AP42 Section:	11.3
Reference:	11
Title:	Final Test Report For U. S. EPA Test Program Conducted At Pine Hall Brick Plant, Madison, NC, U. S. Environmental Protection Agency, Research Triangle Park, NC, August 1993.

FILE COPY

Date: November 13, 1992

Subject: Test Completion Notice: Pine Hall Brick Company
Madison, North Carolina
Review and Update of AP-42 Chapter 8, Mineral Products
EPA Contract 68-DO-0123; MRI Project 9712-63-53

From: Brian Shrager

To: Ron Myers
TSD/EIB/EFMS (MD-14)
U. S. Environmental Protection Agency
Research Triangle Park, N.C. 27711

I. Background

Source testing was conducted at Pine Hall Brick Company, Madison, North Carolina, from October 27 through November 7, 1992. The purpose of this testing program was to obtain data to characterize emissions from a typical sawdust-fired brick manufacturing plant. Specifically, the primary objectives of the test were to quantify emissions of particulate matter (PM), PM-10, metals, hydrogen fluoride, total hydrocarbons, volatile hazardous air pollutants (HAP's), semi-volatile HAP's, carbon monoxide (CO), and nitrogen oxides (NO_x) from the most significant sources associated with brick manufacturing. Emission factors will be calculated based on the emission data and the process rates recorded during the testing program.

II. Emission Testing

Figure 1 provides a process flow diagram with the sampling points identified. The screening and grinding operations are contained in the same building (Sampling Point D). The building (grinding room) has five wall mounted fans (two intake and three exhaust) and two bay doors that provide ventilation. All five fans typically operate during grinding room operation, but the exhaust from only two of the three exhaust fans was ducted for testing, so the third exhaust fan was not supposed to operate during testing. The third exhaust fan was operating for part of the first test run on October 27, 1992, but was shut off at 10:10 a.m. for the duration of the testing. The bay door at the front of the building was open during all of the tests, and it appeared that air was entering the building through this door. During Run 1, the bay door at the back of the building was halfway open until 9:45 a.m. when it was shut because of an irregular air flow pattern through the door. The plant personnel indicated that the door was typically halfway open, and it was reopened at 10:10 a.m.. After further discussion, the door was closed at 10:45 a.m. for the duration of the testing. The results from Run 1 could be biased low because of the operation of the third exhaust fan and the irregular air flow pattern at the back bay door. Filterable PM and PM-10 emissions were measured from the grinding room exhaust using Methods 5 and 201, respectively.

Bulk material samples were taken from storage piles of processed material (grinding room product) and will be analyzed for silt and moisture content.

The brick firing kiln exhaust from kiln Nos. 41 and 42 (Sampling Point E) and sawdust rotary dryer exhaust (Sampling Point F) were sampled for several pollutants, including total hydrocarbons (Method 25A), methane and ethane (Method 18), volatile HAP's (Method 0030--VOST), semi-volatile HAP's (Method 0010--modified Method 5), hydrogen fluoride (Method 26), total fluorides, metals and PM (Method 0012 modified for PM), PM-10 and condensible PM (Methods 201A and 202), particle sizing (Andersen impactor), CO (Method 10), CO_2 (Method 3A), and NO_x (Method 7E--instrument analysis). The exhaust from the kilns is used to dry the sawdust, which is used as fuel for the kilns. After passing through the sawdust dryer, the exhaust gases enter the sawdust recovery cyclones. Sampling of the sawdust dryer emissions was conducted at the outlets of the sawdust recovery cyclones. Sampling ports were installed on both the kiln and sawdust dryer exhaust ducts. Three runs of each sampling train were conducted on both the kiln and the sawdust dryer. For each particular type of pollutant or sampling train, sampling of kiln emissions and sawdust dryer emissions was conducted simultaneously. Samples of dried sawdust were collected daily for moisture content analysis.

During the second week of testing, PM and PM-10 emissions from the primary crusher were measured using two ambient air samplers. The crusher is located in a small building that is open at the front for front-end loader access, and is open at the back where the material leaves the crusher via conveyor. To prepare the building for testing, the opening at the back of the building was covered with plastic to reduce the flow of air through the building. This was the only practical modification that could be made to enclose the building. The samplers operated for eight hours each day, with the crusher operating as needed. The air flow through the building was monitored with an anemometer that was placed at the back of the building.

Throughout the two week testing period, ambient air samplers were used to sample background PM and PM-10. Two samplers were placed at opposite ends of the plant and were run for eight hours each day. One of the samplers was located close to railroad tracks, and trains passed by two to three times daily. However, the trains moved relatively slowly and did not appear to be a significant source of emissions.

III. <u>Process Operations During Testing</u>

The first set of tests was conducted by Emission Measurement Branch (EMB) personnel at the grinding room, which housed the screening and grinding operations that followed the primary crusher. During testing, the process rate was estimated by collecting and weighing a sample of the processed material leaving the building over a measured time interval. This was accomplished by using a front-end loader to catch 30 seconds of discharge from the conveyor that carried the processed material to a storage building. The calculated process rates are shown in Table 1. The grinding room operations were observed five times daily. During each observation, plant personnel indicated that the process was operating normally.

The second set of tests was conducted by EMB personnel at the outlet of the brick kilns (inlet of the sawdust dryer) and at the outlets of the cyclones following the sawdust dryer. During these tests, emissions from one of the two outlet ducts were sampled, while a velocity traverse was performed on the other outlet duct. This method of testing is based on the assumption that the pollutant concentrations in the two outlet ducts are equal. The process rates for these runs were calculated from data that were supplied by the plant, and are shown in Table 2. Operating temperatures for the kilns and sawdust dryer were also provided by the plant. Daily kiln temperature ranges and averages are shown in Table 3, and daily sawdust dryer temperature ranges and averages are shown in Table 4. The kilns and sawdust dryer typically operate 24 hours per day and no shutdowns or upsets were reported during the testing.

The third set of tests was conducted by ETS, Inc. (ETS) personnel at the outlet of the brick kilns (inlet of the sawdust dryer) and at the outlets of the cyclones following the sawdust dryer. The process rates for these runs were calculated from data that were supplied by the plant, and are shown in Table 2. An average sawdust firing rate (provided by the plant) is shown in Table 3. This average rate was obtained from historical information. It was not possible to measure the sawdust feed or firing rate because sawdust is fed intermittently to the kilns through an enclosed screw auger. Operating temperatures for the kilns and sawdust dryer were also provided by the plant. Daily kiln temperature ranges and averages are shown in Table 4, and daily sawdust dryer temperature ranges and averages are shown in Table 5. The kilns and sawdust dryer typically operate 24 hours per day and no shutdowns or upsets were reported during the testing.

During the testing program, the plant had problems with the baghouse that follows the sawdust recovery cyclones. One of the fans had to be replaced, and the baghouse was not fully operational during the testing program. However, no emission tests were planned at the baghouse outlet, and the baghouse malfunction did not affect the process or the emissions being tested.

During the test runs on the primary crusher, the process rates were calculated by counting the number of front-end loader dumps into the crusher over a known time interval. Also, the plant provided historical data that gave an average daily process rate for the primary crusher. The process rates for the primary crusher are shown in Table 6. The best estimate of the primary crusher process rate is the average of the five process rates shown in Table 6, which agrees closely with the historical data provided by the plant.

IV. Conclusions

All processes that were tested operated normally during the test runs. Therefore, the data obtained should be representative of a typical sawdust-fired brick manufacturing plant.

TABLE 1. RAW MATERIAL PROCESSING RATES (GRINDING ROOM)

Test date	Time	Material processed Mg/hr (tons/hr)
10-27-92	11:30 am	178 (196)
10-27-92	1:30 pm	200 (220)
10-28-92	9:30 am	202 (223)
10-28-92	1:00 pm	191 (211)

TABLE 2. BRICK PRODUCTION RATES (KILNS)

Test date	Kiln #41 production rate, Mg/hr (tons/hr)	Kiln #42 production rate, Mg/hr (tons/hr)	Total production rate, Mg/hr (tons/hr)
10-29-92	6.80 (7.50)	9.16 (10.1)	16.0 (17.6)
10-30-92	6.80 (7.50)	9.16 (10.1)	16.0 (17.6)
11-02-92	6.46 (7.12)	9.16 (10.1)	15.6 (17.2)
11-03-92	6.55 (7.22)	9.16 (10.1)	15.7 (17.3)
11-04-92	6.71 (7.40)	8.90 (9.81)	15.6 (17.2)
11-05-92	6.80 (7.50)	8.40 (9.26)	15.2 (16.8)
11-06-92	6.80 (7.50)	8.32 (9.17)	15.2 (16.7)
11-07-92	6.80 (7.50)	8.32 (9.17)	15.2 (16.7)

TABLE 3. AVERAGE SAWDUST CONSUMPTION RATE[a]

Test date	Kiln #41 sawdust consumption, Mg/hr (tons/hr)	Kiln #42 sawdust consumption, Mg/hr (tons/hr)	Total sawdust consumption, Mg/hr (tons/hr)
10-29-92	0.15 (0.17)	0.21 (0.23)	0.36 (0.40)
10-30-92	0.15 (0.17)	0.21 (0.23)	0.36 (0.40)
11-02-92	0.15 (0.16)	0.21 (0.23)	0.36 (0.39)
11-03-92	0.15 (0.16)	0.21 (0.23)	0.36 (0.39)
11-04-92	0.15 (0.17)	0.20 (0.22)	0.35 (0.39)
11-05-92	0.15 (0.17)	0.19 (0.21)	0.34 (0.38)
11-06-92	0.15 (0.17)	0.18 (0.20)	0.33 (0.37)
11-07-92	0.15 (0.17)	0.18 (0.20)	0.33 (0.37)

[a]Based on historical plant data: 0.048 tons of dried sawdust per 1,000 bricks produced. Assumes an average of 4.3 lb per brick.

TABLE 4. KILN TEMPERATURES--DAILY RANGES AND AVERAGES

Test date	Kiln #41 range, °C (°F)	Kiln #41 average, °C (°F)	Kiln #42 range, °C (°F)	Kiln #42 average, °C (°F)
10-29-92	1071-1076 (1960-1969)	1073 (1964)	1077-1082 (1971-1979)	1079 (1975)
10-30-92	1072-1075 (1961-1967)	1074 (1965)	1078-1081 (1973-1978)	1079 (1975)
11-02-92	1067-1079 (1952-1975)	1074 (1965)	1078-1081 (1973-1977)	1079 (1975)
11-03-92	1064-1077 (1948-1971)	1074 (1966)	1074-1081 (1965-1977)	1079 (1974)
11-04-92	1057-1077 (1935-1970)	1070 (1958)	1069-1080 (1956-1976)	1078 (1973)
11-05-92	1053-1074 (1927-1965)	1060 (1940)	1076-1081 (1968-1977)	1079 (1974)
11-06-92	1076-1079 (1968-1975)	1078 (1972)	1078-1081 (1973-1977)	1079 (1975)
11-07-92	1076-1079 (1968-1975)	1077 (1970)	1056-1083 (1932-1981)	1073 (1964)

TABLE 5. SAWDUST DRYER EXHAUST TEMPERATURE DAILY RANGES AND AVERAGES

Test date	Range, °C (°F)	Average, °C (°F)
10-29-92	87.7-91.1 (190-196)	90.0 (194)
10-30-92	92.8-99.4 (199-211)	95.0 (203)
11-02-92	92.8-103 (199-217)	96.7 (206)
11-03-92	91.7-97.2 (197-207)	95.6 (204)
11-04-92	90.0-100 (194-212)	95.0 (203)
11-05-92	87.7-98.3 (190-209)	94.4 (202)
11-06-92	87.7-97.2 (190-207)	93.3 (200)
11-07-92	93.9-97.2 (201-207)	95.6 (204)

TABLE 6. PRIMARY CRUSHING PROCESS RATES[a]

Test date	Time	Process rate, Mg/hr (tons/hr)
11-2-92	1:40-2:10 pm	182 (201)
11-3-92	9:18-9:48 am	214 (236)
11-3-92	12:54-1:24 pm	171 (189)
11-4-92	7:30-8:00 am	257 (283)
11-4-92	12:20-12:50 pm	192 (212)
Average	-----	205 (226)

[a]A study conducted by the plant reported an average of 38 dumps per hour and an approximate dump weight of 5.4 Mg (5.9 tons). This yields an average process rate of 203 Mg/hr (224 tons/hr).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

DRAFT

Mr. John Dowdle
Vice President of Production
Pine Hall Brick Company
Box 836 Lindsey Bridge Road
Madison, North Carolina 27025

MAR 19 1993

Dear Mr. Dowdle:

Enclosed is a draft of the test completion notice for the U. S. Environmental Protection Agency (EPA)-sponsored emission test conducted at the Pine Hall Brick (Pine Hall) facility in Madison, North Carolina, from October 27, 1992 to November 7, 1992. The test completion notice contains process rates that were recorded during testing, as well as a process description for the Pine Hall facility. We would appreciate your reviewing the notice for any errors or omissions. Since this report will eventually become a part of the public record, we want to portray your operation as accurately as possible. You may return the enclosed copy of the notice with your written comments if you wish. A copy of the final version of the test completion notice incorporating your comments will be sent to you for your records. The nonconfidential portions of this notice will be inserted into the final test report for the Pine Hall emission test.

The custody receipt for the test completion notice is also enclosed. Please sign and date the form to acknowledge receipt of the notice and return a copy of the form to the Document Control Officer, Emissions Standards Division (MD-33), Research Triangle Park, N.C. 27711.

If you believe that disclosure of any specific information contained in the test completion notice would reveal trade secrets or other confidential information, you should clearly identify the specific information. If EPA determines that there is a need to disclose such information, we will need, at that time, the following to support your claim:

1. Measures taken by Pine Hall to guard against undesired disclosure of the specific information to others;

2. The extent to which the specific information has been disclosed to others and the precautions taken in connection therewith;

3. Pertinent confidentiality determinations, if any, by other Federal agencies (furnish a copy of such determination, or reference to it, if available); and

4. Whether Pine Hall asserts that disclosure of the specific information would be likely to result in substantial harmful effects on Pine Hall's competitive position, and if so, what those harmful effects would be, why they should be viewed as substantial, and an explanation of the causal relationship between disclosure and such harmful effects.

Any specific information subsequently determined to constitute a trade secret will be protected under 18 U.S.C. 1905. However, all emission data will be available to the public.

We respectfully request that you submit your review comments on the test completion notice by April 16, 1993. If you concur with the information contained in the notice, we would appreciate a letter to that effect. In addition, please indicate in your letter or use the attached form to indicate whether the notice is considered nonconfidential, partially confidential, or fully confidential. If we do not receive a response by April 16, 1993, the notice will be considered nonconfidential and accurate.

Again, we appreciate the cordial reception and information provided by Pine Hall. The information you supplied will be most helpful to us. If you have any questions, please call Mr. Ron Myers at (919) 541-5407 or Mr. Richard Marinshaw of MRI at (919) 677-0249.

Sincerely,

David Mobley, Chief
Emission Inventory Branch
Technical Support Division

Enclosure

OAQPS/TSD/EIB:RMyers, rm 455B, 4201 Bldg., 541-5407, MD-14
(MRI/RMarinshaw/LKaufman/677-0249/03/19/93)

AP-42 Section 11.3
Reference 11

FINAL TEST REPORT

MAIN REPORT

FOR

USEPA TEST PROGRAM

CONDUCTED AT

PINE HALL BRICK PLANT
MADISON, NORTH CAROLINA

USEPA CONTRACT NO. 68-D2-0029

EMB WORK ASSIGNMENT 6

AUGUST 1993

ETS CONTRACT NO. 92-655

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1.0 INTRODUCTION

1.1 Summary of Test Program

The U.S. Environmental Protection Agency (EPA), Office of Air Quality Planning and Standards (OAQPS), Emission Inventory Branch (EIB) is responsible for developing and maintaining air pollution emission factors for industrial processes. EIB, in collaboration with the Brick Association of North Carolina, is currently studying the brick manufacturing industry. The purpose of this study is to develop emission factors for the crushing, grinding operations for brick manufacturing facilities and to develop emission factors for the kiln and sawdust dryer operations for brick manufacturing facilities using sawdust to fire the kilns. The Emission Measurement Branch (EMB) of OAQPS coordinated the emission measurement activities at this plant. ETS Incorporated (ETS Inc.) and EMB personnel conducted ambient and source measurements. MRI personnel collected samples of the process materials and collected process data during testing.

EPA/EIB and the Brick Association of North Carolina considered the Pine Hall Brick Plant in Madison, North Carolina to be one of the three facilities representing an advantageous test site. Three areas of the manufacturing facility were tested: (1) the crushing, grinding, and screening operations; (2) the kiln; and (3) the sawdust dryer. The primary reasons for selecting Pine Hall were: (1) the facility was identified by the North Carolina Brick Association as being representative of sawdust-fired brick manufacturing plants; and (2) the grinding, sawdust drying and brick firing (kiln) operations were configured in such a way that facilitated emission testing. A facility site plan showing the layout of the operation and the sampling locations is shown in Figure 1.1-1.

Air sampling at the crushing and grinding operations was performed for particulate matter (PM) and particulate matter less than or equal to ten microns (PM_{10}) from October 27 through November 6, 1992. In addition, background ambient air sampling for PM and PM_{10} was conducted at "upwind" and "downwind" plant boundary locations from October 27, 1992 through November 6, 1992. Background ambient PM and PM_{10} monitoring at the grinding building air intake was also performed during the grinding building exhaust sampling conducted by EMB from October 26 through October 28, 1992. Process materials were sampled at the screening and grinding operations. Sieve and moisture analyses were performed on these samples.

Source sampling at the kiln and sawdust dryer was performed for PM, PM_{10}, condensible particulate matter (CPM), particle sizing, multiple metals, total fluorides, hydrogen fluoride, carbon monoxide, nitrogen oxides, total hydrocarbons, methane, ethane, volatile organic compounds (VOC), and semivolatile organic compounds (SVOC). The sampling was conducted from October 27 through November 7, 1992. Table 1.1-1 identifies the metals targeted for measurement and tables 1.1-2 and 1.1-3 show the VOC and SVOC compounds targeted for measurement in this test program.

1.2 Key Personnel

The key personnel who coordinated the test program and their phone numbers are:

-ETS Inc. Project Manager, Mike Visneski	703/265-0004
-EIB Technical Coordinator, Ron Myers	919/541-5407
-EMB Field Test Coordinator, John Brown	919/541-0200
-Pine Hall Brick Contact, H. John Dowdle, Jr.	919/548-6007
-Brick Association of N.C., Peter P. Cieslak	800/622-7425
-MRI Process Monitor, Brian Shrager	919/677-0249

2.0 PROCESS DESCRIPTION AND SAMPLING LOCATIONS

At Pine Hall Brick, emissions from the kiln, sawdust dryer, and the crushing, grinding, and screening operations were studied. The kiln outlet at Pine Hall Brick is also the sawdust dryer inlet.

2.1 Crushing, Grinding, and Screening Operation

A simplified process schematic for the crushing, grinding, and screening operations is given in Figure 2.1-1. This figure also shows the locations for the emissions testing.

The raw material is kept in a covered storage pile. From this pile the process material is loaded into the primary crusher. In the primary crusher the large pieces of material are broken apart. From the primary crusher the material is transported into the grinding building, where it is first ground and then screened. From the screening operations the undersized material is transported into the storage building. The material is kept in the storage building until it is loaded into the brick making operations.

Particulate emissions from the primary crusher and the grinding building were measured. The roof vents of the grinding building and the conveyor outlet side of the crusher building were sealed during sampling. The emission test points consisted of the exhaust air ducts for the grinding building and ambient PM and PM_{10} samplers suspended from the roof joist of the crusher building. Ambient PM and PM_{10} samplers were also positioned on scaffolding located at the air intake of the grinding building. Background ambient PM and PM_{10} monitoring was also performed at "upwind" and "downwind" plant fenceline locations. Process material was sampled at the grinding building for sieve and moisture analyses.

2.2 Sawdust Dryer Operation

A simplified process schematic for the sawdust dryer operations is given in Figure 2.2-1. This figure also shows the locations for the emissions testing.

The exhaust gases from two kilns are combined into a single inlet to the sawdust dryer. The kiln exhaust gases and the green sawdust enter the dryer together. At the opposite end of the dryer, the dried sawdust is removed and the gas stream is split into two parallel paths. Each path consists of a cyclone and induced draft (ID) fan. Following the ID fans, the two gas streams are independently introduced into a single baghouse. The gases are then exhausted into the atmosphere from the top of the baghouse.

The dried sawdust is collected from the end of the dryer, each cyclone, and the baghouse and fed onto a common conveyor which transports the sawdust to the dry storage silo.

The emissions testing for the sawdust drying operations was performed at three locations simultaneously. These locations were the dryer inlet (which is also the kiln outlet) and both cyclone outlets. A baghouse is not considered typical of sawdust drying operations at brick manufacturing facilities and therefore was not tested.

2.3 Flue Gas, Process and Background Sampling Locations

Background and emissions sampling was conducted at: (1) the plant boundary line; (2) the primary crusher; (3) the grinding building; (4) the kiln outlet/sawdust dryer inlet; and (5) the cyclone outlets. Process sampling was conducted at the grinding building and the sawdust dryer.

2.3.1 Plant Boundary Line: Ambient air sampling for PM and PM_{10} was conducted at two locations along the plant boundary: the west boundary line ("upwind") and the east boundary line ("downwind").

2.3.2 Primary Crusher: Emissions from the primary crusher building were sampled using ambient Hi-Vol samplers for PM and PM_{10}. The ambient samplers were suspended from the roof of the building for the test series. The openings at base of the crusher building (except for a doorway required to be kept open) were sealed with plastic during sampling.

2.3.3 Grinding Building: Ambient air sampling for background PM and background PM_{10} was conducted at one location outside the grinding building. The ambient samplers were placed on elevated platforms located between the two air inlet fans outside the grinding building. The two outlet exhaust fans were fitted with temporary ductwork with ports for sampling. Figure 2.3.3-1 shows the detailed schematic of the traverse and sampling locations for the grinder building outlet ducts.

2.3.4 Kiln Outlet/Sawdust Dryer Inlet: Figure 2.3.4-1 is a schematic of the sampling location for the kiln outlet/sawdust dryer inlet. Two 6 inch diameter test ports were installed for all wet methods. A 3 inch diameter port was installed for single-point sampling for the instrumental analyzer methods. The 6 inch ports are located less than two stack diameters upstream from a disturbance, but this was selected as the only practical location for isokinetic sampling. Method 1 requires 24 traverse and sampling points for volumetric flow measurements and particulate sampling. Figure 2.3.4-2 is a detailed schematic of the traverse and sampling locations.

2.3.5 Cyclone Outlets: Figure 2.3.5-1 is a schematic of the sampling locations for the cyclone outlets. The two cyclone outlets are identical. Two 6 inch diameter test ports were installed for all wet method sampling. A 3 inch diameter port was installed for single-point sampling for the instrument analyzer methods. Method 1 requires 24 traverse and sampling points for volumetric flow measurements and particulate sampling. Figure 2.3.5-2 is a detailed schematic of the traverse and sampling locations.

3.0 SUMMARY AND DISCUSSION OF TEST RESULTS

3.1 Objectives and Test Matrix

The purpose of the test program was to develop emission factors for the brick manufacturing industry.

The specific objectives of the test program for Pine Hall Brick were:

(1) Measure the following emissions for the crushing, grinding, and screening operation:

- Particulate Matter
- PM_{10}

(2) Measure the following emissions for the kiln and sawdust dryer operations:

- Particulate Matter

- PM_{10}
- Condensible Particulate Matter
- Multiple Metals
- Hydrogen Fluoride
- Total Fluorides
- Carbon Monoxide
- Nitrogen Oxides
- Total Hydrocarbons
- Methane
- Ethane
- Volatile Organics
- Semivolatile Organics

3.2 Test Matrix

Table 3.2-1 presents the sampling and analytical matrix for measuring emissions from the crushing, grinding, and screening operations. Table 3.2-2 presents the sampling and analytical matrix for emissions measurements performed by ETS, Inc. on the kiln and the sawdust dryer. Table 3.2-3 presents the sampling and analytical matrix for emissions measurements performed by EMB on the grinding building and the sawdust dryer.

3.3 Field Test Changes and Problems

3.3.1 Ambient Samplers: Three of the 54 ambient sampling runs were voided. Two of the east end boundary runs were voided due to flow controller failures. One run at the primary crusher was voided due to a filter not properly seated in the sampler. All sampling data associated with the voided sampler was also voided and the complete sampling set was repeated in order to obtain comparable data.

3.3.2 Sawdust Dryer Sampling

3.3.2.1 Percent Isokinetics: The first Method 13 runs at the sawdust dryer were under isokinetic due to air flow control problems resulting from blockage in the baghouse on the exit side of the induced draft fans. The results of these tests were included since any bias would be positive giving a worst case emission rate.

- I-M13-R1, Total Fluorides: 89.9%

- OA-M13-R1, Total Fluorides: 75.3%

One of the particle sizing runs at the sawdust dryer inlet exceeded the percent isokinetic requirement of ± 10 percent as a result of a source flowrate change during the test.

- IN-IMP-R1, Andersen Impactor for Particle Sizing: 68.5%

3.3.2.2 Continuous Emissions Monitoring Calibration Drift : The Calibration drift for the NO_x Monitor at Outlet A exceeded the limit of 3.00% as stated in 40 CFR 60 Appendix A Method 7E.

- OA-MM-R3, Multiple Metals run, NO_x calibration drift was 5.21% at the zero span.

- OA-M0010-R1, Semi-VOST and VOST run, NO_x calibration drift was 3.32% at the zero span.

- OA-M0010-R3, Semi-VOST and VOST run, NO_x calibration drift was -3.16% at the high span.

3.3.2.3 Analytical Changes and Problems: The analysis of the Tenax/Tenax Charcoal VOST tubes for the OB-M0030-R1B sample and the IN-M0030-R1D sample were voided due to a computer malfunction during analysis.

In the analysis of the volatile and semivolatile samples, several of the detected compounds were either below the method quantitation limit or above the calibration range. The values for these compounds were estimated and the results are footnoted and included in the B.6 and B.7 appendices.

The impinger fractions for Runs OB-M23-R1 and OB-M23-R2 were mislabeled during the analysis of the semi-VOST samples. The data for these samples is considered suspect although the two fractions were analyzed separately and found to be similar. The laboratory data for the analysis of semivolatile compounds is contained in Appendix G.6.

The initial analysis of the filter blank for the total fluorides was contaminated giving an inordinately high value. Subsequent analysis of other blank filters from the same batch used for field sampling showed nondetectable levels.

3.3.2.4 Miscellaneous Changes and Problems: Due to difficulties encountered in performing a port change at the sawdust dryer inlet, the EMB test coordinator determined it would be adequate to traverse the same port twice during the last three runs for SVOC. The final run for VOC and SVOC was interrupted for approximately 30 minutes to repair an electrical problem with the Outlet B meterbox. These changes are not expected to affect the results.

3.4 Presentation of Results

3.4.1 Crushing, Grinding and Screening Operation Sampling

3.4.1.1 Ambient Sampling: Ambient particulate sampling was conducted in order to determine background particulate concentrations at the plant boundaries and at the air intake to the grinding building. To determine particulate emission rates from the grinding building, the ambient particulate concentrations at the air intake vents are important. Ambient PM and PM_{10} measurements were made at the grinding building air intake location coinciding with EMB exhaust duct testing for particulates. Table 3.4.1-1 shows the average concentration for the ambient PM and PM_{10} at the specified locations. The field and laboratory data for the ambient monitoring is contained in Appendix B.12.

The following observations are made:

1) The ambient particulate concentrations at the grinding building are approximately two times greater than the ambient concentrations at the plant boundaries.

2) The ambient PM_{10} at the grinding building was approximately 57% of the total PM concentration.

3) The fenceline particulate concentrations varied considerably from day to day. There was reasonable correlation between the "upwind" and "downwind" stations. The average "downwind" PM was 61.5 ug/m^3. The average "upwind" PM was 45.6 ug/m^3. The average "downwind" PM_{10} was 26.0 ug/m^3. The average "upwind" PM_{10} concentration was slightly higher at 30.9 ug/m^3.

Ambient particulate monitoring was also performed at the crusher building in order to determine emissions of PM and PM_{10} resulting from the crushing operation. The monitors were suspended from the roof joist of the crusher building and operated during the day during the normal hours while the crusher was operating. The average PM concentration was determined to be 1357 ug/m^3 and the average PM_{10} concentration was 585 ug/m^3. These are averages of two consecutive days of sampling.

3.4.1.2 Particulate and PM_{10} Sampling: Sampling for total filterable particulate and 10 micron or smaller particulate was conducted simultaneously at two outlet ducts using Method 201. The total particulate emissions averaged 0.01102 gr/dscf with a range of 0.00736 to 0.01584 gr/dscf. The PM_{10} emissions averaged 0.001022 gr/dscf and ranged from 0.00072 to 0.00185 gr/dscf. The ducts for this testing were custom made to use existing exhaust ventilation wall fans on the upper north wall for air flow. The flowrate for duct #1 and duct #2 averaged 25,005 and 29,277 dscfm, respectively. The untested ventilation fans were turned off and the building ridge vent was sealed during the tests to achieve optimum capture of the particulate matter inside the building. Detailed summaries for each Method 201 test run conducted on the grinding room exhaust ducts are contained in Tables 3.4.1-2 and 3.4.1-3.

3.4.1.3 Process Sampling: Process samples of the raw clay material from conveyor at the exit of the grinding room building were collected for sieve and moisture analyses. The data for the sieve and moisture analyses is contained in Appendix B.11. The sieve analysis was consistent for three of four samples collected. The fourth sample showed a greater amount of larger (> 20 mesh) particles. The average of the three consistent samples was 27.5% compared to 42.5% for the apparent outlier. The mid-range (< 20 > 200 mesh) average for the three consistent samples was 66.5% compared to 52.0% for the apparent outlier. All four samples had comparable composition of fine particles (< 200 mesh). The average of the four samples was 4.5%. Moisture analyses for the four samples ranged from 13.0% to 14.2%.

3.4.2 Sawdust Dryer Sampling: The sawdust dryer was sampled at the inlet and two outlets simultaneously. The inlet of the sawdust dryer is the outlet of the kiln. The sawdust dryer outlet splits to feed two identical cyclones. The outlet of each cyclone was tested. The test log for all sawdust dryer testing is contained in Appendix A.0.

3.4.2.1 PM, PM_{10}, CPM Emissions and Particle Sizing: Method 5 particulate testing was combined with the multiple metals sampling. The total particulate emissions for the inlet averaged 0.0557 grains per dry standard cubic foot corrected to 7% O_2 (gr/dscf @ 7% O_2). The total particulate emissions for the cyclone outlets averaged 0.0636 gr/dscf @ 7% O_2 for outlet A and 0.5631 gr/dscf @ 7% O_2 for outlet B. The high particulate concentrations for outlet B are consistent over 3 runs performed over two days. A comparison of the metals analyzed from the same runs do not show correspondingly high values for the cyclone outlet B. Tables 3.4.2-1, 3.4.2-2 and 3.4.2-3 contain summaries of the detailed data contained in Appendix B.1.

PM_{10} was sampled simultaneously at the sawdust dryer inlet and outlets using Method 201A. Method 202 was used to measure the condensible particulate matter (CPM). These runs were performed together over two sampling days. The PM_{10} emissions for the inlet averaged 0.0928 gr/dscf @ 7% O_2. The PM_{10} emissions for the cyclone outlets averaged 0.0722 gr/dscf @ 7% O_2 for outlet A and 0.0597 gr/dscf @ 7% O_2 for outlet B. The CPM for the inlet averaged 57.06%. The CPM for the cyclone outlets averaged 16.72% for outlet A and 14.0% for outlet B. Tables 3.4.2-4, 3.4.2-5 and 3.4.2-6 contain summaries of the detailed data contained in Appendix B.2.

Particle size distribution was determined on samples collected simultaneously on the dryer inlet and two outlets using Andersen impactors. The data for each run is shown in Figures 3.4.2-1, 3.4.2-2 and 3.4.2-3 and detailed data is contained in

Appendix B.10.

3.4.2.2 Trace Metals Emissions: Trace metal sampling was performed together with total particulate sampling. Tables 3.4.2-1, 3.4.2-2 and 3.4.2-3 contain summaries of the detailed data contained in Appendix B.1. The trace metal emissions were in agreement within a factor of 2 of the mean from run to run except for a high manganese on the inlet run 3 (IN-MM/TSP-R3). This result was voided due to suspected backhalf contamination by permanganate. Samples were analyzed for antimony, arsenic, beryllium, cadmium, chromium, lead, manganese, mercury, nickel, phosphorous and selenium. Detectable quantities of all of the metals were present in one or more of the sample runs.

3.4.2.3 Total Fluoride Emissions: Total fluorides were measured at the inlet and one of the outlet ducts from the dryer cyclones. Sampling at the other cyclone outlet was not possible due to a malfunctioning induced draft fan. Total fluoride emissions averaged 1.197 lb/hr ranging from 0.048 to 3.248 at the inlet and averaged 0.334 lb/hr with a range of 0.173 to 0.524 at the outlet. The inlet averaged 1.772 lb/hr while the outlet averaged 0.349 lb/hr if the first subisokinetic runs are discarded. There is no obvious explanation for the low inlet total fluoride compared to the inlet hydrogen fluoride data, especially since the outlet data agree well. Tables 3.4.2-9 and 3.4.2-10 contain summaries of the detailed data contained in Appendix B.4.

Variable fluoride emissions are considered typical for brick manufacturing and have been described as micro-geographic dependant ("Ceramic Bulletin" Vol. 54 No. 11 coauthored by Hugh H. Wilson of Clemson University and Larry D. Johnson of EPA-AREAL).

3.4.2.4 Hydrogen Fluoride Emissions: The hydrogen fluoride emissions were inconsistent and highly variable. The inlet concentrations ranged from 118 to 281 ppmdv @ 7% O_2. The outlet A concentrations ranged from 27 to 194 ppmdv @ 7% O_2. The outlet B concentrations ranged from 1.0 to 159 ppmdv @ 7% O_2. Tables 3.4.2-11, 3.4.2-12 and 3.4.2-13 contain summaries of the detailed data contained in Appendix B.5.

3.4.2.5 CO Emissions: Carbon monoxide emissions were monitored instrumentally (Method 10) throughout the sawdust dryer test program. The averages for CO are contained in the summary tables for each wet method test series. The CO concentration at the inlet averaged 450 ppmdv. The CO concentration at the outlet averaged 342 ppmdv for outlet A and 345 ppmdv for outlet B. Detailed data for CEM testing is contained in Appendix C.

3.4.2.6 NOx Emissions: Nitrogen oxide emissions were monitored instrumentally (Method 7E) throughout the sawdust dryer test program. The averages for NOx are contained in the summary tables for each wet method test series. The NOx concentration at the inlet averaged 34.4 ppmdv. The NOx concentration at the outlet averaged 22.7 ppmdv for outlet A and 22.0 ppmdv for outlet B. Detailed data for CEM testing is contained in Appendix C.0.

3.4.2.7 THC Emissions: Total hydrocarbon emissions were monitored instrumentally (Method 25A) during the VOST sampling. THC emissions averaged 14.90 ppmdv as carbon at the inlet, 45.39 ppmdv as carbon at outlet A and 32.64 ppmdv as carbon at outlet B. The results show a significant increase in THC emissions following the sawdust dryer. Tables 3.4.2-20, 3.4.2-21 and 3.4.2-22 contain summaries of the Method 25A test program.

Methane and ethane samples were collected as integrated bag samples during the semi-VOST sampling. These samples were analyzed by gas chromatography in the laboratory. The samples were all below the detection limit of 40 ppmdv for ethane and 152 ppmdv for methane for all inlet and outlet samples except Run 2 on outlet A (0A-M18-R2) which gave a value of 9223 ppmdv for methane. This result is inconsistent with all other measurements recorded and is an obvious outlier. There is no explanation for the value observed. Tables 3.4.2-23, 3.4.2-24 and 3.4.2-25 contain summaries of the detailed data contained in Appendix B.9.

3.4.2.8 VOC Emissions: VOST samples were analyzed for chloromethane, bromomethane, methylene chloride, chloroform, trichlorofluoromethane, iodomethane, carbon tetrachloride, trichloroethene, benzene, tetrachloroethene, acetone, carbon disulfide, acrylonitrile, 2-butanone, 1,1,1-trichloroethane, vinyl acetate, 2-hexanone, toluene, ethylbenzene, styrene, o-xylene, and m-/p-xylene using Method 0030. Detectable quantities of chloromethane, bromomethane, methylene chloride, trichlorofluoromethane, iodomethane, benzene, acetone, carbon disulfide, acrylonitrile, 2-butanone, toluene, ethylbenzene, o-xylene, and m-/p-xylene were found in one or more of the sample runs. Tables 3.4.2-14, 3.4.2-15 and 3.4.2-16 contain summaries of the detailed data contained in Appendix B.6.

3.4.2.9 SVOC Emissions: Semi-VOST samples were analyzed for phenol, naphthalene, 2-methylphenol, dimethylphthalate, dibenzofuran, di-n-butylphthalate and bis(2-ethylhexyl)phthalate and were scanned for compounds on the list of 189 Hazardous Air Pollutants (HAPs) using Method 0010. Detectable quantities of phenol, naphthalene, dimethylphthalate, dibenzofuran, di-n-butylphthalate, bis(2-ethylhexyl)phthalate were found in one or more of the sample runs. Tables 3.4.2-17, 3.4.2-18 and 3.4.2-19 contain summaries of the detailed data contained in Appendix B.7.

3.4.2.10 Process Sampling: Process samples of sawdust were collected for sieve and moisture analysis. Eight samples of dried sawdust were taken on successive days. One sample represented the wet feed sawdust. The data for the sieve and moisture analyses is contained in Appendix B.11. The sieve analysis was consistent for all nine samples collected. The sawdust samples showed a greater amount (73.6%) of larger (> 20 mesh) particles. The mid-range (< 20 > 200 mesh) average for all samples was 26.3%. Less than 0.1% of the composition of all of the samples consisted of fine particles (< 200 mesh). The wet sawdust had a moisture content of 47.2%. The average of the eight dried sawdust samples was 2.7% moisture.

4.0 SAMPLING AND ANALYTICAL PROCEDURES

4.1 Test Methods

4.1.1 <u>Ambient Particulate Matter (PM and PM_{10}) - Hi-Vol</u>: Ambient sampling of PM was collected in accordance with 40 CFR 50 Appendix B. Ambient sampling of PM_{10} was collected in accordance with 40 CFR 50 Appendix J. Ambient sampling was used to establish background PM and PM_{10} concentrations at the plant boundary and at the air intake to the grinding building. Ambient samplers were also used to determine PM and PM_{10} concentrations at the crusher building door during the crusher operation.

The background samplers were operated for at least 8 hours per day. The samplers located at the crusher building were operated during the day while the crusher was operating. All ambient sampling was performed with collocated PM and PM_{10} samplers. The background samplers were placed on platforms at least 6 feet above the surrounding terrain. The crusher building samplers were suspended from the roof of the building.

4.1.1.1 <u>Ambient Hi-Vol and PM_{10} Analyses</u>: Filters used in the ambient sampling monitors were weighed before and after sampling. The weight gain represented the particulate content of the air volume sampled. Prior to weighing, the filter was conditioned to a controlled temperature and humidity for at least 24 hours. Filters were inspected for tears or pinholes which, if present, cause the filter to be voided. Filters were weighed to the nearest 0.1 mg.

4.1.2 <u>Volumetric Flow Measurements</u>: Volumetric flow measurements were made in accordance with EPA Method 2 at the grinding building outlet ducts and the sawdust dryer inlet and outlet ducts using stainless steel Type-S pitot tubes to measure the gas velocity heads. The pitot tubes were calibrated against a NIST traceable pitot tube in accordance with Method 2. Calibrated Type-K thermocouples were used to determine gas temperatures. Velocity and temperature measurements were made at each of the traverse points determined by EPA Method 1.

4.1.3 <u>Molecular Weight Determination</u>: Gas compositional measurements (O_2 and CO_2) for determining the average molecular weight of the stack gases were done instrumentally in accordance with EPA Reference Method 3A. Sampling was done by obtaining integrated gas samples as part of the continuous emissions monitoring.

4.1.4 Flue Gas Moisture Content: The flue gas moisture was measured in conjunction with each of the pollutant tests according to the sampling and analytical procedures outlined in EPA Method 4. The flue gas moisture for each test was determined by gravimetric analyses of the water collected in the impinger condensers of the pollutant sampling train. All impingers were contained in an ice bath throughout the testing in order to assure complete condensation of the moisture in the flue gas stream. Any moisture which was not condensed in the impingers was captured in the silica gel contained in the final impinger.

Moisture content was determined gravimetrically in accordance with Method 4 by measuring either the volume or mass gains of each impinger in the pollutant sampling trains.

4.1.5 PM_{10} Sampling - EPA Methods 201 and 201A: EPA Method 201A was used for determination of PM_{10} emissions from the sawdust dryer inlet and outlets. This procedure utilized an in-stack PM_{10} sizing device and an in-stack filter in conjunction with an EPA Method 17 train. Gravimetric analyses were performed as described by EPA Method 5.

EPA Method 201 was used to determine PM_{10} emissions from the grinding and screening building outlets. This method employs an in-stack cyclone to separate particulate greater than 10 microns and an in-stack glass fiber filter to collect PM_{10}. To maintain isokinetic flowrate conditions at the tip of the probe and a constant flowrate through the cyclone, a clean, dried portion of the sample gas at stack temperature is recycled into the nozzle. Gravimetric analyses were performed as described by EPA Method 5.

4.1.5.1 Sampling Train Descriptions: The Method 201A train consisted of a cyclone followed by a 47 mm diameter glass fiber (Gelman) filter. These in-stack components were attached to an unheated stainless steel probe. The Method 201A sampling train is shown in Figure 4.1.5.1-1. The stack gases were drawn through the cyclone where a portion of the airborne particulate is separated before it passes through a Gelman filter. The size fraction of the particles that have a 50 percent probability of exiting the cyclone to the Gelman filter are defined as the cyclone cut size (D_{50}). The required particle size for a valid test run ranges from 9 um to 11 um. After the sample gas passes through the Gelman filter, it then enters a stainless steel conduit which leads into a glass impinger train consisting of four impingers immersed in an ice bath. The first, second and third impingers each contained 100 milliliters of water. The fourth impinger was initially empty and the fifth impinger contained approximately 200 grams of color-indicating silica gel.

The Method 201 train consisted of an in-stack cyclone followed by an in-stack glass fiber filter. The Method 201 sampling train is shown in Figure 4.1.5.1-2. The stack gases were drawn through the cyclone where PM greater than PM_{10} is removed. The PM_{10} is then collected on a glass fiber filter. This train is designed to maintain isokinetic sampling rates while maintaining sufficient flow through the cyclone by recylcling a portion of clean, dried stack gas at stack temperature through the nozzle of the sampling probe. The amount of recycled gas is maintained between 10 and 80%.

4.1.5.2 Pre-Test Preparation: Before sampling, a velocity traverse of the stack was performed. This traverse, along with a gas analysis of the stack gas, was used to determine the nozzle diameter(s) needed to maintain a flow rate through the cyclone to achieve a cut size of 10μm. A nozzle was selected by comparing the velocity heads from the velocity traverse with the Δp_{min} and Δp_{max} calculated for each nozzle. The nozzle was chosen to bracket all the Δp's from the velocity traverse.

4.1.5.3 Sampling Train Operation: Throughout the sampling run the orifice pressure head was maintained at the pretest calculated value. If the stack gas temperature varied by more than 28°F from the pretest average temperature, then the orifice pressure head was determined using the pretest average ± 28°F.

Sampling was started at the first traverse point. Sampling time (or dwell time) at this point was determined by the pretest calculations. After moving to the next traverse point, the dwell time at this point was determined by the velocity head at this point. This procedure was repeated for the remainder of the traverse points.

4.1.5.4 Sample Train Recovery: During the run, if necessary, and following the run the filters were quantitatively recovered into their original tared and labeled foil wrappers. Following the run, the particulate matter was quantitatively recovered using acetone from all of the surfaces from the cyclone exit to the front half of the in-stack filter holder, including the "turn around" cup inside the cyclone and the interior surfaces of the exit tube. The rinsings were placed into labeled glass bottles. The filters and rinsings were transported to the ETS laboratory for gravimetric analyses as described by EPA Method 5. The impinger water and silica gel were recovered as per EPA Method 4 procedures.

4.1.5.5 PM_{10} Analyses: Analyses of the glass fiber filters and cyclone acetone rinses from the Method 201 and 201A sampling trains were performed gravimetrically in accordance with EPA

Method 5 procedures. The total PM_{10} catch included the particulate collected in the acetone rinses from all of the surfaces from the cyclone exit to the front half of the in-stack filter holder, including the "turn around" cup inside the cyclone and the interior surfaces of the exit tube, as well as the particulate collected by the glass fiber filter.

4.1.6 Total Fluoride Sampling- EPA Method 13B: Sampling for total fluoride was performed in accordance with EPA Method 13B. This method involved absorbing the fluorides in distilled water, and analyzing the solution for total fluorides using a ion specific electrode procedure.

4.1.6.1 Sampling Train Description: Figure 4.1.6.1-1 shows the Method 13B sampling train. A heated stainless steel probe with a quartz liner was used to withdraw the gas sample. The probe was equipped with an appropriately sized integrated quartz nozzle fused directly to the liner for isokinetic gas withdrawal.

From the nozzle and probe, sample gas was pulled through an impinger train. The impinger train consisted of four glass impingers immersed in an ice bath. The first and second impingers each contained 100 milliliters of deionized distilled water, the third impinger was initially dry, and the fourth initially contained approximately 200 grams of silica gel. A Whatman No. 1 paper filter was located between the third and fourth impinger.

4.1.6.2 Sampling Train Operation: The sampling train was operated in accordance with Method 13B and Method 5 procedures and specifications, including leak checking, isokinetic sampling rate and stack traversing.

4.1.6.3 Sample Recovery: At the completion of each test run, the train components were recovered according to Method 13B procedures. The probe was rinsed with deionized distilled water. The volumes of the impinger contents were measured, and the liquids quantitatively transferred to Nalgene sample bottles. The impingers were rinsed with distilled water, and the rinses collected into the sample bottles with the impinger contents. The Whatman filter was placed in with the impinger solutions. The silica gel in the last impinger was recovered into its original container. A schematic of the recovery process is shown in figure 4.1.6.3-1.

4.1.6.4 Field Blanks: One field blank was collected during the test program for the Method 13B tests. The field blank consisted of a complete sampling train set up on site and recovered during the recovery of the normal stack test samples.

4.1.6.5 Total Fluoride Analyses: The Method 13B filter and rinsates were analyzed for total fluoride using sample digestion followed by analysis by a fluoride ion specific electrode. The analysis is schematically shown in figure 4.1.6.5-1.

4.1.7 Multiple Metals with PM - EPA Multi-Metals Procedure: Sampling for antimony, arsenic, beryllium, cadmium, total chromium, lead, manganese, mercury, nickel, phosphorous, and selenium was performed in accordance with EPA Method 5 in conjunction with Section 3.1 of "Methods Manual for Compliance with BIF Regulations (EPA/530-SW-91-010)". This methodology is commonly referred to as the Multi-Metals procedure. In addition, the filter and probe washes were analyzed for determining PM in accordance with EPA Method 5.

4.1.7.1 Sampling Train Description: The testing was conducted utilizing the Multi-Metals sampling train as illustrated in Figure 4.1.7.1-1. A heated stainless steel probe with a quartz liner was used to withdraw the gas sample. The probe was equipped with an appropriately sized integrated quartz nozzle fused directly to the liner for isokinetic gas withdrawal.

From the nozzle and probe, sample gas was pulled through a heated glass filter holder which holds a Pallflex ultra-pure 2500 QUAT-UP quartz filter supported on a teflon frit. The filter was maintained at a temperature sufficiently high to prevent the condensation of water (248 ± 25°F). Sample gas subsequently passed through an impinger train consisting of seven glass impingers immersed in an ice bath. The first impinger was initially empty. The second and third impingers each contained 100 milliliters of 5% nitric acid/10% hydrogen peroxide solution. The fourth impinger was initially empty. The fifth and sixth impingers each contained 100 milliliters of 4% potassium permanganate/10% sulfuric acid solution. The seventh impinger contained approximately 200 grams of silica gel. The amount of moisture collected in the sampling train was quantified in order to determine the stack gas moisture content in accordance with EPA Method 4.

4.1.7.2 Sample Train Preparation: All glassware components of the multiple metals sampling train were pre-cleaned before use. The following cleaning procedure was used:

1) Wash with hot water and detergent.
2) Rinse with tap water three times.
3) Rinse with deionized, distilled water three times.
4) Soak in a 10% nitric acid solution for four hours.
5) Rinse three times with deionized water.
6) Rinse three times with acetone and allow to air dry.

All glassware openings were covered with Teflon tape until sampling to prevent contamination.

4.1.7.3 Sample Train Operation: Sampling was done in accordance with EPA Method 5 procedures and specifications, including leak checking, isokinetic sampling rate and stack traversing.

4.1.7.4 <u>Sample Recovery and Clean-up</u>: At the completion of each test, the probe was removed from the train and the ends of the probe and sample train capped. The probe was cleaned on the test platform, while the remainder of the sample train was transported to a clean-up site for recovery. The sample recovery procedure is shown in Figure 4.1.7.4-1:

4.1.7.5 <u>Field Blanks</u>: One field blank was collected during the test program for each location from which metals sampling was conducted. Each field blank consisted of a complete sampling train set up on site and recovered during the recovery of the normal stack test samples.

4.1.7.6 <u>PM Analyses - EPA Method 5</u>: Particulate matter was determined in accordance with EPA Method 5 procedures. The filter was analyzed gravimetrically to a constant weight. The front half rinse was evaporated and analyzed gravimetrically to a constant weight. The total particulate catch equaled the sum of the front half rinse and the filter.

4.1.7.7 <u>Multi-Metals Analyses - EPA Multi-Metals</u>: The filter, front-half rinses, and contents of impingers 1 through 4 of the multi-metals sampling train were analyzed for antimony, arsenic, beryllium, cadmium, total chromium, lead, manganese, nickel, phosphorous, and selenium. The rinses and contents of impingers 5 and 6 were analyzed for mercury.

Analyses of the filters and front-half acetone rinses were conducted after completion of the Method 5 gravimetric analyses. SW-846 Method (atomic absorption) was used to determine the metals concentrations.

The sampling train components (including the digested filter, probe washes, and impinger contents and rinses) were prepared for analysis in accordance with the procedures given in the EPA draft method. All digestions were performed using a 600-watt microwave digester and Teflon pressure relief vessels. After preparation, the samples were analyzed with a Perkin Elmer Plasma 2000 inductively coupled plasma (ICP) atomic absorption spectrometer for antimony, arsenic, beryllium, cadmium, total chromium, lead, manganese, nickel, phosphorous, and selenium. A Coleman 50A cold vapor atomic absorption spectrometer (CVAAS) was used to analyze the samples for mercury.

Duplicate analyses were performed on all metals samples. In addition, field blanks were analyzed. Spikes were added to the samples to determine the metals recovery efficiencies. A schematic of the analytical procedure is contained in Figure 4.1.7.7-1.

4.1.8 PM_{10}/CPM Sampling - EPA Method 201A/202: Sampling of PM_{10}/CPM at the cyclone outlets was conducted with a combined Method 201A/202 sampling train. The analyses of the samples included Method 201A procedures for determining PM_{10} and Method 202 procedures for determining CPM.

4.1.8.1 Sampling Train Description: The Method 201A/202 train consists of a cyclone followed by a 47 mm diameter glass fiber (Gelman) filter. These in-stack components were attached to a heated stainless steel probe. For sampling at the cyclone outlets, a teflon liner was used with the sample probe. The high temperatures at the sawdust dryer inlet prevented the in-stack use of teflon. The Method 201A/202 sampling train is shown in Figure 4.1.8.1-1.

The stack gases were drawn through the cyclone, then the Gelman filter and into the glass impinger train consisting of five glass impingers immersed in an ice bath. The first, second, and third impingers each contained 100 milliliters of deionized distilled water. The fourth impinger was initially empty, and the fifth contained approximately 200 grams of silica gel.

4.1.8.2 Pre-Test Preparation: Before sampling, a velocity traverse of the stack was performed. This traverse, along with an analysis of the stack gas, was used to determine the nozzle diameter(s) needed to maintain a flow rate through the cyclone to achieve a cut size of 10μm. A nozzle was selected by comparing the velocity heads from the velocity traverse with the Δp_{min} and Δp_{max} calculated for each nozzle. The nozzle chosen bracketed all the Δp's from the velocity traverse. Nozzle changes during the sampling run were not required since the velocity head at the sampling points were within the Δp_{min} and Δp_{max} for that nozzle. The details of the calculations are given in Method 201A.
Two additional pretest calculations were also needed. The orifice pressure head needed to maintain the necessary cyclone flow rate was calculated. And finally, dwell time for the first traverse point was calculated from the pretest traverse. These calculations are also detailed in Method 201A.

4.1.8.3 Sampling Train Operation: Throughout the sampling run the orifice pressure head was maintained at the pretest calculated value. If the stack gas temperature varied by more than 28°F from the pretest average temperature, then the orifice pressure head was determined using the pretest average ± 28°F.

Sampling was started at the first traverse point. Sampling time (or dwell time) at this point was determined by the pretest calculations. After moving to the next traverse point, the dwell time at this point was determined by the velocity head at this point. This procedure was repeated for the remainder of the traverse points.

4.1.8.4 Sample Recovery and Clean-up: During the run, if necessary, and following the run the filters were quantitatively recovered into petri dishes. Following the run, the particulate matter was quantitatively recovered using acetone from all of the surfaces from the cyclone exit to the front half of the in-stack filter holder, including the "turn around" cup inside the cyclone and the interior surfaces of the exit tube. The rinsings were placed into labeled glass bottles. The filters and rinsings were transported to the ETS laboratory for gravimetric analyses as described by EPA Method 5.

The back-half of the sampling train (impingers plus connecting glassware) was recovered in accordance with EPA Method 202 procedures. The pH of the first impinger was measured immediately after the test. If the pH was less than 4.5, then the entire impinger train was purged for one hour using purified air in accordance with Method 202 procedures. If the pH of the first impinger exceeds 4.5, then the purge was omitted. A schematic of the recovery of the combined 201A/202 train is presented in figure 4.1.8.4-1. The analysis for the 201A and 202 sampling trains were slightly different.

4.1.8.5 Field Blanks: One field blank was collected during the test program for each location where PM_{10}/CPM were tested. Each field blank consisted of a complete sampling train set up on site and recovered during the recovery of the normal stack test samples.

4.1.8.6 CPM Analyses - EPA Method 202: The determination of the total condensible particulate matter (CPM) in the back-half of the sampling train was determined in accordance with Method 202 procedures. The total sulfate concentration of the impinger contents and aqueous rinses were determined by analyzing an aliquot of each sample using ion chromatography. The impinger contents and aqueous rinses were then combined with the methylene chloride rinses and extracted twice with methylene chloride using a separatory funnel. The samples were divided into organic (methylene chloride) and inorganic (aqueous) fractions. The organic fraction was evaporated at room temperature and pressure, and the resulting residue gravimetrically analyzed to a constant weight.

The inorganic fraction was evaporated to dryness at 105°C. If the pH of the original impinger solutions was less than 4.5, then the resulting residue was redissolved in 100 milliliters of distilled water, and made basic using concentrated ammonium hydroxide. The resulting solution was evaporated to dryness at 105°C once more, and the residue determined gravimetrically. If the pH of the original solution was greater than 4.5, then the ammonia addition step was omitted.

The back-half condensible particulate catch will equal the organic residue plus the inorganic residue plus the combined water removed by the acid-base reaction based on the impinger analysis for sulfate.

The total particulate catch will equal the front-half probe rinse and filter plus the back-half condensibles. A schematic of the analytical procedure is contained in Figure 4.1.8.6-1.

4.1.8.7 <u>PM_{10} Analyses - EPA Method 201A</u>: Analyses of the glass fiber filters and cyclone acetone rinses from the PM_{10} sampling were performed gravimetrically in accordance with EPA Method 5 procedures. The total PM_{10} catch included the particulate collected in the acetone rinses from all of the surfaces from the cyclone exit to the front half of the in-stack filter holder, including the "turn around" cup inside the cyclone and the interior surfaces of the exit tube, as well as the particulate collected by the glass fiber filter. A schematic of the analytical procedure is contained in Figure 4.1.8.6-1.

4.1.9 <u>Particle Sizing - Andersen Impactor</u>: Particle sizing was performed using an eight-stage Andersen-style cascade impactor, following the general procedures recommended by the impactor manufacturer.

4.1.9.1 <u>Sampling Train Description</u>: Figure 4.1.9.1-1 shows the major components of the impactor sampling train. Stack gas was pulled through an appropriately sized stainless steel nozzle to insure isokinetic sampling. From the nozzle, the sample gas was then pulled through an Andersen Mark III Cascade Impactor consisting of eight fiberglass filters and a single back-up filter. Each filter was supported on a perforated stainless steel disc designed to separate particles according to their terminal velocity through the perforations in the disc. The gases were then passed into an impinger train consisting of four glass impingers immersed in an ice bath. The first two impingers initially contained 100 milliliters of deionized, distilled water. The third impinger was initially empty, and the fourth initially contained approximately 200 grams of silica gel.

4.1.9.2 <u>Sampling Train Operation</u>: Sampling was done in accordance with the procedures recommended by Andersen 2000 for leak checking, isokinetic sampling rate and stack traversing.

4.1.9.3 <u>Sample Recovery and Clean-up</u>: Recovery of the cascade impactor sampling nozzle was accomplished and using a teflon-fiber probe brush. The nozzle was rinsed with acetone three times and brushed between rinsings. The impactor filters were individually collected and placed back into their original tared containers. The impinger contents were measured for moisture gain and discarded. The silica gel from the fourth impinger was transferred back to its original Nalgene container.

The amount of moisture collected in the sampling train was quantified in order to determine the stack gas moisture content in accordance with EPA Method 4. A schematic of the recovery process is shown in figure 4.1.9.3-1.

4.1.9.4 Andersen Impactor Analysis: Mass gains for the filters of each stage of the cascade impactor will be determined in accordance with EPA Method 5 procedures. Each filter will be analyzed gravimetrically to a constant weight. A schematic of the analysis is shown in figure 4.1.9.4-1.

4.1.10 Hydrogen Fluoride (HF) - EPA Method 26: HF emissions were measured in accordance with EPA Method 26. The procedure involves absorbing the HF in dilute sulfuric acid and analyzing the solution for total fluorides using an ion chromatography technique.

4.1.10.1 Sampling Train Description: A schematic of the Method 26 sampling train is shown in Figure 4.1.10.1-1. A heated glass probe was used for sample withdrawal. The gas stream was passed through a heated Teflon filter and five glass impingers. The impingers were immersed in an ice bath. The first impinger was initially left empty, a shortened tube is used to prevent bubbling of the gas sample through the collected condensate. The second and third impingers were each charged with 15 ml of 0.1 Normal sulfuric acid solution for HF absorption. The fourth impinger was charged with 15 ml of 0.1 Normal sodium hydroxide to absorb acid gases harmful to the dry gas meter. The fifth impinger was charged with silica gel to absorb any moisture before the stream enters the dry gas meter.

4.1.10.2 Sampling Train Operation: The gas stream was sampled at a single point in the center of the stack for 120 minutes at a sampling rate of approximately 2 liters per minute. All sampling procedures, such as leak checking and system purging, were in accordance with EPA Method 26. The impingers were maintained in an ice bath during the sampling period. The sample train was initially leak checked from the probe and subsequently checked at the three way stopcock for the following runs. The sample trains were leak checked to demonstrate a leakage rate not in excess of 2% of the average sample.

4.1.10.3 Sample Recovery and Clean-up: A schematic of the recovery of the Method 26A sampling train is contained in figure 4.1.10.3-1.

4.1.10.4 Field Blanks: One field blank was collected during the test program for each location from which HF was tested. The field blank consisted of a complete sampling train set up on site and recovered during the recovery of the normal stack test samples.

4.1.10.5 Hydrogen Fluoride Analyses: The contents of the first three impingers of the Method 26 train were analyzed for fluoride in accordance with EPA Method 26 procedures. The contents of the fourth impinger (sodium hydroxide) was not analyzed. Ion chromatography was employed in the analyses. A schematic of the analytical procedure is contained in Figure 4.1.10.5-1.

