16-92 CHECKED ______ DATE ______ CALC. NO. ______

PROJECT STROEHMANN BAKERIES JOB NO. ______

SUBJECT 6-18-92 DATA REVIEW SHEET ____ OF ____ SHEETS

## Initial Calibration:

① METHANE

| Run# | Conc.(ppm) | AREA |
|---|---|---|
| 103 | 4.88 | 312,128 |
| 104 | 9.76 | 448,572 |
| 105 | 16.0 | 778,136 |
| 106 | 40.2 | 1,706,462 |
| 107 | 80.2 | 3,287,250 |

r= 0.9997
m= 39,708
b= 107,818

② ACETALDEHYDE

| Run# | Conc.(ppm) | AREA |
|---|---|---|
| 98 | 1.52 | 54,941 |
| 99 | 3.03 | 103,854 |
| 100 | 22.2 | 706,527 |
| 101 | 44.3 | 1,310,965 |
| 102 | 82.5 | 2,570,938 |

r= 0.9995
m= 30,822
b= 2886

③ Ethanol

| Run# | Conc.(ppm) | AREA |
|---|---|---|
| 95 | 200 | 570,838 |
| 96 | 498 | 1,692,831 |
| 97 | 4000 | 11,009,464 |

r= 0.9996
m= 2,710
b= 179,380

4-81-3361

**RADIAN CORPORATION**

# CALCULATION SHEET

CALC. NO. ______

SIGNATURE M.O [signature] DATE 7-16-92 CHECKED ______ DATE ______

PROJECT STROEHMANN Bakeries JOB NO. ______

SUBJECT DATA REVIEW 6-18-92 SHEET ____ OF ____ SHEETS

| Run # | TIME | LOCATION | METHANE AREA / Conc. | Acetaldehyde AREA / CONC. | Ethanol AREA / CONC. |
|---|---|---|---|---|---|
| 108 | 15:54:40 | REAR | 33,009,696<br>1980 | 2,419,269<br>78.4 | 4,815,984<br>1710 |
| 109 | 16:03:35 | FRONT | 25,472,032<br>826 | 3,842,582<br>125 | 9,104,762<br>3,290 |
| 110 | 16:12:26 | REAR | 31,711,728<br>1,550 | 2,529,998<br>82.0 | 4,922,352<br>1,750 |
| 111 | 16:21:25 | FRONT | 18,889,344<br>491 | 3,014,845<br>97.7 | 8,038,707<br>2,900 |
| 112 | 16:30:35 | REAR | 32,819,856<br>1970 | 2,412,774<br>78.2 | 5,110,506<br>1,820 |
| 113 | 16:49:28 | REAR | 7,119,914<br>185 | 589,026<br>19.0 | 4,461,712<br>1,580 |
| 117 | 17:22:56 | REAR | 33,276,128<br>1990 | 2,230,645<br>72.3 | 3,499,568<br>1,220 |
| 120 | 17:53:15 | REAR | 34,161,344<br>2050 | 2,286,022<br>74.3 | 3,954,416<br>1,390 |
| 121 | 18:04:20 | REAR | 33,956,192<br>2030 | 2,057,213<br>66.7 | 4,182,096<br>1,480 |
| ~~121~~ 124 | 18:23:55 | FRONT | 28,875,520<br>1411 | 2,820,514<br>91.4 | 7,128,048<br>2,590 |
| 125 | 18:33:35 | REAR | 32,698,928<br>1960 | 2,372,341<br>76.9 | 4,680,170<br>1,660 |
| 126 | 18:42:35 | FRONT | 31,509,840<br>1540 | 4,042,120<br>131 | 6,648,192<br>2,390 |
| 127 | 18:52:08 | REAR | 32,361,392<br>1940 | 2,573,670<br>83.4 | 5,203,461<br>1,850 |
| 128 | 19:01:20 | FRONT | 27,168,160<br>1330 | 3,148,768<br>102 | 7,882,832<br>2,840 |
| 129 | 19:10:45 | REAR | 35,205,024<br>2110 | 2,665,490<br>86.4 | 5,732,059<br>2,050 |

4-81-3361

**RADIAN CORPORATION**

# CALCULATION SHEET

SIGNATURE M.D. [signature] DATE 7-16-92 CHECKED ______ DATE ______ CALC. NO. ______

PROJECT STROEHMANN BAKERY JOB NO. ______

SUBJECT DATA REVIEW 6-18-92 SHEET ______ OF ______ SHEETS

FINAL CAL. CURVE

**ACETALDEHYDE:**

| Run # | Conc. (ppm) | Area | |
|---|---|---|---|
| 138 | 1.52 | 50,685 | |
| 139 | 3.03 | 103,392 | r = 0.9999 |
| 140 | 22.2 | 643,299 | m = 28,932 |
| 141 | 44.3 | 1,283,107 | b = 7370 |
| 142 | 82.5 | 2,398,866 | |

**Ethanol:**

| Run # | Conc. (ppm) | Area | |
|---|---|---|---|
| 143 | 249 | 702,080 | r = 0.9999 |
| 144 | 498 | 1,414,304 | m = 2707 |
| 145 | 4000 | 10,874,024 | b = 46,384 |

**METHANE:**

| Run # | Conc. (ppm) | Area | |
|---|---|---|---|
| 146 | 9.76 | 441,687 | r = 0.9986 |
| 147 | 40.1 | 1,699,683 | m = 38,463 |
| 148 | 80.2 | 3,241,046 | b = 16,685 |
| 149 | 199.1 | 7,103,085 | |
| 150 | 399 | 15,605,400 | |

| | OFF SCALE | SINGLE PT | METHANE |
|---|---|---|---|
| 151 | 798 | 24,621,344 | |
| 132 | 1490 | 30,487,504 | |
| 152 | 2000 | 33,375,424 | |
| 153 | 3980 | 39,522,496 | |

4-81-3381

Appendix B.4

Method 18 Chromatogram

SITE # 02

STROEHMANN BAKERY
NORRISTOWN, PA
6-16-92 to 6-18-92

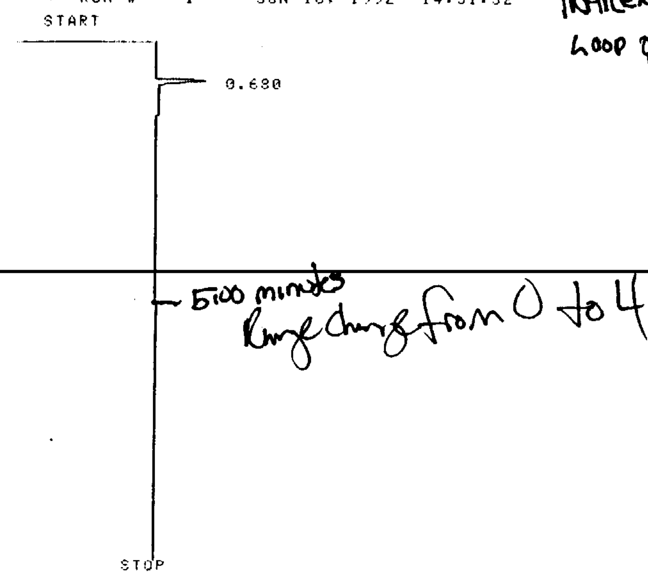
Column (Helium) (30 psi) = 20 ml/min
$H_2$ (20 psi) = 30 ml/min
AIR (38 psi) = 400 ml/min

* LIST: LIST
PEAK CAPACITY: 1244

ZERO = 5. -3.782
ATT 2^ = 6
CHT SP = 1.0
AR REJ = 10000
THRSH = 4
PK WD = 0.10

* RUN # 1 JUN 16, 1992 14:51:32

TRAILER AIR "BLANK"
LOOP QC CHECK

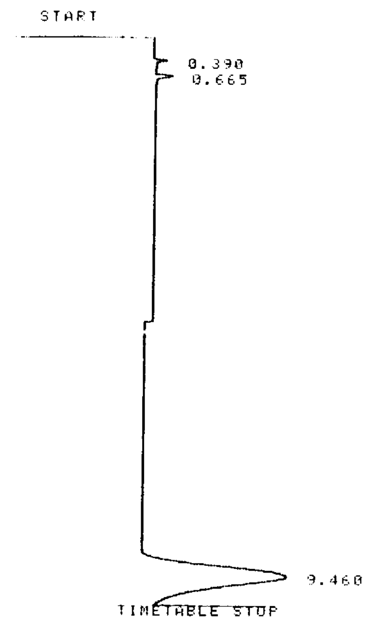



RUN# 1 JUN 16, 1992 14:51:32

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .680 | 115442 | PB | .062 | 100.00000 |

TOTAL AREA= 115442
MUL FACTOR=1.0000E+00



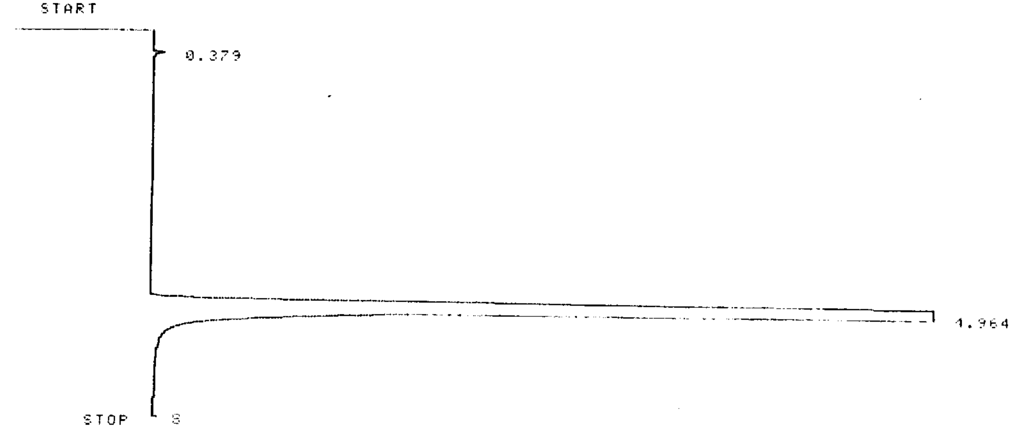

RUN# 2 JUN 16, 1992 15:09:45

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .390 | 20403 | BV | .042 | .81930 |
| .665 | 36764 | PV | .053 | 1.47628 |
| 9.460 | 2433144 I | BH | .445 | 97.70445 |

TOTAL AREA=2490310
MUL FACTOR=1.0000E+00

* RUN # 3 JUN 16, 1992 15:23:56 HEAD PRESSURE to 60psi

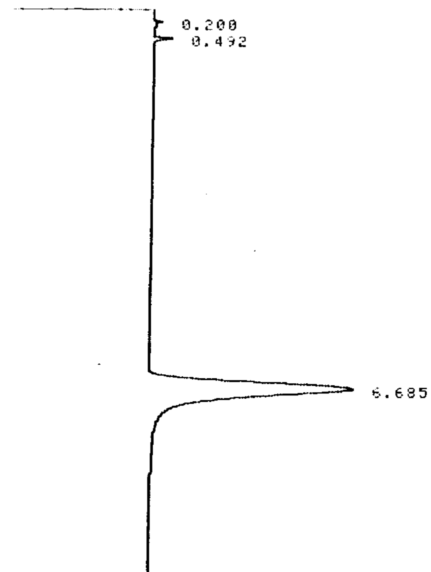



RUN# 3 JUN 16, 1992 15:23:56

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .379 | 14224 | BB | .033 | .05820 |
| 4.964 | 24426912 | SHB | .143 | 99.94179 |

TOTAL AREA=2.4441E+07
MUL FACTOR=1.0000E+00

* RUN # 4 JUN 16, 1992 15:32:56 44psi Ethanol @ 1000ppm
START




TIMETABLE STOP

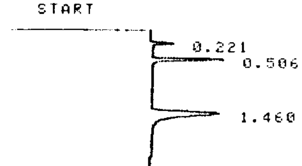
RUN# 4 JUN 16, 1992 15:32:56

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .200 | 12169 | BB | .036 | .52331 |
| .492 | 32895 | BB | .045 | 1.41459 |
| 6.685 | 2280341 | PB | .303 | 98.06211 |

TOTAL AREA=2325405
MUL FACTOR=1.0000E+00

* RUN # 5 JUN 16, 1992 15:55:54 ACETALDEHYDE @ 8.25ppm
1:10 dilution CAL# ALM002105
START




STOP

RUN# 5

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .221 | 27369 | BB | .033 | 6.30881 |
| .506 | 120804 | PB | .043 | 27.84645 |
| 1.460 | 285649 | PB | .108 | 65.84477 |

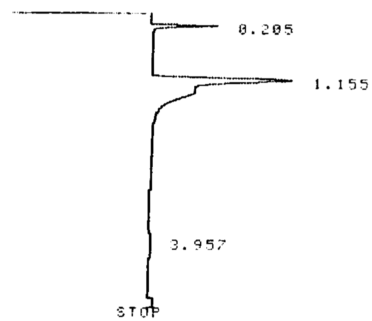
TOTAL AREA= 433822
MUL FACTOR=1.0000E+00

* RUN # 6 JUN 16, 1992 16:00:57
START: not ready
STOP

RUN# 6 JUN 16, 1992 16:00:57

NO RUN PEAKS STORED

* RUN # 7 JUN 16, 1992 16:01:15
START



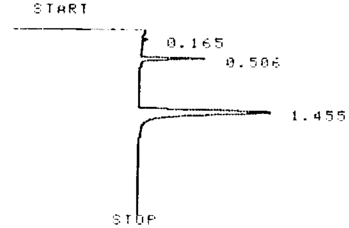

RUN# 7 JUN 16, 1992 16:01:15

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .205 | 105930 | PB | .043 | 13.24029 |
| 1.155 | 621891 | PV | .117 | 77.80416 |
| 3.957 | 71582 | BP | .480 | 8.95555 |

TOTAL AREA= 799303
MUL FACTOR=1.0000E+00

* RUN # 8 JUN 16, 1992 16:07:52 1:5 Dilution
START



RUN# 8 JUN 16, 1992 16:07:52

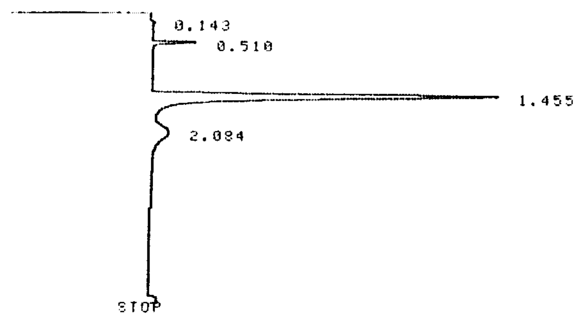
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .506 | 104326 | VB | .042 | 16.38142 |
| 1.455 | 532530 | BB | .106 | 83.61859 |

TOTAL AREA= 636856
MUL FACTOR=1.0000E+00

* RUN # 9 JUN 16, 1992 16:12:30 1:2 Dilution

START




RUN# 9 JUN 16, 1992 16:12:30

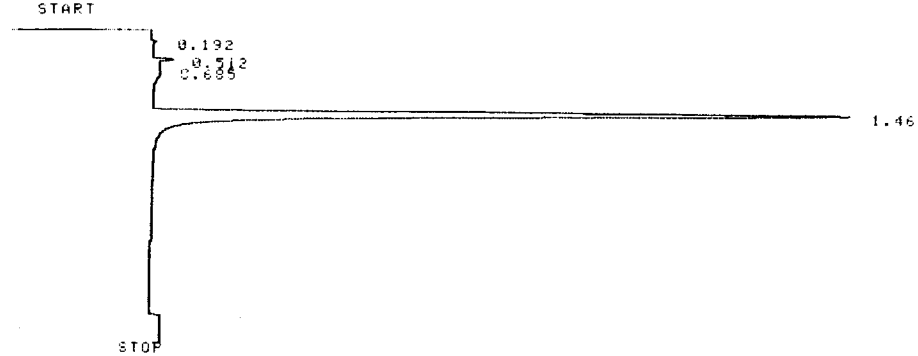
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .510 | 77420 | PB | .044 | 4.89549 |
| 1.455 | 1356640 | PB | .105 | 85.78419 |
| 2.084 | 147397 | BB | .249 | 9.32033 |

TOTAL AREA=1581457
MUL FACTOR=1.0000E+00

* RUN # 10 JUN 16 1992 16:18:32 No Dilution

START



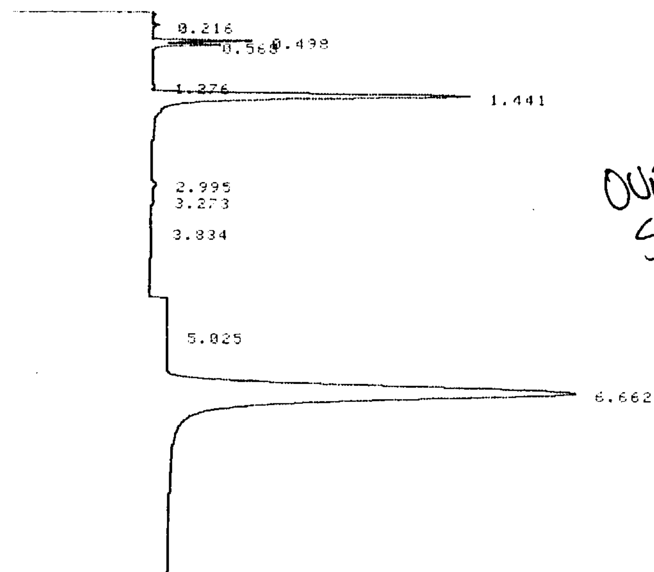

RUN# 10 JUN 16, 1992 16:18:32

| | | | | |
|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| .685 | 105562 | VP | .282 | 3.70851 |
| 1.462 | 2693286 | PB | .104 | 94.61821 |

TOTAL AREA=2846478
MUL FACTOR=1.0000E+00

*00 BREAK

* RUN # 11 JUN 16, 1992 17:09:12
START



TIMETABLE STOP

OVEN#2
SYRINGE
FRONT STACK

RUN# 11 JUN 16, 1992 17:09:12

AREA%

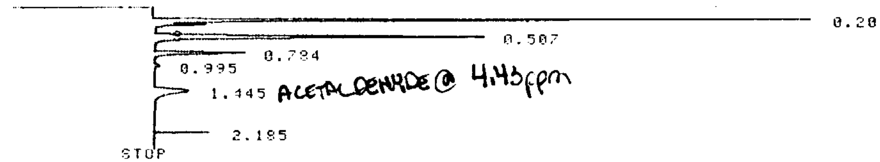
| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .498 | 146203 | PV | .038 | 2.31387 |
| .568 | 103636 | VB | .039 | 1.64019 |
| 1.441 | 1232920 | PB | .104 | 19.51272 |
| 2.995 | 29304 | VV | .121 | .46378 |
| 3.273 | 24808 | VP | .145 | .39262 |
| 3.834 | 30401 | PV | .229 | .48114 |
| 5.025 | 201777 | PB | .379 | 3.19341 |
| 6.662 | 4549498 | PB | .302 | 72.00227 |

TOTAL AREA=6318544
MUL FACTOR=1.0000E+00

*

* RUN # 12 JUN 17, 1992 08:41:30 1:10 Dilution CYL# AAL 9441

START




RUN# 12 JUN 17, 1992 08:41:30

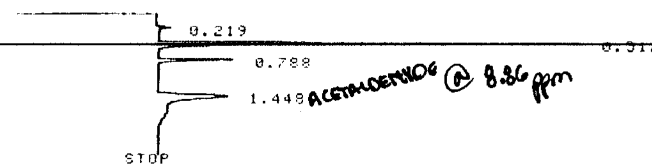
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .201 | 849765 | SPB | .034 | 49.18613 |
| .507 | 558422 | BB | .044 | 32.32261 |
| .784 | 136332 | PB | .039 | 7.89117 |
| .995 | 15093 | BP | .052 | .87361 |
| 1.445 | 146859 | PB | .106 | 8.50049 |
| 2.185 | 21181 | BB | .009 | 1.22600 |

TOTAL AREA=1727652
MUL FACTOR=1.0000E+00

* RUN # 13 JUN 17, 1992 08:46:26 1:5 Dilution CYL # AAL 9441

START




RUN# 13 JUN 17, 1992 08:46:26

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .219 | 20600 | BB | .038 | 2.09037 |
| .512 | 593147 | PB | .038 | 60.18923 |
| .788 | 111900 | BB | .038 | 11.35499 |
| 1.448 | 259823 | PB | .101 | 26.36538 |

TOTAL AREA= 985470
MUL FACTOR=1.0000E+00

* RUN # 14 JUN 17, 1992 08:51:49 1:2 Dilution CYL # AAL 9441

START

STOP

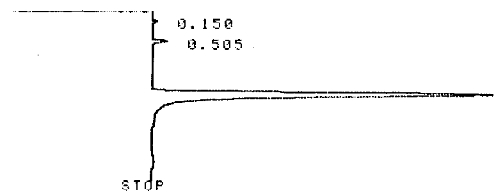
RUN# 14 JUN 17, 1992 08:51:49

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .178 | 13402 | BB | .039 | 1.00333 |
| .512 | 539365 | VB | .037 | 40.37901 |
| .788 | 58953 | PB | .038 | 4.41346 |
| 1.286 | 35352 | PV | .180 | 2.64659 |
| 1.447 | 688684 | VB | .106 | 51.55762 |

TOTAL AREA=1335756
MUL FACTOR=1.0000E+00

* RUN # 15 JUN 17, 1992 08:55:56 NO DIL CYL# AAL 9441
START




ACETALDEHYDE @ 44.3ppm

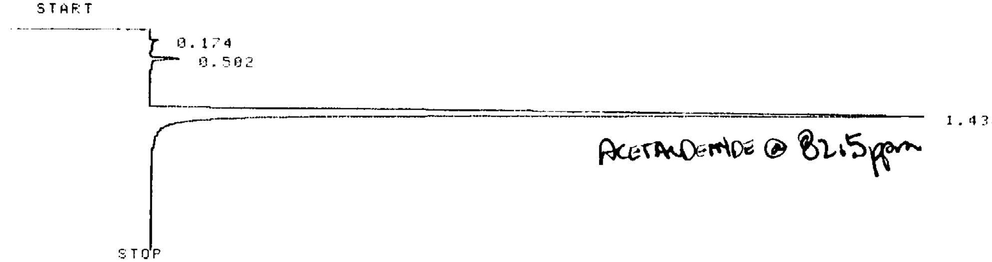
RUN# 15 JUN 17, 1992 08:55:56

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .505 | 27178 | VB | .044 | 2.02211 |
| 1.444 | 1316867 | PB | .104 | 97.97792 |

TOTAL AREA=1344045
MUL FACTOR=1.0000E+00

* RUN # 16 JUN 17, 1992 09:01:39 ALM 002105
START




ACETALDEHYDE @ 82.5ppm

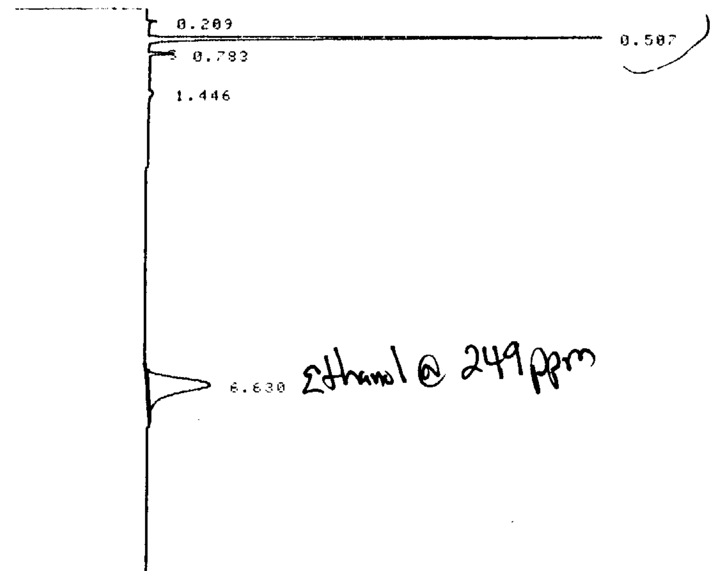
RUN# 16 JUN 17, 1992 09:01:39

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|

TOTAL AREA=3011053
MUL FACTOR=1.0000E+00

* RUN # 17 JUN 17, 1992 09:09:46 1:2 Dilution ALM029496
START




TIMETABLE STOP

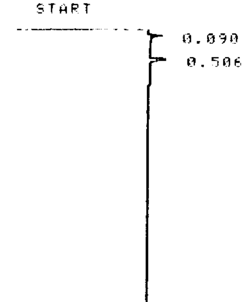
RUN# 17 JUN 17, 1992 09:09:46

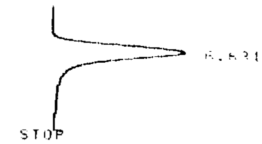
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .209 | 15417 | PV | .037 | 1.07272 |
| .507 | 637212 | SHB | .037 | 44.33760 |
| .783 | 37615 | BB | .038 | 2.61727 |
| 1.446 | 27387 | PB | .104 | 1.90560 |
| 6.630 | 719551 | PB | .303 | 50.06680 |

TOTAL AREA=1437182
MUL FACTOR=1.0000E+00

* RUN # 19 JUN 17, 1992 09:21:17 ALM029496
START






Ethanol @ 498ppm

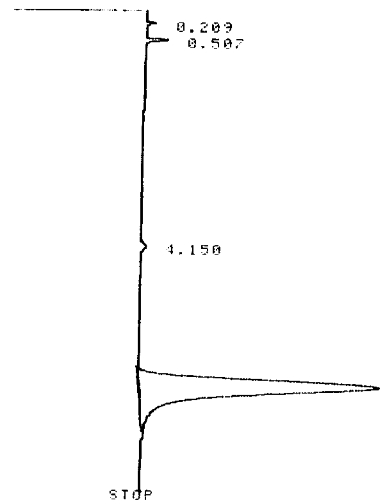
RUN# 18 JUN 17, 1992 09:21:17

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .090 | 13274 | BB | .027 | .87454 |
| .506 | 29423 | PB | .044 | 1.93850 |
| 6.631 | 1475122 | PB | .303 | 97.18694 |

TOTAL AREA=1517819
MUL FACTOR=1.0000E+00

* RUN # 19 JUN 17, 1992 09:30:35 ALM 029486
START




Ethanol @ 1000ppm

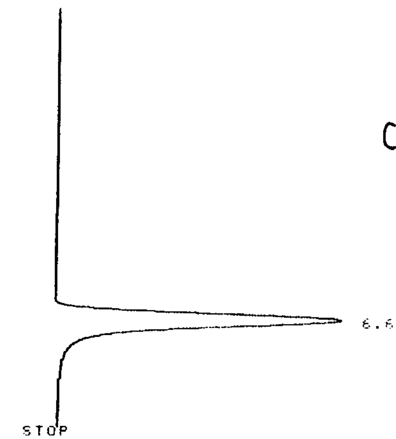
RUN# 19 JUN 17, 1992 09:30:35

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .209 | 13273 | BB | .034 | .48301 |
| .507 | 41269 | PB | .046 | 1.50180 |
| 4.150 | 43959 | BB | .166 | 1.59969 |
| 6.631 | 2649477 | BB | .298 | 96.41549 |

TOTAL AREA=2747978
MUL FACTOR=1.0000E+00

* RUN # 20 JUN 17, 1992 09:42:52 1:2 Dilution ALM 011208
START




C4L has very low Pressure to Keep the Ethanol from falling out of the GAS ∴ HARD. to get a good injection

Ethanol @ 2000 ppm.
BAD Injection
RERUN DURING FINAL CAL.

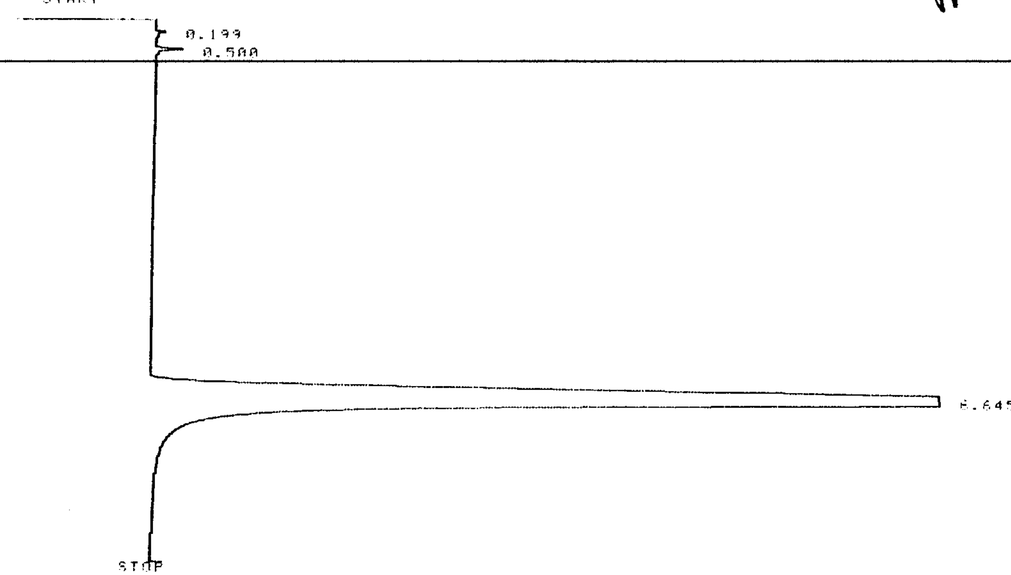
RUN# 20 JUN 17, 1992 09:42:52

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .515 | 599338 | BB | .037 | 15.53031 |
| .790 | 148232 | PB | .038 | 3.84105 |
| 6.637 | 3111581 | PB | .294 | 80.62864 |

TOTAL AREA=3859150
MUL FACTOR=1.0000E+00

* RUN # 21 JUN 17, 1992 09:52:51 ALM 001208 Ethanol @ 4000 ppm
START

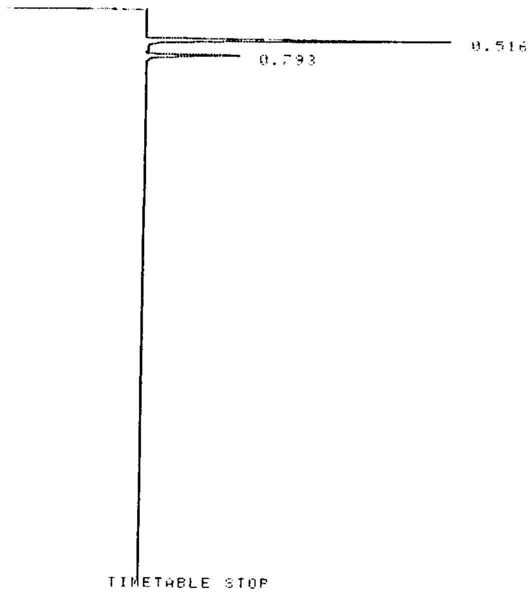



RUN# 21 JUN 17, 1992 09:52:51

| | | | | |
|---|---|---|---|---|
| .199 | 12936 | PB | .033 | .10928 |
| .500 | 47747 | BV | .044 | .40335 |
| 6.645 | 11776896 | PB | .289 | 99.48736 |

TOTAL AREA=1.1839E+07
MUL FACTOR=1.0000E+00

* RUN # 22 JUN 17, 1992 10:06:50
START



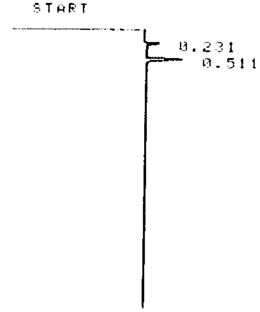

RUN# 22 JUN 17, 1992 10:06:50

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .516 | 435540 | PB | .037 | 75.92806 |
| .793 | 138082 | BB | .039 | 24.07195 |

TOTAL AREA= 573622
MUL FACTOR=1.0000E+00

* RUN # 23 JUN 17, 1992 10:21:08 SYRINGE CHECK
START



TIMETABLE STOP

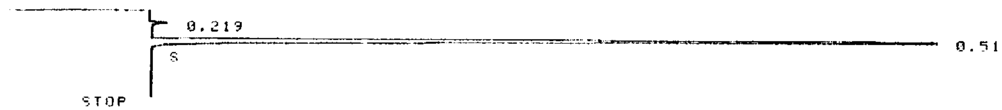
RUN# 23 JUN 17, 1992 10:21:08

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .231 | 17709 | BV | .031 | 23.09678 |
| .511 | 58964 | BB | .042 | 76.90320 |

TOTAL AREA= 76673
MUL FACTOR=1.0000E+00

* RUN # 24 JUN 17, 1992 10:38:58 CYL # 16-2046 METHANE @ 80.2 ppm
START



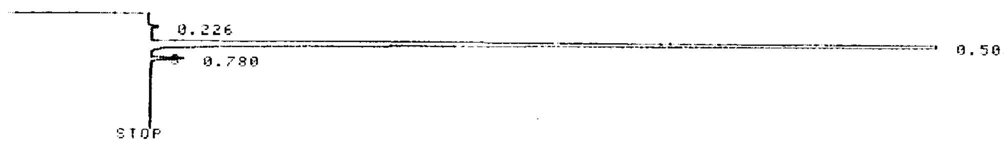

RUN# 24 JUN 17, 1992 10:38:58

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .219 | 25633 | PB | .037 | .81759 |
| .515 | 3109558 | SBB | .036 | 99.18240 |

TOTAL AREA=3135190
MUL FACTOR=1.0000E+00

* RUN # 25 JUN 17, 1992 10:47:44 CYL# AAL-4029 METHANE @ 199.1 ppm
START

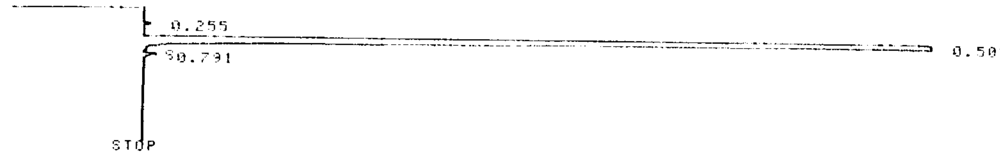



RUN# 25 JUN 17, 1992 10:47:44

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .226 | 17605 | BV | .045 | .22261 |
| .503 | 7840528 | SHB | .037 | 99.14109 |
| .780 | 50321 | BB | .038 | .63629 |

* RUN # 26 JUN 17, 1992 10:54:42 CYL# ALM 011031 METHANE @ 798ppm
START




RUN# 26 JUN 17, 1992 10:54:42

AREA%

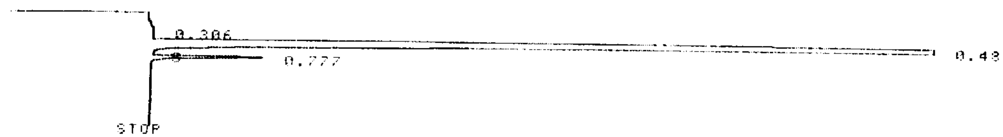
| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .505 | 24739728 | >SBB | .049 | 99.91914 |
| .791 | 20023 | BB | .038 | .08087 |

TOTAL AREA=2.4760E+07
MUL FACTOR=1.0000E+00

* RUN # 27 JUN 17, 1992 11:01:05 CYL#

METHANE@ 1490
FROM FRONT

START




RUN# 27 JUN 17, 1992 11:01:05

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .306 | 62444 | BH | .259 | .20024 |
| .488 | 30956608 | >SHB | .060 | 99.27082 |
| .777 | 164944 | BB | .039 | .52894 |

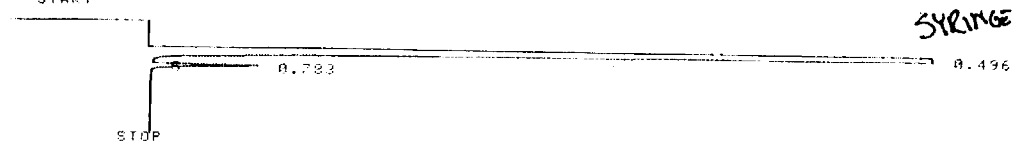
THROUGH FRONT LINE

TOTAL AREA=3.1184E+07
MUL FACTOR=1.0000E+00

* RUN # 28 JUN 17, 1992 11:07:07 CYL#

METHANE@ 1490
SYRINGE INJ.