4.1.11 Continuous Monitoring for O_2, CO_2, CO, NO_x, and THC - Instrumental Methods: Instrumental monitoring of the stack gases were performed in accordance with the following procedures:

GAS	REFERENCE METHOD	INSTRUMENT TYPE
O_2	Method 3A	Teledyne Model 320A Chemical Cell Portable O_2 Analyzer
CO_2	Method 3A	HORIBA Model PIR-2000 NDIR CO_2 Analyzer
CO	Method 10	TECO Model 48 NDIR CO Analyzer
NO_x	Method 7E	TECO Model 10AR Chemilu-minesence NO_x Analyzer
THC	Method 25A	J.U.M. Model VE-7 Heated THC Analyzer (FID)

All of the analyzers except the hydrocarbon analyzer measured gas concentrations on a dry volume basis. The hydrocarbon analyzer measured the concentrations in parts per million wet volume as propane (ppmwv as C_3H_8).

4.1.11.1 Sampling System Description: An integrated, remote instrumental system housing the pollutant gas analyzers as well as the diluent gas (O_2 and CO_2) monitors were used. The design incorporated a dry extractive system. All of the instruments were housed in a trailer located at ground level.

Figure 4.1.11.1-1 is a schematic of the dry sampling system. Each dry sampling system consisted of a heated stainless steel probe located at the stack port location. A heated glass fiber filter was attached to the probe for rough particulate removal. A short section of heated Teflon sample line delivered the sample to an ice-cooled condenser designed to remove the flue gas moisture. An unheated Teflon sample line transported the dry gas sample from the stack port location down to the instrumental system. The sample gas exiting the Teflon sample line was pumped to the O_2, CO_2, CO, and NO_x monitors.

The sampling system for each hydrocarbon analyzer incorporated a heated stainless steel probe, a heated glass fiber filter, and a heated Teflon sample line. The sample line was heated along its entire length from the stack sampling location to the analyzer. Figure 4.1.11.1-2 is a schematic of the wet sampling system used for Method 25A.

4.1.11.2 Data Acquisition System: The response outputs of the monitors were recorded digitally by a Campbell Scientific Model CR10WP multi-channel data acquisition system. The system sampled at a rate of 60 Hz, and stored one-minute average values.

4.1.11.3 Calibration: At the beginning of every test day, each monitor in the dry sampling system was zeroed, using Zero Nitrogen, and spanned, using a certified calibration gas (EPA Protocol 1 certified or ± 1% Traceable Standards) with a concentration of 80-100% of the instrument span. Following local calibration a mid range gas, 40-60% of the instrument span, was introduced locally to each monitor to check for response linearity. The mid range response error did not exceed 2% of the instrument span as required by EPA Reference Method 6C.

At the beginning of every test day in which THCs were to be measured, each THC monitor was zeroed, using Zero Nitrogen, and spanned, using a certified propane calibration gas (EPA Protocol 1 certified or ± 1% Traceable Standards) with a concentration of 80-90% of the instrument span. Following local calibration a mid range gas (45-55% of the instrument span) and a low range gas (25-35% of instrument span) was introduced locally to each monitor to check for response linearity. The mid range response error did not exceed 5% of the respective gas value as required by EPA Reference Method 25A.

After locally calibrating all monitors, calibration gas was introduced remotely through the probe in order to verify the absence of sampling system bias. The bias error did not exceed 5% of the instrument span as required by EPA Reference Method 6C.

After each test run, Zero Nitrogen and a high range calibration gas was introduced locally to each monitor to check for calibration drift error. In accordance with Methods 6C and 25A, the instrument drift did not exceed 3% of the instrument span except, for the run to be considered valid.

At the end of every test day, calibration gas was again introduced remotely through the probe in order to verify the absence of sampling system bias. The bias error did not exceed 5% of the instrument span except for the runs noted in the field test changes and problems section of this report.

4.1.12 Methane and Ethane Sampling - EPA Method 18: EPA Method 18 was conducted for sampling methane(CH_4) and ethane(C_2H_8). Samples were collected using the Flexible Bag Procedure with some modifications.

4.1.12.1 Sampling Train Description: A stainless steel probe was affixed to the pollutant sampling probe for sampling purposes. A teflon-lined leak-free diaphragm pump, delivering 500 to 750 mL/min of flue gas, was used to fill a Tedlar bag. Figure 4.1.12.1 shows a schematic of the sampling train.

4.1.12.2 Pre-Test Bag Preparation: Each new, unused tedlar bag was checked for contamination before testing by filling with an inert gas (zero nitrogen), allowing it to sit overnight, then analyzing the contents with by FID.

4.1.12.3 Sampling Train Operation: Multi-point, integrated sampling was used to obtain a constant rate sample of flue gas concurrent with the VOST and Semi-VOST. Sampling was of the same duration (except purges following port changes) as the pollutant runs. A sampling schematic is shown in figure 4.1.12.3-1.

4.1.12.4 Ethane and Methane Analysis: Bag samples were analyzed for methane and ethane using a GC in accordance with EPA Method 18, Section 7.1.5 "Analysis of Bag Samples" (40 CFR 60, Appendix A). Analysis for methane and ethane was performed by injection of an aliquot of the gas sample on a gas chromatograph and analyzing the sample by FID. A schematic of the analytical procedure is shown in Figure 4.1.12.4-1.

4.1.13 Volatile Organics Sampling: Sampling for volatile organics was conducted in accordance with Method 0030 of SW-846.

4.1.13.1 Sampling Train Description: A schematic of the volatile organic sampling Train (VOST) is shown in Figure 4.1.13.1-1. The primary components of the VOST system were the probe, condenser, condensate trap, a second condenser, and a backup resin trap. The first cartridge was packed with approximately 1.6 grams of Tenax-GC resin. The second cartridge was packed with Tenax-GC and petroleum-based charcoal (1 gram of each, approximately 3:1 by volume), with the charcoal on the outlet end of the cartridge. The first trap retained most of the higher boiling analytes. Lower boiling analytes and the portion of the higher boiling analytes that break through the first cartridge were retained on the second trap. Analytes that collect in the condensate trap were purged into the second trap and condenser units. The metering system consisted of vacuum gauges, a leak-free pump, a calibrated rotameter, and a dry gas meter.

4.1.13.2 Sampling Train Operation: Sampling was done in accordance with Method 0030 of SW-846 procedures, including leak checking and sampling rate. The train was leak checked by closing the valve at the inlet to the first condenser and pulling a vacuum of 10 in. Hg above the normal operating pressure. The traps and condensers were isolated from the pump and the leak check noted. The leak rate was less than 0.1 in. Hg per minute.

After leak checking, sample collection was accomplished by opening the valve at the inlet to the first condenser, turning on the pump, and sampling at the rate of approximately one liter per minute (1 lpm) for 20 minutes. At this point, the train was leaked checked at the highest vacuum achieved during the sampling run, and the first pair of sorbent cartridges were replaced with a new pair of cartridges. This procedure was repeated until a total of six pairs of sorbent cartridges were used. This resulted in a sampling time of 120 minutes per run.

4.1.13.3 Sample Train Recovery and Clean-up: At the end of each 20-minute sampling period, each pair of sorbent cartridges was removed from the sampling train, the end caps were replaced on the cartridges, and the cartridges were stored in a cooler with "Blue Ice" until analysis. A schematic of the recovery is shown in figure 4.1.13.3-1.

4.1.13.4 Field Blanks: A single pair of sorbent cartridges was taken to each sampling location and the ends removed for a period of time while the two pairs of sorbent cartridges on the VOST system were exchanged. At the end of this period, the end caps were replaced, and the cartridges were stored and analyzed with the samples cartridges.

4.1.13.5 Volatile Organics Analyses - Method 0030: The VOST sorbent cartridges were analyzed for Volatile Compounds listed in Table 1.1-2. The analyses were performed using thermal desorption and gas chromatography with mass spectroscopy (GC/MS) in accordance with Method 0030 procedures. A schematic of the analytical procedure is contained in Figure 4.1.13.5-1.

4.1.14 Semivolatile Organics Sampling: Sampling for semi-volatile organics was conducted in accordance with Method 0010 of SW-846.

4.1.14.1 Sampling Train Description: Figure 4.1.14.1-1 illustrates the Method 0010 sampling train. The train employed a single piece quartz nozzle and probe for sample withdrawal. The nozzle opening was appropriately sized to maintain isokinetic sampling. Particulate matter was removed from the gas stream by means of a heated gas filter supported on a Teflon frit. The filter temperature was maintained at 248 $\pm$ 25°F. After particulate removal, the gases passed into a water-cooled glass condenser and enter an XAD resin sorbent trap. The sorbent trap was packed with pre-cleaned, quality control checked amberlite XAD-2 resin. Coolant water maintained at wet-ice temperature was continuously recirculated into the assembly using a submersible water pump. The condenser cooled the sample gases and condensed part of the moisture. The cooled gases and condensate flowed down through the XAD-2 resin which retained the organics. After passing through the sorbent trap, the sample gases passed through a chilled impinger train to remove the remaining moisture. The impinger train consisted of five glass impingers immersed in an ice bath. The first impinger was left blank to facilitate collection of the condensate which passed through the XAD-2 resin trap. The second and third impingers each contained 100 milliliters of distilled water. The fourth impinger was initially empty and the fifth impinger initially contained approximately 200 grams of silica gel. All components from the nozzle to the fourth impinger were made of glass. All connections from the probe to the exit stem of the fourth impinger were sealed with Teflon O-rings. Sealing grease was not used on any connections before the fifth impinger.

4.1.14.2 Sampling Train Operation: Sampling was performed in general accordance with EPA Method 5 procedures and specifications, including leak checking, isokinetic sampling rate, and stack traversing. Sampling was performed for 7.5 minutes at each of the 24 traverse points, yielding a 180-minute test per run at each test location. A minimum sample volume of 106 dry standard cubic feet was obtained for each run.

4.1.14.3 Sample Recovery and Clean-up: At the completion of each test run, the probe was removed from the train, and the ends of the sample train capped with hexane-rinsed aluminum foil. The probe was immediately recovered at each sampling location, while the remainder of the sampling train was transported to a clean-up site for recovery. Sample recovery proceeded as follows (figure 4.1.14.3-1):

Immediately upon recovery, all samples including liquid rinses, filters and sorbent traps were placed into insulated coolers packed with ice, thus protecting the samples from light and heat.

The samples remained inside the coolers during transport to the analytical laboratory. While in the custody of ETS, the temperatures inside the coolers were periodically measured to insure that the samples did not exceed 32°F. All samples were express mailed directly to the analytical lab for analysis. While at the lab, the samples were kept in a refrigerated compartment until analyzed.

4.1.14.4 Field Blanks: Three field blanks were collected during the test program for the Method 0010 tests. Each field blank consisted of a complete sampling train set up on site and recovered during the recovery of the normal stack test samples.

4.1.14.5 Semivolatile Organics Analyses: Analysis of the Method 0010 sample train components were performed in accordance with the procedures outlined in Method 0010 of SW-846. Analyses were performed for the Semivolatile compounds listed in Table 1.1-3. The analyses were performed with high resolution gas chromatography/mass spectrometry (GC/MS). A schematic of the analytical procedure is contained in Figure 4.1.14.5-1.

5.0 QA/QC ACTIVITIES

Specific quality control (QC) procedures were followed to ensure the continuous production of useful and valid data throughout the course of this test program. The QC checks and procedures described in this section represent an integral part of the overall sampling and analytical scheme. Strict adherence to prescribed procedures is quite often the most applicable QC check. A discussion of both the sampling and analytical QC checks that were utilized during this program are presented below.

5.1 Equipment QA Procedures

For all test methods requiring a dry gas meter, an EPA supplied calibrated critical orifice was used for auditing. Limits of acceptability and procedures followed those recommended in Method 5, Section 7.2 of 40 CFR 60. Data sheets for the above procedures were provided by the EPA.

5.2 Equipment QC Procedures

5.2.1 Equipment Inspection and Maintenance: Each item of field test equipment was assigned a unique, permanent identification number. An effective preventive maintenance program was necessary to ensure data quality. Each item of equipment returning from the field was inspected before it was returned to storage. During the course of these inspections, items were cleaned, repaired, reconditioned, and recalibrated where necessary.

Each item of equipment transported to the field was inspected again before being packed to detect equipment problems which may originate during periods of storage. This minimizes lost time on the job site due to equipment failure.

Equipment failure in the field was unavoidable despite the most rigorous inspection and maintenance procedures. For this reason, ETS routinely transported to the job site spare equipment for all critical sampling train components.

5.2.2 Equipment Calibration: New items for which calibration was required were calibrated before initial field use. Equipment whose calibration status may change with use or time was inspected in the field before testing began and again upon return from each field use. When an item of equipment was found to be out of calibration, it was repaired and recalibrated or retired from service. All equipment was periodically recalibrated in full, regardless of the outcome of these regular inspections.

Calibrations are conducted in a manner, and at a frequency, which meets or exceeds U.S. EPA specifications. ETS followed the calibration procedures outlined in the EPA Methods, and those recommended within the Quality Assurance Handbook for Air Pollution Measurement Systems: Volume III (EPA-600/4-77-027b, August, 1977). When these methods were inapplicable, ETS used methods such as those prescribed by the American Society for Testing and Materials (ASTM).

Data obtained during calibrations were recorded on standardized forms, which were checked for completeness and accuracy by the quality assurance director or the quality assurance manager. Data reduction and subsequent calculations were performed using ETS's own computer facilities. Calculations were checked at least twice for accuracy.

Emissions sampling equipment requiring calibration included pitot tubes, pressure gauges, thermometers, dry gas meters, and barometers. The following sections elaborate on the calibration procedures followed by ETS for these items of equipment.

5.2.2.1 Pitot Tubes: All Type-S pitot tubes used by ETS, whether separate or attached to a sampling probe, are constructed in-house. Each new pitot was calibrated in accordance with the geometric standards contained in EPA Method 2. A Type S pitot tube, constructed and positioned according to these standards, had a coefficient of 0.84 ± 0.02. This coefficient should not change as long as the pitot tube was not damaged. The actual coefficient of each pitot tube was determined using a wind tunnel calibration against a standard NIST traceable pitot tube. These calibrations were performed in accordance with EPA Method 2 procedures.

Each pitot tube was inspected visually upon return from the field. If a cursory inspection indicated damage or raised doubt that the pitot remained true to its original calibration, the pitot tube was refurbished as needed and recalibrated.

5.2.2.2 Impinger Thermometer: Prior to the start of testing, the thermometer used to monitor the temperature of the gas leaving the last impinger was compared with a mercury-in-glass thermometer which meets ASTM E-1 No. 63F specifications. The impinger thermometer was adjusted when necessary until it agreed within 2°F of the reference thermometer. If the thermometer was not adjustable, it was labeled with a correction factor.

5.2.2.3 Dry Gas Meter Thermometer: The thermometer used to measure the temperature of the metered gas sample was checked prior to each field trip against an ASTM mercury-in-glass thermometer. The dry gas meter thermometer was acceptable if the values agree within ± 5.4°F. Thermometers not meeting this requirement were adjusted or labeled with a correction factor.

5.2.2.4 Flue Gas Temperature Sensor: All thermocouples employed for the measurement of flue gas temperatures were calibrated upon receipt. Initial calibrations were performed at three points (ice bath, boiling water, and furnace). An ASTM mercury-in-glass thermometer was used as a reference. The thermocouple was acceptable if the agreement is within 1.5 percent (absolute) at each of the three calibration points.

On-site, prior to the start of testing, the reading from the flue gas thermocouple-potentiometer combination was compared with an ASTM mercury-in-glass reference thermometer. If the two agree within ± 1.5 percent (absolute), the thermocouple and potentiometer were considered to be in proper working order for the test series. After each field use, the thermocouple-potentiometer system was compared with an ASTM mercury-in-glass reference thermometer at a temperature within ± 10 percent of the average absolute flue gas temperature data. If the absolute temperatures agree within ± 1.5 percent, the temperature data were considered valid.

5.2.2.5 Dry Gas Meter and Orifice: Two procedures were used to calibrate the dry gas meter and orifice simultaneously. The full calibration was a complete laboratory procedure used to obtain the calibration factor of the dry gas meter. Full calibrations are performed over a wide range of orifice settings. A simpler procedure, the post test calibration, was designed to check whether the calibration factor had changed. Post test calibrations were performed after each field test series at an intermediate orifice setting (based on the test data) and at the maximum vacuum reached during the test.

Each metering system received a full calibration at the time of purchase and a post test calibration after each field use. If the calibration factor Y deviated by less than five percent from the initial value, the test data were acceptable. If Y deviated by more than 5 percent, the meter was recalibrated and the meter coefficient (initial or recalibrated) that yielded the lowest sample volume for the test runs was used. EPA Method 5 requires another full calibration anytime the post test calibration check indicates that Y had changed by more than 5 percent. Standard practice at ETS is to recalibrate the dry gas meter anytime Y was found to be outside the range of 0.98 to 1.02.

An orifice calibration factor was calculated for each flow setting during a full calibration. If the range of values did not vary by more than 0.15 in. H_2O over the range of 0.4 to 4.0

in. H_2O, the arithmetic average of the values obtained during the calibration was used.

5.3 Sampling QC Procedures

5.3.1 Pre-Test QC Checks and Procedures: The following pretest QC checks were conducted:

- All sampling equipment was thoroughly checked to ensure clean and operable components.
- Equipment was inspected for possible damage from shipment.
- The oil manometer used to measure pressure across the Type S pitot tube was leveled and zeroed.
- The number and location of the sampling traverse points were checked before taking measurements.
- The temperature measurement system was visually checked for damage and operability by measuring the ambient temperature prior to each traverse.
- All cleaned glassware and sample train components were kept sealed until train assembly.
- The sampling trains were assembled in an environment free from uncontrolled dust.
- Each sampling train was visually inspected for proper assembly.
- Pretest calculations determined the proper sampling nozzle size.

5.3.2 QC Checks and Procedures During Testing: The following checks and procedures will be conducted during testing:

- Readings of temperature and differential pressure were taken at each traverse point.
- All sampling data and calculations were recorded on preformatted data sheets.
- All calibration data forms were reviewed for completeness and accuracy.
- Any unusual occurrences were noted during each run on the appropriate data form.
- The project supervisor reviewed sampling data sheets

daily during testing.

- The roll and pitch axis of the Type S pitot tube and the sampling nozzle were properly maintained.
- Leak check the train before and after any move from one sampling port to another during a run or if a filter change took place.
- Conduct additional leak checks if the sampling time exceeded 4 hours.
- Maintained the probe, filter and impingers at the proper temperature.
- Maintained ice in the ice bath at all times.
- Make proper readings of the dry gas meter, delta P and delta H, temperature, and pump vacuum during sampling at each traverse point.
- Maintained isokinetic sampling within ± 10% of 100%.

5.3.3 <u>QC Checks and Procedures After Testing</u>:

- Visually inspect the sampling nozzle.
- Visually inspect the Type S pitot tube.
- Leak check each leg of the Type S pitot tube.
- Leak check the entire sampling train.

5.4 Analytical QA Procedures

All analytical QA procedures followed those given in each test method. Each test method along with the prescribed reference sections regarding auditing procedures are as follows:

Test Method		Reference
Method 29	-	Method 29, Section 7 proposed to be added to Appendix A of 40 CFR 60
Method 26	-	Method 26, Section 6.2 of 40 CFR 60
Method 18	-	Method 18, Section 7.4.4.3 of 40 CFR 60

Method 0030	-	Method 0030, Section 7.0 of SW - 846
Method 0010	-	Method 0010, Section 11.0 of SW - 846

5.5 Analytical QC Procedures

All analyses for this program were performed using accepted laboratory procedures in accordance with the specified analytical protocols. Adherence to prescribed QC procedures ensured data of consistent and measurable quality. Analytical QC focused upon the use of control standards to provide a measure of analytical precision and accuracy. Also, specific acceptance criteria were defined for various analytical operations including calibrations, control standard analyses, drift checks, blanks, etc. The following general QC procedures were incorporated into the analytical effort:

- The on-site project supervisor reviewed all analytical data and QC data on a daily basis for completeness and acceptability.

- Analytical QC data was tabulated using the appropriate charts and forms on a daily basis.

- Copies of the QC data tabulation were submitted to the quality assurance manager following the completion of the test program.

- All hard copy raw data (i.e., strip charts, computer printouts, etc.) were maintained in organized files.

5.6 QA/QC Checks of Data Reduction

Calculations that were to be used in the field were checked by the QA officer prior to testing with predetermined data. The QA officer performed random checks in the field to insure data was being properly recorded. Upon completion of the testing, data was then transferred from the data sheets to the computer. This process was also reviewed and checked by the QA officer. When multiple tests were performed in one location, data from each test were compared.

5.7 Sample Identification and Custody

Each test run was assigned a unique run identification (i.d.) which consisted of a 3 digit code for the location, the test method and the specific test run. Labels were pre-printed with the test method, the container number, a unique client/sample i.d., a space to write in the run number described above and the contents of the sample container. As each sample was recovered, its sample label was attached and the sample number and contents were recorded in the chain of custody section of the run sheet. The run identification, the sample number and contents were then recorded in a bound field sample log that was maintained by the sample recovery person. A glue on label carrying the signature of the recovery person was placed around the lid to the shoulder of the sample bottle in such a way that the label must be broken for the sample bottle to be opened. A three way check was then made by the recovery person to insure that the sample label information, the log book information and the run sheet chain of custody all corresponded correctly.

When the samples were returned for analysis, the team leader again checked to see that the sample label information, the run sheet chain of custody and the field log book information all corresponded correctly. Any discrepancies were brought to the attention of the project manager. If any condition existed that may influence the integrity of the sample, it was noted and brought to the attention of the project manager (i.e. broken seals, leaking samples, improper storage temperature). All of the chain of custody information was entered into a database. A print out of the computerized field log was made and checked against the chain of custody on the test run sheet. A copy of the computerized chain of custody accompanied the samples to the location where they were to be analyzed. Each sample label was checked again against the computerized field log as it was sent from sample management.

Table 1.1-1: Targeted Metals

METAL
antimony
arsenic
beryllium
cadmium
chromium
lead
manganese
mercury
nickel
phosphorus
selenium

TABLE 1.1-2: Targeted Volatile Compounds

COMPOUND (VALIDATED[1])	COMPOUND (NOT VALIDATED[2])
chloromethane	acetone*
bromomethane	carbon disulfide
methylene chloride	acrylonitrile
chloroform	2-butanone
trichlorofluoromethane*	1,1,1-trichloroethane
iodomethane	vinyl acetate
carbon tetrachloride	2-hexanone*
trichloroethene*	toluene
benzene	ethylbenzene
tetrachloroethene	styrene
	o-xylene
	m-/p-xylene

[1] Validated Analytical Method
[2] Not a Validated Analytical Method
* Not a listed HAP.

TABLE 1.1-3: Targeted Semivolatile Compounds

COMPOUND (VALIDATED[1])	COMPOUND (NOT VALIDATED[2])
phenol	2-methylphenol*
naphthalene	dimethylphthalate
	dibenzofuran
	di-n-butylphthalate*
	bis(2-ethylhexy)phthalate

[1] Validated Analytical Method
[2] Not a Validated Analytical Method
* Not a listed HAP.

Table 3.2-1: Sampling Matrix for Crushing, Grinding, and Screening Operations at Pine Hall Brick (Madison, North Carolina).

Run # Date	Sample Type	Test Method	Sample location/Time
1 10/27/92	PM_{10} PM	Ambient Hi-Vol[a] Ambient Hi-Vol[b]	Boundary and Grinding 7:00-16:04 8 1/2 hrs
2 10/28/92	PM_{10} PM	Ambient Hi-Vol[a] Ambient Hi-Vol[b]	Boundary and Grinding 7:08-16:46 9 1/2 hrs
3 10/29/92	PM_{10} PM	Ambient Hi-Vol[a] Ambient Hi-Vol[b]	Boundary and Grinding 7:10-15:31 8 1/4 hrs
4 11/02/92	PM_{10} PM	Ambient Hi-Vol[a] Ambient Hi-Vol[b]	Boundary and Crushing 8:00-17:50 10 hrs
5 11/03/92	PM_{10} PM	Ambient Hi-Vol[a] Ambient Hi-Vol[b]	Boundary and Crushing 6:55-15:01 8 3/4 hrs
6 11/04/92	PM_{10} PM	Ambient Hi-Vol[a] Ambient Hi-Vol[b]	Boundary and Crushing 6:45-15:20 9 1/4 hrs
7 11/05/92	PM_{10} PM	Ambient Hi-Vol[a] Ambient Hi-Vol[b]	Boundary 7:05-15:19 8 1/4 hrs
8 11/06/92	PM_{10} PM	Ambient Hi-Vol[a] Ambient Hi-Vol[b]	Boundary 16:15-9:03 7 1/4 hrs

[a] 40 CFR 50, Appendix B
[b] 40 CFR 50, Appendix J

Table 3.2-2: Test Matrix for Kiln and Sawdust Dryer Operations at Pine Hall Brick (Madison, North Carolina).

RUN # DATE	SAMPLE TYPE	TEST METHOD	SIMULTANEOUS SD-INLET	 SD-OUTLET A	 SD-OUTLET B
1 11/02/92	PS HF O_2/CO_2 CO NO_x	Imp M26[c] M3A[c] M10[c] M7E[c]		13:11-15:28 120 minutes 120 120 120 120	
2 11/02/92	PS HF O_2/CO_2 CO NO_x	Imp M26[c] M3A[c] M10[c] M7E[c]		17:33-19:42 120 minutes 120 120 120 120	
3 11/03/92	PS HF O_2/CO_2 CO NO_x	Imp M26[c] M3A[c] M10[c] M7E[c]		9:15-11:32 120 minutes 120 120 120 120	
4 11/03/92	PM_{10} CPM O_2/CO_2 CO NO_x	M201A M202 M3A[c] M10[c] M7E[c]		16:54-19:36 120 minutes 120 120 120 120	
5 11/04/92	PM_{10} CPM O_2/CO_2 CO NO_x	M201A M202 M3A[c] M10[c] M7E[c]		10:15-12:55 120 minutes 120 120 120 120	
6 11/04/92	PM_{10} CPM O_2/CO_2 CO NO_x	M201A M202 M3A[c] M10[c] M7E[c]		14:12-16:45 120 minutes 120 120 120 120	
7 11/04/92	MM PM O_2/CO_2 CO NO_x	M0012 PM[a] M3A[c] M10[c] M7E[c]		19:40-22:41 120 minutes 120 120 120 120	

Table 3.2-2 (Continued)

RUN # DATE	SAMPLE TYPE	TEST METHOD	SD-INLET	SD-OUTLET A	SD-OUTLET B
				9:28-11:53	
8 11/05/92	MM	M0012		120 minutes	
	PM	PM[a]		120	
	O_2/CO_2	M3A[c]		120	
	CO	M10[c]		120	
	NO_x	M7E[c]		120	
				13:25-15:50	
9 11/05/92	MM	M0012		120 minutes	
	PM	PM[a]		120	
	O_2/CO_2	M3A[c]		120	
	CO	M10[c]		120	
	NO_x	M7E[c]		120	
		Imp		16:44-17:55	
10 11/05/92	PS	M3A[c]		120 minutes	
	O_2/CO_2	M10[c]		120	
	CO	M7E[c]		120	
	NO_x			120	
				11:47-16:38	
11 11/06/92	VOC	M0030[e]		120 minutes	
	SVOC	M0010[e]		120	
	O_2/CO_2	M3A[c]		120	
	CO	M10[c]		120	
	NO_x	M7E[c]		120	
	THC	M25A[c]		120	
				17:34-21:42	
12 11/06/92	VOC	M0030[e]		120 minutes	
	SVOC	M0010[e]		120	
	O_2/CO_2	M3A[c]		120	
	CO	M10[c]		120	
	NO_x	M7E[c]		120	
	THC	M25A[c]		120	
				9:02-13:12	
13 11/07/92	VOC	M0030[e]		120 minutes	
	SVOC	M0010[e]		120	
	O_2/CO_2	M3A[c]		120	
	CO	M10[c]		120	
	NO_x	M7E[c]		120	
	THC	M25A[c]		120	

[a] Methods Manual for Compliance with BIF Regs(EPA/530-SW-91-010)
[b] 40 CFR 51, Appendix M
[c] 40 CFR 60, Appendix A
[d] M18 of 40 CFR 60, Appendix A using an integrated bag sample for GC analysis
[e] Test Methods for Evaluating Solid Waste, Third Edition, Report SW-846, U.S.

Table 3.2-3: Test Matrix for the Grinding Building and Sawdust Dryer. Testing performed by the EPA EMB.

Run # Date	Sample Type	Test Method	Sample Location/ Time
1 10/26/92	PM_{10}	M201	Grinding Building
2 10/27/92	PM_{10}	M201	Grinding Building
3 10/28/92	PM_{10}	M201	Grinding Building
4 10/29/92	Total Fluoride	13B	Sawdust Dryer
5 10/30/92	Total Fluoride	13B	Sawdust Dryer

Table 3.4.1-1: Average ambient sampling concentrations.

Pollutant	East end $\mu g/m^3$	West end $\mu g/m^3$	Grinding $\mu g/m^3$	Crusher $\mu g/m^3$
TSP	61.5	45.6	104.1	1356.9
PM_{10}	26.0	30.9	59.0	584.6

TABLE 3.4-1-2: SUMMARY OF METHOD 201: TOTAL FILTERABLE PARTICULATE AND PM_{10}: GRINDING-SCREENING BUILDING

RUN NUMBER DATE	D1-M201-R1 10/27/92	D1-M201-R2 10/28/92	D1-M201-R3 10/28/92	AVERAGE
SAMPLING DATA				
Metered Volume - cf	62.641	51.108	52.638	55.462
Total Test Time - min	240	180	180	200
% Isokinetic	98.8	98.4	98.2	98.5
GAS PARAMETERS				
Gas Temperature - oF	72	61	69	67
Oxygen - %	20.9	20.9	20.9	20.9
Carbon Dioxide - %	0.0	0.0	0.0	0.0
Moisture - %	1.0	1.0	1.0	1.0
GAS FLOWRATE				
Velocity - ft/sec	31.13	33.64	34.87	33.21
Actual Volume - acfm	23471	26163	27119	25585
Standard Volume - dscfm	22709	25891	26414	25005
TOTAL FILTERABLE PARTICULATE EMISSIONS				
Concentration - gr/dscf	0.01166	0.00777	0.01284	0.01076
Mass Rate - lb/hr	2.270	1.724	2.907	2.300
TOTAL PM_{10} EMISSIONS				
Concentration - gr/dscf	0.00094	0.00077	0.00072	0.00081
Mass Rate - lb/hr	0.183	0.171	0.163	0.172

Note: D1 is duct #1 off the Grinding-Screening building.

See Appendix F.3.1 for detailed field sampling information.

A duct size of 48.0 inches was used in calculating flowrates. This information was gathered from ETS, Inc. files pertaining to the duct work.

TABLE 3.4.1-3: SUMMARY OF METHOD 201: TOTAL FILTERABLE PARTICULATE AND PM_{10}: GRINDING-SCREENING BUILDING

RUN NUMBER DATE	D2-M201-R1 10/27/92	D2-M201-R2 10/28/92	D2-M201-R3 10/28/92	AVERAGE
<u>SAMPLING DATA</u>				
Metered Volume - cf	45.031	35.88	36.691	39.201
Total Test Time - min	240	180	180	200
% Isokinetic	99.2	104.2	102.6	102.0
<u>GAS PARAMETERS</u>				
Gas Temperature - oF	72	61	67	67
Oxygen - %	20.9	20.9	20.9	20.9
Carbon Dioxide - %	0.0	0.0	0.0	0.0
Moisture - %	1.0	1.0	1.0	1.0
<u>GAS FLOWRATE</u>				
Velocity - ft/sec	38.15	38.50	39.72	38.79
Actual Volume - acfm	28764	29943	30891	29866
Standard Volume - dscfm	27883	29668	30280	29277
<u>TOTAL FILTERABLE PARTICULATE EMISSIONS</u>				
Concentration - gr/dscf	0.01584	0.00736	0.01064	0.01128
Mass Rate - lb/hr	3.786	1.872	2.762	2.806
<u>TOTAL PM_{10} EMISSIONS</u>				
Concentration - gr/dscf	0.00185	0.00097	0.00088	0.00123
Mass Rate - lb/hr	0.442	0.247	0.228	0.306

Note: D2 is duct #2 off the Grinding-Screening building.

See Appendix F.3.2 for detailed field sampling information.

A duct size of 48.0 inches was used in calculating flowrates. This information was gathered from ETS, Inc. files pertaining to the duct work.

TABLE 3.4.2-1: SUMMARY OF FILTERABLE PARTICULATE AND METALS EMISSIONS: SAWDUST DRYER INLET.

RUN I.D.	IN-MM/TSP-R1	IN-MM/TSP-R2	IN-MM/TSP-R3	AVERAGE
DATE	11/04/92	11/05/92	11/05/92	
TIME STARTED	19:40	09:28	13:25	
TIME ENDED	22:41	11:53	15:50	
SAMPLING PARAMETERS				
Metered Volume - dcf	74.087	83.040	76.204	77.777
Corrected Volume - dscf	73.648	82.184	74.533	76.789
Total Test Time - min	120	120	120	120
% Isokinetics	102.3	99.8	100.5	100.9
GAS PARAMETERS				
Gas Temperature - oF	496.9	494.6	495.0	495.5
Oxygen - %	15.5	16.1	16.1	15.9
Carbon Dioxide - %	4.9	4.8	4.6	4.8
Moisture - %	7.97	6.52	7.37	7.29
GAS FLOWRATE				
Velocity - ft/sec	58.50	65.49	60.11	61.36
Actual Volume - acfm	55826	62490	57357	58558
Standard Volume - dscfm	28005	32033	28862	29634
FILTERABLE PARTICULATE EMISSIONS				
Concentration - gr/dscf	0.0201	0.0206	0.0196	0.0201
Conc. - gr/dscf @ 7% O2	0.0515	0.0595	0.0560	0.0557
Mass Rate - lb/hr	4.83	5.64	4.84	5.10
METALS EMISSIONS - lb/hr				
Antimony	< 1.24E-04	< 1.24E-04	1.97E-04	< 1.48E-04
Arsenic	9.52E-04	9.09E-04	7.53E-04	8.71E-04
Beryllium	9.06E-06	9.28E-06	1.84E-05	1.23E-05
Cadmium	1.06E-04	2.91E-04	4.79E-04	2.92E-04
Chromium	5.68E-04	9.23E-04	1.19E-03	8.93E-04
Lead	5.66E-03	2.92E-03	8.04E-03	5.54E-03
Manganese	1.88E-02	1.72E-02	6.08E-01	2.15E-01
Mercury	1.65E-04	9.02E-05	2.45E-04	1.67E-04
Nickel	3.55E-04	6.10E-04	7.81E-04	5.82E-04
Phosphorus	1.92E-02	3.09E-02	2.16E-02	2.39E-02
Selenium	1.97E-03	3.70E-04	5.12E-04	9.50E-04
CO EMISSIONS				
Conc. - ppmdv	453.23	401.98	369.35	408.19
Mass Rate - lb/hr	55.36	56.16	46.50	52.67
NOx EMISSIONS				
Conc. - ppmdv	34.12	39.39	34.02	35.84
Mass Rate - lb/hr (as NO_2)	6.85	9.04	7.03	7.64

TABLE 3.4.2-2: SUMMARY OF FILTERABLE PARTICULATE AND METALS EMISSIONS: SAWDUST DRYER OUTLET A.

RUN I.D.	OA-MM/TSP-R1	OA-MM/TSP-R2	OA-MM/TSP-R3	AVERAGE
DATE	11/04/92	11/05/92	11/05/92	
TIME STARTED	19:40	09:29	13:25	
TIME ENDED	22:41	11:53	15:50	
<u>SAMPLING PARAMETERS</u>				
Metered Volume - dcf	81.477	80.045	83.415	81.646
Corrected Volume - dscf	78.602	77.167	80.166	78.645
Total Test Time - min	120	120	120	120
% Isokinetics	102.7	103.3	104.1	103.3
<u>GAS PARAMETERS</u>				
Gas Temperature - oF	180.9	190.8	194.2	188.6
Oxygen - %	17.2	17.1	17.2	17.2
Carbon Dioxide - %	3.3	3.4	3.3	3.4
Moisture - %	12.22	11.37	11.85	11.81
<u>GAS FLOWRATE</u>				
Velocity - ft/sec	44.78	43.91	46.11	44.93
Actual Volume - acfm	24634	24157	25365	24719
Standard Volume - dscfm	17170	16756	17273	17066
<u>FILTERABLE PARTICULATE EMISSIONS</u>				
Concentration - gr/dscf	0.0150	0.0153	0.0207	0.0170
Conc. - gr/dscf @ 7% O2	0.0565	0.0563	0.0781	0.0636
Mass Rate - lb/hr	2.21	2.19	3.07	2.49
<u>METALS EMISSIONS - lb/hr</u>				
Antimony	< 2.72E-05	< 2.76E-05	< 2.65E-05	< 2.71E-05
Arsenic	1.97E-04	2.31E-04	2.60E-04	2.30E-04
Beryllium	2.31E-06	< 1.44E-06	8.84E-06	< 4.20E-06
Cadmium	8.12E-05	1.52E-04	5.79E-05	9.71E-05
Chromium	2.72E-04	6.78E-04	1.52E-04	3.67E-04
Lead	2.41E-03	9.18E-04	1.11E-04	1.15E-03
Manganese	2.63E-03	3.78E-03	6.43E-03	4.28E-03
Mercury	1.34E-04	8.62E-05	6.10E-05	9.39E-05
Nickel	3.17E-04	4.51E-04	1.19E-04	2.96E-04
Phosphorus	< 7.04E-03	4.71E-03	< 6.93E-03	< 6.23E-03
Selenium	4.60E-04	4.51E-04	4.29E-04	4.47E-04
<u>CO EMISSIONS</u>				
Conc. - ppmdv	346.92	360.91	349.77	352.53
Mass Rate - lb/hr	25.98	26.38	26.35	26.24
<u>NOx EMISSIONS</u>				
Conc. - ppmdv	24.40	26.86	19.91	23.72
Mass Rate - lb/hr (as NO_2)	3.00	3.22	2.46	2.90

TABLE 3.4.2-3: SUMMARY OF FILTERABLE PARTICULATE AND METALS EMISSIONS: SAWDUST DRYER OUTLET B.

RUN I.D.	OB-MM/TSP-R1	OB-MM/TSP-R2	OB-MM/TSP-R3	AVERAGE
DATE	11/04/92	11/05/92	11/05/92	
TIME STARTED	19:40	09:28	13:25	
TIME ENDED	22:41	11:53	15:50	
SAMPLING PARAMETERS				
Metered Volume - dcf	75.403	72.906	72.615	73.641
Corrected Volume - dscf	75.053	72.342	70.768	72.721
Total Test Time - min	120	120	120	120
% Isokinetics	102.0	101.1	101.8	101.6
GAS PARAMETERS				
Gas Temperature - oF	180.6	181.5	180.1	180.8
Oxygen - %	17.3	17.3	17.3	17.3
Carbon Dioxide - %	3.3	3.3	3.2	3.2
Moisture - %	11.77	10.56	11.25	11.20
GAS FLOWRATE				
Velocity - ft/sec	42.73	40.99	40.37	41.36
Actual Volume - acfm	23505	22551	22208	22754
Standard Volume - dscfm	16507	16044	15595	16048
FILTERABLE PARTICULATE EMISSIONS				
Concentration - gr/dscf	0.1370	0.1465	0.1555	0.1463
Conc. - gr/dscf @ 7% O2	0.5248	0.5625	0.6020	0.5631
Mass Rate - lb/hr	19.39	20.15	20.78	20.11
METALS EMISSIONS - lb/hr				
Antimony	< 7.10E-05	< 7.16E-05	3.15E-05	< 5.80E-05
Arsenic	9.19E-05	1.85E-04	9.80E-05	1.25E-04
Beryllium	2.33E-06	< 1.47E-06	< 1.46E-06	< 1.75E-06
Cadmium	2.71E-04	2.80E-04	2.63E-04	2.72E-04
Chromium	2.40E-04	6.81E-04	3.91E-04	4.37E-04
Lead	2.12E-03	7.04E-04	3.96E-05	9.54E-04
Manganese	3.57E-03	4.30E-03	3.37E-03	3.75E-03
Mercury	1.62E-04	3.96E-05	5.98E-05	8.71E-05
Nickel	2.03E-04	3.66E-04	2.67E-04	2.79E-04
Phosphorus	9.05E-03	< 7.17E-03	< 7.14E-03	< 7.78E-03
Selenium	1.73E-04	4.67E-04	3.76E-04	3.39E-04
CO EMISSIONS				
Conc. - ppmdv	345.75	352.00	335.80	344.52
Mass Rate - lb/hr	24.89	24.63	22.84	24.12
NOx EMISSIONS				
Conc. - ppmdv	19.85	23.73	25.14	22.91
Mass Rate - lb/hr (as NO_2)	2.35	2.73	2.81	2.63

TABLE 3.4.2-4: SUMMARY OF PM_{10} AND M202 RESULTS: SAWDUST DRYER INLET.

RUN I.D.	IN-M201A-R1	IN-M201A-R2	IN-M201A-R3	AVERAGE
DATE	11/03/92	11/04/92	11/04/92	
TIME STARTED	16:54	10:15	14:12	
TIME ENDED	19:36	12:55	16:49	
<u>SAMPLING PARAMETERS</u>				
Metered Volume - dcf	59.176	56.140	58.603	57.973
Corrected Volume - dscf	58.972	56.639	58.246	57.952
Total Test Time - min	131.25	125.5	129.75	128.83
% Isokinetics	114.8	95.5	98.8	103.0
D50	9.59	9.58	9.63	9.60
<u>GAS PARAMETERS</u>				
Gas Temperature - oF	486.0	492.0	503.2	493.7
Oxygen - %	15.63	15.7	15.4	15.6
Carbon Dioxide - %	4.8	4.9	5.1	4.9
Moisture - %	6.66	6.35	6.05	6.35
<u>GAS FLOWRATE</u>				
Velocity - ft/sec	49.89	60.58	59.01	56.49
Actual Volume - acfm	47604	57812	56312	53909
Standard Volume - dscfm	24714	29814	28690	27739
<u>PM DISTRIBUTION</u>				
% Filterable	39.98	41.75	47.09	42.94
% Condensible	60.02	58.25	52.91	57.06
<u>PARTICULATE EMISSIONS</u>				
Concentration - gr/dscf	0.0404	0.0339	0.0324	0.0356
Mass Rate - lb/hr	8.56	8.67	7.97	8.40
<u>CO EMISSIONS</u>				
Conc. - ppmdv	405.75	478.80	485.13	456.56
Mass Rate - lb/hr	43.74	62.26	60.71	55.57
<u>NOx EMISSIONS</u>				
Conc. - ppmdv	31.32	37.20	35.73	34.75
Mass Rate - lb/hr (as NO_2)	5.55	7.95	7.34	6.94

TABLE 3.4.2-5: SUMMARY OF PM_{10} AND M202 RESULTS: SAWDUST DRYER OUTLET A.

RUN I.D.	OA-M201A-R1	OA-M201A-R2	OA-M201A-R3	AVERAGE
DATE	11/03/92	11/04/92	11/04/92	
TIME STARTED	16:54	10:15	14:12	
TIME ENDED	19:27	12:42	16:45	
SAMPLING PARAMETERS				
Metered Volume - dcf	52.652	46.381	56.995	52.009
Corrected Volume - dscf	52.724	47.097	55.901	51.907
Total Test Time - min	120.9	117	135.1	124.33
% Isokinetics	112.2	101.6	99.1	104.3
D50	8.97	9.41	9.21	9.20
GAS PARAMETERS				
Gas Temperature - oF	186.9	185.9	183.7	185.5
Oxygen - %	17.55	17.0	17.3	17.3
Carbon Dioxide - %	2.6	3.5	3.2	3.1
Moisture - %	10.93	11.50	11.48	11.30
GAS FLOWRATE				
Velocity - ft/sec	43.35	44.54	47.01	44.97
Actual Volume - acfm	23848	24502	25861	24737
Standard Volume - dscfm	16845	17177	18099	17374
PM DISTRIBUTION				
% Filterable	88.37	97.29	64.17	83.28
% Condensible	11.63	2.71	35.83	16.72
PARTICULATE EMISSIONS				
Concentration - gr/dscf	0.0155	0.0139	0.0266	0.0187
Mass Rate - lb/hr	2.24	2.05	4.12	2.80
CO EMISSIONS				
Conc. - ppmdv	259.80	385.83	337.84	327.82
Mass Rate - lb/hr	19.09	28.91	26.67	24.89
NOx EMISSIONS				
Conc. - ppmdv	15.33	24.09	22.40	20.61
Mass Rate - lb/hr (as NO_2)	1.85	2.96	2.90	2.57

TABLE 3.4.2-6: SUMMARY OF PM_{10} AND M202 RESULTS: SAWDUST DRYER OUTLET B.

RUN I.D.	OB-M201A-R1	OB-M201A-R2	OB-M201A-R3	AVERAGE
DATE	11/03/92	11/04/92	11/04/92	
TIME STARTED	16:54	10:15	14:12	
TIME ENDED	19:24	12:55	16:41	
<u>SAMPLING PARAMETERS</u>				
Metered Volume - dcf	45.427	65.889	50.230	53.849
Corrected Volume - dscf	44.870	66.492	50.122	53.828
Total Test Time - min	114.1	146.7	127.9	129.57
% Isokinetics	94.3	108.6	92.8	98.6
D50	9.61	8.84	9.62	9.36
<u>GAS PARAMETERS</u>				
Gas Temperature - oF	176.2	178.5	179.2	178.0
Oxygen - %	17.08	17.08	17.12	17.09
Carbon Dioxide - %	3.41	3.36	3.40	3.39
Moisture - %	11.19	9.37	11.02	10.53
<u>GAS FLOWRATE</u>				
Velocity - ft/sec	45.78	45.18	46.90	45.95
Actual Volume - acfm	25181	24852	25801	25278
Standard Volume - dscfm	18067	18081	18311	18153
<u>PM DISTRIBUTION</u>				
% Filterable	83.25	90.02	84.73	86.00
% Condensible	16.75	9.98	15.27	14.00
<u>PARTICULATE EMISSIONS</u>				
Concentration - gr/dscf	0.0196	0.0124	0.0170	0.0163
Mass Rate - lb/hr	3.04	1.91	2.67	2.54
<u>CO EMISSIONS</u>				
Conc. - ppmdv	338.85	375.25	367.27	360.46
Mass Rate - lb/hr	26.70	29.59	29.33	28.54
<u>NOx EMISSIONS</u>				
Conc. - ppmdv	19.04	20.29	22.97	20.77
Mass Rate - lb/hr (as NO_2)	2.46	2.63	3.01	2.70

TABLE 3.4.2-9: SUMMARY OF TOTAL FLUORIDE SAMPLING: EPA METHOD 13B: SAWDUST DRYER INLET.

RUN NUMBER	IN-M13-R1	IN-M13-R2	IN-M13-R3	AVERAGE
DATE	10/29/92	10/29/92	10/30/92	
SAMPLING DATA				
Metered Volume - cf	130.045	101.348	97.560	109.651
Corrected Vol. - dscf	124.192	97.313	94.436	105.313
Total Test Time - min	120	120	120	120
% Isokinetic	90.0	96.6	94.2	93.6
GAS PARAMETERS				
Gas Temperature - oF	451	412	451	438
Oxygen - %	18.3	18.3	18.3	18.3
Carbon Dioxide - %	3.0	3.0	3.0	3.0
Moisture - %	5.3	5.4	5.0	5.2
GAS FLOWRATE				
Velocity - ft/sec	46.68	46.57	48.84	47.36
Actual Volume - acfm	44545	44440	46609	45198
Standard Volume - dscfm	23861	25090	24948	24633
FLUORIDE EMISSIONS				
Concentration - mg/l	1.8	6.5	73.8	27.4
Sample Vol. - ml	1043.1	1329.1	1259.3	1210.5
Conc. - ppmdv	0.68	3.97	44.00	16.22
Conc. - ppmdv @ 7% O2	3.61	21.22	235.25	86.70
Mass Rate - lb/hr	0.048	0.295	3.248	1.197

Notes: Sample values for 2-M13-LOCE and 2A-M13-LOCE were combined for IN-M13-R2.

Sample values for 3-M13-LOCE and 3A-M13-LOCE were combined for IN-M13-R3.

TABLE 3.4.2-10: SUMMARY OF TOTAL FLUORIDE SAMPLING: EPA METHOD 13B: SAWDUST DRYER OUTLET A.

RUN NUMBER DATE	OA-M13-R1 10/29/92	OA-M13-R2 10/29/92	OA-M13-R3 10/30/92	AVERAGE
SAMPLING DATA				
Metered Volume - cf	104.366	78.196	85.682	89.415
Corrected Vol. - dscf	105.663	80.150	87.015	90.943
Total Test Time - min	120	120	120	120
% Isokinetic	75.4	94.7	105.9	92.0
GAS PARAMETERS				
Gas Temperature - oF	149	141	155	148
Oxygen - %	19.1	19.1	19.1	19.1
Carbon Dioxide - %	2.2	2.2	2.2	2.2
Moisture - %	6.15	8.05	10.32	8.17
GAS FLOWRATE				
Velocity - ft/sec	72.81	43.40	43.13	53.11
Actual Volume - acfm	42033	25052	24897	30661
Standard Volume - dscfm	32995	19911	19339	24082
FLUORIDE EMISSIONS				
Concentration - mg/l	8.4	8.0	13.6	10.0
Sample Volume - ml.	883.9	657.1	1310.3	950.4
Conc. - ppmdv	3.14	2.93	9.16	5.08
Conc. - ppmdv @ 7% O2	24.26	22.65	70.71	39.21
Mass Rate - lb/hr	0.307	0.173	0.524	0.334

Note: Sample values for 3-M13-LOCF1 and 3A-M13-LOCF1 were combined for OA-M13-R3.

TABLE 3.4.2-11: HF DATA AND RESULTS: EPA METHOD 26: SAWDUST DRYER INLET.

RUN NUMBER	**IN-M26-R1**	**IN-M26-R2**	**IN-M26-R3**	AVERAGE
DATE	11/02/92	11/02/92	11/03/92	
START TIME	13:11	17:33	09:15	
END TIME	15:28	19:42	11:32	
SAMPLING DATA				
Initial Meter Volume - l	2158.380	2289.670	2411.150	2286.400
Final Meter Volume - l	2278.440	2409.690	2531.190	2406.440
Net Meter Volume - l	120.060	120.020	120.040	120.040
Average Meter Temp. - F	77.4	79.4	80.0	78.9
Barometric Pres. - in.Hg	29.48	29.57	29.72	29.59
Avg. Meter Pres. - in.W.C.	1.0	1.0	1.0	1.0
Meter Cal. Factor - Gamma	1.0047	1.0047	1.0047	
Corr. Meter Volume - dscf	4.132	4.128	4.145	4.135
Oxygen - %dv	15.22	14.46	15.59	15.09
GAS FLOWRATE DATA				
Velocity - ft/sec	54.90	55.55	51.22	53.89
Actual Volume - acfm	52390	53009	48878	51426
Standard Volume - dscfm	27292	27249	25509	26683
LABORATORY DATA				
Fluoride Analysis				
Total Liquid Volume - ml	40.0	40.0	33.0	37.7
Floride Conc. - mg/liter	252.0	300.0	127.0	226.3
HF EMISSIONS				
Concentration - ppmdv	109.071	129.977	45.209	94.752
Conc. - ppmdv @ 7% O2	266.916	280.540	118.343	221.933
Mass Rate - lb/hr	9.275	11.036	3.593	7.968

TABLE 3.4.2-12: HF DATA AND RESULTS: EPA METHOD 26: SAWDUST DRYER OUTLET A.

RUN NUMBER	**OA-M26-R1**	**OA-M26-R2**	**OA-M26-R3**	**AVERAGE**
DATE	11/02/92	11/02/92	11/03/92	
START TIME	13:11	17:33	09:15	
END TIME	15:28	19:42	11:32	
SAMPLING DATA				
Initial Meter Volume - l	211.050	457.060	716.460	461.523
Final Meter Volume - l	453.850	714.760	1092.400	753.670
Net Meter Volume - l	242.800	257.700	375.940	292.147
Average Meter Temp. - F	64.3	65.3	68.0	65.9
Barometric Pres. - in.Hg	29.46	29.57	29.72	29.58
Avg. Meter Pres. - in.W.C.	1.0	1.0	1.0	1.0
Meter Cal. Factor - Gamma	1.0007	1.0007	1.0007	
Corr. Meter Volume - dscf	8.525	9.065	13.225	10.272
Oxygen - %dv	16.79	16.65	17.76	17.07
GAS FLOWRATE DATA				
Velocity - ft/sec	42.15	41.12	41.96	41.74
Actual Volume - acfm	23185	22622	23081	22963
Standard Volume - dscfm	17478	16774	17029	17094
LABORATORY DATA				
Fluoride Analysis				
Total Liquid Volume - ml	40.0	40.0	40.0	40.0
Fluoride Conc. - mg/liter	105.0	300.0	45.8	150.3
HF EMISSIONS				
Concentration - ppmdv	22.028	59.190	6.194	29.138
Conc. - ppmdv @ 7% O2	74.499	193.587	27.420	98.502
Mass Rate - lb/hr	1.200	3.094	0.329	1.541

TABLE 3.4.2-13: HF DATA AND RESULTS: EPA METHOD 26: SAWDUST DRYER OUTLET B.

RUN NUMBER	OB-M26-R1	OB-M26-R2	OB-M26-R3	AVERAGE
DATE	11/02/92	11/02/92	11/03/92	
START TIME	13:11	17:33	09:15	
END TIME	15:28	19:42	11:32	
SAMPLING DATA				
Initial Meter Volume - l	455.560	703.230	955.120	704.637
Final Meter Volume - l	702.150	956.900	1198.630	952.560
Net Meter Volume - l	246.590	253.670	243.510	247.923
Average Meter Temp. - F	73.2	75.7	85.6	78.2
Barometric Pres. - in.Hg	29.48	29.57	29.72	29.59
Avg. Meter Pres. - in.W.C.	1.0	1.0	1.0	1.0
Meter Cal. Factor - Gamma	1.0009	1.0009	1.0009	
Corr. Meter Volume - dscf	8.521	8.753	8.291	8.522
Oxygen - %dv	16.81	16.64	16.91	16.79
GAS FLOWRATE DATA				
Velocity - ft/sec	35.79	38.62	38.55	37.65
Actual Volume - acfm	19690	21243	21209	20714
Standard Volume - dscfm	15377	15734	16346	15819
LABORATORY DATA				
Fluoride Analysis				
Total Liquid Volume - ml	40.0	40.0	40.0	40.0
Fluoride Conc. - mg/liter	1.4	238.0	200.0	146.5
HF EMISSIONS				
Concentration - ppmdv	0.294	48.635	43.145	30.691
Conc. - ppmdv @ 7% O2	0.999	158.691	150.304	103.331
Mass Rate - lb/hr	0.014	2.384	2.197	1.532

TABLE 3.4.2-14: SUMMARY OF VOLATILE ORGANICS EMISSIONS: METHOD 0030: SAWDUST DRYER INLET.

RUN I.D.	IN-VST-R1	IN-VST-R2	IN-VST-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:42	09:02	
TIME ENDED	15:05	20:47	12:27	
<u>VOLATILE ORGANIC EMISSIONS - lb/hr</u>				
Acetone	3.94E-03	2.79E-03	1.29E-02	6.55E-03
Acrylonitrile	4.43E-04	< 3.46E-04	< 3.00E-04	<3.63E-04
Benzene	9.60E-03	9.50E-03	6.70E-03	8.60E-03
Bromomethane	5.62E-04	7.44E-04	1.19E-03	8.32E-04
2-butanone	< 3.23E-04	< 5.05E-06	< 5.13E-06	<1.11E-04
Carbon Disulfide	2.66E-04	3.32E-04	2.15E-04	2.71E-04
Carbon Tetrachloride	< 4.94E-06	< 5.05E-06	< 5.13E-06	<5.04E-06
Chloroform	< 4.94E-06	< 5.05E-06	< 5.13E-06	<5.04E-06
Chloromethane	1.50E-02	1.68E-02	2.30E-03	1.14E-02
Ethylbenzene	2.20E-04	1.07E-04	1.00E-04	1.42E-04
2-Hexanone	< 4.94E-06	< 5.05E-06	< 5.13E-06	<5.04E-06
Iodomethane	2.66E-03	3.64E-03	3.88E-03	3.39E-03
Methylene Chloride	1.72E-04	6.90E-05	1.33E-04	1.25E-04
M-/p-xylene	4.23E-04	1.85E-04	8.35E-04	4.81E-04
O-xylene	< 1.39E-04	< 5.97E-05	9.00E-05	9.64E-05
Styrene	< 4.94E-06	< 1.17E-05	< 5.13E-06	<7.27E-06
Tetrachloroethane	< 4.94E-06	< 5.05E-06	< 5.13E-06	<5.04E-06
Toluene	2.05E-03	1.08E-03	2.14E-03	1.75E-03
1,1,1-trichloroethane	< 4.94E-06	< 5.05E-06	< 5.13E-06	<5.04E-06
Trichloroethene	< 4.94E-06	< 5.05E-06	< 5.13E-06	<5.04E-06
Trichlorofluoromethane	1.17E-04	7.75E-05	9.50E-05	9.64E-05
Vinyl Acetate	< 4.94E-06	< 5.05E-06	< 5.13E-06	<5.04E-06

Notes: Emission values for IN-VST-R1 represent the average of five separate vost tube analyses. Sample IN-M0030-R1D was lost due to laboratory computer failure (see Appendix G.5 case narrative accompanying laboratory data report). Emission values for runs IN-VST-R2 and IN-VST-R3 represent the averages of six separate vost tube analyses. See Appendix B.6.1 for more detailed test results.

All VOST tubes were analyzed in tandem according to the guidelines of Methods 8240 and 5040. The response factors used are the average response factors from the initial calibration. Amounts reported for target compounds that are not detected are denoted as < 0.001. The reported laboratory values for non-detected target compounds are calculated using an area of 20 counts.

The acquisitions for samples OB-M0030-R1B and IN-M0030-R1D were lost due to laboratory computer failure.

All field samples were observed to contain condensation within the Tenax and Tenax-charcoal tubes prior to analysis. Saturation of target analytes or TICs may have inhibited target analyte recoveries. All saturated compounds should be considered underestimated and may interfere with the detection or quantitation of target analytes.

Compounds found in the field samples at levels less than five times the amount found in the associated blank should not be considered native to the samples. The majority of the samples had one or more compounds at levels over the calibration range. This occurrence is identified with an 'E' label, these quantitations should be considered estimates.

Ketone results for VOST matrices should be considered semi-quantitative as these compounds often experience erratic recovery from VOST.

See case narrative accompanying the volatile organics laboratory data, Appendix G.5, for additional information.

TABLE 3.4.2-15: SUMMARY OF VOLATILE ORGANICS EMISSIONS: METHOD 0030: SAWDUST DRYER OUTLET A

RUN I.D.	OA-VST-R1	OA-VST-R2	OA-VST-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:47	17:34	09:02	
TIME ENDED	16:38	21:42	12:47	

VOLATILE ORGANIC EMISSIONS - lb/hr

Acetone	5.96E-03	6.15E-03	1.09E-02	7.67E-03
Acrylonitrile	< 7.39E-05	1.48E-04	2.18E-04	< 1.46E-04
Benzene	3.87E-03	4.24E-03	4.12E-03	4.08E-03
Bromomethane	3.27E-04	3.38E-04	4.70E-04	3.78E-04
2-butanone	1.03E-03	< 6.53E-04	4.79E-03	< 2.16E-03
Carbon Disulfide	1.07E-04	1.35E-04	1.50E-04	1.31E-04
Carbon Tetrachloride	< 3.30E-06	< 3.25E-06	< 3.33E-06	< 3.29E-06
Chloroform	< 3.30E-06	< 3.25E-06	< 3.33E-06	< 3.29E-06
Chloromethane	8.41E-03	1.12E-02	1.16E-02	1.04E-02
Ethylbenzene	8.16E-05	6.73E-05	1.10E-04	8.63E-05
2-Hexanone	< 3.30E-06	< 3.25E-06	< 3.33E-06	< 3.29E-06
Iodomethane	1.55E-03	1.83E-03	2.07E-03	1.81E-03
Methylene Chloride	2.59E-04	1.76E-03	4.41E-04	8.19E-04
M-/p-xylene	4.64E-04	1.68E-04	2.56E-04	2.96E-04
O-xylene	7.60E-05	4.77E-05	7.56E-05	6.64E-05
Styrene	< 3.30E-06	< 3.25E-06	< 9.28E-06	< 5.28E-06
Tetrachloroethane	< 3.30E-06	< 3.25E-06	< 3.33E-06	< 3.29E-06
Toluene	3.91E-03	4.00E-03	3.82E-03	3.91E-03
1,1,1-trichloroethane	< 1.89E-05	< 3.25E-06	< 3.33E-06	< 8.50E-06
Trichloroethene	< 3.30E-06	< 3.25E-06	< 3.33E-06	< 3.29E-06
Trichlorofluoromethane	< 1.51E-04	< 9.15E-05	1.56E-04	< 1.33E-04
Vinyl Acetate	< 3.30E-06	< 3.25E-06	< 3.33E-06	< 3.29E-06

Notes: The emission values for each run represent the average of six separate vost tube analyses. See Appendix B.6.2 for more detailed test results.