START



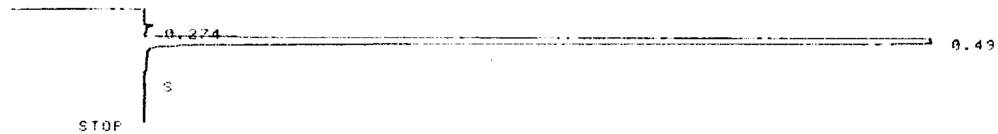

RUN# 28 JUN 17, 1992 11:07:07

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .496 | 30989988 | >SBB | .060 | 99.47946 |

TOTAL AREA=[illegible]
MUL FACTOR=1.0000E+00

* RUN # 29 JUN 17, 1992 11:16:09 METHANE@ 2000
START



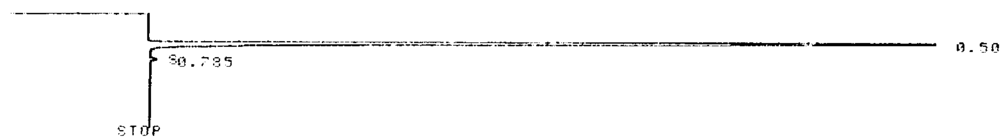

RUN# 29 JUN 17, 1992 11:16:09

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .274 | 11324 | PB | .032 | .03345 |
| .496 | 33846624 | >SBB | .065 | 99.96656 |

TOTAL AREA=3.3858E+07
MUL FACTOR=1.0000E+00

* RUN # 30 JUN 17, 1992 11:25:48
START




RUN# 30 JUN 17, 1992 11:25:48

AREA%

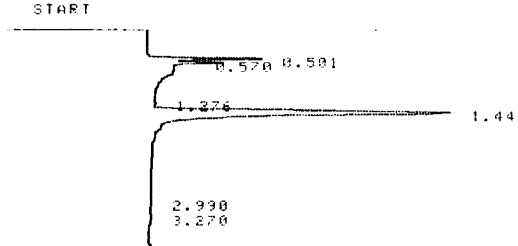
| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .508 | 2045384 | SPB | .036 | 99.34403 |
| .785 | 13506 | BB | .039 | .65598 |

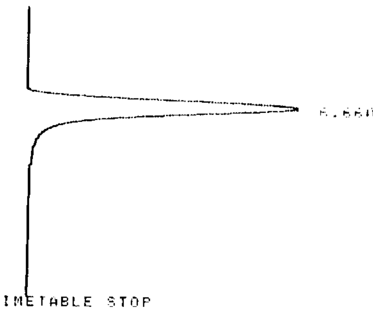
TOTAL AREA=2058890
MUL FACTOR=1.0000E+00

Computer / HP Integrator TIME SET

+TIME11:31:50
JUN 17, 1992 11:31:50

* RUN # 31 JUN 17, 1992 11:33:25 FRONT
START






TIMETABLE STOP

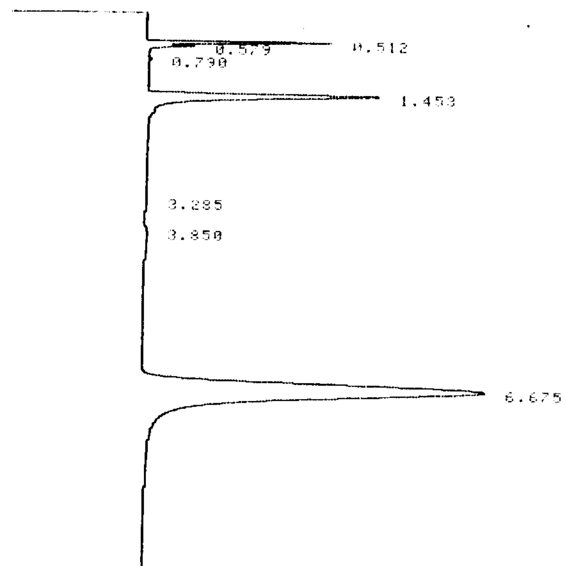
RUN# 31 JUN 17, 1992 11:33:25

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .501 | 109086 | PV | .028 | 2.45204 |
| .570 | 79691 | VB | .037 | 1.79130 |
| 1.441 | 1174986 | VV | .105 | 26.40910 |
| 2.990 | 19211 | VV | .120 | .43183 |
| 3.270 | 20370 | VB | .133 | .45788 |
| 6.660 | 3045549 | PB | .302 | 68.45786 |

TOTAL AREA=4448794
MUL FACTOR=1.0000E+00

\+ RUN # 32 JUN 17, 1992 11:46:00 FRONT
START




TIMETABLE STOP

RUN# 32 JUN 17, 1992 11:46:00

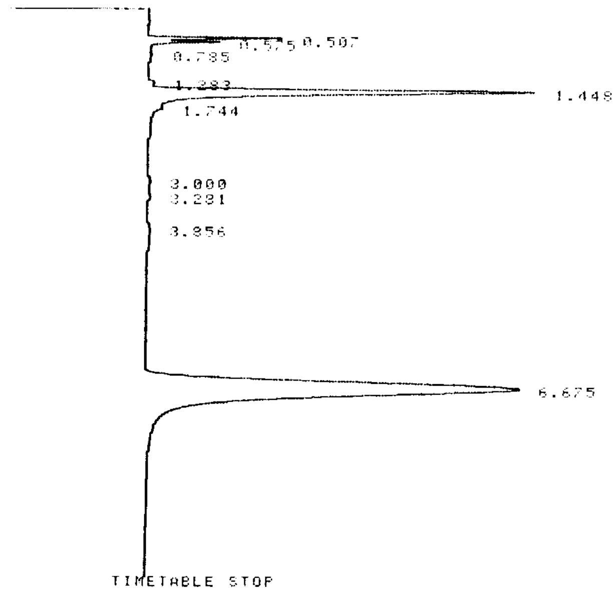
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 1.453 | 916261 | PB | .106 | 17.73982 |
| 3.285 | 23010 | VP | .146 | .44550 |
| 3.850 | 56837 | PP | .316 | 1.10043 |
| 6.675 | 3842554 | PB | .302 | 74.39603 |

TOTAL AREA=5164998
MUL FACTOR=1.0000E+00

* RUN # 33 JUN 17, 1992 11:56:36 FRONT
START




TIMETABLE STOP

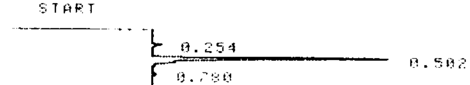
RUN# 33 JUN 17, 1992 11:56:36

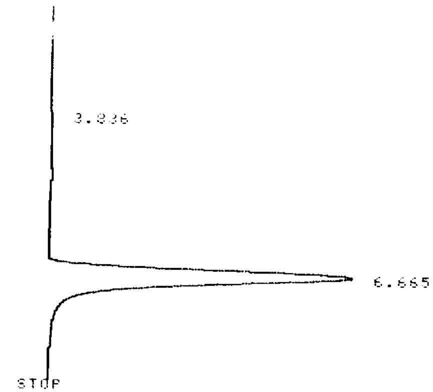
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .507 | 205665 | PV | .040 | 3.25320 |
| .575 | 107864 | VB | .038 | 1.70619 |
| .785 | 17990 | BP | .079 | .28457 |
| 1.283 | 49270 | PV | .150 | .77935 |
| 1.449 | 1550614 | VV | .107 | 24.52750 |
| 1.744 | 95580 | VP | .158 | 1.51188 |
| 3.000 | 26641 | VV | .140 | .42141 |
| 3.281 | 29126 | VP | .136 | .46071 |
| 3.856 | 44809 | PV | .223 | .70879 |
| 6.675 | 4194362 | PB | .303 | 66.34630 |

TOTAL AREA=6321920
MUL FACTOR=1.0000E+00

* RUN # 34 JUN 17, 1992 12:07:13 REAR SYRINGE 2. FROM BYPASS
START






RUN# 34 JUN 17, 1992 12:07:13

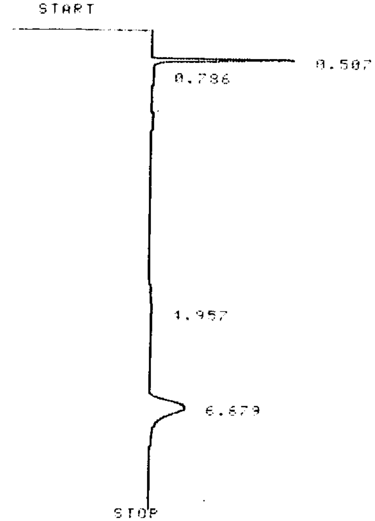
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .254 | 12595 | BV | .031 | .30541 |
| .502 | 373757 | PB | .042 | 9.06310 |
| .780 | 10300 | BV | .040 | .24976 |
| 1.446 | 236194 | VV | .133 | 5.72743 |
| 3.836 | 42940 | PV | .262 | 1.04125 |
| 6.665 | 3448120 | PB | .303 | 83.61299 |

TOTAL AREA=4123906
MUL FACTOR=1.0000E+00

\+ RUN # 35 JUN 17, 1992 12:19:34 Nitrogen from BPPAS

START



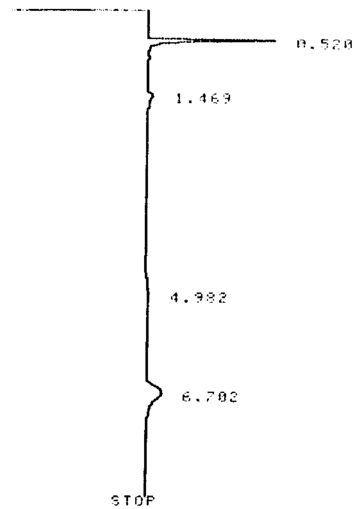

RUN# 35 JUN 17, 1992 12:19:34

AREA%

| | | | | |
|---|---|---|---|---|
| 4.957 | 75850 | VB | .519 | 10.34496 |
| 6.679 | 441633 | PB | .311 | 60.23306 |

TOTAL AREA= 733207
MUL FACTOR=1.0000E+00

* RUN # 36 JUN 17, 1992 12:29:55 SYRINGE REAR
START



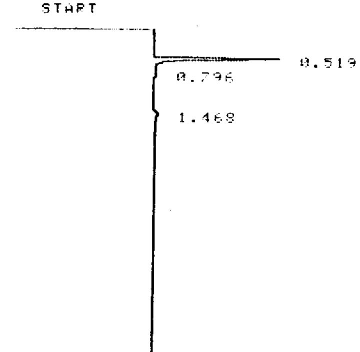

RUN# 36 JUN 17, 1992 12:29:55

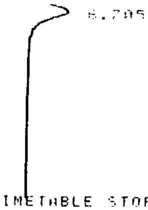
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .520 | 202810 | BB | .042 | 41.31762 |
| 1.469 | 37769 | PB | .136 | 7.69452 |
| 4.982 | 45421 | PB | .296 | 9.25343 |
| 6.702 | 204856 | PB | .318 | 41.73443 |

TOTAL AREA= 490856
MUL FACTOR=1.0000E+00

* RUN # 37 JUN 17, 1992 12:40:15 NEW SETUP HEAT TRACE REAR NITTA MOORE
START





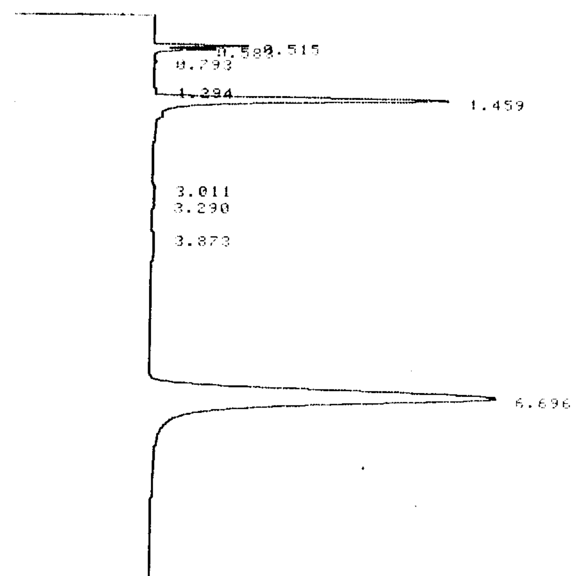

RUN# 37 JUN 17, 1992 12:40:15

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .519 | 193807 | PB | .041 | 24.93734 |
| 1.468 | 23937 | BB | .122 | 3.08000 |
| 6.705 | 559432 | PB | .358 | 71.98266 |

TOTAL AREA= 777176
MUL FACTOR=1.0000E+00

* RUN # 38 JUN 17, 1992 12:51:50 FRONT (LAST SAMPLE 1st Run)
START



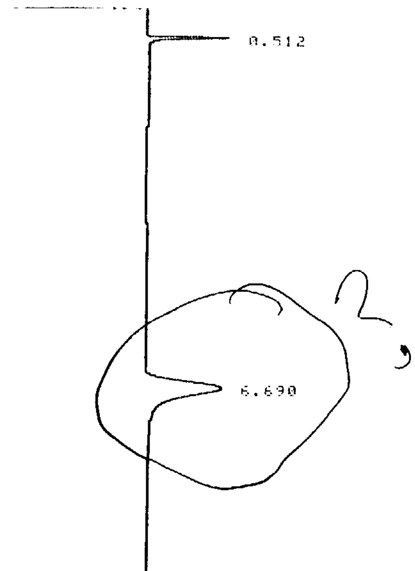

RUN# 38 JUN 17, 1992 12:51:50

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .515 | 138531 | PV | .038 | 2.56403 |
| .583 | 91953 | VB | .038 | 1.70193 |
| 1.294 | 11277 | BV | .058 | .20872 |
| 1.459 | 1175228 | VV | .106 | 21.75191 |
| 3.011 | 18821 | PV | .119 | .34835 |
| 3.290 | 22552 | VP | .144 | .41741 |
| 3.873 | 68465 | PP | .365 | 1.26720 |

TOTAL AREA=5402870
MUL FACTOR=1.0000E+00

\+ RUN # 39 JUN 17, 1992 13:06:01 REAR HEAT TRACE
$N_2$ through the line
START




TIMETABLE STOP

REAR DATA
RUN 01
Suspect.
Flow from heat trace
just purge pulse of
pump!

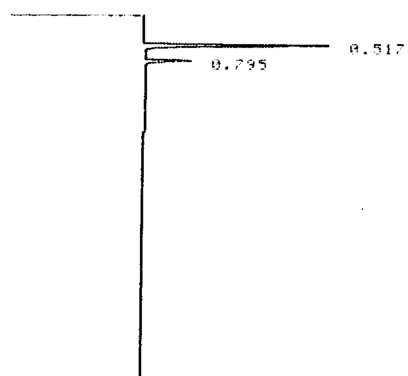
RUN# 39 JUN 17, 1992 13:06:01

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .512 | 129073 | PB | .041 | 12.72380 |
| 6.690 | 885349 | PB | .312 | 87.27622 |

TOTAL AREA=1014422
MUL FACTOR=1.0000E+00

\+ RUN # 40 JUN 17, 1992 13:17:55 $N_2$ BLANK DIRECT
START



TIMETABLE STOP

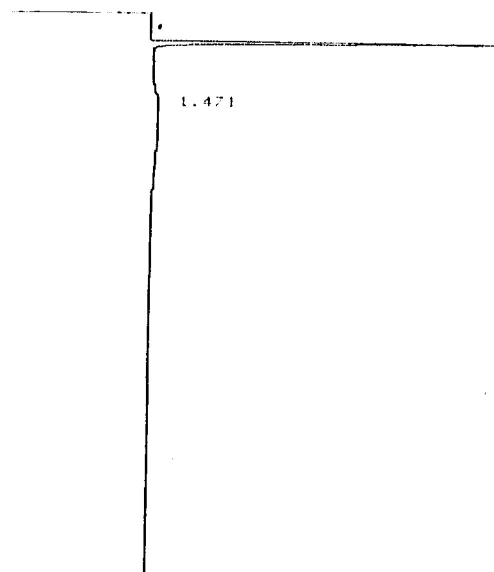
RUN# 40 JUN 17, 1992 13:17:55

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .517 | 268329 | BB | .038 | 78.82522 |
| .795 | 72081 | FB | .039 | 21.17476 |

TOTAL AREA= 340410
MUL FACTOR=1.0000E+00

* RUN # 41 JUN 17, 1992 13:28:49
START




N2 Blank through Heat Trace Rear

TIMETABLE STOP

RUN# 41 JUN 17, 1992 13:28:49

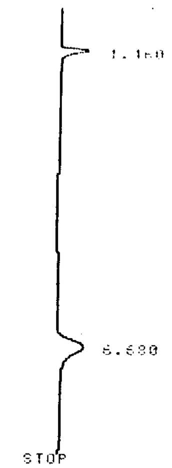
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .512 | 485121 | BB | .038 | 96.40662 |
| 1.471 | 18082 | FB | .171 | 3.59338 |

TOTAL AREA= 503203
MUL FACTOR=1.0000E+00

BUN LINE RUN 01

* RUN # 42 JUN 17, 1992 14:11:11 FRONT
START



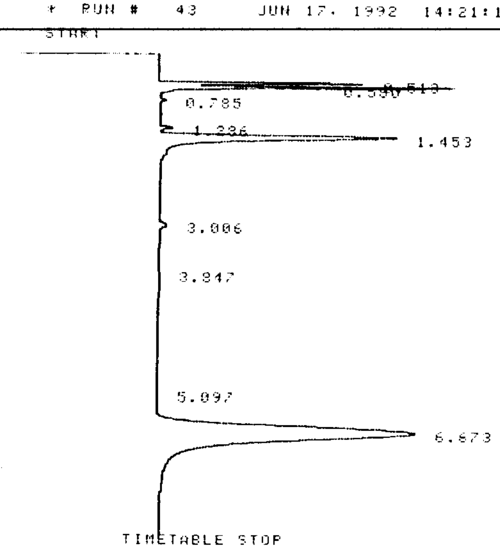

RUN# 42 JUN 17, 1992 14:11:11

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .515 | 194230 | BV | .037 | 23.05510 |
| .584 | 88663 | VB | .041 | 10.52430 |
| 1.460 | 123641 | PB | .110 | 14.67610 |
| 6.680 | 435926 | PB | .436 | 51.74442 |

TOTAL AREA= 842460
MUL FACTOR=1.0000E+00

* TIME 8.5 STOP
* RUN # 43 JUN 17, 1992 14:21:15 REAL

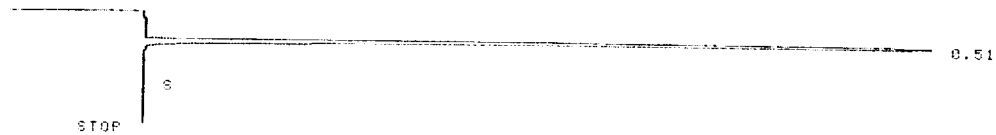



RUN# 43 JUN 17, 1992 14:21:15

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .513 | 270407 | PV | .036 | 5.71044 |
| .580 | 422723 | VB | .039 | 8.92703 |
| .785 | 12423 | PB | .040 | .26235 |
| 1.286 | 30056 | PV | .053 | .63472 |
| 1.453 | 942276 | VV | .106 | 19.89892 |
| 3.006 | 45278 | PV | .113 | .95618 |
| 3.947 | 42801 | BV | .293 | .90387 |
| 5.097 | 61194 | PB | .624 | 1.29229 |
| 6.673 | 2908154 | PB | .304 | 61.41421 |

TOTAL AREA=4735312
MUL FACTOR=1.0000E+00

* RUN # 44 JUN 17, 1992 14:33:00
START



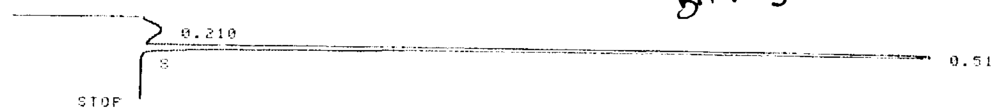

RUN# 44 JUN 17, 1992 14:33:00

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .515 | 2076096 | SPB | .036 | 100.00000 |

TOTAL AREA=2076096
MUL FACTOR=1.0000E+00

* RUN # 45 JUN 17, 1992 14:39:22 METHANE @ 80.2 ppm 1/4 JUMPER
BACK BUN OVEN
START



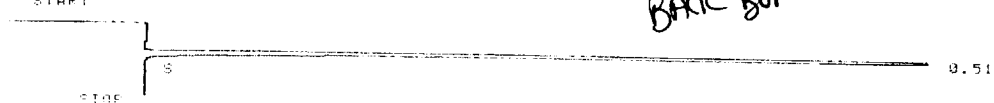

RUN# 45 JUN 17, 1992 14:39:22

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .210 | 158796 | BH | .251 | 4.77862 |
| .513 | 3164253 | SHB | .037 | 95.22138 |

TOTAL AREA=3323048
MUL FACTOR=1.0000E+00

* RUN # 46 JUN 17, 1992 14:42:25 METHANE @ 80.2 ppm 1/4 JUMPER RUN 02
BACK BUN OVEN
START



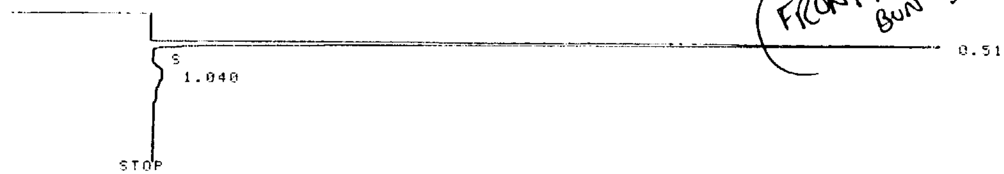
RUN# 46 JUN 17, 1992 14:42:25

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .510 | 3239074 | SPB | .037 | 100.00000 |

TOTAL AREA=3239074
MUL FACTOR=1.0000E+00

* RUN # 47 JUN 17, 1992 14:45:02 METHANE @ 80.2 HEAT TRACE NITTA MOORE FRONT Run 01 BUN
START



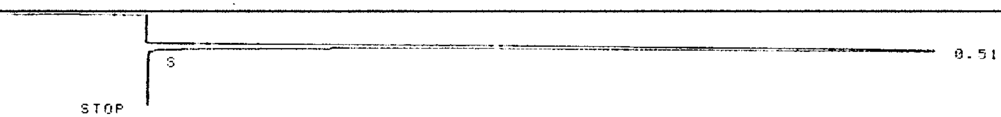

RUN# 47 JUN 17, 1992 14:45:02

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .513 | 1822710 | SBB | .037 | 92.05386 |
| 1.040 | 157337 | BV | .346 | 7.94612 |

TOTAL AREA=1980047
MUL FACTOR=1.0000E+00

* RUN # 48 JUN 17, 1992 14:53:15 METHANE @ 80.2 ppm Nitta Moore HEAT TRACE
START



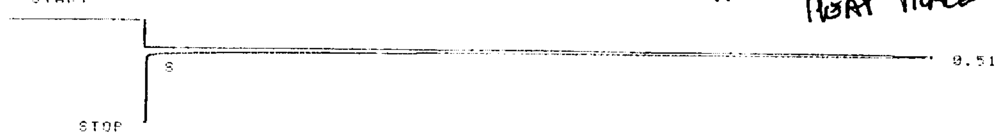

RUN# 48 JUN 17, 1992 14:53:15

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .514 | 2344406 | SPB | .037 | 100.00000 |

TOTAL AREA=2344406
MUL FACTOR=1.0000E+00

* RUN # 49 JUN 17, 1992 14:56:00 METHANE @ 80.2 ppm Nitta Moore HEAT TRACE
START



RUN# 49 JUN 17, 1992 14:56:00

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .515 | 3164478 | SHB | .037 | 100.00000 |

TOTAL AREA=3164478
MUL FACTOR=1.0000E+00

+ RUN # 50 JUN 17, 1992 14:58:50 METHANE @ 80.2 ppm Nitta MOORE HEAT TRACE
START: not read.

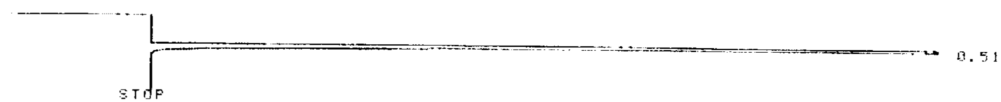

RUN# 50 JUN 17, 1992 14:58:50

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .520 | 3237374 | SPB | .037 | 92.21821 |
| 1.111 | 273185 | I BH | .272 | 7.78181 |

TOTAL AREA=3510558
MUL FACTOR=1.0000E+00

+ RUN # 51 JUN 17, 1992 15:01:05 METHANE @ 80.2 1/4" JUMPER
START



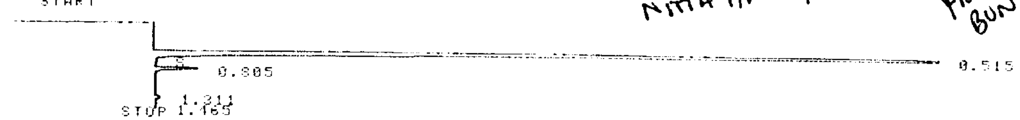

RUN# 51 JUN 17, 1992 15:01:05

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .511 | 3231278 | SBB | .037 | 100.00000 |

TOTAL AREA=3231278
MUL FACTOR=1.0000E+00

+ RUN # 52 JUN 17, 1992 15:11:30 METHANE @ 80.2 NEW JUMPER 1/4" REPLACING NITTA MORE HEAT TRACE FRONT BUN
START




RUN# 52 JUN 17, 1992 15:11:30

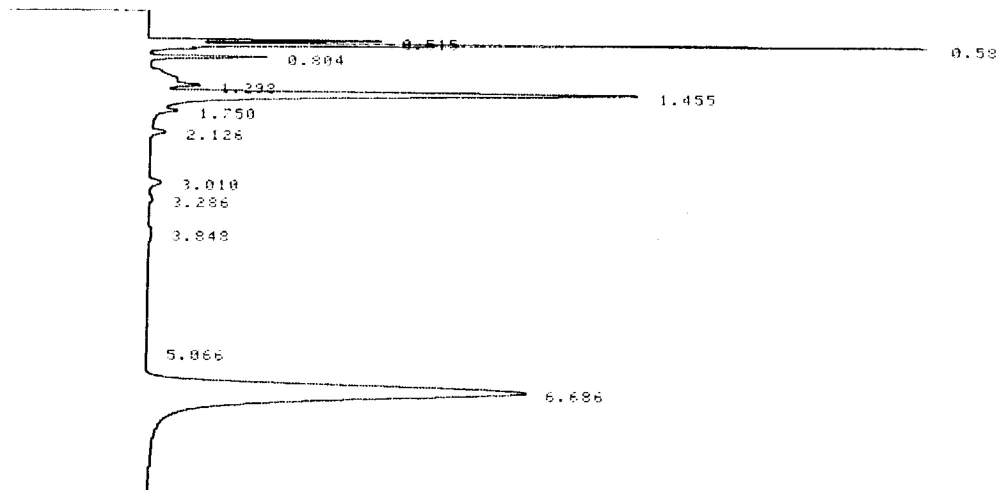
AREA%

| | | | | |
|---|---|---|---|---|
| .805 | 67313 | PB | .039 | 2.02053 |
| 1.311 | 15989 | VV | .056 | .47994 |
| 1.465 | 11575 I | VH | .089 | .34745 |

TOTAL AREA=3331453
MUL FACTOR=1.0000E+00

BUN OVEN RUN #01

\+ RUN # 53 JUN 17, 1992 15:16:59 FRONT
START




TIMETABLE STOP

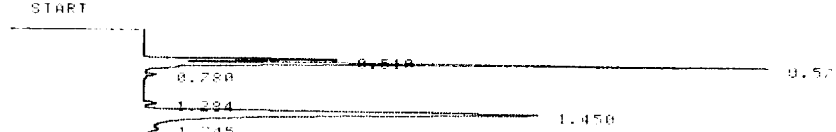
RUN# 53 JUN 17, 1992 15:16:59

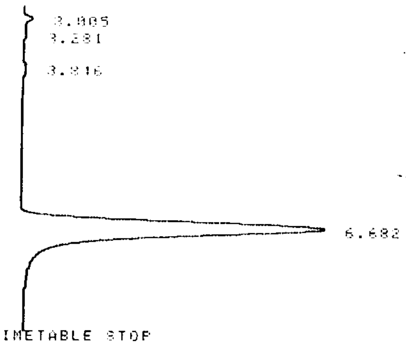
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .515 | 305388 | BV | .035 | 3.54587 |
| .581 | 1139122 | VB | .039 | 13.22637 |
| .804 | 182982 | BB | .041 | 2.12461 |
| 1.298 | 366819 | BV | .190 | 4.25914 |
| 1.455 | 1948856 | VV | .107 | 22.62821 |
| 1.750 | 129175 | VV | .114 | 1.49985 |
| 2.126 | 59570 | VB | .090 | .69167 |
| 3.010 | 58111 | BV | .113 | .67473 |
| 3.286 | 38044 | VP | .161 | .44173 |
| 3.848 | 54573 | PV | .233 | .63365 |
| 5.066 | 59150 | PB | .674 | .68679 |
| 6.686 | 4270717 | PB | .304 | 49.58739 |

TOTAL AREA=8.6125E+06
MUL FACTOR=1.0000E+00

\+ RUN # 54 JUN 17, 1992 15:26:50 REAR
START





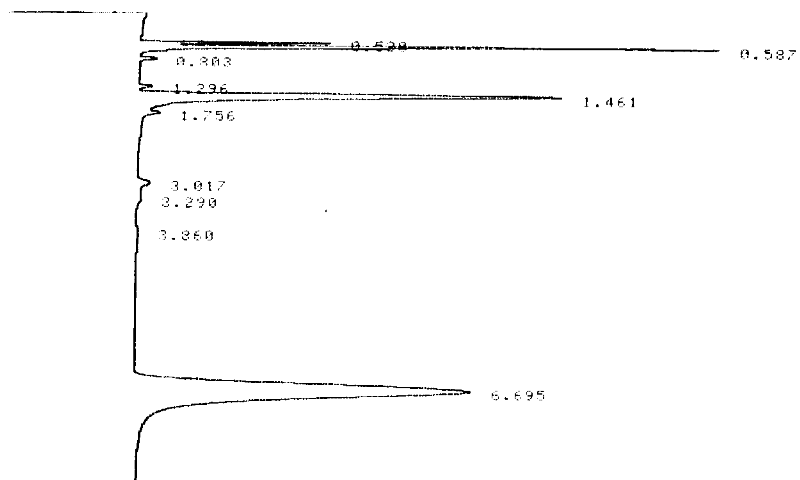

RUN# 54 JUN 17, 1992 15:26:50

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .510 | 263266 | PV | .037 | 4.07820 |
| .575 | 927232 | VB | .039 | 14.36354 |
| .780 | 19098 | BB | .039 | .29584 |
| 1.284 | 28978 | PV | .053 | .44889 |
| 1.450 | 1558066 | VV | .105 | 24.14004 |
| 1.745 | 77915 | VV | .119 | 1.20696 |
| 3.005 | 51102 | VV | .124 | .79161 |
| 3.281 | 31700 | VV | .163 | .49106 |
| 3.846 | 65110 | VP | .297 | 1.00860 |
| 6.682 | 3432189 | PB | .305 | 53.16726 |

TOTAL AREA=6455456
MUL FACTOR=1.0000E+00

* RUN # 55 JUN 17, 1992 15:35:50 FRONT
START

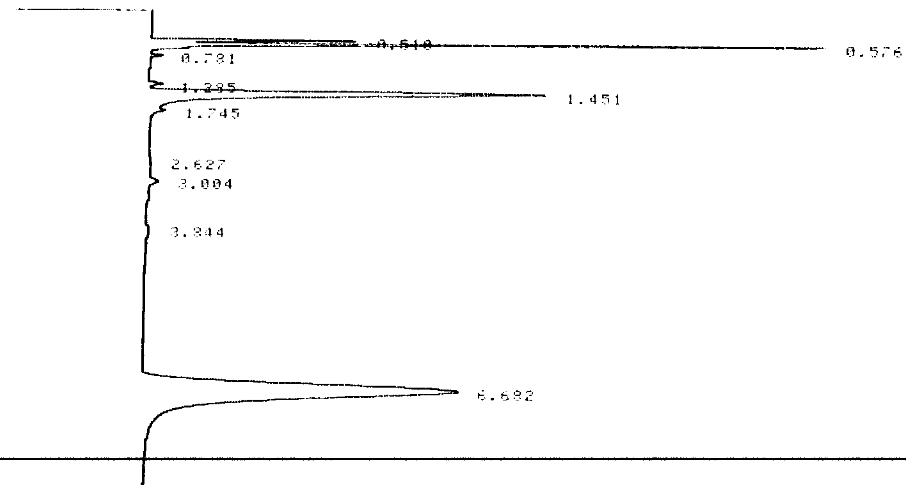



RUN# 55 JUN 17, 1992 15:35:50

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .520 | 254716 | BV | .035 | 3.74318 |
| .587 | 830736 | VB | .038 | 12.20806 |
| .803 | 34508 | BB | .047 | .50711 |
| 1.296 | 33009 | PV | .054 | .48508 |
| 1.461 | 1656815 | VV | .104 | 24.34770 |
| 1.756 | 86539 | VB | .101 | 1.27172 |
| 3.017 | 88299 | BV | .149 | 1.29758 |
| 3.290 | 47478 | VP | .175 | .69771 |
| 3.860 | 40852 | PV | .219 | .60034 |
| 6.695 | 3731962 | PB | .300 | 54.84152 |

TOTAL AREA=6804813
MUL FACTOR=1.0000E+00

\+ RUN # 56 JUN 17, 1992 15:45:10 REAR
START




TIMETABLE STOP

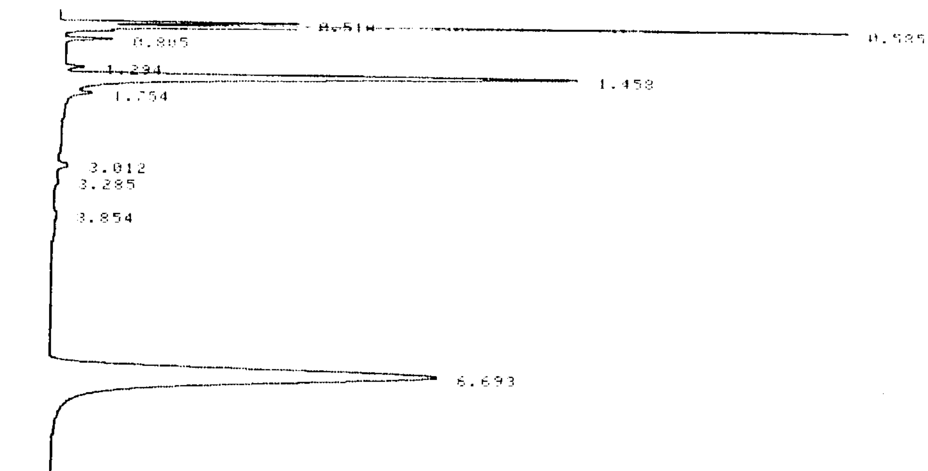
RUN# 56 JUN 17, 1992 15:45:10

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .510 | 276721 | BV | .035 | 4.14184 |
| .576 | 990225 | VB | .039 | 14.82127 |
| .781 | 19245 | BB | .038 | .28805 |
| 1.285 | 29532 | BV | .053 | .44202 |
| 1.451 | 1554421 | VV | .105 | 23.26592 |
| 1.745 | 71714 | VB | .109 | 1.07339 |
| 2.627 | 46552 | BV | .269 | .69677 |
| 3.004 | 63211 | VV | .135 | .94612 |
| 3.944 | 50476 | PV | .221 | .75550 |
| 6.682 | 3579010 | PB | .305 | 53.56912 |

TOTAL AREA=6681107
MUL FACTOR=1.0000E+00

\+ RUN # 57 JUN 17, 1992 15:54:30 FRONT



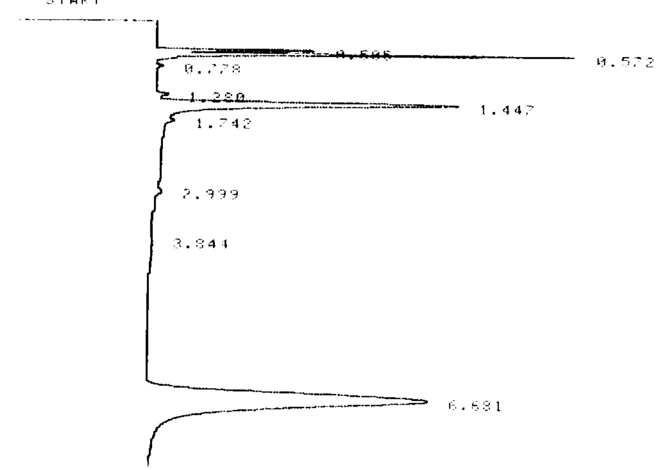

RUN# 57 JUN 17, 1992 15:54:30

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .518 | 301298 | PV | .034 | 3.58072 |
| .585 | 1263331 | VB | .039 | 15.01434 |
| .805 | 80885 | PB | .045 | .96130 |
| 1.294 | 58228 | VV | .071 | .69202 |
| 1.458 | 2028930 | VV | .106 | 24.11327 |
| 1.754 | 150346 | VV | .127 | 1.78682 |
| 3.012 | 65288 | VV | .119 | .77593 |
| 3.285 | 29770 | VB | .129 | .35381 |
| 3.854 | 49474 | BV | .215 | .58798 |
| 6.693 | 4386624 | PB | .305 | 52.13382 |

TOTAL AREA=8.4142E+06
MUL FACTOR=1.0000E+00

* RUN # 58 JUN 17, 1992 16:03:50 REAR
START



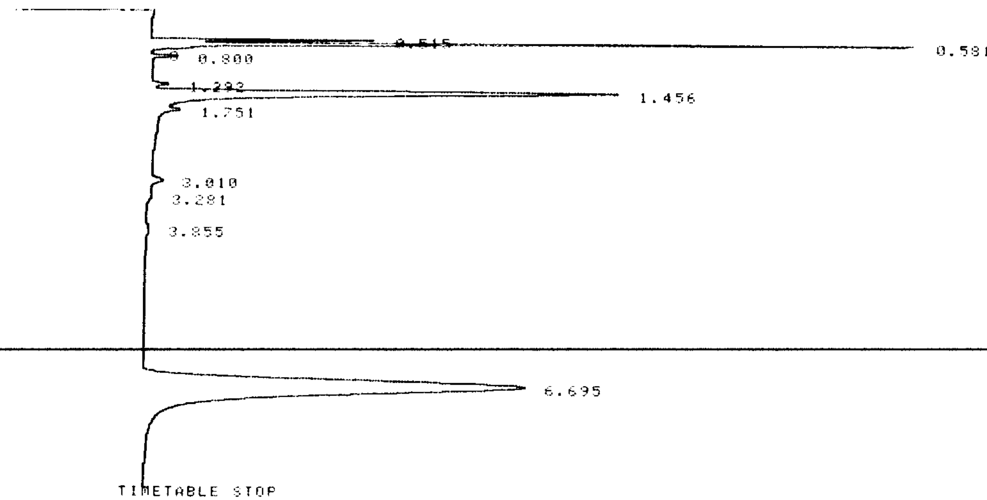
RUN# 58 JUN 17, 1992 16:03:50

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .505 | 216130 | PV | .036 | 3.96726 |
| .572 | 597619 | VB | .038 | 10.97012 |
| .778 | 13066 | PB | .039 | .23984 |
| 1.280 | 28559 | BV | .063 | .52424 |
| 1.447 | 1194742 | VV | .106 | 21.93114 |
| 1.742 | 100236 | VB | .156 | 1.83997 |
| 2.999 | 39569 | VV | .116 | .72634 |
| 3.844 | 54049 | PP | .295 | .99214 |
| 6.691 | 3203726 | PB | .306 | 58.80893 |

TOTAL AREA=5447696
MUL FACTOR=1.0000E+00

+ RUN # 59 JUN 17, 1992 16:12:55 FRONT
START




RUN# 59 JUN 17, 1992 16:12:55

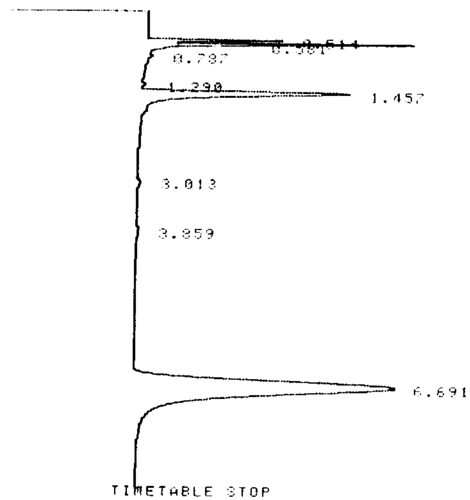
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .515 | 302400 | BH | .035 | 3.75463 |
| .581 | 1121578 | SHB | .039 | 13.92561 |
| .800 | 52169 | BB | .047 | .64774 |
| 1.292 | 43437 | BV | .063 | .53932 |
| 1.456 | 1854586 | VV | .106 | 23.02671 |
| 1.751 | 154367 | VV | .137 | 1.91663 |
| 3.010 | 66569 | VV | .120 | .82653 |
| 3.281 | 26925 | VP | .127 | .33430 |
| 3.855 | 46654 | PV | .216 | .57926 |
| 6.695 | 4385379 | PB | .305 | 54.44928 |

TOTAL AREA=8054064

* RUN # 60 JUN 17, 1992 16:24:15 Cinnfoss Wood Life #07

START




TIMETABLE STOP

RUN# 60 JUN 17, 1992 16:24:15

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .514 | 185776 | BV | .036 | 4.15061 |
| .581 | 396137 | VB | .039 | 8.85051 |
| 1.290 | 10945 | PV | .049 | .24453 |
| 1.457 | 824398 | VV | .105 | 18.41874 |
| 3.013 | 24903 | PV | .126 | .55638 |
| 3.859 | 49943 | PP | .294 | 1.11583 |
| 6.691 | 2983765 | PB | .306 | 66.66339 |

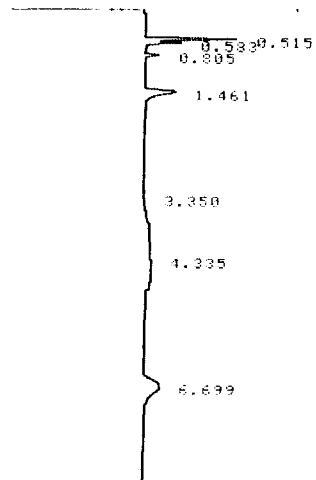
TOTAL AREA=4475866
MUL FACTOR=1.0000E+00

BREAD RERUN

DREAD LINE

* RUN # 61 JUN 17, 1992 16:47:30 REAR

START




RUN# 61 JUN 17, 1992 16:47:30

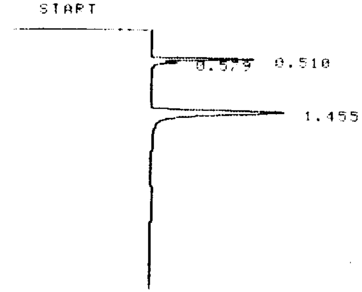
AREA%

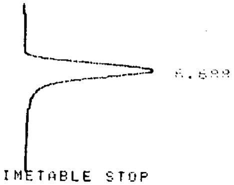
| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .515 | [illegible] | BV | [illegible] | 12.444[illegible] |
| .583 | 60283 | VB | .041 | 5.51261 |
| .805 | 25590 | BB | .041 | 2.34009 |
| 1.461 | 135340 | VV | .108 | 12.37623 |
| 3.350 | 29820 | PV | .256 | 2.72690 |
| 4.335 | 481704 | VB | 1.337 | 44.04965 |
| 6.699 | 224729 | PB | .319 | 20.55045 |

TOTAL AREA=1093548
MUL FACTOR=1.0000E+00

* RUN # 62 JUN 17, 1992 16:56:30 FRONT

START






TIMETABLE STOP

RUN# 62 JUN 17, 1992 16:56:30

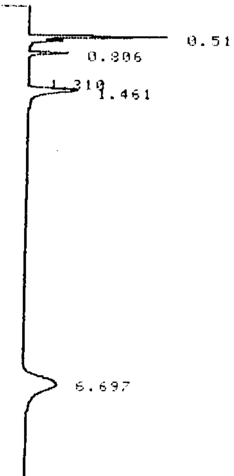
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .510 | 152985 | BV | .038 | 6.69728 |
| .579 | 39659 | VB | .041 | 1.73617 |
| 1.455 | 524631 | PB | .105 | 22.96695 |
| 6.688 | 1567012 | PB | .322 | 68.59962 |

TOTAL AREA=2284286
MUL FACTOR=1.0000E+00

* RUN # 63 JUN 17, 1992 17:05:55 REAR

START




TIMETABLE STOP

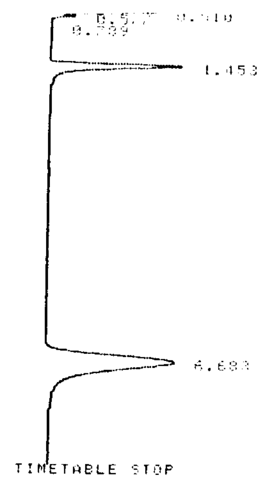
RUN# 63 JUN 17, 1992 17:05:55

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .515 | 258943 | VB | .048 | 24.00563 |
| .806 | 61951 | BB | .039 | 5.74324 |
| 1.461 | 216947 | VB | .112 | 20.11234 |
| 6.697 | 540835 | BB | .417 | 50.13880 |

TOTAL AREA=1078676
MUL FACTOR=1.0000E+00

* RUN # 64 JUN 17, 1992 17:14:55 FRONT



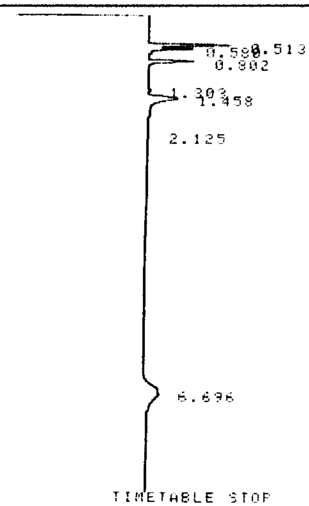

RUN# 64 JUN 17, 1992 17:14:55

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .510 | 157163 | PV | .039 | 7.04158 |
| .577 | 39049 | VB | .040 | 1.74956 |
| 1.453 | 522435 | PB | .104 | 23.40735 |
| 6.683 | 1513280 | PB | .315 | 67.80150 |

TOTAL AREA=2231926
MUL FACTOR=1.0000E+00

* RUN # 65 JUN 17, 1992 17:24:30 Real
START

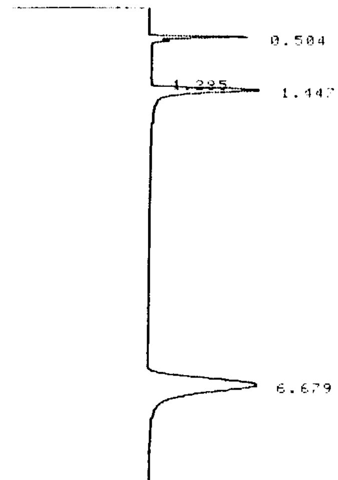



RUN# 65 JUN 17, 1992 17:24:30

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .513 | 116636 | BV | .037 | 17.19256 |
| .580 | 69248 | VP | .040 | 10.20740 |
| .802 | 71790 | PB | .040 | 10.58210 |
| 1.303 | 10224 | PV | .065 | 1.50[illegible] |
| 1.458 | 134431 | VV | .111 | 19.81560 |
| 2.125 | 16556 | VV | .110 | 2.44041 |
| 6.696 | 259520 | BB | .451 | 38.25414 |