All VOST tubes were analyzed in tandem according to the guidelines of Methods 8240 and 5040. The response factors used are the average response factors from the initial calibration. Amounts reported for target compounds that are not detected are denoted as < 0.001. The reported laboratory values for non-detected target compounds are calculated using an area of 20 counts.

The acquisitions for samples OB-M0030-R1B and IN-M0030-R1D were lost due to laboratory computer failure.

All field samples were observed to contain condensation within the Tenax and Tenax-charcoal tubes prior to analysis. Saturation of target analytes or TICs may have inhibited target analyte recoveries. All saturated compounds should be considered underestimated and may interfere with the detection or quantitation of target analytes.

Compounds found in the field samples at levels less than five times the amount found in the associated blank should not be considered native to the samples. The majority of the samples had one or more compounds at levels over the calibration range. This occurrence is identified with an 'E' label, these quantitations should be considered estimates.

Ketone results for VOST matrices should be considered semi-quantitative as these compounds often experience erratic recovery from VOST.

See case narrative accompanying the volatile organics laboratory data, Appendix G.5, for additional information.

TABLE 3.4.2-16: SUMMARY OF VOLATILE ORGANICS EMISSIONS: METHOD 0030: SAWDUST DRYER OUTLET B

RUN I.D.	OB-VST-R1	OB-VST-R2	OB-VST-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:47	17:32	09:05	
TIME ENDED	16:37	21:46	12:45	

VOLATILE ORGANIC EMISSIONS - lb/hr				
Acetone	9.61E-03	9.47E-03	9.83E-03	9.64E-03
Acrylonitrile	2.21E-04	< 2.03E-04	2.13E-04	<2.12E-04
Benzene	6.12E-03	4.99E-03	4.59E-03	5.23E-03
Bromomethane	4.35E-04	< 3.73E-04	4.69E-04	<4.26E-04
2-butanone	1.44E-03	< 1.59E-03	2.60E-03	<1.88E-03
Carbon Disulfide	1.80E-04	1.63E-04	1.81E-04	1.75E-04
Carbon Tetrachloride	< 3.10E-06	< 3.09E-06	< 2.87E-06	<3.02E-06
Chloroform	< 3.10E-06	< 3.09E-06	< 2.87E-06	<3.02E-06
Chloromethane	1.29E-02	1.02E-02	1.35E-02	1.22E-02
Ethylbenzene	1.19E-04	6.89E-05	6.00E-05	8.27E-05
2-Hexanone	< 3.10E-06	< 3.09E-06	< 2.87E-06	<3.02E-06
Iodomethane	2.19E-03	2.17E-03	2.41E-03	2.26E-03
Methylene Chloride	2.07E-04	3.45E-04	6.79E-05	2.07E-04
M-/p-xylene	2.26E-04	1.47E-04	1.66E-04	1.80E-04
O-xylene	7.16E-05	4.65E-05	4.56E-05	5.46E-05
Styrene	< 8.52E-05	< 1.04E-04	< 2.62E-05	<7.18E-05
Tetrachloroethane	< 3.10E-06	< 3.09E-06	< 2.87E-06	<3.02E-06
Toluene	3.52E-03	2.93E-03	3.44E-03	3.30E-03
1,1,1-trichloroethane	< 3.10E-06	< 1.19E-05	< 2.87E-06	<5.97E-06
Trichloroethene	< 3.10E-06	< 3.09E-06	< 2.87E-06	<3.02E-06
Trichlorofluoromethane	1.05E-04	< 5.84E-05	8.71E-05	<8.35E-05
Vinyl Acetate	< 3.10E-06	< 3.09E-06	< 2.87E-06	<3.02E-06

Notes: Emission values for OB-VST-R1 represent the average of five separate vost tube analyses. Sample OB-M0030-R1D was lost due to laboratory computer failure (see Appendix G.5 case narrative accompanying laboratory data report). Emission values for runs IN-VST-R2 and IN-VST-R3 represent the averages of six separate vost tube analyses. See Appendix B.6.1 for more detailed test results.

All VOST tubes were analyzed in tandem according to the guidelines of Methods 8240 and 5040. The response factors used are the average response factors from the initial calibration. Amounts reported for target compounds that are not detected are denoted as < 0.001. The reported laboratory values for non-detected target compounds are calculated using an area of 20 counts.

The acquisitions for samples OB-M0030-R1B and IN-M0030-R1D were lost due to laboratory computer failure.

All field samples were observed to contain condensation within the Tenax and Tenax-charcoal tubes prior to analysis. Saturation of target analytes or TICs may have inhibited target analyte recoveries. All saturated compounds should be considered underestimated and may interfere with the detection or quantitation of target analytes.

Compounds found in the field samples at levels less than five times the amount found in the associated blank should not be considered native to the samples. The majority of the samples had one or more compounds at levels over the calibration range. This occurrence is identified with an 'E' label, these quantitations should be considered estimates.

Ketone results for VOST matrices should be considered semi-quantitative as these compounds often experience erratic recovery from VOST.

See case narrative accompanying the volatile organics laboratory data, Appendix G.5, for additional information.

TABLE 3.4.2-17: SUMMARY OF EMISSIONS FOR SEMIVOLATILE COMPOUNDS: METHOD 0010: SAWDUST DRYER INLET

RUN I.D.	IN-M0010-R1	IN-M0010-R2	IN-M0010-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:42	09:02	
TIME ENDED	15:19	21:02	13:12	
<u>SAMPLING PARAMETERS</u>				
Metered Volume - dcf	104.311	105.158	108.266	105.912
Corrected Volume - dscf	105.646	108.272	111.242	108.387
Total Test Time - min	180	180	180	180
% Isokinetics	101.5	100.4	100.8	100.9
<u>GAS PARAMETERS</u>				
Gas Temperature - oF	502.3	494.8	498.5	498.6
Oxygen - %	16.42	16.0	16.3	16.3
Carbon Dioxide - %	4.5	4.3	4.4	4.4
Moisture - %	5.60	4.43	5.79	5.27
<u>GAS FLOWRATE</u>				
Velocity - ft/sec	54.94	55.78	57.83	56.18
Actual Volume - acfm	52427	53228	55184	53613
Standard Volume - dscfm	26998	27968	28623	27863
<u>SEMIVOLATILE EMISSIONS (lb/hr)</u>				
Bis(2-ethylhexy)phthalate	6.49E-04	4.68E-04	3.13E-04	4.77E-04
Dibenzofuran	5.81E-04	1.73E-04	< 3.40E-08	<2.51E-04
Dimethylphthalate	< 3.38E-08	< 3.42E-08	5.10E-04	<1.70E-04
Di-n-butylphthalate	< 3.38E-08	3.04E-04	< 3.40E-08	<1.01E-04
2-methylphenol	< 3.38E-08	< 3.42E-08	< 3.40E-08	<3.40E-08
Naphthalene	1.71E-02	< 3.42E-08	< 3.40E-08	<5.70E-03
Phenol	< 3.38E-08	3.18E-03	4.36E-04	<1.20E-03
<u>CO EMISSIONS</u>				
Conc. - ppmdv	433.13	474.74	493.83	467.23
Mass Rate - lb/hr	51.00	57.91	61.65	56.86
<u>NOx EMISSIONS</u>				
Conc. - ppmdv	39.36	26.47	32.00	32.61
Mass Rate - lb/hr (as NO_2)	7.61	5.30	6.56	6.49

TABLE 3.4.2-18: SUMMARY OF EMISSIONS FOR SEMIVOLATILE COMPOUNDS: METHOD 0010: SAWDUST DRYER OUTLET A

RUN I.D.	OA-M0010-R1	OA-M0010-R2	OA-M0010-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:32	09:02	
TIME ENDED	15:19	21:02	13:12	
<u>SAMPLING PARAMETERS</u>				
Metered Volume - dcf	120.273	120.553	121.899	120.908
Corrected Volume - dscf	120.642	121.676	123.588	121.969
Total Test Time - min	180	180	180	180
% Isokinetics	102.0	103.6	103.1	102.9
<u>GAS PARAMETERS</u>				
Gas Temperature - oF	185.7	185.5	186.0	185.7
Oxygen - %	16.97	17.2	17.2	17.1
Carbon Dioxide - %	3.5	3.4	3.4	3.4
Moisture - %	9.67	10.51	9.51	9.90
<u>GAS FLOWRATE</u>				
Velocity - ft/sec	44.93	45.00	45.21	45.05
Actual Volume - acfm	24718	24755	24869	24781
Standard Volume - dscfm	17689	17558	17918	17722
<u>SEMIVOLATILE EMISSIONS (lb/hr)</u>				
Bis(2-ethylhexy)phthalate	3.44E-04	< 1.91E-08	3.21E-04	< 2.21E-04
Dibenzofuran	< 1.94E-08	< 1.91E-08	< 1.92E-08	< 1.92E-08
Dimethylphthalate	< 1.94E-08	< 1.91E-08	< 1.92E-08	< 1.92E-08
Di-n-butylphthalate	3.63E-04	< 1.91E-08	1.28E-04	< 1.64E-04
2-methylphenol	< 1.94E-08	< 1.91E-08	< 1.92E-08	< 1.92E-08
Naphthalene	< 1.94E-08	< 1.91E-08	< 1.92E-08	< 1.92E-08
Phenol	< 1.94E-08	1.33E-03	1.59E-03	< 9.74E-04
<u>CO EMISSIONS</u>				
Conc. - ppmdv	325.22	353.45	349.82	342.83
Mass Rate - lb/hr	25.09	27.07	27.34	26.50
<u>NOx EMISSIONS</u>				
Conc. - ppmdv	23.78	24.11	23.24	23.71
Mass Rate - lb/hr (as NO_2)	3.01	3.03	2.98	3.01

TABLE 3.4.2-19: SUMMARY OF EMISSIONS FOR SEMIVOLATILE COMPOUNDS: METHOD 0010: SAWDUST DRYER OUTLET B

RUN I.D.	OB-M0010-R1	OB-M0010-R2	OB-M0010-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:32	09:02	
TIME ENDED	15:19	21:02	13:12	
<u>SAMPLING PARAMETERS</u>				
Metered Volume - dcf	110.613	113.298	107.111	110.341
Corrected Volume - dscf	111.720	115.140	109.810	112.223
Total Test Time - min	180	180	180	180
% Isokinetics	98.9	101.5	103.8	101.4
<u>GAS PARAMETERS</u>				
Gas Temperature - oF	181.9	182.3	182.3	182.2
Oxygen - %	17.19	17.5	17.3	17.3
Carbon Dioxide - %	3.3	3.2	3.2	3.2
Moisture - %	6.46	8.46	8.05	7.65
<u>GAS FLOWRATE</u>				
Velocity - ft/sec	41.11	42.17	38.98	40.75
Actual Volume - acfm	22612	23200	21443	22419
Standard Volume - dscfm	16895	16954	15821	16557
<u>SEMIVOLATILE EMISSIONS (lb/hr)</u>				
Bis(2-ethylhexy)phthalate	8.94E-04	4.49E-03	9.08E-04	2.10E-03
Dibenzofuran	< 2.00E-08	< 1.95E-08	< 1.91E-08	< 1.95E-08
Dimethylphthalate	< 2.00E-08	< 1.95E-08	< 1.91E-08	< 1.95E-08
Di-n-butylphthalate	3.82E-05	8.63E-05	1.75E-04	9.98E-05
2-methylphenol	< 2.00E-08	< 1.95E-08	< 1.91E-08	< 1.95E-08
Naphthalene	< 2.00E-08	< 1.95E-08	< 1.91E-08	< 1.95E-08
Phenol	5.86E-04	9.24E-04	7.67E-04	7.59E-04
<u>CO EMISSIONS</u>				
Conc. - ppmdv	313.89	341.50	338.45	331.28
Mass Rate - lb/hr	23.13	25.25	23.35	23.91
<u>NOx EMISSIONS</u>				
Conc. - ppmdv	24.84	21.78	20.58	22.40
Mass Rate - lb/hr (as NO_2)	3.01	2.65	2.33	2.66

TABLE 3.4.2-20: SUMMARY OF TOTAL HYDROCARBONS EMISSIONS: EPA METHOD 25A: SAWDUST DRYER INLET

RUN I.D.	IN-M25A-R1	IN-M25A-R2	IN-M25A-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:42	09:02	
TIME ENDED	15:19	21:02	13:12	
SAMPLING PARAMETERS				
Metered Volume - dcf	104.311	105.158	108.266	105.912
Corrected Volume - dscf	105.646	108.272	111.242	108.387
Total Test Time - min	180	180	180	180
% Isokinetics	101.5	100.4	100.8	100.9
GAS PARAMETERS				
Gas Temperature - oF	502.3	494.8	498.5	498.6
Oxygen - %	16.42	16.0	16.3	16.3
Carbon Dioxide - %	4.5	4.3	4.4	4.4
Moisture - %	5.60	4.43	5.79	5.27
GAS FLOWRATE				
Velocity - ft/sec	54.94	55.78	57.83	56.18
Actual Volume - acfm	52427	53228	55184	53613
Standard Volume - dscfm	26998	27968	28623	27863
CO EMISSIONS				
Conc. - ppmdv	433.13	474.74	493.83	467.23
Mass Rate - lb/hr	51.00	57.91	61.65	56.86
NOx EMISSIONS				
Conc. - ppmdv	39.36	26.47	32.00	32.61
Mass Rate - lb/hr (as NO_2)	7.61	5.30	6.56	6.49
THC EMISSIONS				
Conc. - ppmwv (as Propane)	4.49	4.85	4.78	4.71
Conc. - ppmdv (as Propane)	4.76	5.07	5.07	4.97
Conc. - ppmdv (as Carbon)	14.27	15.22	15.22	14.90
Mass Rate - lb/hr (as Carbon)	0.72	0.80	0.81	0.78

(*) Gas flowrate data was taken from IN-M0010-R1,R2, and R3, respectively.

TABLE 3.4.2-21: SUMMARY OF TOTAL HYDROCARBONS EMISSIONS: EPA METHOD 25A: SAWDUST DRYER OUTLET A

RUN I.D.	OA-M25A-R1	OA-M25A-R2	OA-M25A-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:32	09:02	
TIME ENDED	15:19	21:02	13:12	
SAMPLING PARAMETERS				
Metered Volume - dcf	120.273	120.553	121.899	120.908
Corrected Volume - dscf	120.642	121.676	123.588	121.969
Total Test Time - min	180	180	180	180
% Isokinetics	102.0	103.6	103.1	102.9
GAS PARAMETERS				
Gas Temperature - oF	185.7	185.5	186.0	185.7
Oxygen - %	16.97	17.2	17.2	17.1
Carbon Dioxide - %	3.5	3.4	3.4	3.4
Moisture - %	9.67	10.51	9.51	9.90
GAS FLOWRATE				
Velocity - ft/sec	44.93	45.00	45.21	45.05
Actual Volume - acfm	24718	24755	24869	24781
Standard Volume - dscfm	17689	17558	17918	17722
CO EMISSIONS				
Conc. - ppmdv	325.22	353.45	349.82	342.83
Mass Rate - lb/hr	25.09	27.07	27.34	26.50
NOx EMISSIONS				
Conc. - ppmdv	23.78	24.11	23.24	23.71
Mass Rate - lb/hr (as NO_2)	3.01	3.03	2.98	3.01
THC EMISSIONS				
Conc. - ppmwv (as Propane)	2.67	17.86	20.34	13.62
Conc. - ppmdv (as Propane)	2.96	19.96	22.48	15.13
Conc. - ppmdv (as Carbon)	8.87	59.87	67.43	45.39
Mass Rate - lb/hr (as Carbon)	0.29	1.97	2.26	1.51

(*) Gas flowrate data was taken from OA-M0010-R1,R2, and R3, respectively.

TABLE 3.4.2-22: SUMMARY OF TOTAL HYDROCARBONS EMISSIONS: EPA METHOD 25A: SAWDUST DRYER OUTLET B

RUN I.D.	OB-M25A-R1	OB-M25A-R2	OB-M25A-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:32	09:02	
TIME ENDED	15:19	21:02	13:12	
SAMPLING PARAMETERS				
Metered Volume - dcf	110.613	113.298	107.111	110.341
Corrected Volume - dscf	111.720	115.140	109.810	112.223
Total Test Time - min	180	180	180	180
% Isokinetics	98.9	101.5	103.8	101.4
GAS PARAMETERS				
Gas Temperature - oF	181.9	182.3	182.3	182.2
Oxygen - %	17.19	17.5	17.3	17.3
Carbon Dioxide - %	3.3	3.2	3.2	3.2
Moisture - %	6.46	8.46	8.05	7.65
GAS FLOWRATE				
Velocity - ft/sec	41.11	42.17	38.98	40.75
Actual Volume - acfm	22612	23200	21443	22419
Standard Volume - dscfm	16895	16954	15821	16557
CO EMISSIONS				
Conc. - ppmdv	313.89	341.50	338.45	331.28
Mass Rate - lb/hr	23.13	25.25	23.35	23.91
NOx EMISSIONS				
Conc. - ppmdv	24.84	21.78	20.58	22.40
Mass Rate - lb/hr (as NO_2)	3.01	2.65	2.33	2.66
THC EMISSIONS				
Conc. - ppmwv (as Propane)	9.70	7.57	12.87	10.05
Conc. - ppmdv (as Propane)	10.37	8.27	14.00	10.88
Conc. - ppmdv (as Carbon)	31.11	24.81	41.99	32.64
Mass Rate - lb/hr (as Carbon)	0.98	0.79	1.24	1.00

(*) Gas flowrate data was taken from OB-M0010-R1,R2, and R3, respectively.

TABLE 3.4.2-23: SUMMARY OF ETHANE AND METHANE EMISSIONS: EPA METHOD 18: SAWDUST DRYER INLET

RUN I.D.	IN-M18-R1	IN-M18-R2	IN-M18-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:42	09:02	
TIME ENDED	15:19	21:02	13:12	
GAS PARAMETERS*				
Gas Temperature - oF	502.3	494.8	498.5	498.6
Oxygen - %	16.42	16.0	16.3	16.3
Carbon Dioxide - %	4.5	4.3	4.4	4.4
Moisture - %	5.60	4.43	5.79	5.27
GAS FLOWRATE				
Velocity - ft/sec	54.94	55.78	57.83	56.18
Actual Volume - acfm	52427	53228	55184	53613
Standard Volume - dscfm	26998	27968	28623	27863
ETHANE EMISSIONS				
Conc. - ug/ml	< 0.050	< 0.050	< 0.050	< 0.050
Conc. - ppm	< 40.012	< 40.012	< 40.012	<40.012
Conc. - mg/m3	< 50.000	< 50.000	< 50.000	<50.000
Mass Rate - lb/hr	< 5.056	< 5.238	< 5.361	< 5.218
METHANE EMISSIONS				
Conc. - ug/ml	< 0.101	< 0.101	< 0.101	< 0.101
Conc. - ppm	<151.469	<151.469	<151.469	<151.469
Conc. - mg/m3	<101.000	<101.000	<101.000	<101.000
Mass Rate - lb/hr	< 10.214	< 10.581	< 10.829	< 10.541

(*) Gas flowrate data was taken from IN-M0010-R1,R2, and R3, respectively.

TABLE 3.4.2-24: SUMMARY OF ETHANE AND METHANE EMISSIONS: EPA METHOD 18: SAWDUST DRYER OUTLET A

RUN I.D.	**OA-M18-R1**	**OA-M18-R2**	**OA-M18-R3**	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:32	09:02	
TIME ENDED	15:19	21:02	13:12	
<u>GAS PARAMETERS</u>*				
Gas Temperature - oF	185.7	185.5	186.0	185.7
Oxygen - %	16.97	17.2	17.2	17.1
Carbon Dioxide - %	3.5	3.4	3.4	3.4
Moisture - %	9.67	10.51	9.51	9.90
<u>GAS FLOWRATE</u>				
Velocity - ft/sec	44.93	45.00	45.21	45.05
Actual Volume - acfm	24718	24755	24869	24781
Standard Volume - dscfm	17689	17558	17918	17722
<u>ETHANE EMISSIONS</u>				
Conc. - ug/ml	< 0.050	< 0.050	< 0.050	< 0.050
Conc. - ppm	< 40.012	< 40.012	< 40.012	<40.012
Conc. - mg/m3	< 50.000	< 50.000	< 50.000	<50.000
Mass Rate - lb/hr	< 3.313	< 3.288	< 3.356	< 3.319
<u>METHANE EMISSIONS</u>				
Conc. - ug/ml	< 0.101	6.150	< 0.101	< 2.117
Conc. - ppm	<151.469	9223.083	<151.469	<3175.340
Conc. - mg/m3	<101.000	6150.000	<101.000	<2117.333
Mass Rate - lb/hr	< 6.692	404.468	< 6.779	< 139.313

(*) Gas flowrate data was taken from OA-M0010-R1,R2, and R3, respectively.

TABLE 3.4.2-25: SUMMARY OF ETHANE AND METHANE EMISSIONS: EPA METHOD 18: SAWDUST DRYER OUTLET B

RUN I.D.	OB-M18-R1	OB-M18-R2	OB-M18-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:32	09:02	
TIME ENDED	15:19	21:02	13:12	
GAS PARAMETERS*				
Gas Temperature - oF	181.9	182.3	182.3	182.2
Oxygen - %	17.19	17.5	17.3	17.3
Carbon Dioxide - %	3.3	3.2	3.2	3.2
Moisture - %	6.46	8.46	8.05	7.65
GAS FLOWRATE				
Velocity - ft/sec	41.11	42.17	38.98	40.75
Actual Volume - acfm	22612	23200	21443	22419
Standard Volume - dscfm	16895	16954	15821	16557
ETHANE EMISSIONS				
Conc. - ug/ml	< 0.050	< 0.050	< 0.050	< 0.050
Conc. - ppm	< 40.012	< 40.012	< 40.012	<40.012
Conc. - mg/m3	< 50.000	< 50.000	< 50.000	<50.000
Mass Rate - lb/hr	< 3.164	< 3.175	< 2.963	< 3.101
METHANE EMISSIONS				
Conc. - ug/ml	< 0.101	< 0.101	< 0.101	< 0.101
Conc. - ppm	<151.469	<151.469	<151.469	<151.469
Conc. - mg/m3	<101.000	<101.000	<101.000	<101.000
Mass Rate - lb/hr	< 6.392	< 6.414	< 5.985	< 6.264

(*) Gas flowrate data was taken from OB-M0010-R1,R2, and R3, respectively.

Table 5.5-1 **SUMMARY OF VOLATILE EMISSIONS: EPA METHOD 0030: EPA GAS AUDIT CYLINDER #539.**

RUN I.D. DATE	C539-VST-R1A 11/12/92	C539-VST-R1B 11/12/92	C539-VST-R1C 11/12/92	AVERAGE
POLLUTANT CONCENTRATION - ug/Nm3				
Acetone	< 0.110	< 0.089	2.857	< 1.019
Acrylonitrile	< 0.110	< 0.089	< 0.110	< 0.103
Benzene	< 0.110	< 0.089	< 0.110	< 0.103
Bromomethane	5.280	7.199	6.153	6.211
2-butanone	4.620	5.866	6.043	5.510
Carbon Disulfide	< 0.110	< 0.089	< 0.110	< 0.103
Carbon Tetrachloride	< 0.110	< 0.089	< 0.110	< 0.103
Chloroform	< 0.110	4.000	< 0.110	< 1.407
Chloromethane	11.220	11.021	11.098	11.113
Ethylbenzene	< 0.110	< 0.089	< 0.110	< 0.103
2-Hexanone	< 0.110	< 0.089	< 0.110	< 0.103
Iodomethane	< 0.110	< 0.089	< 0.110	< 0.103
Methylene Chloride	10.120	1.689	0.989	4.266
M-/p-xylene	1.430	< 0.089	< 0.110	< 0.543
O-xylene	< 0.110	< 0.089	< 0.110	< 0.103
Styrene	< 0.110	< 0.089	< 0.110	< 0.103
Tetrachloroethene	< 0.110	< 0.089	< 0.110	< 0.103
Toluene	4.510	0.622	0.440	1.857
1,1,1-trichloroethane	32.450	31.464	27.250	30.388
Trichloroethene	30.580	30.042	32.744	31.122
Trichlorofluoromethane	23.540	22.043	33.073	26.219
Vinyl Acetate	< 0.110	< 0.089	< 0.110	< 0.103

Table 5.5-2 SUMMARY OF VOLATILE EMISSIONS: EPA METHOD 0030: EPA GAS AUDIT CYLINDER #540.

RUN I.D.	C540-VST-R1A	C540-VST-R1B	C540-VST-R1C	AVERAGE
DATE	11/12/92	11/12/92	11/12/92	
<u>POLLUTANT CONCENTRATION - ug/Nm3</u>				
Acetone	141.184	26.843	17.146	61.724
Acrylonitrile	< 0.097	< 0.101	< 0.099	< 0.099
Benzene	2.221	1.013	< 0.099	< 1.111
Bromomethane	< 0.097	< 0.101	< 0.099	< 0.099
2-butanone	0.579	< 0.101	0.690	< 0.457
Carbon Disulfide	< 0.097	< 0.101	< 0.099	< 0.099
Carbon Tetrachloride	< 0.097	< 0.101	< 0.099	< 0.099
Chloroform	0.290	0.203	4.434	1.642
Chloromethane	< 0.097	< 0.101	< 0.099	< 0.099
Ethylbenzene	< 0.097	< 0.101	< 0.099	< 0.099
2-Hexanone	< 0.097	< 0.101	< 0.099	< 0.099
Iodomethane	< 0.097	< 0.101	< 0.099	< 0.099
Methylene Chloride	82.663	13.067	15.668	37.132
M-/p-xylene	3.187	< 0.101	< 0.099	< 1.129
O-xylene	< 0.097	< 0.101	< 0.099	< 0.099
Styrene	< 0.097	< 0.101	< 0.099	< 0.099
Tetrachloroethene	< 0.097	< 0.101	< 0.099	< 0.099
Toluene	44.518	30.996	31.631	35.715
1,1,1-trichloroethane	5.504	0.608	1.478	2.530
Trichloroethene	0.483	< 0.101	< 0.099	< 0.228
Trichlorofluoromethane	0.869	2.938	0.690	1.499
Vinyl Acetate	< 0.097	< 0.101	< 0.099	< 0.099

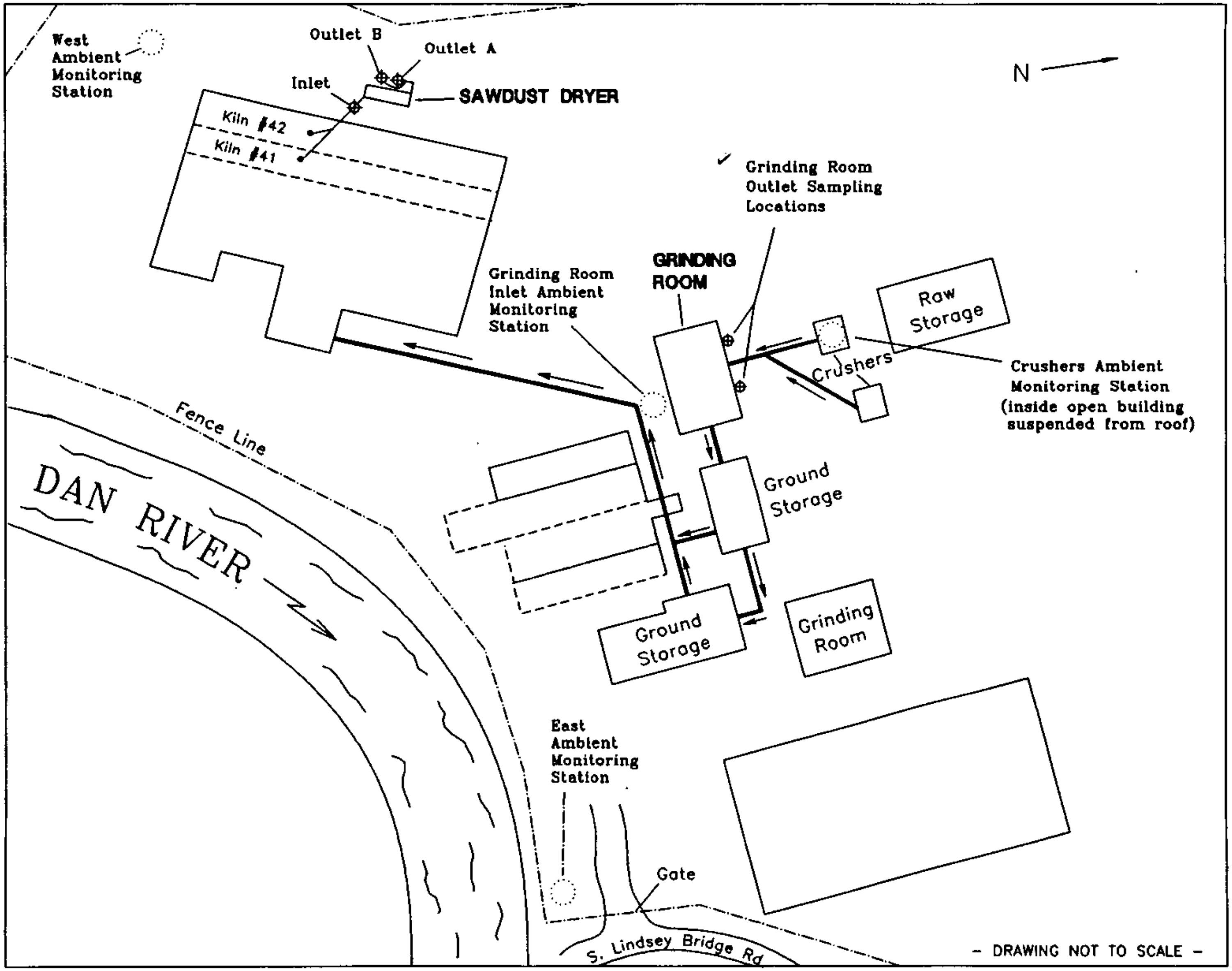


Figure 1.1-1: Pine Hall Brick Facility Site Plan.

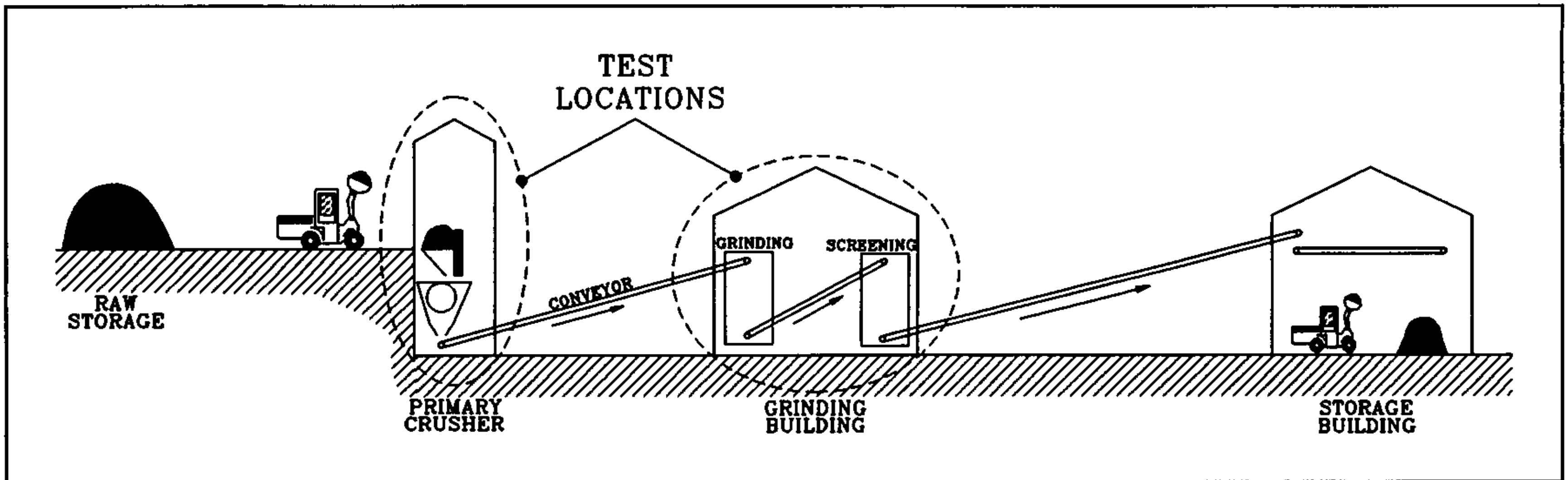


Figure 2.1-1: Crushing, grinding, and storage operations process schematic and emissions testing locations at Pine Hall Brick.

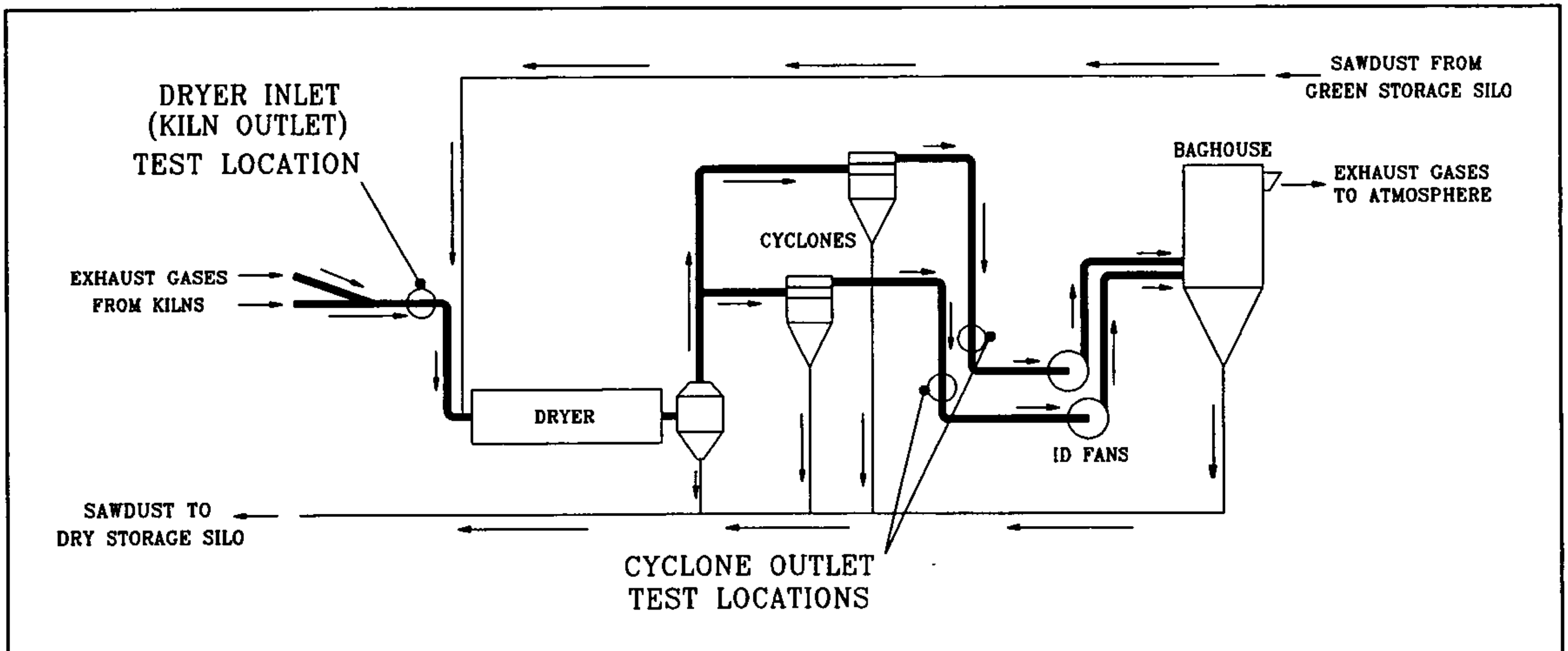
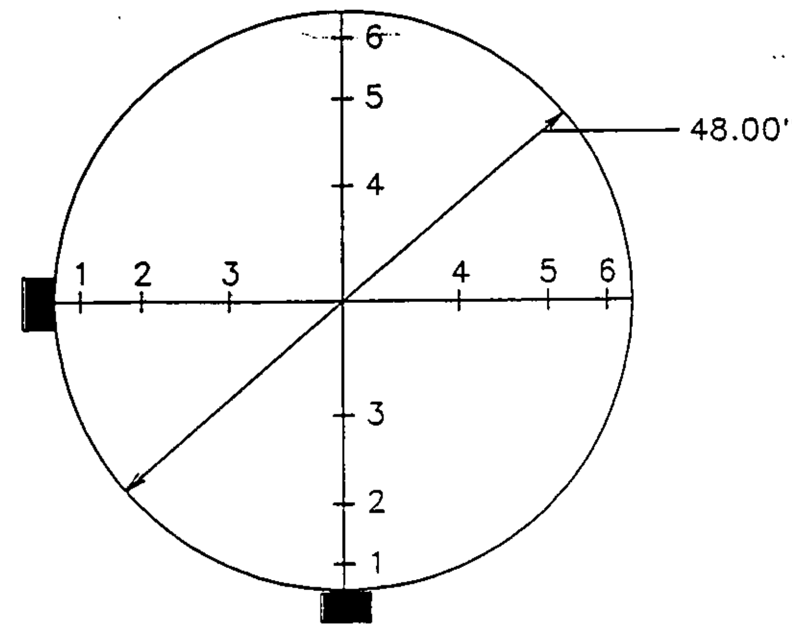


Figure 2.2-1: Sawdust dryer process schematic and emissions testing locations at Pine Hall Brick.



POINT	% ID	DISTANCE FROM INSIDE OF PORT (inches)
1	4.4	2.09
2	14.6	7.03
3	29.6	14.20
4	70.4	33.80
5	85.4	40.97
6	95.6	45.91

INSIDE STACK DIAMETER	48.0 in	4.0 ft

Figure 2.3.3-1: Sampling and Traverse Point Locations for Grinding Building Ducts.

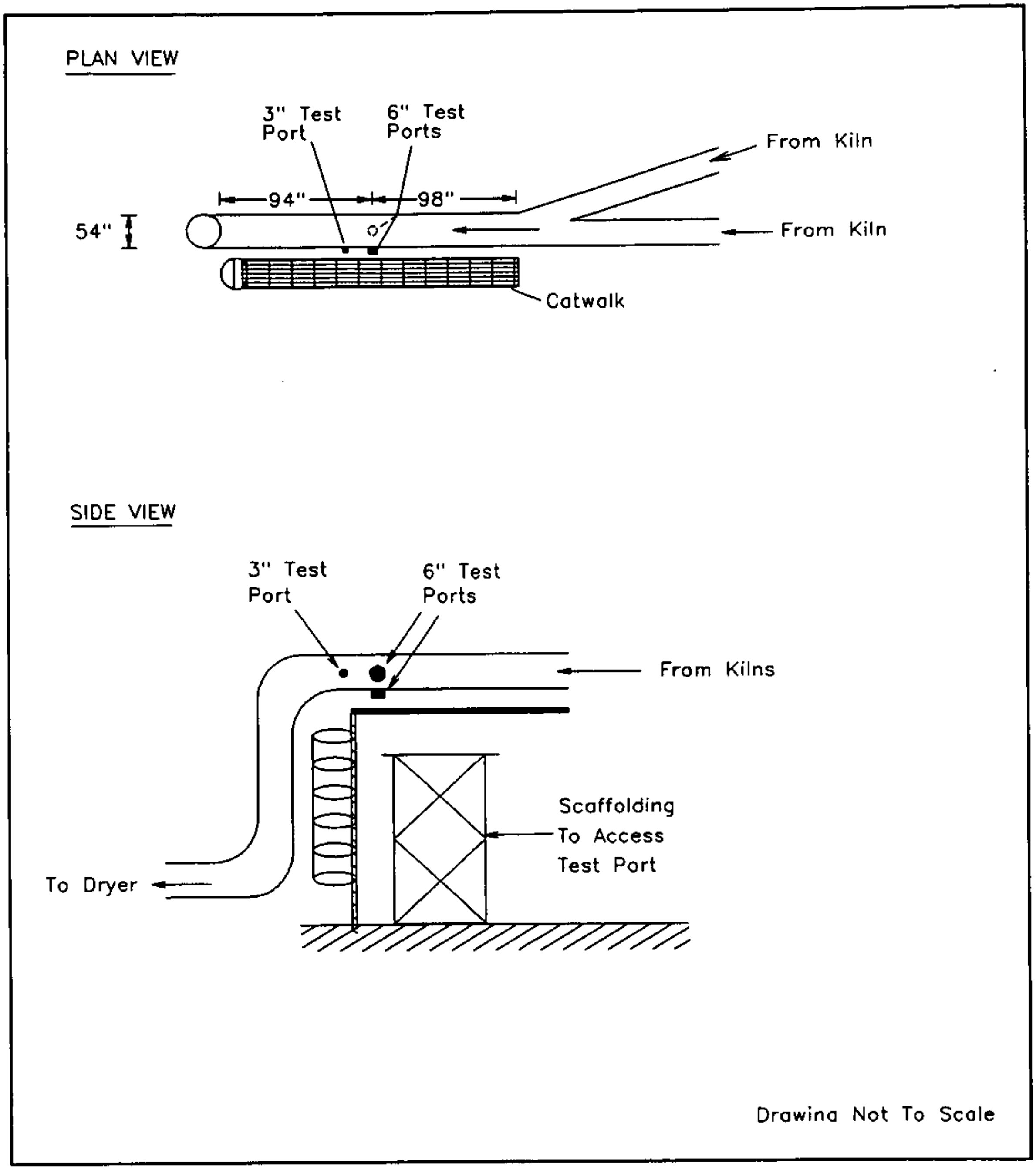
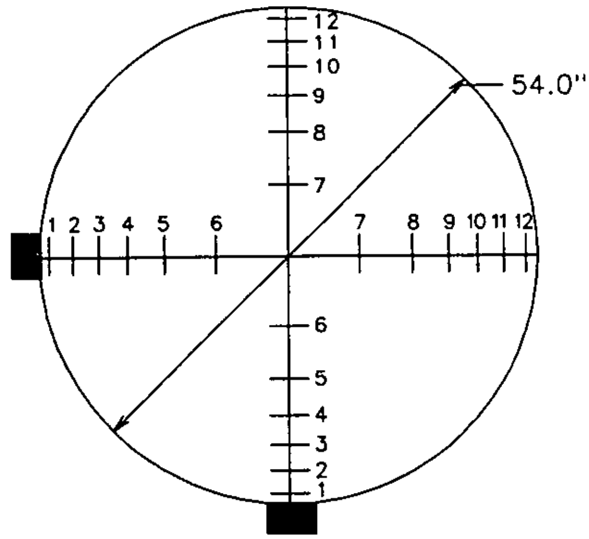


Figure 2.3.4-1: Schematic of the Sampling Location for the Kiln Outlet/Sawdust Dryer Inlet at Pine Hall Brick.



Point	%ID	Distance from Inside of Port (inches)
1	2.1	1.13
2	6.7	3.62
3	11.8	6.37
4	17.7	9.56
5	25.0	13.50
6	35.6	19.22
7	64.4	34.78
8	75.0	40.50
9	82.3	44.44
10	88.2	47.63
11	93.3	50.38
12	97.9	52.87

Inside Stack Diameter	54.0 in.	4.5 ft.
Distance Upstream from Disturbance	94.0 in.	1.74 Dia.
Distance Downstream from Disturbance	98.0 in.	1.80 Dia.

Figure 2.3.4-2: **Schematic of Sampling and Traverse Points for the Kiln Outlet/Sawdust Dryer Inlet at Pine Hall Brick.**

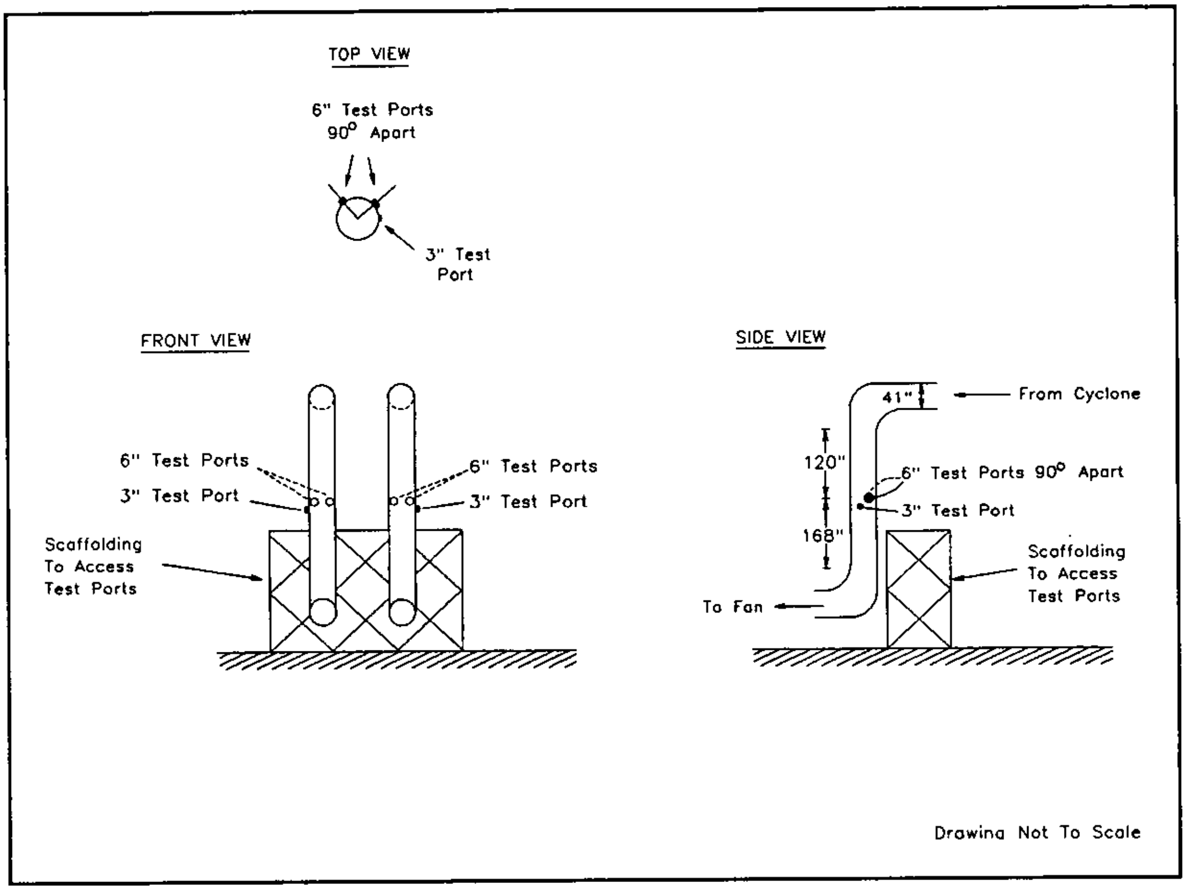
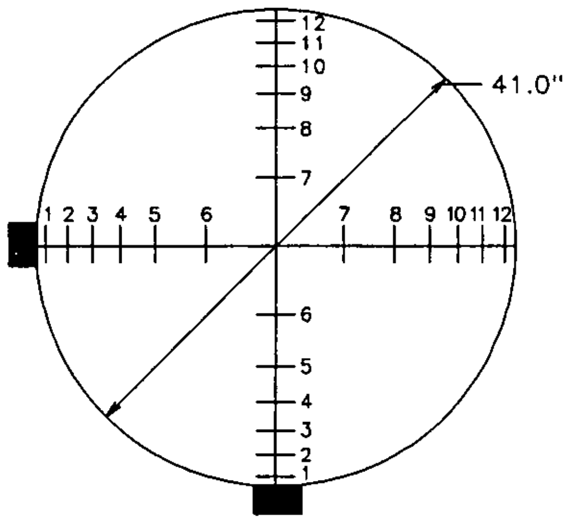


Figure 2.3.5-1: **Schematic of the Sampling Location for the Cyclone Outlets at Pine Hall Brick.**



POINT	% ID	DISTANCE FROM INSIDE OF PORT (inches)
1	2.1	1.00*
2	6.7	2.75
3	11.8	4.84
4	17.7	7.27
5	25.0	10.25
6	35.6	14.58
7	64.4	26.42
8	75.0	30.75
9	82.3	33.73
10	88.2	36.16
11	93.3	38.25
12	97.9	40.00*

(*) Points were adjusted to 1-inch away from stack wall.

INSIDE STACK DIAMETER	41.0 in	3.4 ft
DISTANCE UPSTREAM FROM DISTURBANCE	14.0 ft	4.1 DIA
DISTANCE DOWNSTREAM FROM DISTURBANCE	10.0 ft	2.9 DIA

Figure 2.3.5-2: **Schematic of Sampling and Traverse Points for the Cyclone Outlets at Pine Hall Brick.**

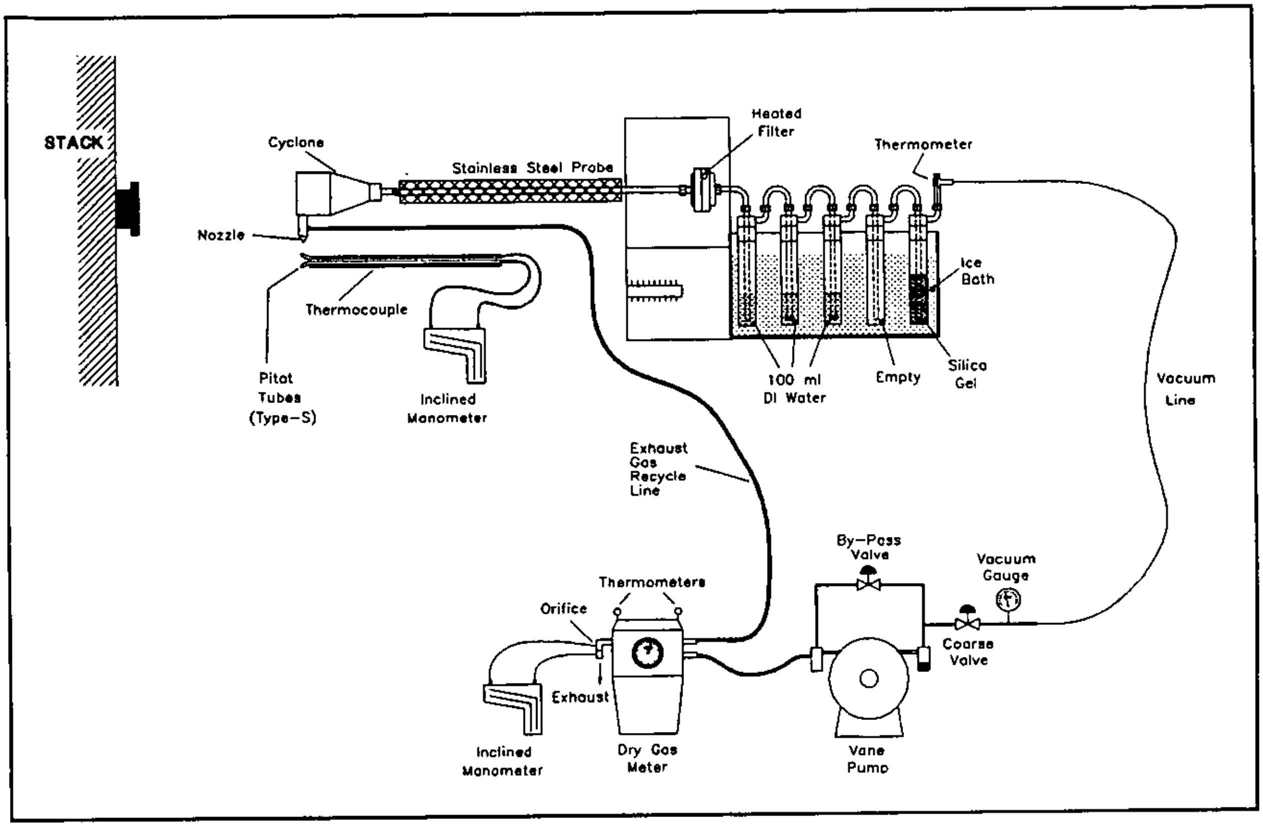


Figure 4.1.5.1-1: EPA Method 201A Sampling Train

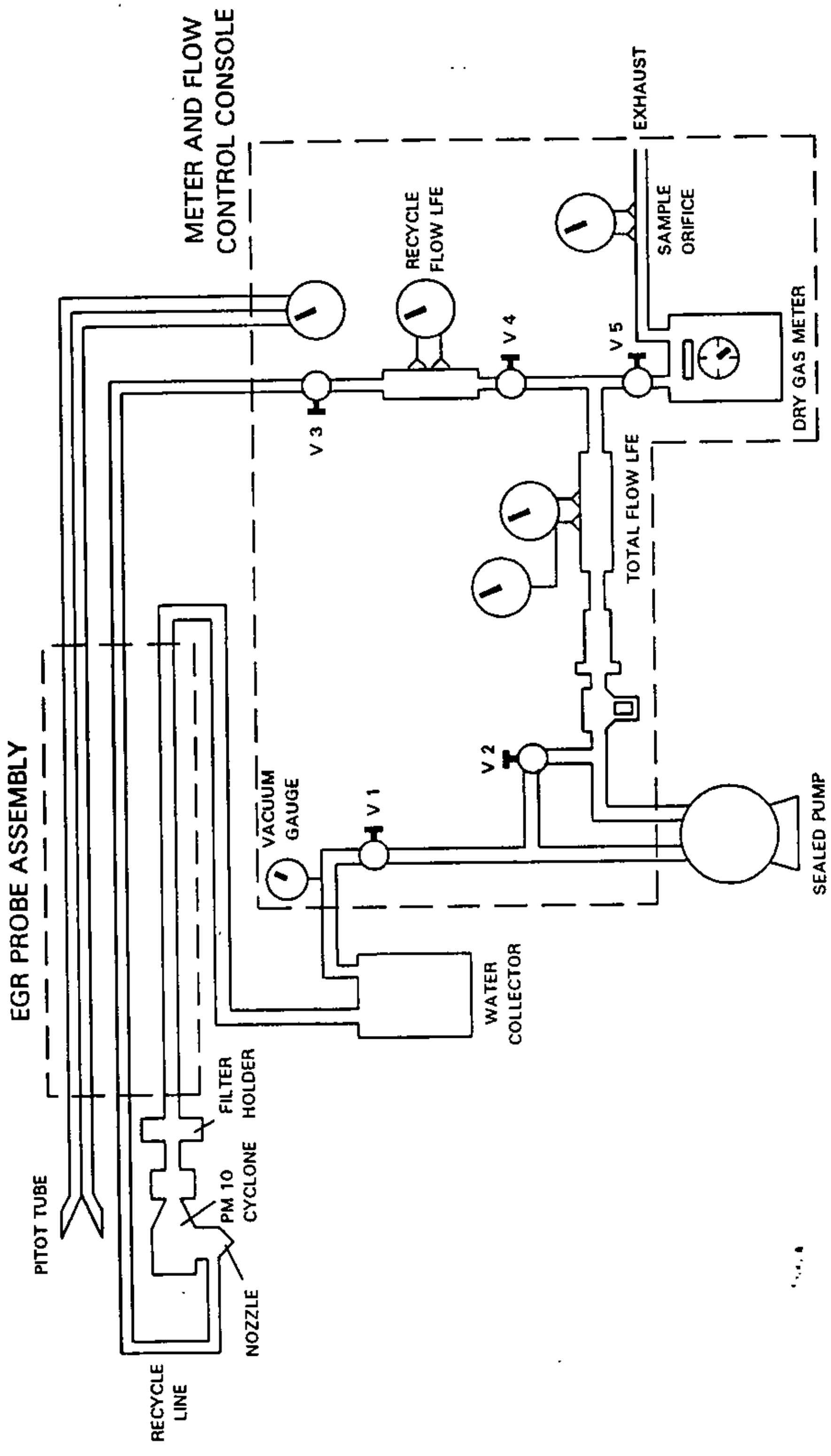


Figure 4.1.5.1-2: EPA Method 201 Sampling Train

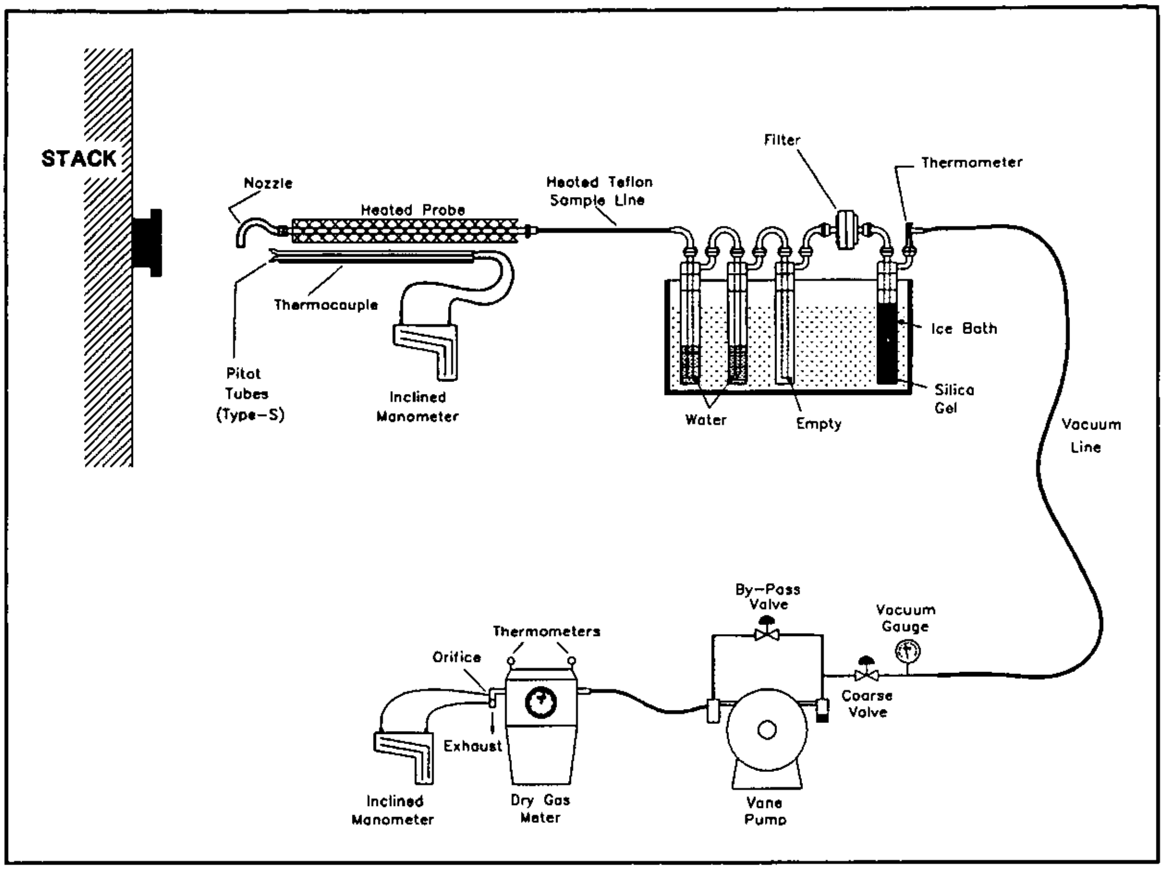


Figure 4.1.6.1-1: EPA Method 13B Sampling Train

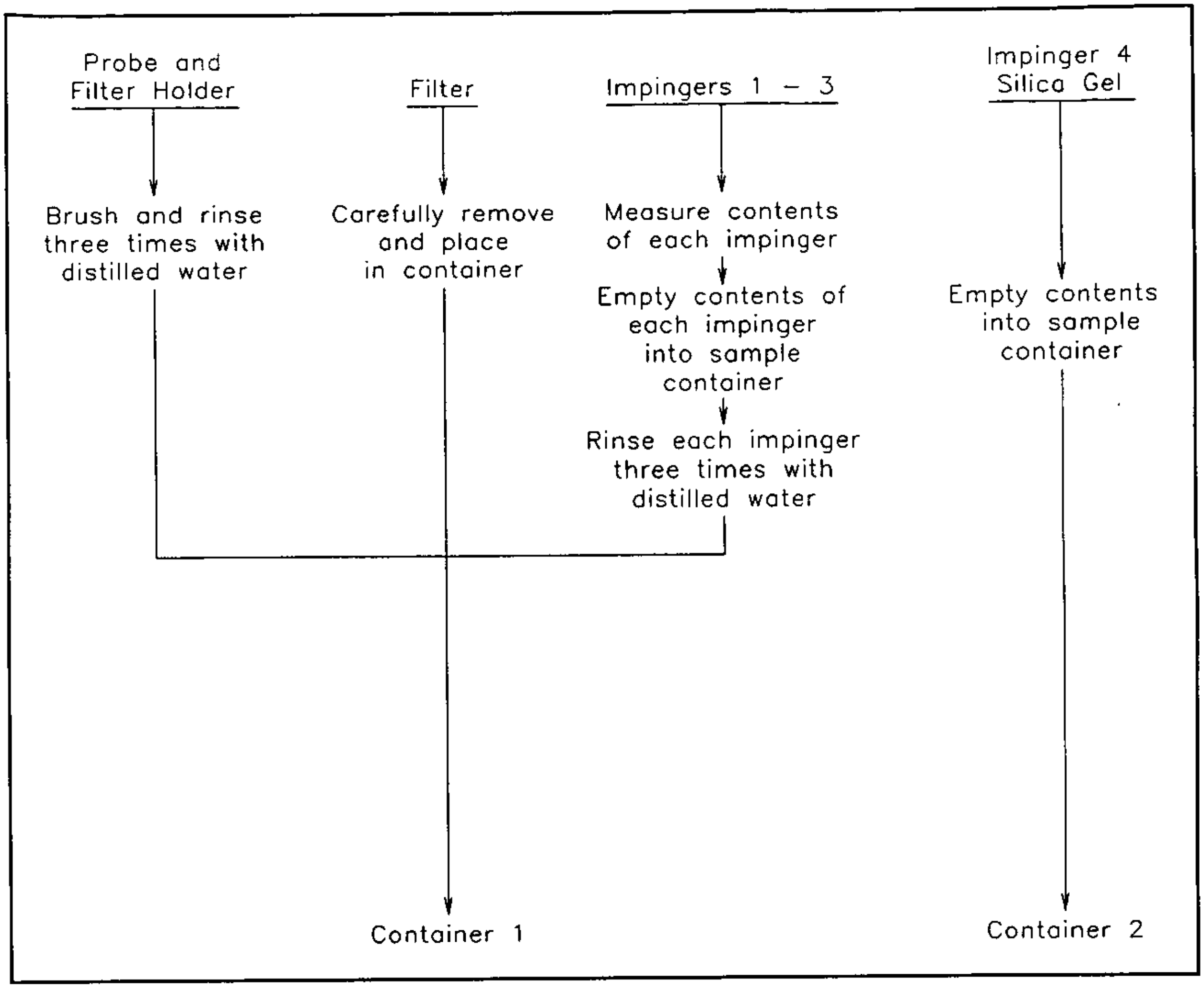


Figure 4.1.6.3-1: EPA Method 13B Recovery Procedure
Source: 40 CFR Part 60, Appendix A