TOTAL AREA= 678410
MUL FACTOR=1.0000E+00

\+ RUN # 66 JUN 17, 1992 17:33:51 FRONT
START




TIMETABLE STOP

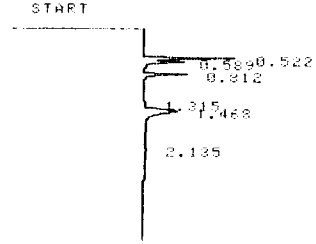
RUN# 66 JUN 17, 1992 17:33:51

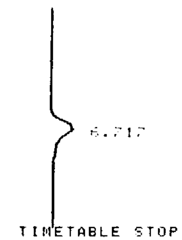
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .504 | 170653 | VB | .045 | 9.16742 |
| 1.447 | 427778 | PB | .105 | 22.98009 |
| 6.679 | 1263085 | PB | .308 | 67.85251 |

TOTAL AREA=1861516
MUL FACTOR=1.0000E+00

\+ RUN # 67 JUN 17, 1992 17:43:50 REAR
START






RUN# 67 JUN 17, 1992 17:43:50

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .522 | 131807 | BV | .037 | 17.78563 |
| .589 | 64200 | VB | .040 | 8.66295 |
| .812 | 66007 | PB | .039 | 8.90678 |
| 1.468 | 145448 | VV | .110 | 19.62630 |
| 2.135 | 23043 | VB | .147 | 3.10935 |
| 6.717 | 310582 | BB | .394 | 41.90898 |

TOTAL AREA= 741087
MUL FACTOR=1.0000E+00

* RUN # 68 JUN 17, 1992 17:56:35 REAL METHANE @ 80.2 ppm
START

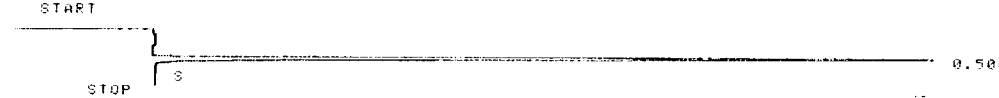

RUN# 68 JUN 17, 1992 17:56:35

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .521 | 2912408 | SPB | .037 | 99.22346 |
| .811 | 22793 | BB | .040 | .77654 |

TOTAL AREA=2935202
MUL FACTOR=1.0000E+00

* RUN # 69 JUN 17, 1992 17:58:55
START

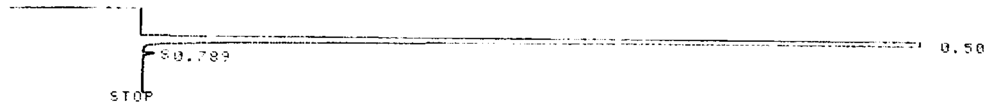



RUN# 69 JUN 17, 1992 17:58:55

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .506 | 1750460 | SBB | .037 | 100.00000 |

* RUN # 70 JUN 17, 1992 18:01:35 FRONT METHANE@ 1798 ppm
START



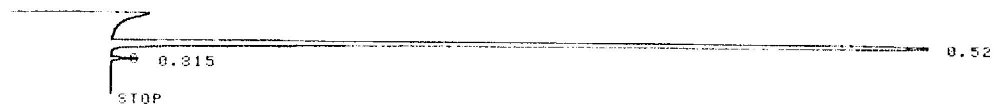

RUN# 70 JUN 17, 1992 18:01:35

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .505 | 23889056 | /SBB | .046 | 99.92150 |
| .789 | 18769 | BB | .038 | .07851 |

TOTAL AREA=2.3908E+07
MUL FACTOR=1.0000E+00

* RUN # 71 JUN 17, 1992 18:05:40 REAR METHANE@ 1991 ppm
START: not ready



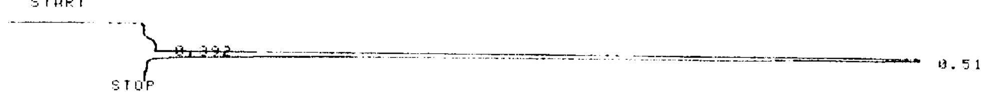

RUN# 71 JUN 17, 1992 18:05:40

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .524 | 7620112 | SBB | .036 | 99.41526 |
| .815 | 44821 | BP | .040 | .58475 |

TOTAL AREA=7664934
MUL FACTOR=1.0000E+00

* RUN # 72 JUN 17, 1992 18:07:55 FRONT METHANE@ 1991 ppm
START




RUN# 72 JUN 17, 1992 18:07:55

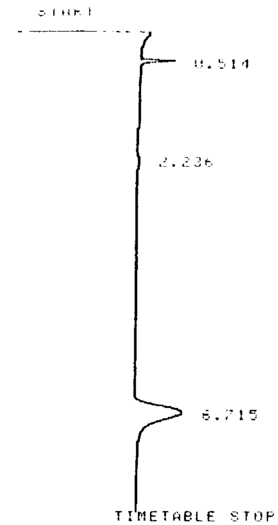
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .392 | 99128 | PH | .206 | 1.29415 |
| .514 | 7560547 | ISHH | .037 | 98.70586 |

TOTAL AREA=7659677
MUL FACTOR=1.0000E+00

:17371

FRONT



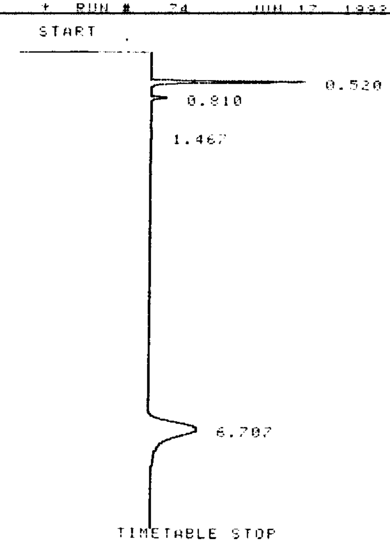

RUN# 73 JUN 17, 1992 18:12:26

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .514 | 33599 | BB | .029 | 5.26622 |
| 2.236 | 38688 | PP | .259 | 6.06385 |
| 6.715 | 565723 | PB | .313 | 88.66992 |

TOTAL AREA= 638010
MUL FACTOR=1.0000E+00

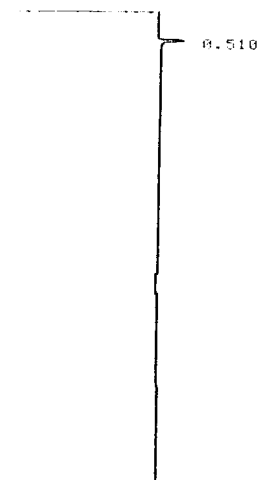
\+ RUN # 74 JUN 17, 1992 18:22:10 CYL # ALM 013821
Ethanol @ 300 ppm
REAR 1/4" JUMPER



| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .520 | 325557 | BB | .038 | 26.54474 |
| .810 | 28742 | BB | .041 | 3.38251 |
| 1.467 | 14658 | VB | .102 | 1.72503 |
| 6.707 | 580767 | PB | .317 | 68.34771 |

TOTAL AREA= 849724
MUL FACTOR=1.0000E+00

* RUN # 75 JUN 17, 1992 18:33:25 NITROGEN BLANK FRONT HEAT TRACE (JUMPER)
START




TIMETABLE STOP

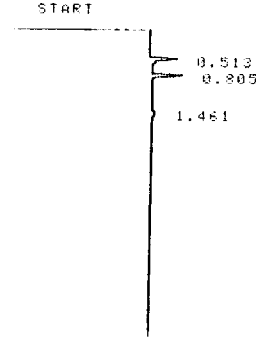
RUN# 75 JUN 17, 1992 18:33:25

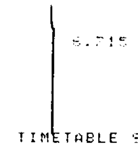
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .510 | 42423 | BB | .044 | 100.00000 |

TOTAL AREA= 42423
MUL FACTOR=1.0000E+00

* RUN # 76 JUN 17, 1992 18:45:50 Nitrogen Blank REAR JUMPER
START






TIMETABLE STOP

RUN# 76 JUN 17, 1992 18:45:50

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .513 | 50229 | BB | .049 | 8.04915 |
| .805 | 50817 | BB | .040 | 8.14337 |
| 1.461 | 22946 | PB | .101 | 3.67707 |
| 6.715 | 500037 | I BH | 2.197 | 80.13040 |

TOTAL AREA= 624029
MUL FACTOR=1.0000E+00

* RUN # 77 JUN 17, 1992 18:55:26 1:4 Dilution CYL # IL-2046
METHANE @ 20.05 ppm

START


RUN# 77 JUN 17, 1992 18:55:26

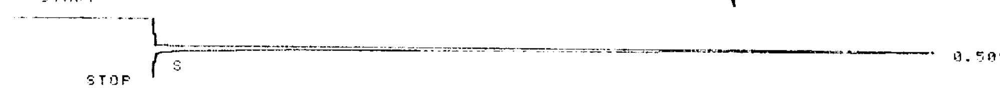
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .120 | 12525 | BB | .036 | 1.31292 |
| .504 | 941458 | SHB | .037 | 98.68710 |

~~TOTAL AREA= 953983~~
MUL FACTOR=1.0000E+00

* RUN # 78 JUN 17, 1992 18:58:07 1:2 Dilution CYL # IL-2046
METHANE @ 40.1 ppm

START




RUN# 78 JUN 17, 1992 18:58:07

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .505 | 1657964 | SBB | .037 | 100.00000 |

TOTAL AREA=1657864
MUL FACTOR=1.0000E+00

* RUN # 79 JUN 17, 1992 19:01:24 NO Dilution CYL# IL-3046
METHANE @ 80.2 ppm

START

STOP

RUN# 79 JUN 17, 1992 19:01:24

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .507 | 3304614 | ISBH | .038 | 97.63408 |
| .773 | 80079 | ITBB | .205 | 2.36592 |

TOTAL AREA=3384693
MUL FACTOR=1.0000E+00

* RUN # 80 JUN 17, 1992 19:07:11 AAL 81441
METHANE @ 9.76ppm
Ethane @ 10.01 ppm

START


RUN# 80 JUN 17, 1992 19:07:11

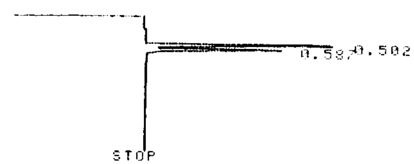
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .504 | 475650 | BV | .037 | 41.28157 |
| .588 | 676559 | VB | .036 | 58.71845 |

TOTAL AREA=1152209
MUL FACTOR=1.0000E+00

* RUN # 81 JUN 17, 1992 19:10:01

START




1:4 AAL 31441
METHANE @ 2.44
Ethane @ 2.5

METHANE
BACKGROUN ~2.0ppm

RUN# 81 JUN 17, 1992 19:10:01

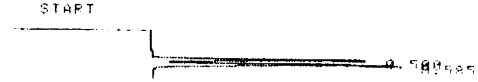
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .502 | 276248 | PV | .038 | 59.34565 |
| .587 | 189242 | VB | .037 | 40.65435 |

TOTAL AREA= 465490
MUL FACTOR=1.0000E+00

* RUN # 82 JUN 17, 1992 19:13:26

START




1:2 AAL 21441
METHANE @ 4.88
[illegible]

STOP

RUN# 82 JUN 17, 1992 19:13:26

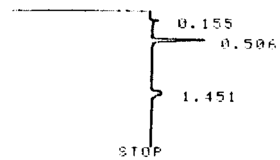
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .500 | 328098 | PV | .040 | 48.43776 |
| .595 | 349262 | VB | .037 | 51.56226 |

TOTAL AREA= 677360
MUL FACTOR=1.0000E+00

* RUN # 83 JUN 17, 1992 19:22:11 1:2 Dil. AAL 13774
Acetaldehyde @ 1.52 ppmV

START




RUN# 83 JUN 17, 1992 19:22:11

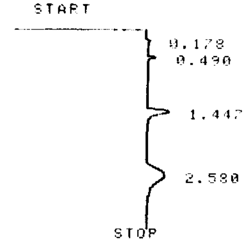
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .155 | 11623 | PB | .037 | 7.52366 |
| .506 | 87112 | VB | .041 | 56.38827 |
| 1.451 | 55751 | PB | .112 | 36.08806 |

TOTAL AREA= 154486
MUL FACTOR=1.0000E+00

* RUN # 84 JUN 17, 1992 19:26:18 AAL 13774 Acetaldehyde @ 3.03 ppm

START



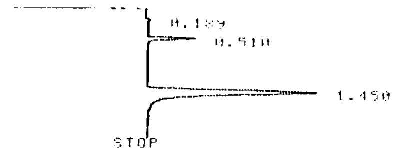

RUN# 84 JUN 17, 1992 19:26:18

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .490 | 18008 | BB | .044 | 4.83666 |
| 1.447 | 97849 | PB | .105 | 26.28067 |
| 2.580 | 256466 | BB | .329 | 68.88266 |

TOTAL AREA= 372323
MUL FACTOR=1.0000E+00

* RUN # 85 JUN 17, 1992 19:31:44 AAL 1441 ACETALDEHYDE @ 32.2 ppm
1:2 Dilution
START



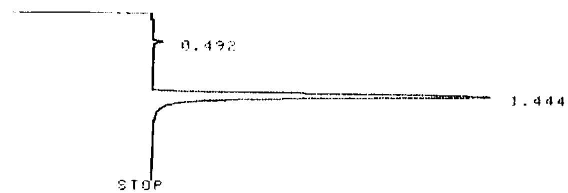

RUN# 85 JUN 17, 1992 19:31:44

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .510 | 70524 | BB | .038 | 9.40715 |
| 1.450 | 679161 | PB | .106 | 90.59283 |

TOTAL AREA= 749685
MUL FACTOR=1.0000E+00

* RUN # 86 JUN 17, 1992 19:35:05 AAL 1441 ACETALDEHYDE @ 44.3 ppm
START



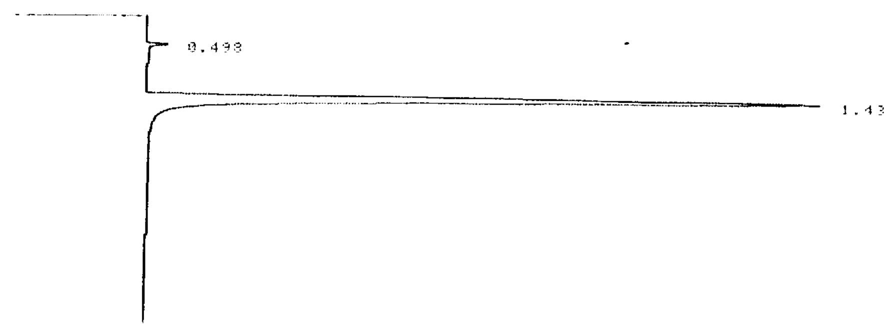

RUN# 86 JUN 17, 1992 19:35:05

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .492 | 18728 | BB | .045 | 1.39540 |
| 1.444 | 1323395 | PB | .104 | 98.60458 |

TOTAL AREA=1342123
MUL FACTOR=1.0000E+00

* RUN # 87 JUN 17, 1992 19:39:03 ALM 002105 ACETALDEHYDE @ 82.5 ppm
START



RUN# 87 JUN 17, 1992 19:39:03

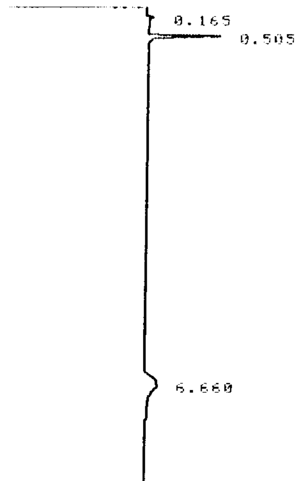
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .498 | 33738 | PB | .043 | 1.27898 |
| 1.437 | 2604157 | PB | .103 | 98.72102 |

TOTAL AREA=2637894
MUL FACTOR=1.0000E+00

* RUN # 88 JUN 17, 1992 19:47:09 1:4 Dil ALM018821 Ethanol @ 50 ppm

START




TIMETABLE STOP

RUN# 88 JUN 17, 1992 19:47:09

Integration QUESTIONABLE ?

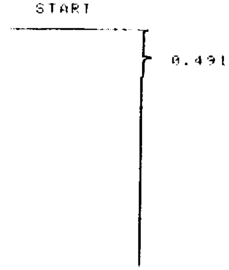
AREA%

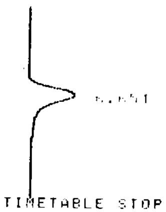
| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .505 | 115692 | VB | .042 | 29.75082 |
| 6.660 | 273178 | BB | .500 | 70.24918 |

TOTAL AREA= 388870
MUL FACTOR=1.0000E+00

* RUN # 89 JUN 17, 1992 19:55:51 ALM 018821 Ethanol @ 200 ppm

START





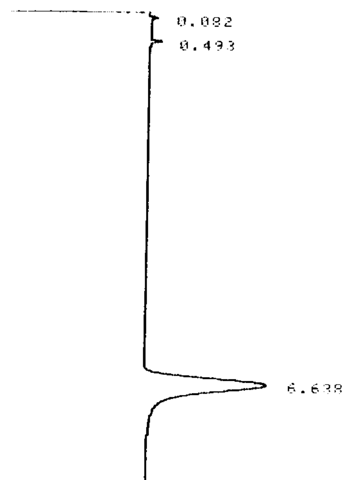

RUN# 89 JUN 17, 1992 19:55:51

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .491 | 18878 | BB | .044 | 3.42751 |
| 6.651 | 531901 | VB | .313 | 96.57251 |

TOTAL AREA= 550779
MUL FACTOR=1.0000E+00

* RUN # 90 JUN 17, 1992 20:05:31 ACM 024496 ethanol @ 498 ppm
START



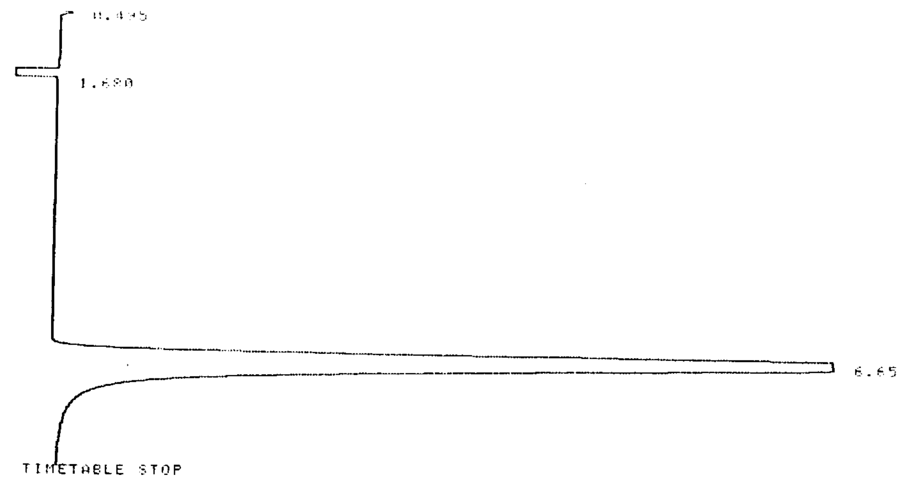

RUN# 90 JUN 17, 1992 20:05:31

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .082 | 11956 | BB | .034 | .80439 |
| .493 | 21342 | BB | .042 | 1.44798 |
| 6.638 | 1440716 | PB | .314 | 97.74762 |

TOTAL AREA=1473914
MUL FACTOR=1.0000E+00

* RUN # 91 JUN 17, 1992 20:15:01 ACM011208 Ethanol @ 4000 ppm




RUN# 91 JUN 17, 1992 20:15:01

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .495 | 23096 | BV | .043 | .19924 |
| 1.690 | 37106 | PB | .053 | .32010 |
| 6.659 | 11531848 | PB | .294 | 99.48064 |

TOTAL AREA=1.1592E+07
MUL FACTOR=1.0000E+00

*

Power failed
JUN 18, 1992 07:17:57

BREAK

* LIST: LIST
PEAK CAPACITY: 1244

ZERO = 5, 1083.306
ATT 2^ = 6
CHT SP = 1.0
AR REJ = 10000
THRSH = 4
PK WD = 0.10

*TIME 12:10:35
JUN 18, 1992 12:10:35

POWER to trailer @ 12:10

* TRAILER
moved to 2nd location

Helium @ 14 psi – [illegible]

Air @ 400 ml/min

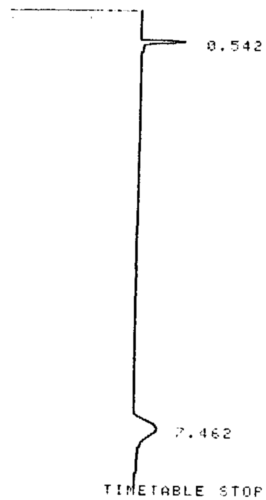
$H_2$ @ 30 ml/min

```
*  LIST: LIST
PEAK CAPACITY:  1244

ZERO    =  5. 47.163
ATT 2^  =  6
CHT SP  =  1.0
AR REJ  =  10000
THRSH   =  4
PK WD   =  0.10

*  ATT 2^   BREAK

*  RUN #   92      JUN 18, 1992  13:56:29
START
```

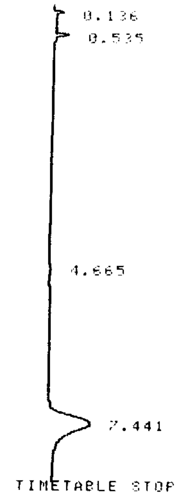



Flow too low

```
RUN#    92           JUN 18, 1992  13:56:29

AREA%
       RT       AREA TYPE  WIDTH       AREA%
     .542      93914   VB   .053    17.70102
    7.462     436643   PB   .483    82.29998

TOTAL AREA= 530557
MUL FACTOR=1.0000E+00
```




Flow too low
adjust to 44 psi

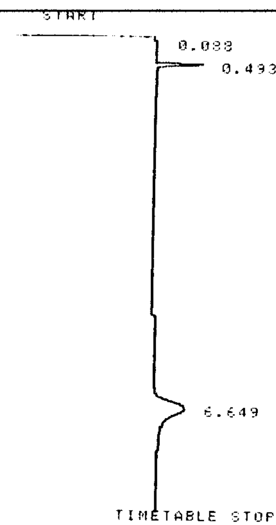
RUN# 93 JUN 18, 1992 14:06:09

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .136 | 15873 | BB | .041 | 1.79258 |
| .535 | 27782 | VB | .048 | 3.13748 |
| 4.665 | 30849 | BP | .188 | 3.48385 |
| 7.441 | 810982 | PB | .516 | 91.58608 |

TOTAL AREA= 885486
MUL FACTOR=1.0000E+00

* RUN # 94 JUN 18, 1992 14:21:13 1:1 Dilution Run 0188N Ethanol @ 100ppm



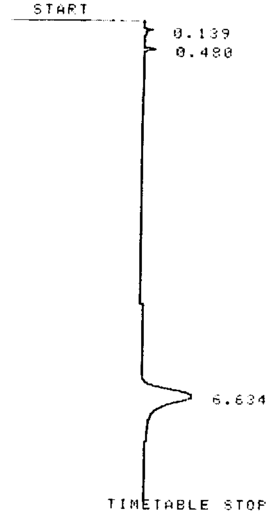

RUN# 94 JUN 18, 1992 14:21:13

| | | | | |
|---|---|---|---|---|
| 6.649 | 694742 | BB | .577 | 99.44435 |

Below 200ppm Integration Ethanol. Use PEAK Heights

TOTAL AREA= 776731
MUL FACTOR=1.0000E+00

* RUN # 95 JUN 18, 1992 14:30:17 ALM 0188921 Ethanol @ 200ppm
START



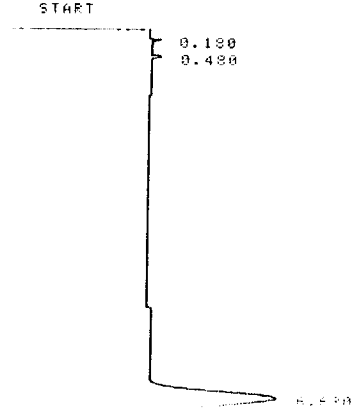

RUN# 95 JUN 18, 1992 14:30:17

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .139 | 11912 | PB | .033 | 1.97388 |
| .480 | 20731 | VB | .042 | 3.43524 |
| 6.634 | 570839 | PB | .313 | 94.59088 |

TOTAL AREA= 603481
MUL FACTOR=1.0000E+00

* RUN # 96 JUN 18, 1992 14:40:55 ALM 029496 Ethanol @ 498ppm
START



TIMETABLE STOP

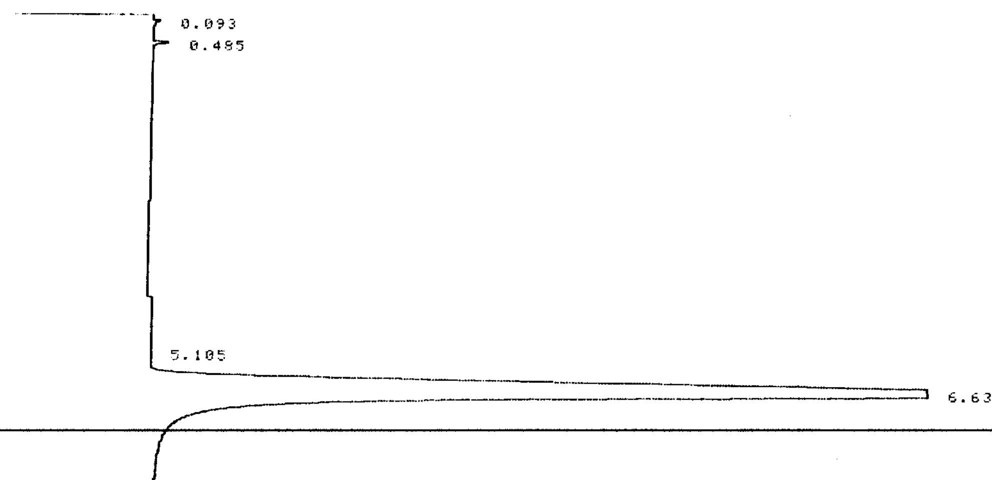
RUN# 96 JUN 18, 1992 14:40:55

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .180 | 13720 | PV | .034 | .79396 |
| .480 | 21489 | BB | .045 | 1.24355 |
| 6.620 | 1692831 | PB | .354 | 97.96250 |

TOTAL AREA=1728040
MUL FACTOR=1.0000E+00

\+ RUN # 97 JUN 18, 1992 14:50:25 ALM 011208 Ethanol @ 4000 ppm
START



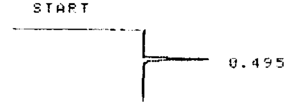

RUN# 97 JUN 18, 1992 14:50:25

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .093 | 10369 | BB | .031 | .09277 |
| .485 | 30718 | VV | .045 | .27483 |
| 5.105 | 126380 | PB | .587 | 1.13072 |
| 6.634 | 11009464 | PB | .294 | 98.50166 |

TOTAL AREA=1.1177E+07
MUL FACTOR=1.0000E+00

* RUN # 98 JUN 18, 1992 15:11:26 1:2 Dilution AAL 13774 Acetaldehyde @ 1.52 ppm
START



STOP

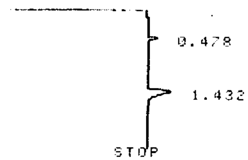
RUN# 99 JUN 18, 1992 15:11:26

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .495 | 108514 | PB | .042 | 66.39581 |
| 1.436 | 54921 | BB | .109 | 33.60419 |

TOTAL AREA= 163435
MUL FACTOR=1.0000E+00

* RUN # 99 JUN 18, 1992 15:14:34 AAL 13774 Acetaldehyde @ 3.03 ppm
START



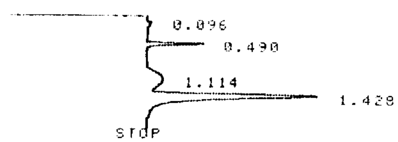

RUN# 99 JUN 18, 1992 15:14:34

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .478 | 18427 | PB | .042 | 15.06939 |
| 1.432 | 103854 | PB | .109 | 84.93059 |

TOTAL AREA= 122281
MUL FACTOR=1.0000E+00

* RUN # 100 JUN 18, 1992 15:20:06 1:2 dilution AAL 9441 Acetaldehyde @ 22.2 ppm
START



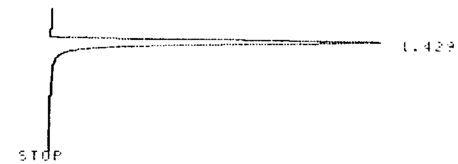

RUN# 100 JUN 18, 1992 15:20:06

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .490 | 93509 | BB | .041 | 9.47073 |
| 1.114 | 187311 | BV | .276 | 18.97114 |
| 1.428 | 706527 | VB | .109 | 71.55814 |

TOTAL AREA= 987347
MUL FACTOR=1.0000E+00

* RUN # 101 JUN 18, 1992 15:22:57 AAL 9441 Acetaldehyde @ 44.3 ppm
START



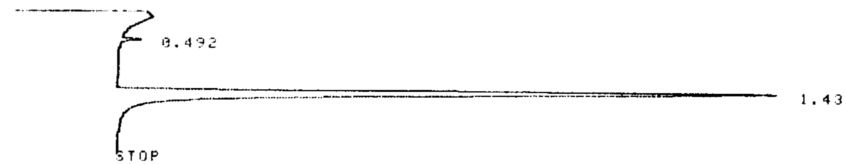

RUN# 101 JUN 18, 1992 15:22:57

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .481 | 24719 | VB | .050 | 1.85059 |
| 1.429 | 1310965 | BB | .106 | 98.14941 |

TOTAL AREA=1335683
MUL FACTOR=1.0000E+00

* RUN # 102 JUN 18, 1992 15:26:40 ALM 003105 Acetaldehyde @ 82.5ppm
START



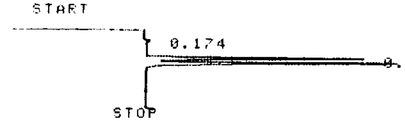

RUN# 102 JUN 18, 1992 15:26:40

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .492 | 31834 | BB | .039 | 1.22308 |
| 1.430 | 2570938 | PB | .104 | 98.77692 |

TOTAL AREA=2602773
MUL FACTOR=1.0000E+00

* RUN # 103 JUN 18, 1992 15:31:45 1:1 dilution AA-21441 Methane @ 4.88 Ethane @ 5.10
START




RUN# 103 JUN 18, 1992 15:31:45

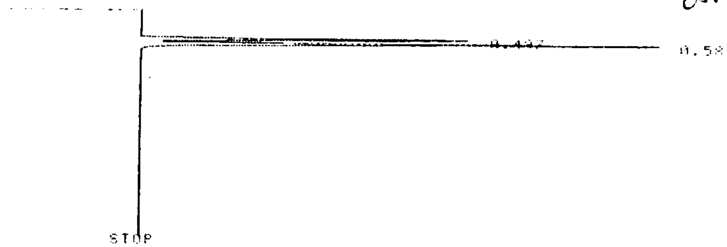
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .494 | 312128 | PV | .038 | 47.79002 |
| .578 | 340996 | VB | .036 | 52.20998 |

TOTAL AREA= 653124
MUL FACTOR=1.0000E+00

9.76

* RUN # 104 JUN 18, 1992 15:33:38




RUN# 104 JUN 18, 1992 15:33:38

AREA%

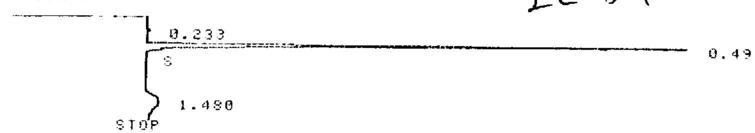
| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .497 | 448572 | PV | .036 | 39.38691 |
| .580 | 690314 | VB | .035 | 60.61310 |

TOTAL AREA=1138886
MUL FACTOR=1.0000E+00

* RUN # 105 JUN 18, 1992 15:38:47

1:5 dilution
IL-2046

16.0 ppm methane




RUN# 105 JUN 18, 1992 15:38:47

AREA%

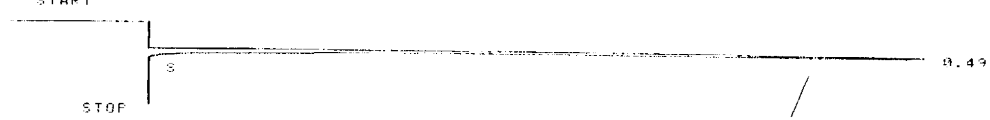
| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .494 | 778136 | SBB | .038 | 80.30490 |
| 1.480 | 190841 | I PH | .313 | 19.69510 |

TOTAL AREA= 968977
MUL FACTOR=1.0000E+00

* RUN # 106 JUN 18, 1992 15:40:58

1:2 dilution
IL-2046

40.1 ppm methane



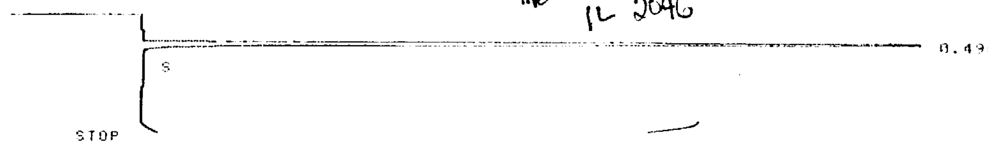

RUN# 106 JUN 18, 1992 15:40:58

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .493 | 1706462 | SBB | .037 | 100.00000 |

* RUN # 107 JUN 18, 1992 15:43:19

Methane @ 90.2
IL 2046



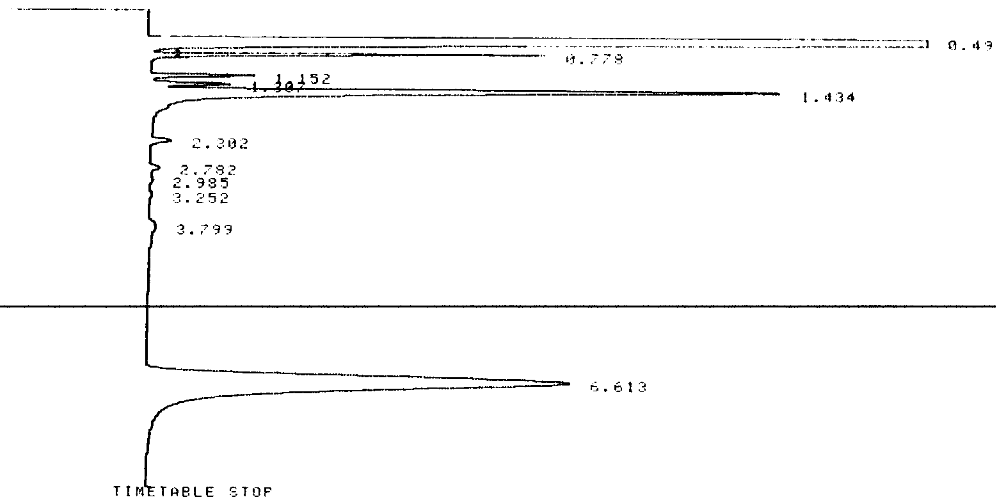

RUN# 107 JUN 18, 1992 15:43:19

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .496 | 3287250 | SHB | .036 | 100.00000 |

TOTAL AREA=3287250
MUL FACTOR=1.0000E+00

* RUN # 108 JUN 18, 1992 15:54:40 Repeat



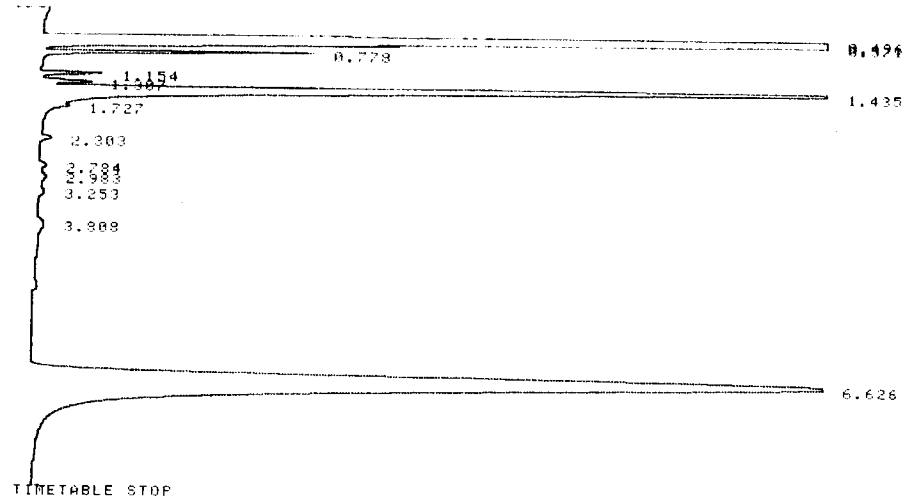

RUN# 108 JUN 18, 1992 15:54:40

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .496 | 33009696 | >SPB | .063 | 79.64006 |
| .778 | 576021 | BB | .039 | 1.38972 |
| 1.152 | 181394 | PV | .046 | .43764 |
| 1.307 | 160300 | VV | .055 | .38674 |
| 1.434 | 2419269 | VB | .103 | 5.83679 |
| 2.302 | 66385 | PB | .078 | .16016 |
| 2.782 | 44753 | PV | .097 | .10797 |
| 2.985 | 26012 | VV | .121 | .06276 |
| 3.252 | 29103 | VP | .146 | .07021 |
| 3.799 | 119706 | PV | .310 | .28881 |

TOTAL AREA=4.1443E+0
MUL FACTOR=1.0000E+00

+ RUN # 109 JUN 18, 1992 16:03:35 FRONT
START



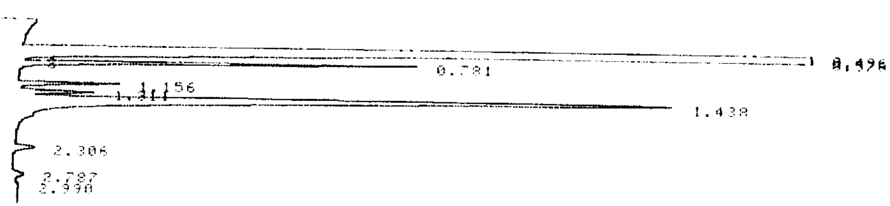

RUN# 109 JUN 18, 1992 16:03:35

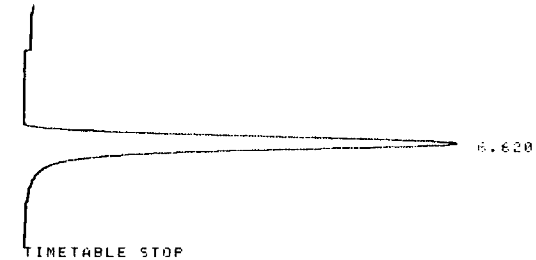
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .496 | 25472032 | SPB | .049 | 59.83581 |
| .571 | 3072422 | TBB | .031 | 7.21736 |
| .778 | 394949 | BB | .039 | .92777 |
| 1.154 | 112165 | PV | .047 | .26348 |
| 1.307 | 129005 | VV | .065 | .30304 |
| 1.435 | 3842582 | VV | .104 | 9.02653 |
| 1.727 | 147703 | VB | .130 | .34697 |
| 2.303 | 39237 | PP | .079 | .09217 |
| 2.784 | 48951 | PV | .125 | .11499 |
| 2.983 | 64649 | VV | .164 | .15187 |
| 3.253 | 57038 | VP | .163 | .13399 |
| 3.808 | 84409 | PV | .227 | .19828 |
| 6.626 | 9104762 | PB | .298 | 21.38779 |

TOTAL AREA=4.2570E+07
MUL FACTOR=1.0000E+00

+ RUN # 110 JUN 18, 1992 16:12:26 REAR
START






TIMETABLE STOP

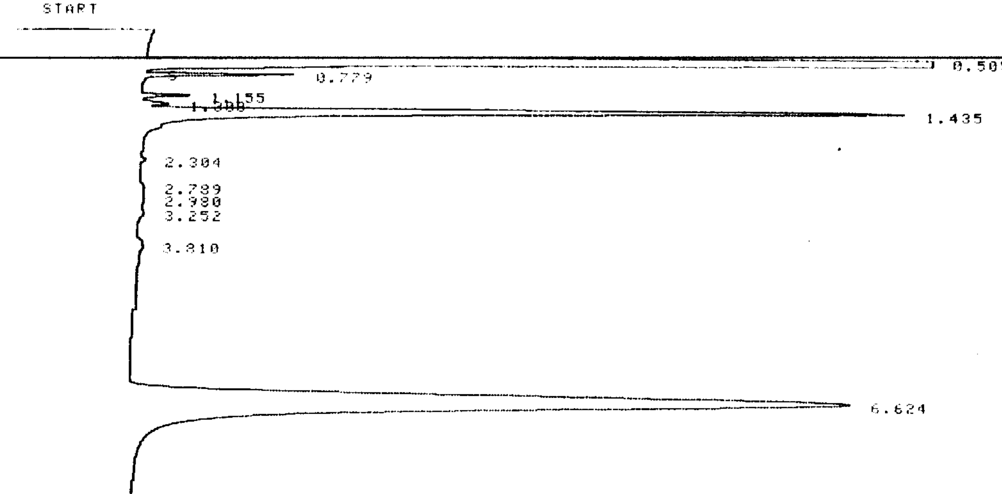
RUN# 110 JUN 18, 1992 16:12:26

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .496 | 31711728 | >SBB | .061 | 74.58099 |
| .576 | 2132760 | TBB | .034 | 5.01591 |
| .781 | 578753 | BB | .038 | 1.36114 |
| 1.156 | 182045 | PV | .046 | .42814 |
| 1.311 | 161351 | VV | .055 | .37947 |
| 1.438 | 2529998 | VB | .103 | 5.95016 |
| 2.306 | 69748 | PP | .081 | .16404 |
| 2.787 | 53816 | BV | .106 | .12657 |
| 2.990 | 63426 | VV | .176 | .14917 |
| 3.800 | 113904 | VV | .255 | .26788 |
| 6.620 | 4922352 | PB | .302 | 11.57660 |

TOTAL AREA=4.2520E+07
MUL FACTOR=1.0000E+00

* RUN # 111 JUN 18, 1992 16:21:25 FRONT
START




TIMETABLE STOP

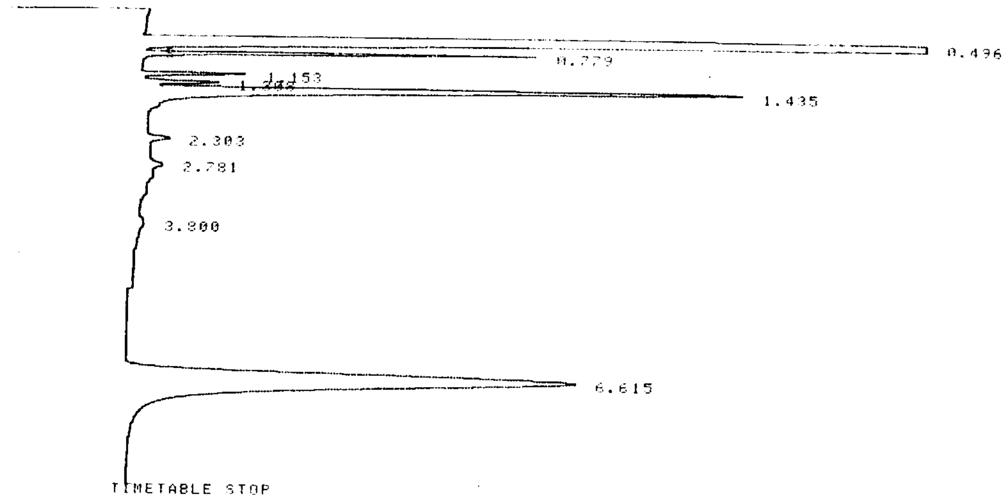
RUN# 111 JUN 18, 1992 16:21:25

AREA%

| | | | | |
|---|---|---|---|---|
| [illegible] | 419471 | BB | .039 | .71479 |
| 1.153 | 88567 | PV | .047 | .28845 |
| 1.309 | 74428 | VV | .065 | .24240 |
| 1.435 | 3014845 | VV | .105 | 9.81896 |
| 2.304 | 25529 | VB | .084 | .08314 |
| 2.789 | 48736 | BV | .160 | .15873 |
| 2.980 | 64775 | VV | .190 | .21096 |
| 3.252 | 68482 | VV | .191 | .22304 |
| 3.810 | 171459 | VV | .441 | .55842 |
| 6.624 | 8038707 | PB | .299 | 26.18103 |

TOTAL AREA=3.0704E+07
MUL FACTOR=1.0000E+00

\+ RUN # 112 JUN 18, 1992 16:30:35 REAR
START




RUN# 112 JUN 18, 1992 16:30:35

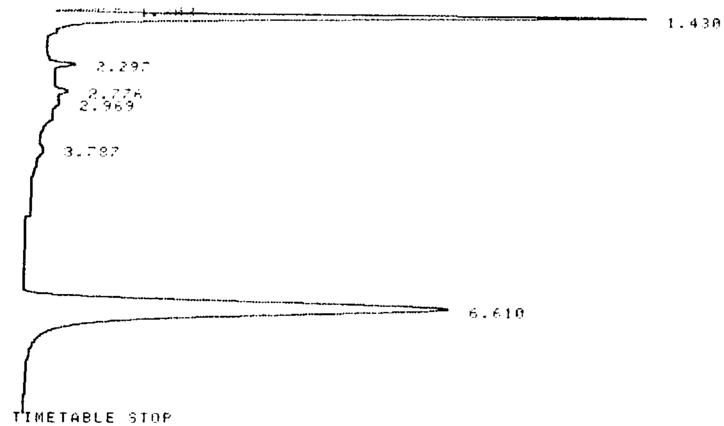
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .496 | 32819856 | >SBB | .063 | 77.92291 |
| .779 | 569890 | BB | .039 | 1.35307 |
| 1.153 | 190884 | PV | .047 | .45321 |
| 1.309 | 179026 | VV | .059 | .42505 |
| 1.435 | 2412774 | VV | .106 | 5.72856 |
| 2.303 | 245416 | VV | .187 | .58268 |
| 2.781 | 335073 | VV | .303 | .79555 |
| 3.800 | 254964 | VV | .462 | .60535 |
| 6.615 | 5110506 | PB | .302 | 12.13367 |

TOTAL AREA=4.2118E+07
MUL FACTOR=1.0000E+00

REAR

\+ RUN # 113 JUN 18, 1992 16:39:30
START



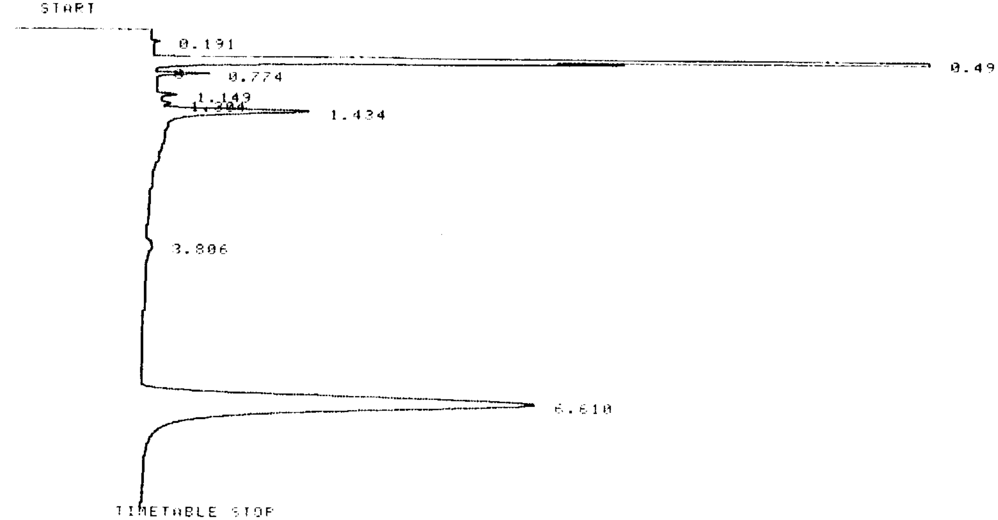

RUN# 113 JUN 18, 1992 16:39:30

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .488 | 33955168 | >SBB | .065 | 77.63085 |
| .773 | 607215 | BB | .030 | 1.38840 |
| 1.148 | 204059 | BV | .048 | .46658 |
| 1.303 | 192628 | VV | .059 | .44045 |
| 1.430 | 2462762 | VV | .107 | 5.63113 |
| 2.297 | 419204 | VV | .247 | .95851 |
| 2.776 | 482775 | VV | .332 | 1.10387 |
| 2.969 | 271742 | VV | .233 | .62134 |
| 3.787 | 327053 | VV | .481 | .74781 |
| 6.610 | 4812195 | PB | .301 | 11.00314 |

TOTAL AREA=4.3735E+07
MUL FACTOR=1.0000E+00

\+ RUN # 114 JUN 18, 1992 16:49:28 REAR
START



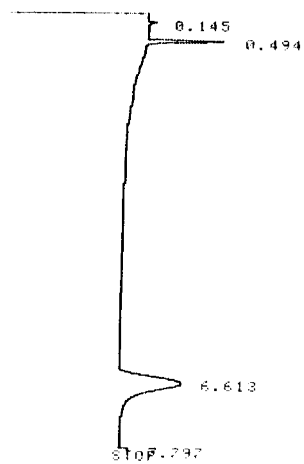
RUN# 11'    JUN 18, 1992 16:49:28

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .191 | 11857 | BH | .033 | .09570 |
| .499 | 7119914 | SHB | .039 | 57.46502 |
| .774 | 79959 | BB | .038 | .64535 |
| 1.149 | 30607 | PV | .044 | .24703 |
| 1.304 | 21944 | VV | .055 | .17711 |
| 1.434 | 589026 | VB | .105 | 4.75405 |
| 3.806 | 74972 | PB | .238 | .60510 |
| 6.610 | 4461712 | PB | .302 | 36.01062 |

TOTAL AREA=1.2390E+07
MUL FACTOR=1.0000E+00

* RUN # 115    JUN 18, 1992 16:59:47
START




RUN# 115    JUN 18, 1992 16:59:47

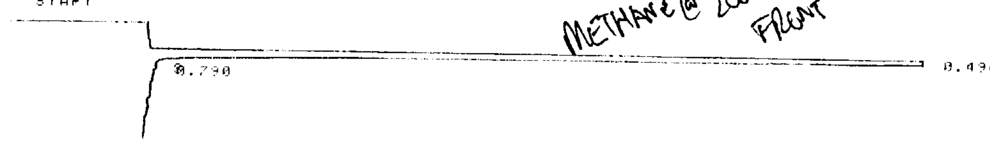
AREA%

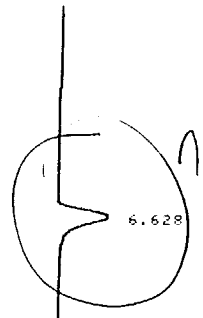
| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .145 | 11328 | BB | .033 | 1.24999 |
| .494 | 123607 | VB | .041 | 13.63942 |
| 6.613 | 750719 | PB | .311 | 82.83814 |
| 7.797 | 20594 | I PH | .048 | 2.27245 |

TOTAL AREA= 906248
MUL FACTOR=1.0000E+00

* RUN # 116    JUN 18, 1992 17:08:30
START

METHANE @ 2000 PPM FRONT






? , IN LINE ?

FRONT LINE REPLACED 18:00

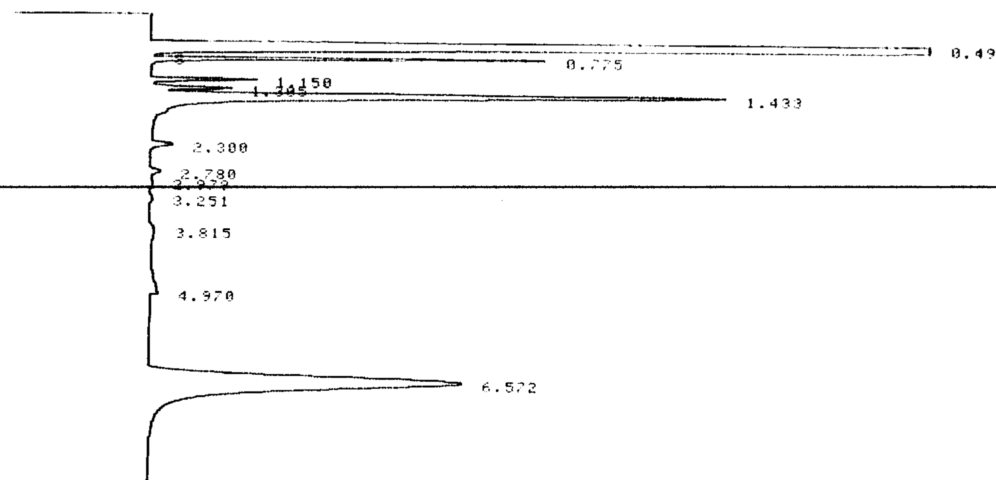
RUN# 116 JUN 18, 1992 17:08:30

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .496 | 31632192 | >SHB | .061 | 98.18269 |
| 6.628 | 585506 | PB | .311 | 1.81734 |

TOTAL AREA=3.2218E+07
MUL FACTOR=1.0000E+00

* RUN # 117 JUN 18, 1992 17:22:56 REAR
START




RUN# 117 JUN 18, 1992 17:22:56

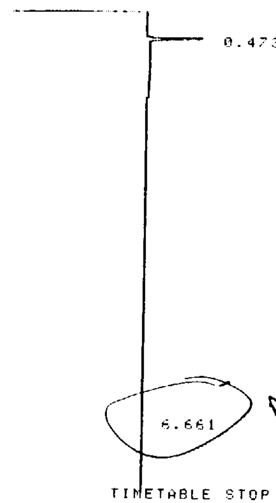
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .496 | 33276128 | >SBB | .064 | 82.38867 |
| .775 | 592001 | BB | .039 | 1.46574 |
| 1.150 | 189893 | PV | .046 | .47013 |
| 1.305 | 166375 | VV | .055 | .41193 |
| 1.433 | 2230645 | VB | .104 | 5.52287 |

| | | | | |
|---|---|---|---|---|
| [illegible] | 24686 | VV | .120 | .06112 |
| 3.251 | 30330 | VP | .146 | .07509 |
| 3.815 | 69101 | PV | .249 | .17109 |
| 4.970 | 187288 | VB | .439 | .46371 |
| 6.572 | 3499568 | PB | .296 | 8.66461 |

TOTAL AREA=4.0389E+07
MUL FACTOR=1.0000E+00

* RUN # 118 JUN 18, 1992 17:33:54 QC CHECK BAG TEDLAR BAG $H_2$ ACM 029428 QC #303130 99.999% Pure
START




NO PEAK

TIMETABLE STOP

RUN# 118 JUN 18, 1992 17:33:54

AREA%

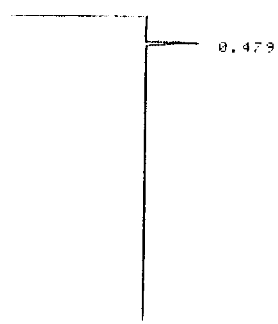
| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .473 | 86269 | BV | .039 | 23.75019 |
| 6.661 | 276966 | I PH | 2.324 | 76.24982 |

— NO PEAK

WIDTH INCORRECT NO PEAK

TOTAL AREA= 363235
MUL FACTOR=1.0000E+00

* RUN # 119 JUN 18, 1992 17:43:59 TEDLAR BAG $H_2$ Run 02
START



TIMETABLE STOP

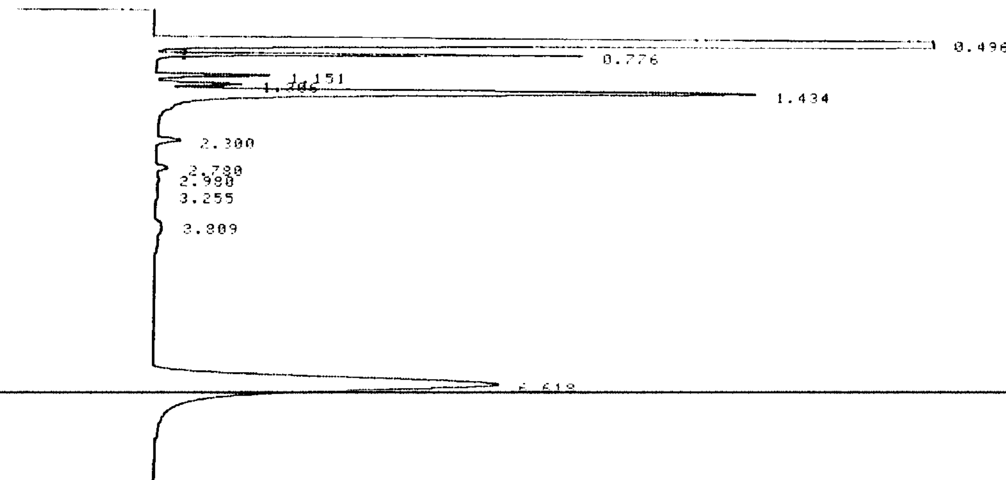
RUN# 119 JUN 18, 1992 17:43:59

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .479 | 70087 | PB | .033 | 100.00000 |

TOTAL AREA= 70087
MUL FACTOR=1.0000E+00

+ RUN # 120 JUN 18, 1992 17:53:15 REAL
START




TIMETABLE STOP

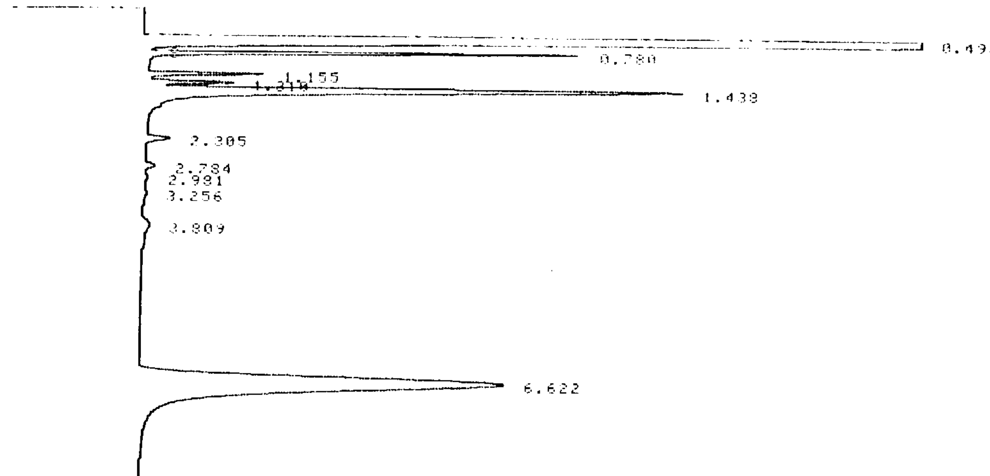
RUN# 120 JUN 18, 1992 17:53:15

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .496 | 34161344 | >SPB | .066 | 81.92771 |
| .776 | 630921 | BB | .039 | 1.51311 |
| 1.151 | 201429 | PV | .046 | .48308 |
| 1.306 | 172079 | VV | .054 | .41269 |
| 1.434 | 2286022 | VB | .102 | 5.48247 |
| 2.300 | 77565 | BP | .081 | .18602 |
| 2.780 | 49316 | BV | .098 | .11827 |
| 2.990 | 27933 | VV | .125 | .06699 |
| 3.255 | 30145 | VP | .150 | .07230 |
| 3.909 | 105802 | PP | .294 | .25374 |
| 6.618 | 3954416 | PB | .304 | 9.48371 |

TOTAL AREA=4.1697E+07
MUL FACTOR=1.0000E+00

* RUN # 121 JUN 18, 1992 18:04:20 PEAK
START



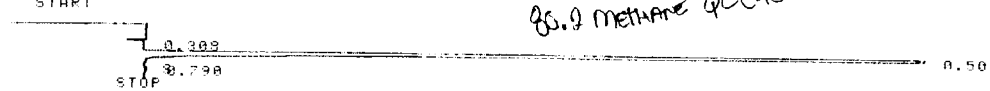

RUN# 121 JUN 18, 1992 18:04:20

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .496 | 33956192 | >SPB | .065 | 81.84685 |
| .780 | 626630 | BB | .039 | 1.51041 |
| 1.155 | 202648 | PV | .046 | .48846 |
| 1.310 | 173679 | VV | .055 | .41863 |
| 1.438 | 2057213 | VB | .103 | 4.95864 |
| 2.305 | 79901 | VP | .083 | .19259 |
| 2.784 | 48465 | PV | .098 | .11682 |
| 2.981 | 25752 | VV | .122 | .06207 |
| 3.256 | 32103 | VP | .154 | .07738 |
| 3.809 | 102847 | PV | .299 | .24790 |
| 6.622 | 4182096 | PB | .304 | 10.08038 |

TOTAL AREA=4.1487E+07
MUL FACTOR=1.0000E+00

* RUN # 122 JUN 18, 1992 18:17:45 FRONT HEAT TRACE
80.9 METHANE QC CHECK
START




RUN# 122 JUN 18, 1992 18:17:45

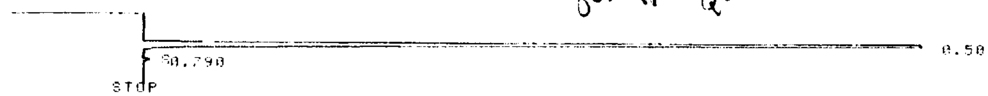
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .308 | 33227 | PB | .059 | 1.02849 |
| .506 | 3197429 | SPB | .036 | 98.97149 |

TOTAL AREA=3230654

* RUN # 123 JUN 18, 1992 18:19:50 FRONT HEAT TRACE 30.2 ppm METHANE QC CHECK

START




RUN# 123 JUN 18, 1992 18:19:50

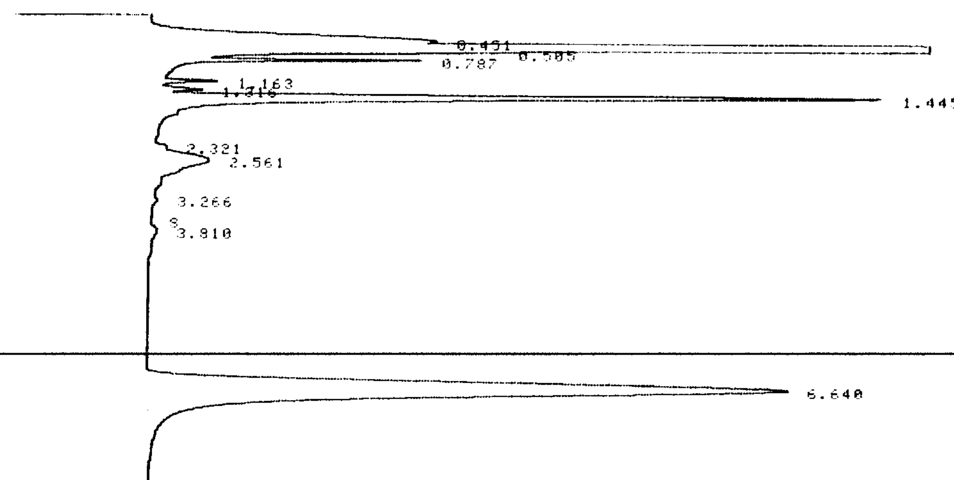
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .505 | 3242742 | SBB | .036 | 99.59981 |
| .790 | 13030 | BB | .040 | .40021 |

TOTAL AREA=3255773
MUL FACTOR=1.0000E+00

* RUN # 124 JUN 18, 1992 18:23:55 FRONT

START

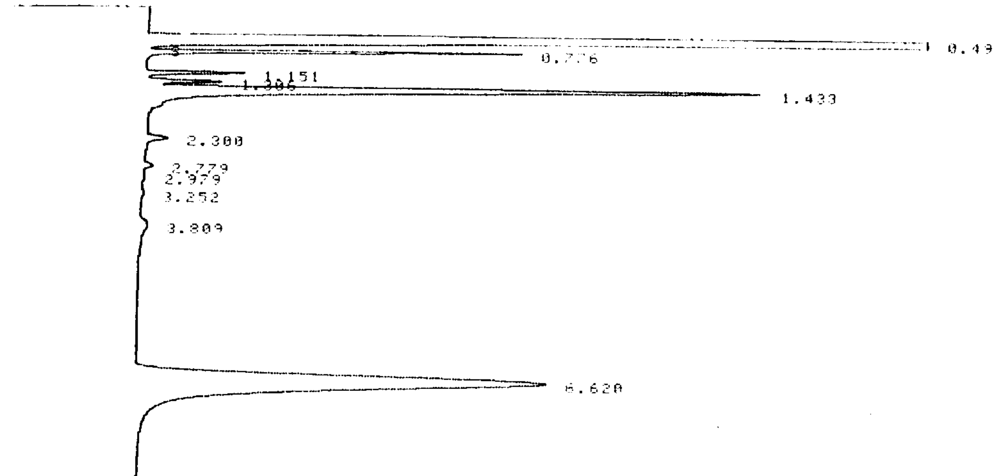



RUN# 124 JUN 18, 1992 18:23:55

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .451 | 1662999 | BH | .154 | 3.96852 |
| .505 | 28875520 | >SHB | .056 | 68.90742 |
| .787 | 313793 | TBB | .038 | .74882 |
| 1.163 | 93668 | TBP | .046 | .22353 |
| 1.316 | 94346 | TPV | .059 | .22514 |
| 1.445 | 2820514 | TVV | .104 | 6.73076 |
| 2.321 | 42932 | TPV | .080 | .10245 |
| 2.561 | 677739 | TVV | .314 | 1.61733 |
| 3.266 | 44167 | TVB | .162 | .10540 |
| 3.810 | 91114 | BP | .274 | .21743 |
| 6.640 | 7188048 | PB | .300 | 17.15327 |

* RUN # 125 JUN 18, 1992 18:33:35 REAR
START




TIMETABLE STOP

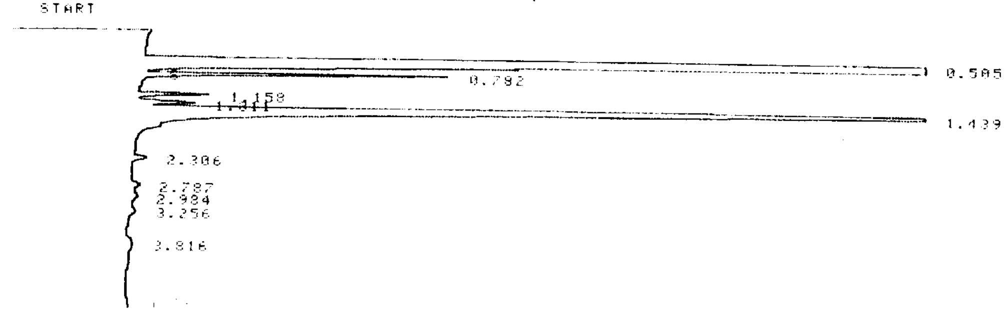
RUN# 125 JUN 18, 1992 18:33:35

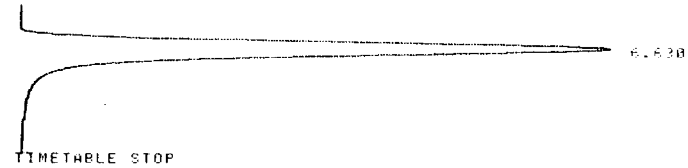
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .496 | 32698928 | >SBB | .063 | 79.91069 |
| .776 | 557866 | BB | .039 | 1.36333 |
| 1.151 | 175104 | PV | .046 | .42792 |
| 1.306 | 153813 | VV | .056 | .37589 |
| 1.433 | 2372341 | VB | .103 | 5.79760 |
| 2.300 | 83628 | BB | .095 | .20437 |
| 2.779 | 39686 | BV | .093 | .09699 |
| 2.979 | 18069 | VV | .106 | .04416 |
| 3.252 | 20889 | VP | .122 | .05105 |
| 3.809 | 118887 | PV | .301 | .29054 |
| 6.620 | 4680170 | PB | .303 | 11.43754 |

TOTAL AREA=4.0919E+07
MUL FACTOR=1.0000E+00

* RUN # 126 JUN 18, 1992 18:42:35 FRONT
START





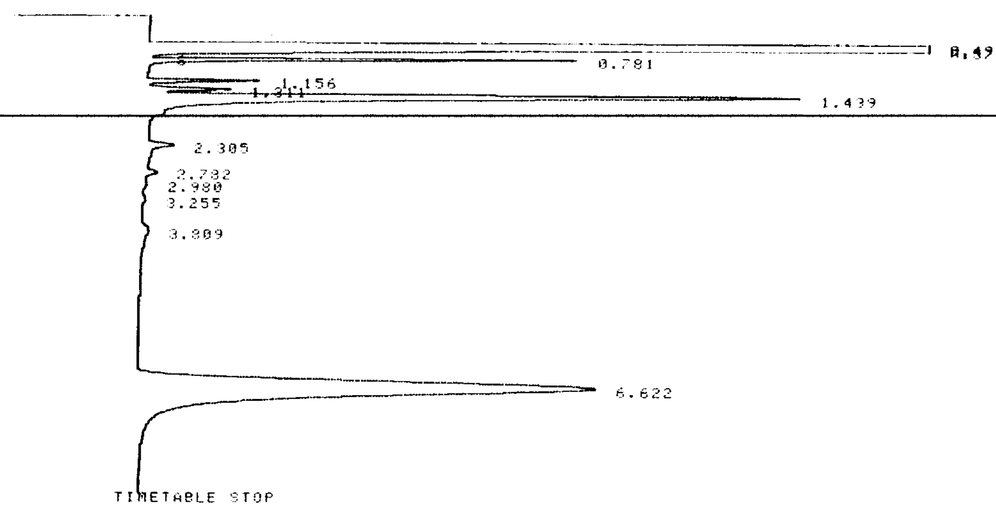

RUN# 126 JUN 18, 1992 18:42:35

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .505 | 31509840 | >SBB | .061 | 72.82195 |
| .782 | 455797 | BB | .039 | 1.05339 |
| 1.158 | 131918 | PV | .047 | .30487 |
| 1.311 | 142348 | VV | .063 | .32898 |
| 1.439 | 4042120 | VV | .104 | 9.34168 |
| 2.306 | 48949 | VB | .080 | .11313 |
| 2.787 | 52270 | VV | .116 | .12080 |
| 2.984 | 63016 | VV | .161 | .14564 |
| 3.256 | 55968 | VP | .152 | .12935 |
| 3.816 | 68894 | PV | .223 | .15920 |
| 4.899 | 50428 | BB | .210 | .11654 |
| 6.630 | 6648192 | PB | .302 | 15.36454 |

TOTAL AREA=4.3270E+07
MUL FACTOR=1.0000E+00

* RUN # 127 JUN 18, 1992 18:52:08 REAR
START




RUN# 127 JUN 18, 1992 18:52:08

AREA%

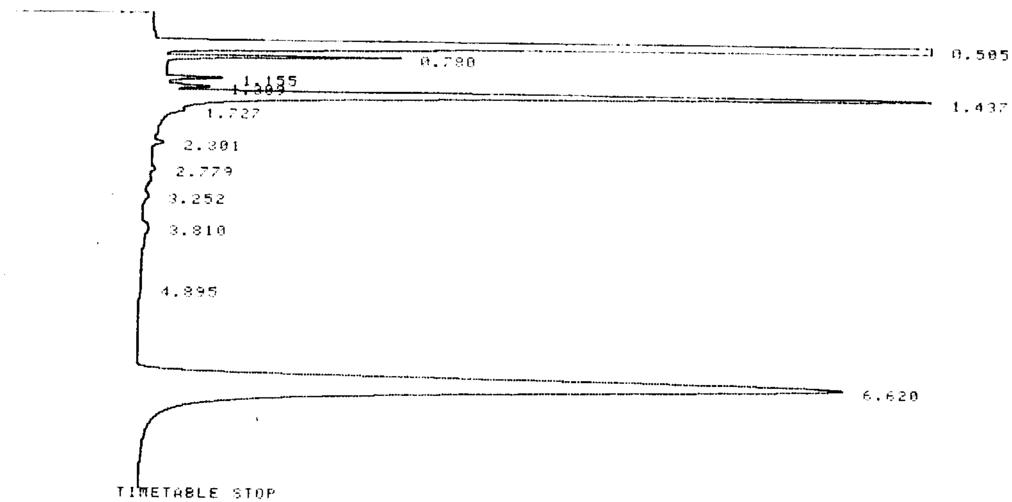
| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .496 | 32361392 | >SPB | .062 | 74.11434 |
| .577 | 2218250 | TBB | .034 | 5.08025 |

| | | | | |
|---|---|---|---|---|
| 1.439 | 2573670 | VV | .105 | 5.89424 |
| 2.305 | 93048 | PB | .093 | .21310 |
| 2.782 | 41450 | BV | .090 | .09493 |
| 2.980 | 17112 | VP | .099 | .03919 |
| 3.255 | 21667 | PP | .115 | .04962 |
| 3.809 | 114686 | PV | .301 | .26265 |
| 6.622 | 5202461 | PB | .303 | 11.91472 |

TOTAL AREA=4.3664E+07
MUL FACTOR=1.0000E+00

FRONT

\+ RUN # 128 JUN 18, 1992 19:01:20
START



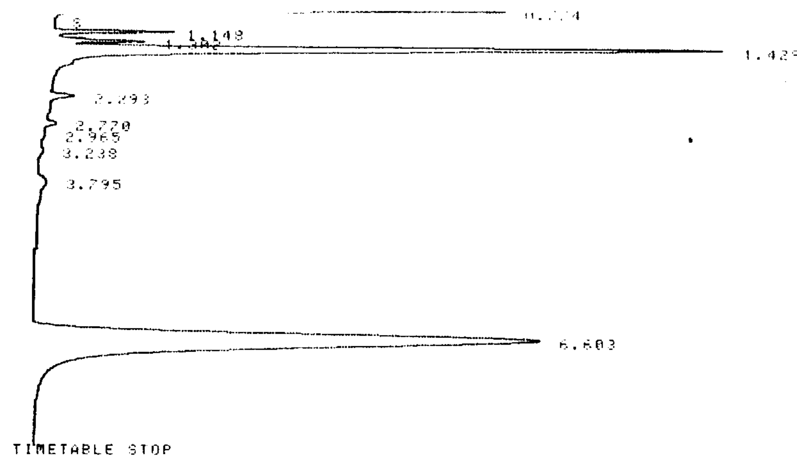

RUN# 128 JUN 18, 1992 19:01:20

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .505 | 27168160 | >SBB | .052 | 69.41459 |
| .780 | 348147 | TBV | .039 | .88951 |
| 1.155 | 113637 | TVV | .051 | .29034 |
| 1.309 | 121783 | TVV | .066 | .31116 |
| 1.437 | 3148768 | TVV | .105 | 8.04509 |
| 1.727 | 113751 | TVB | .116 | .29063 |
| 2.301 | 33521 | BP | .077 | .08565 |
| 2.779 | 35993 | VV | .111 | .09196 |
| 3.252 | 25514 | VP | .110 | .06519 |
| 3.810 | 114473 | PV | .318 | .29248 |
| 4.895 | 32431 | VB | .217 | .08286 |
| 6.620 | 7882832 | PB | .299 | 20.14061 |

TOTAL AREA=3.9139E+07
MUL FACTOR=1.0000E+00

\+ RUN # 129 JUN 19, 1992 19:10:45 BACK
START




RUN# 129 JUN 18, 1992 19:10:45

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .488 | 35285024 | >SBB | .068 | 78.31165 |
| .774 | 669360 | TBB | .039 | 1.48558 |
| 1.148 | 221578 | BV | .049 | .49177 |
| 1.302 | 208135 | VV | .059 | .46194 |
| 1.429 | 2665690 | VV | .105 | 5.91624 |
| 2.293 | 79826 | BB | .081 | .17717 |
| 2.770 | 44050 | BV | .090 | .09776 |
| 2.965 | 15219 | VP | .096 | .03378 |
| 3.238 | 19765 | PP | .110 | .04387 |
| 3.795 | 115911 | PP | .284 | .25725 |
| 6.603 | 5732659 | PB | .302 | 12.72308 |

TOTAL AREA=4.5057E+07
MUL FACTOR=1.0000E+00

* RUN # 130 JUN 18, 1992 19:20:25 QC CHECK 800ppm Methane FRONT

START

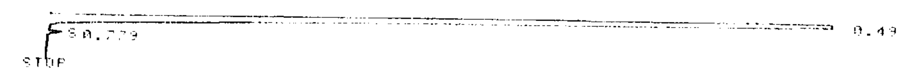

RUN# 130 JUN 18, 1992 19:20:25

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .496 | 23985584 | >SPH | .046 | 99.87626 |
| .779 | 29717 | TBB | .042 | .12374 |

TOTAL AREA=2.4015E+07
MUL FACTOR=1.0000E+00

* RUN # 131 JUN 18, 1992 19:23:25 QC CHECK Methane REAR




RUN# 131 JUN 18, 1992 19:22:25

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .496 | 24029280 | >SBB | .046 | 99.90810 |
| .779 | 22105 | BB | .038 | .09191 |

TOTAL AREA=2.4051E+07
MUL FACTOR=1.0000E+00

1496 METHANE FRONT

* RUN # 132 JUN 18, 1992 19:24:45
START


RUN# 132 JUN 18, 1992 19:24:45

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .496 | 30487504 | >SBB | .059 | 99.47821 |
| .780 | 159922 | BB | .038 | .52181 |

TOTAL AREA=3.0647E+07
MUL FACTOR=1.0000E+00

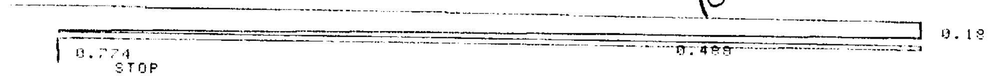
*

Power failed
JUN 18, 1992 19:26:07

BREAK

* RUN # 133 JUN 18, 1992 19:26:38
START

POWER FAILURE RERUN




RUN# 133 JUN 18, 1992 19:26:38

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .184 | 20685776 | BV | .237 | 41.01874 |
| .488 | 29654448 | > VB | .059 | 58.80310 |
| .774 | 89848 | BB | .022 | .17816 |

* RUN # 134 JUN 18, 1992 19:29:44 1490 METHANE REAR

START


RUN# 134 JUN 18, 1992 19:29:44

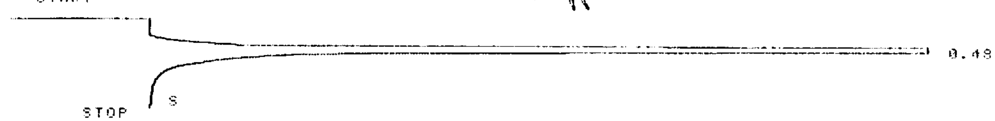
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .480 | 30570240 | >SBB | .059 | 99.45565 |
| .767 | 167324 | BB | .039 | .54436 |

TOTAL AREA=3.0738E+07
MUL FACTOR=1.0000E+00

* RUN # 135 JUN 18, 1992 19:32:40 200ppm Methane FRONT

START




RUN# 135 JUN 18, 1992 19:32:40

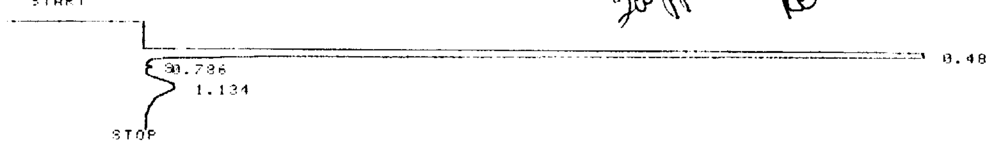
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .480 | 35030752 | >SPB | .067 | 100.00000 |

TOTAL AREA=3.5031E+07
MUL FACTOR=1.0000E+00

* RUN # 136 JUN 18, 1992 19:35:13 200ppm Methane REAR

START




RUN# 136 JUN 18, 1992 19:35:13

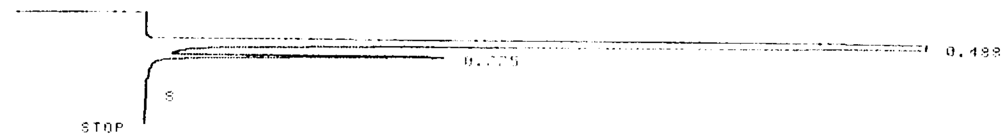
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .488 | 33581376 | >SBB | .065 | 98.82160 |
| .786 | 10614 | BP | .037 | .03123 |
| 1.134 | 389941 | I PP | .329 | 1.14720 |

TOTAL AREA=3.3982E+07
MUL FACTOR=1.0000E+00

\+ RUN # 137 JUN 18, 1992 19:41:14 5.13 ppm FROM

START




RUN# 137 JUN 18, 1992 19:41:14

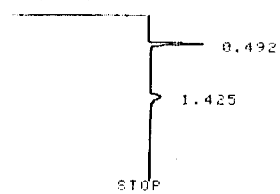
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .488 | 39468800 | >SBB | .076 | 98.96499 |
| .775 | 412779 | TBB | .038 | 1.03501 |

TOTAL AREA=3.9882E+07
MUL FACTOR=1.0000E+00

\+ RUN # 138 JUN 18, 1992 19:53:09 1:2 Dilution AAL 13414 Acetaldehyde @ 1.57 ppm

START




RUN# 138 JUN 18, 1992 19:53:09

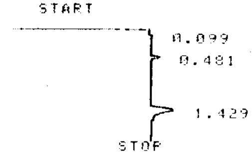
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .492 | 92756 | BB | .046 | 64.66493 |
| 1.425 | 50685 | BP | .110 | 35.33509 |

TOTAL AREA= 143441
MUL FACTOR=1.0000E+00

\+ RUN # 139 JUN 18, 1992 19:56:59 AAL 13774 Acetaldehyde @ 3.03 ppm

START




RUN# 139 JUN 18, 1992 19:56:59

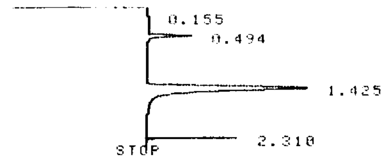
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .481 | 17247 | BP | .039 | 14.29637 |
| 1.429 | 103392 | PB | .112 | 85.70362 |

TOTAL AREA= 120639

* RUN # 140 JUN 18, 1992 20:00:27 1:2 Dilution AAL 9441 Acetaldehyde @ 22.2 ppm

START




RUN# 140 JUN 18, 1992 20:00:27

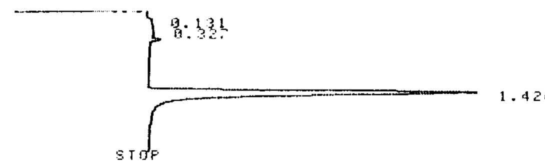
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .494 | 71165 | BB | .040 | 9.50710 |
| 1.425 | 643299 | PB | .105 | 85.93981 |
| 2.310 | 34092 | BB | .017 | 4.55309 |

TOTAL AREA= 748546
MUL FACTOR=1.0000E+00

* RUN # 141 JUN 18, 1992 20:03:20 AAL 9441 ACETALDEHYDE @ 44.3ppm

START




RUN# 141 JUN 18, 1992 20:03:20

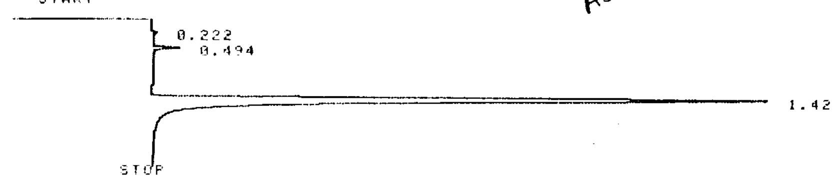
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .131 | 11817 | PV | .054 | .84007 |
| .327 | 111748 | VV | .360 | 7.94414 |
| 1.426 | 1283107 | PB | .103 | 91.21578 |