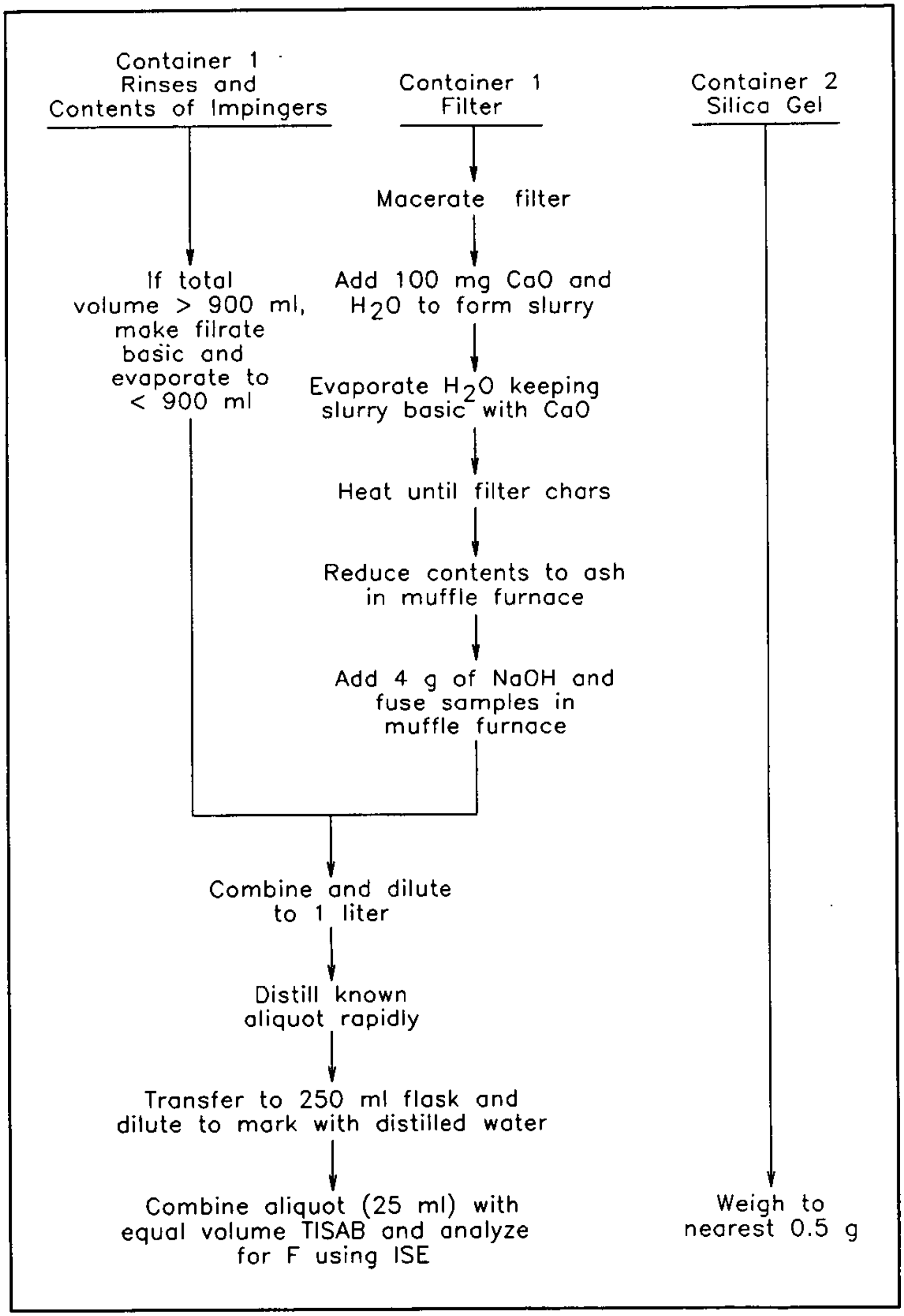


Figure 4.1.6.5-1: EPA Method 13B Analysis Procedure
Source: 40 CFR Part 60, Appendix A

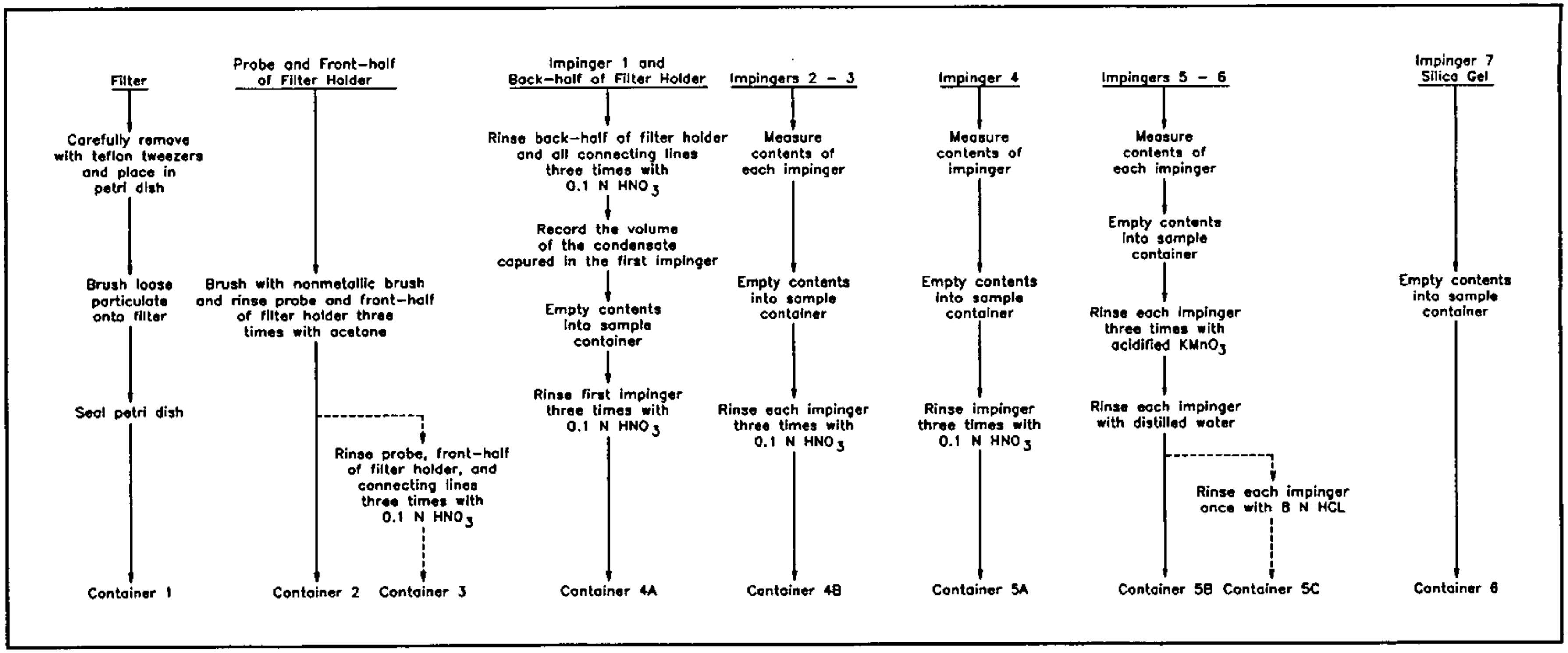


Figure 4.1.7.4-1: Multiple Metals Recovery Procedure
Source: 40 CFR Part 266, Appendix IX, Section 3

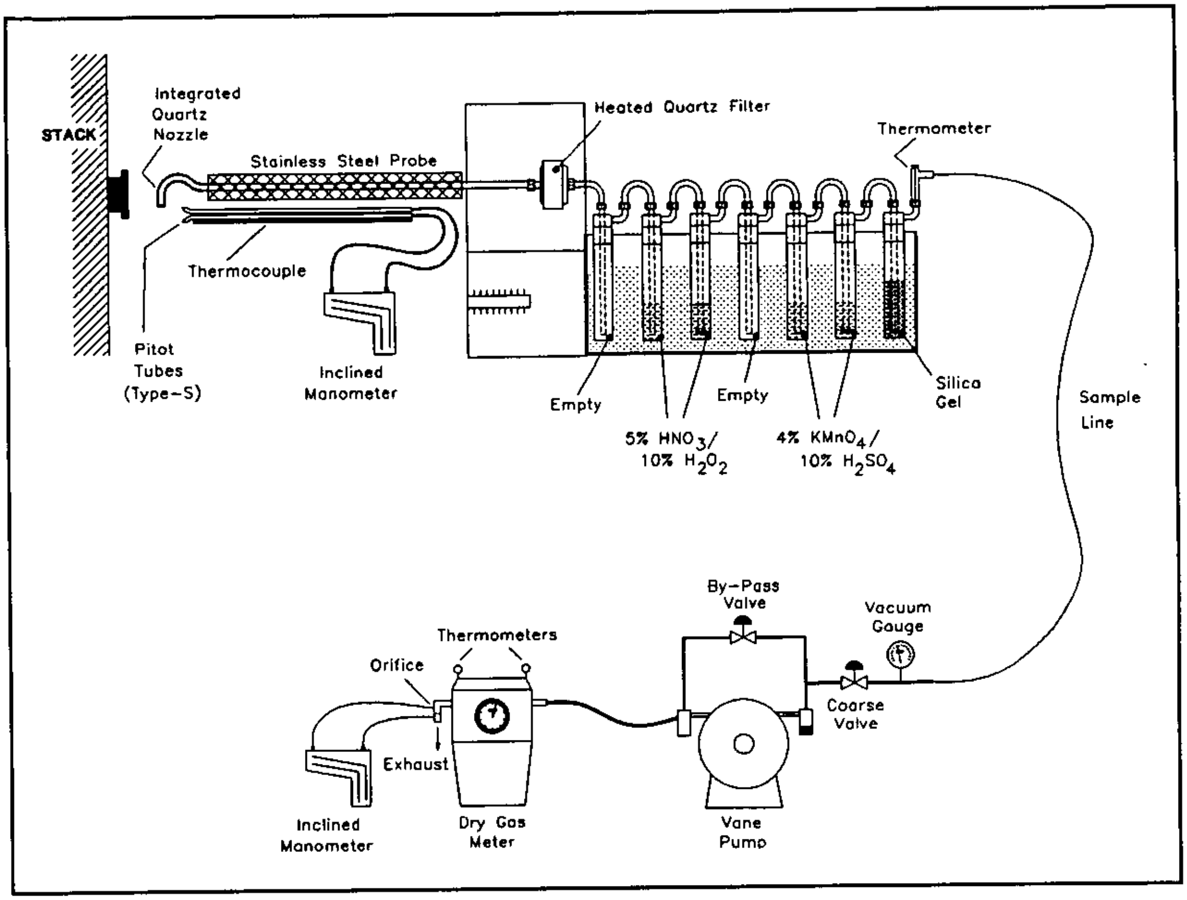


Figure 4.1.7.1-1: Multiple Metals/TSP Sampling Train

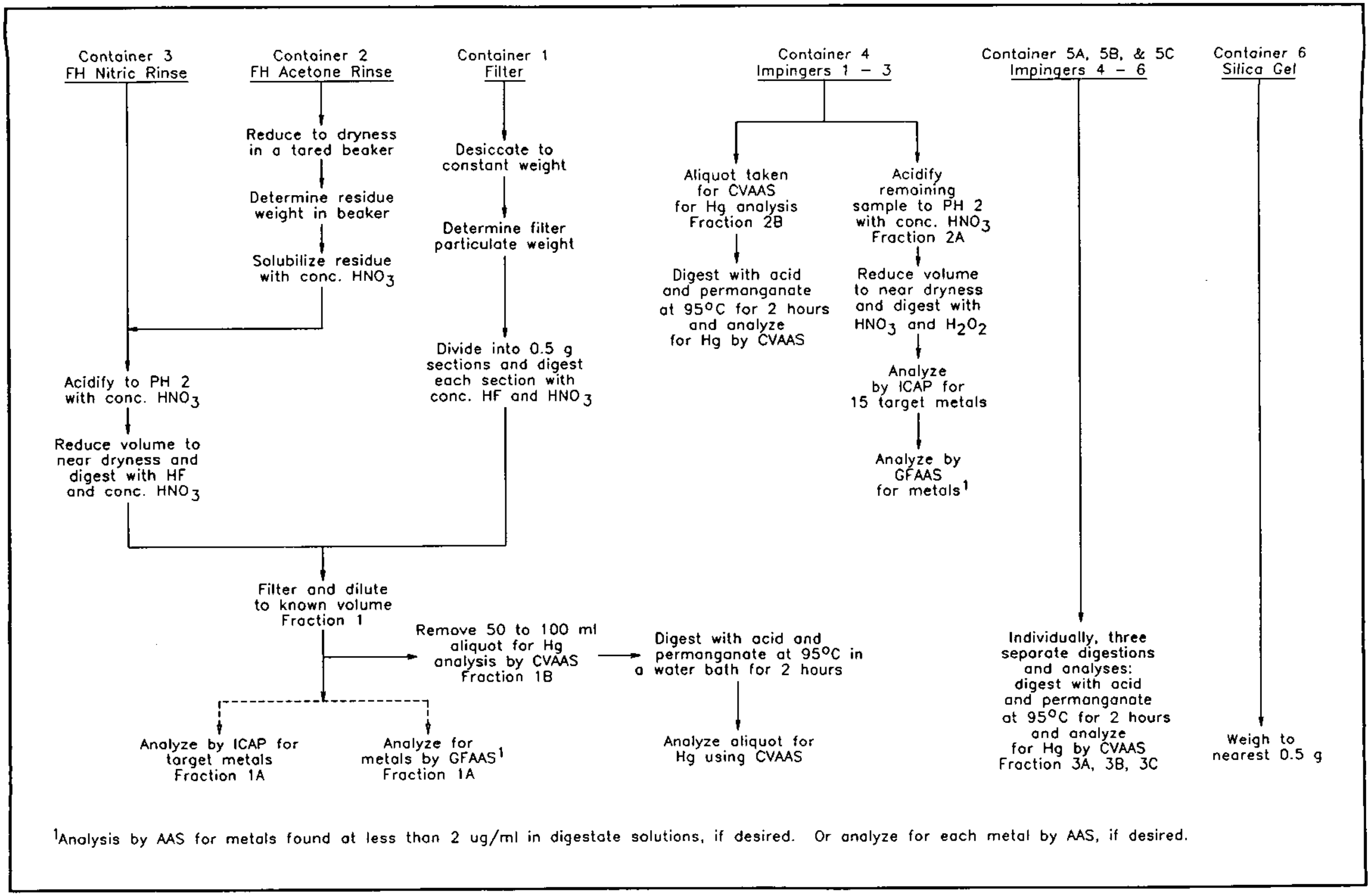


Figure 4.1.7.7-1: Multiple Metals Analysis Procedure
Source: 40 CFR Part 266, Appendix IX, Section 3

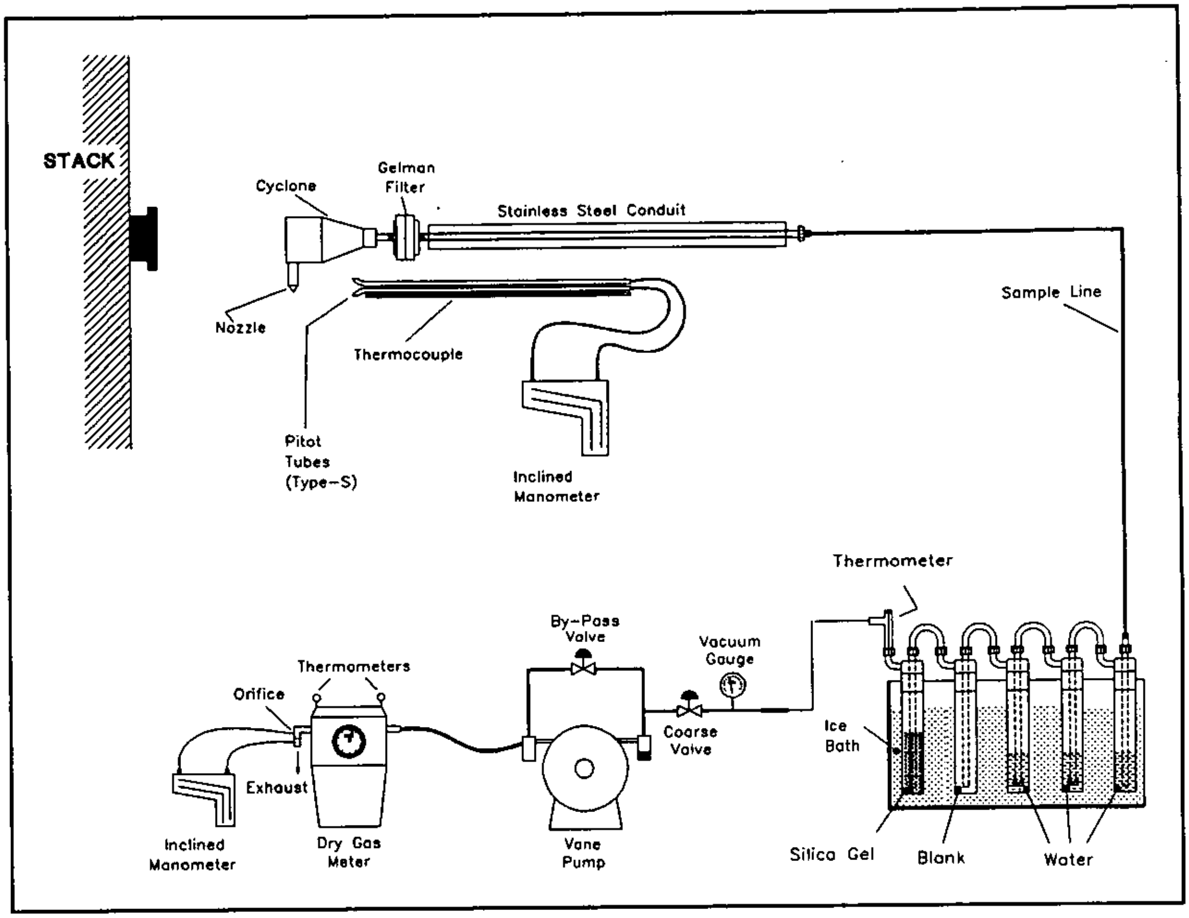


Figure 4.1.8.1-1: EPA Method 201A/202 Sampling Train

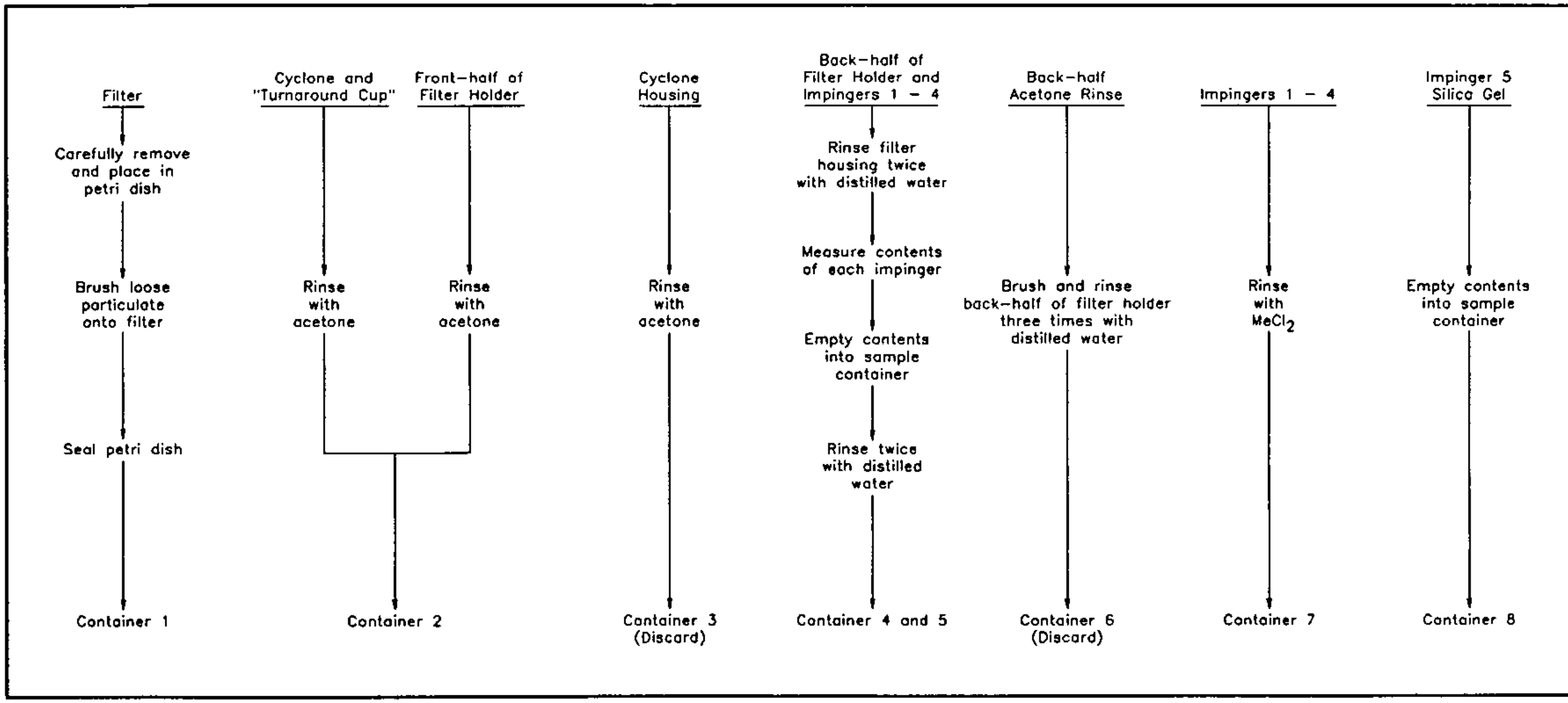


Figure 4.1.8.4-1: Method 201A/202 Recovery Procedure
Source: 40 CFR Part 51, Appendix M

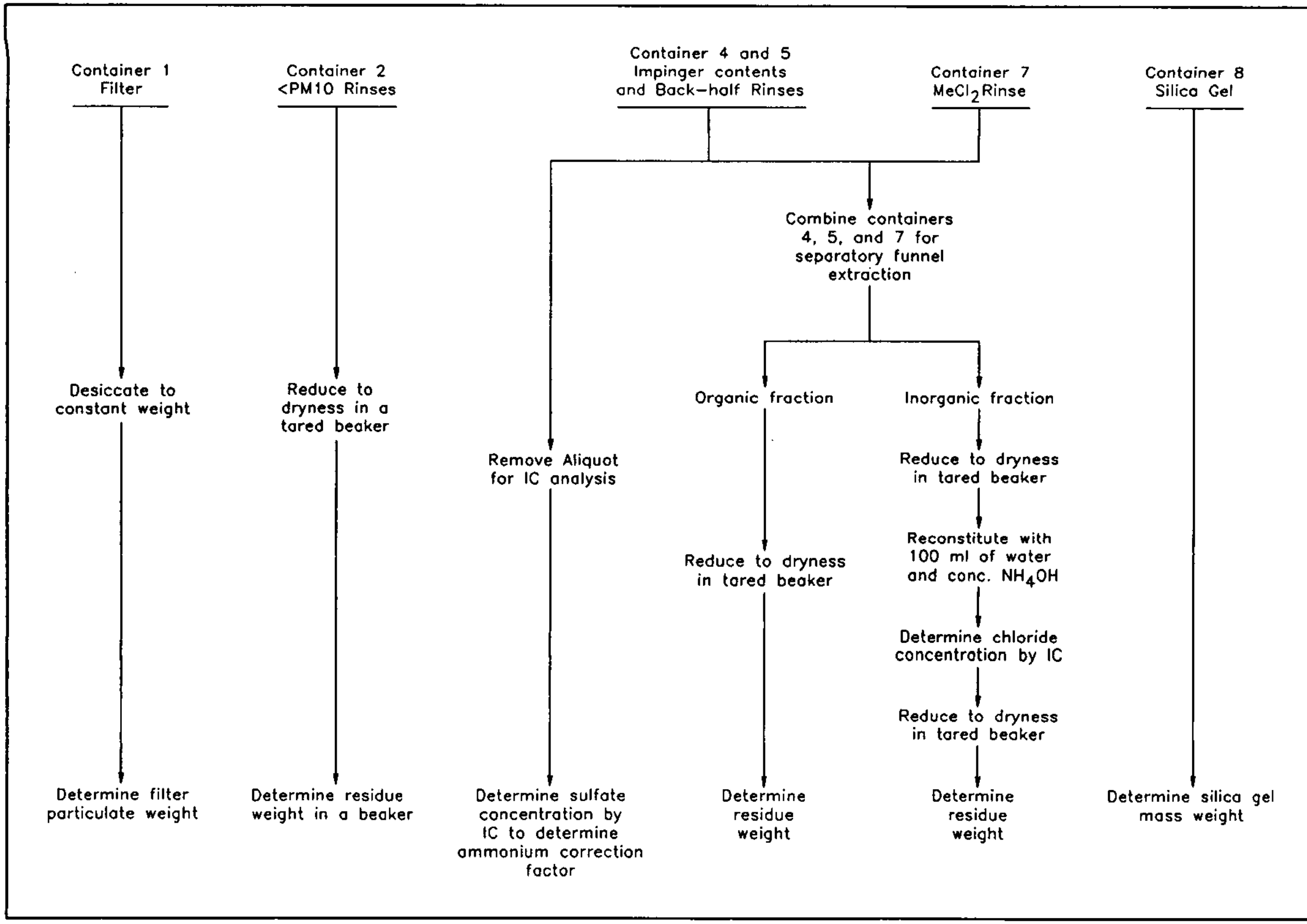


Figure 4.1.8.6-1: Method 201A/202 Analysis Procedure
Source: 40 CFR Part 51, Appendix M

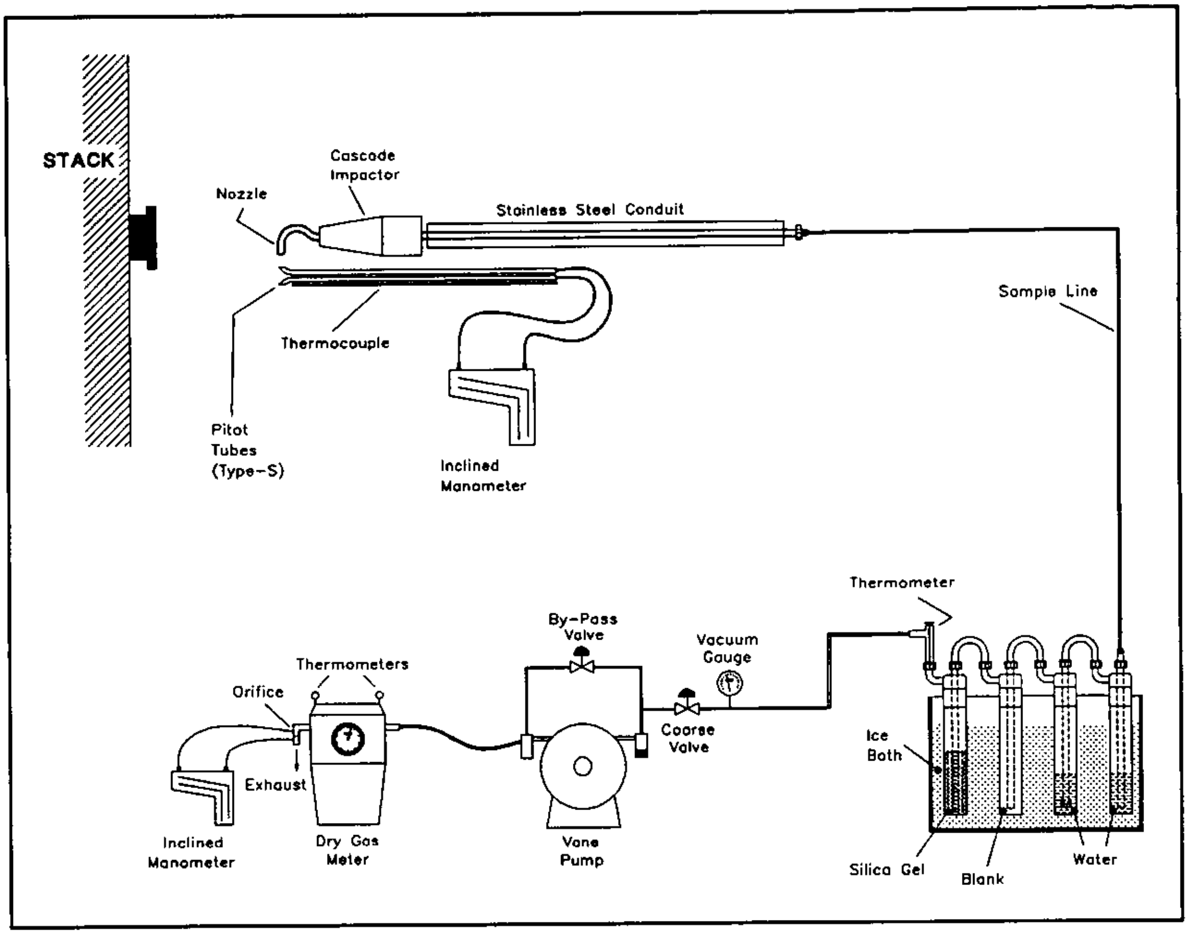


Figure 4.1.9.1-1: Andersen Impactor Sampling Train for Particle Sizing

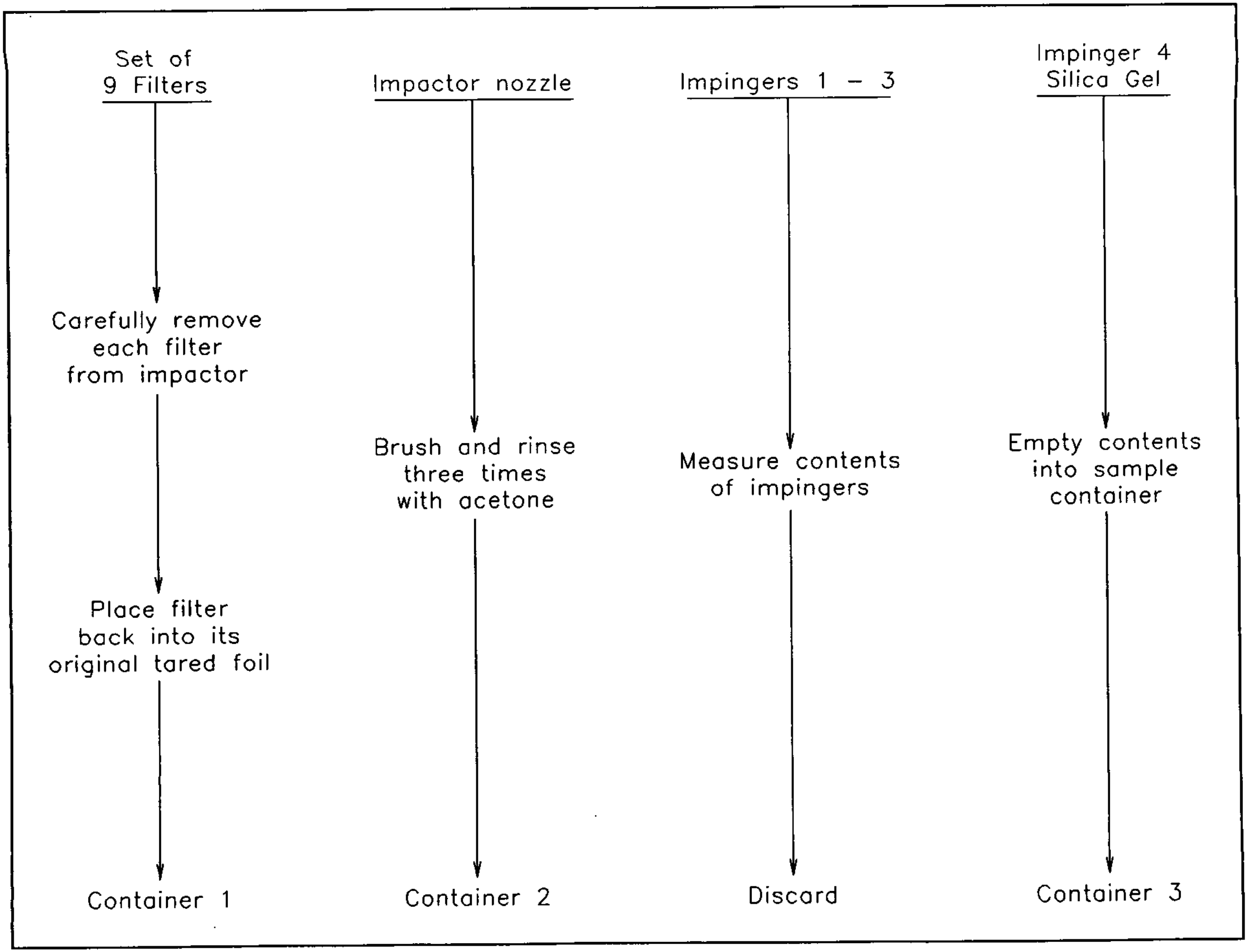


Figure 4.1.9.3-1: Andersen Impactor Recovery Procedure
Source: Manufacturer's Recommended Procedure Manual

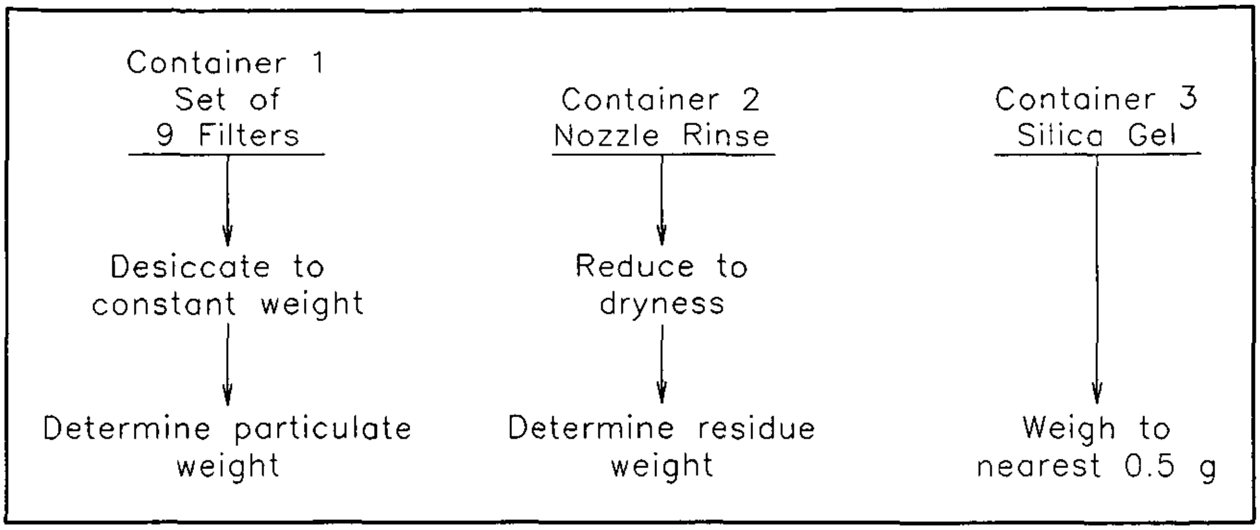


Figure 4.1.9.4-1: Andersen Impactor Analysis Procedure
Source: Manufacturer's Recommended Procedure Manual

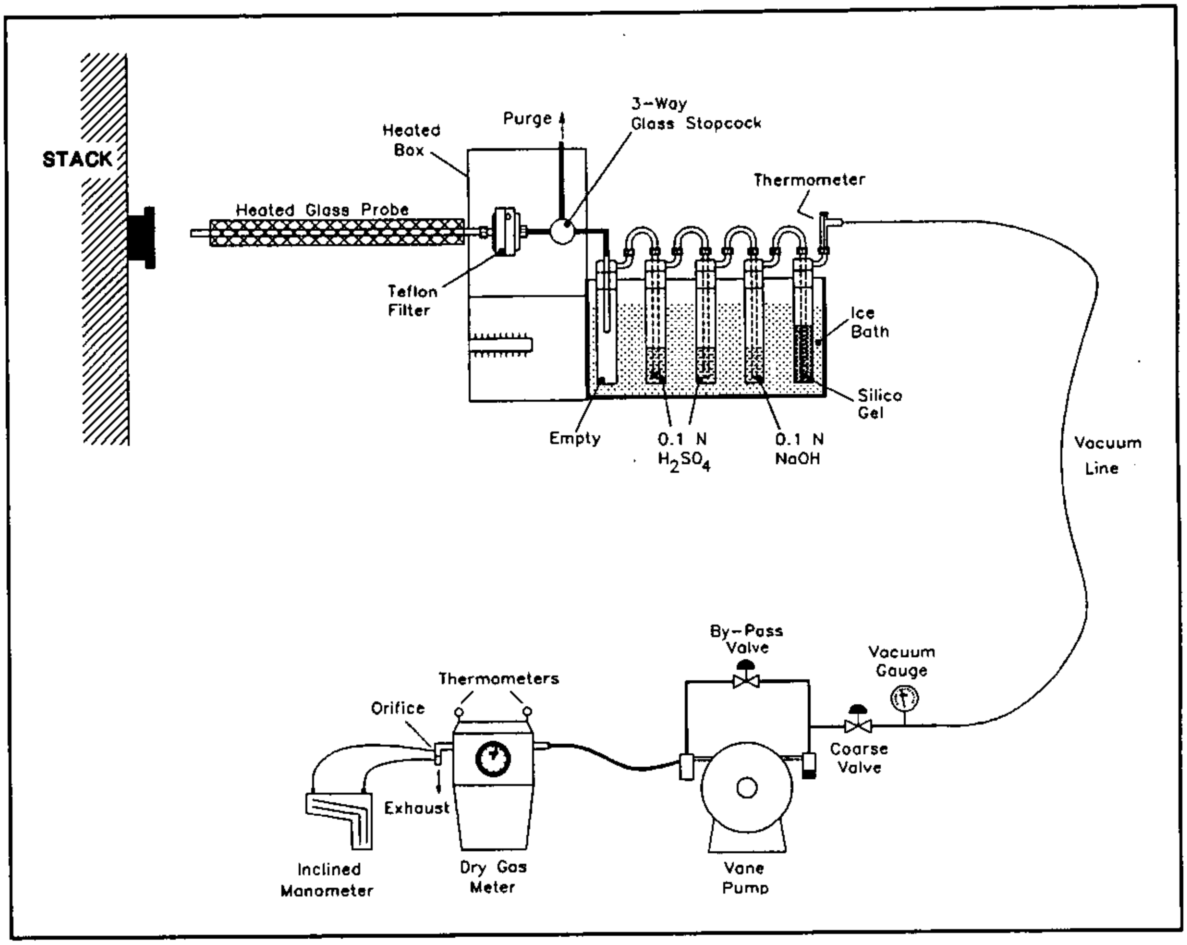


Figure 4.1.10.1-1: EPA Method 26 Sampling Train

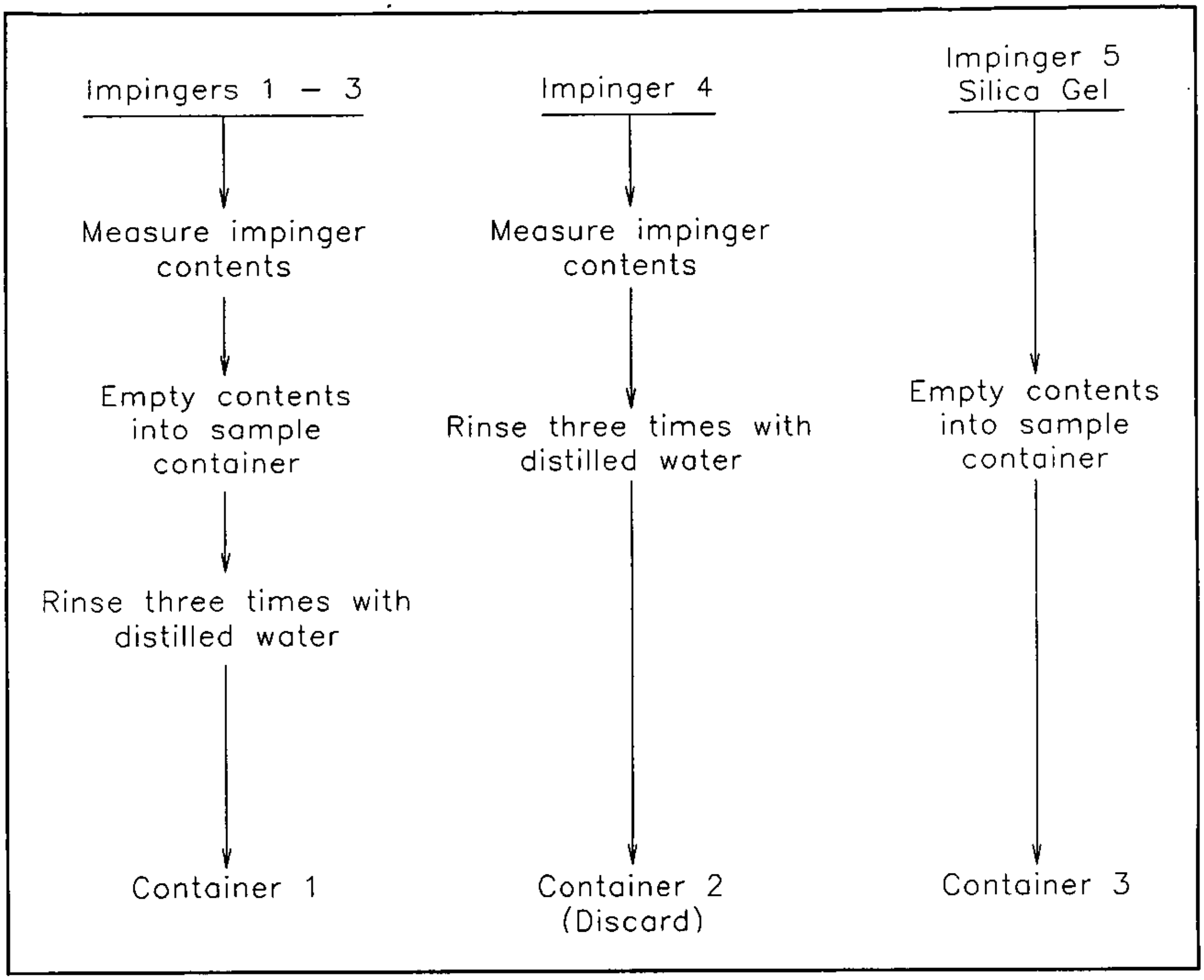


Figure 4.1.10.3-1: EPA Method 26 Recovery Procedure
Source: 40 CFR Part 60, Appendix A

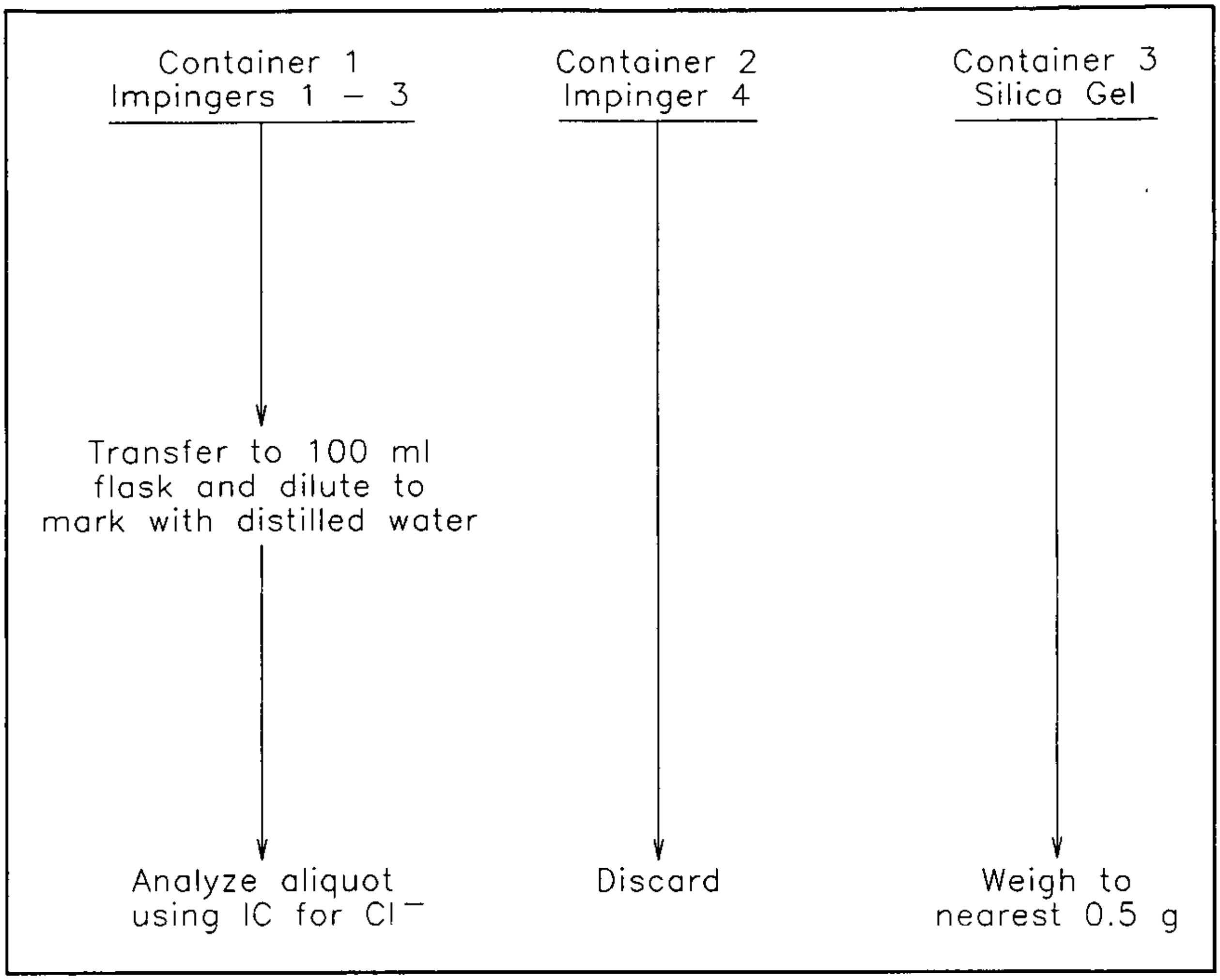


Figure 4.1.10.5-1: EPA Method 26 Analysis Procedure
Source: 40 CFR Part 60, Appendix A

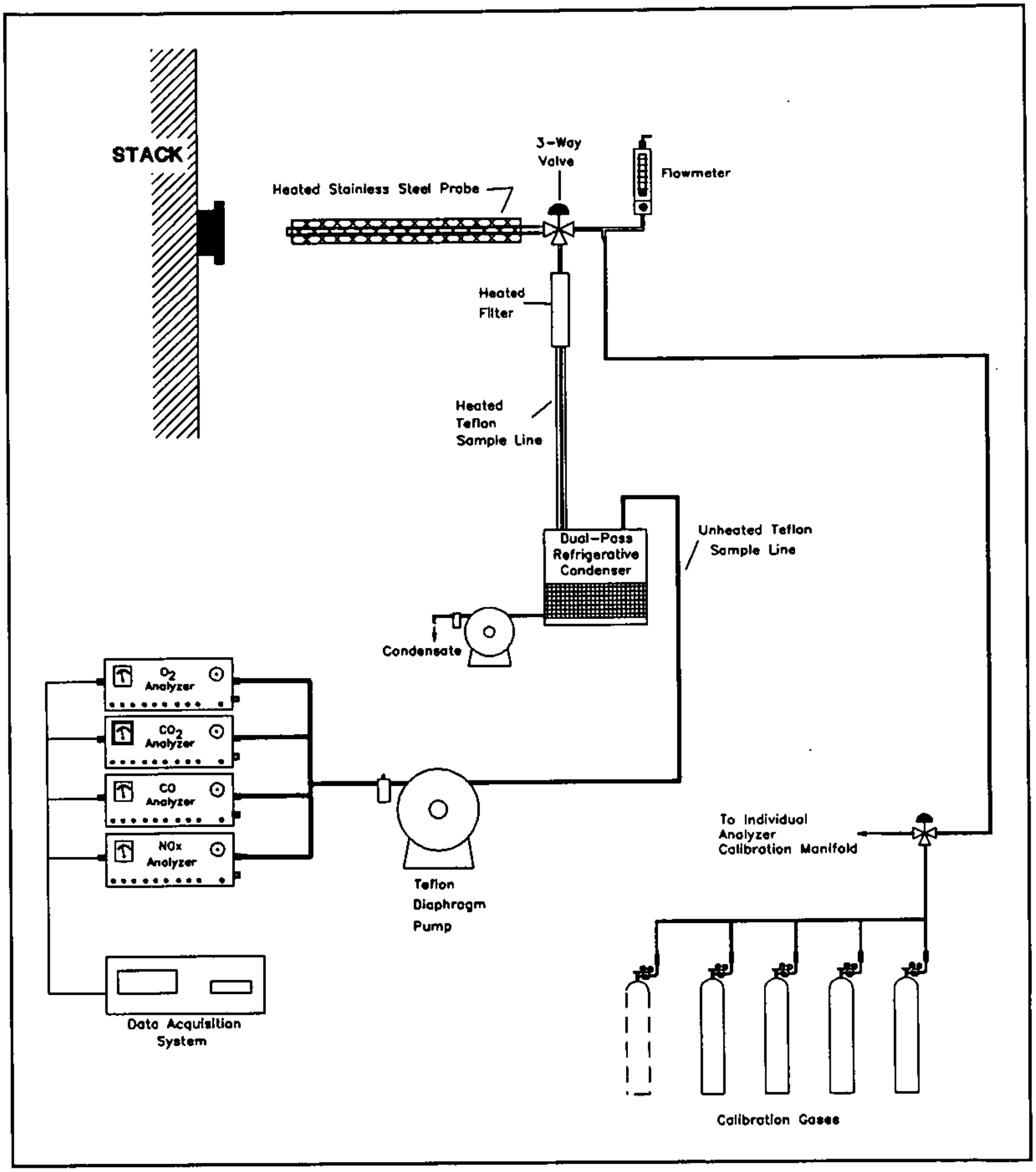


Figure 4.1.11.1-1: Continuous Emissions Monitoring Dry Extractive System for EPA Methods 3A, 7E, and 10 (O_2, CO_2, NO_x, CO).