TOTAL AREA=1406672
MUL FACTOR=1.0000E+00

* RUN # 142 JUN 18, 1992 20:10:49 ALM 002105 ACETALDEHYDE @ 82.5 ppm

START

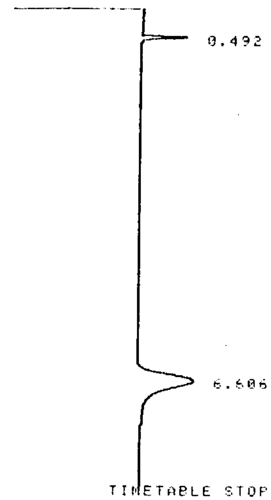



RUN# 142 JUN 18, 1992 20:10:49

| | | | | |
|---|---|---|---|---|
| .494 | 49437 | PB | .044 | 2.01924 |
| 1.424 | 2399866 | PB | .103 | 97.98077 |

TOTAL AREA=2449302
MUL FACTOR=1.0000E+00

* RUN # 143 JUN 18, 1992 20:17:32 1:2 Dilution ALM 022496 ~~ACETALDEHYDE~~ Ethanol @ 274 ppm
START



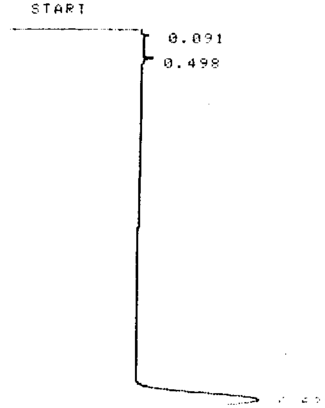

RUN# 143 JUN 18, 1992 20:17:32

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .492 | 73580 | BB | .042 | 9.48611 |
| 6.606 | 702080 | PB | .345 | 90.51389 |

TOTAL AREA= 775660
MUL FACTOR=1.0000E+00

* RUN # 144 JUN 18, 1992 20:26:31 ALM 022496 Ethanol @ 498 ppm
START



TIMETABLE STOP

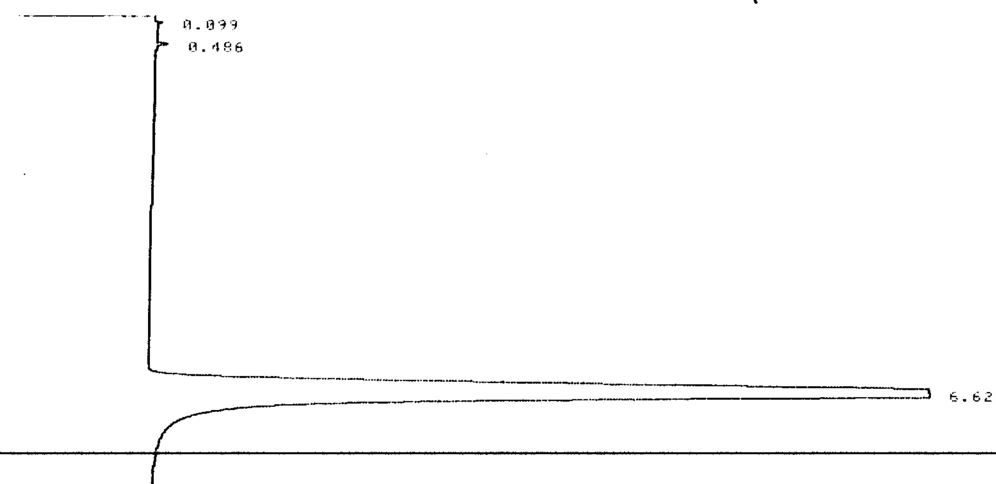
RUN# 144 JUN 18, 1992 20:26:31

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .498 | 17729 | VB | .039 | 1.23803 |
| 6.625 | 1414304 | PB | .307 | 98.76195 |

TOTAL AREA=1432033
MUL FACTOR=1.0000E+00

* RUN # 145 JUN 18, 1992 20:35:59 ACM 011203 Ethanol @ 4000 f
START




TIMETABLE STOP

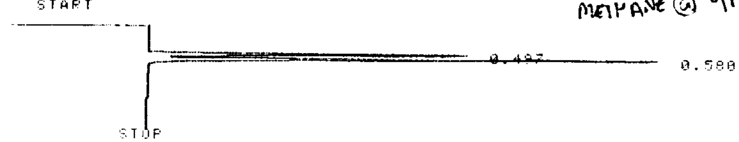
RUN# 145 JUN 18, 1992 20:35:59

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .099 | 10696 | BB | .034 | .09794 |
| .486 | 26266 | VB | .049 | .24073 |
| 6.625 | 10874024 | PB | .292 | 99.66131 |

TOTAL AREA=1.0911E+07
MUL FACTOR=1.0000E+00

* RUN # 146 JUN 18, 1992 20:47:25 AAL 21441 METHANE @ 9.76 ppm
START




STOP

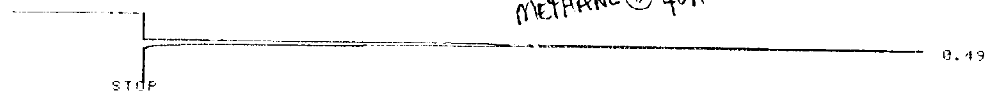
RUN# 146 JUN 18, 1992 20:47:25

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .497 | 441687 | BV | .036 | 39.17835 |
| .580 | 685688 | VB | .035 | 60.82165 |

TOTAL AREA=1127375
MUL FACTOR=1.0000E+00

* RUN # 147 JUN 18, 1992 20:50:28 1:2 Dilution IL-2046
METHANE @ 40.1
START



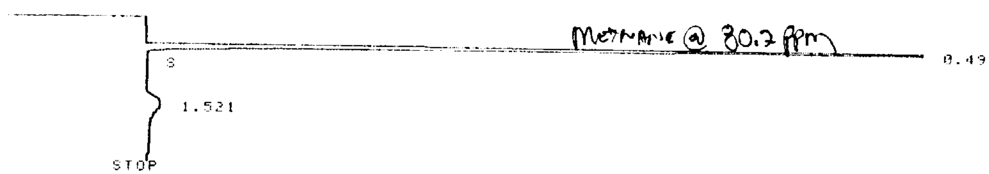

RUN# 147 JUN 18, 1992 20:50:28

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .495 | 1699663 | SBB | .036 | 100.00000 |

TOTAL AREA=1699663
MUL FACTOR=1.0000E+00

* RUN # 148 JUN 18, 1992 20:52:32 IL-2046
START



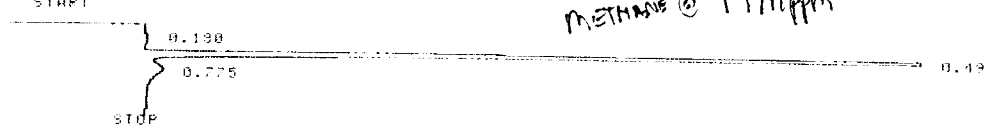

RUN# 148 JUN 18, 1992 20:52:32

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .494 | 3241046 | SPB | .036 | 92.39174 |
| 1.521 | 266893 | BV | .416 | 7.60826 |

TOTAL AREA=3507939
MUL FACTOR=1.0000E+00

* RUN # 149 JUN 18, 1992 20:56:20 AAL-4024
METHANE @ 199.1 ppm
START

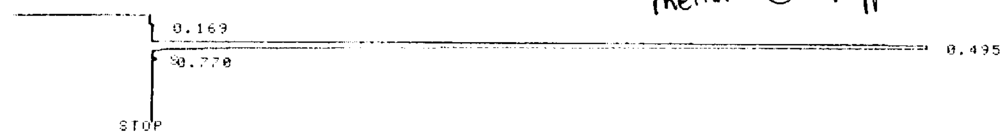


AREA%

| PT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .498 | 7103085 | ISBP | .036 | 98.64880 |
| .775 | 97292 | TBP | .207 | 1.35121 |

TOTAL AREA=7200378
MUL FACTOR=1.0000E+00

* RUN # 150 JUN 18, 1992 21:00:38 1:2 Dil. ACM-011031
METHANE @ 399 ppm
START



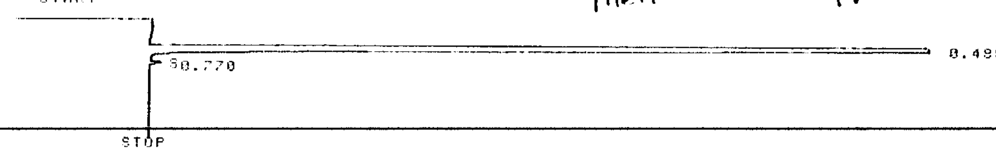

RUN# 150 JUN 18, 1992 21:00:38

AREA%

| PT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .495 | 15605400 | SBB | .036 | 100.00000 |

TOTAL AREA=1.5605E+07
MUL FACTOR=1.0000E+00

* RUN # 151 JUN 18, 1992 21:02:54 ACM-511031
METHANE @ 798ppm
START



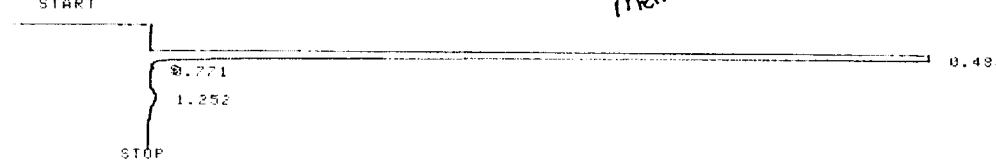

RUN# 151 JUN 18, 1992 21:02:54

AREA%

| PT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .488 | 24621344 | >SPB | .047 | 99.92410 |
| .770 | 18706 | BB | .037 | .07592 |

TOTAL AREA=2.4640E+07
MUL FACTOR=1.0000E+00

* RUN # 152 JUN 18, 1992 21:06:01 AAL-021793
METHANE @ 2000ppm
START



RUN#  152          JUN 18, 1992  21:06:01

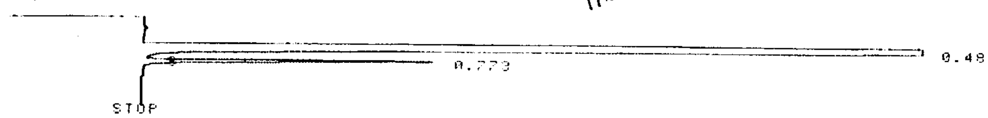
AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .488 | 33375424 | >SBB | .064 | 99.67600 |
| 1.252 | 108491 | I BP | .325 | .32401 |

TOTAL AREA=3.3484E+07
MUL FACTOR=1.0000E+00

* RUN # 153     JUN 18, 1992  21:09:28  ACM 024530
methane @ 3380ppm

START




RUN#  153          JUN 18, 1992  21:09:28

AREA%

| RT | AREA | TYPE | WIDTH | AREA% |
|---|---|---|---|---|
| .488 | 39522496 | >SFB | .076 | 98.95718 |
| .773 | 416500 | BB | .038 | 1.04284 |

TOTAL AREA=3.9939E+07
MUL FACTOR=1.0000E+00

* LIST: LIST
PEAK CAPACITY:  1244

ZERO  =  5, 0.341
ATT 2^ =  6
CHT SP =  1.0
AR REJ =  10000
THRSH  =  4
PK WD  =  0.10

*

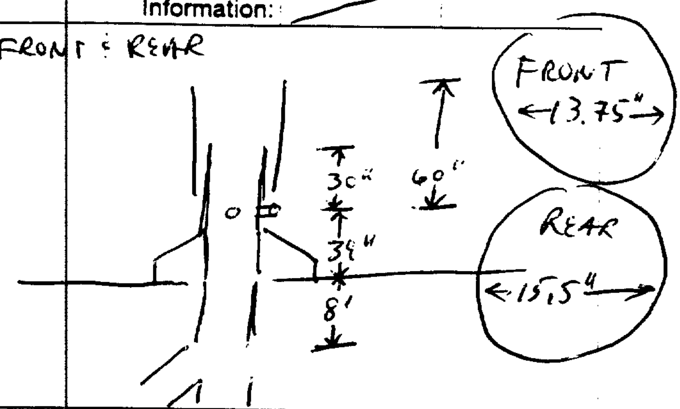
# Appendix B.5

## Field Flow Measurements Data Sheets

# Traverse Point Location Form

| | |
|---|---|
| Plant | SITE 2 |
| Date | 6/17 |
| Sampling Location | LINE 3 BREAD FRONT & REAR |
| Total Duct Depth (Distance A) | |
| (Inside Far Wall to Outside of Nipple/Port) | |
| Nipple/Port Length (Distance B) | |
| (Inside Near Wall to Outside End of Nipple/Port) | |
| Stack Depth (Dist A – Dist B) | |
| Stack Width (If rectangular) | |
| FROM Nearest Upstream Disturbance | 2.5' |
| FROM Nearest Downstream Disturbance | 11.25' |
| Calculator | CAP |

Sample Ports Information: Number | I.D. (in)

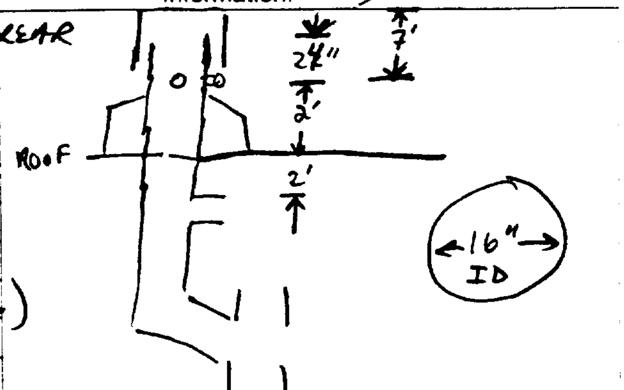



**Schematic of Sampling Location (Cross Section of Duct)**

| 1<br>Traverse Point Number | 2<br>Percent Fraction of Stack ID | 3<br>Stack ID (in) | 4<br>Product of Columns 2 & 3 (to nearest 1/8 inch) | 5<br>Distance B (in) | 6<br>Traverse Point Location from Outside of Nipple (sum of columns 4 & 5) |
|---|---|---|---|---|---|
| FRONT 1 | 6.7 | 13.75 | 1.0 | | |
| 2 | 25 | ↓ | 3.4 | | |
| 3 | 75 | | 10.3 | | |
| 4 | 93.4 | | 12.75 | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 1 | 6.7 | 15.5 | 1.0 | | |
| 2 | 25 | ↓ | 3.9 | | |
| 3 | 75 | | 11.6 | | |
| 4 | 93.4 | | 14.5 | | |

# Traverse Point Location Form

| | | Sample Ports Information: | Number | I.D. (in) |
|---|---|---|---|---|
| Plant | SITE 2 | | | |
| Date | 6/16 | | | |
| Sampling Location | LINE 2 BEAD REAR | | | |
| Total Duct Depth (Distance A) | | | | |
| (Inside Far Wall to Outside of Nipple/Port) | | | | |
| Nipple/Port Length (Distance B) | | | | |
| (Inside Near Wall to Outside End of Nipple/Port) | | | | |
| Stack Depth (Dist A – Dist B) | | | | |
| Stack Width (If rectangular) | | | | |
| FROM Nearest Upstream Disturbance | 23" (1.4 diam) | | | |
| FROM Nearest Downstream Disturbance | ~4' (3 diam) | | | |
| Calculator | | | | |

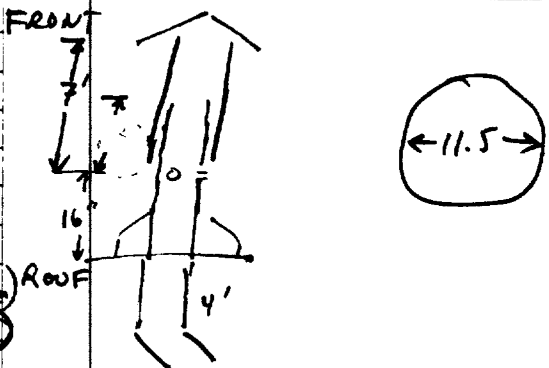



Schematic of Sampling Location
(Cross Section of Duct)

| 1<br>Traverse Point Number | 2<br>Percent Fraction of Stack ID | 3<br>Stack ID (in) | 4<br>Product of Columns 2 & 3 (to nearest 1/8 inch) | 5<br>Distance B (in) | 6<br>Traverse Point Location from Outside of Nipple (sum of columns 4 & 5) |
|---|---|---|---|---|---|
| 1 | 3.2 | 16" | 1.0 | | |
| 2 | 10.5 | | 1.7 | | |
| 3 | 19.4 | | 3.1 | | |
| 4 | 32.3 | | 5.2 | | |
| 5 | 67.7 | | 10.8 | | |
| 6 | 80.6 | | 12.9 | | |
| 7 | 89.5 | | 14.3 | | |
| 8 | 96.6 | | 15 | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

# Traverse Point Location Form

| | | | |
|---|---|---|---|
| Plant | SITE 2 | Sample Ports Information: | Number / I.D. (in) |
| Date | 6/16 | | |
| Sampling Location | LINE 2 BREAD – FRONT | | |
| Total Duct Depth (Distance A) | | | |
| (Inside Far Wall to Outside of Nipple/Port) | | | |
| Nipple/Port Length (Distance B) | | | |
| (Inside Near Wall to Outside End of Nipple/Port) | | | |
| Stack Depth (Dist A – Dist B) | | | |
| Stack Width (If rectangular) | | | |
| FROM Nearest Upstream Disturbance | 11" (0.96 diam) ROOF | | |
| FROM Nearest Downstream Disturbance | ([illegible] " (5.6 diam) | | |
| Calculator | | | |



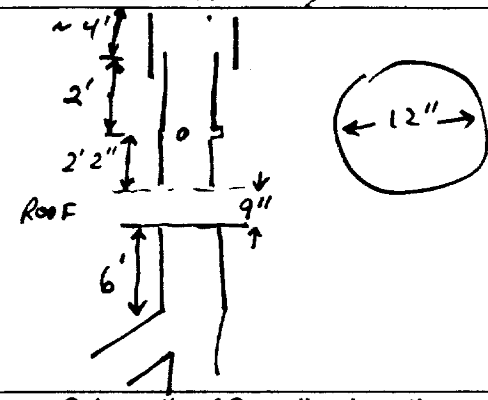

Schematic of Sampling Location
(Cross Section of Duct)

| 1<br>Traverse Point Number | 2<br>Percent Fraction of Stack ID | 3<br>Stack ID (in) | 4<br>Product of Columns 2 & 3 (to nearest 1/8 inch) | 5<br>Distance B (in) | 6<br>Traverse Point Location from Outside of Nipple (sum of columns 4 & 5) |
|---|---|---|---|---|---|
| 1 | 3.2 | 11.54 | 1.0 | | |
| 2 | 10.5 | | 1.2 | | |
| 3 | 19.4 | | 2.25 | | |
| 4 | 32.3 | | 3.7 | | |
| 5 | 67.7 | | 7.8 | | |
| 6 | 80.6 | | 9.3 | | |
| 7 | 89.5 | | 10.3 | | |
| 8 | 96.6 | | 10.5 | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

# Traverse Point Location Form

| | |
|---|---|
| Plant | Site 2 |
| Date | 6/16 |
| Sampling Location | LINE 1 (BUN) FRONT : REAR |
| Total Duct Depth (Distance A) (Inside Far Wall to Outside of Nipple/Port) | |
| Nipple/Port Length (Distance B) (Inside Near Wall to Outside End of Nipple/Port) | |
| Stack Depth (Dist A – Dist B) | |
| Stack Width (If rectangular) | |
| From ~~Nearest~~ Upstream Disturbance | 2' (2 diam) |
| From ~~Nearest~~ Downstream Disturbance | 9' (9 diam) |
| Calculator | |

| Sample Ports Information: | Number | I.D. (in) |
|---|---|---|
| | | |

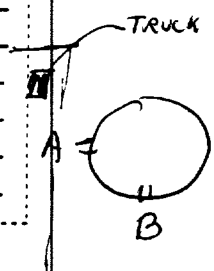



**Schematic of Sampling Location (Cross Section of Duct)**

| 1<br>Traverse Point Number | 2<br>Percent Fraction of Stack ID | 3<br>Stack ID (in) | 4<br>Product of Columns 2 & 3 (to nearest 1/8 inch) | 5<br>Distance B (in) | 6<br>Traverse Point Location from Outside of Nipple (sum of columns 4 & 5) |
|---|---|---|---|---|---|
| 1 | 6.7 | 12" | 1.0 | | |
| 2 | 25 | | 3 | | |
| 3 | 75 | | 9 | | |
| 4 | 93.3 | | 11.0 | | |

# PRELIMINARY VELOCITY TRAVERSE

PLANT Stroehmanns
DATE 6/14
LOCATION LINE 1 FRONT
INSIDE STACK DIMENSIONS 12
BAROMETRIC PRESSURE, in. Hg
STACK GAUGE PRESSURE, in. $H_2O$ − 0.10
OPERATOR




~1630 hrs

Fyrite 19 $O_2$
2.0 $CO_2$

| TRAVERSE POINT NUMBER | VELOCITY HEAD ($\Delta Ps$), in. $H_2O$ | STACK TEMPERATURE (°F) |
|---|---|---|
| A1 | 0.15 | 266 |
| 2 | 0.14 | 273 |
| 3 | 0.12 | 269 |
| 4 | 0.11 | 267 |
| Pt. 1, all the way in | | |
| AVERAGE | | |

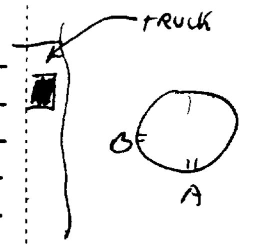
SCHEMATIC OF TRAVERSE POINT LAYOUT

| TRAVERSE POINT NUMBER | VELOCITY HEAD ($\Delta Ps$), in. $H_2O$ | STACK TEMPERATURE (°F) |
|---|---|---|
| B1 | 0.13 | 266 |
| 2 | 0.13 | 270 |
| 3 | 0.12 | 269 |
| 4 | 0.12 | 269 |

**Figure 6-6. Preliminary Velocity and Cyclonic Flow Sheet.**

# PRELIMINARY VELOCITY TRAVERSE

PLANT Stroehmanns
DATE 6/19
LOCATION LINE 1 REAR
INSIDE STACK DIMENSIONS 12
BAROMETRIC PRESSURE, in. Hg
STACK GAUGE PRESSURE, in. $H_2O$ – 0.2
OPERATOR GDD




Fyrite 18.5 $O_2$
1 $CO_2$

SCHEMATIC OF TRAVERSE POINT LAYOUT

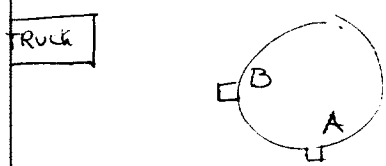
| TRAVERSE POINT NUMBER | VELOCITY HEAD ($\Delta$Ps), in. $H_2O$ | STACK TEMPERATURE (°F) |
|---|---|---|
| A1 | 0.33 | 312 |
| 2 | 0.32 | 297 |
| 3 | 0.31 | 298 |
| 4 | 0.28 | 298 |
| | | |
| | | |
| * pt 4 is all the way in | | |
| AVERAGE | | |

| TRAVERSE POINT NUMBER | VELOCITY HEAD ($\Delta$Ps), in. $H_2O$ | STACK TEMPERATURE (°F) |
|---|---|---|
| B1 | 0.35 | 315 |
| 2 | 0.34 | 318 |
| 3 | 0.31 | 316 |
| 4 | 0.30 | 314 |

**Figure 6-6. Preliminary Velocity and Cyclonic Flow Sheet.**

# PRELIMINARY VELOCITY TRAVERSE

PLANT Streehmann's Bakery
DATE 6/17
LOCATION Line 2 (Bread Oven) Front Stack
INSIDE STACK DIMENSIONS 11.5"
BAROMETRIC PRESSURE, in. Hg
STACK GAUGE PRESSURE, in. $H_2O$ -0.10
OPERATOR CRP




14.00

| TRAVERSE POINT NUMBER | VELOCITY HEAD ($\Delta Ps$), in. $H_2O$ | STACK TEMPERATURE (°F) |
|---|---|---|
| A 1 | 0.18 | 224 |
| A 2 | 0.18 | 222 |
| A 3 | 0.19 | 223 |
| A 4 | 0.19 | 224 |
| A 5 | 0.19 | 221 |
| A 6 | 0.20 | 220 |
| A 7 | 0.19 | 230 |
| A 8 | 0.18 | 235 |
| | | |
| AVERAGE | | |

SCHEMATIC OF TRAVERSE POINT LAYOUT

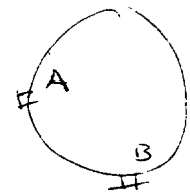
| TRAVERSE POINT NUMBER | VELOCITY HEAD ($\Delta Ps$), in. $H_2O$ | STACK TEMPERATURE (°F) |
|---|---|---|
| B1 | 0.15 | 240 |
| B2 | 0.15 | 238 |
| B3 | 0.19 | 240 |
| B4 | 0.18 | 236 |
| B5 | 0.18 | 234 |
| B6 | 0.16 | 231 |
| B7 | 0.15 | 230 |
| B8 | 0.16 | 250 |

**Figure 6-6. Preliminary Velocity and Cyclonic Flow Sheet.**

# PRELIMINARY VELOCITY TRAVERSE

PLANT Strochmann's Bakery
DATE 6/17
LOCATION Line 2 oven stack → Rear
INSIDE STACK DIMENSIONS 16"
BAROMETRIC PRESSURE, in. Hg
STACK GAUGE PRESSURE, in. $H_2O$ −0.05
OPERATOR CBP

TRUCK




1st points are all the way in

18:40 hrs

| TRAVERSE POINT NUMBER | VELOCITY HEAD ($\Delta Ps$), in. $H_2O$ | STACK TEMPERATURE (°F) |
|---|---|---|
| 1 | 0.02 | 286 |
| 2 | 0.02 | 293 |
| 3 | 0.025 | 292 |
| 4 | 0.025 | 294 |
| 5 | 0.025 | 300 |
| 6 | 0.045 | 355 |
| 7 | 0.045 | 346 |
| 8 | 0.035 | 300 |
| AVERAGE | | |

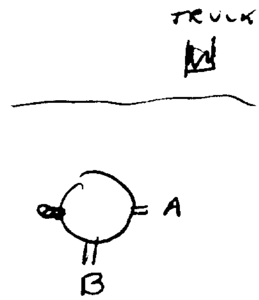
SCHEMATIC OF TRAVERSE POINT LAYOUT

| TRAVERSE POINT NUMBER | VELOCITY HEAD ($\Delta Ps$), in. $H_2O$ | STACK TEMPERATURE (°F) |
|---|---|---|
| 1 | 0.045 | 330 |
| 2 | 0.045 | 333 |
| 3 | 0.05 | 332 |
| 4 | 0.045 | 336 |
| 5 | 0.045 | 338 |
| 6 | 0.04 | 300 |
| 7 | 0.035 | 323 |
| 8 | 0.035 | 300 |

**Figure 6-6. Preliminary Velocity and Cyclonic Flow Sheet.**

## PRELIMINARY VELOCITY TRAVERSE

PLANT Stroehmanns
DATE 6/19
LOCATION LINE 3 - FRONT
INSIDE STACK DIMENSIONS 13.75"
BAROMETRIC PRESSURE in. Hg
STACK GAUGE PRESSURE in. $H_2O$ -0.25
OPERATOR CBP




17:00 hrs

Fyrite 19.5 $O_2$
0.5 $CO_2$

SCHEMATIC OF TRAVERSE POINT LAYOUT

| TRAVERSE POINT NUMBER | VELOCITY HEAD ($\Delta$Ps), in. $H_2O$ | STACK TEMPERATURE (°F) |
|---|---|---|
| A 1 | 0.55 | 217 |
| 2 | 0.52 | 218 |
| 3 | 0.34 | 213 |
| 4 | 0.29 | 208 |
| | | |
| 1 is | all the | way in |
| AVERAGE | | |

| TRAVERSE POINT NUMBER | VELOCITY HEAD ($\Delta$Ps), in. $H_2O$ | STACK TEMPERATURE (°F) |
|---|---|---|
| B 1 | 0.44 | 219 |
| 2 | 0.46 | 218 |
| 3 | 0.46 | 219 |
| 4 | 0.37 | 217 |

**Figure 6-6. Preliminary Velocity and Cyclonic Flow Sheet.**

## PRELIMINARY VELOCITY TRAVERSE

PLANT Stroehmanns
DATE 6/19
LOCATION LINE 3 REAR
INSIDE STACK DIMENSIONS 15.5
BAROMETRIC PRESSURE, in. Hg
STACK GAUGE PRESSURE, in. $H_2O$ -0.15
OPERATOR GBP

18 ooks

| TRAVERSE POINT NUMBER | VELOCITY HEAD ($\Delta Ps$), in. $H_2O$ | STACK TEMPERATURE (°F) |
|---|---|---|
| A1 | 0.29 | 226 |
| 2 | 0.30 | 227 |
| 3 | 0.25 | 225 |
| 4 | 0.19 | 201 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

SCHEMATIC OF TRAVERSE POINT LAYOUT

| TRAVERSE POINT NUMBER | VELOCITY HEAD ($\Delta Ps$), in. $H_2O$ | STACK TEMPERATURE (°F) |
|---|---|---|
| B1 | 0.22 | 208 |
| 2 | 0.25 | 209 |
| 3 | 0.26 | 210 |
| 4 | 0.23 | 208 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**Figure 6-6. Preliminary Velocity and Cyclonic Flow Sheet.**

Appendix B.6

Field H2O Data Sheets

## FIELD MOISTURE DETERMINATION REFERENCE METHOD

Plant: Stroehmanns
Location: LINE 3 FRONT
Operator: CAO
Date: 6/19
Run No.: 4
Ambient temperature: ~~[illegible]~~ 70
Barometric pressure:
Probe length m (ft): 3

SCHEMATIC OF STACK CROSS SECTION

SITE 2
LINE 3 — FRONT
N-34
Box Y = 0.9947

14.8 wls entrained

| Traverse point number | Sampling time (θ), min. | Stack temperature °C (°F) | Pressure differential across orifice meter ΔH mm (in.) $H_2O$ | Meter reading gas sample volume $m^3$ ($ft^3$) | $\Delta V_m$ $m^3$ ($ft^3$) | Gas Sample temperature at dry gas meter: Inlet ($Tm_{in}$), °C (°F) | Gas Sample temperature at dry gas meter: Outlet ($Tm_{out}$), °C (°F) | Temperature of gas leaving condenser or last impinger °C (°F) |
|---|---|---|---|---|---|---|---|---|
| | 1725 | 220 | 1.5 | 570.790 | | 80 | 79 | |
| | 1730 | – | 1.6 | 574.1 | | 80 | 84 | |
| | 1738 | – | 1.6 | 579. | | 82 | 89 | |
| | 1745 | – | – | 584.471 | | – | – | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Total | | | | | | | | |
| Average | | | | | Avg. | Avg. | Avg. | |



Figure 6-9. Method 4 Field Data Sheet.

# FIELD MOISTURE DETERMINATION REFERENCE METHOD

Plant ........ Strochmanns
Location ........ LINE 2 FRONT
Operator ........ CRP
Date ........ 6/15
Run No. ........ 1
Ambient temperature ........ 80
Barometric pressure ........
Probe length m (ft) ........ 3'
INITIAL LEAK V = 0.012

SITE 2
LINE 2 - FRONT
BOX N-39
Y = 0.9947

91.3 mls entrained

SCHEMATIC OF STACK CROSS SECTION

| Traverse point number | Sampling time (θ), min. | Stack temperature °C (°F) | Pressure differential across orifice meter ΔH mm (in.) $H_2O$ | Meter reading gas sample volume $m^3$ ($ft^3$) | $\Delta V_m$ $m^3$ ($ft^3$) | Gas Sample temperature at dry gas meter: Inlet ($Tm_{in}$), °C (°F) | Gas Sample temperature at dry gas meter: Outlet ($Tm_{out}$), °C (°F) | Temperature of gas leaving condenser or last impinger °C (°F) |
|---|---|---|---|---|---|---|---|---|
| | 1607 | 238 | 1.5 | 479.616 | | 86 | 86 | |
| | 1612 | 240 | 1.5 | 482.7 | | 87 | 87 | |
| | 1620 | 243 | 0.8 | 486.9 | | 90 | 88 | |
| | 1622 | – | 1.2 | 488.15 | | 88 | 87 | |
| | 1632 | – | – | 493.972 | | – | – | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Total ........ Average ........ | | | | | Avg. | Avg. | Avg. | |

Figure 6-9. Method 4 Field Data Sheet.

## FIELD MOISTURE DETERMINATION REFERENCE METHOD

Plant: Stroehmanns
Location: LINE 2 REAR
Operator: CAP
Date: 6/18
Run No.: 2
Ambient temperature: 80
Barometric pressure:
Probe length m (ft): 3

INITIAL LEAK $\checkmark$ = 0.004 @10"
FINAL LEAK $\checkmark$ = 0.004 @5"

SITE 2
LINE 2 - REAR
Box N-39
Y = 0.9947

24.2 mls entrance

SCHEMATIC OF STACK CROSS SECTION

| Traverse point number | Sampling time (θ), min. | Stack temperature °C (°F) | Pressure differential across orifice meter ΔH mm (in.) $H_2O$ | Meter reading gas sample volume $m^3$ ($ft^3$) | $\Delta V_m$ $m^3$ ($ft^3$) | Gas Sample temperature at dry gas meter: Inlet ($Tm_{in}$), °C (°F) | Gas Sample temperature at dry gas meter: Outlet ($Tm_{out}$), °C (°F) | Temperature of gas leaving condenser or last impinger °C (°F) |
|---|---|---|---|---|---|---|---|---|
| | 1659 | 300 | 1.7 | 494.110 | | 87 | 87 | |
| | 1704 | 304 | 1.7 | 497.65 | | 88 | 87 | |
| | 1728 | 365 | 1.4 | 512.5 | | 90 | 88 | |
| | 1730 | – | – | 513.737 | | – | – | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Total | | | | | | | | |
| Average | | | | | Avg. | Avg. | Avg. | |

**Figure 6-9. Method 4 Field Data Sheet.**

# FIELD MOISTURE DETERMINATION REFERENCE METHOD

Plant: Stroehmanns
Location: LINE 1 FRONT
Operator: CAP
Date: 6/18
Run No.: 3
Ambient temperature: 80
Barometric pressure:
Probe length m (ft): 3

INITIAL LEAK ✓ = 0.004 @10"
FINAL " " = 0.02 @7"

SCHEMATIC OF STACK CROSS SECTION

SITE 2
LINE 1 - FRONT
N - 39
Y = 0.9947

31.0 mls entrained

| Traverse point number | Sampling time | Stack temperature | Pressure differential across orifice meter ΔH | Meter reading gas sample volume | $\Delta V_m$ | Gas Sample temperature at dry gas meter | | Temperature of gas leaving condenser or last impinger |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Inlet | Outlet | |
| | ($\theta$), min. | °C (°F) | mm (in.) $H_2O$ | $m^3$ ($ft^3$) | $m^3$ ($ft^3$) | ($Tm_{in}$), °C (°F) | ($Tm_{out}$), °C (°F) | °C (°F) |
| | 1924 | 250 | 1.6 | 574.160 | | 81 | 82 | |
| | 1948 | - | 0.65 | 524.1 | | 82 | 80 | |
| | 2005 | - | - | 531.355 | | - | - | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Total / Average | | | | | Avg. | Avg. | Avg. | |

Figure 6-9. Method 4 Field Data Sheet.

MOISTURE RECOVERY FORM FOR METHOD 4

PLANT Stockmans

DATE

RUN NUMBER

SAMPLING LOCATION LINE 1 - Rear

SAMPLING TYPE

SAMPLING BOX NUMBER

CLEAN-UP PERSON

SOLVENT RINSES

SAMPLE IDENTIFICATION CODE

XAD TRAP NUMBER

| IMPINGER NUMBER | IMPINGER SOLUTION | AMOUNT OF SOLUTION (g) | IMPINGER TIP CONFIGURATION | IMPINGER WEIGHT (grams) | | |
|---|---|---|---|---|---|---|
| | | | | FINAL | INITIAL | WEIGHT GAIN |
| | | | | | 609.0 | |
| | | | | | 603.2 | |
| | | | | | 474.0 | |
| | | | | | 729.0 | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Revision: 3/90

TOTAL WEIGHT GAIN (grams) ______

Figure 6-8. Method 4 Train Preparation and Recovery Sheet.

$\frac{V_{LC} \times .04707}{(V_{LC} \cdot .04707) + V_m} = B_{ws}$

## MOISTURE RECOVERY FORM FOR METHOD 4

Run 1 4.7% @ 30 ft³ 20

Run 2 12.5% @ 30 ft³

Run 3 $\frac{31 \times .04707}{31 \cdot .04707 + 15} = 8.9\%$

PLANT Strochmann's Bakery

DATE 6/18/92

RUN NUMBER 01

SAMPLING LOCATION Line 2 Run 1 = Front

SAMPLING TYPE $H_2O$ Run 2 = Rear

SAMPLING BOX NUMBER 1

CLEAN-UP PERSON CRP

SOLVENT RINSES None

SAMPLE IDENTIFICATION CODE —

XAD TRAP NUMBER —

| IMPINGER NUMBER | IMPINGER SOLUTION | AMOUNT OF SOLUTION (g) | IMPINGER TIP CONFIGURATION | Final Run 02 | IMPINGER WEIGHT (grams) FINAL | INITIAL | WEIGHT GAIN | Weight Gain Run 02 |
|---|---|---|---|---|---|---|---|---|
| 1 | $H_2O$ | 100 | MOD | 686.5 | 669.4 | 592.4 | 77.0 | 17.1 |
| 2 | $H_2O$ | 100 | ↓ | 600.0 | 598.0 | 589.9 | 8.1 | 2.0 |
| 3 | MT | 0 | ↓ | 473.0 | 472.2 | 470.4 | 1.8 | 0.8 |
| 4 | Sil Gel | 200 | ↓ | 720.3 | 716.0 | 711.6 | 4.4 | 4.3 |
| | | | | | | | ↑ Run 1 | Run 2 |
| | | | | | | | | |
| | | | | | | | | 24.2 Total Run 02 |

Revision: 3/90

TOTAL WEIGHT GAIN (grams) 91.3

20 ft³

**Figure 6-8. Method 4 Train Preparation and Recovery Sheet.**

CAP
6/18/92
Run 03
2oM
~~[illegible]~~?

## MOISTURE RECOVERY FORM FOR METHOD 4

PLANT: SITE 2
DATE: 6/18
RUN NUMBER: 3
SAMPLING LOCATION: LINE 1 FRONT
SAMPLING TYPE: $H_2O$
SAMPLING BOX NUMBER:
CLEAN-UP PERSON:
SOLVENT RINSES:
SAMPLE IDENTIFICATION CODE:
XAD TRAP NUMBER:

| IMPINGER NUMBER | IMPINGER SOLUTION | AMOUNT OF SOLUTION (g) | IMPINGER TIP CONFIGURATION | IMPINGER WEIGHT (grams) | | |
|---|---|---|---|---|---|---|
| | | | | $T_s = \sim 350°$ FINAL | $\sim 15$ ft³ INITIAL | WEIGHT GAIN |
| 4 | SG | | | 723.7 | 720.3 ~~686.5~~ | 3.4 |
| 3 | | | | 473.2 | 473 | 0.2 |
| 2 | | | | 601.7 | 600 | 1.7 |
| 1 | | | | 712.2 | 686.5 | 25.7 |
| | | | | | | Run 3 |
| | | | | | | |
| | | | | | | |

Revision: 3/90

TOTAL WEIGHT GAIN (grams) 31 VLL

**Figure 6-8. Method 4 Train Preparation and Recovery Sheet.**

# Appendix B.7

# Flow Calculations

| | | | |
|---|---|---|---|
| PLANT ................ | SITE 2 | STD METERED VOLUME (scf)........ | 16.78 |
| DATE ................. | 6/18/92 | MOISTURE COLLECTED (g).......... | 24.20 |
| SAMPLING LOCATION ..... | LINE 1 FRONT | % O2........ ..................... ........................ | 19.00 |
| RUN ................. | LINE 1F - RUN 1 | % CO2....... ..................... ........................ | 2.00 |
| AMBIENT TEMPERATUR | 72.00 | %N2........ ..................... ........................ | 79.00 |
| BAROMETRIC PRESSUR | 30.01 | PERCENT MOISTURE IN STACK..... | 6.37 |
| STATIC PRESSURE (in H2 | -0.10 | MOLE FRAC. of DRY STACK GAS... | 0.94 |
| OPERATOR ............. | CRP | DRY MOLECULAR ........................ | 29.08 |
| METER TEMP (deg. F).... | 81.25 | WET MOLECULAR ........................ | 28.37 |
| METER ORIFICE dH (" H2 | 1.13 | STACK DIAMETER (I ........................ | 12.00 |
| METERED VOLUME (cu.f | 17.20 | STACK AREA (sq ft) ........................ | 0.79 |
| METER Y................ | 0.9947 | | |

| Traverse Point Number | Velocity Head P (in H2O) | Stack Ts ( F) | Square Root of P | Stack Gas Velocity (fps) | Stack Gas Velocity (fpm) |
|---|---|---|---|---|---|
| A1 | 0.150 | 266 | 0.39 | 25.68 | 1540.73 |
| A2 | 0.140 | 273 | 0.37 | 24.93 | 1495.65 |
| A3 | 0.120 | 269 | 0.35 | 23.02 | 1380.91 |
| A4 | 0.110 | 267 | 0.33 | 22.01 | 1320.31 |
| B1 | 0.130 | 266 | 0.36 | 23.91 | 1434.34 |
| B2 | 0.130 | 270 | 0.36 | 23.97 | 1438.29 |
| B3 | 0.120 | 269 | 0.35 | 23.02 | 1380.91 |
| B4 | 0.120 | 269.00 | 0.35 | 23.02 | 1380.91 |
| Averages | | 268.63 | 0.36 | 23.69 | 1421.50 |

| | |
|---|---|
| STACK GAS ACTUAL VOL FLOW (acfm) | 1116.44 |
| STACK GAS STANDARD VOL FLOW (scfm) | 811.26 |
| STACK GAS STANDARD DRY VOL FLOW (ds | 759.61 |

| | | | |
|---|---|---|---|
| PLANT ................ | SITE 2 | STD METERED VOLUME (scf)........ | NC |
| DATE .................. | 6/18/92 | MOISTURE COLLECTED (g).......... | NC |
| SAMPLING LOCATION ..... | LINE 1 REAR | % O2......... | 18.50 |
| RUN .................. | LINE 1R - RUN 1 | % CO2....... | 1.00 |
| AMBIENT TEMPERATURE | 72.00 | %N2.......... | 80.50 |
| BAROMETRIC PRESSURE | 30.01 | PERCENT MOISTURE IN STACK...... | 6.37 * |
| STATIC PRESSURE (in H2 | -0.20 | MOLE FRAC. of DRY STACK GAS..... | 0.94 |
| OPERATOR ............. | CRP | DRY MOLECULAR W | 28.90 |
| METER TEMP (deg. F).... | NC | WET MOLECULAR W | 28.21 |
| METER ORIFICE dH (" H2 | NC | STACK DIAMETER (I | 12.00 |
| METERED VOLUME (cu.ft. | NC | STACK AREA (sq ft) | 0.79 |
| METER Y................ | NC | | |

| Traverse Point Number | Velocity Head P (in H2O) | Stack Ts ( F) | Square Root of P | Stack Gas Velocity (fps) | Stack Gas Velocity (fpm) |
|---|---|---|---|---|---|
| A1 | 0.330 | 312 | 0.57 | 39.40 | 2363.90 |
| A2 | 0.320 | 297 | 0.57 | 38.42 | 2305.08 |
| A3 | 0.310 | 298 | 0.56 | 37.84 | 2270.27 |
| A4 | 0.280 | 298 | 0.53 | 35.96 | 2157.63 |
| B1 | 0.350 | 315 | 0.59 | 40.65 | 2439.21 |
| B2 | 0.340 | 318 | 0.58 | 40.15 | 2408.76 |
| B3 | 0.310 | 316 | 0.56 | 38.28 | 2297.08 |
| B4 | 0.300 | 314.00 | 0.55 | 37.61 | 2256.81 |
| Averages | | 308.50 | 0.56 | 38.54 | 2312.15 |

| | |
|---|---|
| STACK GAS ACTUAL VOL FLOW (acfm) | 1815.96 |
| STACK GAS STANDARD VOL FLOW (scfm) | 1250.78 |
| STACK GAS STANDARD DRY VOL FLOW (dscf | 1171.15 |

* ASSUMED FROM A PREVIOUS RUN

| | |
|---|---|
| PLANT ................. | SITE 2 |
| DATE .................. | 6/17/92 |
| SAMPLING LOCATION ..... | LINE 2 FRONT |
| RUN .................. | LINE 2F - RUN 1 |
| AMBIENT TEMPERATURE | 72.00 |
| BAROMETRIC PRESSURE | 30.21 |
| STATIC PRESSURE (in H2 | -0.10 |
| OPERATOR .............. | CRP |
| METER TEMP (deg. F).... | 87.38 |
| METER ORIFICE dH (" H2 | 1.25 |
| METERED VOLUME (cu.ft. | 14.36 |
| METER Y................ | 0.9947 |

| | |
|---|---|
| STD METERED VOLUME (scf)....... | 13.95 |
| MOISTURE COLLECTED (g).......... | 91.30 |
| % O2........ | 19.00 * |
| % CO2........ | 0.05 * |
| %N2........ | 80.95 |
| PERCENT MOISTURE IN STACK...... | 23.58 |
| MOLE FRAC. of DRY STACK GAS..... | 0.76 |
| DRY MOLECULAR W | 28.77 |
| WET MOLECULAR W | 26.23 |
| STACK DIAMETER (I | 11.50 |
| STACK AREA (sq ft) | 0.72 |

| Traverse Point Number | Velocity Head P (in $H_2O$) | Stack Ts (F) | Square Root of P | Stack Gas Velocity (fps) | Stack Gas Velocity (fpm) |
|---|---|---|---|---|---|
| A1 | 0.18 | 224 | 0.42 | 28.30 | 1698.26 |
| A2 | 0.18 | 222 | 0.42 | 28.26 | 1695.78 |
| A3 | 0.19 | 223 | 0.44 | 29.06 | 1743.52 |
| A4 | 0.19 | 224 | 0.44 | 29.08 | 1744.80 |
| A5 | 0.19 | 221 | 0.44 | 29.02 | 1740.96 |
| A6 | 0.20 | 220 | 0.45 | 29.75 | 1784.88 |
| A7 | 0.19 | 230 | 0.44 | 29.21 | 1752.44 |
| A8 | 0.18 | 235.00 | 0.42 | 28.53 | 1711.87 |
| B1 | 0.15 | 240.00 | 0.39 | 26.14 | 1568.33 |
| B2 | 0.15 | 238.00 | 0.39 | 26.10 | 1566.09 |
| B3 | 0.19 | 240.00 | 0.44 | 29.42 | 1765.10 |
| B4 | 0.18 | 236.00 | 0.42 | 28.55 | 1713.10 |
| B5 | 0.18 | 234.00 | 0.42 | 28.51 | 1710.64 |
| B6 | 0.16 | 231.00 | 0.40 | 26.82 | 1609.31 |
| B7 | 0.15 | 230.00 | 0.39 | 25.95 | 1557.08 |
| B8 | 0.16 | 230.00 | 0.40 | 26.80 | 1608.15 |
| Averages | | 229.88 | 0.42 | 28.10 | 1685.86 |

| | |
|---|---|
| STACK GAS ACTUAL VOL FLOW (acfm) | 1216.03 |
| STACK GAS STANDARD VOL FLOW (scfm) | 939.47 |
| STACK GAS STANDARD DRY VOL FLOW (dscf | 717.93 |

* ESTIMATED

| | | | |
|---|---|---|---|
| PLANT ................ | SITE 2 | STD METERED VOLUME (scf)........ | 19.07 |
| DATE ................. | 6/17/92 | MOISTURE COLLECTED (g).......... | 24.20 |
| SAMPLING LOCATION ..... | LINE 2 REAR | % O2........ ..................... ......................... | 19.00 * |
| RUN ................. | LINE 2R - RUN 1 | % CO2........ ..................... ......................... | 0.05 * |
| AMBIENT TEMPERATURE | 72.00 | %N2.......... ..................... ......................... | 80.95 |
| BAROMETRIC PRESSURE | 30.21 | PERCENT MOISTURE IN STACK...... | 5.64 |
| STATIC PRESSURE (in H2 | -0.05 | MOLE FRAC. of DRY STACK GAS..... | 0.94 |
| OPERATOR ............. | CRP | DRY MOLECULAR W ........................ | 28.77 |
| METER TEMP (deg. F).... | 87.83 | WET MOLECULAR W ........................ | 28.16 |
| METER ORIFICE dH (" H2 | 1.60 | STACK DIAMETER (I ........................ | 16.00 |
| METERED VOLUME (cu.ft. | 19.63 | STACK AREA (sq ft) ........................ | 1.40 |
| METER Y................ | 0.9947 | | |

| Traverse Point Number | Velocity Head P (in H2O) | Stack Ts (F) | Square Root of P | Stack Gas Velocity (fps) | Stack Gas Velocity (fpm) |
|---|---|---|---|---|---|
| A1 | 0.020 | 286 | 0.14 | 9.51 | 570.53 |
| A2 | 0.020 | 293 | 0.14 | 9.55 | 573.20 |
| A3 | 0.025 | 292 | 0.16 | 10.67 | 640.43 |
| A4 | 0.025 | 294 | 0.16 | 10.69 | 641.28 |
| A5 | 0.025 | 300 | 0.16 | 10.73 | 643.83 |
| A6 | 0.045 | 355 | 0.21 | 14.91 | 894.51 |
| A7 | 0.045 | 346 | 0.21 | 14.83 | 889.56 |
| A8 | 0.035 | 300.00 | 0.19 | 12.70 | 761.79 |
| B1 | 0.045 | 330.00 | 0.21 | 14.68 | 880.68 |
| B2 | 0.045 | 333.00 | 0.21 | 14.71 | 882.35 |
| B3 | 0.050 | 332.00 | 0.22 | 15.49 | 929.49 |
| B4 | 0.045 | 336.00 | 0.21 | 14.73 | 884.02 |
| B5 | 0.045 | 338.00 | 0.21 | 14.75 | 885.13 |
| B6 | 0.040 | 300.00 | 0.20 | 13.57 | 814.39 |
| B7 | 0.035 | 323.00 | 0.19 | 12.89 | 773.24 |
| B8 | 0.035 | 300.00 | 0.19 | 12.70 | 761.79 |
| Averages | | 316.13 | 0.19 | 12.92 | 775.36 |

| | |
|---|---|
| STACK GAS ACTUAL VOL FLOW (acfm) | 1082.61 |
| STACK GAS STANDARD VOL FLOW (scfm) | 743.54 |
| STACK GAS STANDARD DRY VOL FLOW (dscf | 701.57 |

* ESTIMATED

| | | | |
|---|---|---|---|
| PLANT ................ | SITE 2 | STD METERED VOLUME (scf)........ | 13.23 |
| DATE .................. | 6/19/92 | MOISTURE COLLECTED (g).......... | 14.80 |
| SAMPLING LOCATION ..... | LINE 3 FRONT | % O2........ | 19.50 |
| RUN .................. | LINE 3F - RUN 1 | % CO2........ | 0.50 |
| AMBIENT TEMPERATURE | 72.00 | %N2........ | 80.00 |
| BAROMETRIC PRESSURE | 29.77 | PERCENT MOISTURE IN STACK....... | 5.01 |
| STATIC PRESSURE (in H2 | -0.25 | MOLE FRAC. of DRY STACK GAS..... | 0.95 |
| OPERATOR .............. | CRP | DRY MOLECULAR W | 28.86 |
| METER TEMP (deg. F).... | 82.33 | WET MOLECULAR W | 28.32 |
| METER ORIFICE dH (" H2 | 1.57 | STACK DIAMETER (I | 13.75 |
| METERED VOLUME (cu.ft. | 13.68 | STACK AREA (sq ft) | 1.03 |
| METER Y................ | 0.9947 | | |

| Traverse Point Number | Velocity Head P (in H2O) | Stack Ts (F) | Square Root of P | Stack Gas Velocity (fps) | Stack Gas Velocity (fpm) |
|---|---|---|---|---|---|
| A1 | 0.550 | 217 | 0.74 | 47.73 | 2863.87 |
| A2 | 0.520 | 218 | 0.72 | 46.45 | 2786.73 |
| A3 | 0.340 | 213 | 0.58 | 37.42 | 2245.04 |
| A4 | 0.290 | 208 | 0.54 | 34.43 | 2065.68 |
| B1 | 0.440 | 219 | 0.66 | 42.76 | 2565.31 |
| B2 | 0.460 | 218 | 0.68 | 43.68 | 2621.03 |
| B3 | 0.460 | 219 | 0.68 | 43.72 | 2622.96 |
| B4 | 0.370 | 217.00 | 0.61 | 39.15 | 2348.95 |
| Averages | | 216.13 | 0.65 | 41.91 | 2514.43 |

| | |
|---|---|
| STACK GAS ACTUAL VOL FLOW (acfm) | 2592.82 |
| STACK GAS STANDARD VOL FLOW (scfm) | 2013.37 |
| STACK GAS STANDARD DRY VOL FLOW (dscf | 1912.52 |

| | | | |
|---|---|---|---|
| PLANT .................. | SITE 2 | STD METERED VOLUME (scf)........ | NC |
| DATE .................. | 6/19/92 | MOISTURE COLLECTED (g).......... | NC |
| SAMPLING LOCATION ..... | LINE 3 REAR | % O2........ ..................... ......................... | 19.50 * |
| RUN .................. | LINE 3R - RUN 1 | % CO2........ ..................... ......................... | 0.50 * |
| AMBIENT TEMPERATURE | 72.00 | %N2.......... ..................... ......................... | 80.00 |
| BAROMETRIC PRESSURE | 29.77 | PERCENT MOISTURE IN STACK....... | 4.97 |
| STATIC PRESSURE (in H2 | -0.15 | MOLE FRAC. of DRY STACK GAS..... | 0.95 |
| OPERATOR .............. | CRP | DRY MOLECULAR W ......................... | 28.86 |
| METER TEMP (deg. F).... | NC | WET MOLECULAR W ......................... | 28.32 |
| METER ORIFICE dH (" H2 | NC | STACK DIAMETER (I ......................... | 15.50 |
| METERED VOLUME (cu.ft. | NC | STACK AREA (sq ft) ......................... | 1.31 |
| METER Y................. | NC | | |

| Traverse Point Number | Velocity Head P (in H2O) | Stack Ts (F) | Square Root of P | Stack Gas Velocity (fps) | Stack Gas Velocity (fpm) |
|---|---|---|---|---|---|
| A1 | 0.290 | 226 | 0.54 | 34.88 | 2092.93 |
| A2 | 0.300 | 227 | 0.55 | 35.50 | 2130.26 |
| A3 | 0.250 | 225 | 0.50 | 32.36 | 1941.82 |
| A4 | 0.190 | 201 | 0.44 | 27.72 | 1662.91 |
| B1 | 0.220 | 208 | 0.47 | 29.98 | 1798.83 |
| B2 | 0.250 | 209 | 0.50 | 31.98 | 1919.00 |
| B3 | 0.260 | 210 | 0.51 | 32.64 | 1958.46 |
| B4 | 0.230 | 208.00 | 0.48 | 30.65 | 1839.26 |
| Averages | | 214.25 | 0.50 | 31.95 | 1917.20 |

| | |
|---|---|
| STACK GAS ACTUAL VOL FLOW (acfm) | 2512.22 |
| STACK GAS STANDARD VOL FLOW (scfm) | 1956.69 |
| STACK GAS STANDARD DRY VOL FLOW (dscf | 1859.42 |

* ESTIMATED

| | | | |
|---|---|---|---|
| PLANT ................. | SITE 2 | STD METERED VOLUME (scf)........ | NC |
| DATE .................. | 6/18/92 | MOISTURE COLLECTED (g).......... | NC |
| SAMPLING LOCATION ..... | COMFORT HOOD | % O2.............................. | 20.90 * |
| RUN ................... | C.H.-LINE#1-RUN1 | % CO2............................. | 0.00 * |
| AMBIENT TEMPERATURE ... | 70.00 | %N2............................... | 79.00 |
| BAROMETRIC PRESSURE ... | 30.01 | PERCENT MOISTURE IN STACK....... | 2.00 * |
| STATIC PRESSURE (in H2O) | 0.00 | MOLE FRAC. of DRY STACK GAS..... | 0.98 |
| OPERATOR .............. | CRP | DRY MOLECULAR WEIGHT............ | 28.81 |
| METER TEMP (deg. F).... | NC | WET MOLECULAR WEIGHT............ | 28.59 |
| METER ORIFICE dH (" H2O) | NC | STACK DIAMETER (IN) ............ | NA |
| METERED VOLUME (cu.ft.). | NC | STACK AREA (sq ft) ............. | 3.30 |
| METER Y................ | NC | | |

| Traverse Point Number | Velocity Head DP (in H2O) | Stack Ts (°F) | Square Root of DP | Stack Gas Velocity (fps) | Stack Gas Velocity (fpm) |
|---|---|---|---|---|---|
| A1 | | 207 | | | 200.00 |
| A2 | | 207 | | | 100.00 |
| A3 | | 207 | | | 50.00 |
| B1 | | 207 | | | 200.00 |
| B2 | | 207 | | | 200.00 |
| B3 | | 207 | | | 100.00 |
| Averages | | 207.00 | | | 141.67 |

| | |
|---|---|
| STACK GAS ACTUAL VOL FLOW (acfm) | 467.47 |
| STACK GAS STANDARD VOL FLOW (scfm) | 371.16 |
| STACK GAS STANDARD DRY VOL FLOW (dscfm) | 363.73 |

* ESTIMATED

** VELOCITY AND FLOW MEASUREMENTS NOT MADE ACCORDING TO EPA REFERENCE METHODS 1 & 2. COMFORT HOODS EXHAUSTS VENTED DIRECTLY TO ATMOSPHERE FOLLOWING THE FAN. VELOCITY MEASUREMENTS MADE AT 3 POINTS ALONG 2 RADAII OF A ANNULAR TYPE AREA. FLOW MEASUREMENTS MADE WITH A HOT WIRE ANEMOMETER (see below).

NOTE: FAN OFF

| | | | |
|---|---|---|---|
| PLANT ................. | SITE 2 | STD METERED VOLUME (scf)........ | NC |
| DATE .................. | 6/18/92 | MOISTURE COLLECTED (g).......... | NC |
| SAMPLING LOCATION ..... | COMFORT HOOD | % O2............................ | 20.90 * |
| RUN .................. | C.H.-LINE#3-RUN1 | % CO2........................... | 0.00 * |
| AMBIENT TEMPERATURE ... | 70.00 | %N2............................. | 79.00 |
| BAROMETRIC PRESSURE ... | 30.01 | PERCENT MOISTURE IN STACK....... | 2.00 * |
| STATIC PRESSURE (in H2O) | 0.00 | MOLE FRAC. of DRY STACK GAS..... | 0.98 |
| OPERATOR .............. | CRP | DRY MOLECULAR WEIGHT............ | 28.81 |
| METER TEMP (deg. F).... | NC | WET MOLECULAR WEIGHT............ | 28.59 |
| METER ORIFICE dH (" H2O) | NC | STACK DIAMETER (IN) ............ | NA |
| METERED VOLUME (cu.ft.). | NC | STACK AREA (sq ft) ............ | 3.30 |
| METER Y................. | NC | | |

| Traverse Point Number | Velocity Head DP (in H2O) | Stack Ts (°F) | Square Root of DP | Stack Gas Velocity (fps) | Stack Gas Velocity (fpm) |
|---|---|---|---|---|---|
| A1 | | 100 | | | 400.00 |
| A2 | | 100 | | | 200.00 |
| A3 | | 100 | | | 50.00 |
| B1 | | 100 | | | 400.00 |
| B2 | | 100 | | | 200.00 |
| B3 | | 100 | | | 100.00 |
| Averages | | 100.00 | | | 225.00 |

| | |
|---|---|
| STACK GAS ACTUAL VOL FLOW (acfm) | 742.45 |
| STACK GAS STANDARD VOL FLOW (scfm) | 702.12 |
| STACK GAS STANDARD DRY VOL FLOW (dscfm) | 688.07 |

* ESTIMATED

** VELOCITY AND FLOW MEASUREMENTS NOT MADE ACCORDING TO EPA REFERENCE METHODS 1 & 2. COMFORT HOODS EXHAUSTS VENTED DIRECTLY TO ATMOSPHERE FOLLOWING THE FAN. VELOCITY MEASUREMENTS MADE AT 3 POINTS ALONG 2 RADAII OF A ANNULAR TYPE AREA. FLOW MEASUREMENTS MADE WITH A HOT WIRE ANEMOMETER (see below).

NOTE: FAN OFF

| | | | |
|---|---|---|---|
| PLANT ................ | SITE 2 | STD METERED VOLUME (scf)........ | NC |
| DATE ................. | 6/18/92 | MOISTURE COLLECTED (g).......... | NC |
| SAMPLING LOCATION ..... | COMFORT HOOD | % O2............................. | 20.90 * |
| RUN ................. | C.H.-LINE#2-RUN1 | % CO2............................ | 0.00 * |
| AMBIENT TEMPERATURE ... | 70.00 | %N2.............................. | 79.00 |
| BAROMETRIC PRESSURE ... | 30.01 | PERCENT MOISTURE IN STACK....... | 2.00 * |
| STATIC PRESSURE (in H2O) | 0.00 | MOLE FRAC. of DRY STACK GAS..... | 0.98 |
| OPERATOR ............. | CRP | DRY MOLECULAR WEIGHT............ | 28.81 |
| METER TEMP (deg. F).... | NC | WET MOLECULAR WEIGHT............ | 28.59 |
| METER ORIFICE dH (" H2O) | NC | STACK DIAMETER (IN) ............ | NA |
| METERED VOLUME (cu.ft.). | NC | STACK AREA (sq ft) ............. | 3.30 |
| METER Y................ | NC | | |

| Traverse Point Number | Velocity Head DP (in H2O) | Stack Ts (°F) | Square Root of DP | Stack Gas Velocity (fps) | Stack Gas Velocity (fpm) |
|---|---|---|---|---|---|
| A1 | | 106 | | | 2500.00 |
| A2 | | 106 | | | 1500.00 |
| A3 | | 106 | | | 500.00 |
| B1 | | 106 | | | 3500.00 |
| B2 | | 106 | | | 2500.00 |
| B3 | | 106 | | | 1000.00 |
| Averages | | 105.50 | | | 1916.67 |

| | |
|---|---|
| STACK GAS ACTUAL VOL FLOW (acfm) | 6324.56 |
| STACK GAS STANDARD VOL FLOW (scfm) | 5922.82 |
| STACK GAS STANDARD DRY VOL FLOW (dscfm) | 5804.37 |

* ESTIMATED

** VELOCITY AND FLOW MEASUREMENTS NOT MADE ACCORDING TO EPA REFERENCE METHODS 1 & 2. COMFORT HOODS EXHAUSTS VENTED DIRECTLY TO ATMOSPHERE FOLLOWING THE FAN. VELOCITY MEASUREMENTS MADE AT 3 POINTS ALONG 2 RADAII OF A ANNULAR TYPE AREA. FLOW MEASUREMENTS MADE WITH A HOT WIRE ANEMOMETER (see below).

| | | | |
|---|---|---|---|
| PLANT ................. | SITE 2 | STD METERED VOLUME (scf)........ | NC |
| DATE .................. | 6/17/92 | MOISTURE COLLECTED (g).......... | NC |
| SAMPLING LOCATION ..... | COMFORT HOOD | % O2............................ | 20.90 * |
| RUN .................. | C.H.-LINE#2-RUN2 | % CO2........................... | 0.00 * |
| AMBIENT TEMPERATURE ... | 70.00 | %N2............................. | 79.00 |
| BAROMETRIC PRESSURE ... | 30.21 | PERCENT MOISTURE IN STACK....... | 2.00 * |
| STATIC PRESSURE (in H2O) | 0.00 | MOLE FRAC. of DRY STACK GAS..... | 0.98 |
| OPERATOR .............. | CRP | DRY MOLECULAR WEIGHT............ | 28.81 |
| METER TEMP (deg. F).... | NC | WET MOLECULAR WEIGHT............ | 28.59 |
| METER ORIFICE dH (" H2O) | NC | STACK DIAMETER (IN) ............ | NA |
| METERED VOLUME (cu.ft.). | NC | STACK AREA (sq ft) ............ | 3.30 |
| METER Y................. | NC | | |

| Traverse Point Number | Velocity Head DP (in H2O) | Stack Ts (°F) | Square Root of DP | Stack Gas Velocity (fps) | Stack Gas Velocity (fpm) |
|---|---|---|---|---|---|
| A1 | 0.470 | 110 | 0.69 | 39.98 | 2398.95 |
| A2 | 0.270 | 106 | 0.52 | 30.20 | 1811.86 |
| A3 | 0.080 | 110 | 0.28 | 16.50 | 989.73 |
| B1 | 0.420 | 107 | 0.65 | 37.70 | 2261.78 |
| B2 | 0.300 | 107 | 0.55 | 31.86 | 1911.56 |
| B3 | 0.050 | 108 | 0.22 | 13.02 | 781.08 |
| Averages | 0.27 | 108.00 | 0.48 | 28.2108 | 1692.65 |

| | |
|---|---|
| STACK GAS ACTUAL VOL FLOW (acfm) | 5585.35 |
| STACK GAS STANDARD VOL FLOW (scfm) | 5242.24 |
| STACK GAS STANDARD DRY VOL FLOW (dscfm) | 5137.40 |

* ESTIMATED

** VELOCITY AND FLOW MEASUREMENTS NOT MADE ACCORDING TO EPA REFERENCE METHODS 1 & 2. COMFORT HOODS EXHAUSTS VENTED DIRECTLY TO ATMOSPHERE FOLLOWING THE FAN. VELOCITY MEASUREMENTS MADE AT 3 POINTS ALONG 2 RADAII OF A ANNULAR TYPE AREA (see below).

# Appendix B.8

# Test Log

Monday 6/15 - Site 2

0900 Flew up to Phily. Picked up CEM truck/trailer in Economy Lot

1200 Arrived at Stroehmanns after getting a little lost in Norristown. Couldn't find Steve Kmetz (lunch) so we parked truck at Line 1/2 location and broke for lunch

1330 Came back. Reparked vehicle.
- String heat trace
- marked ports. Line 2 oven had 3 stacks. A front, a mid, and a stack coming off the burner. (Sidewise fired oven). The mid stack does not appear to have any flow.

1400 Plant employee worked on setting up power. Source was 220 triple phase - so wouldn't work. Finally after working on this all day got power up at 1930 hrs

While waiting for power, plumbed Support gases to GC, Cal Gases for THC - reset the rack of pumps on it. (Had to have machine shop cut the pump base plate so it would fit.)

We were hoping to get 80-90% set up today but because of the lack of power - not so. (Both lines 1 and 2 are running on Tuesday)

2030 Left Site

6/16 Tues

0845 On Site
Left Mike & Geoff to work while I drove around getting a few days

1200 - 1330 Went to Hardware store & broke for lunch

14:00 Checked Flow of mid oven 2 stack w/ Hot wire. Reading was 20-30 fpm over the top of the stack this was same reading as ambient verifying no flow of this location
* LINE 2 mid stack - no flow
* LINE 2 top ~ 225°F at front stack
* LINE 2 mid stack top = 80°F same as ambient

1700 Mike all set - off site

~1900 Add holes cut in ports stacks

1900 Had some major bugs w/ THC monitor cals. Were real bad - very inconsistent

~2100 Discovered problem was having both THC monitors so close together. The sample pump of one was severely interfering with the other 1) lower the response ~ 2000 ppm 2) cause flame out 3) produce noisy trace. Moved instruments apart and problem was rectified.

2130 I drove out to get whoppers while Geoff started to replumb system.

2300 Performed leak checks. Slight leak in one system I replaced pump bypass w/ new one. Front is about 0.22% V, rear is 0.5% V $\Rightarrow O_2$. Will track down leaks tomorrow

2330 Off Site

6/17 Wed

0835 On Site (Geoff got here at 08:00)
Everything went smooth, until right before we started we got a phantom voltage again on the DAS. Voltmeter on the lineses would read 3.7 v for a ~3900 Cal gas and computer would see 3.2 - 4.6 v
Very hectic — Delayed starting till 11:30

1130 - 1300 Ran Line 2 Bread oven stacks. As usual, the data was excellent. GC data on front stack was good but rear had heat trace jumper problems (GC). Its amazing the $CH_4$ can be so biased by loss of heat. If we think we have a bias problem, we really don't need to work with ethanol (RT = 8 min), we can use $CH_4$ (@ 1.5 min)
Rear stack data is questionable (GC) but values are very low (< 100) as expected (its the burner exhaust)

1400 - 1515 Started on the bun oven. Changed product ~1430 so really didn't want to use that data. Had GC problems afterwards — so didn't start till ~1515. Ran till 16:15

1630 On the way to pulling the heat trace from the oven stacks, was hit in the face by high ethanol concentrations from the confort hood. Decided to test it and it was ~1000 ppm. There's no way to really get a good test on it as its an anulus type geometry But got some good #'s on it and some mediocre flows on it.

2030 off Site

6/18 Thur

0700 CP On Site

0800 Geoff / mike On Site

Switching to Truck Location #2 → for oven 3 tests

As usual, power problems - finally fired up ~ 1200 hrs

Everything looks good - Geoff showed me step by step CEM operation. I changed Mike B's Helium pressure (by mistake) previous night - so his RT changed slightly. Was shooting for startup at 1500 hrs. but didn't really get started till ~ 1545

~1600 Front oven showed very consistent oscillation (strip chart pen noise) Ran for ~ 1/4 - 1/2 hour. Geoff lost the flame (due to too short a warm up period) and weird oscillation continued. Ran stack gas intermittently while continuing to shoot QCs, etc, to determine why the oscillation occurred. All QC's show no oscillation - Geoff checked signal output, electric & source problems & they are ok. Finally, at the end of the day, ~~put the probes~~ put the probes together (same stack) and both ~~THC~~ monitors showed the oscillation.

Ran moisture on Line 2 at Line 1 (Front Only)

2130 off Site

L

6/19 Friday

~1030 On Site
Mike took Geoff to airport, while I started line 1-rear, moisture run. Started raining cats & dogs. I had a tarp over me but T/C readout shorted, - but I kept going. Left train for ~10 minutes and probe fell out of stack + train was plugged somehow. Very frustrated & wet. Decided to bag moistures

~1200 Raining too hard to work. Drove to get foul weather gear

~1300-1400 broke for lunch

Drove to Grainger to try and get new T/C readout - no dice. Bought multimeter.

~1500 Got back to bakery. Did flows on Line 1-rear, Lines 3 Both Stacks.
Ran a moisture on line 3 front

~2000 Off site - ~~Rest~~ Left for Maiers @ Easton

~2200 Arrived at Days Inn - Easton

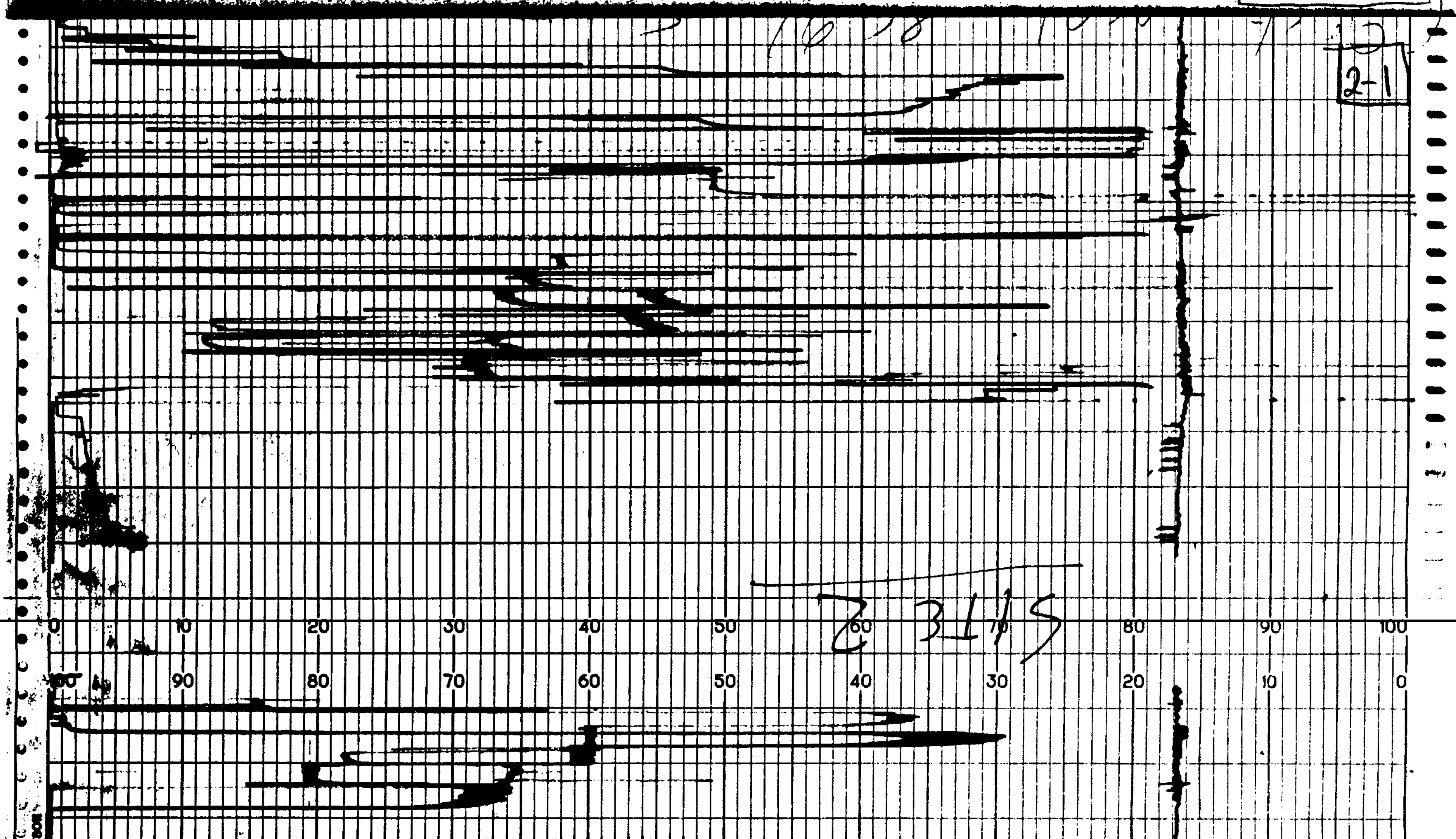
# Appendix B.9

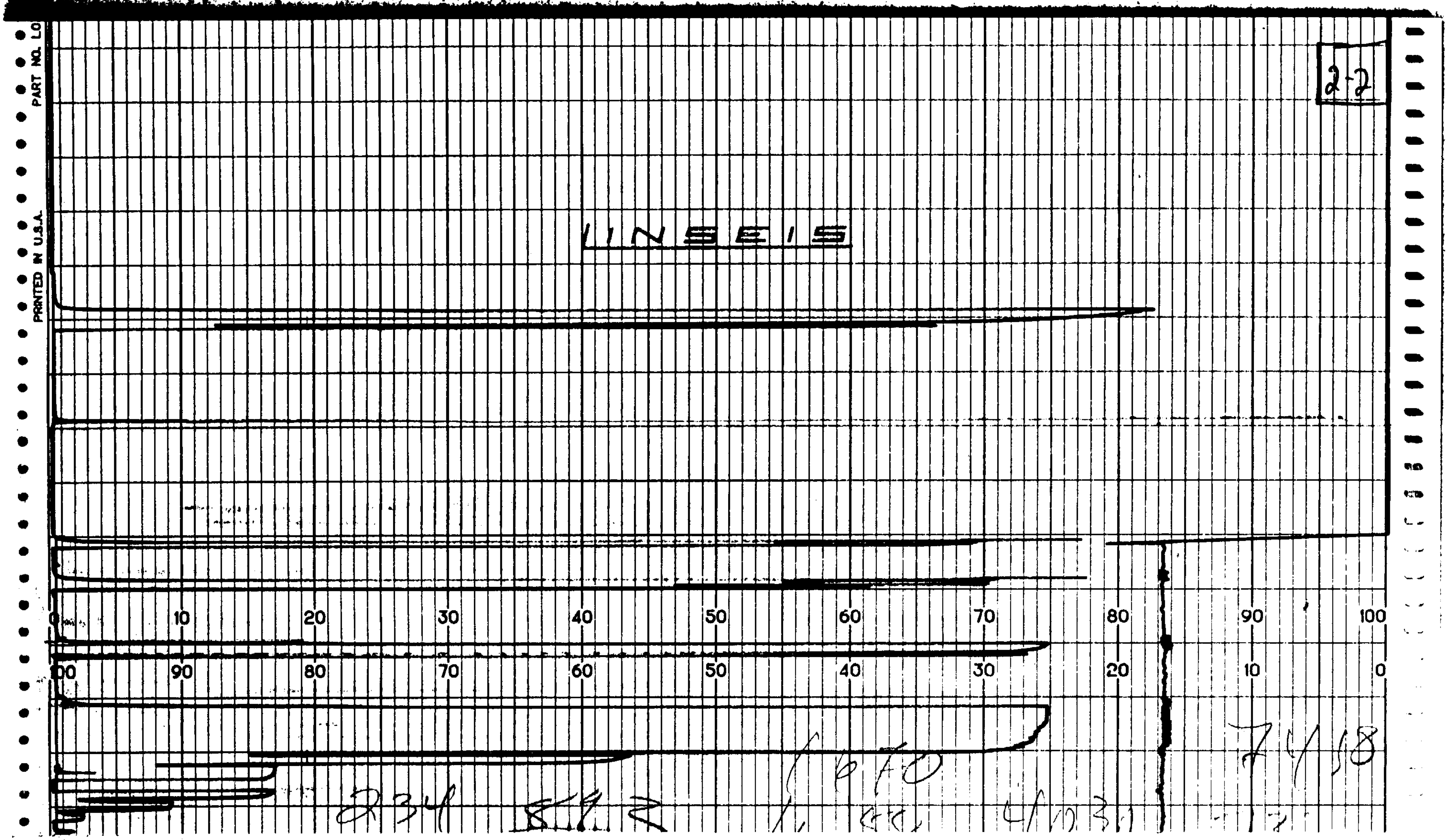
# Method 25A SCR Copies

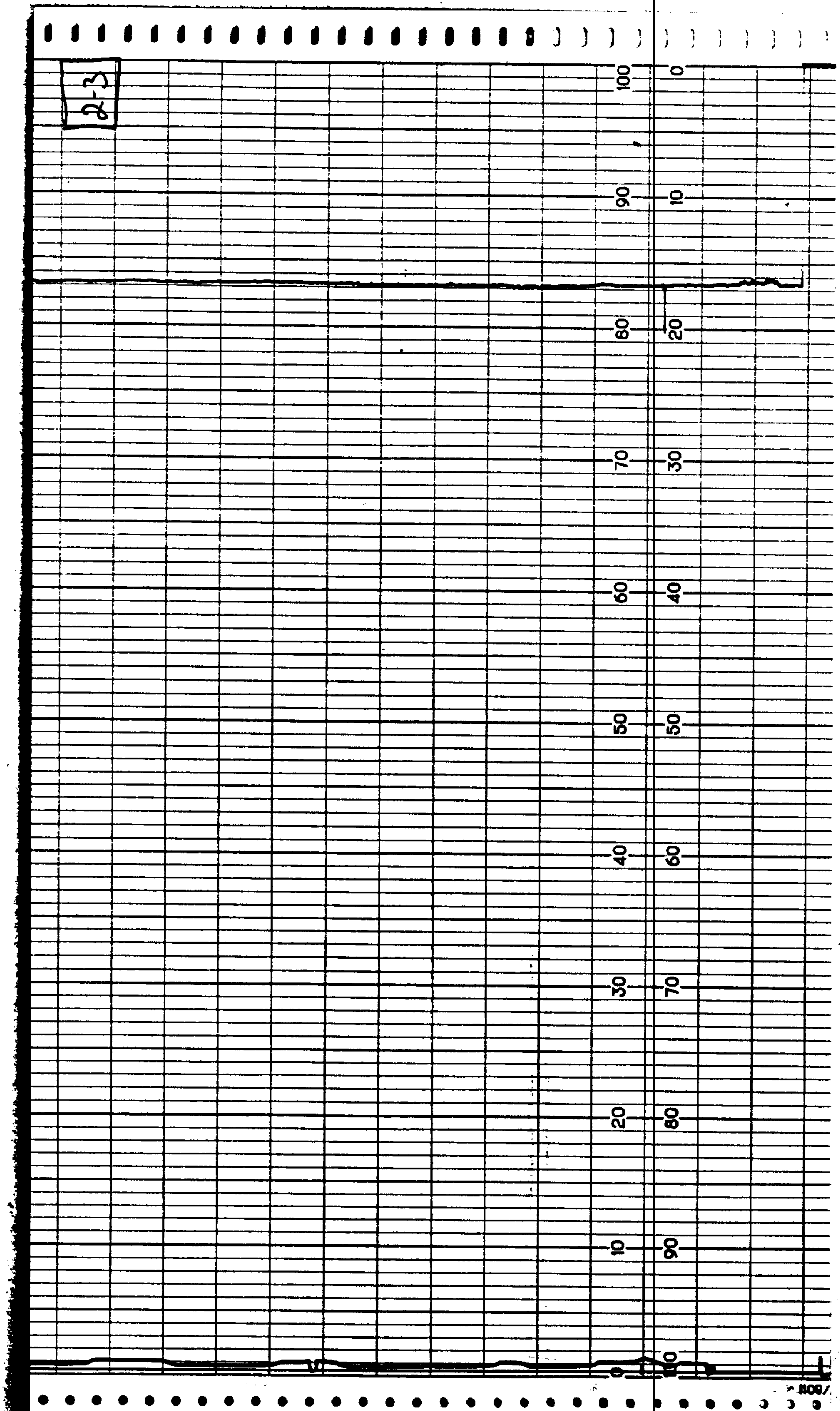
SITE 02
STROEHMANN'S BAKERY
NORRISTOWN, PA.