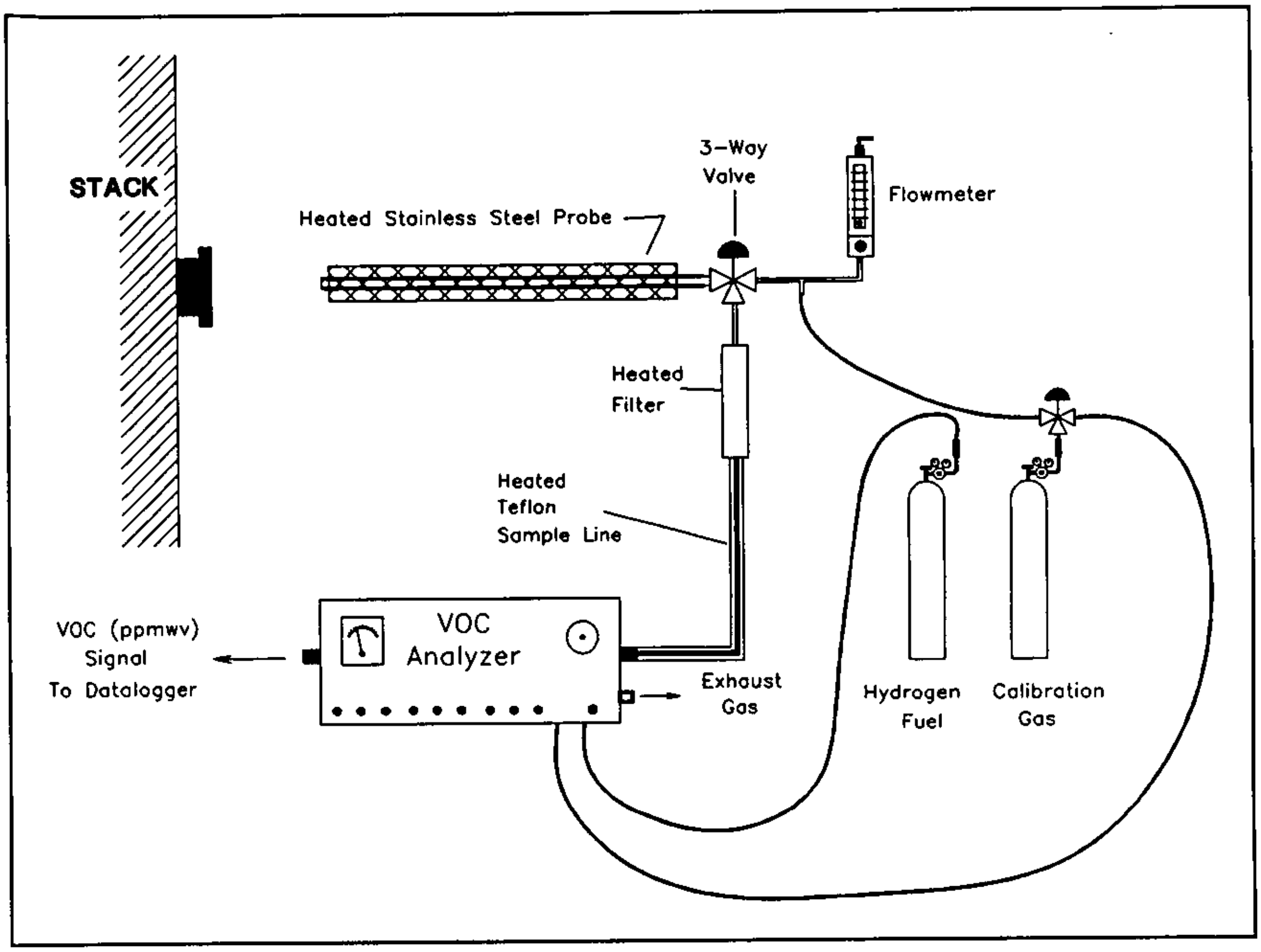


Figure 4.1.11.1-2: Continuous Emissions Monitoring System for EPA Method 25A

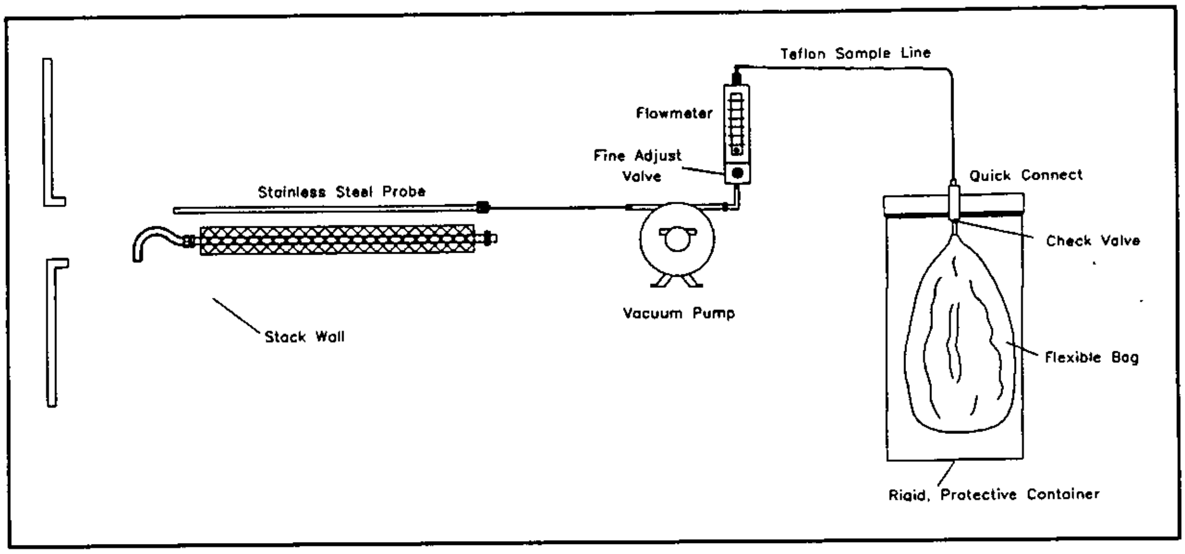


Figure 4.1.12.1-1: EPA Method 18 Sampling Train

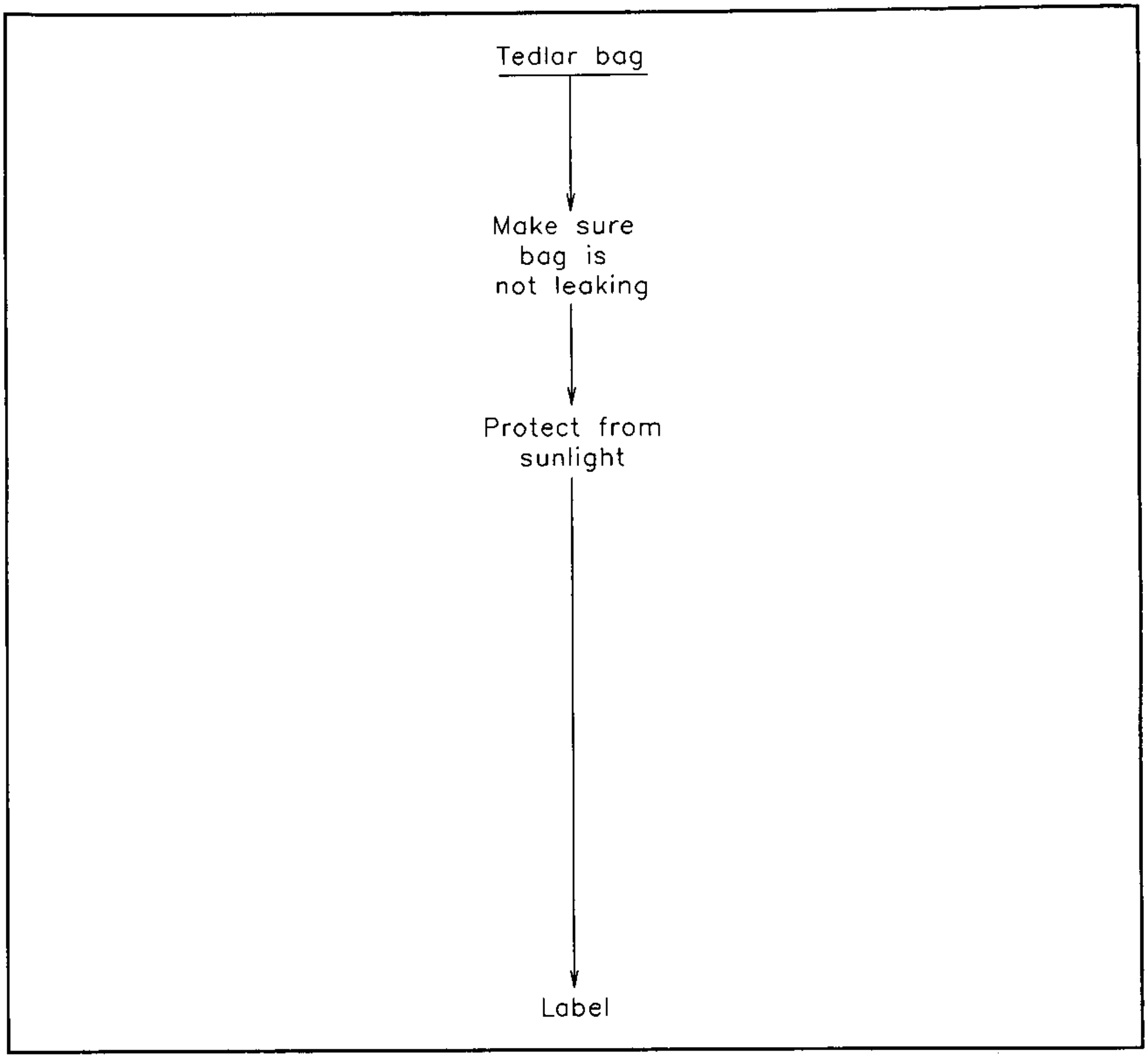


Figure 4.1.12.3-1: EPA Method 18 Recovery Procedure
Source: 40 CFR Part 60, Appendix A

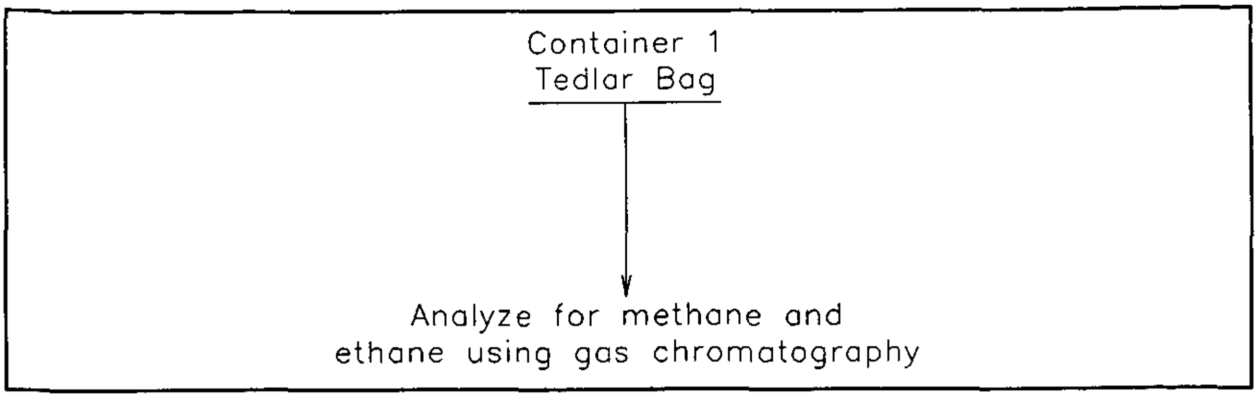


Figure 4.1.12.4-1: EPA Method 18 Analysis Procedure
Source: 40 CFR Part 60, Appendix A

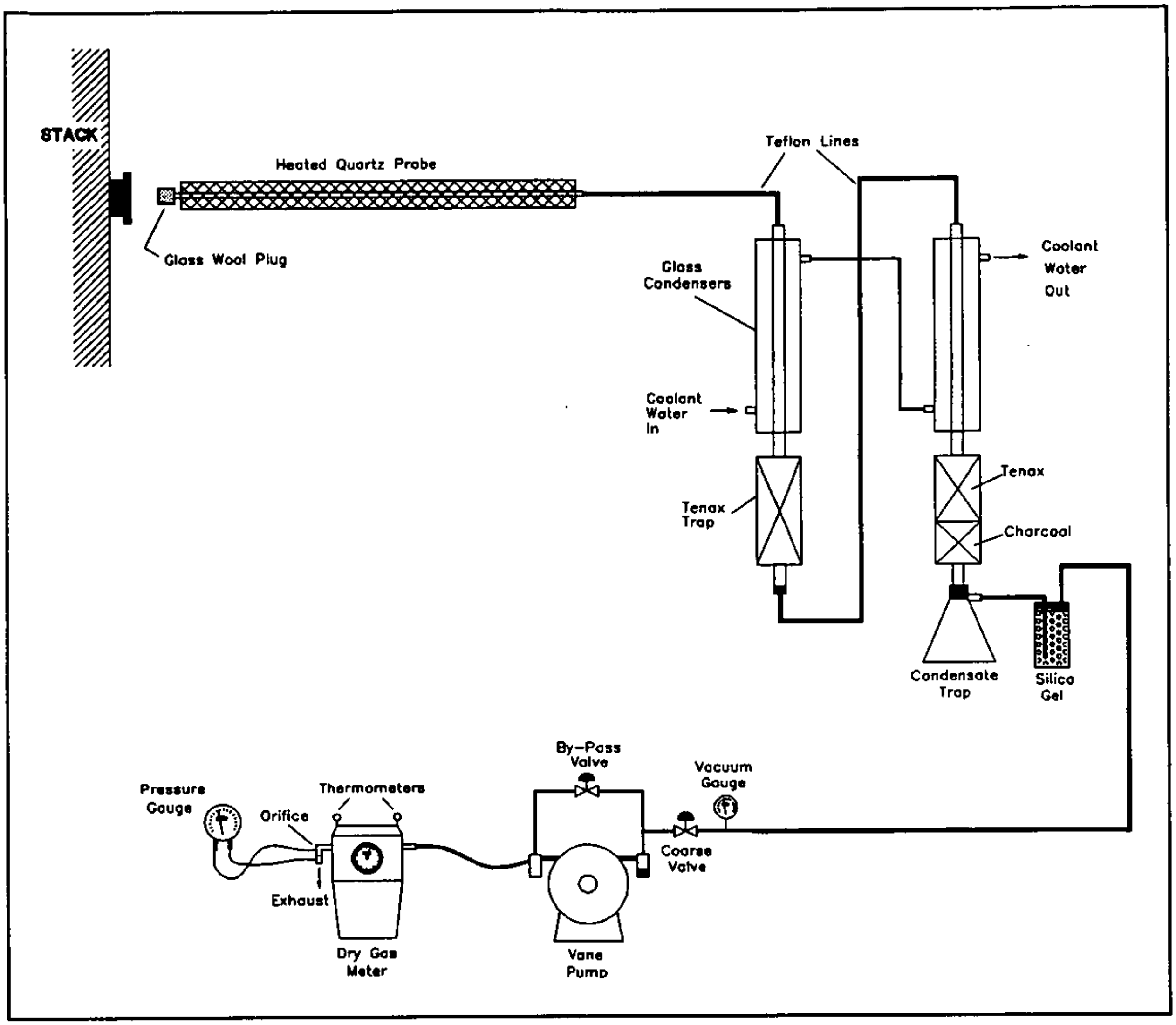


Figure 4.1.13.1-1: Volatile Organic Sampling Train (Method 0030)

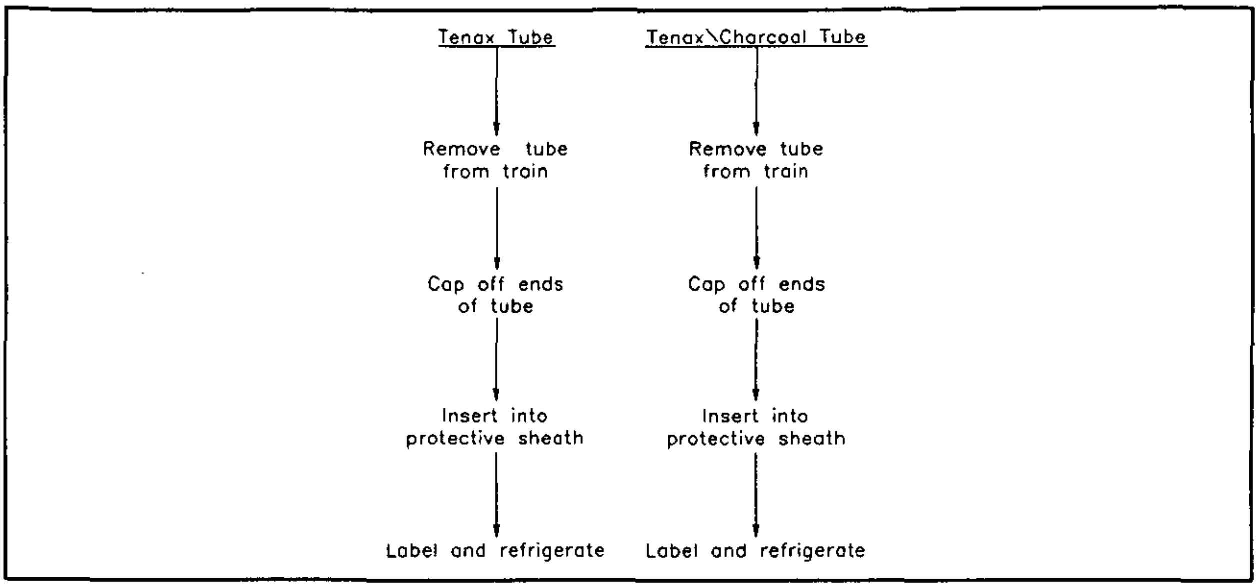


Figure 4.1.13.3-1: Method 0030 Recovery Procedure
Source: EPA 600/8-84-007

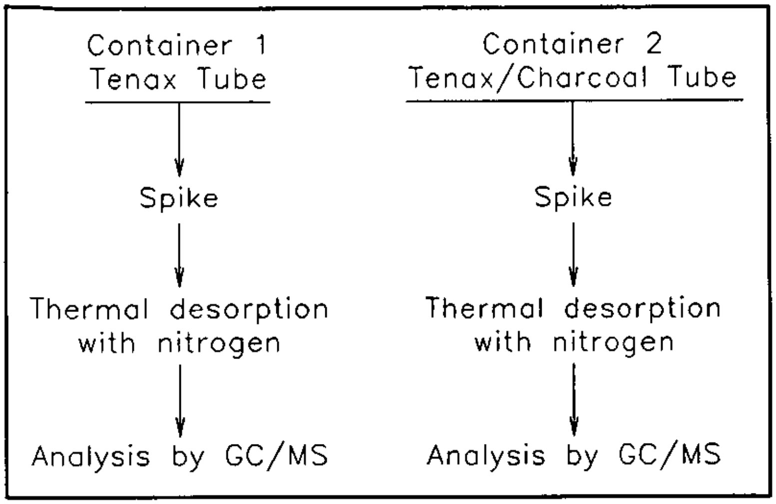


Figure 4.1.13.5-1: Method 0030 Analysis Procedure
Source: EPA 600/8-84-007

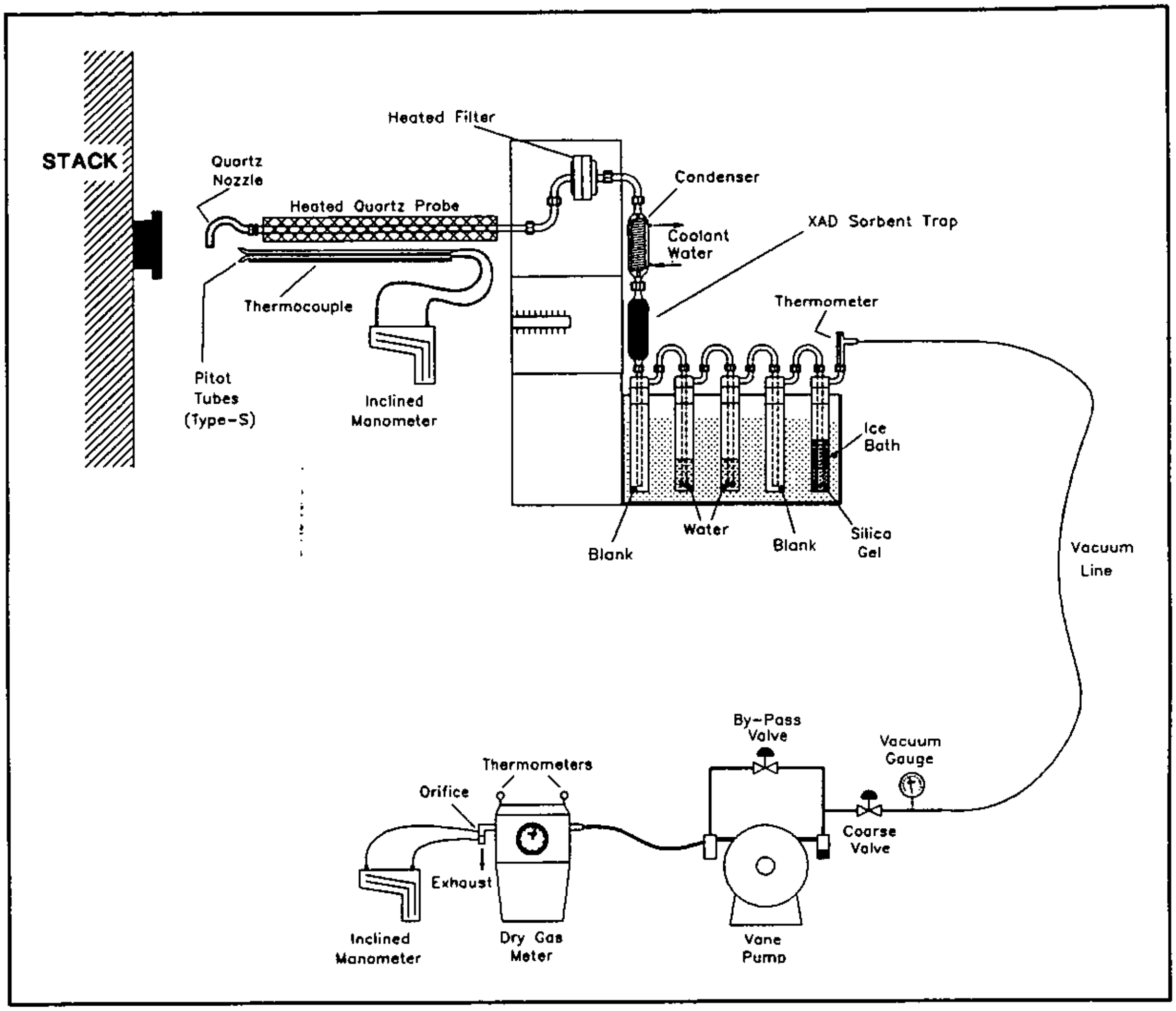


Figure 4.1.14.1-1: EPA Method 0010 Sampling Train for Semi-Volatile Organics

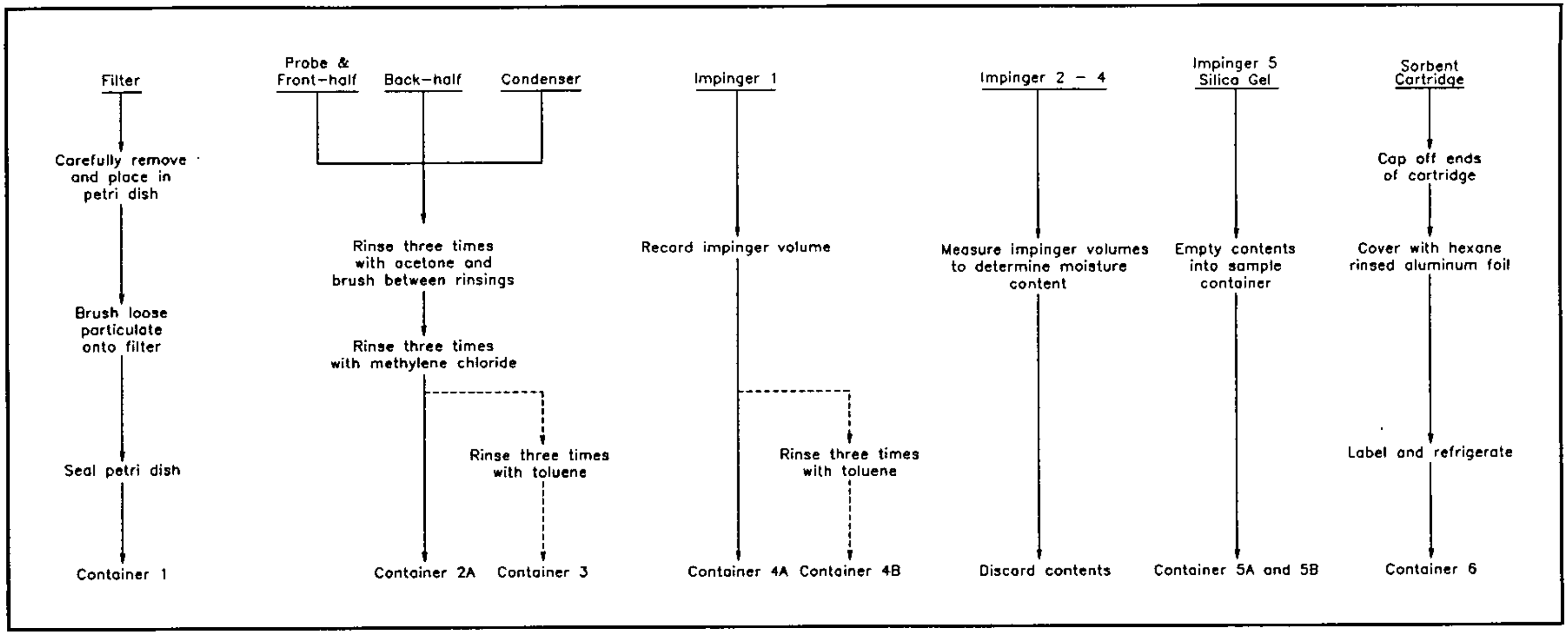


Figure 4.1.14.3-1: Method 0010 Recovery Procedure
Source: EPA 600/8-84-007

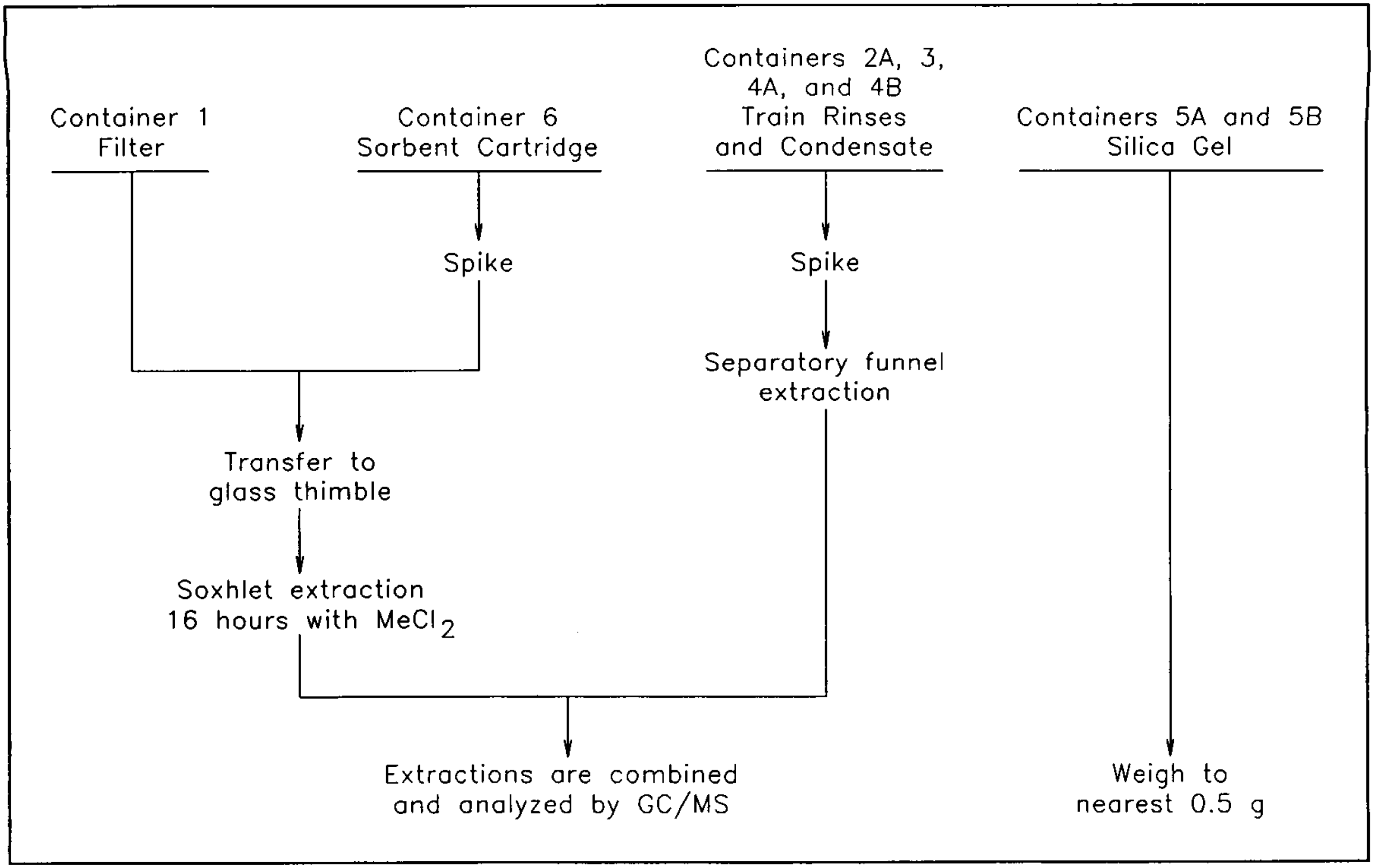


Figure 4.1.14.5-1: Method 0010 Analysis Procedure
Source: EPA 600/8-84-007

MEASUREMENT OF AIR FLOW INTO PRIMARY CRUSHER AT PINE HALL BRICK

Emissions inventory testing at the # 4 brick production facility of Pine Hall Brick Co was conducted during the weeks of October 23 through November 7, 1992. Part of this testing included sampling for total and PM10 particulate from the primary crushing operation. The primary crusher is housed in a building completely open on the charging side and largely open on the output side. Particulate sampling was done with standard ambient total and PM10 collectors located inside and at the top of the charging area. An approximation of air flow was determined by using plastic sheeting to block the open area around the output conveyor and installing a total air flow meter in the center of the plastic. The flow meter used has reversing capacity to measure positive and negative flow giving a net total flow in feet. For these tests positive flow was air entering the crusher building around the output conveyor. The Total volumetric flow rate was determined by recording the total measurement time and multiplying the flow by the area of the meter face (0.0873 sq. ft.).

Air flow was not measured on the first day (Nov. 2) of particulate testing because the flow meter was not available.

DATE	TIME		TOTAL FLOW
11-3-92	Start	09:30	0
	Stop	10:00	2,902
	Start	10:02	0
	Stop	11:02	- 1,515
	Start	11:05	0
	Stop	14:05	-28,834
	Start	14:07	0
	Stop	14:57	- 202
	Start	15:00	0
	Stop	17:35	11,370
	Total	Time:475 minutes	Net flow:-16,279 ft
			Net CFM: - 2.99
11-4-92	Start	07:00	0
	Stop	09:00	21,578
	Start	09:02	0
	Stop	12:02	28,475
	Start	12:03	0
	Stop	15:03	19,865
	Start	15:04	0
	Stop	17:34	2,121
	Total	Time:630 minutes	Net flow: 72,039 ft
			Net CFM: 9.983
11-5-92	Start	07:10	0
	Stop	15:10	71,678
	Total	Time:480 minutes	Net flow: 71,678 ft
			Net CFM: 13.036

11-6-92 (Crusher not run on Fridays, charging hopper completely empty, total flow measured to check empty hopper effect, if any)

Start 07:15	0
Stop 15:00	43,379
	Net flow: 43,379 ft
	Net CFM: 8.144

As expected, air flow into and through the crusher building seems to be determined primarily by air movement and winds in the immediate vicinity of the building. November 3 was the only day with noticeable wind in the area and they were light. This probably explains the negative flows observed on Tuesday.

AP-42 Section 11.3
Reference 11 (Vol. 2)
Section
Reference

FINAL TEST REPORT

(APPENDICES A - E)

FOR

USEPA TEST PROGRAM

CONDUCTED AT

PINE HALL BRICK PLANT
MADISON, NORTH CAROLINA

USEPA CONTRACT NO. 68-D2-0029

EMB WORK ASSIGNMENT 6

AUGUST 1993

ETS CONTRACT NO. 92-655

A.0 TEST LOG

TEST LOG
PINE HALL BRICK
- SAWDUST DRYER INLET -

TEST LOCATION	TEST METHOD	RUN NUMBER	DATE	START TIME	END TIME
SD-INLET	METHOD 26	IN-M26-R1	11/02/92	13:11	15:28
SD-INLET	METHOD 26	IN-M26-R2	11/02/92	17:33	19:42
SD-INLET	METHOD 26	IN-M26-R3	11/03/92	09:15	11:32
SD-INLET*	IMPACTOR	IN-IMP-R1	11/02/92	13:11	15:28
SD-INLET	IMPACTOR	IN-IMP-R2	11/02/92	17:33	19:42
SD-INLET	IMPACTOR	IN-IMP-R3	11/03/92	09:15	11:32
SD-INLET	IMPACTOR	IN-IMP-R4	11/05/92	16:44	17:55
SD-INLET	201A/202	IN-M201A-R1	11/03/92	16:54	19:36
SD-INLET	201A/202	IN-M201A-R2	11/04/92	10:15	12:55
SD-INLET	201A/202	IN-M201A-R3	11/04/92	14:12	16:49
SD-INLET	MULTIMETALS	IN-MM-R1	11/04/92	19:40	22:41
SD-INLET	MULTIMETALS	IN-MM-R2	11/05/92	09:28	11:53
SD-INLET	MULTIMETALS	IN-MM-R3	11/05/92	13:25	15:50
SD-INLET	METHOD 0030	IN-M0030-R1	11/06/92	11:37	15:05
SD-INLET	METHOD 0030	IN-M0030-R2	11/06/92	17:42	20:47
SD-INLET	METHOD 0030	IN-M0030-R3	11/07/92	09:02	12:27
SD-INLET	METHOD 0010	IN-M0010-R1	11/06/92	11:37	15:19
SD-INLET	METHOD 0010	IN-M0010-R2	11/06/92	17:42	21:02
SD-INLET	METHOD 0010	IN-M0010-R3	11/07/92	09:02	13:12
SD-INLET	METHOD 25A	IN-M25A-R1	11/06/92	11:37	15:19
SD-INLET	METHOD 25A	IN-M25A-R2	11/06/92	17:42	21:02
SD-INLET	METHOD 25A	IN-M25A-R3	11/07/92	09:02	13:12
SD-INLET	METHOD 18	IN-M18-R1	11/06/92	11:37	15:19
SD-INLET	METHOD 18	IN-M18-R2	11/06/92	17:42	21:02
SD-INLET	METHOD 18	IN-M18-R3	11/07/92	09:02	13:12

* Voided due to sampling difficulties.

TEST LOG

PINE HALL BRICK

- SAWDUST DRYER OUTLET A -

TEST LOCATION	TEST METHOD	RUN NUMBER	DATE	START TIME	END TIME
SD-OUTLET A	METHOD 26	OA-M26-R1	11/02/92	13:11	15:28
SD-OUTLET A	METHOD 26	OA-M26-R2	11/02/92	17:33	19:42
SD-OUTLET A	METHOD 26	OA-M26-R3	11/03/92	09:15	11:32
SD-OUTLET A*	IMPACTOR	OA-IMP-R1	11/02/92	13:11	15:28
SD-OUTLET A	IMPACTOR	OA-IMP-R2	11/02/92	17:33	19:42
SD-OUTLET A	IMPACTOR	OA-IMP-R3	11/03/92	09:15	11:32
SD-OUTLET A	IMPACTOR	OA-IMP-R4	11/05/92	16:44	17:55
SD-OUTLET A	201A/202	OA-M201A-R1	11/03/92	16:54	19:27
SD-OUTLET A	201A/202	OA-M201A-R2	11/04/92	10:15	12:42
SD-OUTLET A	201A/202	OA-M201A-R3	11/04/92	14:12	16:45
SD-OUTLET A	MULTIMETALS	OA-MM-R1	11/04/92	19:40	22:41
SD-OUTLET A	MULTIMETALS	OA-MM-R2	11/05/92	09:29	11:53
SD-OUTLET A	MULTIMETALS	OA-MM-R3	11/05/92	13:25	15:50
SD-OUTLET A	METHOD 0030	OA-M0030-R1	11/06/92	11:47	16:38
SD-OUTLET A	METHOD 0030	OA-M0030-R2	11/06/92	17:34	21:42
SD-OUTLET A	METHOD 0030	OA-M0030-R3	11/07/92	09:02	12:47
SD-OUTLET A	METHOD 0010	OA-M0010-R1	11/06/92	11:37	15:19
SD-OUTLET A	METHOD 0010	OA-M0010-R2	11/06/92	17:32	21:02
SD-OUTLET A	METHOD 0010	OA-M0010-R3	11/07/92	09:02	13:12
SD-OUTLET A	METHOD 25A	OA-M25A-R1	11/06/92	11:37	15:19
SD-OUTLET A	METHOD 25A	OA-M25A-R2	11/06/92	17:32	21:02
SD-OUTLET A	METHOD 25A	OA-M25A-R3	11/07/92	09:02	13:12
SD-OUTLET A	METHOD 18	OA-M18-R1	11/06/92	11:37	15:19
SD-OUTLET A	METHOD 18	OA-M18-R2	11/06/92	17:32	21:02
SD-OUTLET A	METHOD 18	OA-M18-R3	11/07/92	09:02	13:12

* Voided due to sampling difficulties.

TEST LOG
PINE HALL BRICK
- SAWDUST DRYER OUTLET B -

TEST LOCATION	TEST METHOD	RUN NUMBER	DATE	START TIME	END TIME
SD-OUTLET B	METHOD 26	OB-M26-R1	11/02/92	13:11	15:28
SD-OUTLET B	METHOD 26	OB-M26-R2	11/02/92	17:33	19:42
SD-OUTLET B	METHOD 26	OB-M26-R3	11/03/92	09:15	11:32
SD-OUTLET B*	IMPACTOR	OB-IMP-R1	11/02/92	13:11	15:28
SD-OUTLET B	IMPACTOR	OB-IMP-R2	11/02/92	17:33	19:42
SD-OUTLET B	IMPACTOR	OB-IMP-R3	11/03/92	09:15	11:32
SD-OUTLET B	IMPACTOR	OB-IMP-R4	11/05/92	16:44	17:55
SD-OUTLET B	201A/202	OB-M201A-R1	11/03/92	16:54	19:24
SD-OUTLET B	201A/202	OB-M201A-R2	11/04/92	10:15	12:55
SD-OUTLET B	201A/202	OB-M201A-R3	11/04/92	14:12	16:41
SD-OUTLET B	MULTIMETALS	OB-MM-R1	11/04/92	19:40	22:41
SD-OUTLET B	MULTIMETALS	OB-MM-R2	11/05/92	09:28	11:53
SD-OUTLET B	MULTIMETALS	OB-MM-R3	11/05/92	13:25	15:50
SD-OUTLET B	METHOD 0030	OB-M0030-R1	11/06/92	11:47	16:37
SD-OUTLET B	METHOD 0030	OB-M0030-R2	11/06/92	17:32	21:46
SD-OUTLET B	METHOD 0030	OB-M0030-R3	11/07/92	09:05	12:45
SD-OUTLET B	METHOD 0010	OB-M0010-R1	11/06/92	11:37	15:19
SD-OUTLET B	METHOD 0010	OB-M0010-R2	11/06/92	17:32	21:02
SD-OUTLET B	METHOD 0010	OB-M0010-R3	11/07/92	09:02	13:12
SD-OUTLET B	METHOD 25A	OB-M25A-R1	11/06/92	11:37	15:19
SD-OUTLET B	METHOD 25A	OB-M25A-R2	11/06/92	17:32	21:02
SD-OUTLET B	METHOD 25A	OB-M25A-R3	11/07/92	09:02	13:12
SD-OUTLET B	METHOD 18	OB-M18-R1	11/06/92	11:37	15:19
SD-OUTLET B	METHOD 18	OB-M18-R2	11/07/92	17:32	21:02
SD-OUTLET B	METHOD 18	OB-M18-R3	11/07/92	09:02	13:12

* Voided due to sampling difficulties.

B.0 DATA AND RESULTS APPENDICES

B.1 DATA AND RESULTS FOR PARTICULATE MATTER AND MULTIPLE METALS TESTING

B.1.1 TSP/MM DATA AND RESULTS - SAWDUST DRYER INLET

RUN NUMBER	**IN-MM/TSP-R1**
DATE	11/04/92
START TIME	19:40
END TIME	22:41
STACK DIAM.	54 inches
NOZZLE I.D.	0.250 inches
METER BOX GAMMA	1.0069
METER BOX dH@	1.6944
BAROMETRIC	29.61 in.Hg
Cp	0.84
TEST DURATION	120 minutes

METHOD 4 DATA

	INIT. (ml)	FINAL (ml)	NET (ml)
IMP.1	0.0	53.0	53.0
IMP.2	100.0	116.0	16.0
IMP.3	100.0	105.0	5.0
IMP.4	0.0	40.0	40.0
IMP.5	100.0	93.0	-7.0
IMP.6	100.0	113.0	13.0
IMP.7			0.0
TOTAL	400.0	520.0	120.0
S.G.	200.0	215.5	15.5

SAMPLING RESULTS

Metered Volume	74.087	dcf
Metered Volume	2.098	dcm
Volume @ Std.Cond.	73.648	dscf
Volume @ Std.Cond.	2.086	dscm
% Water	7.97	%
% Isokinetics	102.3	%

METHOD 3 DATA

%O2	15.47	Md	29.40
%CO2	4.91	Ms	28.50
%CO	0.0	Ps	29.56
%N2	79.6	Fo	1.106
O2+CO2	10.0	%EA	278.75

VOLUMETRIC RESULTS - USENG

Velocity	58.50	ft/sec
Actual Flow	55826	acfm
Std. Flow	30432	scfm
Dry Std. Flow	28005	dscfm

VOLUMETRIC RESULTS - SI

Velocity	17.83	m/sec
Actual Flow	94850	am3/hr
Std. Flow	51704	sm3/hr
Dry Std. Flow	47582	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	451	-0.72	0.38	0.72	120.294	62	62
2	489	-0.70	0.40	0.73		62	62
3	425		0.39	0.76		66	62
4	483		0.37	0.70		68	63
5	467		0.37	0.71		69	63
6	477		0.57	1.10		71	64
7	475		0.60	1.14		73	64
8	501		0.63	1.17		73	64
9	522		0.50	0.91		74	65
10	525		0.45	0.81		73	65
11	530		0.44	0.79		73	65
12	529		0.42	0.76	153.320	73	65
13	512		0.35	0.64	163.233	66	65
14	532		0.63	1.13		72	67
15	479		1.00	1.90		77	68
16	521		0.79	1.43		79	68
17	512		0.84	1.54		81	70
18	500		0.87	1.61		81	70
19	492		0.81	1.52		82	71
20	492		0.88	1.65		82	72
21	498		0.80	1.49		82	72
22	504		0.77	1.42		82	72
23	510		0.70	1.29		81	72
24	499		0.45	0.84		80	72
25					204.294		
AVG.	497	-0.71	0.60	1.12	74.087		71

EPA METHOD 5 DATA

RUN NUMBER IN-MM/TSP-R1

COMPONENT	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Probe Wash	65.15493	65.16920	0.01427	105.0
Corr. for Blank			0.01345	
Filter	0.43639	0.51888	0.08249	
Back Half	0.00000	0.00000	0.00000	
TOTAL			0.09594	

ACETONE BLANK

Actual Residue	0.00154 grams
Actual Blank Corr.	0.00162 grams
Max. Allowable Res.	0.00082 grams
Volume	100.0 ml

PARTICULATE EMISSIONS

Actual Grain Loading	0.02010	gr/dscf
Corrected to 7% O2	0.05146	gr/dscf @ 7% O2
Corrected to 12% CO2	0.04913	gr/dscf @ 12% CO2
Corrected to 50% Excess Air	0.05076	gr/dscf @ 50% EA
Mass Rate	4.8255	lb/hr

SAMPLING QA/QC

Isokinetics	102.3 %
Corrected Meter Volume	73.648 dscf

SUMMARY OF METAL EMISSIONS

RUN NUMBER = **IN-MM/TSP-R1**
SAMPLE VOLUME = 73.648 dscf
TOTAL GAS FLOWRATE = 28005.42 dscfm
CARBON DIOXIDE % = 4.9
OXYGEN % = 15.5

		LABORATORY DATA					GAS EMISSIONS			
		SAMPLE CATCH - micrograms					CONCENTRATION			MASS
		FRONT HALF:		BACK HALF:			ACTUAL	@ 12% CO2	@7% O2	RATE
COMPONENT		SAMPLE	BLANK	SAMPLE	BLANK	TOTAL	ug/Nm3	ug/Nm3	ug/Nm3	lb/hr
Antimony	Sb	< 1.50	0.00	< 0.97	0.00	< 2.47	< 1.27	< 3.11	< 3.25	<1.24E-04
Arsenic	As	13.30	0.00	5.62	0.00	18.92	9.74	23.79	24.92	9.52E-04
Beryllium	Be	0.18	0.00	0.00	0.00	0.18	0.09	0.23	0.24	9.06E-06
Cadmium	Cd	1.92	0.00	0.23	0.04	2.11	1.09	2.65	2.78	1.06E-04
Chromium	Cr	9.21	0.00	2.08	0.00	11.29	5.81	14.20	14.87	5.68E-04
Lead	Pb	111.00	0.00	1.60	0.00	112.60	57.94	141.61	148.32	5.66E-03
Manganese	Mn	372.00	0.81	2.72	1.00	372.91	191.89	468.99	491.22	1.88E-02
Mercury	Hg	0.00	0.00	3.28	0.00	3.28	1.69	4.13	4.32	1.65E-04
Nickel	Ni	7.98	1.06	1.14	1.00	7.06	3.63	8.88	9.30	3.55E-04
Phosphorus	P	382.00	0.00	0.00	0.00	382.00	196.57	480.42	503.20	1.92E-02
Selenium	Se	39.10	0.00	0.00	0.00	39.10	20.12	49.17	51.51	1.97E-03

Front Half - Probe Wash and Filter
Back Half - Impinger Catches
Blank - Field Blank

RUN NUMBER	**IN-MM/TSP-R2**					
DATE	11/05/92	**METHOD 4 DATA**				
START TIME	09:28			INIT. (ml)	FINAL (ml)	NET (ml)
END TIME	11:53					
STACK DIAM.	54 inches		IMP.1	0.0	70.0	70.0
NOZZLE I.D.	0.250 inches		IMP.2	100.0	120.0	20.0
METER BOX GAMMA	1.0069		IMP.3	100.0	100.0	0.0
METER BOX dH@	1.6944		IMP.4	0.0	2.0	2.0
BAROMETRIC	29.63 in.Hg		IMP.5	100.0	104.0	4.0
Cp	0.84		IMP.6	100.0	105.0	5.0
TEST DURATION	120 minutes		IMP.7			0.0
			TOTAL	400.0	501.0	101.0
			S.G.	200.0	220.7	20.7

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	83.040	dcf	%O2	16.10	Md	29.41
Metered Volume	2.351	dcm	%CO2	4.81	Ms	28.67
Volume @ Std.Cond.	82.184	dscf	%CO	0.0	Ps	29.66
Volume @ Std.Cond.	2.327	dscm	%N2	79.1	Fo	0.998
% Water	6.52	%	O2+CO2	20.9	%EA	336.84
% Isokinetics	99.8	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	65.49	ft/sec	Velocity	19.96	m/sec
Actual Flow	62490	acfm	Actual Flow	106173	am3/hr
Std. Flow	34266	scfm	Std. Flow	58219	sm3/hr
Dry Std. Flow	32033	dscfm	Dry Std. Flow	54425	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	467	0.35	0.30	0.58	228.229	64	64
2	463	0.75	0.34	0.66		66	64
3	470	0.18	0.33	0.64		68	64
4	474		0.44	0.85		71	65
5	468		0.65	1.26		73	66
6	460		0.65	1.27		76	67
7	479		0.80	1.53		76	67
8	481		0.77	1.47		78	68
9	515		0.76	1.40		79	69
10	531		0.50	0.91		78	69
11	534		0.50	0.90		79	70
12	539		0.56	1.01	264.183	79	71
13	501		0.53	0.99	264.467	71	70
14	505		0.64	1.19		75	72
15	510		1.30	2.41		78	71
16	511		1.50	2.78		83	72
17	501		0.62	1.16		83	73
18	492		0.70	1.32		82	73
19	490		0.87	1.65		82	73
20	482		0.90	1.72		83	73
21	488		1.20	2.28		83	73
22	501		1.20	2.24		83	73
23	503		1.30	2.43		84	74
24	505		1.30	2.42		85	74
25					311.553	85	74
AVG.	495	0.43	0.78	1.46	83.040		74

EPA METHOD 5 DATA

RUN NUMBER IN-MM/TSP-R2

COMPONENT	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Probe Wash	65.18466	65.21510	0.03044	100.0
Corr. for Blank			0.02966	
Filter	0.43570	0.51550	0.07980	
Back Half	0.00000	0.00000	0.00000	
TOTAL			0.10946	

ACETONE BLANK

Actual Residue	0.00154 grams
Actual Blank Corr.	0.00154 grams
Max. Allowable Res.	0.00078 grams
Volume	100.0 ml

PARTICULATE EMISSIONS

Actual Grain Loading	0.02055	gr/dscf
Corrected to 7% O2	0.05952	gr/dscf @ 7% O2
Corrected to 12% CO2	0.05128	gr/dscf @ 12% CO2
Corrected to 50% Excess Air	0.05986	gr/dscf @ 50% EA
Mass Rate	5.6433	lb/hr

SAMPLING QA/QC

Isokinetics	99.8 %
Corrected Meter Volume	82.184 dscf

SUMMARY OF METAL EMISSIONS

RUN NUMBER = IN-MM/TSP-R2
SAMPLE VOLUME = 82.184 dscf
TOTAL GAS FLOWRATE = 32033.31 dscfm
CARBON DIOXIDE % = 4.8
OXYGEN % = 16.1

		LABORATORY DATA					GAS EMISSIONS			
		SAMPLE CATCH - micrograms					CONCENTRATION			MASS
		FRONT HALF:		BACK HALF:			ACTUAL	@ 12% CO2	@7% O2	RATE
COMPONENT		SAMPLE	BLANK	SAMPLE	BLANK	TOTAL	ug/Nm3	ug/Nm3	ug/Nm3	lb/hr
Antimony	Sb	< 1.50	0.00	< 0.90	0.00	< 2.40	< 1.11	< 2.76	< 3.20	<1.24E-04
Arsenic	As	10.50	0.00	7.12	0.00	17.62	8.13	20.27	23.53	9.09E-04
Beryllium	Be	0.18	0.00	0.00	0.00	0.18	0.08	0.21	0.24	9.28E-06
Cadmium	Cd	5.49	0.00	0.20	0.04	5.65	2.61	6.50	7.54	2.91E-04
Chromium	Cr	17.90	0.00	0.00	0.00	17.90	8.25	20.59	23.90	9.23E-04
Lead	Pb	56.20	0.00	0.42	0.00	56.62	26.11	65.14	75.61	2.92E-03
Manganese	Mn	312.00	0.81	23.20	1.16	333.23	153.67	383.37	444.99	1.72E-02
Mercury	Hg	0.00	0.00	1.75	0.00	1.75	0.81	2.01	2.34	9.02E-05
Nickel	Ni	11.90	1.06	1.99	1.00	11.83	5.46	13.61	15.80	6.10E-04
Phosphorus	P	600.00	0.00	0.00	0.00	600.00	276.68	690.27	801.23	3.09E-02
Selenium	Se	7.18	0.00	0.59	0.59	7.18	3.31	8.26	9.59	3.70E-04

Front Half - Probe Wash and Filter
Back Half - Impinger Catches
Blank - Field Blank

RUN NUMBER	IN-MM/TSP-R3					

DATE	11/05/92		**METHOD 4 DATA**			
START TIME	13:25			INIT.	FINAL	NET
END TIME	15:50			(ml)	(ml)	(ml)
STACK DIAM.	54	inches	IMP.1	0.0	71.0	71.0
NOZZLE I.D.	0.250	inches	IMP.2	100.0	124.0	24.0
METER BOX GAMMA	1.0069		IMP.3	100.0	112.0	12.0
METER BOX dH@	1.6944		IMP.4	0.0	1.0	1.0
BAROMETRIC	29.41	in.Hg	IMP.5	100.0	103.0	3.0
Cp	0.84		IMP.6	100.0	104.0	4.0
TEST DURATION	120	minutes	IMP.7			0.0
			TOTAL	400.0	515.0	115.0
			S.G.	200.0	211.0	11.0

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	76.204	dcf	%O2	16.05	Md	29.38
Metered Volume	2.158	dcm	%CO2	4.59	Ms	28.54
Volume @ Std.Cond.	74.533	dscf	%CO	0.0	Ps	29.40
Volume @ Std.Cond.	2.111	dscm	%N2	79.4	Fo	1.057
% Water	7.37	%	O2+CO2	20.6	%EA	327.48
% Isokinetics	100.5	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	60.11	ft/sec	Velocity	18.32	m/sec
Actual Flow	57357	acfm	Actual Flow	97451	am3/hr
Std. Flow	31160	scfm	Std. Flow	52941	sm3/hr
Dry Std. Flow	28862	dscfm	Dry Std. Flow	49038	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	500	-0.14	0.45	0.84	312.984	71	70
2	503	-0.18	0.36	0.67		70	69
3	516	-0.15	0.42	0.77		72	69
4	516		0.53	0.98		74	70
5	503		0.67	1.25		77	70
6	490		0.90	1.70		78	70
7	477		1.30	2.49		81	72
8	487		1.30	2.47		83	73
9	486		1.30	2.47		83	73
10	483		0.89	1.70		83	73
11	493		0.78	1.49		84	74
12	505		0.61	1.14	355.130	84	75
13	483		0.24	0.46	355.249	72	72
14	484		0.25	0.48		76	73
15	488		0.28	0.53		77	74
16	488		0.30	0.57		78	74
17	485		0.54	1.03		79	74
18	486		0.68	1.30		80	74
19	475		0.74	1.42		81	74
20	470		0.83	1.60		81	74
21	519		0.80	1.47		82	74
22	525		0.63	1.15		82	74
23	539		0.54	0.97		82	74
24	478		0.32	0.61		82	74
25					389.307		
AVG.	495	-0.16	0.65	1.23	76.204		76

EPA METHOD 5 DATA

RUN NUMBER IN-MM/TSP-R3

COMPONENT	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Probe Wash	65.32467	65.36610	0.04143	98.0
Corr. for Blank			0.04066	
Filter	0.43921	0.49299	0.05378	
Back Half	0.00000	0.00000	0.00000	
TOTAL			0.09444	

ACETONE BLANK

Actual Residue	0.00154 grams
Actual Blank Corr.	0.00151 grams
Max. Allowable Res.	0.00077 grams
Volume	100.0 ml

PARTICULATE EMISSIONS

Actual Grain Loading	0.01955	gr/dscf
Corrected to 7% O2	0.05604	gr/dscf @ 7% O2
Corrected to 12% CO2	0.05112	gr/dscf @ 12% CO2
Corrected to 50% Excess Air	0.05573	gr/dscf @ 50% EA
Mass Rate	4.8376	lb/hr

SAMPLING QA/QC

Isokinetics	100.5 %
Corrected Meter Volume	74.533 dscf

SUMMARY OF METAL EMISSIONS

RUN NUMBER = IN-MM/TSP-R3
SAMPLE VOLUME = 74.533 dscf
TOTAL GAS FLOWRATE = 28862.36 dscfm
CARBON DIOXIDE % = 4.6
OXYGEN % = 16.1

		LABORATORY DATA: SAMPLE CATCH - micrograms					GAS EMISSIONS: CONCENTRATION			
		FRONT HALF:		BACK HALF:						MASS
COMPONENT		SAMPLE	BLANK	SAMPLE	BLANK	TOTAL	ACTUAL ug/Nm3	@ 12% CO2 ug/Nm3	@7% O2 ug/Nm3	RATE lb/hr
Antimony	Sb	3.84	0.00	0.00	0.00	3.84	1.95	5.10	5.60	1.97E-04
Arsenic	As	8.28	0.00	6.42	0.00	14.70	7.47	19.54	21.42	7.53E-04
Beryllium	Be	0.36	0.00	0.00	0.00	0.36	0.18	0.48	0.52	1.84E-05
Cadmium	Cd	9.00	0.00	0.38	0.04	9.34	4.75	12.42	13.61	4.79E-04
Chromium	Cr	23.20	0.00	0.00	0.00	23.20	11.80	30.84	33.81	1.19E-03
Lead	Pb	157.00	0.00	0.00	0.00	157.00	79.83	208.71	228.80	8.04E-03
Manganese	Mn	288.00	0.81	12200.00	610.00	11877.19	6039.31	15789.07	17308.56	6.08E-01
Mercury	Hg	0.00	0.00	4.79	0.00	4.79	2.44	6.37	6.98	2.45E-04
Nickel	Ni	12.80	1.06	4.50	1.00	15.24	7.75	20.26	22.21	7.81E-04
Phosphorus	P	421.00	0.00	0.00	0.00	421.00	214.07	559.66	613.52	2.16E-02
Selenium	Se	10.00	0.00	0.00	0.00	10.00	5.08	13.29	14.57	5.12E-04

Front Half - Probe Wash and Filter
Back Half - Impinger Catches
Blank - Field Blank

B.1.2 TSP/MM DATA AND RESULTS - SAWDUST DRYER OUTLET A

RUN NUMBER	OA-MM/TSP-R1				
DATE	11/04/92	**METHOD 4 DATA**			
START TIME	19:40		INIT.	FINAL	NET
END TIME	22:41		(ml)	(ml)	(ml)
STACK DIAM.	41 inches	IMP.1	0.0	139.0	139.0
NOZZLE I.D.	0.250 inches	IMP.2	100.0	156.0	56.0
METER BOX GAMMA	0.9915	IMP.3	100.0	107.0	7.0
METER BOX dH@	1.7326	IMP.4	0.0	1.0	1.0
BAROMETRIC	29.61 in.Hg	IMP.5	100.0	100.0	0.0
Cp	0.84	IMP.6	100.0	104.0	4.0
TEST DURATION	120 minutes	IMP.7			0.0
		TOTAL	400.0	607.0	207.0
		S.G.	200.0	225.5	25.5

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	81.477	dcf	%O2	17.20	Md	29.22
Metered Volume	2.307	dcm	%CO2	3.33	Ms	27.85
Volume @ Std.Cond.	78.602	dscf	%CO	0.0	Ps	28.84
Volume @ Std.Cond.	2.226	dscm	%N2	79.5	Fo	1.111
% Water	12.22	%	O2+CO2	10.0	%EA	455.02
% Isokinetics	102.7	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	44.78	ft/sec	Velocity	13.65	m/sec
Actual Flow	24634	acfm	Actual Flow	41854	am3/hr
Std. Flow	19560	scfm	Std. Flow	33233	sm3/hr
Dry Std. Flow	17170	dscfm	Dry Std. Flow	29172	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	170	-10.50	0.46	1.30	834.382	72	70
2	168	-10.50	0.47	1.30		81	73
3	171		0.51	1.42		82	73
4	171		0.53	1.50		83	73
5	175		0.50	1.40		84	74
6	176		0.50	1.40		84	74
7	180		0.44	1.25		84	75
8	184		0.44	1.25		84	74
9	187		0.46	1.30		84	75
10	189		0.50	1.40		83	74
11	185		0.56	1.55		84	75
12	186		0.56	1.55	875.954	84	75
13	172		0.48	1.32	876.068	84	72
14	175		0.46	1.30		75	68
15	178		0.48	1.32		80	70
16	172		0.46	1.30		83	72
17	179		0.45	1.25		84	73
18	186		0.46	1.30		85	74
19	187		0.53	1.50		87	75
20	190		0.53	1.50		87	76
21	191		0.53	1.50		88	76
22	191		0.47	1.30		88	77
23	189		0.46	1.30		87	77
24	190		0.47	1.30		86	77
25					915.973		
AVG.	181	-10.50	0.49	1.37	81.477	79	

EPA METHOD 5 DATA

RUN NUMBER OA-MM/TSP-R1

COMPONENT	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Probe Wash	67.25950	67.27180	0.01230	118.0
Corr. for Blank			0.01137	
Filter	0.43460	0.49981	0.06521	
Back Half	0.00000	0.00000	0.00000	
TOTAL			0.07658	

ACETONE BLANK

Actual Residue	0.00099 grams
Actual Blank Corr.	0.00117 grams
Max. Allowable Res.	0.00093 grams
Volume	100.0 ml

PARTICULATE EMISSIONS

Actual Grain Loading	0.01504	gr/dscf
Corrected to 7% O2	0.05649	gr/dscf @ 7% O2
Corrected to 12% CO2	0.05418	gr/dscf @ 12% CO2
Corrected to 50% Excess Air	0.05564	gr/dscf @ 50% EA
Mass Rate	2.2129	lb/hr

SAMPLING QA/QC

Isokinetics	102.7 %
Corrected Meter Volume	78.602 dscf

SUMMARY OF METAL EMISSIONS

RUN NUMBER = **OA-MM/TSP-R1**
SAMPLE VOLUME = 78.602 dscf
TOTAL GAS FLOWRATE = 17169.798 dscfm
CARBON DIOXIDE % = 3.3
OXYGEN % = 17.2

		LABORATORY DATA					GAS EMISSIONS			
		SAMPLE CATCH - micrograms					CONCENTRATION			MASS
		FRONT HALF:		BACK HALF:			ACTUAL	@ 12% CO2	@7% O2	RATE
COMPONENT		SAMPLE	BLANK	SAMPLE	BLANK	TOTAL	ug/Nm3	ug/Nm3	ug/Nm3	lb/hr
Antimony	Sb	< 1.50	1.50	< 0.94	0.00	< 0.94	< 0.45	< 1.63	< 1.70	< 2.72E-05
Arsenic	As	3.20	0.00	3.62	0.00	6.82	3.29	11.85	12.35	1.97E-04
Beryllium	Be	0.08	0.00	0.00	0.00	0.08	0.04	0.14	0.14	2.31E-06
Cadmium	Cd	2.58	0.00	0.23	0.00	2.81	1.35	4.88	5.09	8.12E-05
Chromium	Cr	6.87	0.00	2.53	0.00	9.40	4.53	16.33	17.03	2.72E-04
Lead	Pb	82.20	0.00	1.14	0.00	83.34	40.18	144.80	150.96	2.41E-03
Manganese	Mn	87.80	1.02	4.68	0.57	90.89	43.82	157.92	164.63	2.63E-03
Mercury	Hg	0.00	0.00	4.65	0.00	4.65	2.24	8.08	8.42	1.34E-04
Nickel	Ni	9.15	1.36	3.65	0.47	10.97	5.29	19.06	19.87	3.17E-04
Phosphorus	P	< 150.00	0.00	< 93.60	0.00	<243.60	< 117.45	< 423.26	<441.24	< 7.04E-03
Selenium	Se	15.90	0.00	0.00	0.00	15.90	7.67	27.63	28.80	4.60E-04

Front Half - Probe Wash and Filter
Back Half - Impinger Catches
Blank - Field Blank

RUN NUMBER	OA-MM/TSP-R2					
DATE	11/05/92	**METHOD 4 DATA**				
START TIME	09:29		INIT.	FINAL	NET	
END TIME	11:53		(ml)	(ml)	(ml)	
STACK DIAM.	41 inches	IMP.1	0.0	114.0	114.0	
NOZZLE I.D.	0.250 inches	IMP.2	100.0	160.0	60.0	
METER BOX GAMMA	0.9915	IMP.3	100.0	110.0	10.0	
METER BOX dH@	1.7326	IMP.4	0.0	1.0	1.0	
BAROMETRIC	29.63 in.Hg	IMP.5	100.0	104.0	4.0	
Cp	0.84	IMP.6	100.0	105.0	5.0	
TEST DURATION	120 minutes	IMP.7			0.0	
		TOTAL	400.0	594.0	194.0	
		S.G.	200.0	216.2	16.2	

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	80.045	dcf	%O2	17.13	Md	29.23
Metered Volume	2.267	dcm	%CO2	3.42	Ms	27.96
Volume @ Std.Cond.	77.167	dscf	%CO	0.0	Ps	28.86
Volume @ Std.Cond.	2.185	dscm	%N2	79.5	Fo	1.102
% Water	11.37	%	O2+CO2	20.6	%EA	445.54
% Isokinetics	103.3	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	43.91	ft/sec	Velocity	13.38	m/sec
Actual Flow	24157	acfm	Actual Flow	41043	am3/hr
Std. Flow	18904	scfm	Std. Flow	32119	sm3/hr
Dry Std. Flow	16756	dscfm	Dry Std. Flow	28468	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	177	-10.50	0.44	1.25	923.951	70	68
2	180	-10.50	0.42	1.20		74	69
3	185		0.40	1.15		79	71
4	179		0.40	1.15		82	73
5	186		0.43	1.20		83	73
6	197		0.43	1.20		85	74
7	196		0.50	1.42		85	75
8	194		0.51	1.45		85	76
9	197		0.50	1.42		85	75
10	197		0.45	1.28		86	76
11	198		0.44	1.25		86	77
12	198		0.40	1.10	963.131	86	77
13	180		0.51	1.42	963.641	77	75
14	187		0.50	1.42		79	75
15	185		0.52	1.50		82	75
16	187		0.52	1.50		85	76
17	185		0.51	1.42		85	76
18	193		0.46	1.30		85	76
19	191		0.40	1.10		86	77
20	197		0.43	1.20		86	77
21	196		0.47	1.32		86	78
22	197		0.50	1.42		87	79
23	198		0.51	1.42		88	79
24	198		0.50	1.42		89	79
25					1004.506		
AVG.	191	-10.50	0.46	1.31	80.045	79	

EPA METHOD 5 DATA

RUN NUMBER OA-MM/TSP-R2

COMPONENT	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Probe Wash	67.34878	67.37150	0.02272	107.0
Corr. for Blank			0.02188	
Filter	0.43896	0.49349	0.05453	
Back Half	0.00000	0.00000	0.00000	
TOTAL			0.07641	

ACETONE BLANK

Actual Residue	0.00099 grams
Actual Blank Corr.	0.00106 grams
Max. Allowable Res.	0.00084 grams
Volume	100.0 ml

PARTICULATE EMISSIONS

Actual Grain Loading	0.01528	gr/dscf
Corrected to 7% O2	0.05634	gr/dscf @ 7% O2
Corrected to 12% CO2	0.05362	gr/dscf @ 12% CO2
Corrected to 50% Excess Air	0.05558	gr/dscf @ 50% EA
Mass Rate	2.1947	lb/hr

SAMPLING QA/QC

Isokinetics	103.3 %
Corrected Meter Volume	77.167 dscf

SUMMARY OF METAL EMISSIONS

RUN NUMBER = OA-MM/TSP-R2
SAMPLE VOLUME = 77.167 dscf
TOTAL GAS FLOWRATE = 16755.833 dscfm
CARBON DIOXIDE % = 3.4
OXYGEN % = 17.1