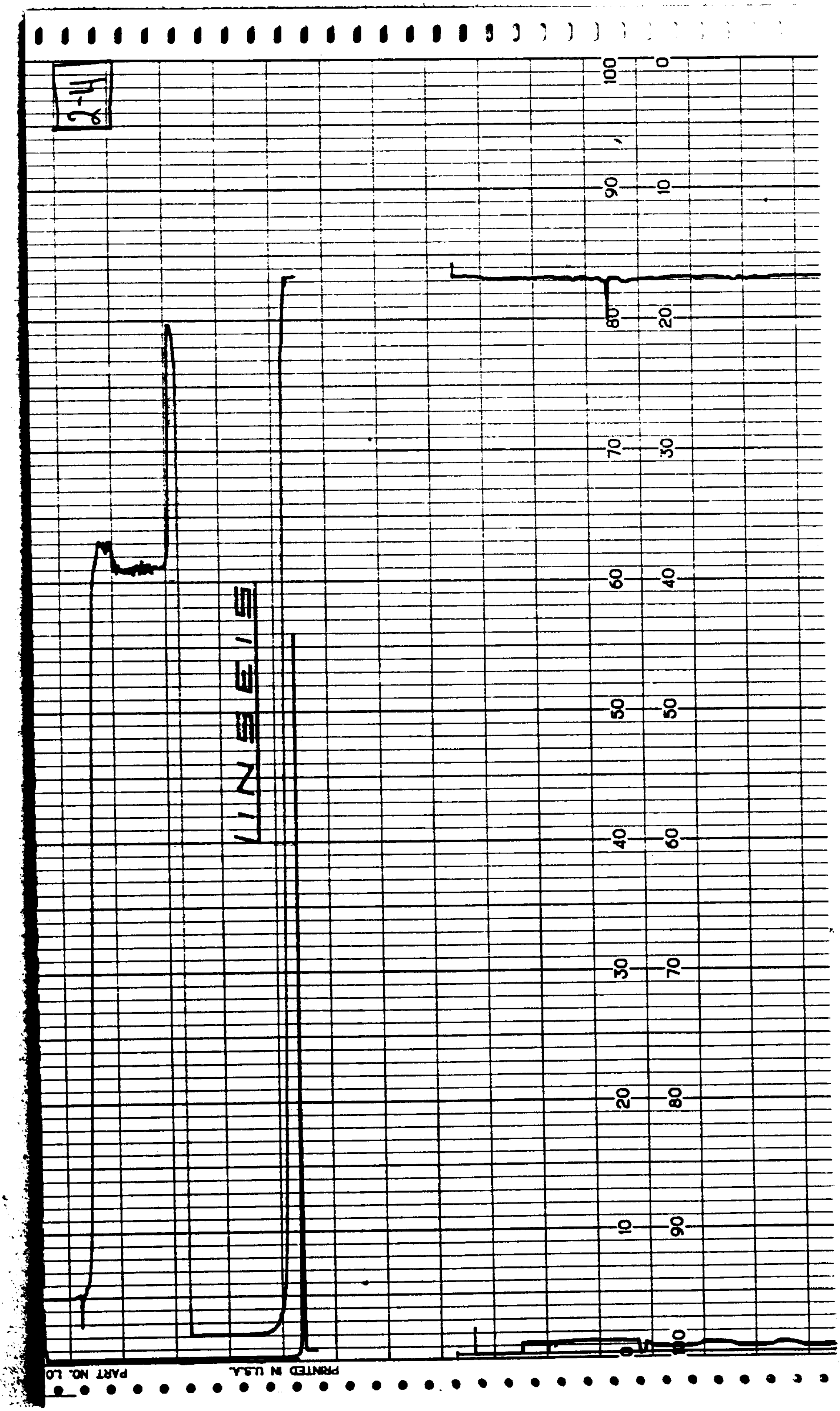
PAGE 1 OF 25

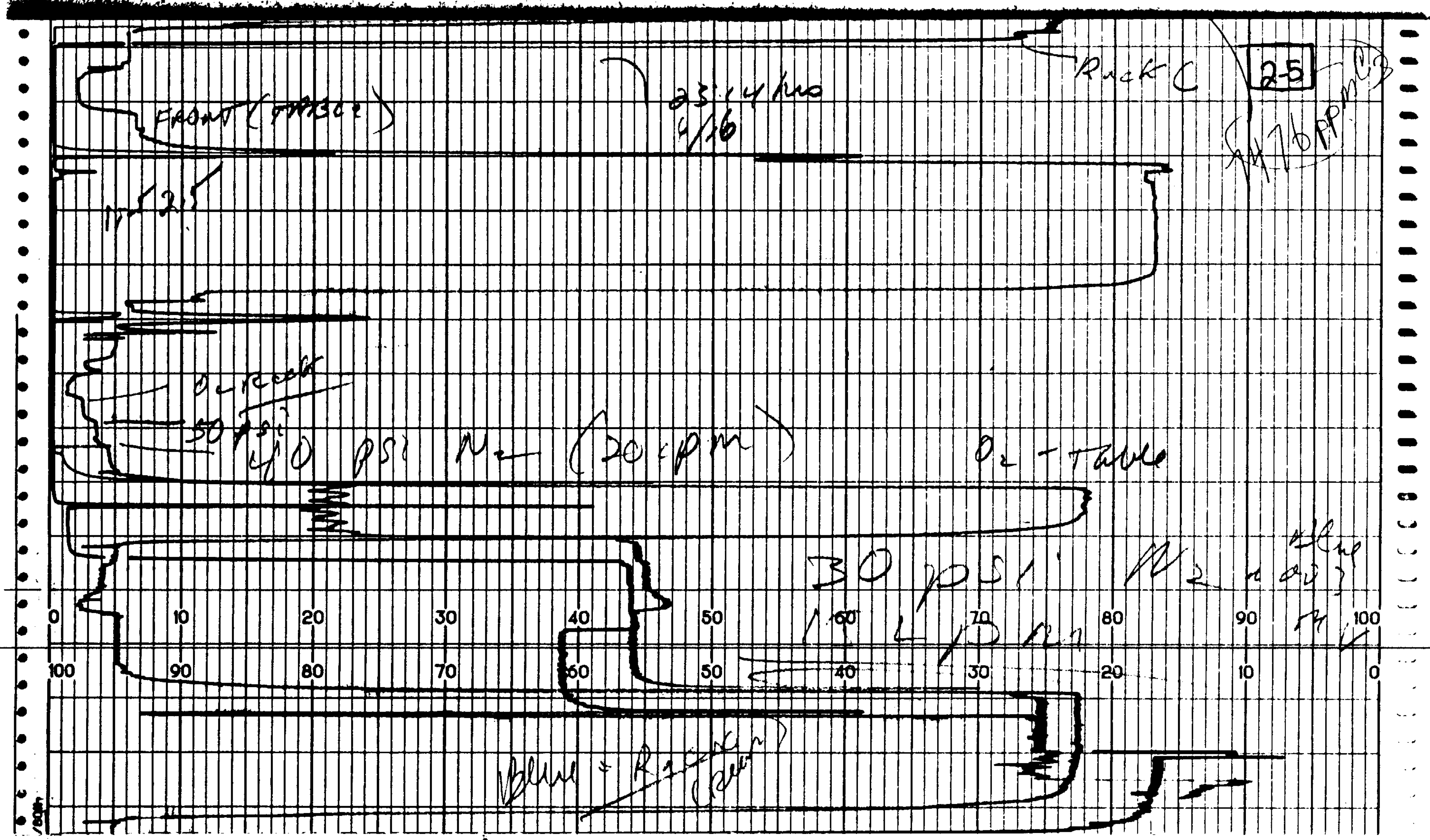
SITE 02 - PAGE 01

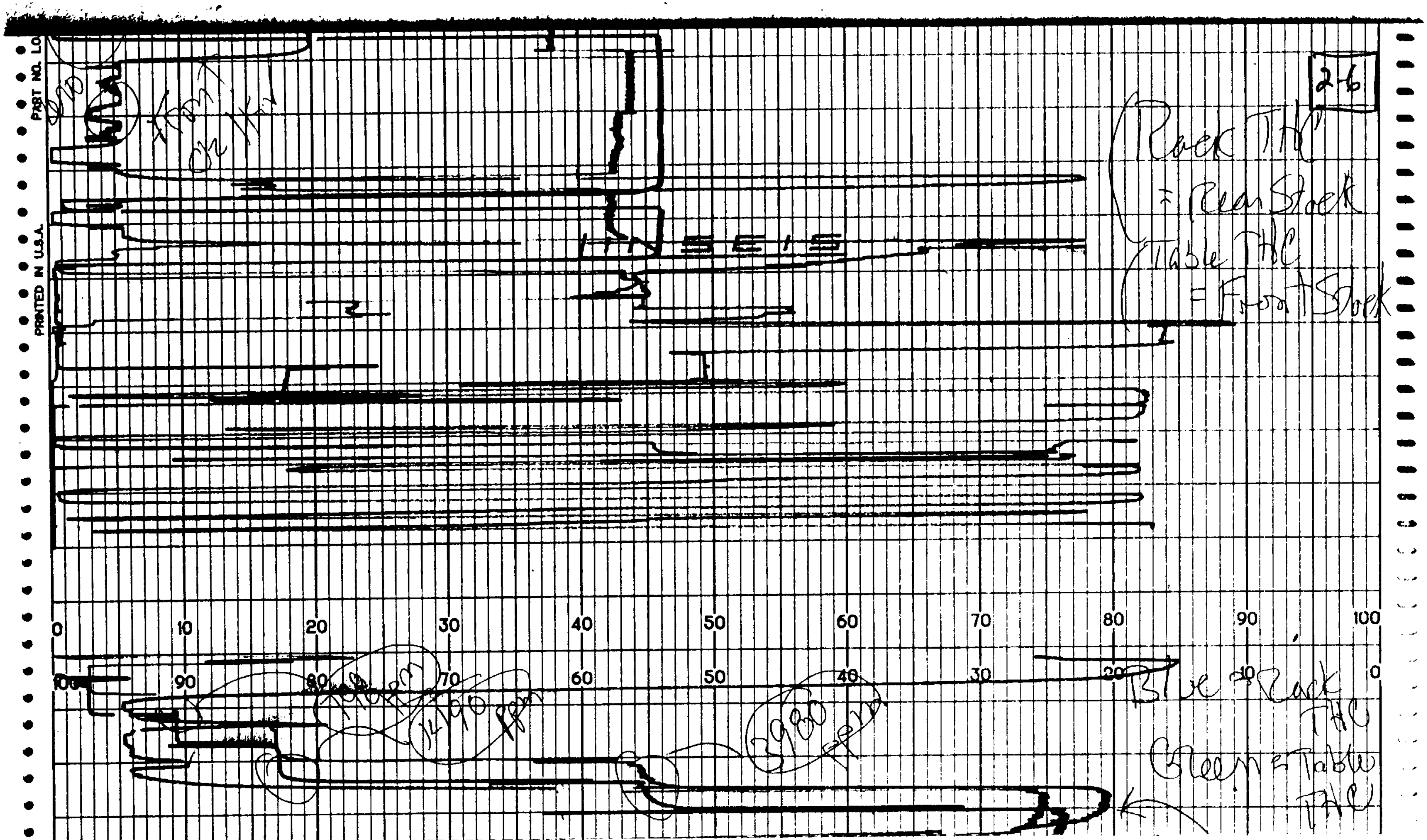


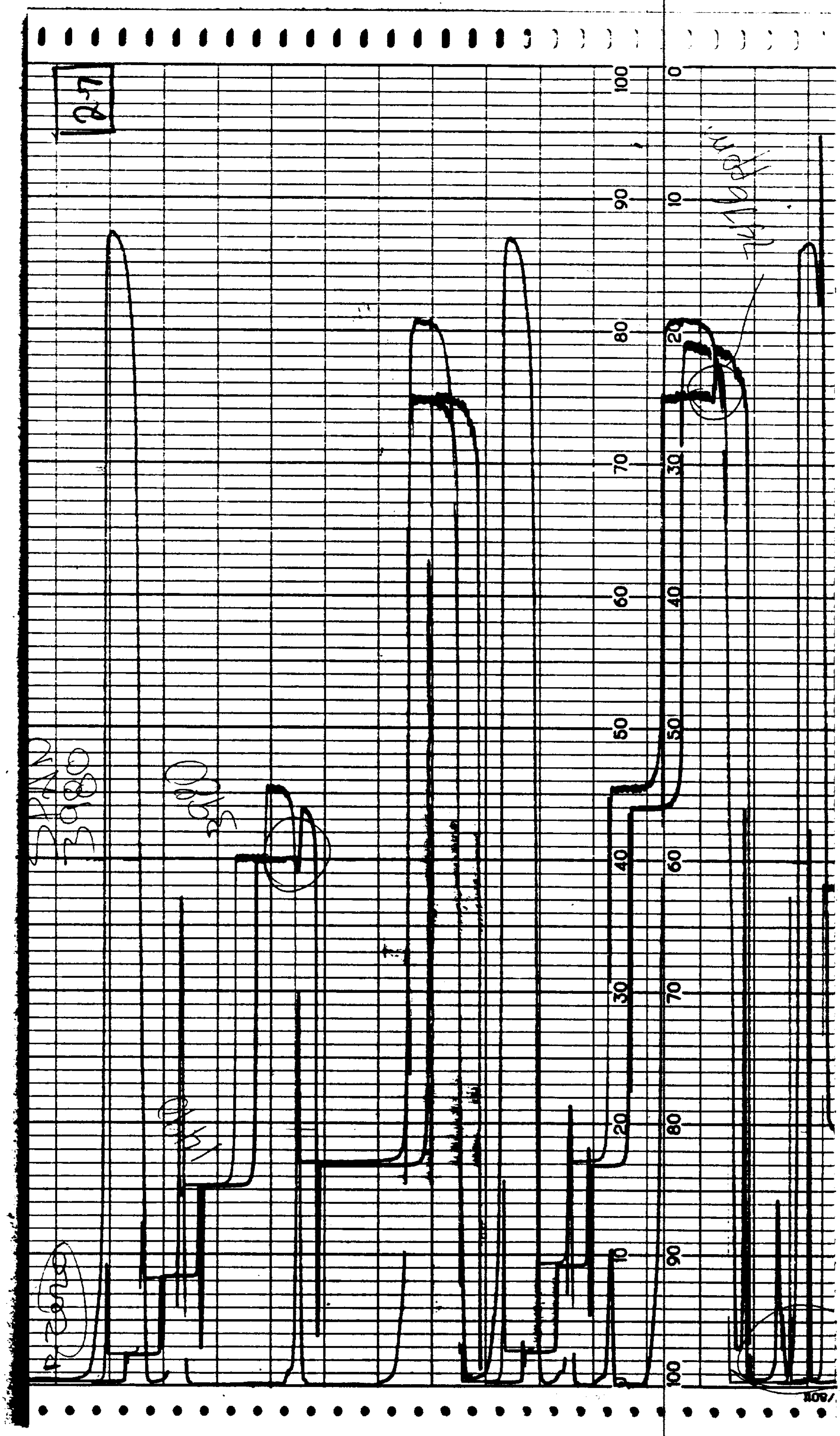

2-2
LINSEIS
PART NO. LO
PRINTED IN U.S.A.

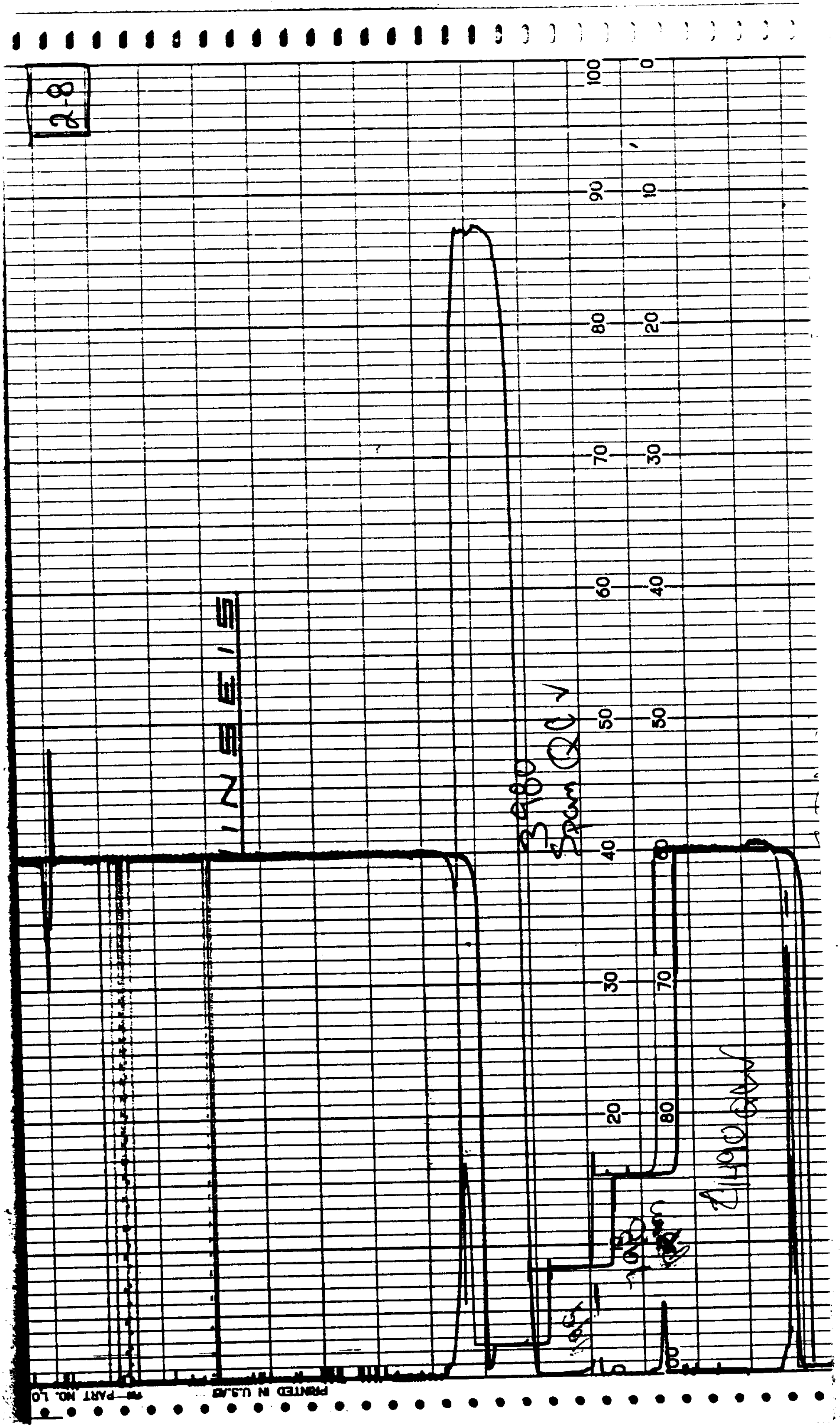

2-3
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

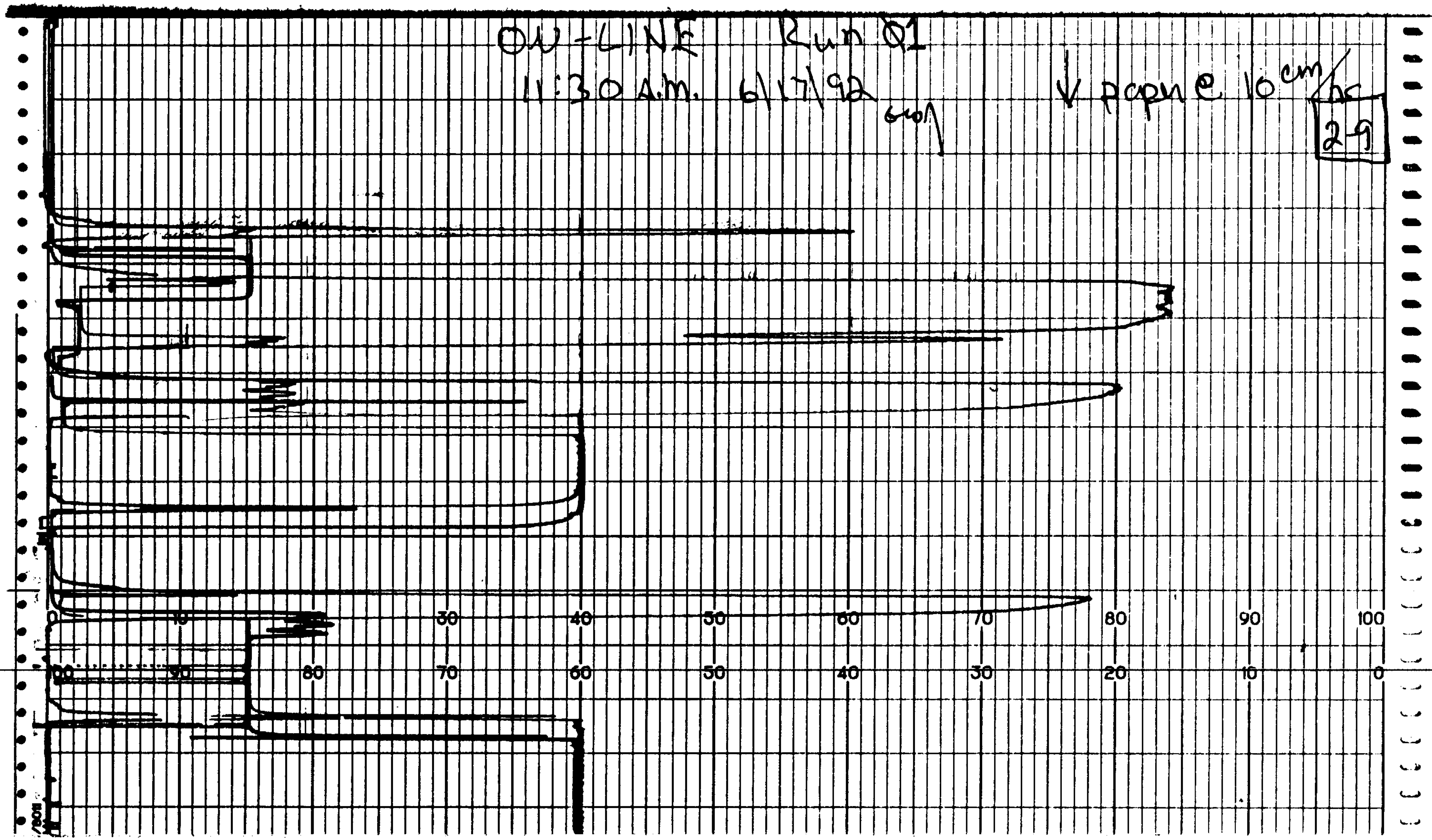

2-14
LINSEIS
PART NO. L0
PRINTED IN U.S.A.

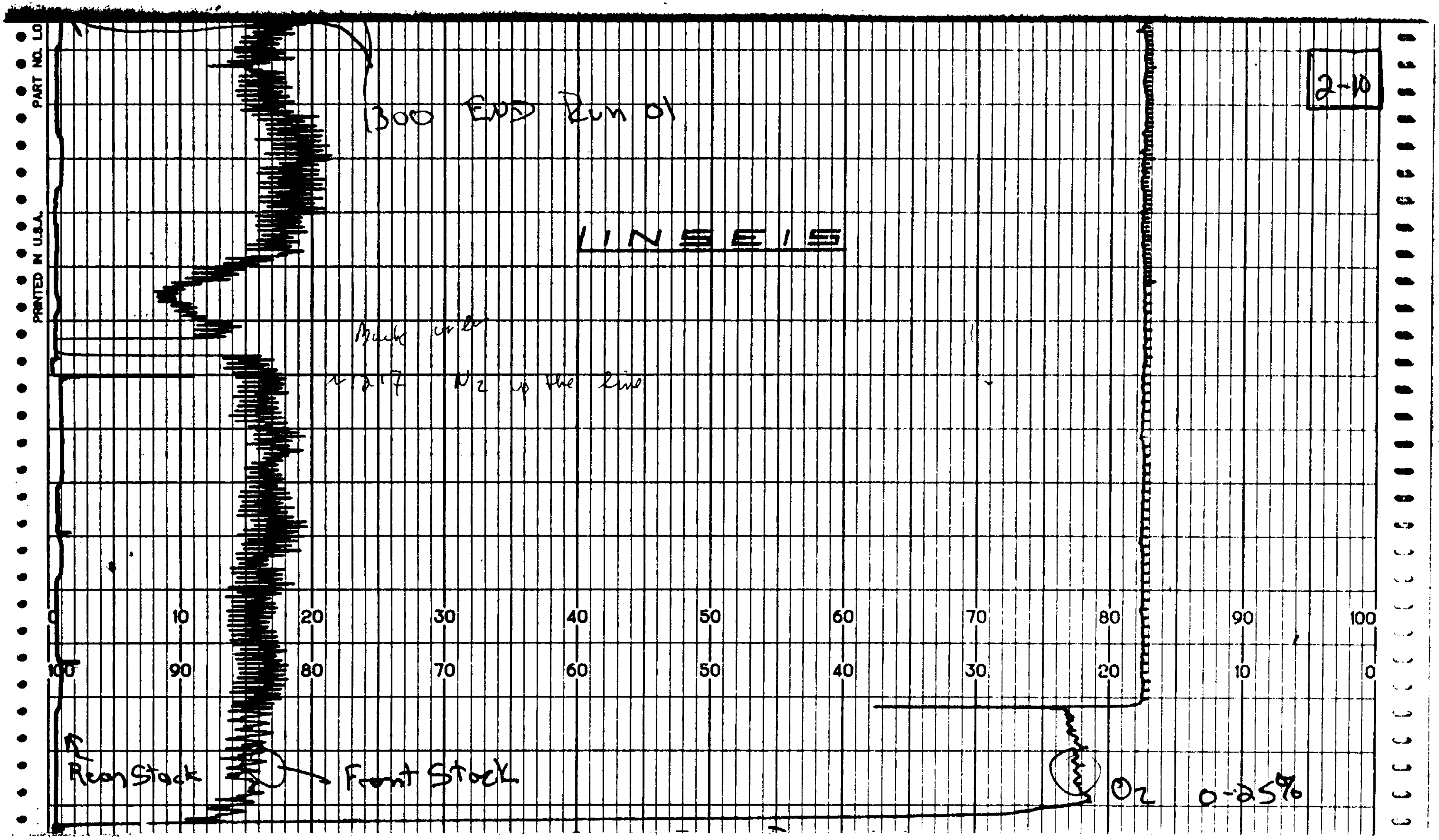

25
Rack C
23:14 hrs
4/16
FRONT (FREEZE)
O2 - Table
40 PSI N2 (20 LPM)
50 PSI
30 PSI N2
Blue + Red

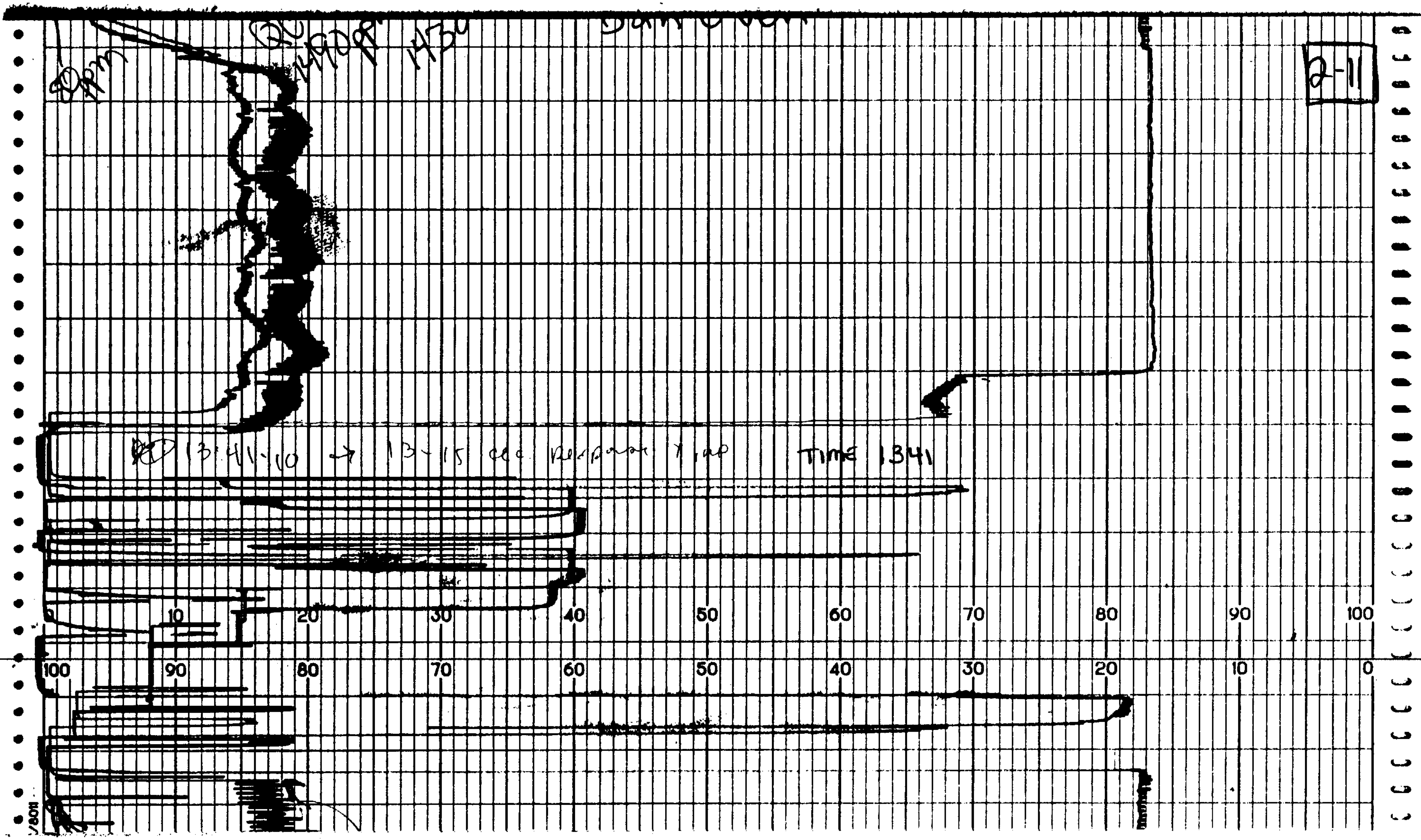

PART NO. LO
PRINTED IN U.S.A.
2-6
Rock THC
= Rear Stock
Table THC
= Front Stock
Blue = Rack THC
Green = Table THC
5980 RPM
14490 RPM

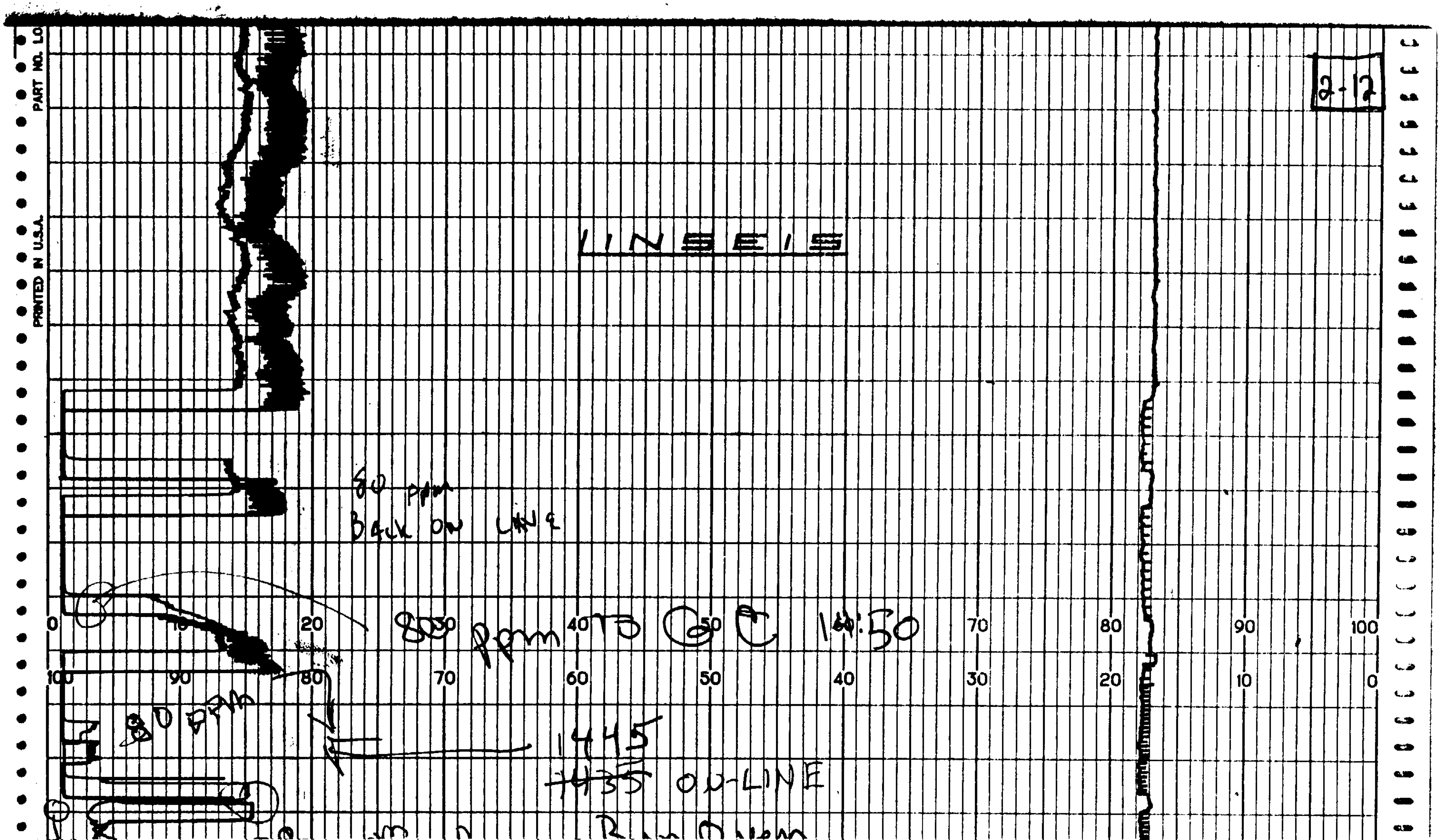


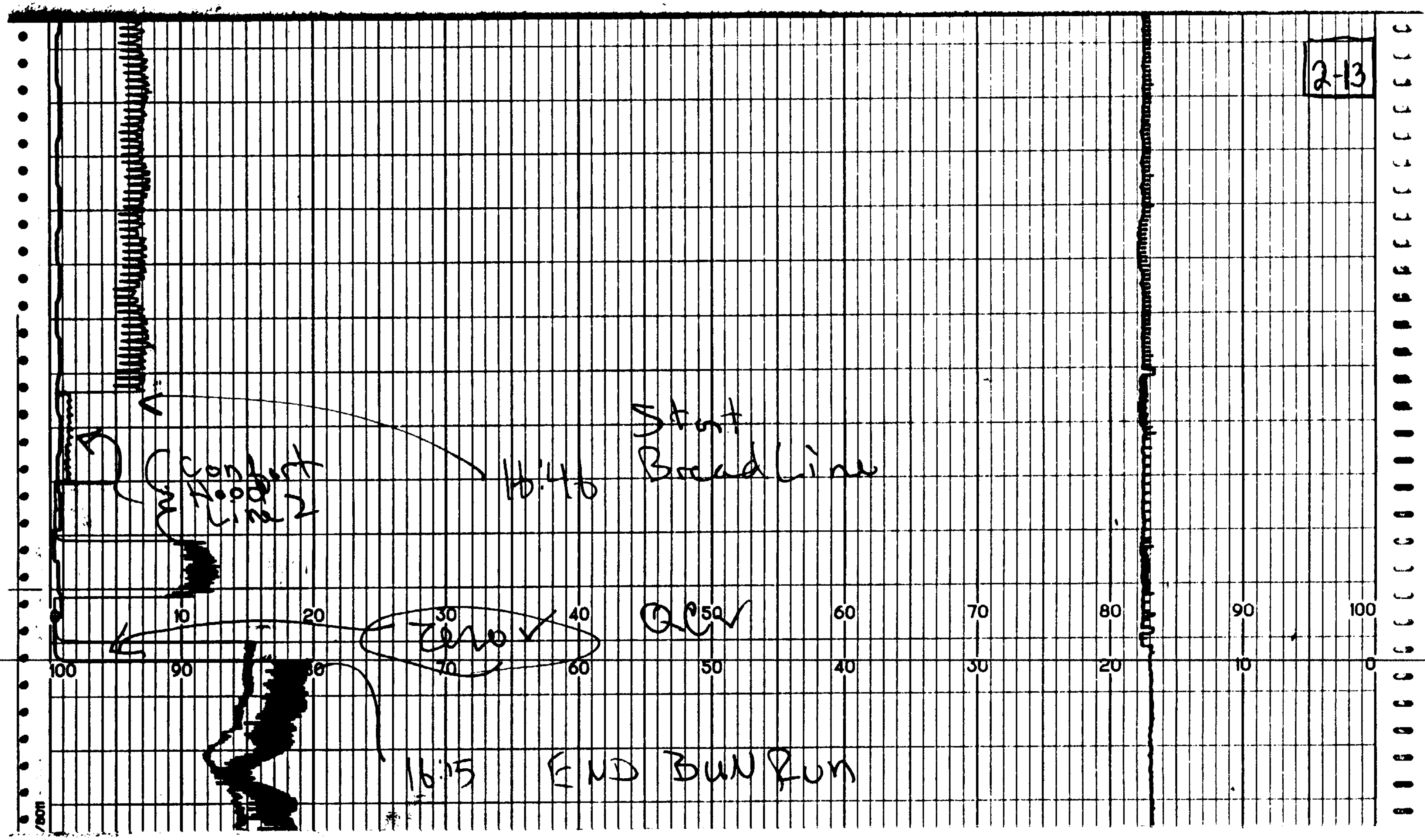

2-8
100
90
80
70
60
50
40
30
20
0
10
20
30
40
50
60
70
80
90
3280
Span QC
PRINTED IN U.S.A.


ON-LINE Run Q1
11:30 A.M. 6/17/92
↓ paper 10 cm/hr
2-9
0
10
30
40
50
60
70
80
90
100
100
90
80
70
60
50
40
30
20
10
0

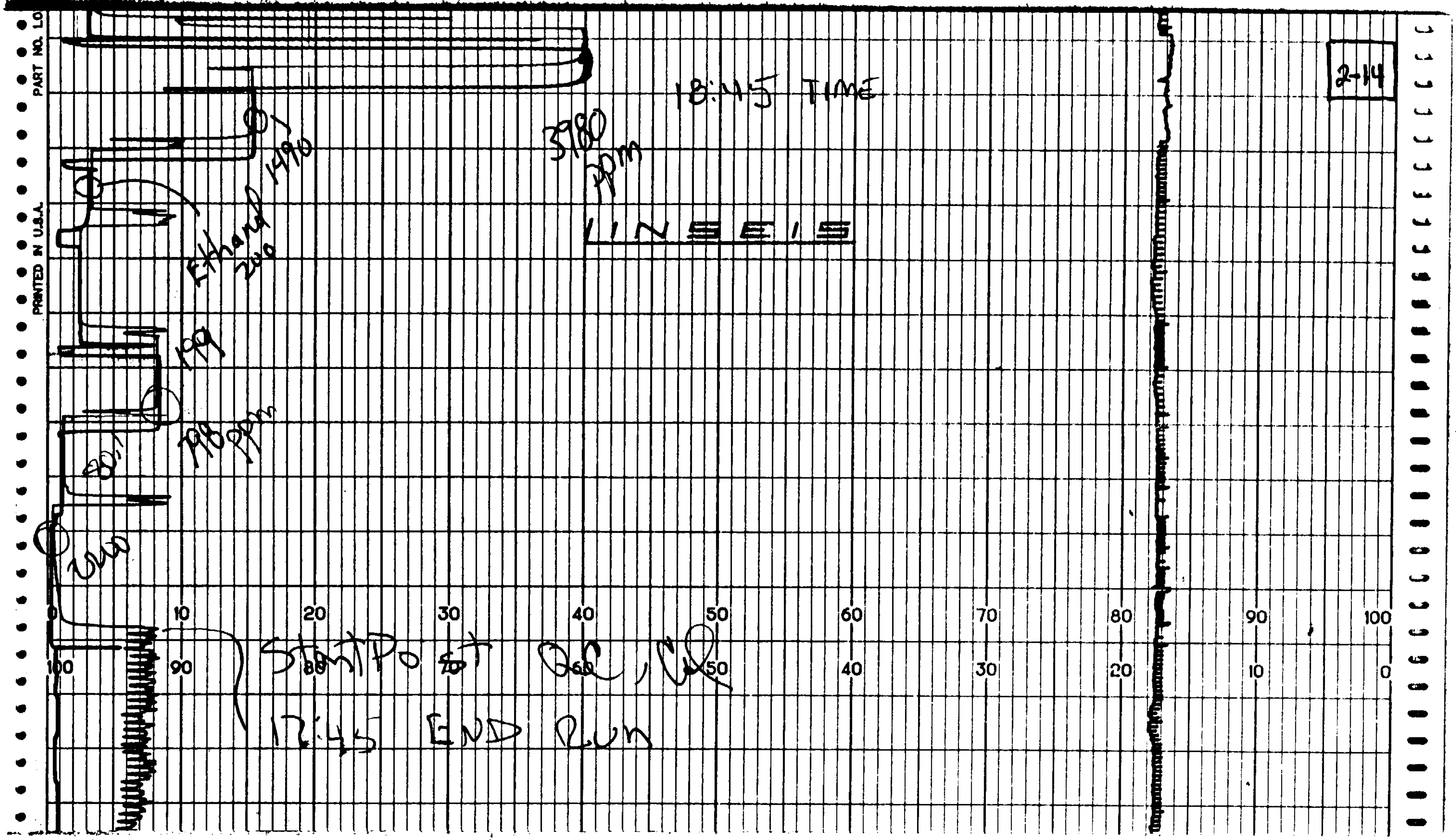

2-10
1300 END Run 01
LINSEIS
N2 up the line
0 10 20 30 40 50 60 70 80 90 100
100 90 80 70 60 50 40 30 20 10 0
Rear Stack
Front Stack
O2 0-25%
PART NO. LO
PRINTED IN U.S.A.