		LABORATORY DATA					GAS EMISSIONS			
		SAMPLE CATCH - micrograms					CONCENTRATION			MASS
		FRONT HALF:		BACK HALF:			ACTUAL	@ 12% CO2	@7% O2	RATE
COMPONENT		SAMPLE	BLANK	SAMPLE	BLANK	TOTAL	ug/Nm3	ug/Nm3	ug/Nm3	lb/hr
Antimony	Sb	< 1.50	1.50	< 0.96	0.00	< 0.96	< 0.47	< 1.65	< 1.74	< 2.76E-05
Arsenic	As	4.04	0.00	4.01	0.00	8.05	3.95	13.87	14.58	2.31E-04
Beryllium	Be	< 0.03	0.00	< 0.02	0.00	< 0.05	< 0.02	< 0.09	< 0.09	< 1.44E-06
Cadmium	Cd	4.98	0.00	0.32	0.00	5.30	2.60	9.13	9.60	1.52E-04
Chromium	Cr	23.60	0.00	0.00	0.00	23.60	11.59	40.67	42.73	6.78E-04
Lead	Pb	27.50	0.00	4.44	0.00	31.94	15.69	55.04	57.84	9.18E-04
Manganese	Mn	124.00	1.02	9.14	0.57	131.55	64.61	226.69	238.21	3.78E-03
Mercury	Hg	0.00	0.00	3.00	0.00	3.00	1.47	5.17	5.43	8.62E-05
Nickel	Ni	15.20	1.36	2.32	0.47	15.69	7.71	27.04	28.41	4.51E-04
Phosphorus	P	164.00	0.00	0.00	0.00	164.00	80.54	282.61	296.97	4.71E-03
Selenium	Se	15.70	0.00	0.00	0.00	15.70	7.71	27.05	28.43	4.51E-04

Front Half - Probe Wash and Filter
Back Half - Impinger Catches
Blank - Field Blank

RUN NUMBER	**OA-MM/TSP-R3**
DATE	11/05/92
START TIME	13:25
END TIME	15:50
STACK DIAM.	41 inches
NOZZLE I.D.	0.250 inches
METER BOX GAMMA	0.9915
METER BOX dH@	1.7326
BAROMETRIC	29.41 in.Hg
Cp	0.84
TEST DURATION	120 minutes

METHOD 4 DATA

	INIT. (ml)	FINAL (ml)	NET (ml)
IMP.1	0.0	146.0	146.0
IMP.2	100.0	156.0	56.0
IMP.3	100.0	98.0	-2.0
IMP.4	0.0	1.0	1.0
IMP.5	100.0	105.0	5.0
IMP.6	100.0	104.0	4.0
IMP.7			0.0
TOTAL	400.0	610.0	210.0
S.G.	200.0	218.9	18.9

SAMPLING RESULTS

Metered Volume	83.415	dcf
Metered Volume	2.362	dcm
Volume @ Std.Cond.	80.166	dscf
Volume @ Std.Cond.	2.270	dscm
% Water	11.85	%
% Isokinetics	104.1	%

METHOD 3 DATA

%O2	17.21	Md	29.22
%CO2	3.32	Ms	27.89
%CO	0.0	Ps	28.64
%N2	79.5	Fo	1.111
O2+CO2	20.5	%EA	456.49

VOLUMETRIC RESULTS - USENG

Velocity	46.11	ft/sec
Actual Flow	25365	acfm
Std. Flow	19594	scfm
Dry Std. Flow	17273	dscfm

VOLUMETRIC RESULTS - SI

Velocity	14.05	m/sec
Actual Flow	43095	am3/hr
Std. Flow	33291	sm3/hr
Dry Std. Flow	29347	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	180	-10.50	0.53	1.50	16.910	74	74
2	179	-10.50	0.52	1.46		79	75
3	180		0.52	1.46		81	76
4	178		0.52	1.46		82	76
5	196		0.51	1.46		82	76
6	196		0.50	1.40		83	77
7	196		0.45	1.30		83	77
8	195		0.45	1.30		82	77
9	195		0.50	1.40		83	77
10	196		0.52	1.46		83	77
11	196		0.56	1.60		83	77
12	195		0.58	1.65	59.154	83	77
13	181		0.46	1.32	59.472	72	72
14	179		0.46	1.32		74	73
15	182		0.44	1.25		76	73
16	199		0.44	1.25		77	73
17	203		0.44	1.25		77	73
18	208		0.50	1.40		77	73
19	210		0.51	1.46		79	74
20	206		0.56	1.60		79	74
21	209		0.55	1.58		80	74
22	204		0.52	1.46		79	74
23	200		0.53	1.50		79	74
24	198		0.53	1.50		79	74
25					100.643		
AVG.	194	-10.50	0.50	1.43	83.415		77

EPA METHOD 5 DATA

RUN NUMBER OA-MM/TSP-R3

COMPONENT	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Probe Wash	64.84253	64.87330	0.03077	105.0
Corr. for Blank			0.02995	
Filter	0.43924	0.51693	0.07769	
Back Half	0.00000	0.00000	0.00000	
TOTAL			0.10764	

ACETONE BLANK

Actual Residue	0.00099 grams
Actual Blank Corr.	0.00104 grams
Max. Allowable Res.	0.00082 grams
Volume	100.0 ml

PARTICULATE EMISSIONS

Actual Grain Loading	0.02072	gr/dscf
Corrected to 7% O2	0.07805	gr/dscf @ 7% O2
Corrected to 12% CO2	0.07489	gr/dscf @ 12% CO2
Corrected to 50% Excess Air	0.07687	gr/dscf @ 50% EA
Mass Rate	3.0677	lb/hr

SAMPLING QA/QC

Isokinetics	104.1 %
Corrected Meter Volume	80.166 dscf

SUMMARY OF METAL EMISSIONS

RUN NUMBER = **OA-MM/TSP-R3**
SAMPLE VOLUME = 80.166 dscf
TOTAL GAS FLOWRATE = 17272.726 dscfm
CARBON DIOXIDE % = 3.3
OXYGEN % = 17.2

		LABORATORY DATA					GAS EMISSIONS			
		SAMPLE CATCH - micrograms					CONCENTRATION			MASS
		FRONT HALF:		BACK HALF:			ACTUAL	@ 12% CO2	@7% O2	RATE
COMPONENT		SAMPLE	BLANK	SAMPLE	BLANK	TOTAL	ug/Nm3	ug/Nm3	ug/Nm3	lb/hr
Antimony	Sb	< 1.50	1.50	< 0.93	0.00	< 0.93	< 0.44	< 1.59	< 1.66	< 2.65E-05
Arsenic	As	4.58	0.00	4.55	0.00	9.13	4.32	15.60	16.26	2.60E-04
Beryllium	Be	0.31	0.00	0.00	0.00	0.31	0.15	0.53	0.55	8.84E-06
Cadmium	Cd	1.88	0.00	0.15	0.00	2.03	0.96	3.47	3.62	5.79E-05
Chromium	Cr	5.34	0.00	0.00	0.00	5.34	2.52	9.12	9.51	1.52E-04
Lead	Pb	2.75	0.00	1.16	0.00	3.91	1.85	6.68	6.96	1.11E-04
Manganese	Mn	107.00	1.02	120.00	0.57	225.41	106.56	385.17	401.42	6.43E-03
Mercury	Hg	0.00	0.00	2.14	0.00	2.14	1.01	3.66	3.81	6.10E-05
Nickel	Ni	4.36	1.36	1.66	0.47	4.19	1.98	7.16	7.46	1.19E-04
Phosphorus	P	< 150.00	0.00	< 93.10	0.00	<243.10	< 114.93	<415.39	<432.92	< 6.93E-03
Selenium	Se	14.60	0.00	0.46	0.00	15.06	7.12	25.73	26.82	4.29E-04

Front Half - Probe Wash and Filter
Back Half - Impinger Catches
Blank - Field Blank

B.1.3 TSP/MM DATA AND RESULTS - SAWDUST DRYER OUTLET B

RUN NUMBER	**OB-MM/TSP-R1**					

		METHOD 4 DATA	INIT. (ml)	FINAL (ml)	NET (ml)
DATE	11/04/92				
START TIME	19:40				
END TIME	22:41				
STACK DIAM.	41 inches	IMP.1	0.0	128.0	128.0
NOZZLE I.D.	0.250 inches	IMP.2	100.0	156.0	56.0
METER BOX GAMMA	1.0082	IMP.3	100.0	110.0	10.0
METER BOX dH@	1.7651	IMP.4	0.0	34.0	34.0
BAROMETRIC	29.61 in.Hg	IMP.5	100.0	110.0	10.0
Cp	0.84	IMP.6	100.0	60.0	-40.0
TEST DURATION	120 minutes	IMP.7			0.0
		TOTAL	400.0	598.0	198.0
		S.G.	200.0	214.8	14.8

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	75.403	dcf	%O2	17.27	Md	29.21
Metered Volume	2.135	dcm	%CO2	3.27	Ms	27.89
Volume @ Std.Cond.	75.053	dscf	%CO	0.0	Ps	28.90
Volume @ Std.Cond.	2.125	dscm	%N2	79.5	Fo	1.110
% Water	11.77	%	O2+CO2	10.0	%EA	465.82
% Isokinetics	102.0	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	42.73	ft/sec	Velocity	13.02	m/sec
Actual Flow	23505	acfm	Actual Flow	39935	am3/hr
Std. Flow	18710	scfm	Std. Flow	31789	sm3/hr
Dry Std. Flow	16507	dscfm	Dry Std. Flow	28046	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	179	-9.70	0.30	0.84	111.103	64	64
2	180	-9.70	0.32	0.90		65	64
3	180		0.31	0.87		66	64
4	181		0.37	1.03		68	65
5	181		0.35	0.98		72	65
6	181		0.41	1.15		73	66
7	182		0.50	1.40		75	67
8	182		0.55	1.54		76	67
9	183		0.62	1.73		77	68
10	181		0.65	1.82		77	68
11	181		0.66	1.85		78	69
12	180		0.60	1.68	150.292	78	70
13	177		0.35	0.99	150.597	72	68
14	179		0.34	0.96		65	64
15	179		0.34	0.96		67	64
16	180		0.32	0.90		72	66
17	180		0.39	1.09		74	67
18	181		0.38	1.06		77	68
19	182		0.43	1.20		78	69
20	182		0.46	1.29		79	70
21	182		0.53	1.48		80	71
22	182		0.57	1.60		81	71
23	181		0.55	1.54		81	72
24	179		0.57	1.60		81	72
25					186.811		
AVG.	181	-9.70	0.45	1.27	75.403	71	

EPA METHOD 5 DATA

RUN NUMBER OB-MM/TSP-R1

COMPONENT	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Probe Wash	67.94487	67.95510	0.01023	110.0
Corr. for Blank			0.00937	
Filter	0.43462	1.09172	0.65710	
Back Half	0.00000	0.00000	0.00000	
TOTAL			0.66647	

ACETONE BLANK

Actual Residue	0.00118 grams
Actual Blank Corr.	0.00124 grams
Max. Allowable Res.	0.00086 grams
Volume	105.0 ml

PARTICULATE EMISSIONS

Actual Grain Loading	0.13704	gr/dscf
Corrected to 7% O2	0.52475	gr/dscf @ 7% O2
Corrected to 12% CO2	0.50290	gr/dscf @ 12% CO2
Corrected to 50% Excess Air	0.51693	gr/dscf @ 50% EA
Mass Rate	19.3894	lb/hr

SAMPLING QA/QC

Isokinetics	102.0 %
Corrected Meter Volume	75.053 dscf

SUMMARY OF METAL EMISSIONS

RUN NUMBER = **OB-MM/TSP-R1**
SAMPLE VOLUME = 75.053 dscf
TOTAL GAS FLOWRATE = 16506.93 dscfm
CARBON DIOXIDE % = 3.3
OXYGEN % = 17.3

		LABORATORY DATA					GAS EMISSIONS			
		SAMPLE CATCH - micrograms					CONCENTRATION			MASS
		FRONT HALF:		BACK HALF:			ACTUAL	@ 12% CO2	@7% O2	RATE
COMPONENT		SAMPLE	BLANK	SAMPLE	BLANK	TOTAL	ug/Nm3	ug/Nm3	ug/Nm3	lb/hr
Antimony	Sb	< 1.50	0.00	< 0.94	0.00	< 2.44	< 1.23	< 4.52	< 4.72	<7.10E-05
Arsenic	As	0.00	0.00	3.16	0.00	3.16	1.60	5.86	6.11	9.19E-05
Beryllium	Be	0.08	0.00	0.00	0.00	0.08	0.04	0.15	0.15	2.33E-06
Cadmium	Cd	9.09	0.00	0.26	0.03	9.32	4.71	17.27	18.02	2.71E-04
Chromium	Cr	8.25	0.00	0.00	0.00	8.25	4.17	15.29	15.95	2.40E-04
Lead	Pb	70.80	0.00	2.94	0.96	72.78	36.75	134.87	140.73	2.12E-03
Manganese	Mn	108.00	0.66	16.40	1.00	122.74	61.98	227.44	237.33	3.57E-03
Mercury	Hg	0.00	0.00	5.57	0.00	5.57	2.81	10.32	10.77	1.62E-04
Nickel	Ni	6.57	2.43	3.74	0.89	6.99	3.53	12.95	13.52	2.03E-04
Phosphorus	P	311.00	0.00	0.00	0.00	311.00	157.04	576.30	601.35	9.05E-03
Selenium	Se	5.95	0.00	0.00	0.00	5.95	3.00	11.03	11.50	1.73E-04

Front Half - Probe Wash and Filter
Back Half - Impinger Catches
Blank - Field Blank

RUN NUMBER	OB-MM/TSP-R2				
DATE	11/05/92	METHOD 4 DATA			
START TIME	09:28		INIT.	FINAL	NET
END TIME	11:53		(ml)	(ml)	(ml)
STACK DIAM.	41 inches	IMP.1	0.0	54.0	54.0
NOZZLE I.D.	0.250 inches	IMP.2	100.0	168.0	68.0
METER BOX GAMMA	1.0082	IMP.3	100.0	135.0	35.0
METER BOX dH@	1.7651	IMP.4	0.0	4.0	4.0
BAROMETRIC	29.63 in.Hg	IMP.5	100.0	105.0	5.0
Cp	0.84	IMP.6	100.0	100.0	0.0
TEST DURATION	120 minutes	IMP.7			0.0
		TOTAL	400.0	566.0	166.0
		S.G.	200.0	215.4	15.4

SAMPLING RESULTS			METHOD 3 DATA			
Metered Volume	72.906	dcf	%O2	17.28	Md	29.21
Metered Volume	2.064	dcm	%CO2	3.26	Ms	28.03
Volume @ Std.Cond.	72.342	dscf	%CO	0.0	Ps	28.92
Volume @ Std.Cond.	2.049	dscm	%N2	79.5	Fo	1.110
% Water	10.56	%	O2+CO2	20.5	%EA	467.35
% Isokinetics	101.1	%				

VOLUMETRIC RESULTS - USENG			VOLUMETRIC RESULTS - SI		
Velocity	40.99	ft/sec	Velocity	12.49	m/sec
Actual Flow	22551	acfm	Actual Flow	38315	am3/hr
Std. Flow	17938	scfm	Std. Flow	30476	sm3/hr
Dry Std. Flow	16044	dscfm	Dry Std. Flow	27258	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	177	-9.70	0.34	0.96	192.253	63	62
2	177	-9.70	0.36	1.01		64	62
3	178		0.31	0.87		67	63
4	178		0.36	1.01		70	64
5	179		0.39	1.09		72	65
6	180		0.35	0.98		73	66
7	178		0.38	1.07		75	67
8	185		0.46	1.28		76	67
9	184		0.49	1.37		77	68
10	182		0.52	1.45		78	69
11	185		0.55	1.53		79	70
12	183		0.53	1.48	229.555	79	70
13	177		0.35	0.98	229.722	73	70
14	178		0.27	0.76		73	70
15	180		0.28	0.78		75	71
16	180		0.31	0.87		77	71
17	181		0.32	0.89		78	72
18	183		0.35	0.98		79	72
19	184		0.40	1.11		80	73
20	184		0.47	1.31		81	73
21	183		0.51	1.42		82	74
22	185		0.55	1.53		83	74
23	189		0.58	1.60		84	75
24	187		0.59	1.64		84	75
25					265.326		
AVG.	182	-9.70	0.42	1.17	72.906	73	

EPA METHOD 5 DATA

RUN NUMBER OB-MM/TSP-R2

COMPONENT	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Probe Wash	64.50708	64.52160	0.01452	115.0
Corr. for Blank			0.01362	
Filter	0.43372	1.10686	0.67314	
Back Half	0.00000	0.00000	0.00000	
TOTAL			0.68676	

ACETONE BLANK

Actual Residue	0.00118 grams
Actual Blank Corr.	0.00129 grams
Max. Allowable Res.	0.00090 grams
Volume	105.0 ml

PARTICULATE EMISSIONS

Actual Grain Loading	0.14650	gr/dscf
Corrected to 7% O2	0.56254	gr/dscf @ 7% O2
Corrected to 12% CO2	0.53927	gr/dscf @ 12% CO2
Corrected to 50% Excess Air	0.55412	gr/dscf @ 50% EA
Mass Rate	20.1465	lb/hr

SAMPLING QA/QC

Isokinetics	101.1 %
Corrected Meter Volume	72.342 dscf

SUMMARY OF METAL EMISSIONS

RUN NUMBER = OB-MM/TSP-R2
SAMPLE VOLUME = 72.342 dscf
TOTAL GAS FLOWRATE = 16043.55 dscfm
CARBON DIOXIDE % = 3.3
OXYGEN % = 17.3

		LABORATORY DATA					GAS EMISSIONS			
		SAMPLE CATCH - micrograms					CONCENTRATION			MASS
		FRONT HALF:		BACK HALF:			ACTUAL	@ 12% CO2	@7% O2	RATE
COMPONENT		SAMPLE	BLANK	SAMPLE	BLANK	TOTAL	ug/Nm3	ug/Nm3	ug/Nm3	lb/hr
Antimony	Sb	< 1.50	0.00	< 0.94	0.00	< 2.44	< 1.28	< 4.71	< 4.91	<7.16E-05
Arsenic	As	2.87	0.00	3.44	0.00	6.31	3.31	12.17	12.69	1.85E-04
Beryllium	Be	< 0.03	0.00	< 0.02	0.00	< 0.05	< 0.03	< 0.10	< 0.10	<1.47E-06
Cadmium	Cd	9.45	0.00	0.14	0.03	9.56	5.01	18.44	19.23	2.80E-04
Chromium	Cr	23.20	0.00	0.00	0.00	23.20	12.15	44.74	46.67	6.81E-04
Lead	Pb	24.00	0.00	0.52	0.52	24.00	12.57	46.28	48.28	7.04E-04
Manganese	Mn	127.00	0.66	21.30	1.07	146.58	76.79	282.65	294.85	4.30E-03
Mercury	Hg	0.00	0.00	1.35	0.00	1.35	0.71	2.60	2.72	3.96E-05
Nickel	Ni	14.40	2.43	1.41	0.89	12.49	6.54	24.09	25.12	3.66E-04
Phosphorus	P	< 150.00	0.00	< 94.20	0.00	<244.20	< 127.93	< 470.91	<491.23	<7.17E-03
Selenium	Se	15.90	0.00	0.00	0.00	15.90	8.33	30.66	31.98	4.67E-04

Front Half - Probe Wash and Filter
Back Half - Impinger Catches
Blank - Field Blank

RUN NUMBER	OB-MM/TSP-R3				
DATE	11/05/92	**METHOD 4 DATA**			
START TIME	13:25		INIT. (ml)	FINAL (ml)	NET (ml)
END TIME	15:50				
STACK DIAM.	41 inches	IMP.1	0.0	124.0	124.0
NOZZLE I.D.	0.250 inches	IMP.2	100.0	135.0	35.0
METER BOX GAMMA	1.0082	IMP.3	100.0	104.0	4.0
METER BOX dH@	1.7651	IMP.4	0.0	2.0	2.0
BAROMETRIC	29.41 in.Hg	IMP.5	100.0	107.0	7.0
Cp	0.84	IMP.6	100.0	104.0	4.0
TEST DURATION	120 minutes	IMP.7			0.0
		TOTAL	400.0	576.0	176.0
		S.G.	200.0	214.7	14.7

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	72.615	dcf	%O2	17.31	Md	29.20
Metered Volume	2.056	dcm	%CO2	3.17	Ms	27.94
Volume @ Std.Cond.	70.768	dscf	%CO	0.0	Ps	28.70
Volume @ Std.Cond.	2.004	dscm	%N2	79.5	Fo	1.132
% Water	11.25	%	O2+CO2	20.5	%EA	469.96
% Isokinetics	101.8	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	40.37	ft/sec	Velocity	12.30	m/sec
Actual Flow	22208	acfm	Actual Flow	37731	am3/hr
Std. Flow	17572	scfm	Std. Flow	29856	sm3/hr
Dry Std. Flow	15595	dscfm	Dry Std. Flow	26495	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	176	-9.60	0.25	0.70	269.942	71	69
2	176	-9.70	0.28	0.79		72	70
3	177		0.28	0.79		75	71
4	178		0.31	0.87		78	72
5	179		0.32	0.90		79	72
6	180		0.34	0.95		82	75
7	183		0.39	1.09		82	74
8	184		0.48	1.34		82	74
9	185		0.54	1.50		84	75
10	183		0.56	1.56		85	76
11	182		0.57	1.59		85	76
12	181		0.57	1.60	306.321	86	77
13	175		0.34	0.96	306.583	75	75
14	177		0.35	0.98		78	75
15	178		0.33	0.93		79	76
16	179		0.33	0.93		81	75
17	180		0.33	0.93		83	76
18	180		0.35	0.99		83	76
19	180		0.40	1.13		84	77
20	181		0.42	1.18		85	77
21	183		0.45	1.26		86	78
22	182		0.48	1.35		85	77
23	182		0.49	1.37		86	78
24	181		0.48	1.35		88	79
25					342.819		
AVG.	180	-9.65	0.40	1.13	72.615	78	

EPA METHOD 5 DATA

RUN NUMBER OB-MM/TSP-R3

COMPONENT	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Probe Wash	64.79537	64.80410	0.00873	117.0
Corr. for Blank			0.00781	
Filter	0.43935	1.14447	0.70512	
Back Half	0.00000	0.00000	0.00000	
TOTAL			0.71293	

ACETONE BLANK

Actual Residue	0.00118 grams
Actual Blank Corr.	0.00131 grams
Max. Allowable Res.	0.00092 grams
Volume	105.0 ml

PARTICULATE EMISSIONS

Actual Grain Loading	0.15547	gr/dscf
Corrected to 7% O2	0.60195	gr/dscf @ 7% O2
Corrected to 12% CO2	0.58852	gr/dscf @ 12% CO2
Corrected to 50% Excess Air	0.59074	gr/dscf @ 50% EA
Mass Rate	20.7810	lb/hr

SAMPLING QA/QC

Isokinetics	101.8 %
Corrected Meter Volume	70.768 dscf

SUMMARY OF METAL EMISSIONS

RUN NUMBER = OB-MM/TSP-R3
SAMPLE VOLUME = 70.768 dscf
TOTAL GAS FLOWRATE = 15594.50 dscfm
CARBON DIOXIDE % = 3.2
OXYGEN % = 17.3

		LABORATORY DATA					GAS EMISSIONS			
		SAMPLE CATCH - micrograms						CONCENTRATION		MASS
		FRONT HALF:		BACK HALF:			ACTUAL	@ 12% CO2	@7% O2	RATE
COMPONENT		SAMPLE	BLANK	SAMPLE	BLANK	TOTAL	ug/Nm3	ug/Nm3	ug/Nm3	lb/hr
Antimony	Sb	0.00	0.00	1.08	0.00	1.08	0.58	2.19	2.24	3.15E-05
Arsenic	As	0.00	0.00	3.36	0.00	3.36	1.80	6.81	6.97	9.80E-05
Beryllium	Be	< 0.03	0.00	< 0.02	0.00	< 0.05	< 0.03	< 0.10	< 0.10	<1.46E-06
Cadmium	Cd	8.85	0.00	0.20	0.03	9.02	4.83	18.29	18.70	2.63E-04
Chromium	Cr	13.40	0.00	0.00	0.00	13.40	7.18	27.17	27.78	3.91E-04
Lead	Pb	1.36	0.00	0.00	0.00	1.36	0.73	2.76	2.82	3.96E-05
Manganese	Mn	115.00	0.66	2.33	1.00	115.67	61.94	234.49	239.84	3.37E-03
Mercury	Hg	0.00	0.00	2.05	0.00	2.05	1.10	4.16	4.25	5.98E-05
Nickel	Ni	8.63	2.43	3.85	0.89	9.16	4.91	18.57	18.99	2.67E-04
Phosphorus	P	<150.00	0.00	<94.80	0.00	<244.80	< 131.10	<496.27	<507.59	<7.14E-03
Selenium	Se	12.90	0.00	0.00	0.00	12.90	6.91	26.15	26.75	3.76E-04

Front Half - Probe Wash and Filter
Back Half - Impinger Catches
Blank - Field Blank

B.2 DATA AND RESULTS FOR PM_{10} AND CONDENSIBLE PM TESTING

B.2.1 M201A/M202 DATA AND RESULTS - SAWDUST DRYER INLET

RUN NUMBER	IN-M201A-R1					
DATE	11/03/92	METHOD 4 DATA				
START TIME	16:54		INIT. (ml)	FINAL (ml)	NET (ml)	
END TIME	19:36					
STACK DIAM.	54 inches	IMP.1	100.0	169.0	69.0	
NOZZLE I.D.	0.215 inches	IMP.2	100.0	104.0	4.0	
METER BOX GAMMA	1.0069	IMP.3	100.0	101.0	1.0	
METER BOX dH@	1.6944	IMP.4	0.0	0.0	0.0	
BAROMETRIC	29.84 in.Hg	IMP.5	0.0	0.0	0.0	
Cp	0.84	IMP.6	0.0	0.0	0.0	
TEST DURATION	131 minutes	IMP.7			0.0	
		TOTAL	300.0	374.0	74.0	
		S.G.	200.0	215.4	15.4	

SAMPLING RESULTS			METHOD 3 DATA			
Metered Volume	59.176	dcf	%O2	15.63	Md	29.39
Metered Volume	1.676	dcm	%CO2	4.79	Ms	28.63
Volume @ Std.Cond.	58.972	dscf	%CO	0.0	Ps	29.82
Volume @ Std.Cond.	1.670	dscm	%N2	79.6	Fo	1.100
% Water	6.66	%	O2+CO2	10.0	%EA	290.57
% Isokinetics	114.8	%				

VOLUMETRIC RESULTS - USENG			VOLUMETRIC RESULTS - SI		
Velocity	49.89	ft/sec	Velocity	15.21	m/sec
Actual Flow	47604	acfm	Actual Flow	80879	am3/hr
Std. Flow	26478	scfm	Std. Flow	44987	sm3/hr
Dry Std. Flow	24714	dscfm	Dry Std. Flow	41990	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	356	-0.15	0.25	0.58	925.793	91	89
2	357	-0.47	0.26	0.58		83	85
3	380		0.33	0.58		81	83
4	464		0.35	0.58		81	82
5	483		0.37	0.58		81	80
6	486		0.40	0.58		80	79
7	511		0.68	0.58		79	78
8	538		0.55	0.58		78	76
9	551		0.45	0.58		77	75
10	555		0.43	0.58		76	74
11	568		0.40	0.58		76	73
12	570		0.37	0.58	954.348	75	73
13	397		0.27	0.58	957.444	67	66
14	483		0.30	0.58		66	65
15	509		0.62	0.58		68	65
16	455		0.72	0.58		69	65
17	504		0.78	0.58		69	64
18	496		0.85	0.58		68	64
19	477		0.44	0.58		68	64
20	489		0.46	0.58		68	63
21	486		0.40	0.58		68	63
22	513		0.38	0.58		68	63
23	517		0.40	0.58		67	63
24	519		0.31	0.58		67	62
25					988.065		
AVG.	486	-0.31	0.45	0.58	59.176	73	

EPA METHOD 201A/202 ANALYSES

RUN I.D. **IN-M201A-R1**

SUMMARY

COMPONENT	NET (grams)	CORRECTED FOR BLANK (grams)
Probe Wash	0.00771	0.00696
Filter	0.05480	0.05480
Total CPM	0.15329	0.09271
TOTAL PM	0.21580	0.15447

ANALYTICAL DATA

METHOD 5 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Acetone Probe Wash	65.04909	65.05680	0.00771	95.0
Acetone Residue	67.06294	67.06490	0.00196	120.0
Applicable Acetone Blank			0.00155	95.0
Max. Allowable Blank			0.00075	120.0
Filter	0.41115	0.46595	0.05480	

METHOD 202 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	REAGENT VOLUME (ml)	CONC. (mg/l)
Volume of Cont.#4				420.2	
Organic CPM	74.51070	74.54490	0.03420	275.0	
MeCl2 Blank	64.93590	64.96180	0.02590	125.0	
Inorganic CPM (Uncorr.)	111.76650	111.88310	0.12243	346.2*	
H2O Blank	104.87950	104.88260	0.00310	297.6	
Sulfate Aliquot Volume				20.0	
Sulfate				420.2	126.0
Chloride				100.0	14.9
Inorganic CPM (Corr.)			0.11909		

PARTICULATE EMISSIONS

	FILTERABLE	CPM	TOTAL
Actual Grain Loading (gr/dscf)	0.0162	0.0243	0.0404
Corrected to 7% O2 (gr/dscf)	0.0426	0.0640	0.1066
Corrected to 12% CO2 (gr/dscf)	0.0405	0.0608	0.1013
Corrected to 50% Excess Air (gr/dscf)	0.0421	0.0632	0.1053
Mass Rate (lb/hr)	3.42	5.14	8.56

SAMPLING QA/QC

Isokinetics (%)	114.8
Corrected Meter Volume (dscf)	58.972

(*) Water rinses equaled 46.2 ml.

RUN NUMBER	IN-M201A-R2					
DATE	11/04/92	METHOD 4 DATA				
START TIME	10:15		INIT. (ml)	FINAL (ml)	NET (ml)	
END TIME	12:55					
STACK DIAM.	54 inches	IMP.1	100.0	167.0	67.0	
NOZZLE I.D.	0.215 inches	IMP.2	100.0	103.0	3.0	
METER BOX GAMMA	1.0069	IMP.3	100.0	100.0	0.0	
METER BOX dH@	1.6944	IMP.4	0.0	0.0	0.0	
BAROMETRIC	29.76 in.Hg	IMP.5			0.0	
Cp	0.84	IMP.6			0.0	
TEST DURATION	126 minutes	IMP.7			0.0	
		TOTAL	300.0	370.0	70.0	
		S.G.	200.0	211.6	11.6	

SAMPLING RESULTS			METHOD 3 DATA			
Metered Volume	56.140	dcf	%O2	15.65	Md	29.41
Metered Volume	1.590	dcm	%CO2	4.88	Ms	28.68
Volume @ Std.Cond.	56.639	dscf	%CO	0.0	Ps	29.71
Volume @ Std.Cond.	1.604	dscm	%N2	79.5	Fo	1.076
% Water	6.35	%	O2+CO2	20.5	%EA	293.62
% Isokinetics	95.5	%				

VOLUMETRIC RESULTS - USENG			VOLUMETRIC RESULTS - SI		
Velocity	60.58	ft/sec	Velocity	18.47	m/sec
Actual Flow	57812	acfm	Actual Flow	98223	am3/hr
Std. Flow	31837	scfm	Std. Flow	54092	sm3/hr
Dry Std. Flow	29814	dscfm	Dry Std. Flow	50655	dsm3/h

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	395	-0.70	0.40	0.55	997.224	57	57
2	479		0.39	0.55		58	57
3	480		0.41	0.55		59	56
4	480		0.42	0.55		60	57
5	466		0.69	0.55		61	57
6	471		0.71	0.55		62	57
7	497		0.74	0.55		63	58
8	517		0.63	0.55		65	59
9	526		0.48	0.55		64	58
10	535		0.42	0.55		66	59
11	510		0.39	0.55		66	60
12	548		0.34	0.55	1021.747	69	62
13	510		0.70	0.55	1022.215	62	61
14	511		0.71	0.55		68	63
15	498		0.67	0.55		70	64
16	488		0.88	0.55		72	65
17	480		0.94	0.55		73	66
18	478		0.95	0.55		74	67
19	475		0.90	0.55		74	67
20	483		0.91	0.55		74	67
21	490		0.80	0.55		74	68
22	498		0.71	0.55		75	68
23	497		0.74	0.55		74	68
24	496		0.73	0.55	1053.832	74	68
25					1053.832		
AVG.	492	-0.70	0.65	0.55	56.140	65	

EPA METHOD 201A/202 ANALYSES

RUN I.D. IN-M201A-R2

SUMMARY

COMPONENT	NET (grams)	CORRECTED FOR BLANK (grams)
Probe Wash	0.00937	0.00859
Filter	0.04341	0.04341
Total CPM	0.13286	0.07256
TOTAL PM	0.18564	0.12455

ANALYTICAL DATA

METHOD 5 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Acetone Probe Wash	66.32873	66.33810	0.00937	100.0
Acetone Residue	67.06294	67.06490	0.00196	120.0
Applicable Acetone Blank			0.00163	100.0
Max. Allowable Blank			0.00078	120.0
Filter	0.41402	0.45743	0.04341	

METHOD 202 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	REAGENT VOLUME (ml)	CONC. (mg/l)
Volume of Cont.#4				389.3	
Organic CPM	65.77360	65.80410	0.03050	275.0	
MeCl2 Blank	64.93590	64.96180	0.02590	125.0	
Inorganic CPM (Uncorr.)	107.33710	107.43910	0.10752	319.3*	
H2O Blank	104.87950	104.88260	0.00310	297.6	
Sulfate Aliquot Volume				20.0	
Sulfate				389.3	142.0
Chloride				100.0	26.7
Inorganic CPM (Corr.)			0.10236		

PARTICULATE EMISSIONS

	FILTERABLE	CPM	TOTAL
Actual Grain Loading (gr/dscf)	0.0142	0.0198	0.0339
Corrected to 7% O2 (gr/dscf)	0.0375	0.0523	0.0899
Corrected to 12% CO2 (gr/dscf)	0.0348	0.0486	0.0835
Corrected to 50% Excess Air (gr/dscf)	0.0372	0.0519	0.0891
Mass Rate (lb/hr)	3.62	5.05	8.67

SAMPLING QA/QC

Isokinetics (%)	95.5
Corrected Meter Volume (dscf)	56.639

(*) Water rinses equaled 19.3 ml.

RUN NUMBER	IN-M201A-R3					
DATE	11/04/92	METHOD 4 DATA				
START TIME	14:12		INIT.	FINAL	NET	
END TIME	16:49		(ml)	(ml)	(ml)	
STACK DIAM.	54	inches	IMP.1	100.0	171.0	71.0
NOZZLE I.D.	0.215	inches	IMP.2	100.0	97.0	-3.0
METER BOX GAMMA	1.0069		IMP.3	100.0	86.0	-14.0
METER BOX dH@	1.6944		IMP.4	0.0	18.0	18.0
BAROMETRIC	29.61	in.Hg	IMP.5			0.0
Cp	0.84		IMP.6			0.0
TEST DURATION	130	minutes	IMP.7			0.0
			TOTAL	300.0	372.0	72.0
			S.G.	200.0	207.7	7.7

SAMPLING RESULTS			METHOD 3 DATA			
Metered Volume	58.603	dcf	%O2	15.39	Md	29.43
Metered Volume	1.659	dcm	%CO2	5.08	Ms	28.74
Volume @ Std.Cond.	58.246	dscf	%CO	0.0	Ps	29.60
Volume @ Std.Cond.	1.649	dscm	%N2	79.5	Fo	1.085
% Water	6.05	%	O2+CO2	20.5	%EA	274.53
% Isokinetics	98.8	%				

VOLUMETRIC RESULTS - USENG			VOLUMETRIC RESULTS - SI		
Velocity	59.01	ft/sec	Velocity	17.99	m/sec
Actual Flow	56312	acfm	Actual Flow	95675	am3/hr
Std. Flow	30537	scfm	Std. Flow	51883	sm3/hr
Dry Std. Flow	28690	dscfm	Dry Std. Flow	48744	dsm3/h

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	489	-0.18	0.35	0.55	54.314	65	65
2	490	-0.12	0.41	0.55		66	65
3	484		0.48	0.55		66	64
4	486		0.54	0.55		66	64
5	483		0.48	0.55		68	64
6	481		0.45	0.55		69	64
7	490		0.82	0.55		70	65
8	526		0.60	0.55		72	65
9	542		0.47	0.55		71	65
10	554		0.42	0.55		71	65
11	560		0.40	0.55		71	65
12	564		0.36	0.55	80.472	71	66
13	509		0.64	0.55	81.180	67	66
14	519		0.59	0.55		71	67
15	515		0.55	0.55		73	68
16	513		0.68	0.55		75	69
17	488		0.80	0.55		76	69
18	475		0.96	0.55		77	70
19	478		0.89	0.55		78	71
20	484		0.77	0.55		78	71
21	484		0.79	0.55		79	72
22	484		0.72	0.55		78	72
23	489		0.70	0.55		79	73
24	490		0.74	0.55	113.625	79	73
25					113.625		
AVG.	503	-0.15	0.61	0.55	58.603	70	

EPA METHOD 201A/202 ANALYSES

RUN I.D. **IN-M201A-R3**

SUMMARY

COMPONENT	NET (grams)	CORRECTED FOR BLANK (grams)
Probe Wash	0.00604	0.00510
Filter	0.05250	0.05250
Total CPM	0.12482	0.06472
TOTAL PM	0.18336	0.12231

ANALYTICAL DATA

METHOD 5 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Acetone Probe Wash	64.85896	64.86500	0.00604	120.0
Acetone Residue	67.06294	67.06490	0.00196	120.0
Applicable Acetone Blank			0.00196	120.0
Max. Allowable Blank			0.00094	120.0
Filter	0.42605	0.47855	0.05250	

METHOD 202 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	REAGENT VOLUME (ml)	CONC. (mg/l)
Volume of Cont.#4				361.5	
Organic CPM	65.89960	65.95480	0.05520	275.0	
MeCl2 Blank	64.93590	64.96180	0.02590	125.0	
Inorganic CPM (Uncorr.)	98.86280	98.93140	0.07262	300.0*	
H2O Blank	104.87950	104.88260	0.00310	297.6	
Sulfate Aliquot Volume				20.0	
Sulfate				361.5	160.0
Chloride				100.0	12.0
Inorganic CPM (Corr.)			0.06962		

PARTICULATE EMISSIONS

	FILTERABLE	CPM	TOTAL
Actual Grain Loading (gr/dscf)	0.0153	0.0171	0.0324
Corrected to 7% O2 (gr/dscf)	0.0385	0.0433	0.0818
Corrected to 12% CO2 (gr/dscf)	0.0360	0.0405	0.0766
Corrected to 50% Excess Air (gr/dscf)	0.0381	0.0428	0.0809
Mass Rate (lb/hr)	3.75	4.22	7.97

SAMPLING QA/QC

Isokinetics (%)	98.8
Corrected Meter Volume (dscf)	58.246

(*) There was no water rinse.

B.2.2 M201A/M202 DATA AND RESULTS - SAWDUST DRYER OUTLET A

RUN NUMBER	OA-M201A-R1					
DATE	11/03/92	**METHOD 4 DATA**				
START TIME	16:54		INIT.	FINAL	NET	
END TIME	19:27		(ml)	(ml)	(ml)	
STACK DIAM.	41 inches	IMP.1	100.0	213.0	113.0	
NOZZLE I.D.	0.197 inches	IMP.2	100.0	114.0	14.0	
METER BOX GAMMA	1.0144	IMP.3	100.0	102.0	2.0	
METER BOX dH@	1.8838	IMP.4	0.0	0.0	0.0	
BAROMETRIC	29.84 in.Hg	IMP.5	0.0	0.0	0.0	
Cp	0.84	IMP.6	0.0	0.0	0.0	
TEST DURATION	121 minutes	IMP.7			0.0	
		TOTAL	300.0	429.0	129.0	
		S.G.	200.0	208.4	8.4	

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	52.652	dcf	%O2	17.55	Md	29.11
Metered Volume	1.491	dcm	%CO2	2.58	Ms	27.90
Volume @ Std.Cond.	52.724	dscf	%CO	0.0	Ps	29.07
Volume @ Std.Cond.	1.493	dscm	%N2	79.9	Fo	1.298
% Water	10.93	%	O2+CO2	10.0	%EA	496.37
% Isokinetics	112.2	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	43.35	ft/sec	Velocity	13.21	m/sec
Actual Flow	23848	acfm	Actual Flow	40518	am3/hr
Std. Flow	18911	scfm	Std. Flow	32130	sm3/hr
Dry Std. Flow	16845	dscfm	Dry Std. Flow	28620	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	185	-10.50	0.47	0.62	319.421	72	72
2	189	-10.50	0.48	0.62		78	76
3	192		0.49	0.62		79	76
4	193		0.53	0.62		81	77
5	189		0.49	0.62		81	77
6	187		0.46	0.62		81	76
7	187		0.41	0.62		81	77
8	190		0.42	0.62		80	76
9	186		0.45	0.62		80	76
10	183		0.49	0.62		79	76
11	182		0.50	0.62		79	75
12	182		0.47	0.62	346.069	79	76
13	183		0.41	0.62	346.175	72	72
14	182		0.34	0.62		70	71
15	189		0.47	0.62		72	71
16	187		0.44	0.62		72	70
17	187		0.43	0.62		72	70
18	190		0.49	0.62		72	70
19	189		0.51	0.62		72	69
20	187		0.51	0.62		72	69
21	185		0.47	0.62		71	68
22	187		0.41	0.62		71	68
23	189		0.43	0.62		71	68
24	185		0.42	0.62		72	69
25					372.179		
AVG.	187	-10.50	0.46	0.62	52.652	74	

EPA METHOD 201A/202 ANALYSES

RUN I.D. OA-M201A-R1

SUMMARY

COMPONENT	NET (grams)	CORRECTED FOR BLANK (grams)
Probe Wash	0.01264	0.01174
Filter	0.03509	0.03509
Total CPM	0.04614	0.00616
TOTAL PM	0.09387	0.05299

ANALYTICAL DATA

METHOD 5 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Acetone Probe Wash	63.92726	63.93990	0.01264	115.0
Acetone Residue	64.85998	64.86180	0.00182	115.0
Applicable Acetone Blank			0.00182	115.0
Max. Allowable Blank			0.00090	115.0
Filter	0.41335	0.44844	0.03509	

METHOD 202 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	REAGENT VOLUME (ml)	CONC. (mg/l)
Volume of Cont.#4				498.8	
Organic CPM	71.96950	72.00610	0.03660	275.0	
MeCl2 Blank	66.25090	66.26720	0.01630	125.0	
Inorganic CPM (Uncorr.)	106.42440	106.43400	0.01000	369.8*	
H2O Blank	105.67890	105.68220	0.00330	296.5	
Sulfate Aliquot Volume				20.0	
Sulfate				498.8	45.0
Chloride				100.0	0.0
Inorganic CPM (Corr.)			0.00954		

PARTICULATE EMISSIONS

	FILTERABLE	CPM	TOTAL
Actual Grain Loading (gr/dscf)	0.0137	0.0018	0.0155
Corrected to 7% O2 (gr/dscf)	0.0569	0.0075	0.0644
Corrected to 12% CO2 (gr/dscf)	0.0638	0.0084	0.0721
Corrected to 50% Excess Air (gr/dscf)	0.0545	0.0072	0.0617
Mass Rate (lb/hr)	1.98	0.26	2.24

SAMPLING QA/QC

Isokinetics (%) 112.2

Corrected Meter Volume (dscf) 52.724

(*) Water rinse equaled 69.8 ml.

RUN NUMBER	OA-M201A-R2				
DATE	11/04/92	**METHOD 4 DATA**			
START TIME	10:15		INIT.	FINAL	NET
END TIME	12:42		(ml)	(ml)	(ml)
STACK DIAM.	41 inches	IMP.1	100.0	204.0	104.0
NOZZLE I.D.	0.197 inches	IMP.2	100.0	111.0	11.0
METER BOX GAMMA	1.0144	IMP.3	100.0	103.0	3.0
METER BOX dH@	1.8838	IMP.4	0.0	0.0	0.0
BAROMETRIC	29.76 in.Hg	IMP.5			0.0
Cp	0.84	IMP.6			0.0
TEST DURATION	117 minutes	IMP.7			0.0
		TOTAL	300.0	418.0	118.0
		S.G.	200.0	212.1	12.1

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	46.381	dcf	%O2	16.96	Md	29.24
Metered Volume	1.313	dcm	%CO2	3.51	Ms	27.95
Volume @ Std.Cond.	47.097	dscf	%CO	0.0	Ps	29.00
Volume @ Std.Cond.	1.334	dscm	%N2	79.5	Fo	1.123
% Water	11.50	%	O2+CO2	20.5	%EA	420.23
% Isokinetics	101.6	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	44.54	ft/sec	Velocity	13.58	m/sec
Actual Flow	24502	acfm	Actual Flow	41630	am3/hr
Std. Flow	19410	scfm	Std. Flow	32978	sm3/hr
Dry Std. Flow	17177	dscfm	Dry Std. Flow	29184	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	179	-10.50	0.57	0.50	378.737	63	61
2	183	-10.30	0.56	0.50		66	62
3	181		0.56	0.50		67	62
4	180		0.55	0.50		68	63
5	182		0.49	0.50		68	63
6	184		0.47	0.50		68	63
7	189		0.42	0.50		68	63
8	187		0.42	0.50		68	62
9	190		0.47	0.50		68	63
10	188		0.51	0.50		68	63
11	187		0.47	0.50		67	62
12	189		0.50	0.50	402.212	68	63
13	179		0.42	0.50	402.455	64	62
14	181		0.49	0.50		64	61
15	181		0.46	0.50		65	61
16	185		0.42	0.50		67	62
17	187		0.43	0.50		67	62
18	190		0.44	0.50		69	63
19	189		0.51	0.50		69	63
20	190		0.52	0.50		70	62
21	193		0.53	0.50		70	64
22	193		0.49	0.50		70	64
23	182		0.45	0.50		70	64
24	193		0.46	0.50		70	64
25					425.361		
AVG.	186	-10.40	0.48	0.50	46.381	65	

EPA METHOD 201A/202 ANALYSES

RUN I.D. OA-M201A-R2

SUMMARY

COMPONENT	NET (grams)	CORRECTED FOR BLANK (grams)
Probe Wash	0.01084	0.00986
Filter	0.03147	0.03147
Total CPM	0.04092	0.00115
TOTAL PM	0.08323	0.04248

ANALYTICAL DATA

METHOD 5 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Acetone Probe Wash	66.24556	66.25640	0.01084	125.0
Acetone Residue	64.85998	64.86180	0.00182	115.0
Applicable Acetone Blank			0.00198	125.0
Max. Allowable Blank			0.00098	115.0
Filter	0.41444	0.44591	0.03147	

METHOD 202 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	REAGENT VOLUME (ml)	CONC. (mg/l)
Volume of Cont.#4				469.2	
Organic CPM	65.62430	65.65350	0.02920	275.0	
MeCl2 Blank	66.25090	66.26720	0.01630	125.0	
Inorganic CPM (Uncorr.)	101.46680	101.47870	0.01243	351.2*	
H2O Blank	105.67890	105.68220	0.00330	296.5	
Sulfate Aliquot Volume				20.0	
Sulfate				469.2	74.0
Chloride				100.0	0.0
Inorganic CPM (Corr.)			0.01172		

PARTICULATE EMISSIONS

	FILTERABLE	CPM	TOTAL
Actual Grain Loading (gr/dscf)	0.0135	0.0004	0.0139
Corrected to 7% O2 (gr/dscf)	0.0478	0.0013	0.0491
Corrected to 12% CO2 (gr/dscf)	0.0463	0.0013	0.0476
Corrected to 50% Excess Air (gr/dscf)	0.0470	0.0013	0.0483
Mass Rate (lb/hr)	1.99	0.06	2.05

SAMPLING QA/QC

Isokinetics (%)	101.6
Corrected Meter Volume (dscf)	47.097

(*) Water rinse equaled 51.2 ml.

RUN NUMBER OA-M201A-R3

DATE	11/04/92	**METHOD 4 DATA**			
START TIME	14:12		INIT.	FINAL	NET
END TIME	16:45		(ml)	(ml)	(ml)
STACK DIAM.	41 inches	IMP.1	100.0	226.0	126.0
NOZZLE I.D.	0.197 inches	IMP.2	100.0	113.0	13.0
METER BOX GAMMA	0.9915	IMP.3	100.0	102.0	2.0
METER BOX dH@	1.9326	IMP.4	0.0	0.0	0.0
BAROMETRIC	29.61 in.Hg	IMP.5			0.0
Cp	0.84	IMP.6			0.0
TEST DURATION	135 minutes	IMP.7			0.0
		TOTAL	300.0	441.0	141.0
		S.G.	200.0	213.0	13.0

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	56.995	dcf	%O2	17.32	Md	29.20
Metered Volume	1.614	dcm	%CO2	3.16	Ms	27.91
Volume @ Std.Cond.	55.901	dscf	%CO	0.0	Ps	28.84
Volume @ Std.Cond.	1.583	dscm	%N2	79.5	Fo	1.133
% Water	11.48	%	O2+CO2	20.5	%EA	471.51
% Isokinetics	99.1	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	47.01	ft/sec	Velocity	14.33	m/sec
Actual Flow	25861	acfm	Actual Flow	43939	am3/hr
Std. Flow	20447	scfm	Std. Flow	34740	sm3/hr
Dry Std. Flow	18099	dscfm	Dry Std. Flow	30751	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	177	-10.50	0.47	0.50	740.774	61	61
2	178	-10.50	0.53	0.50		66	62
3	179		0.54	0.50		67	62
4	185		0.45	0.50		70	64
5	182		0.47	0.50		71	65
6	186		0.47	0.50		72	68
7	187		0.57	0.50		72	68
8	188		0.60	0.50		72	66
9	185		0.61	0.50		73	66
10	182		0.60	0.50		73	67
11	189		0.54	0.50		74	67
12	187		0.52	0.50		74	67
13	177		0.55	0.50		68	65
14	179		0.53	0.50		68	65
15	182		0.61	0.50		71	66
16	185		0.57	0.50		72	66
17	177		0.56	0.50		72	66
18	180		0.52	0.50		74	68
19	185		0.47	0.50		76	69
20	189		0.47	0.50		76	69
21	188		0.51	0.50		72	66
22	185		0.58	0.50		72	67
23	187		0.58	0.50		73	67
24	189		0.57	0.50		73	67
25					797.769		
AVG.	184	-10.50	0.54	0.50	56.995		69

EPA METHOD 201A/202 ANALYSES

RUN I.D. **OA-M201A-R3**

SUMMARY

COMPONENT	NET (grams)	CORRECTED FOR BLANK (grams)
Probe Wash	0.01353	0.01259
Filter	0.04916	0.04916
Total CPM	0.07368	0.03448
TOTAL PM	0.13637	0.09623

ANALYTICAL DATA

METHOD 5 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Acetone Probe Wash	65.50907	65.52260	0.01353	120.0
Acetone Residue	64.85998	64.86180	0.00182	115.0
Applicable Acetone Blank			0.00190	120.0
Max. Allowable Blank			0.00094	115.0
Filter	0.42719	0.47635	0.04916	

METHOD 202 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	REAGENT VOLUME (ml)	CONC. (mg/l)
Volume of Cont.#4				433.4	
Organic CPM	74.96240	75.02530	0.06290	275.0	
MeCl2 Blank	66.25090	66.26720	0.01630	125.0	
Inorganic CPM (Uncorr.)	118.95080	118.96160	0.01132	300.0*	
H2O Blank	105.67890	105.68220	0.00330	296.5	
Sulfate Aliquot Volume				20.0	
Sulfate				433.4	61.0
Chloride				100.0	0.0
Inorganic CPM (Corr.)			0.01078		

PARTICULATE EMISSIONS

	FILTERABLE	CPM	TOTAL
Actual Grain Loading (gr/dscf)	0.0170	0.0095	0.0266
Corrected to 7% O2 (gr/dscf)	0.0662	0.0370	0.1031
Corrected to 12% CO2 (gr/dscf)	0.0647	0.0361	0.1009
Corrected to 50% Excess Air (gr/dscf)	0.0649	0.0363	0.1012
Mass Rate (lb/hr)	2.64	1.48	4.12

SAMPLING QA/QC

Isokinetics (%)	99.1
Corrected Meter Volume (dscf)	55.901

(*) There was no water rinse.

B.2.3 M201A/M202 DATA AND RESULTS - SAWDUST DRYER OUTLET B

RUN NUMBER	OB-M201A-R1					
DATE	11/03/92		METHOD 4 DATA			
START TIME	16:54			INIT. (ml)	FINAL (ml)	NET (ml)
END TIME	19:24					
STACK DIAM.	41	inches	IMP.1	100.0	155.0	55.0
NOZZLE I.D.	0.197	inches	IMP.2	100.0	147.0	47.0
METER BOX GAMMA	1.0082		IMP.3	100.0	107.0	7.0
METER BOX dH@	1.7651		IMP.4	0.0	0.0	0.0
BAROMETRIC	29.84	in.Hg	IMP.5	0.0	0.0	0.0
Cp	0.84		IMP.6	0.0	0.0	0.0
TEST DURATION	114	minutes	IMP.7			0.0
			TOTAL	300.0	300.0	109.0
			S.G.	200.0	211.1	11.1

SAMPLING RESULTS			METHOD 3 DATA			
Metered Volume	45.427	dcf	%O2	17.08	Md	29.23
Metered Volume	1.286	dcm	%CO2	3.41	Ms	27.97
Volume @ Std.Cond.	44.870	dscf	%CO	0.0	Ps	29.12
Volume @ Std.Cond.	1.271	dscm	%N2	79.5	Fo	1.120
% Water	11.19	%	O2+CO2	10.0	%EA	436.76
% Isokinetics	94.3	%				

VOLUMETRIC RESULTS - USENG			VOLUMETRIC RESULTS - SI		
Velocity	45.78	ft/sec	Velocity	13.95	m/sec
Actual Flow	25181	acfm	Actual Flow	42784	am3/hr
Std. Flow	20343	scfm	Std. Flow	34564	sm3/hr
Dry Std. Flow	18067	dscfm	Dry Std. Flow	30697	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	180	-9.80	0.42	0.48	936.422	73	73
2	179	-9.70	0.39	0.48		75	73
3	163		0.40	0.48		75	73
4	176		0.40	0.48		77	74
5	179		0.42	0.48		78	75
6	178		0.54	0.48		79	75
7	184		0.63	0.48		80	75
8	183		0.70	0.48		81	76
9	182		0.70	0.48		82	77
10	180		0.71	0.48		82	77
11	176		0.67	0.48		83	77
12	175		0.68	0.48	959.565	83	77
13	164		0.14	0.48	975.569	83	78
14	168		0.47	0.48		83	78
15	170		0.45	0.48		82	78
16	174		0.44	0.48		82	77
17	174		0.47	0.48		81	77
18	171		0.46	0.48		81	77
19	177		0.52	0.48		81	76
20	180		0.56	0.48		80	76
21	181		0.62	0.48		80	76
22	179		0.66	0.48		79	76
23	178		0.68	0.48		80	75
24	177		0.62	0.48	997.853	79	75
25					997.853		
AVG.	176	-9.75	0.53	0.48	45.427	78	

EPA METHOD 201A/202 ANALYSES

RUN I.D. OB-M201A-R1

SUMMARY

COMPONENT	NET (grams)	CORRECTED FOR BLANK (grams)
Probe Wash	0.02021	0.01923
Filter	0.02830	0.02830
Total CPM	0.02612	0.00956
TOTAL PM	0.07463	0.05709

ANALYTICAL DATA

METHOD 5 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Acetone Probe Wash	66.85029	66.87050	0.02021	125.0
Acetone Residue	67.31777	67.31960	0.00183	115.0
Applicable Acetone Blank			0.00199	125.0
Max. Allowable Blank			0.00098	115.0
Filter	0.41265	0.44095	0.02830	

METHOD 202 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	REAGENT VOLUME (ml)	CONC. (mg/l)
Volume of Cont.#4				470.6	
Organic CPM	71.51810	71.53280	0.01470	275.0	
MeCl2 Blank		*	0.00668	125.0	
Inorganic CPM (Uncorr.)	95.70610	95.71740	0.01180	361.6**	
H2O Blank	103.23720	103.23870	0.00150	292.7	
Sulfate Aliquot Volume				20.0	
Sulfate				470.6	40.0
Chloride				100.0	0.0
Inorganic CPM (Corr.)			0.01142		

PARTICULATE EMISSIONS

	FILTERABLE	CPM	TOTAL
Actual Grain Loading (gr/dscf)	0.0163	0.0033	0.0196
Corrected to 7% O2 (gr/dscf)	0.0595	0.0120	0.0714
Corrected to 12% CO2 (gr/dscf)	0.0575	0.0116	0.0691
Corrected to 50% Excess Air (gr/dscf)	0.0585	0.0118	0.0703
Mass Rate (lb/hr)	2.53	0.51	3.04

SAMPLING QA/QC

Isokinetics (%)	94.3
Corrected Meter Volume (dscf)	44.870

(*) Actual blank value exceeded actual sample value. A blank equal to 0.0147 x (125/275) was used.
(**)Water rinse equaled 61.6 ml.

RUN NUMBER	OB-M201A-R2					
DATE	11/04/92	**METHOD 4 DATA**				
START TIME	10:15		INIT.	FINAL	NET	
END TIME	12:55		(ml)	(ml)	(ml)	
STACK DIAM.	41 inches	IMP.1	100.0	198.0	98.0	
NOZZLE I.D.	0.197 inches	IMP.2	100.0	124.0	24.0	
METER BOX GAMMA	1.0082	IMP.3	100.0	106.0	6.0	
METER BOX dH@	1.7651	IMP.4	0.0	0.0	0.0	
BAROMETRIC	29.76 in.Hg	IMP.5			0.0	
Cp	0.84	IMP.6			0.0	
TEST DURATION	147 minutes	IMP.7			0.0	
		TOTAL	300.0	428.0	128.0	
		S.G.	200.0	218.0	18.0	

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	65.889	dcf	%O2	17.08	Md	29.22
Metered Volume	1.866	dcm	%CO2	3.36	Ms	28.17
Volume @ Std.Cond.	66.492	dscf	%CO	0.0	Ps	29.05
Volume @ Std.Cond.	1.883	dscm	%N2	79.6	Fo	1.137
% Water	9.37	%	O2+CO2	20.4	%EA	435.29
% Isokinetics	108.6	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	45.18	ft/sec	Velocity	13.77	m/sec
Actual Flow	24852	acfm	Actual Flow	42224	am3/hr
Std. Flow	19950	scfm	Std. Flow	33896	sm3/hr
Dry Std. Flow	18081	dscfm	Dry Std. Flow	30720	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	171	-9.70	0.30	0.47	989.436	55	54
2	172	-9.70	0.47	0.47		56	55
3	174		0.43	0.47		59	55
4	174		0.44	0.47		61	56
5	175		0.45	0.47		65	58
6	177		0.43	0.47		64	58
7	177		0.56	0.47		64	58
8	181		0.65	0.47		65	59
9	181		0.75	0.47		68	61
10	181		0.77	0.47		68	62
11	183		0.73	0.47		69	63
12	184		0.72	0.47		70	64
13	174		0.30	0.47		67	64
14	176		0.28	0.47		68	63
15	178		0.35	0.47		69	65
16	178		0.32	0.47		70	65
17	179		0.57	0.47		71	66
18	181		0.48	0.47		72	66
19	181		0.46	0.47		73	67
20	184		0.48	0.47		74	67
21	182		0.54	0.47		74	67
22	182		0.70	0.47		74	68
23	180		0.66	0.47		74	69
24	180		0.60	0.47		75	69
25					1055.325		
AVG.	179	-9.70	0.52	0.47	65.889	65	

EPA METHOD 201A/202 ANALYSES

RUN I.D. OB-M201A-R2

SUMMARY

COMPONENT	NET (grams)	CORRECTED FOR BLANK (grams)
Probe Wash	0.01274	0.01189
Filter	0.03603	0.03603
Total CPM	0.03344	0.00531
TOTAL PM	0.08221	0.05323

ANALYTICAL DATA

METHOD 5 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Acetone Probe Wash	67.31516	67.32790	0.01274	108.0
Acetone Residue	67.31777	67.31960	0.00183	115.0
Applicable Acetone Blank			0.00172	108.0
Max. Allowable Blank			0.00085	115.0
Filter	0.41846	0.45449	0.03603	

METHOD 202 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	REAGENT VOLUME (ml)	CONC. (mg/l)
Volume of Cont.#4				504.3	
Organic CPM	75.41960	75.44580	0.02620	275.0	
MeCl2 Blank		*	0.01191	125.0	
Inorganic CPM (Uncorr.)	105.81480	105.82220	0.00771	376.3**	
H2O Blank	103.23720	103.23870	0.00150	292.7	
Sulfate Aliquot Volume				20.0	
Sulfate				504.3	45.0
Chloride				100.0	0.0
Inorganic CPM (Corr.)			0.00724		

PARTICULATE EMISSIONS

	FILTERABLE	CPM	TOTAL
Actual Grain Loading (gr/dscf)	0.0111	0.0012	0.0124
Corrected to 7% O2 (gr/dscf)	0.0405	0.0045	0.0450
Corrected to 12% CO2 (gr/dscf)	0.0397	0.0044	0.0441
Corrected to 50% Excess Air (gr/dscf)	0.0397	0.0044	0.0441
Mass Rate (lb/hr)	1.72	0.19	1.91

SAMPLING QA/QC

Isokinetics (%)	108.6
Corrected Meter Volume (dscf)	66.492

(*) Actual blank value exceeded actual sample value. A blank equal to 0.0262 x (125/275) was used.