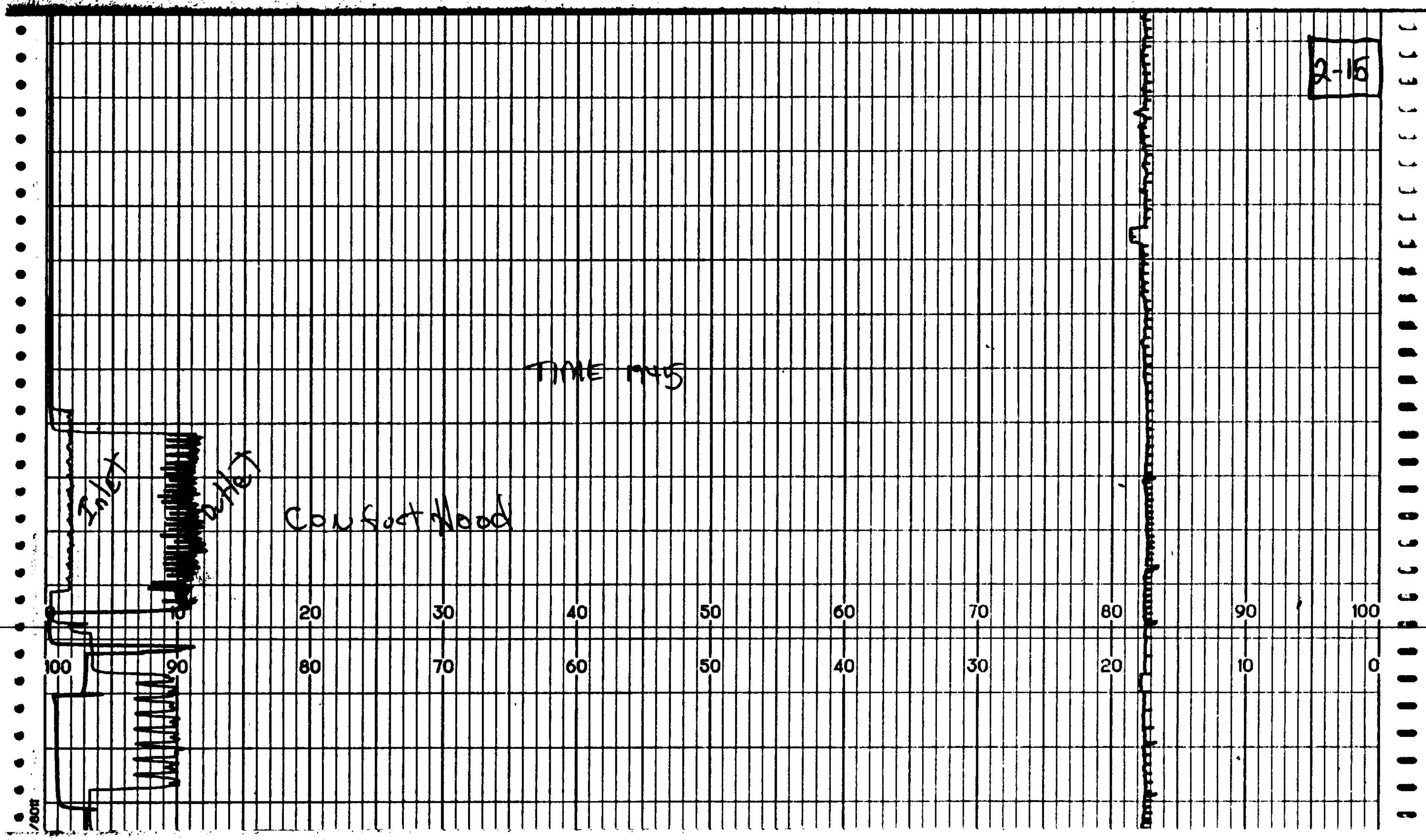

2-11
TIME 1341
1430

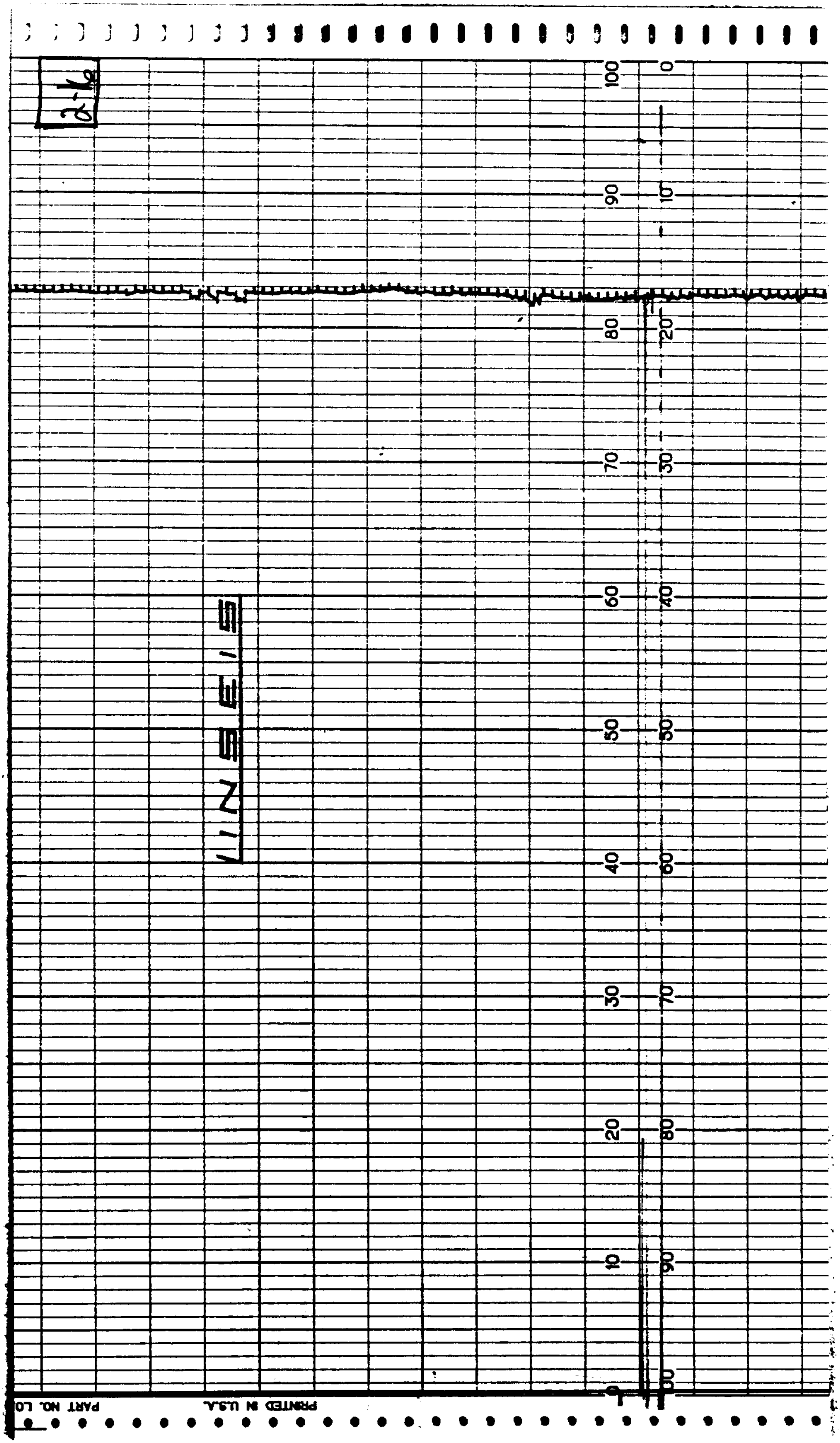

2-12
LINSEIS
80 ppm
BACK ON LINE
800 ppm TO GC 14:50
80 ppm
1445
~~1435~~ ON-LINE
PRINTED IN U.S.A.
PART NO. LO

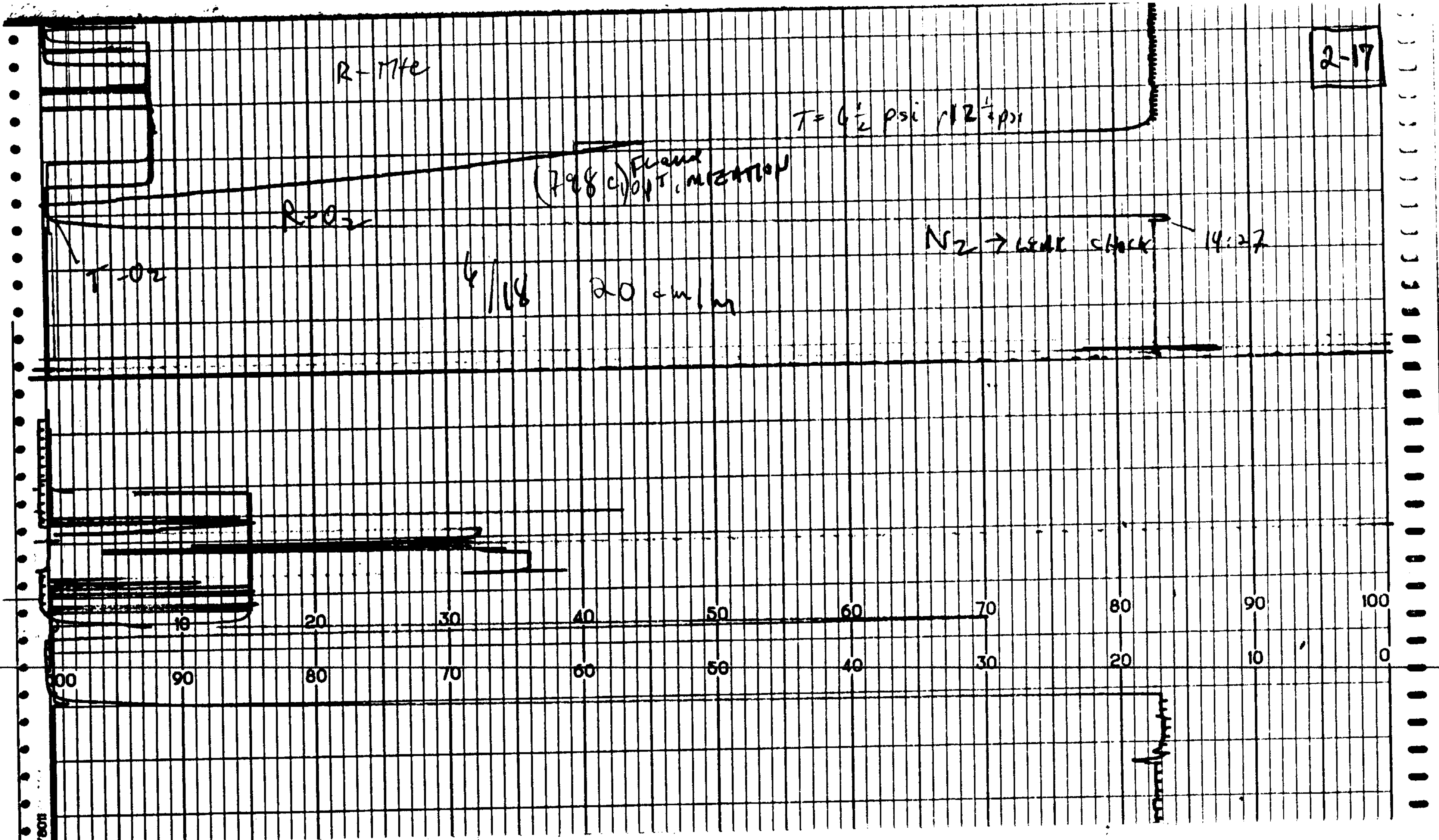


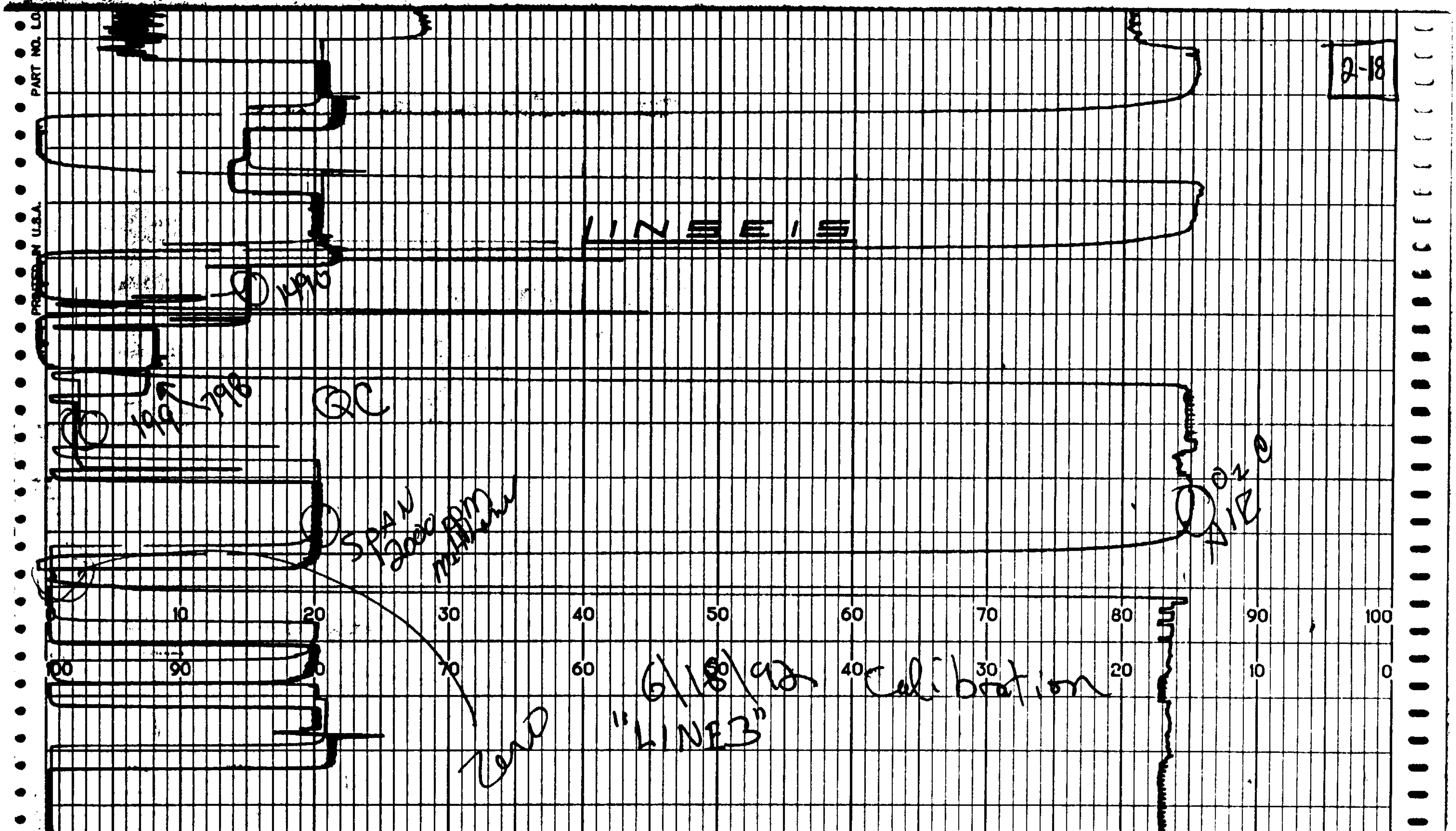
2-13
Start
Baseline
16:46
Comfort
Hood
Line 2
Zero ✓
QC ✓
16:15 END BUN RUN

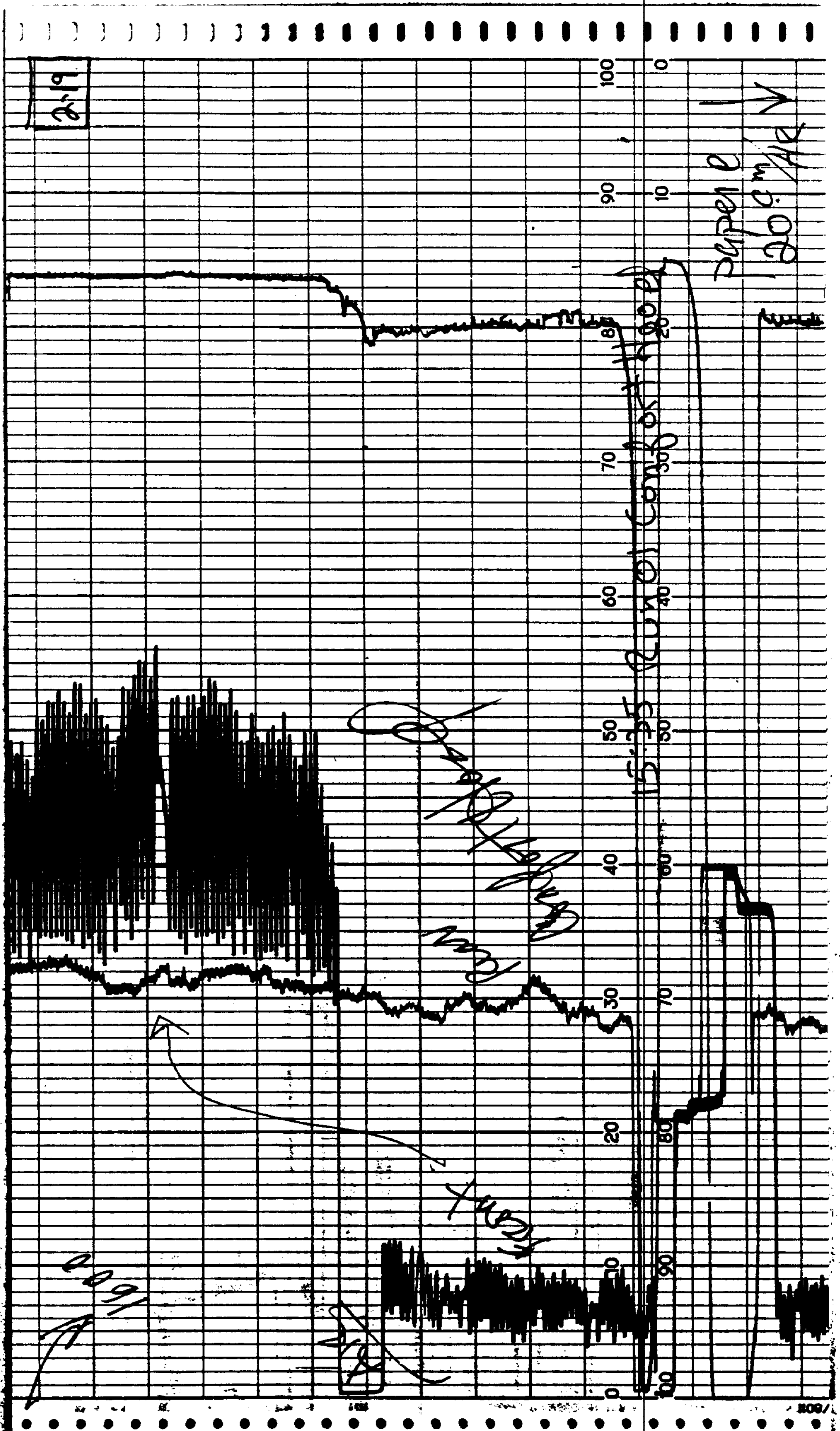

2-14
18:45 TIME
3980 ppm
LINSEIS
Ethanol 1490
200
199
198 ppm
.80
200
Start Pos at 060, C
12:45 END RUN
10 20 30 40 50 60 70 80 90 100
100 90 80 70 60 50 40 30 20 10 0
PRINTED IN U.S.A.
PART NO. LO

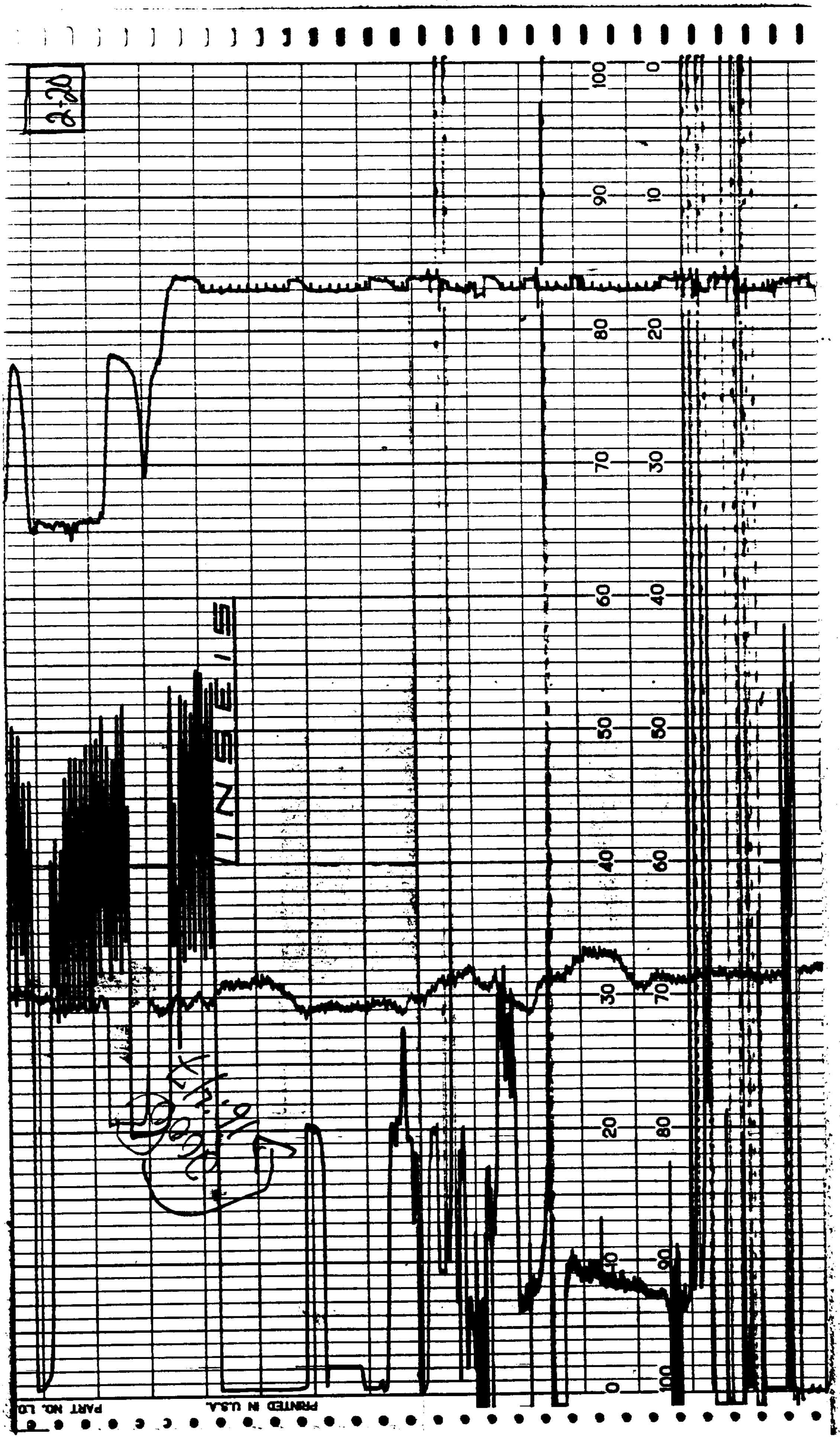

2-16
TIME 1445
Inlet
Outlet
Consort Hood
0
10
20
30
40
50
60
70
80
90
100

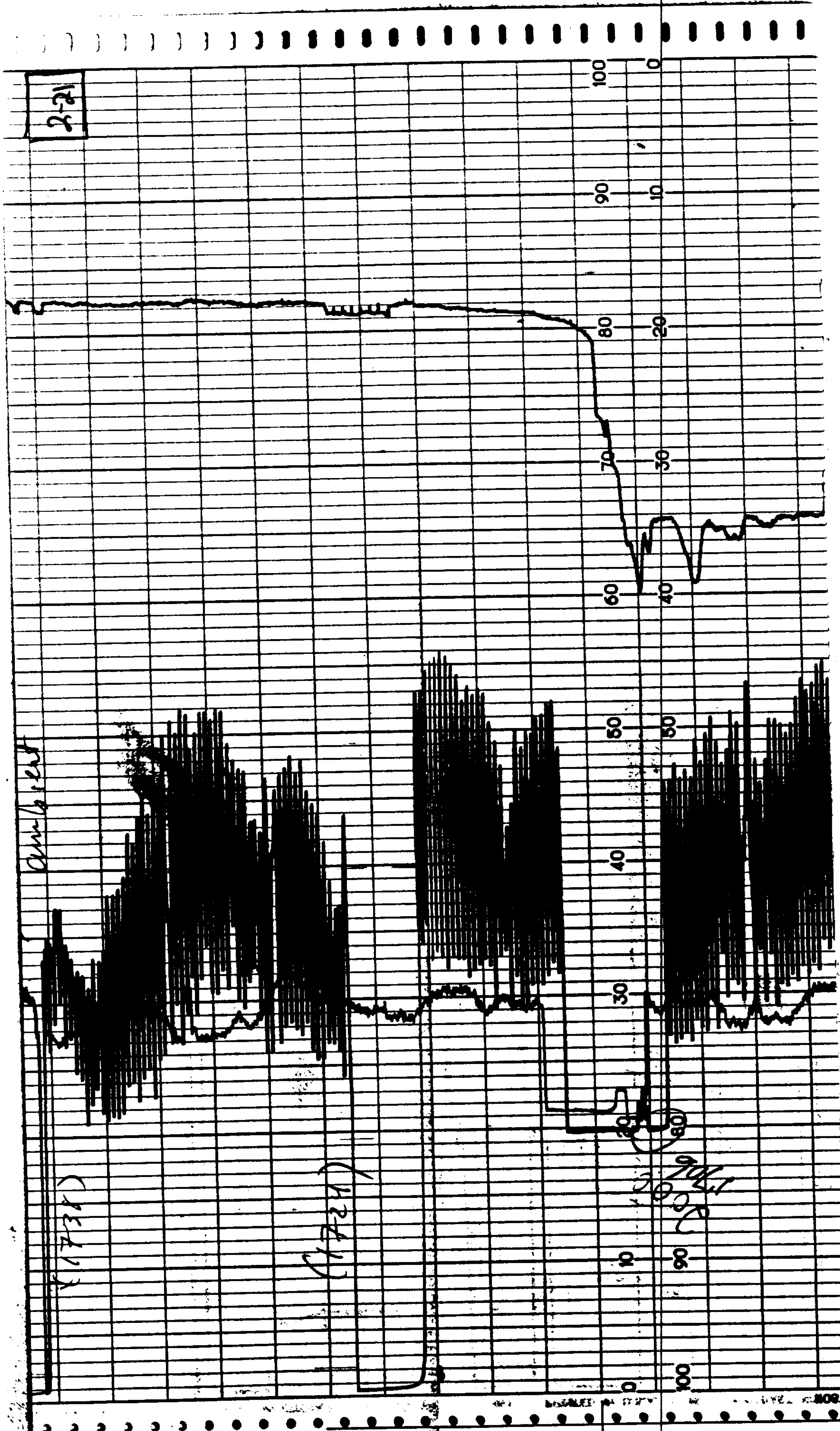

2-6
LINSEIS
PART NO. LO
PRINTED IN U.S.A.
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

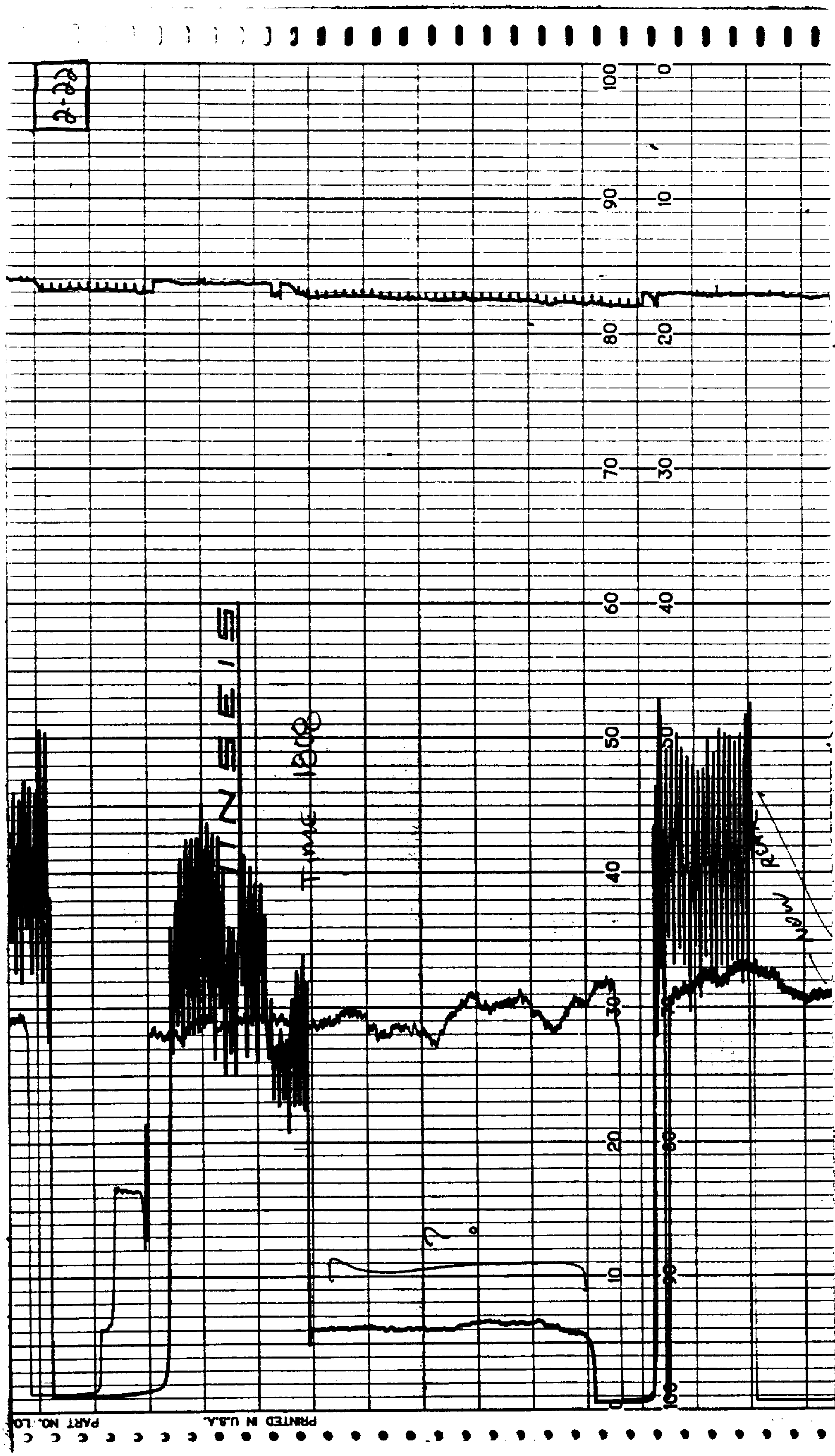

2-17
R-MHe
T = 6½ psi / 12½ psi
(798 c) Flame OPTIMIZATION
R→O2
T-O2
N2 → Leak check
14:27
4/18
20 cm/hr
10 20 30 40 50 60 70 80 90 100
100 90 80 70 60 50 40 30 20 10 0

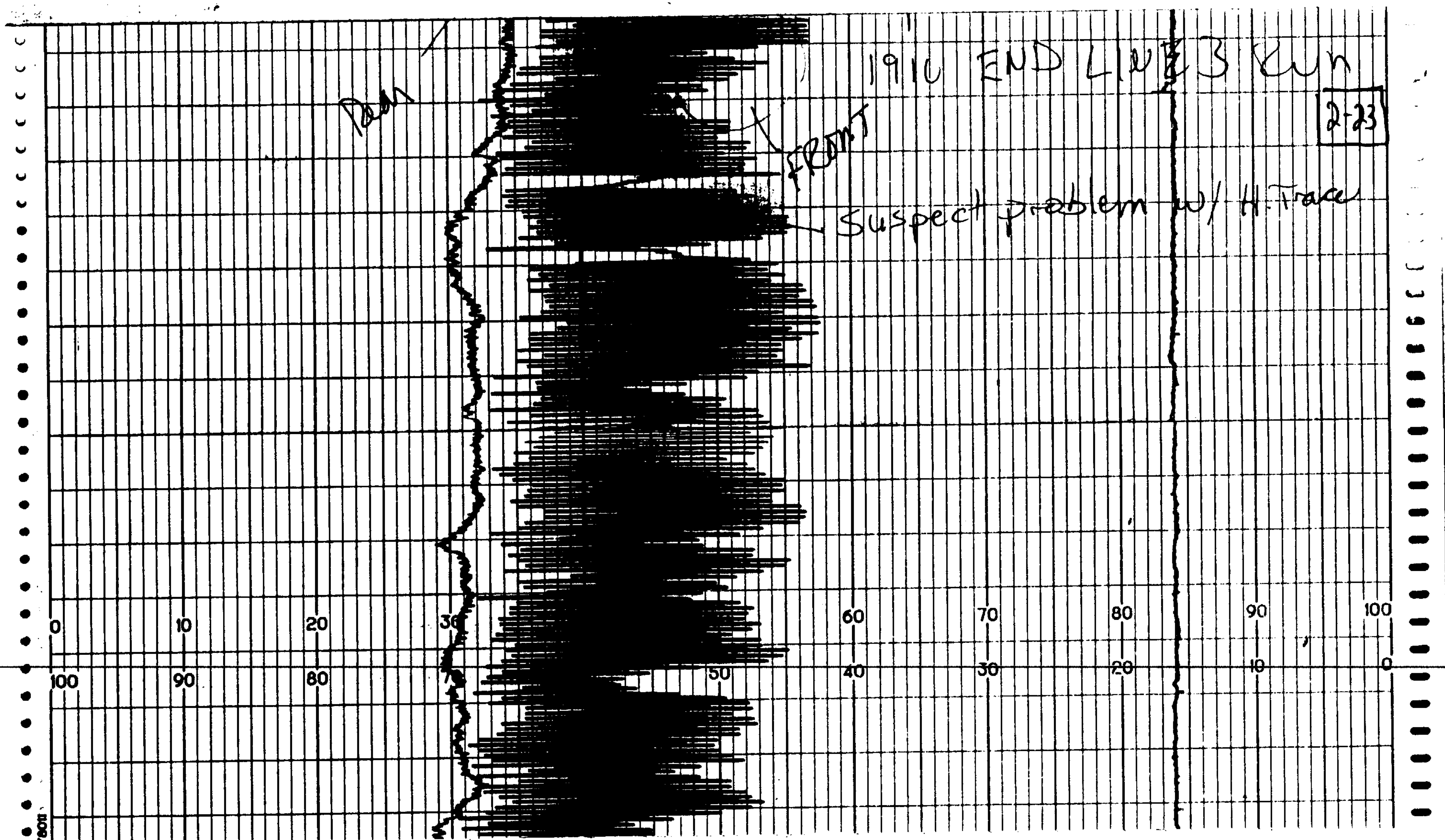

2-18
LINSEIS
PART NO. LO
PRINTED IN U.S.A.
1496
199
198
QC
SPAN
2000 PPM
Zero
6/18/92
"LINE 3"
Calibration

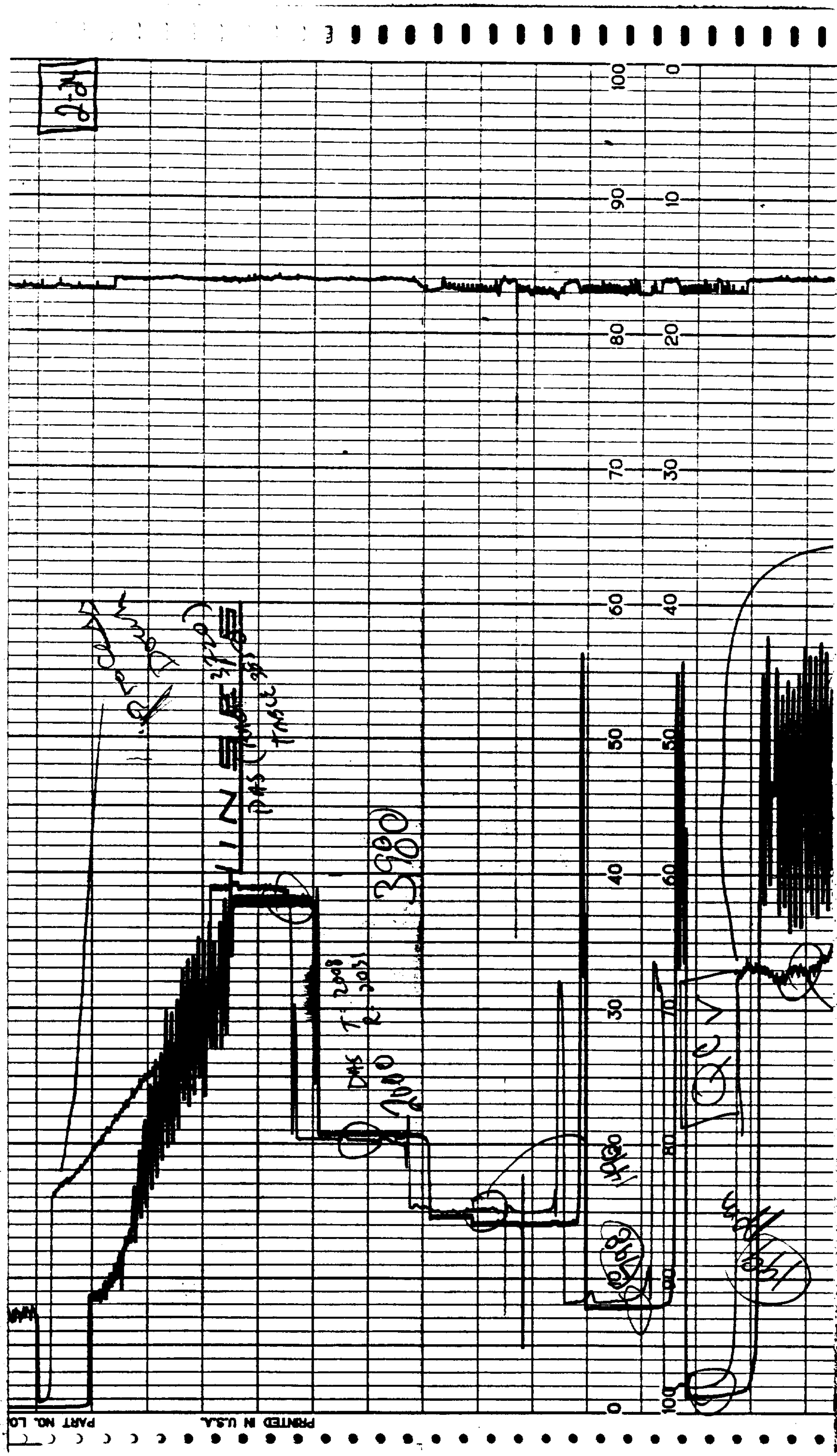

2:19
100
90
80
70
60
50
40
30
20
10
0
0
10
20
30
40
50
60
70
80
90
100
15:35


2:20
LINSEIS
PRINTED IN U.S.A.
PART NO. LD
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

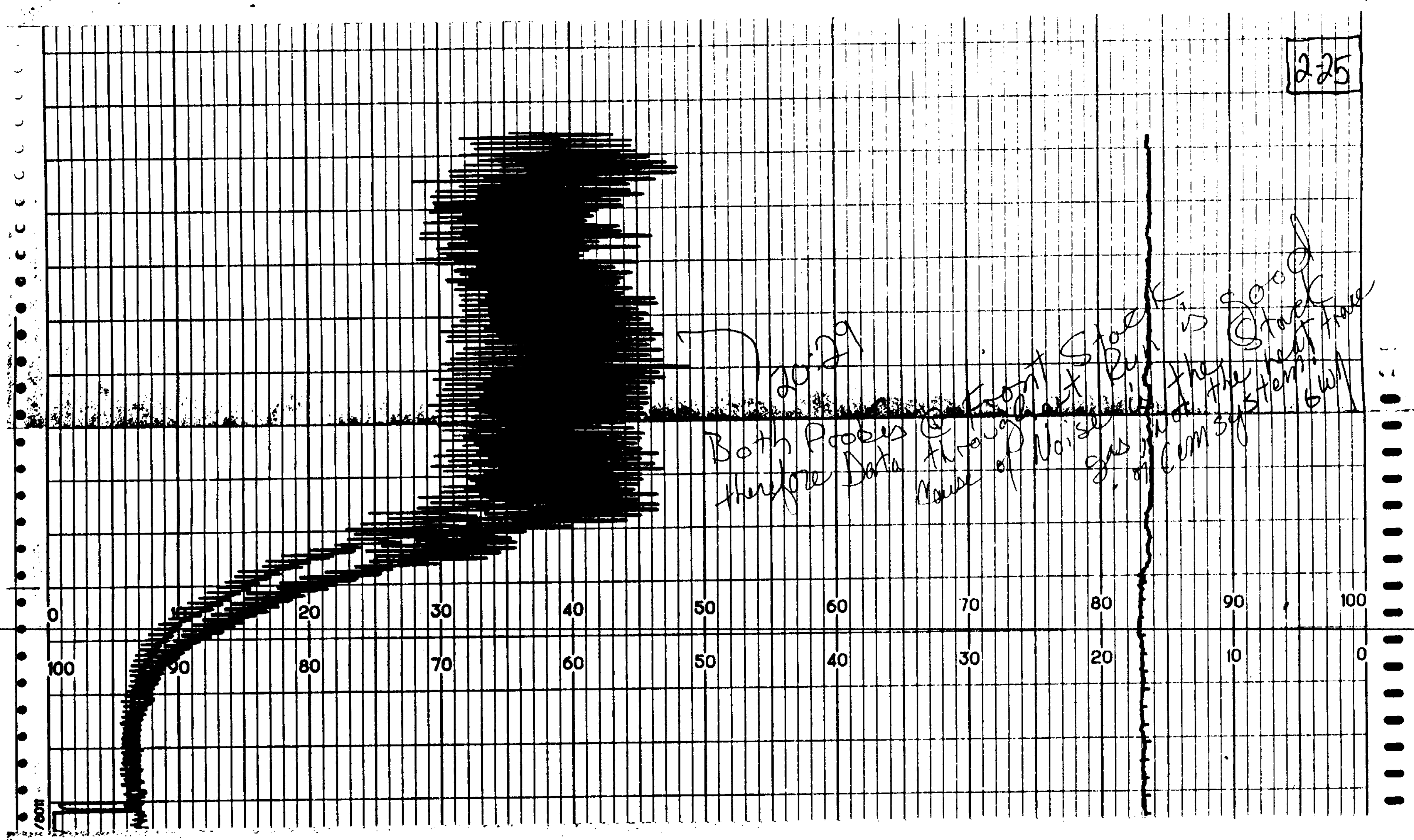

2-21
ambient
100
90
80
70
60
50
40
30
10
0


TIME 1808
PRINTED IN U.S.A.
PART NO.


1910 END LINE 3 Run
2-23
FRONT
Suspect problem w/ H-Trace
Dean
0
10
20
30
60
70
80
90
100
100
90
80
70
50
40
30
20
10
0
1109/



PART NO. LO
PRINTED IN U.S.A.
100
90
80
70
60
50
40
30
20
10
0


2-25
0
10
20
30
40
50
60
70
80
90
100
20.29
Both Probes @ Front Stack is good
therefore Data throughout Run is @ Stack
Cause of Noise not the heat trace
gas, or CEM system. GWJ