(**) Water rinse equaled 76.3 ml.

RUN NUMBER	OB-M201A-R3				
DATE	11/04/92	**METHOD 4 DATA**			
START TIME	14:12		INIT.	FINAL	NET
END TIME	16:41		(ml)	(ml)	(ml)
STACK DIAM.	41 inches	IMP.1	100.0	179.0	79.0
NOZZLE I.D.	0.197 inches	IMP.2	100.0	132.0	32.0
METER BOX GAMMA	1.0082	IMP.3	100.0	105.0	5.0
METER BOX dH@	1.7651	IMP.4	0.0	0.0	0.0
BAROMETRIC	29.61 in.Hg	IMP.5			0.0
Cp	0.84	IMP.6			0.0
TEST DURATION	128 minutes	IMP.7			0.0
		TOTAL	300.0	416.0	116.0
		S.G.	200.0	215.9	15.9

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	50.230	dcf	%O2	17.12	Md	29.23
Metered Volume	1.422	dcm	%CO2	3.40	Ms	27.99
Volume @ Std.Cond.	50.122	dscf	%CO	0.0	Ps	28.89
Volume @ Std.Cond.	1.419	dscm	%N2	79.5	Fo	1.112
% Water	11.02	%	O2+CO2	20.5	%EA	443.21
% Isokinetics	92.8	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	46.90	ft/sec	Velocity	14.30	m/sec
Actual Flow	25801	acfm	Actual Flow	43836	am3/hr
Std. Flow	20579	scfm	Std. Flow	34965	sm3/hr
Dry Std. Flow	18311	dscfm	Dry Std. Flow	31110	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	171	-9.80	0.42	0.47	55.829	67	67
2	173	-9.80	0.54	0.47		64	63
3	174		0.51	0.47		64	64
4	175		0.47	0.47		67	64
5	175		0.47	0.47		69	64
6	176		0.48	0.47		71	66
7	177		0.54	0.47		71	66
8	176		0.57	0.47		72	67
9	178		0.64	0.47		72	66
10	178		0.67	0.47		73	67
11	178		0.64	0.47		74	68
12	187		0.64	0.47		74	68
13	187		0.42	0.47		66	65
14	185		0.40	0.47		67	65
15	185		0.42	0.47		68	66
16	183		0.41	0.47		69	67
17	183		0.41	0.47		70	67
18	184		0.41	0.47		71	67
19	179		0.56	0.47		72	67
20	181		0.63	0.47		73	68
21	181		0.70	0.47		73	68
22	180		0.74	0.47		76	67
23	176		0.72	0.47		73	67
24	178		0.68	0.47		73	68
25					106.059		
AVG.	179	-9.80	0.55	0.47	50.230	68	

EPA METHOD 201A/202 ANALYSES

RUN I.D. OB-M201A-R3

SUMMARY

COMPONENT	NET (grams)	CORRECTED FOR BLANK (grams)
Probe Wash	0.01143	0.01045
Filter	0.03645	0.03645
Total CPM	0.03109	0.00845
TOTAL PM	0.07897	0.05535

ANALYTICAL DATA

METHOD 5 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	VOLUME (ml)
Acetone Probe Wash	64.80047	64.81190	0.01143	125.0
Acetone Residue	67.31777	67.31960	0.00183	115.0
Applicable Acetone Blank			0.00199	125.0
Max. Allowable Blank			0.00098	115.0
Filter	0.42684	0.46329	0.03645	

METHOD 202 COMPONENTS

	TARE (grams)	FINAL (grams)	NET (grams)	REAGENT VOLUME (ml)	CONC. (mg/l)
Volume of Cont.#4				408.2	
Organic CPM	75.29180	75.31290	0.02110	275.0	
MeCl2 Blank		*	0.00959	125.0	
Inorganic CPM (Uncorr.)	110.85250	110.86250	0.01052	300.0**	
H2O Blank	103.23720	103.23870	0.00150	292.7	
Sulfate Aliquot Volume				20.0	
Sulfate				408.2	63.0
Chloride				100.0	0.0
Inorganic CPM (Corr.)			0.00999		

PARTICULATE EMISSIONS

	FILTERABLE	CPM	TOTAL
Actual Grain Loading (gr/dscf)	0.0144	0.0026	0.0170
Corrected to 7% O2 (gr/dscf)	0.0531	0.0096	0.0627
Corrected to 12% CO2 (gr/dscf)	0.0510	0.0092	0.0601
Corrected to 50% Excess Air (gr/dscf)	0.0523	0.0094	0.0617
Mass Rate (lb/hr)	2.27	0.41	2.67

SAMPLING QA/QC

Isokinetics (%)	92.8
Corrected Meter Volume (dscf)	50.122

(*)Actual blank value exceeded actual sample value. A blank equal to 0.0211 x (125/275) was used.
(**) There was no water rinse.

B.3 EPA DATA AND RESULTS FOR PM_{10} AND TOTAL PM TESTING

B.3.1 M201 DATA AND RESULTS - GRINDING-SCREENING BUILDING DUCT #1

SUMMARY OF METHOD 201 - TOTAL FILTERABLE AND PM_{10} PARTICULATE:
GRINDING-SCREENING BUILDING

RUN NUMBER	D1-M201-R1	D1-M201-R2	D1-M201-R3	AVERAGE
DATE	10/27/92	10/28/92	10/28/92	
SAMPLING DATA				
Metered Volume - cf	62.641	51.108	52.638	55.462
Total Test Time - min	240	180	180	200
% Isokinetic	98.8	98.4	98.2	98.5
GAS PARAMETERS				
Gas Temperature - oF	72	61	69	67
Oxygen - %	20.9	20.9	20.9	20.9
Carbon Dioxide - %	0.0	0.0	0.0	0.0
Moisture - %	1.0	1.0	1.0	1.0
GAS FLOWRATE				
Velocity - ft/sec	31.13	33.64	34.87	33.21
Actual Volume - acfm	23471	26163	27119	25585
Standard Volume - dscfm	22709	25891	26414	25005
TOTAL FILTERABLE PARTICULATE EMISSIONS				
Concentration - gr/dscf	0.01166	0.00777	0.01284	0.01076
Mass Rate - lb/hr	2.270	1.724	2.907	2.300
TOTAL PM_{10} EMISSIONS				
Concentration - gr/dscf	0.00094	0.00077	0.00072	0.00081
Mass Rate - lb/hr	0.183	0.171	0.163	0.172

Note: D1 is duct #1 off the Grinding-Screening building.

See Appendix F.3.1 for detailed field sampling information.

A duct size of 48.0 inches was used in calculating flowrates. This information was gathered from ETS, Inc. files pertaining to the duct work.

B.3.2 M201 DATA AND RESULTS - GRINDING-SCREENING BUILDING DUCT #2

SUMMARY OF METHOD 201 - TOTAL FILTERABLE AND PM_{10} PARTICULATE:
GRINDING-SCREENING BUILDING

RUN NUMBER	D2-M201-R1	D2-M201-R2	D2-M201-R3	AVERAGE
DATE	10/27/92	10/28/92	10/28/92	
SAMPLING DATA				
Metered Volume - cf	45.031	35.88	36.691	39.201
Total Test Time - min	240	180	180	200
% Isokinetic	99.2	104.2	102.6	102.0
GAS PARAMETERS				
Gas Temperature - oF	72	61	67	67
Oxygen - %	20.9	20.9	20.9	20.9
Carbon Dioxide - %	0.0	0.0	0.0	0.0
Moisture - %	1.0	1.0	1.0	1.0
GAS FLOWRATE				
Velocity - ft/sec	38.15	38.50	39.72	38.79
Actual Volume - acfm	28764	29943	30891	29866
Standard Volume - dscfm	27883	29668	30280	29277
TOTAL FILTERABLE PARTICULATE EMISSIONS				
Concentration - gr/dscf	0.01584	0.00736	0.01064	0.01128
Mass Rate - lb/hr	3.786	1.872	2.762	2.806
TOTAL PM_{10} EMISSIONS				
Concentration - gr/dscf	0.00185	0.00097	0.00088	0.00123
Mass Rate - lb/hr	0.442	0.247	0.228	0.306

Note: D2 is duct #2 off the Grinding-Screening building.

See Appendix F.3.2 for detailed field sampling information.

A duct size of 48.0 inches was used in calculating flowrates. This information was gathered from ETS, Inc. files pertaining to the duct work.

B.4 DATA AND RESULTS FOR TOTAL FLUORIDE TESTING

B.4.1 M13B DATA AND RESULTS - SAWDUST DRYER INLET

SUMMARY OF TOTAL FLUORIDE SAMPLING: SAWDUST DRYER INLET

RUN NUMBER	IN-M13-R1	IN-M13-R2	IN-M13-R3	AVERAGE
DATE	10/29/92	10/29/92	10/30/92	
SAMPLING DATA				
Metered Volume - cf	130.045	101.348	97.560	109.651
Corrected Vol. - dscf	124.192	97.313	94.436	
Total Test Time - min	120	120	120	120
% Isokinetic	90.0	96.6	94.2	93.6
GAS PARAMETERS				
Gas Temperature - oF	451	412	451	438
Oxygen - %	18.3	18.3	18.3	18.3
Carbon Dioxide - %	3.0	3.0	3.0	3.0
Moisture - %	5.3	5.4	5.0	5.2
GAS FLOWRATE				
Velocity - ft/sec	46.68	46.57	48.84	47.36
Actual Volume - acfm	44545	44440	46609	45198
Standard Volume - dscfm	23861	25090	24948	24633
FLUORIDE EMISSIONS				
Concentration - mg/l	1.8	6.5	73.8	27.4
Sample Vol. - ml	1043.1	1329.1	1259.3	1210.5
Conc. - ppmdv	0.68	3.97	44.00	16.22
Conc. - ppmdv @ 7% O2	3.61	21.22	235.25	86.70
Mass Rate - lb/hr	0.048	0.295	3.248	1.197

Notes: Sample values for 2-M13-LOCE and 2A-M13-LOCE were combined for IN-M13-R2.

Sample values for 3-M13-LOCE and 3A-M13-LOCE were combined for IN-M13-R3.

Run 15

INITIAL DATA VALUES	PLANT- *** DATE- *** LOCATION-*** RUN- ***	CALCULATED VALUES

DIA. OF STACK OR CROSS SECTION
54.0000 IN. OR 0.0000 L 0.0000 W IN.

CATCH
FROUNT HALF 1900.0000 ug.
BACK HALF 0.0000 ug.
TOTAL 1900.0000 ug.

BAROMETRIC PRESSURE Pbar 29.58 in. Hg	Ym METER CORRECTION FACTOR 1.0118
STACK STATIC PRESSURE Pst 0.21 in. HOH	NET TIME OF TEST Tt 120 min.
ESTIMATED % MOISTURE 6.6	PITOT COEFFICIENT 0.84
DIA. OF NOZZLE 0.3750 in.	Vw TOTAL H2O COLLECTED 146.60 ml
METER DELTA H@ 1.9757 in. HOH	Np # OF POINTS 24

%CO2	%O2	%N2
3.00	18.30	78.70

Milligrams/Dry Std. Cubic Meter = 0.5403

Grains/Dry Std. Cubic Ft. = 2.36E-04

Lbs./Hour = 4.829E-02 Kilograms/Hour = 2.190E-02

AFCM 44544.86	DSCFM 23860.70	
Vw gas 6.9049 CF	Vm Std. 124.1915 CF	STACK GAS PRESSURE Ps 29.5954 in. HOH
TRUE % M 5.2670	AVE. DELTA P 0.4038 in. HOH	MWd MOL WT. OF STACK GAS 29.2120
Md 0.9340	AVE. DELTA H 4.66 in. HOH	AVE. SQRT DELTA P 18.8694
Bws(est) 0.0660	AVE. Ts 451 F	PER CENT ISOKINETIC %I 89.9930
Vm TOTAL 130.0450 CF	AVE. Tm 99 F	Vs STACK GAS VELOCITY 46.6801 f/s

MW MOL. WT. OF STACK GAS WET= 28.4720

|| LEAK CHECK ||

GAS METER READING

	START	STOP	COMENTS
1	0.0000	0.0000	
2	0.0000	0.0000	
3	0.0000	0.0000	
4	0.0000	0.0000	
5	0.0000	0.0000	

=========	
RUN DATA	
=========	

PLANT- Pine Hall Brick
DATE- Oct 29, 1992
LOCATION- E Dryer Inlet
RUN- 1E

POINT #	TIME	GAS METER READING	VELOCITY DELTA P	ORIFICE PRESSURE ACTUAL	ORIFICE PRESSURE DESIRED	STACK TEMP	DRY GAS METER TEMP. IN	DRY GAS METER TEMP. OUT	%I PER POINT	COMENTS
1	0.00	728.855	0.29	5.85	5.84	79	60	64	113.9	
2	5.00	736.000	0.35	6.00	6.39	150	80	70	79.1	
3	10.00	741.250	0.52	6.00	6.43	454	92	74	102.2	
4	15.00	748.100	0.48	5.80	5.91	468	100	78	89.7	
5	20.00	753.900	0.63	6.00	7.98	447	105	80	86.2	
6	25.00	760.400	0.70	6.00	8.61	485	112	86	83.8	
7	30.00	767.000	0.73	6.00	9.04	485	115	90	81.5	
8	35.00	773.600	0.53	6.00	6.64	476	116	92	93.6	
9	40.00	780.100	0.45	5.65	5.66	476	118	94	99.5	
10	45.00	786.500	0.43	5.30	5.32	495	120	96	84.8	
11	50.00	791.800	0.37	4.50	4.56	502	120	100	120.5	
12	55.00	798.800	0.32	4.00	3.92	508	120	100	46.8	
1	60.00	801.325	0.28	3.45	3.47	459	86	88	96.0	
2	65.00	806.100	0.28	3.45	3.48	461	90	90	98.1	
3	70.00	811.000	0.27	3.30	3.33	476	100	90	99.7	
4	75.00	815.900	0.29	3.60	3.64	465	106	90	97.2	
5	80.00	820.900	0.30	3.85	3.85	450	110	92	100.0	
6	85.00	826.200	0.46	5.00	5.82	469	114	96	90.4	
7	90.00	832.100	0.58	4.85	7.37	470	118	98	81.5	
8	95.00	838.100	0.40	4.70	5.03	483	120	100	96.8	
9	100.00	844.000	0.30	3.70	3.72	499	120	102	108.4	
10	105.00	849.700	0.27	3.30	3.31	513	122	104	90.5	
11	110.00	854.200	0.25	3.00	3.04	521	124	104	98.3	
12	115.00	858.900	0.21	2.55	2.55	525	122	106	0.0	

Run - 2
E

INITIAL DATA VALUES	PLANT- *** DATE- *** LOCATION-*** RUN-	CALCULATED VALUES

DIA. OF STACK OR CROSS SECTION
54.0000 IN. OR 0.0000 L 0.0000 W IN.

CATCH
FROUNT HALF 4400.0000 ug.
BACK HALF 0.0000 ug.
TOTAL 4400.0000 ug.

BAROMETRIC PRESSURE Pbar 29.52 in. Hg	Ym METER CORRECTION FACTOR 1.0118
STACK STATIC PRESSURE Pst 0.21 in. HOH	NET TIME OF TEST Pt 120 min.
ESTIMATED % MOISTURE 4.6	PITOT COEFFICIENT 0.84
DIA. OF NOZZLE 0.3125 in.	Vw TOTAL H20 COLLECTED 117.00 ml
METER DELTA H@ 1.9757 in. HOH	Np # OF POINTS 24

%CO2	%O2	%N2
3.00	18.30	78.70

Milligrams/Dry Std. Cubic Meter = 1.5967

Grains/Dry Std. Cubic Ft. = 6.98E-04

Lbs./Hour = 1.501E-01 Kilograms/Hour = 6.807E-02

APCM 44440.10	DSCFM 25090.43	
Vw gas 5.5107 CF	Vm Std. 97.3128 CF	STACK GAS PRESSURE Ps 29.5354 in. HOH
TRUE % M 5.3594	AVE. DELTA P 0.4196 in. HOH	MWd MOL WT. OF STACK GAS 29.2120
Md 0.9540	AVE. DELTA H 2.59 in. HOH	AVE. SQRT DELTA P 18.8799
Bws(est) 0.0460	AVE. Ts 421 F	PER CENT ISOKINETIC %I 96.5660
Vm TOTAL 101.3480 CF	AVE. Tm 92 F	Vs STACK GAS VELOCITY 46.5703 f/s

MW MOL. WT. OF STACK GAS WET= 28.6962

|| LEAK CHECK ||

GAS METER READING

	START	STOP	COMENTS
1	0.0000	0.0000	
2	0.0000	0.0000	
3	0.0000	0.0000	
4	0.0000	0.0000	
5	0.0000	0.0000	

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RUN DATA
=========

PLANT- Pine Hall Brick
DATE- Oct 29, 1992
LOCATION-Dryer Inlet
RUN- 2

POINT #	TIME	GAS METER READING	VELOCITY DELTA P	ORIFICE PRESSURE ACTUAL	ORIFICE PRESSURE DESIRED	STACK TEMP	DRY GAS METER TEMP. IN	DRY GAS METER TEMP. OUT	%I PER POINT	COMMENTS
1	0.00	863.550	0.32	2.00	2.13	378	74	78	98.6	
2	5.00	867.370	0.40	3.90	4.01	99	80	80	93.7	
3	10.00	872.350	0.55	5.10	5.30	128	92	80	95.6	
4	15.00	878.210	0.60	3.50	3.61	497	106	82	96.5	
5	20.00	883.140	0.70	4.10	4.24	496	110	86	89.3	
6	25.00	888.100	0.69	1.50	4.23	488	110	90	71.3	
7	30.00	892.090	0.73	4.40	4.56	450	86	88	95.0	
8	35.00	897.500	0.60	3.60	3.73	466	98	90	100.1	
9	40.00	902.700	0.55	3.60	3.70	400	104	90	97.3	
10	45.00	907.750	0.45	2.72	2.81	470	108	92	93.5	
11	50.00	912.000	0.42	2.50	2.56	496	108	94	103.2	
12	55.00	916.480	0.39	2.30	2.38	493	108	94	179.4	
1	60.00	924.001	0.26	1.90	2.03	266	80	90	101.9	
2	65.00	927.888	0.29	1.80	1.87	432	94	91	101.8	
3	70.00	931.638	0.28	2.10	2.20	272	98	91	69.2	
4	75.00	934.412	0.29	1.80	1.85	443	101	91	104.7	
5	80.00	938.272	0.31	2.00	2.08	400	102	91	128.2	
6	85.00	943.280	0.32	2.00	2.03	453	103	92	107.0	
7	90.00	947.408	0.40	2.50	2.54	454	106	93	82.7	
8	95.00	950.982	0.45	2.50	2.71	475	82	84	100.3	
9	100.00	955.396	0.34	2.00	2.02	497	90	86	88.9	
10	105.00	958.792	0.28	1.60	1.64	510	96	80	70.8	
11	110.00	961.232	0.24	1.40	1.41	516	99	86	114.3	
12	115.00	964.898	0.21	1.25	1.23	518	99	86	0.0	

3L

INITIAL DATA VALUES	PLANT- *** DATE- *** LOCATION-*** RUN- ***	CALCULATED VALUES

DIA. OF STACK OR CROSS SECTION
54.0000 IN. OR 0.0000 L 0.0000 W IN.

CATCH
FROUNT HALF 3600.0000 ug.
BACK HALF 0.0000 ug.
TOTAL 3600.0000 ug.

BAROMETRIC PRESSURE Pbar 29.58 in. Hg	Ym METER CORRECTION FACTOR 1.0118
STACK STATIC PRESSURE Pst 0.21 in. HOH	NET TIME OF TEST Tt 120 min.
ESTIMATED % MOISTURE 6.6	PITOT COEFFICIENT 0.84
DIA. OF NOZZLE 0.3125 in.	Vw TOTAL H20 COLLECTED 104.90 ml
METER DELTA H@ 1.9757 in. HOH	Np # OF POINTS 24

%CO2	%O2	%N2
3.00	18.30	78.70

Milligrams/Dry Std. Cubic Meter = 1.3462

Grains/Dry Std. Cubic Ft. = 5.88E-04

Lbs./Hour = 1.258E-01 Kilograms/Hour = 5.706E-02

AFCM 46608.51	DSCFM 24947.84	
Vw gas 4.9408 CF	Vm Std. 94.4357 CF	STACK GAS PRESSURE Ps 29.5954 in. HOH
TRUE % M 4.9718	AVE. DELTA P 0.4388 in. HOH	MWd MOL WT. OF STACK GAS 29.2120
Md 0.9340	AVE. DELTA H 2.63 in. HOH	AVE. SQRT DELTA P 19.7436
Bws(est) 0.0660	AVE. Ts 451 F	PER CENT ISOKINETIC %I 94.2467
Vm TOTAL 97.5630 CF	AVE. Tm 89 F	Vs STACK GAS VELOCITY 48.8426 f/s

MW MOL. WT. OF STACK GAS WET= 28.4720

|| LEAK CHECK ||

GAS METER READING

	START	STOP	COMENTS
1	20.4230	23.3200	
2	0.0000	0.0000	
3	0.0000	0.0000	
4	0.0000	0.0000	
5	0.0000	0.0000	

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RUN DATA
=========

PLANT- Pine Hall Brick
DATE- Oct 30, 1992
LOCATION-Dryer Inlet
RUN- 3E

POINT #	TIME	GAS METER READING	VELOCITY DELTA P	ORIFICE PRESSURE ACTUAL	ORIFICE PRESSURE DESIRED	STACK TEMP	DRY GAS METER TEMP. IN	DRY GAS METER TEMP. OUT	%I PER POINT	COMMENTS
1	0.00	965.110	0.35	2.10	2.15	400	65	68	113.6	
2	5.00	969.490	0.45	3.35	3.36	250	70	68	97.5	
3	10.00	974.190	0.44	2.50	2.53	474	80	70	99.2	
4	15.00	978.365	0.52	3.00	2.93	499	84	72	98.6	
5	20.00	982.840	0.66	3.50	3.74	500	90	74	97.9	
6	25.00	987.875	0.70	4.00	4.04	490	96	78	77.7	
7	30.00	992.045	0.78	4.60	4.62	471	100	80	113.8	
8	35.00	998.580	0.70	4.20	4.18	471	105	84	97.6	
9	40.00	1003.940	0.52	3.10	3.11	473	106	88	96.8	
10	45.00	1008.550	0.45	2.70	2.70	475	108	90	98.3	
11	50.00	1012.920	0.44	2.60	2.61	486	106	92	87.9	
12	55.00	1016.760	0.42	2.60	2.62	442	108	92	149.7	
1	60.00	1023.320	0.28	1.70	1.71	425	77	81	82.6	
2	65.00	1026.197	0.31	1.90	1.86	451	87	85	122.4	
3	70.00	1030.675	0.32	1.95	1.95	442	92	85	99.8	
4	75.00	1034.420	0.32	2.00	2.01	425	96	90	96.9	
5	80.00	1038.119	0.32	1.95	1.95	451	96	92	112.5	
6	85.00	1042.360	0.45	2.70	2.73	457	97	92	111.9	
7	90.00	1047.340	0.56	3.40	3.39	460	98	93	86.1	
8	95.00	1051.608	0.42	2.50	2.50	479	99	94	86.6	
9	100.00	1055.302	0.33	1.90	1.93	496	99	94	93.9	
10	105.00	1058.827	0.30	1.65	1.79	470	96	92	97.9	
11	110.00	1062.368	0.27	1.60	1.59	485	96	92	94.1	
12	115.00	1065.570	0.22	1.50	1.49	360	94	91	0.0	

B.4.2 M13B DATA AND RESULTS - SAWDUST DRYER OUTLET A

SUMMARY OF TOTAL FLUORIDE SAMPLING: SAWDUST DRYER OUTLET A

RUN NUMBER	OA-M13-R1	OA-M13-R2	OA-M13-R3	AVERAGE
DATE	10/29/92	10/29/92	10/30/92	
SAMPLING DATA				
Metered Volume - cf	104.366	78.196	85.682	89.415
Corrected Vol. - dscf	105.663	80.150	87.015	
Total Test Time - min	120	120	120	120
% Isokinetic	75.4	94.7	105.9	92.0
GAS PARAMETERS				
Gas Temperature - oF	149	141	155	148
Oxygen - %	19.1	19.1	19.1	19.1
Carbon Dioxide - %	2.2	2.2	2.2	2.2
Moisture - %	6.15	8.05	10.32	8.17
GAS FLOWRATE				
Velocity - ft/sec	72.81	43.40	43.13	53.11
Actual Volume - acfm	42033	25052	24897	30661
Standard Volume - dscfm	32995	19911	19339	24082
FLUORIDE EMISSIONS				
Concentration - mg/l	8.4	8.0	13.6	10.0
Sample Volume - ml.	883.9	657.1	1310.3	950.4
Conc. - ppmdv	3.14	2.93	9.16	5.08
Conc. - ppmdv @ 7% O2	24.26	22.65	70.71	39.21
Mass Rate - lb/hr	0.307	0.173	0.524	0.334

Note: Sample values for 3-M13-LOCF1 and 3A-M13-LOCF1 were combined for OA-M13-R3.

\F\

INITIAL DATA VALUES	PLANT- *** DATE- *** LOCATION-*** RUN- ***	CALCULATED VALUES

DIA. OF STACK OR 42.0000 IN.	CROSS SECTION OR 0.0000 L 0.0000 W IN.	Milligrams/Dry Std. Cubic Meter = 2.4732		
		Grains/Dry Std. Cubic Ft. = 1.08E-03		
CATCH FROUNT HALF 7400.0000 uq. BACK HALF 0.0000 uq. TOTAL 7400.0000 uq.		Lbs./Hour = 3.057E-01		Kilograms/Hour = 1.386E-01
		AFCM 42033.15	DSCFM 32994.74	
BAROMETRIC PRESSURE Pbar 29.58 in. Hg	Ym METER CORRECTION FACTOR 1.0796	Vw gas 6.9237 CF	Vm Std. 105.6627 CF	STACK GAS PRESSURE Ps 28.8006 in. HOH
STACK STATIC PRESSURE Pst -10.60 in. HOH	NET TIME OF TEST Tt 120 min.	TRUE % M 6.1497	AVE. DELTA P 1.6083 in. HOH	MWd MOL WT. OF STACK GAS 29.1160
ESTIMATED % MOISTURE 6.0	PITOT COEFFICIENT 0.84	Md 0.9400	AVE. DELTA H 3.50 in. HOH	AVE. SQRT DELTA P 29.0238
DIA. OF NOZZLE 0.2500 in.	Vw TOTAL H20 COLLECTED 147.00 ml	Bws(est) 0.0600	AVE. Ts 149 F	PER CENT ISOKINETIC %I 75.3652
METER DELTA H@ 1.6312 in. HOH	Np # OF POINTS 24	Vm TOTAL 104.3660 CF	AVE. Tm 101 F	Vs STACK GAS VELOCITY 72.8140 f/s
%CO2 2.20	%O2 19.10 %N2 78.70	MW MOL. WT. OF STACK GAS WET= 28.4490		

|| LEAK CHECK ||

GAS METER READING

	START	STOP	COMENTS
1	0.0000	0.0000	
2	0.0000	0.0000	
3	0.0000	0.0000	
4	0.0000	0.0000	
5	0.0000	0.0000	

=========
RUN DATA
=========

PLANT- Pine Hall Brick
DATE- Oct 29, 1992
LOCATION-Dryer Outlet
RUN- 1F1

POINT #	TIME	GAS METER READING	VELOCITY DELTA P	ORIFICE PRESSURE ACTUAL	ORIFICE PRESSURE DESIRED	STACK TEMP	DRY GAS METER TEMP. IN	DRY GAS METER TEMP. OUT	%I PER POINT	COMMENTS
1	0.00	225.594	3.20	5.20	10.73	65	68	66	67.1	
2	5.00	231.520	3.20	5.20	10.87	66	82	68	59.2	
3	10.00	236.820	3.20	5.20	10.92	71	95	70	65.4	
4	15.00	242.730	3.30	5.20	10.88	97	106	74	58.9	
5	20.00	248.080	2.10	5.20	6.44	143	111	77	81.4	
6	25.00	253.790	2.00	5.20	5.86	177	117	81	89.7	
7	30.00	259.820	2.40	5.20	7.01	183	120	85	78.0	
8	35.00	265.570	2.30	5.20	6.79	180	124	88	80.8	
9	40.00	271.450	2.30	5.20	6.83	181	130	91	81.0	
10	45.00	277.390	2.30	5.20	6.82	182	128	93	80.0	
11	50.00	283.250	2.20	5.20	6.56	182	131	95	82.0	
12	55.00	289.150	2.40	5.20	7.18	182	133	98	80.1	
1	60.00	295.196	2.40	5.20	7.19	183	134	100	42.0	
2	65.00	298.370	0.44	1.55	1.55	73	110	98	86.9	
3	70.00	301.420	0.48	1.70	1.69	74	110	98	90.7	
4	75.00	304.740	0.59	1.90	1.91	122	110	97	89.7	
5	80.00	308.220	0.54	1.70	1.68	148	116	97	92.8	
6	85.00	311.610	0.47	1.45	1.44	159	117	98	93.3	
7	90.00	314.770	0.43	1.30	1.29	170	113	99	93.9	
8	95.00	317.780	0.45	1.30	1.31	185	110	98	92.9	
9	100.00	320.780	0.46	1.35	1.34	185	111	98	92.2	
10	105.00	323.790	0.48	1.40	1.40	186	114	98	92.2	
11	110.00	326.870	0.48	1.40	1.40	187	110	98	92.9	
12	115.00	329.960	0.48	1.40	1.40	186	109	97	0.0	

2F1

PLANT- ***
DATE- ***
LOCATION-***
RUN- ***

INITIAL DATA VALUES

DIA. OF STACK OR CROSS SECTION
42.0000 IN. OR 0.0000 L 0.0000 W IN.

CATCH

FROUNT HALF	5300.0000 ug.
BACK HALF	0.0000 ug.
TOTAL	5300.0000 ug.

BAROMETRIC PRESSURE Pbar 29.58 in. Hg	Ym METER CORRECTION FACTOR 1.0796
STACK STATIC PRESSURE Pst -10.60 in. HOH	NET TIME OF TEST Tt 120 min.
ESTIMATED % MOISTURE 6.0	PITOT COEFFICIENT 0.84
DIA. OF NOZZLE 0.2500 in.	Vw TOTAL H2O COLLECTED 149.00 ml
METER DELTA H@ 1.6400 in. HOH	Np # OF POINTS 24

%CO2	%O2	%N2
2.20	19.10	78.70

CALCULATED VALUES

Milligrams/Dry Std. Cubic Meter = 2.3352

Grains/Dry Std. Cubic Ft. = 1.02E-03

Lbs./Hour = 1.742E-01 Kilograms/Hour = 7.900E-02

AFCM 25051.52	DSCFM 19911.41	
Vw gas 7.0179 CF	Vm Std. 80.1499 CF	STACK GAS PRESSURE Ps 28.8006 in. HOH
TRUE % M 8.0510	AVE. DELTA P 0.4996 in. HOH	MWd MOL WT. OF STACK GAS 29.1160
Md 0.9400	AVE. DELTA H 1.62 in. HOH	AVE. SQRT DELTA P 17.2980
Bws(est) 0.0600	AVE. Ts 141 F	PER CENT ISOKINETIC %I 94.7315
Vm TOTAL 78.1960 CF	AVE. Tm 92 F	Vs STACK GAS VELOCITY 43.3967 f/s

MW MOL. WT. OF STACK GAS WET= 28.4490

|| LEAK CHECK ||

GAS METER READING

	START	STOP	COMENTS
1	0.0000	0.0000	
2	0.0000	0.0000	
3	0.0000	0.0000	
4	0.0000	0.0000	
5	0.0000	0.0000	

=========
RUN DATA
=========

PLANT- Pine Hall Brick
DATE- Oct 29,1992
LOCATION-Dryer Outlet
RUN- 2F1

POINT #	TIME	GAS METER READING	VELOCITY DELTA P	ORIFICE PRESSURE ACTUAL	ORIFICE PRESSURE DESIRED	STACK TEMP	DRY GAS METER TEMP. IN	DRY GAS METER TEMP. OUT	%I PER POINT	COMMENTS
0	0.00	334.904			0.00				0.0	
1	5.00	338.050	0.41	1.40	1.40	76	84	83	100.7	
2	10.00	341.330	0.46	1.60	1.58	76	90	85	94.5	
3	15.00	344.610	0.43	1.50	1.48	77	98	86	110.3	
4	20.00	348.340	0.53	1.90	1.85	74	104	87	94.8	
5	25.00	351.930	0.50	1.60	1.56	142	110	88	98.6	
6	30.00	355.370	0.47	1.40	1.40	172	113	90	106.7	
7	35.00	358.910	0.54	1.60	1.61	173	114	92	100.8	
8	40.00	362.500	0.57	1.70	1.68	182	116	94	96.3	
9	45.00	366.010	0.54	1.60	1.60	182	117	95	95.9	
10	50.00	369.420	0.52	1.55	1.53	180	108	97	95.3	
11	55.00	372.730	0.51	1.55	1.51	179	112	97	55.6	
12	60.00	374.649	0.50	1.50	1.49	178	112	98	115.6	
13	65.00	378.610	0.50	1.70	1.72	74	87	86	99.5	
14	70.00	382.210	0.46	1.60	1.61	70	95	88	100.6	
15	75.00	385.750	0.45	1.60	1.58	71	104	88	115.3	
16	80.00	389.790	0.61	2.20	2.15	72	108	89	90.3	
17	85.00	393.480	0.60	1.90	1.89	138	112	90	44.3	
18	90.00	395.182	0.55	1.70	1.69	155	114	90	50.2	
19	95.00	397.010	0.52	1.65	1.42	175	60	56	96.9	
20	100.00	400.120	0.46	1.45	1.26	187	72	60	105.0	
21	105.00	403.310	0.46	1.50	1.27	188	80	64	104.2	
22	110.00	406.510	0.46	1.50	1.28	188	92	66	112.2	
23	115.00	410.000	0.47	1.55	1.32	188	98	70	97.7	
24	120.00	413.100	0.47	1.55	1.33	189	104	74	0.0	

3F1

INITIAL DATA VALUES	PLANT- *** DATE- *** LOCATION-*** RUN- ***	CALCULATED VALUES

DIA. OF STACK OR CROSS SECTION
42.0000 IN. OR 0.0000 L 0.0000 W IN.

CATCH
FROUNT HALF 6700.0000 ug.
BACK HALF 0.0000 ug.
TOTAL 6700.0000 ug.

BAROMETRIC PRESSURE Pbar 29.57 in. Hg	Ym METER CORRECTION FACTOR 1.0780
STACK STATIC PRESSURE Pst -10.60 in. HOH	NET TIME OF TEST Tt 120 min.
ESTIMATED % MOISTURE 6.0	PITOT COEFFICIENT 0.84
DIA. OF NOZZLE 0.2500 in.	Vw TOTAL H2O COLLECTED 212.50 ml
METER DELTA H@ 1.8890 in. HOH	Np # OF POINTS 24

%CO2	%O2	%N2
2.20	19.10	78.70

Milligrams/Dry Std. Cubic Meter = 2.7191

Grains/Dry Std. Cubic Ft. = 1.19E-03

Lbs./Hour = 1.970E-01 Kilograms/Hour = 8.934E-02

AFCM 24897.17	DSCFM 19339.46	
Vw gas 10.0088 CF	Vm Std. 87.0150 CF	STACK GAS PRESSURE Ps 28.7906 in. HOH
TRUE % M 10.3158	AVE. DELTA P 0.4929 in. HOH	MWd MOL WT. OF STACK GAS 29.1160
Md 0.9400	AVE. DELTA H 1.78 in. HOH	AVE. SQRT DELTA P 17.1885
Bws(est) 0.0600	AVE. Ts 155 F	PER CENT ISOKINETIC %I 105.8872
Vm TOTAL 85.6820 CF	AVE. Tm 96 F	Vs STACK GAS VELOCITY 43.1293 f/s

MW MOL. WT. OF STACK GAS WET= 28.4490

|| LEAK CHECK ||

GAS METER READING

	START	STOP	COMENTS
1	0.0000	0.0000	
2	0.0000	0.0000	
3	0.0000	0.0000	
4	0.0000	0.0000	
5	0.0000	0.0000	

=========	PLANT- Pine Hall Brick
RUN DATA	DATE- Oct 30, 1992
=========	LOCATION-Dryer Outlet
	RUN- 3F1

POINT #	TIME	GAS METER READING	VELOCITY DELTA P	ORIFICE PRESSURE ACTUAL	ORIFICE PRESSURE DESIRED	STACK TEMP	DRY GAS METER TEMP. IN	DRY GAS METER TEMP. OUT	%I PER POINT	COMENTS
0	0.00	460.655			0.00				0.0	
1	5.00	465.210	0.76	3.05	3.02	75	94	87	84.3	
2	10.00	468.990	0.40	1.60	1.61	74	102	88	99.9	
3	15.00	472.280	0.35	1.40	1.40	80	108	90	99.7	
4	20.00	475.360	0.32	1.25	1.25	92	103	90	112.4	
5	25.00	478.630	0.38	1.40	1.37	133	100	89	103.1	
6	30.00	481.770	0.39	1.30	1.29	190	104	90	116.5	
7	35.00	485.220	0.47	1.60	1.56	191	107	90	104.5	
8	40.00	488.620	0.48	1.60	1.60	191	109	92	105.1	
9	45.00	492.090	0.47	1.60	1.57	191	114	93	107.8	
10	50.00	495.630	0.49	1.70	1.65	188	116	94	103.3	
11	55.00	499.110	0.46	1.60	1.55	189	119	96	102.6	
12	60.00	502.472	0.42	1.45	1.42	187	118	97	169.6	
13	65.00	507.792	1.10	4.40	4.34	67	80	77	82.5	
14	70.00	512.162	0.68	2.75	2.71	69	94	79	87.1	
15	75.00	515.852	0.48	1.90	1.86	89	102	80	97.4	
16	80.00	519.292	0.50	1.70	1.68	175	100	82	93.7	
17	85.00	522.432	0.49	1.60	1.60	193	100	83	90.3	
18	90.00	525.392	0.47	1.55	1.54	193	101	84	117.0	
19	95.00	529.152	0.41	1.40	1.35	192	104	86	106.6	
20	100.00	532.372	0.41	1.40	1.35	192	105	87	107.8	
21	105.00	535.632	0.44	1.50	1.45	192	106	89	108.5	
22	110.00	539.042	0.47	1.60	1.56	192	108	90	120.4	
23	115.00	542.962	0.51	1.70	1.70	192	110	92	99.2	
24	120.00	546.337	0.48	1.60	1.59	189	104	92	0.0	

B.5 DATA AND RESULTS FOR HYDROGEN FLUORIDE TESTING

B.5.1 M26 DATA AND RESULTS - SAWDUST DRYER INLET

HF DATA AND RESULTS
EPA METHOD 26

- SAWDUST DRYER INLET -

RUN NUMBER	IN-M26-R1	IN-M26-R2	IN-M26-R3	AVERAGE
DATE	11/02/92	11/02/92	11/03/92	
START TIME	13:11	17:33	09:15	
END TIME	15:28	19:42	11:32	

SAMPLING DATA

Initial Meter Volume - l	2158.380	2289.670	2411.150	2286.400
Final Meter Volume - l	2278.440	2409.690	2531.190	2406.440
Net Meter Volume - l	120.060	120.020	120.040	120.040
Average Meter Temp. - F	77.4	79.4	80.0	78.9
Barometric Pres. - in.Hg	29.48	29.57	29.72	29.59
Avg. Meter Pres. - in.W.C.	1.0	1.0	1.0	1.0
Meter Cal. Factor - Gamma	1.0047	1.0047	1.0047	
Corr. Meter Volume - dscf	4.132	4.128	4.145	4.135
Oxygen - %dv	15.22	14.46	15.59	15.09

GAS FLOWRATE DATA

Velocity - ft/sec	54.90	55.55	51.22	53.89
Actual Volume - acfm	52390	53009	48878	51426
Standard Volume - dscfm	27292	27249	25509	26683

LABORATORY DATA

Fluoride Analysis				
Total Liquid Volume - ml	40.0	40.0	33.0	37.7
Floride Conc. - mg/liter	252.0	300.0	127.0	226.3

HF EMISSIONS

Concentration - ppmdv	109.071	129.977	45.209	94.752
Conc. - ppmdv @ 7% O2	266.916	280.540	118.343	221.933
Mass Rate - lb/hr	9.275	11.036	3.593	7.968

B.5.2 M26 DATA AND RESULTS - SAWDUST DRYER OUTLET A

HF DATA AND RESULTS
EPA METHOD 26

- SAWDUST DRYER OUTLET A -

RUN NUMBER	**OA-M26-R1**	**OA-M26-R2**	**OA-M26-R3**	AVERAGE
DATE	11/02/92	11/02/92	11/03/92	
START TIME	13:11	17:33	09:15	
END TIME	15:28	19:42	11:32	
SAMPLING DATA				
Initial Meter Volume - l	211.050	457.060	716.460	461.523
Final Meter Volume - l	453.850	714.760	1092.400	753.670
Net Meter Volume - l	242.800	257.700	375.940	292.147
Average Meter Temp. - F	64.3	65.3	68.0	65.9
Barometric Pres. - in.Hg	29.46	29.57	29.72	29.58
Avg. Meter Pres. - in.W.C.	1.0	1.0	1.0	1.0
Meter Cal. Factor - Gamma	1.0007	1.0007	1.0007	
Corr. Meter Volume - dscf	8.525	9.065	13.225	10.272
Oxygen - %dv	16.79	16.65	17.76	17.07
GAS FLOWRATE DATA				
Velocity - ft/sec	42.15	41.12	41.96	41.74
Actual Volume - acfm	23185	22622	23081	22963
Standard Volume - dscfm	17478	16774	17029	17094
LABORATORY DATA				
Fluoride Analysis				
Total Liquid Volume - ml	40.0	40.0	40.0	40.0
Fluoride Conc. - mg/liter	105.0	300.0	45.8	150.3
HF EMISSIONS				
Concentration - ppmdv	22.028	59.190	6.194	29.138
Conc. - ppmdv @ 7% O2	74.499	193.587	27.420	98.502
Mass Rate - lb/hr	1.200	3.094	0.329	1.541

B.5.3 M26 DATA AND RESULTS - SAWDUST DRYER OUTLET B

HF DATA AND RESULTS
EPA METHOD 26

- SAWDUST DRYER OUTLET B -

RUN NUMBER	OB-M26-R1	OB-M26-R2	OB-M26-R3	AVERAGE
DATE	11/02/92	11/02/92	11/03/92	
START TIME	13:11	17:33	09:15	
END TIME	15:28	19:42	11:32	

SAMPLING DATA

Initial Meter Volume - l	455.560	703.230	955.120	704.637
Final Meter Volume - l	702.150	956.900	1198.630	952.560
Net Meter Volume - l	246.590	253.670	243.510	247.923
Average Meter Temp. - F	73.2	75.7	85.6	78.2
Barometric Pres. - in.Hg	29.48	29.57	29.72	29.59
Avg. Meter Pres. - in.W.C.	1.0	1.0	1.0	1.0
Meter Cal. Factor - Gamma	1.0009	1.0009	1.0009	
Corr. Meter Volume - dscf	8.521	8.753	8.291	8.522
Oxygen - %dv	16.81	16.64	16.91	16.79

GAS FLOWRATE DATA

Velocity - ft/sec	35.79	38.62	38.55	37.65
Actual Volume - acfm	19690	21243	21209	20714
Standard Volume - dscfm	15377	15734	16346	15819

LABORATORY DATA

Fluoride Analysis				
Total Liquid Volume - ml	40.0	40.0	40.0	40.0
Fluoride Conc. - mg/liter	1.4	238.0	200.0	146.5

HF EMISSIONS

Concentration - ppmdv	0.294	48.635	43.145	30.691
Conc. - ppmdv @ 7% O2	0.999	158.691	150.304	103.331
Mass Rate - lb/hr	0.014	2.384	2.197	1.532

B.6 DATA AND RESULTS FOR VOLATILE ORGANICS TESTING

B.6.1 M0030 DATA AND RESULTS - SAWDUST DRYER INLET

SUMMARY OF VOLATILE ORGANICS EMISSIONS: METHOD 0030: SAWDUST DRYER INLET.

RUN I.D.	IN-VST-R1	IN-VST-R2	IN-VST-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:42	09:02	
TIME ENDED	15:05	20:47	12:27	

VOLATILE ORGANIC EMISSIONS - lb/hr

Acetone	3.94E-03	2.79E-03	1.29E-02	6.55E-03
Acrylonitrile	4.43E-04	< 3.46E-04	< 3.00E-04	<3.63E-04
Benzene	9.60E-03	9.50E-03	6.70E-03	8.60E-03
Bromomethane	5.62E-04	7.44E-04	1.19E-03	8.32E-04
2-butanone	< 3.23E-04	< 5.05E-06	< 5.13E-06	<1.11E-04
Carbon Disulfide	2.66E-04	3.32E-04	2.15E-04	2.71E-04
Carbon Tetrachloride	< 4.94E-06	< 5.05E-06	< 5.13E-06	<5.04E-06
Chloroform	< 4.94E-06	< 5.05E-06	< 5.13E-06	<5.04E-06
Chloromethane	1.50E-02	1.68E-02	2.30E-03	1.14E-02
Ethylbenzene	2.20E-04	1.07E-04	1.00E-04	1.42E-04
2-Hexanone	< 4.94E-06	< 5.05E-06	< 5.13E-06	<5.04E-06
Iodomethane	2.66E-03	3.64E-03	3.88E-03	3.39E-03
Methylene Chloride	1.72E-04	6.90E-05	1.33E-04	1.25E-04
M-/p-xylene	4.23E-04	1.85E-04	8.35E-04	4.81E-04
O-xylene	< 1.39E-04	< 5.97E-05	9.00E-05	9.64E-05
Styrene	< 4.94E-06	< 1.17E-05	< 5.13E-06	<7.27E-06
Tetrachloroethane	< 4.94E-06	< 5.05E-06	< 5.13E-06	<5.04E-06
Toluene	2.05E-03	1.08E-03	2.14E-03	1.75E-03
1,1,1-trichloroethane	< 4.94E-06	< 5.05E-06	< 5.13E-06	<5.04E-06
Trichloroethene	< 4.94E-06	< 5.05E-06	< 5.13E-06	<5.04E-06
Trichlorofluoromethane	1.17E-04	7.75E-05	9.50E-05	9.64E-05
Vinyl Acetate	< 4.94E-06	< 5.05E-06	< 5.13E-06	<5.04E-06

Notes: Emission values for IN-VST-R1 represent the average of five separate vost tube analyses. Sample IN-M0030-R1D was lost due to laboratory computer failure (See Appendix G.5 case narrative accompanying laboratory data report). Emission values for runs IN-VST-R2 and IN-VST-R3 represent the averages of six separate vost tube analyses.

All VOST tubes were analyzed in tandem according to the guidelines of Methods 8240 and 5040. The response factors used are the average response factors from the initial calibration. Amounts reported for target compounds that are not detected are denoted as < 0.001. The reported laboratory values for non-detected target compounds are calculated using an area of 20 counts.

The acquisitions for samples OB-M0030-R1B and IN-M0030-R1D were lost due to laboratory computer failure.

All field samples were observed to contain condensation within the Tenax and Tenax-charcoal tubes prior to analysis. Saturation of target analytes or TICs may have inhibited target analyte recoveries. All saturated compounds should be considered underestimated and may interfere with the detection or quantitation of target analytes.

Compounds found in the field samples at levels less than five times the amount found in the associated blank should not be considered native to the samples. The majority of the samples had one or more compounds at levels over the calibration range. This occurrence is identified with an 'E' label, these quantitations should be considered estimates.

Ketone results for VOST matrices should be considered semi-quantitative as these compounds often experience erratic recovery from VOST.

See case narrative accompanying the volatile organics laboratory data, Appendix G.5, for additional information.

VOST SAMPLING DATA AND RESULTS

Run I.D.	Date	Start Time	End Time	Meter Temp. (Fo)	Meter Press. (in. wc)	Bar. Press. (in. Hg)	Initial Meter Volume (liters)	Final Meter Volume (liters)	Sample Volume (liters)	Corrected Sample Volume (dscm)
IN-VST-R1A	11/06/92	11:37	12:00	51.0	2.5	29.76	2532.710	2552.780	20.070	0.0207
IN-VST-R1B	11/06/92	12:19	12:39	56.5	2.5	29.76	2553.440	2573.490	20.050	0.0205
IN-VST-R1C	11/06/92	12:47	13:07	61.5	2.5	29.76	2574.810	2594.830	20.020	0.0203
IN-VST-R1D	11/06/92	13:49	14:09	57.0	2.5	29.76	2595.170	2615.250	20.080	0.0205
IN-VST-R1E	11/06/92	14:18	14:38	59.5	2.5	29.76	2615.880	2636.030	20.150	0.0205
IN-VST-R1F	11/06/92	14:45	15:05	61.5	2.5	29.76	2636.580	2656.640	20.060	0.0203
IN-VST-R1										
IN-VST-R2A	11/06/92	17:42	18:02	50.0	2.5	29.76	2650.030	2670.110	20.080	0.0208
IN-VST-R2B	11/06/92	18:11	18:31	53.5	2.5	29.76	2670.650	2690.770	20.120	0.0207
IN-VST-R2C	11/06/92	18:39	18:59	54.5	2.5	29.76	2711.310	2731.480	20.170	0.0207
IN-VST-R2D	11/06/92	19:32	19:52	51.5	2.5	29.76	2731.860	2752.130	20.270	0.0209
IN-VST-R2E	11/06/92	19:59	20:19	53.5	2.5	29.76	2752.910	2772.980	20.070	0.0206
IN-VST-R2F	11/06/92	20:27	20:47	55.5	2.5	29.76	2773.190	2793.310	20.120	0.0206
IN-VST-R2										
IN-VST-R3A	11/07/92	09:02	09:22	45.0	2.5	29.92	2773.230	2793.410	20.180	0.0212
IN-VST-R3B	11/07/92	09:30	09:50	49.0	2.5	29.92	2793.890	2813.940	20.050	0.0209
IN-VST-R3C	11/07/92	09:57	10:17	55.5	2.5	29.92	2814.220	2834.460	20.240	0.0208
IN-VST-R3D	11/07/92	11:14	11:34	54.0	2.5	29.92	2834.750	2854.890	20.140	0.0208
IN-VST-R3E	11/07/92	11:40	12:00	56.5	2.5	29.92	2855.040	2875.410	20.370	0.0209
IN-VST-R3F	11/07/92	12:07	12:27	57.5	2.5	29.92	2875.620	2895.770	20.150	0.0207
IN-VST-R3										

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-VST-R1A**
DATE	11/06/92
START TIME	11:37
END TIME	12:00
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	26998 dscfm
OXYGEN	16.42 %

		GAS EMISSIONS CONCENTRATION		MASS
POLLUTANT	SAMPLE TOTAL ug	ACTUAL ug/Nm3	@ 7% O2 ug/Nm3	RATE lb/hr
Acetone	1.214*	62.806	194.866	5.92E-03
Acrylonitrile	0.126	6.519	20.225	6.14E-04
Benzene	3.067*	158.670	492.301	1.50E-02
Bromomethane	0.109	5.639	17.496	5.31E-04
2-butanone	0.327	16.917	52.489	1.59E-03
Carbon Disulfide	0.065	3.363	10.434	3.17E-04
Carbon Tetrachloride	< 0.001	< 0.052	< 0.161	<4.88E-06
Chloroform	< 0.001	< 0.052	< 0.161	<4.88E-06
Chloromethane	3.036	157.066	487.325	1.48E-02
Ethylbenzene	0.124	6.415	19.904	6.05E-04
2-Hexanone	< 0.001	< 0.052	< 0.161	<4.88E-06
Iodomethane	0.571	29.540	91.654	2.78E-03
Methylene Chloride	0.104	5.380	16.694	5.07E-04
M-/p-xylene	0.173	8.950	27.769	8.43E-04
O-xylene	0.064	3.311	10.273	3.12E-04
Styrene	< 0.001	< 0.052	< 0.161	<4.88E-06
Tetrachloroethene	< 0.001	< 0.052	< 0.161	<4.88E-06
Toluene	1.261*	65.237	202.410	6.15E-03
1,1,1-trichloroethane	< 0.001	< 0.052	< 0.161	<4.88E-06
Trichloroethene	< 0.001	< 0.052	< 0.161	<4.88E-06
Trichlorofluoromethane	0.031*	1.604	4.976	1.51E-04
Vinyl Acetate	< 0.001	< 0.052	< 0.161	<4.88E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-VST-R1B**
DATE	11/06/92
START TIME	12:19
END TIME	12:39
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	26998 dscfm
OXYGEN	16.42 %

POLLUTANT	SAMPLE TOTAL ug		GAS EMISSIONS CONCENTRATION ACTUAL ug/Nm3		@ 7% O2 ug/Nm3	MASS RATE lb/hr
Acetone	0.978		51.192		158.832	4.82E-03
Acrylonitrile	0.105		5.496		17.053	5.18E-04
Benzene	1.876*		98.196		304.672	9.25E-03
Bromomethane	0.121		6.334		19.651	5.97E-04
2-butanone	< 0.001	<	0.052	<	0.162	<4.93E-06
Carbon Disulfide	0.056		2.931		9.095	2.76E-04
Carbon Tetrachloride	< 0.001	<	0.052	<	0.162	<4.93E-06
Chloroform	< 0.001	<	0.052	<	0.162	<4.93E-06
Chloromethane	3.022*		158.182		490.788	1.49E-02
Ethylbenzene	0.053		2.774		8.607	2.61E-04
2-Hexanone	< 0.001	<	0.052	<	0.162	<4.93E-06
Iodomethane	0.597		31.249		96.956	2.94E-03
Methylene Chloride	0.014*		0.733		2.274	6.91E-05
M-/p-xylene	0.167		8.741		27.122	8.24E-04
O-xylene	0.047*		2.460		7.633	2.32E-04
Styrene	< 0.001	<	0.052	<	0.162	<4.93E-06
Tetrachloroethene	< 0.001	<	0.052	<	0.162	<4.93E-06
Toluene	0.303		15.860		49.209	1.49E-03
1,1,1-trichloroethane	< 0.001	<	0.052	<	0.162	<4.93E-06
Trichloroethene	< 0.001	<	0.052	<	0.162	<4.93E-06
Trichlorofluoromethane	0.013*		0.680		2.111	6.41E-05
Vinyl Acetate	< 0.001	<	0.052	<	0.162	<4.93E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-VST-R1C**
DATE	11/06/92
START TIME	12:47
END TIME	13:07
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	26998 dscfm
OXYGEN	16.42 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	0.346	18.314	56.821	1.73E-03
Acrylonitrile	0.043*	2.276	7.062	2.14E-04
Benzene	1.244*	65.844	204.293	6.20E-03
Bromomethane	0.076	4.023	12.481	3.79E-04
2-butanone	< 0.001	< 0.053	< 0.164	<4.99E-06
Carbon Disulfide	0.034*	1.800	5.584	1.70E-04
Carbon Tetrachloride	< 0.001	< 0.053	< 0.164	<4.99E-06
Chloroform	< 0.001	< 0.053	< 0.164	<4.99E-06
Chloromethane	1.643*	86.963	269.818	8.19E-03
Ethylbenzene	0.009*	0.476	1.478	4.49E-05
2-Hexanone	< 0.001	< 0.053	< 0.164	<4.99E-06
Iodomethane	0.400	21.172	65.689	2.00E-03
Methylene Chloride	0.033*	1.747	5.419	1.65E-04
M-/p-xylene	0.027*	1.429	4.434	1.35E-04
O-xylene	0.008*	0.423	1.314	3.99E-05
Styrene	< 0.001	< 0.053	< 0.164	<4.99E-06
Tetrachloroethene	< 0.001	< 0.053	< 0.164	<4.99E-06
Toluene	0.093	4.922	15.273	4.64E-04
1,1,1-trichloroethane	< 0.001	< 0.053	< 0.164	<4.99E-06
Trichloroethene	< 0.001	< 0.053	< 0.164	<4.99E-06
Trichlorofluoromethane	0.044*	2.329	7.226	2.19E-04
Vinyl Acetate	< 0.001	< 0.053	< 0.164	<4.99E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-VST-R1E**
DATE	11/06/92
START TIME	14:18
END TIME	14:38
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	26998 dscfm
OXYGEN	16.42 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	0.794	41.595	129.055	3.92E-03
Acrylonitrile	0.091	4.767	14.791	4.49E-04
Benzene	1.952*	102.258	317.273	9.64E-03
Bromomethane	0.113	5.920	18.367	5.58E-04
2-butanone	< 0.001	< 0.052	< 0.163	<4.94E-06
Carbon Disulfide	0.054	2.829	8.777	2.67E-04
Carbon Tetrachloride	< 0.001	< 0.052	< 0.163	<4.94E-06
Chloroform	< 0.001	< 0.052	< 0.163	<4.94E-06
Chloromethane	3.633	190.319	590.499	1.79E-02
Ethylbenzene	0.037*	1.938	6.014	1.83E-04
2-Hexanone	< 0.001	< 0.052	< 0.163	<4.94E-06
Iodomethane	0.541	28.341	87.933	2.67E-03
Methylene Chloride	0.012*	0.629	1.950	5.92E-05
M-/p-xylene	0.059*	3.091	9.590	2.91E-04
O-xylene	0.022*	1.152	3.576	1.09E-04
Styrene	< 0.001	< 0.052	< 0.163	<4.94E-06
Tetrachloroethene	< 0.001	< 0.052	< 0.163	<4.94E-06
Toluene	0.335	17.549	54.450	1.65E-03
1,1,1-trichloroethane	< 0.001	< 0.052	< 0.163	<4.94E-06
Trichloroethene	< 0.001	< 0.052	< 0.163	<4.94E-06
Trichlorofluoromethane	0.014*	0.733	2.276	6.91E-05
Vinyl Acetate	< 0.001	< 0.052	< 0.163	<4.94E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-VST-R1F**
DATE	11/06/92
START TIME	14:45
END TIME	15:05
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	26998 dscfm
OXYGEN	16.42 %

	SAMPLE	GAS EMISSIONS CONCENTRATION		MASS
POLLUTANT	TOTAL ug	ACTUAL ug/Nm3	@ 7% O2 ug/Nm3	RATE lb/hr
Acetone	0.665	35.128	108.990	3.31E-03
Acrylonitrile	0.084	4.437	13.767	4.18E-04
Benzene	1.596*	84.307	261.577	7.94E-03
Bromomethane	0.150	7.924	24.584	7.47E-04
2-butanone	< 0.001	< 0.053	< 0.164	<4.98E-06
Carbon Disulfide	0.060	3.169	9.834	2.99E-04
Carbon Tetrachloride	< 0.001	< 0.053	< 0.164	<4.98E-06
Chloroform	< 0.001	< 0.053	< 0.164	<4.98E-06
Chloromethane	3.841	202.896	629.522	1.91E-02
Ethylbenzene	0.001*	0.053	0.164	4.98E-06
2-Hexanone	< 0.001	< 0.053	< 0.164	<4.98E-06
Iodomethane	0.584	30.849	95.715	2.91E-03
Methylene Chloride	0.012*	0.634	1.967	5.97E-05
M-/p-xylene	0.004*	0.211	0.656	1.99E-05
O-xylene	< 0.001	< 0.053	< 0.164	<4.98E-06
Styrene	< 0.001	< 0.053	< 0.164	<4.98E-06
Tetrachloroethene	< 0.001	< 0.053	< 0.164	<4.98E-06
Toluene	0.094	4.965	15.406	4.68E-04
1,1,1-trichloroethane	< 0.001	< 0.053	< 0.164	<4.98E-06
Trichloroethene	< 0.001	< 0.053	< 0.164	<4.98E-06
Trichlorofluoromethane	0.016*	0.845	2.622	7.96E-05
Vinyl Acetate	< 0.001	< 0.053	< 0.164	<4.98E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-VST-R2A**
DATE	11/06/92
START TIME	17:42
END TIME	18:02
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	27968 dscfm
OXYGEN	16.04 %

		GAS EMISSIONS		
		CONCENTRATION		
POLLUTANT	SAMPLE TOTAL ug	ACTUAL ug/Nm3	@ 7% O2 ug/Nm3	MASS RATE lb/hr
Acetone	1.006*	51.917	148.487	5.07E-03
Acrylonitrile	0.125	6.451	18.450	6.30E-04
Benzene	2.222*	114.672	327.971	1.12E-02
Bromomethane	0.141	7.277	20.812	7.10E-04
2-butanone	< 0.001	< 0.052	< 0.148	<5.04E-06
Carbon Disulfide	0.080	4.129	11.808	4.03E-04
Carbon Tetrachloride	< 0.001	< 0.052	< 0.148	<5.04E-06
Chloroform	< 0.001	< 0.052	< 0.148	<5.04E-06
Chloromethane	4.125	212.881	608.857	2.08E-02
Ethylbenzene	0.037*	1.909	5.461	1.86E-04
2-Hexanone	< 0.001	< 0.052	< 0.148	<5.04E-06
Iodomethane	0.833	42.989	122.952	4.20E-03
Methylene Chloride	0.023*	1.187	3.395	1.16E-04
M-/p-xylene	0.055*	2.838	8.118	2.77E-04
O-xylene	0.020*	1.032	2.952	1.01E-04
Styrene	< 0.001	< 0.052	< 0.148	<5.04E-06
Tetrachloroethene	< 0.001	< 0.052	< 0.148	<5.04E-06
Toluene	0.308	15.895	45.461	1.55E-03
1,1,1-trichloroethane	< 0.001	< 0.052	< 0.148	<5.04E-06
Trichloroethene	< 0.001	< 0.052	< 0.148	<5.04E-06
Trichlorofluoromethane	0.015*	0.774	2.214	7.56E-05
Vinyl Acetate	< 0.001	< 0.052	< 0.148	<5.04E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-VST-R2B**
DATE	11/06/92
START TIME	18:11
END TIME	18:31
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	27968 dscfm
OXYGEN	16.04 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	0.779	40.398	115.541	3.94E-03
Acrylonitrile	0.115	5.964	17.057	5.82E-04
Benzene	2.002*	103.820	296.935	1.01E-02
Bromomethane	0.150	7.779	22.248	7.59E-04
2-butanone	< 0.001	< 0.052	< 0.148	<5.06E-06
Carbon Disulfide	0.074	3.838	10.976	3.75E-04
Carbon Tetrachloride	< 0.001	< 0.052	< 0.148	<5.06E-06
Chloroform	< 0.001	< 0.052	< 0.148	<5.06E-06
Chloromethane	4.636*	240.415	687.608	2.35E-02
Ethylbenzene	0.034*	1.763	5.043	1.72E-04
2-Hexanone	< 0.001	< 0.052	< 0.148	<5.06E-06
Iodomethane	0.848	43.976	125.775	4.29E-03
Methylene Chloride	0.015*	0.778	2.225	7.59E-05
M-/p-xylene	0.051*	2.645	7.564	2.58E-04
O-xylene	0.018*	0.933	2.670	9.11E-05
Styrene	< 0.001	< 0.052	< 0.148	<5.06E-06
Tetrachloroethene	< 0.001	< 0.052	< 0.148	<5.06E-06
Toluene	0.280	14.520	41.529	1.42E-03
1,1,1-trichloroethane	< 0.001	< 0.052	< 0.148	<5.06E-06
Trichloroethene	< 0.001	< 0.052	< 0.148	<5.06E-06
Trichlorofluoromethane	0.016*	0.830	2.373	8.10E-05
Vinyl Acetate	< 0.001	< 0.052	< 0.148	<5.06E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-VST-R2C**
DATE	11/06/92
START TIME	18:39
END TIME	18:59
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	27968 dscfm
OXYGEN	16.04 %

			GAS EMISSIONS				
		SAMPLE	CONCENTRATION				MASS
		TOTAL	ACTUAL		@ 7% O2		RATE
POLLUTANT		ug	ug/Nm3		ug/Nm3		lb/hr
Acetone		0.606	31.409		89.833		3.07E-03
Acrylonitrile		0.089	4.613		13.193		4.50E-04
Benzene		2.439*	126.415		361.557		1.23E-02
Bromomethane		0.163	8.448		24.163		8.25E-04
2-butanone	<	0.001	< 0.052	<	0.148	<	5.06E-06
Carbon Disulfide		0.082	4.250		12.156		4.15E-04
Carbon Tetrachloride	<	0.001	< 0.052	<	0.148	<	5.06E-06
Chloroform	<	0.001	< 0.052	<	0.148	<	5.06E-06
Chloromethane		4.479*	232.149		663.965		2.27E-02
Ethylbenzene		0.023*	1.192		3.410		1.16E-04
2-Hexanone	<	0.001	< 0.052	<	0.148	<	5.06E-06
Iodomethane		0.864	44.782		128.079		4.37E-03
Methylene Chloride		0.015*	0.777		2.224		7.59E-05
M-/p-xylene		0.049*	2.540		7.264		2.48E-04
O-xylene		0.016*	0.829		2.372		8.10E-05
Styrene	<	0.001	< 0.052	<	0.148	<	5.06E-06
Tetrachloroethene	<	0.001	< 0.052	<	0.148	<	5.06E-06
Toluene		0.268	13.891		39.728		1.36E-03
1,1,1-trichloroethane	<	0.001	< 0.052	<	0.148	<	5.06E-06
Trichloroethene	<	0.001	< 0.052	<	0.148	<	5.06E-06
Trichlorofluoromethane		0.017*	0.881		2.520		8.60E-05
Vinyl Acetate	<	0.001	< 0.052	<	0.148	<	5.06E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-VST-R2D**
DATE	11/06/92
START TIME	19:32
END TIME	19:52
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	27968 dscfm
OXYGEN	16.04 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	0.642	32.918	94.148	3.21E-03
Acrylonitrile	0.067	3.435	9.825	3.35E-04
Benzene	2.442*	125.211	358.115	1.22E-02
Bromomethane	0.146	7.486	21.411	7.31E-04
2-butanone	< 0.001	< 0.051	< 0.147	<5.01E-06
Carbon Disulfide	0.063	3.230	9.239	3.15E-04
Carbon Tetrachloride	< 0.001	< 0.051	< 0.147	<5.01E-06
Chloroform	< 0.001	< 0.051	< 0.147	<5.01E-06
Chloromethane	3.983*	204.225	584.100	1.99E-02
Ethylbenzene	0.022*	1.128	3.226	1.10E-04
2-Hexanone	< 0.001	< 0.051	< 0.147	<5.01E-06
Iodomethane	0.739	37.892	108.373	3.70E-03
Methylene Chloride	0.010*	0.513	1.466	5.01E-05
M-/p-xylene	0.039*	2.000	5.719	1.95E-04
O-xylene	0.012*	0.615	1.760	6.01E-05
Styrene	0.009*	0.461	1.320	4.50E-05
Tetrachloroethene	< 0.001	< 0.051	< 0.147	<5.01E-06
Toluene	0.260	13.331	38.129	1.30E-03
1,1,1-trichloroethane	< 0.001	< 0.051	< 0.147	<5.01E-06
Trichloroethene	< 0.001	< 0.051	< 0.147	<5.01E-06
Trichlorofluoromethane	0.015	0.769	2.200	7.51E-05
Vinyl Acetate	< 0.001	< 0.051	< 0.147	<5.01E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-VST-R2E**
DATE	11/06/92
START TIME	19:59
END TIME	20:19
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	27968 dscfm
OXYGEN	16.04 %

			GAS EMISSIONS				
		SAMPLE		CONCENTRATION			MASS
		TOTAL		ACTUAL		@ 7% O2	RATE
POLLUTANT		ug		ug/Nm3		ug/Nm3	lb/hr
Acetone		0.097		5.043		14.423	4.92E-04
Acrylonitrile		0.015*		0.780		2.230	7.61E-05
Benzene		1.005*		52.248		149.432	5.10E-03
Bromomethane		0.137		7.122		20.370	6.95E-04
2-butanone	<	0.001	<	0.052	<	0.149	<5.07E-06
Carbon Disulfide		0.034*		1.768		5.055	1.73E-04
Carbon Tetrachloride	<	0.001	<	0.052	<	0.149	<5.07E-06
Chloroform	<	0.001	<	0.052	<	0.149	<5.07E-06
Chloromethane		1.332*		69.247		198.053	6.76E-03
Ethylbenzene		0.005*		0.260		0.743	2.54E-05
2-Hexanone	<	0.001	<	0.052	<	0.149	<5.07E-06
Iodomethane		0.392		20.379		58.286	1.99E-03
Methylene Chloride		0.010*		0.520		1.487	5.07E-05
M-/p-xylene		0.012*		0.624		1.784	6.09E-05
O-xylene		0.004*		0.208		0.595	2.03E-05
Styrene	<	0.001	<	0.052	<	0.149	<5.07E-06
Tetrachloroethene	<	0.001	<	0.052	<	0.149	<5.07E-06
Toluene		0.074		3.847		11.003	3.76E-04
1,1,1-trichloroethane	<	0.001	<	0.052	<	0.149	<5.07E-06
Trichloroethene	<	0.001	<	0.052	<	0.149	<5.07E-06
Trichlorofluoromethane		0.010*		0.520		1.487	5.07E-05
Vinyl Acetate	<	0.001	<	0.052	<	0.149	<5.07E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-VST-R2F**
DATE	11/06/92
START TIME	20:27
END TIME	20:47
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	27968 dscfm
OXYGEN	16.04 %

POLLUTANT	SAMPLE TOTAL ug	GAS EMISSIONS CONCENTRATION ACTUAL ug/Nm3	@ 7% O2 ug/Nm3	MASS RATE lb/hr
Acetone	0.183	9.527	27.248	9.30E-04
Acrylonitrile	< 0.001	< 0.052	< 0.149	<5.08E-06
Benzene	1.184*	61.639	176.294	6.02E-03
Bromomethane	0.146	7.601	21.739	7.42E-04
2-butanone	< 0.001	< 0.052	< 0.149	<5.08E-06
Carbon Disulfide	0.061	3.176	9.083	3.10E-04
Carbon Tetrachloride	< 0.001	< 0.052	< 0.149	<5.08E-06
Chloroform	< 0.001	< 0.052	< 0.149	<5.08E-06
Chloromethane	1.396*	72.676	207.860	7.09E-03
Ethylbenzene	0.006*	0.312	0.893	3.05E-05
2-Hexanone	< 0.001	< 0.052	< 0.149	<5.08E-06
Iodomethane	0.651	33.891	96.932	3.31E-03
Methylene Chloride	0.009*	0.469	1.340	4.57E-05
M-/p-xylene	0.014*	0.729	2.085	7.11E-05
O-xylene	< 0.001	< 0.052	< 0.149	<5.08E-06
Styrene	< 0.001	< 0.052	< 0.149	<5.08E-06
Tetrachloroethene	< 0.001	< 0.052	< 0.149	<5.08E-06
Toluene	0.090	4.685	13.401	4.57E-04
1,1,1-trichloroethane	< 0.001	< 0.052	< 0.149	<5.08E-06
Trichloroethene	< 0.001	< 0.052	< 0.149	<5.08E-06
Trichlorofluoromethane	0.019*	0.989	2.829	9.66E-05
Vinyl Acetate	< 0.001	< 0.052	< 0.149	<5.08E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-VST-R3A**
DATE	11/07/92
START TIME	09:02
END TIME	09:22
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	28623 dscfm
OXYGEN	16.34 %

			GAS EMISSIONS				
		SAMPLE	CONCENTRATION			MASS
		TOTAL	ACTUAL		@ 7% O2	RATE
POLLUTANT		ug		ug/Nm3		ug/Nm3	lb/hr
Acetone		0.652		32.977		100.522	3.29E-03
Acrylonitrile		0.084		4.249		12.951	4.24E-04
Benzene		1.305*		66.004		201.198	6.59E-03
Bromomethane		0.124		6.272		19.118	6.27E-04
2-butanone	<	0.001	<	0.051	<	0.154	<5.05E-06
Carbon Disulfide		0.062		3.136		9.559	3.13E-04
Carbon Tetrachloride	<	0.001	<	0.051	<	0.154	<5.05E-06
Chloroform	<	0.001	<	0.051	<	0.154	<5.05E-06
Chloromethane		0.925		46.785		142.611	4.67E-03
Ethylbenzene		0.015*		0.759		2.313	7.58E-05
2-Hexanone	<	0.001	<	0.051	<	0.154	<5.05E-06
Iodomethane		0.874		44.205		134.748	4.42E-03
Methylene Chloride		0.018*		0.910		2.775	9.10E-05
M-/p-xylene		0.085*		4.299		13.105	4.30E-04
O-xylene		0.014*		0.708		2.158	7.07E-05
Styrene	<	0.001	<	0.051	<	0.154	<5.05E-06
Tetrachloroethene	<	0.001	<	0.051	<	0.154	<5.05E-06
Toluene		0.212		10.723		32.685	1.07E-03
1,1,1-trichloroethane	<	0.001	<	0.051	<	0.154	<5.05E-06
Trichloroethene	<	0.001	<	0.051	<	0.154	<5.05E-06
Trichlorofluoromethane		0.015*		0.759		2.313	7.58E-05
Vinyl Acetate	<	0.001	<	0.051	<	0.154	<5.05E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-VST-R3B**
DATE	11/07/92
START TIME	09:30
END TIME	09:50
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	28623 dscfm
OXYGEN	16.34 %

		GAS EMISSIONS CONCENTRATION		
POLLUTANT	SAMPLE TOTAL ug	ACTUAL ug/Nm3	@ 7% O2 ug/Nm3	MASS RATE lb/hr
Acetone	0.380	19.498	59.433	1.95E-03
Acrylonitrile	< 0.001	< 0.051	< 0.156	<5.13E-06
Benzene	0.694	35.609	108.544	3.56E-03
Bromomethane	0.081	4.156	12.669	4.15E-04
2-butanone	< 0.001	< 0.051	< 0.156	<5.13E-06
Carbon Disulfide	0.027*	1.385	4.223	1.38E-04
Carbon Tetrachloride	< 0.001	< 0.051	< 0.156	<5.13E-06
Chloroform	< 0.001	< 0.051	< 0.156	<5.13E-06
Chloromethane	0.383	19.651	59.902	1.96E-03
Ethylbenzene	0.011*	0.564	1.720	5.64E-05
2-Hexanone	< 0.001	< 0.051	< 0.156	<5.13E-06
Iodomethane	0.554	28.425	86.647	2.84E-03
Methylene Chloride	0.024*	1.231	3.754	1.23E-04
M-/p-xylene	0.149	7.645	23.304	7.64E-04
O-xylene	0.010*	0.513	1.564	5.13E-05
Styrene	< 0.001	< 0.051	< 0.156	<5.13E-06
Tetrachloroethene	< 0.001	< 0.051	< 0.156	<5.13E-06
Toluene	0.261	13.392	40.821	1.34E-03
1,1,1-trichloroethane	< 0.001	< 0.051	< 0.156	<5.13E-06
Trichloroethene	< 0.001	< 0.051	< 0.156	<5.13E-06
Trichlorofluoromethane	0.015*	0.770	2.346	7.69E-05
Vinyl Acetate	< 0.001	< 0.051	< 0.156	<5.13E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-VST-R3C**
DATE	11/07/92
START TIME	09:57
END TIME	10:17
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	28623 dscfm
OXYGEN	16.34 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	3.724*	191.699	584.346	1.92E-02
Acrylonitrile	< 0.001	< 0.051	< 0.157	<5.14E-06
Benzene	1.610*	82.877	252.631	8.28E-03
Bromomethane	0.940	48.388	147.499	4.83E-03
2-butanone	< 0.001	< 0.051	< 0.157	<5.14E-06
Carbon Disulfide	0.041*	2.111	6.433	2.11E-04
Carbon Tetrachloride	< 0.001	< 0.051	< 0.157	<5.14E-06
Chloroform	< 0.001	< 0.051	< 0.157	<5.14E-06
Chloromethane	0.305	15.700	47.859	1.57E-03
Ethylbenzene	0.020*	1.030	3.138	1.03E-04
2-Hexanone	< 0.001	< 0.051	< 0.157	<5.14E-06
Iodomethane	0.559	28.775	87.715	2.87E-03
Methylene Chloride	0.016*	0.824	2.511	8.23E-05
M-/p-xylene	0.248	12.766	38.915	1.28E-03
O-xylene	0.023*	1.184	3.609	1.18E-04
Styrene	< 0.001	< 0.051	< 0.157	<5.14E-06
Tetrachloroethene	< 0.001	< 0.051	< 0.157	<5.14E-06
Toluene	0.743	38.247	116.587	3.82E-03
1,1,1-trichloroethane	< 0.001	< 0.051	< 0.157	<5.14E-06
Trichloroethene	< 0.001	< 0.051	< 0.157	<5.14E-06
Trichlorofluoromethane	0.009*	0.463	1.412	4.63E-05
Vinyl Acetate	< 0.001	< 0.051	< 0.157	<5.14E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-VST-R3D**
DATE	11/07/92
START TIME	11:14
END TIME	11:34
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	28623 dscfm
OXYGEN	16.34 %

		GAS EMISSIONS		
		CONCENTRATION		
	SAMPLE TOTAL	ACTUAL	@ 7% O2	MASS RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	5.418*	279.470	851.892	2.79E-02
Acrylonitrile	0.176	9.078	27.673	9.07E-04
Benzene	1.358*	70.048	213.523	7.00E-03
Bromomethane	0.072	3.714	11.321	3.71E-04
2-butanone	< 0.001	< 0.052	< 0.157	<5.15E-06
Carbon Disulfide	0.041*	2.115	6.447	2.11E-04
Carbon Tetrachloride	< 0.001	< 0.052	< 0.157	<5.15E-06
Chloroform	< 0.001	< 0.052	< 0.157	<5.15E-06
Chloromethane	0.315	16.248	49.529	1.62E-03
Ethylbenzene	0.021*	1.083	3.302	1.08E-04
2-Hexanone	< 0.001	< 0.052	< 0.157	<5.15E-06
Iodomethane	0.598	30.846	94.026	3.08E-03
Methylene Chloride	0.062	3.198	9.748	3.20E-04
M-/p-xylene	0.204	10.523	32.076	1.05E-03
O-xylene	0.020*	1.032	3.145	1.03E-04
Styrene	< 0.001	< 0.052	< 0.157	<5.15E-06
Tetrachloroethene	< 0.001	< 0.052	< 0.157	<5.15E-06
Toluene	0.686	35.385	107.862	3.54E-03
1,1,1-trichloroethane	< 0.001	< 0.052	< 0.157	<5.15E-06
Trichloroethene	< 0.001	< 0.052	< 0.157	<5.15E-06
Trichlorofluoromethane	0.053	2.734	8.333	2.73E-04
Vinyl Acetate	< 0.001	< 0.052	< 0.157	<5.15E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-V8T-R3E**
DATE	11/07/92
START TIME	11:40
END TIME	12:00
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	28623 dscfm
OXYGEN	16.34 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	1.618*	82.918	252.755	8.28E-03
Acrylonitrile	0.089	4.561	13.903	4.56E-04
Benzene	0.940	48.172	146.842	4.81E-03
Bromomethane	0.072	3.690	11.247	3.69E-04
2-butanone	< 0.001	< 0.051	< 0.156	<5.12E-06
Carbon Disulfide	0.027*	1.384	4.218	1.38E-04
Carbon Tetrachloride	< 0.001	< 0.051	< 0.156	<5.12E-06
Chloroform	< 0.001	< 0.051	< 0.156	<5.12E-06
Chloromethane	0.203	10.403	31.712	1.04E-03
Ethylbenzene	0.012*	0.615	1.875	6.14E-05
2-Hexanone	< 0.001	< 0.051	< 0.156	<5.12E-06
Iodomethane	0.532	27.264	83.106	2.72E-03
Methylene Chloride	0.006*	0.307	0.937	3.07E-05
M-/p-xylene	0.086*	4.407	13.434	4.40E-04
O-xylene	0.010*	0.512	1.562	5.12E-05
Styrene	< 0.001	< 0.051	< 0.156	<5.12E-06
Tetrachloroethene	< 0.001	< 0.051	< 0.156	<5.12E-06
Toluene	0.221	11.326	34.523	1.13E-03
1,1,1-trichloroethane	< 0.001	< 0.051	< 0.156	<5.12E-06
Trichloroethene	< 0.001	< 0.051	< 0.156	<5.12E-06
Trichlorofluoromethane	0.005*	0.256	0.781	2.56E-05
Vinyl Acetate	< 0.001	< 0.051	< 0.156	<5.12E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**IN-VST-R3F**
DATE	11/07/92
START TIME	12:07
END TIME	12:27
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	28623 dscfm
OXYGEN	16.34 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	3.281*	170.307	519.139	1.70E-02
Acrylonitrile	< 0.001	< 0.052	< 0.158	<5.19E-06
Benzene	1.925*	99.921	304.585	9.98E-03
Bromomethane	0.102	5.295	16.139	5.29E-04
2-butanone	< 0.001	< 0.052	< 0.158	<5.19E-06
Carbon Disulfide	0.054	2.803	8.544	2.80E-04
Carbon Tetrachloride	< 0.001	< 0.052	< 0.158	<5.19E-06
Chloroform	< 0.001	< 0.052	< 0.158	<5.19E-06
Chloromethane	0.569	29.535	90.030	2.95E-03
Ethylbenzene	0.038*	1.972	6.013	1.97E-04
2-Hexanone	< 0.001	< 0.052	< 0.158	<5.19E-06
Iodomethane	1.412*	73.293	223.415	7.32E-03
Methylene Chloride	0.029*	1.505	4.589	1.50E-04
M-/p-xylene	0.203	10.537	32.120	1.05E-03
O-xylene	0.028*	1.453	4.430	1.45E-04
Styrene	< 0.001	< 0.052	< 0.158	<5.19E-06
Tetrachloroethene	< 0.001	< 0.052	< 0.158	<5.19E-06
Toluene	0.371	19.258	58.702	1.92E-03
1,1,1-trichloroethane	< 0.001	< 0.052	< 0.158	<5.19E-06
Trichloroethene	< 0.001	< 0.052	< 0.158	<5.19E-06
Trichlorofluoromethane	0.014*	0.727	2.215	7.26E-05
Vinyl Acetate	< 0.001	< 0.052	< 0.158	<5.19E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

B.6.2 M0030 DATA AND RESULTS - SAWDUST DRYER OUTLET A

SUMMARY OF VOLATILE ORGANICS EMISSIONS: METHOD 0030: SAWDUST DRYER OUTLET A.

RUN I.D.	OA-VST-R1	OA-VST-R2	OA-VST-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:47	17:34	09:02	
TIME ENDED	16:38	21:42	12:47	

VOLATILE ORGANIC EMISSIONS - lb/hr

Acetone	5.96E-03	6.15E-03	1.09E-02	7.67E-03
Acrylonitrile	< 7.39E-05	1.48E-04	2.18E-04	< 1.46E-04
Benzene	3.87E-03	4.24E-03	4.12E-03	4.08E-03
Bromomethane	3.27E-04	3.38E-04	4.70E-04	3.78E-04
2-butanone	1.03E-03	< 6.53E-04	4.79E-03	< 2.16E-03
Carbon Disulfide	1.07E-04	1.35E-04	1.50E-04	1.31E-04
Carbon Tetrachloride	< 3.30E-06	< 3.25E-06	< 3.33E-06	< 3.29E-06
Chloroform	< 3.30E-06	< 3.25E-06	< 3.33E-06	< 3.29E-06
Chloromethane	8.41E-03	1.12E-02	1.16E-02	1.04E-02
Ethylbenzene	8.16E-05	6.73E-05	1.10E-04	8.63E-05
2-Hexanone	< 3.30E-06	< 3.25E-06	< 3.33E-06	< 3.29E-06
Iodomethane	1.55E-03	1.83E-03	2.07E-03	1.81E-03
Methylene Chloride	2.59E-04	1.76E-03	4.41E-04	8.19E-04
M-/p-xylene	4.64E-04	1.68E-04	2.56E-04	2.96E-04
O-xylene	7.60E-05	4.77E-05	7.56E-05	6.64E-05
Styrene	< 3.30E-06	< 3.25E-06	< 9.28E-06	< 5.28E-06
Tetrachloroethane	< 3.30E-06	< 3.25E-06	< 3.33E-06	< 3.29E-06
Toluene	3.91E-03	4.00E-03	3.82E-03	3.91E-03
1,1,1-trichloroethane	< 1.89E-05	< 3.25E-06	< 3.33E-06	< 8.50E-06
Trichloroethene	< 3.30E-06	< 3.25E-06	< 3.33E-06	< 3.29E-06
Trichlorofluoromethane	< 1.51E-04	< 9.15E-05	1.56E-04	< 1.33E-04
Vinyl Acetate	< 3.30E-06	< 3.25E-06	< 3.33E-06	< 3.29E-06

Notes: The emission values for each run represent the average of six separate vost tube analyses.

All VOST tubes were analyzed in tandem according to the guidelines of Methods 8240 and 5040. The response factors used are the average response factors from the initial calibration. Amounts reported for target compounds that are not detected are denoted as < 0.001. The reported laboratory values for non-detected target compounds are calculated using an area of 20 counts.

The acquisitions for samples OB-M0030-R1B and IN-M0030-R1D were lost due to laboratory computer failure.

All field samples were observed to contain condensation within the Tenax and Tenax-charcoal tubes prior to analysis. Saturation of target analytes or TICs may have inhibited target analyte recoveries. All saturated compounds should be considered underestimated and may interfere with the detection or quantitation of target analytes.

Compounds found in the field samples at levels less than five times the amount found in the associated blank should not be considered native to the samples. The majority of the samples had one or more compounds at levels over the calibration range. This occurrence is identified with an 'E' label, these quantitations should be considered estimates.

Ketone results for VOST matrices should be considered semi-quantitative as these compounds often experience erratic recovery from VOST.

See case narrative accompanying the volatile organics laboratory data, Appendix G.5, for additional information.

VOST SAMPLING DATA AND RESULTS

Run I.D.	Date	Start Time	End Time	Meter Temp. (Fo)	Meter Press. (in. wc)	Bar. Press. (in. Hg)	Initial Meter Volume (liters)	Final Meter Volume (liters)	Sample Volume (liters)	Corrected Sample Volume (dscm)
OA-VST-R1A	11/06/92	11:47	12:01	53.5	1.0	29.76	1211.065	1231.623	20.558	0.0211
OA-VST-R1B	11/06/92	12:13	12:33	57.0	1.0	29.76	1235.490	1255.192	19.702	0.0201
OA-VST-R1C	11/06/92	12:53	13:13	58.5	1.0	29.76	1262.578	1282.095	19.517	0.0198
OA-VST-R1D	11/06/92	13:57	14:17	56.0	1.0	29.76	1283.000	1302.445	19.445	0.0198
OA-VST-R1E	11/06/92	14:47	15:07	56.0	1.0	29.76	1305.995	1325.780	19.785	0.0202
OA-VST-R1F	11/06/92	16:18	16:38	52.0	1.0	29.76	1326.317	1345.555	19.238	0.0198
OA-VST-R1										
OA-VST-R2A	11/06/92	17:34	17:54	52.0	1.0	29.76	1346.920	1366.027	19.107	0.0196
OA-VST-R2B	11/06/92	18:13	18:33	52.0	1.0	29.76	1366.325	1385.456	19.131	0.0197
OA-VST-R2C	11/06/92	18:53	19:37	51.0	1.0	29.76	1386.253	1407.161	20.908	0.0215
OA-VST-R2D	11/06/92	20:10	20:30	50.0	1.0	29.76	1412.750	1432.730	19.980	0.0206
OA-VST-R2E	11/06/92	20:46	21:09	51.0	1.0	29.76	1433.390	1452.685	19.295	0.0199
OA-VST-R2F	11/06/92	21:22	21:42	51.0	1.0	29.76	1453.620	1473.337	19.717	0.0203
OA-VST-R2										
OA-VST-R3A	11/07/92	09:02	09:22	48.5	1.0	29.92	1493.907	1513.240	19.333	0.0201
OA-VST-R3B	11/07/92	09:30	09:50	52.5	1.0	29.92	1514.140	1533.300	19.160	0.0198
OA-VST-R3C	11/07/92	10:03	10:23	55.5	1.0	29.92	1534.015	1553.415	19.400	0.0199
OA-VST-R3D	11/07/92	11:21	11:41	54.0	1.0	29.92	1554.230	1573.550	19.320	0.0199
OA-VST-R3E	11/07/92	11:50	12:10	56.0	1.0	29.92	1574.025	1593.957	19.932	0.0204
OA-VST-R3F	11/07/92	12:27	12:47	58.0	1.0	29.92	1594.790	1615.038	20.248	0.0207
OA-VST-R3										

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R1A**
DATE	11/06/92
START TIME	11:47
END TIME	12:01
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	17689 dscfm
OXYGEN	16.97 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	5.482*	279.259	987.711	1.72E-02
Acrylonitrile	< 0.001	< 0.051	< 0.180	<3.15E-06
Benzene	1.326*	67.548	238.910	4.17E-03
Bromomethane	0.101	5.145	18.198	3.18E-04
2-butanone	1.208*	61.537	217.650	3.80E-03
Carbon Disulfide	0.026*	1.324	4.685	8.18E-05
Carbon Tetrachloride	< 0.001	< 0.051	< 0.180	<3.15E-06
Chloroform	< 0.001	< 0.051	< 0.180	<3.15E-06
Chloromethane	1.660*	84.562	299.088	5.22E-03
Ethylbenzene	0.029*	1.477	5.225	9.12E-05
2-Hexanone	< 0.001	< 0.051	< 0.180	<3.15E-06
Iodomethane	0.396	20.173	71.349	1.25E-03
Methylene Chloride	0.138	7.030	24.864	4.34E-04
M-/p-xylene	0.512	26.082	92.249	1.61E-03
O-xylene	0.052	2.649	9.369	1.64E-04
Styrene	< 0.001	< 0.051	< 0.180	<3.15E-06
Tetrachloroethene	< 0.001	< 0.051	< 0.180	<3.15E-06
Toluene	1.671*	85.123	301.070	5.26E-03
1,1,1-trichloroethane	< 0.001	< 0.051	< 0.180	<3.15E-06
Trichloroethene	< 0.001	< 0.051	< 0.180	<3.15E-06
Trichlorofluoromethane	< 0.001	< 0.051	< 0.180	<3.15E-06
Vinyl Acetate	< 0.001	< 0.051	< 0.180	<3.15E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R1B**
DATE	11/06/92
START TIME	12:13
END TIME	12:33
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	17689 dscfm
OXYGEN	16.97 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	1.037*	55.497	196.286	3.43E-03
Acrylonitrile	0.037*	1.980	7.003	1.22E-04
Benzene	0.861	46.078	162.973	2.84E-03
Bromomethane	0.078	4.174	14.764	2.58E-04
2-butanone	0.088	4.709	16.657	2.91E-04
Carbon Disulfide	0.030*	1.606	5.678	9.91E-05
Carbon Tetrachloride	< 0.001	< 0.054	< 0.189	<3.30E-06
Chloroform	< 0.001	< 0.054	< 0.189	<3.30E-06
Chloromethane	2.057*	110.084	389.355	6.80E-03
Ethylbenzene	0.027*	1.445	5.111	8.92E-05
2-Hexanone	< 0.001	< 0.054	< 0.189	<3.30E-06
Iodomethane	0.427	22.852	80.824	1.41E-03
Methylene Chloride	0.088	4.709	16.657	2.91E-04
M-/p-xylene	0.115	6.154	21.768	3.80E-04
O-xylene	0.024*	1.284	4.543	7.93E-05
Styrene	< 0.001	< 0.054	< 0.189	<3.30E-06
Tetrachloroethene	< 0.001	< 0.054	< 0.189	<3.30E-06
Toluene	0.546	29.220	103.348	1.80E-03
1,1,1-trichloroethane	< 0.001	< 0.054	< 0.189	<3.30E-06
Trichloroethene	< 0.001	< 0.054	< 0.189	<3.30E-06
Trichlorofluoromethane	0.036*	1.927	6.814	1.19E-04
Vinyl Acetate	< 0.001	< 0.054	< 0.189	<3.30E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R1C**
DATE	11/06/92
START TIME	12:53
END TIME	13:13
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	17689 dscfm
OXYGEN	16.97 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	1.090*	59.057	208.878	3.65E-03
Acrylonitrile	0.046*	2.492	8.815	1.54E-04
Benzene	0.971	52.609	186.074	3.25E-03
Bromomethane	0.089	4.822	17.055	2.98E-04
2-butanone	0.063	3.413	12.073	2.11E-04
Carbon Disulfide	0.030*	1.625	5.749	1.00E-04
Carbon Tetrachloride	< 0.001	< 0.054	< 0.192	<3.35E-06
Chloroform	< 0.001	< 0.054	< 0.192	<3.35E-06
Chloromethane	2.315*	125.428	443.627	7.74E-03
Ethylbenzene	0.016*	0.867	3.066	5.35E-05
2-Hexanone	< 0.001	< 0.054	< 0.192	<3.35E-06
Iodomethane	0.483	26.169	92.558	1.62E-03
Methylene Chloride	0.046*	2.492	8.815	1.54E-04
M-/p-xylene	0.055*	2.980	10.540	1.84E-04
O-xylene	0.013*	0.704	2.491	4.35E-05
Styrene	< 0.001	< 0.054	< 0.192	<3.35E-06
Tetrachloroethene	< 0.001	< 0.054	< 0.192	<3.35E-06
Toluene	0.943	51.092	180.709	3.15E-03
1,1,1-trichloroethane	0.029*	1.571	5.557	9.70E-05
Trichloroethene	< 0.001	< 0.054	< 0.192	<3.35E-06
Trichlorofluoromethane	0.101	5.472	19.355	3.38E-04
Vinyl Acetate	< 0.001	< 0.054	< 0.192	<3.35E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R1D**
DATE	11/06/92
START TIME	13:57
END TIME	14:17
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	17689 dscfm
OXYGEN	16.97 %

POLLUTANT	SAMPLE TOTAL ug	GAS EMISSIONS CONCENTRATION ACTUAL ug/Nm3	GAS EMISSIONS CONCENTRATION @ 7% O2 ug/Nm3	MASS RATE lb/hr
Acetone	0.865	46.813	165.573	2.89E-03
Acrylonitrile	< 0.001	< 0.054	< 0.191	<3.34E-06
Benzene	1.003*	54.281	191.988	3.35E-03
Bromomethane	0.129	6.981	24.692	4.31E-04
2-butanone	0.124	6.711	23.735	4.14E-04
Carbon Disulfide	0.034*	1.840	6.508	1.14E-04
Carbon Tetrachloride	< 0.001	< 0.054	< 0.191	<3.34E-06
Chloroform	< 0.001	< 0.054	< 0.191	<3.34E-06
Chloromethane	2.698*	146.013	516.434	9.02E-03
Ethylbenzene	0.018*	0.974	3.445	6.01E-05
2-Hexanone	< 0.001	< 0.054	< 0.191	<3.34E-06
Iodomethane	0.475	25.707	90.922	1.59E-03
Methylene Chloride	0.049*	2.652	9.379	1.64E-04
M-/p-xylene	0.054*	2.922	10.336	1.80E-04
O-xylene	0.013*	0.704	2.488	4.34E-05
Styrene	< 0.001	< 0.054	< 0.191	<3.34E-06
Tetrachloroethene	< 0.001	< 0.054	< 0.191	<3.34E-06
Toluene	1.220*	66.025	233.525	4.08E-03
1,1,1-trichloroethane	< 0.001	< 0.054	< 0.191	<3.34E-06
Trichloroethene	< 0.001	< 0.054	< 0.191	<3.34E-06
Trichlorofluoromethane	0.044*	2.381	8.422	1.47E-04
Vinyl Acetate	< 0.001	< 0.054	< 0.191	<3.34E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R1E**
DATE	11/06/92
START TIME	14:47
END TIME	15:07
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	17689 dscfm
OXYGEN	16.97 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	1.225*	65.157	230.452	4.02E-03
Acrylonitrile	0.048*	2.553	9.030	1.58E-04
Benzene	1.377*	73.241	259.047	4.52E-03
Bromomethane	0.103	5.478	19.377	3.38E-04
2-butanone	0.165	8.776	31.041	5.42E-04
Carbon Disulfide	0.039*	2.074	7.337	1.28E-04
Carbon Tetrachloride	< 0.001	< 0.053	< 0.188	<3.28E-06
Chloroform	< 0.001	< 0.053	< 0.188	<3.28E-06
Chloromethane	3.249*	172.811	611.216	1.07E-02
Ethylbenzene	0.032*	1.702	6.020	1.05E-04
2-Hexanone	< 0.001	< 0.053	< 0.188	<3.28E-06
Iodomethane	0.536	28.509	100.835	1.76E-03
Methylene Chloride	0.071	3.776	13.357	2.33E-04
M-/p-xylene	0.071*	3.776	13.357	2.33E-04
O-xylene	0.021*	1.117	3.951	6.90E-05
Styrene	< 0.001	< 0.053	< 0.188	<3.28E-06
Tetrachloroethene	< 0.001	< 0.053	< 0.188	<3.28E-06
Toluene	1.305*	69.412	245.502	4.29E-03
1,1,1-trichloroethane	< 0.001	< 0.053	< 0.188	<3.28E-06
Trichloroethene	< 0.001	< 0.053	< 0.188	<3.28E-06
Trichlorofluoromethane	0.043*	2.287	8.089	1.41E-04
Vinyl Acetate	< 0.001	< 0.053	< 0.188	<3.28E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R1F**
DATE	11/06/92
START TIME	16:18
END TIME	16:38
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	17689 dscfm
OXYGEN	16.97 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	1.346*	73.057	258.396	4.51E-03
Acrylonitrile	< 0.001	< 0.054	< 0.192	<3.35E-06
Benzene	1.520*	82.502	291.800	5.09E-03
Bromomethane	0.095	5.156	18.237	3.18E-04
2-butanone	0.274	14.872	52.601	9.18E-04
Carbon Disulfide	0.036*	1.954	6.911	1.21E-04
Carbon Tetrachloride	< 0.001	< 0.054	< 0.192	<3.35E-06
Chloroform	< 0.001	< 0.054	< 0.192	<3.35E-06
Chloromethane	3.284*	178.247	630.441	1.10E-02
Ethylbenzene	0.027*	1.465	5.183	9.05E-05
2-Hexanone	< 0.001	< 0.054	< 0.192	<3.35E-06
Iodomethane	0.497	26.976	95.411	1.67E-03
Methylene Chloride	0.083	4.505	15.934	2.78E-04
M-/p-xylene	0.058*	3.148	11.134	1.94E-04
O-xylene	0.017*	0.923	3.264	5.70E-05
Styrene	< 0.001	< 0.054	< 0.192	<3.35E-06
Tetrachloroethene	< 0.001	< 0.054	< 0.192	<3.35E-06
Toluene	1.461*	79.299	280.473	4.90E-03
1,1,1-trichloroethane	< 0.001	< 0.054	< 0.192	<3.35E-06
Trichloroethene	< 0.001	< 0.054	< 0.192	<3.35E-06
Trichlorofluoromethane	0.047*	2.551	9.023	1.58E-04
Vinyl Acetate	< 0.001	< 0.054	< 0.192	<3.35E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R2A**
DATE	11/06/92
START TIME	17:34
END TIME	17:54
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	17558 dscfm
OXYGEN	17.24 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	1.843*	100.719	382.512	6.17E-03
Acrylonitrile	0.055	3.006	11.415	1.84E-04
Benzene	1.298*	70.935	269.398	4.35E-03
Bromomethane	0.112	6.121	23.245	3.75E-04
2-butanone	0.248	13.553	51.472	8.31E-04
Carbon Disulfide	0.041*	2.241	8.510	1.37E-04
Carbon Tetrachloride	< 0.001	< 0.055	< 0.208	<3.35E-06
Chloroform	< 0.001	< 0.055	< 0.208	<3.35E-06
Chloromethane	3.685*	201.384	764.817	1.23E-02
Ethylbenzene	0.034*	1.858	7.057	1.14E-04
2-Hexanone	< 0.001	< 0.055	< 0.208	<3.35E-06
Iodomethane	0.564	30.822	117.058	1.89E-03
Methylene Chloride	0.070	3.825	14.528	2.34E-04
M-/p-xylene	0.062*	3.388	12.868	2.08E-04
O-xylene	0.017*	0.929	3.528	5.69E-05
Styrene	< 0.001	< 0.055	< 0.208	<3.35E-06
Tetrachloroethene	< 0.001	< 0.055	< 0.208	<3.35E-06
Toluene	1.127*	61.590	233.907	3.77E-03
1,1,1-trichloroethane	< 0.001	< 0.055	< 0.208	<3.35E-06
Trichloroethene	< 0.001	< 0.055	< 0.208	<3.35E-06
Trichlorofluoromethane	< 0.001	< 0.055	< 0.208	<3.35E-06
Vinyl Acetate	< 0.001	< 0.055	< 0.208	<3.35E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R2B**
DATE	11/06/92
START TIME	18:13
END TIME	18:33
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	17558 dscfm
OXYGEN	17.24 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	0.967	52.780	200.448	3.23E-03
Acrylonitrile	0.026*	1.419	5.389	8.70E-05
Benzene	1.279*	69.809	265.122	4.28E-03
Bromomethane	0.116	6.331	24.045	3.88E-04
2-butanone	< 0.001	< 0.055	< 0.207	<3.34E-06
Carbon Disulfide	0.048*	2.620	9.950	1.61E-04
Carbon Tetrachloride	< 0.001	< 0.055	< 0.207	<3.34E-06
Chloroform	< 0.001	< 0.055	< 0.207	<3.34E-06
Chloromethane	4.087*	223.072	847.188	1.37E-02
Ethylbenzene	0.018*	0.982	3.731	6.02E-05
2-Hexanone	< 0.001	< 0.055	< 0.207	<3.34E-06
Iodomethane	0.595	32.476	123.337	1.99E-03
Methylene Chloride	0.095	5.185	19.692	3.18E-04
M-/p-xylene	0.050*	2.729	10.364	1.67E-04
O-xylene	0.017*	0.928	3.524	5.69E-05
Styrene	< 0.001	< 0.055	< 0.207	<3.34E-06
Tetrachloroethene	< 0.001	< 0.055	< 0.207	<3.34E-06
Toluene	1.590*	86.784	329.589	5.32E-03
1,1,1-trichloroethane	< 0.001	< 0.055	< 0.207	<3.34E-06
Trichloroethene	< 0.001	< 0.055	< 0.207	<3.34E-06
Trichlorofluoromethane	0.036*	1.965	7.462	1.20E-04
Vinyl Acetate	< 0.001	< 0.055	< 0.207	<3.34E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R2C**
DATE	11/06/92
START TIME	18:53
END TIME	19:37
CORR. SAMPLE VOL.	0.022 dscm
TOTAL GAS FLOWRATE	17558 dscfm
OXYGEN	17.24 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	2.329*	116.088	440.880	7.11E-03
Acrylonitrile	0.053	2.642	10.033	1.62E-04
Benzene	1.433*	71.427	271.267	4.38E-03
Bromomethane	0.098	4.885	18.551	2.99E-04
2-butanone	0.187	9.321	35.399	5.71E-04
Carbon Disulfide	0.044*	2.193	8.329	1.34E-04
Carbon Tetrachloride	< 0.001	< 0.050	< 0.189	<3.05E-06
Chloroform	< 0.001	< 0.050	< 0.189	<3.05E-06
Chloromethane	3.685*	183.677	697.571	1.13E-02
Ethylbenzene	0.022*	1.097	4.165	6.72E-05
2-Hexanone	< 0.001	< 0.050	< 0.189	<3.05E-06
Iodomethane	0.607	30.256	114.905	1.85E-03
Methylene Chloride	0.056	2.791	10.601	1.71E-04
M-/p-xylene	0.061*	3.041	11.547	1.86E-04
O-xylene	0.016*	0.798	3.029	4.89E-05
Styrene	< 0.001	< 0.050	< 0.189	<3.05E-06
Tetrachloroethene	< 0.001	< 0.050	< 0.189	<3.05E-06
Toluene	1.116*	55.626	211.259	3.41E-03
1,1,1-trichloroethane	< 0.001	< 0.050	< 0.189	<3.05E-06
Trichloroethene	< 0.001	< 0.050	< 0.189	<3.05E-06
Trichlorofluoromethane	0.032*	1.595	6.058	9.77E-05
Vinyl Acetate	< 0.001	< 0.050	< 0.189	<3.05E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R2D**
DATE	11/06/92
START TIME	20:10
END TIME	20:30
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	17558 dscfm
OXYGEN	17.24 %

POLLUTANT	SAMPLE TOTAL ug	GAS EMISSIONS CONCENTRATION ACTUAL ug/Nm3	GAS EMISSIONS CONCENTRATION @ 7% O2 ug/Nm3	MASS RATE lb/hr
Acetone	1.482*	77.149	292.999	4.73E-03
Acrylonitrile	0.046*	2.395	9.094	1.47E-04
Benzene	1.176*	61.220	232.501	3.75E-03
Bromomethane	0.098	5.102	19.375	3.13E-04
2-butanone	0.554	28.840	109.529	1.77E-03
Carbon Disulfide	0.041*	2.134	8.106	1.31E-04
Carbon Tetrachloride	< 0.001	< 0.052	< 0.198	<3.19E-06
Chloroform	< 0.001	< 0.052	< 0.198	<3.19E-06
Chloromethane	3.025*	157.474	598.057	9.65E-03
Ethylbenzene	0.018*	0.937	3.559	5.74E-05
2-Hexanone	< 0.001	< 0.052	< 0.198	<3.19E-06
Iodomethane	0.569	29.621	112.494	1.82E-03
Methylene Chloride	0.058	3.019	11.467	1.85E-04
M-/p-xylene	0.042*	2.186	8.304	1.34E-04
O-xylene	0.013*	0.677	2.570	4.15E-05
Styrene	< 0.001	< 0.052	< 0.198	<3.19E-06
Tetrachloroethene	< 0.001	< 0.052	< 0.198	<3.19E-06
Toluene	1.140*	59.346	225.384	3.64E-03
1,1,1-trichloroethane	< 0.001	< 0.052	< 0.198	<3.19E-06
Trichloroethene	< 0.001	< 0.052	< 0.198	<3.19E-06
Trichlorofluoromethane	0.036*	1.874	7.117	1.15E-04
Vinyl Acetate	< 0.001	< 0.052	< 0.198	<3.19E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R2E**
DATE	11/06/92
START TIME	20:46
END TIME	21:09
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	17558 dscfm
OXYGEN	17.24 %

POLLUTANT	SAMPLE TOTAL ug	GAS EMISSIONS CONCENTRATION ACTUAL ug/Nm3	GAS EMISSIONS CONCENTRATION @ 7% O2 ug/Nm3	GAS EMISSIONS MASS RATE lb/hr
Acetone	1.679*	90.685	344.405	5.56E-03
Acrylonitrile	0.042*	2.268	8.615	1.39E-04
Benzene	1.524*	82.313	312.611	5.04E-03
Bromomethane	0.095	5.131	19.487	3.14E-04
2-butanone	0.103	5.563	21.128	3.41E-04
Carbon Disulfide	0.038*	2.052	7.795	1.26E-04
Carbon Tetrachloride	< 0.001	< 0.054	< 0.205	<3.31E-06
Chloroform	< 0.001	< 0.054	< 0.205	<3.31E-06
Chloromethane	2.775*	149.882	569.222	9.19E-03
Ethylbenzene	0.020*	1.080	4.103	6.62E-05
2-Hexanone	< 0.001	< 0.054	< 0.205	<3.31E-06
Iodomethane	0.517	27.924	106.050	1.71E-03
Methylene Chloride	0.249	13.449	51.076	8.24E-04
M-/p-xylene	0.050*	2.701	10.256	1.65E-04
O-xylene	0.014*	0.756	2.872	4.63E-05
Styrene	< 0.001	< 0.054	< 0.205	<3.31E-06
Tetrachloroethene	< 0.001	< 0.054	< 0.205	<3.31E-06
Toluene	1.236*	66.758	253.535	4.09E-03
1,1,1-trichloroethane	< 0.001	< 0.054	< 0.205	<3.31E-06
Trichloroethene	< 0.001	< 0.054	< 0.205	<3.31E-06
Trichlorofluoromethane	0.028*	1.512	5.744	9.27E-05
Vinyl Acetate	< 0.001	< 0.054	< 0.205	<3.31E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R2F**
DATE	11/06/92
START TIME	21:22
END TIME	21:42
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	17558 dscfm
OXYGEN	17.24 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	3.107*	164.222	623.683	1.01E-02
Acrylonitrile	0.052	2.748	10.438	1.68E-04
Benzene	1.126*	59.515	226.027	3.65E-03
Bromomethane	0.104	5.497	20.876	3.37E-04
2-butanone	0.125	6.607	25.092	4.05E-04
Carbon Disulfide	0.037*	1.956	7.427	1.20E-04
Carbon Tetrachloride	< 0.001	< 0.053	< 0.201	<3.24E-06
Chloroform	< 0.001	< 0.053	< 0.201	<3.24E-06
Chloromethane	3.341*	176.590	670.655	1.08E-02
Ethylbenzene	0.012*	0.634	2.409	3.89E-05
2-Hexanone	< 0.001	< 0.053	< 0.201	<3.24E-06
Iodomethane	0.531	28.066	106.590	1.72E-03
Methylene Chloride	2.719*	143.714	545.798	8.81E-03
M-/p-xylene	0.046*	2.431	9.234	1.49E-04
O-xylene	0.011*	0.581	2.208	3.56E-05
Styrene	< 0.001	< 0.053	< 0.201	<3.24E-06
Tetrachloroethene	< 0.001	< 0.053	< 0.201	<3.24E-06
Toluene	1.170*	61.841	234.860	3.79E-03
1,1,1-trichloroethane	< 0.001	< 0.053	< 0.201	<3.24E-06
Trichloroethene	< 0.001	< 0.053	< 0.201	<3.24E-06
Trichlorofluoromethane	0.037*	1.956	7.427	1.20E-04
Vinyl Acetate	< 0.001	< 0.053	< 0.201	<3.24E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R3A**
DATE	11/07/92
START TIME	09:02
END TIME	09:22
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	17918 dscfm
OXYGEN	17.17 %

	SAMPLE	GAS EMISSIONS CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	2.696*	143.846	536.048	9.00E-03
Acrylonitrile	0.059	3.148	11.731	1.97E-04
Benzene	1.037*	55.329	206.188	3.46E-03
Bromomethane	0.128	6.829	25.450	4.27E-04
2-butanone	0.177	9.444	35.193	5.91E-04
Carbon Disulfide	0.042*	2.241	8.351	1.40E-04
Carbon Tetrachloride	< 0.001	< 0.053	< 0.199	<3.34E-06
Chloroform	< 0.001	< 0.053	< 0.199	<3.34E-06
Chloromethane	3.498*	186.637	695.510	1.17E-02
Ethylbenzene	0.015*	0.800	2.982	5.01E-05
2-Hexanone	< 0.001	< 0.053	< 0.199	<3.34E-06
Iodomethane	0.625	33.347	124.269	2.09E-03
Methylene Chloride	0.124	6.616	24.655	4.14E-04
M-/p-xylene	0.075*	4.002	14.912	2.50E-04
O-xylene	0.016*	0.854	3.181	5.34E-05
Styrene	< 0.001	< 0.053	< 0.199	<3.34E-06
Tetrachloroethene	< 0.001	< 0.053	< 0.199	<3.34E-06
Toluene	1.064*	56.770	211.556	3.55E-03
1,1,1-trichloroethane	< 0.001	< 0.053	< 0.199	<3.34E-06
Trichloroethene	< 0.001	< 0.053	< 0.199	<3.34E-06
Trichlorofluoromethane	0.046*	2.454	9.146	1.53E-04
Vinyl Acetate	< 0.001	< 0.053	< 0.199	<3.34E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R3B**
DATE	11/07/92
START TIME	09:30
END TIME	09:50
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	17918 dscfm
OXYGEN	17.17 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	2.177*	118.125	440.199	7.39E-03
Acrylonitrile	0.070	3.798	14.154	2.38E-04
Benzene	0.905	49.106	182.995	3.07E-03
Bromomethane	0.150	8.139	30.331	5.09E-04
2-butanone	0.151	8.193	30.533	5.12E-04
Carbon Disulfide	0.043*	2.333	8.695	1.46E-04
Carbon Tetrachloride	< 0.001	< 0.054	< 0.202	<3.39E-06
Chloroform	< 0.001	< 0.054	< 0.202	<3.39E-06
Chloromethane	3.609*	195.826	729.755	1.22E-02
Ethylbenzene	0.077	4.178	15.570	2.61E-04
2-Hexanone	< 0.001	< 0.054	< 0.202	<3.39E-06
Iodomethane	0.630	34.184	127.389	2.14E-03
Methylene Chloride	0.378	20.511	76.433	1.28E-03
M-/p-xylene	0.046*	2.496	9.301	1.56E-04
O-xylene	0.011*	0.597	2.224	3.73E-05
Styrene	< 0.001	< 0.054	< 0.202	<3.39E-06
Tetrachloroethene	< 0.001	< 0.054	< 0.202	<3.39E-06
Toluene	1.282*	69.562	259.226	4.35E-03
1,1,1-trichloroethane	< 0.001	< 0.054	< 0.202	<3.39E-06
Trichloroethene	< 0.001	< 0.054	< 0.202	<3.39E-06
Trichlorofluoromethane	0.062	3.364	12.537	2.10E-04
Vinyl Acetate	< 0.001	< 0.054	< 0.202	<3.39E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R3C**
DATE	11/07/92
START TIME	10:03
END TIME	10:23
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	17918 dscfm
OXYGEN	17.17 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	3.204*	172.705	643.593	1.08E-02
Acrylonitrile	0.069	3.719	13.860	2.33E-04
Benzene	1.280*	68.996	257.116	4.31E-03
Bromomethane	0.180	9.703	36.157	6.07E-04
2-butanone	0.445	23.987	89.388	1.50E-03
Carbon Disulfide	0.044*	2.372	8.838	1.48E-04
Carbon Tetrachloride	< 0.001	< 0.054	< 0.201	<3.37E-06
Chloroform	< 0.001	< 0.054	< 0.201	<3.37E-06
Chloromethane	3.323*	179.120	667.497	1.12E-02
Ethylbenzene	0.020*	1.078	4.017	6.74E-05
2-Hexanone	< 0.001	< 0.054	< 0.201	<3.37E-06
Iodomethane	0.570	30.725	114.497	1.92E-03
Methylene Chloride	0.085	4.582	17.074	2.87E-04
M-/p-xylene	0.055*	2.965	11.048	1.85E-04
O-xylene	0.017*	0.916	3.415	5.73E-05
Styrene	< 0.001	< 0.054	< 0.201	<3.37E-06
Tetrachloroethene	< 0.001	< 0.054	< 0.201	<3.37E-06
Toluene	1.413*	76.165	283.832	4.76E-03
1,1,1-trichloroethane	< 0.001	< 0.054	< 0.201	<3.37E-06
Trichloroethene	< 0.001	< 0.054	< 0.201	<3.37E-06
Trichlorofluoromethane	0.039*	2.102	7.834	1.31E-04
Vinyl Acetate	< 0.001	< 0.054	< 0.201	<3.37E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R3D**
DATE	11/07/92
START TIME	11:21
END TIME	11:41
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	17918 dscfm
OXYGEN	17.17 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	4.179*	225.535	840.467	1.41E-02
Acrylonitrile	0.073	3.940	14.682	2.46E-04
Benzene	1.131*	61.039	227.463	3.82E-03
Bromomethane	0.125	6.746	25.140	4.22E-04
2-butanone	0.553	29.845	111.218	1.87E-03
Carbon Disulfide	0.040*	2.159	8.045	1.35E-04
Carbon Tetrachloride	< 0.001	< 0.054	< 0.201	<3.38E-06
Chloroform	< 0.001	< 0.054	< 0.201	<3.38E-06
Chloromethane	3.541*	191.103	712.154	1.20E-02
Ethylbenzene	0.032*	1.727	6.436	1.08E-04
2-Hexanone	< 0.001	< 0.054	< 0.201	<3.38E-06
Iodomethane	0.536	28.927	107.799	1.81E-03
Methylene Chloride	0.070	3.778	14.078	2.36E-04
M-/p-xylene	0.146	7.879	29.363	4.93E-04
O-xylene	0.042*	2.267	8.447	1.42E-04
Styrene	< 0.001	< 0.054	< 0.201	<3.38E-06
Tetrachloroethene	< 0.001	< 0.054	< 0.201	<3.38E-06
Toluene	1.392*	75.124	279.954	4.70E-03
1,1,1-trichloroethane	< 0.001	< 0.054	< 0.201	<3.38E-06
Trichloroethene	< 0.001	< 0.054	< 0.201	<3.38E-06
Trichlorofluoromethane	0.037*	1.997	7.441	1.25E-04
Vinyl Acetate	< 0.001	< 0.054	< 0.201	<3.38E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R3E**
DATE	11/07/92
START TIME	11:50
END TIME	12:10
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	17918 dscfm
OXYGEN	17.17 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	3.068*	161.117	600.408	1.01E-02
Acrylonitrile	0.056	2.941	10.959	1.84E-04
Benzene	1.497*	78.615	292.963	4.92E-03
Bromomethane	0.141	7.405	27.594	4.63E-04
2-butanone	2.127*	111.700	416.254	6.99E-03
Carbon Disulfide	0.054	2.836	10.568	1.77E-04
Carbon Tetrachloride	< 0.001	< 0.053	< 0.196	<3.28E-06
Chloroform	< 0.001	< 0.053	< 0.196	<3.28E-06
Chloromethane	3.843*	201.816	752.075	1.26E-02
Ethylbenzene	0.023*	1.208	4.501	7.55E-05
2-Hexanone	< 0.001	< 0.053	< 0.196	<3.28E-06
Iodomethane	0.685	35.973	134.055	2.25E-03
Methylene Chloride	0.076	3.991	14.873	2.50E-04
M-/p-xylene	0.076*	3.991	14.873	2.50E-04
O-xylene	0.033*	1.733	6.458	1.08E-04
Styrene	< 0.001	< 0.053	< 0.196	<3.28E-06
Tetrachloroethene	< 0.001	< 0.053	< 0.196	<3.28E-06
Toluene	1.049*	55.088	205.289	3.45E-03
1,1,1-trichloroethane	< 0.001	< 0.053	< 0.196	<3.28E-06
Trichloroethene	< 0.001	< 0.053	< 0.196	<3.28E-06
Trichlorofluoromethane	0.056	2.941	10.959	1.84E-04
Vinyl Acetate	< 0.001	< 0.053	< 0.196	<3.28E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OA-VST-R3F**
DATE	11/07/92
START TIME	12:27
END TIME	12:47
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	17918 dscfm
OXYGEN	17.17 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	4.363*	226.422	843.772	1.42E-02
Acrylonitrile	0.064	3.321	12.377	2.08E-04
Benzene	1.577*	81.840	304.980	5.12E-03
Bromomethane	0.120	6.228	23.207	3.89E-04
2-butanone	5.332*	276.709	1031.169	1.73E-02
Carbon Disulfide	0.048*	2.491	9.283	1.56E-04
Carbon Tetrachloride	< 0.001	< 0.052	< 0.193	<3.25E-06
Chloroform	< 0.001	< 0.052	< 0.193	<3.25E-06
Chloromethane	3.020*	156.726	584.045	9.80E-03
Ethylbenzene	0.030*	1.557	5.802	9.74E-05
2-Hexanone	< 0.001	< 0.052	< 0.193	<3.25E-06
Iodomethane	0.674	34.978	130.347	2.19E-03
Methylene Chloride	0.055	2.854	10.637	1.79E-04
M-/p-xylene	0.062*	3.218	11.990	2.01E-04
O-xylene	0.017*	0.882	3.288	5.52E-05
Styrene	0.012*	0.623	2.321	3.89E-05
Tetrachloroethene	< 0.001	< 0.052	< 0.193	<3.25E-06
Toluene	0.659	34.199	127.446	2.14E-03
1,1,1-trichloroethane	< 0.001	< 0.052	< 0.193	<3.25E-06
Trichloroethene	< 0.001	< 0.052	< 0.193	<3.25E-06
Trichlorofluoromethane	0.041*	2.128	7.929	1.33E-04
Vinyl Acetate	< 0.001	< 0.052	< 0.193	<3.25E-06

B.6.3 M0030 DATA AND RESULTS - SAWDUST DRYER OUTLET B

SUMMARY OF VOLATILE ORGANICS EMISSIONS: METHOD 0030:SAWDUST DRYER OUTLET B.

RUN I.D.	OB-VST-R1	OB-VST-R2	OB-VST-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:47	17:32	09:05	
TIME ENDED	16:37	21:46	12:45	

<u>VOLATILE ORGANIC EMISSIONS - lb/hr</u>

Acetone	9.61E-03	9.47E-03	9.83E-03	9.64E-03
Acrylonitrile	2.21E-04	< 2.03E-04	2.13E-04	<2.12E-04
Benzene	6.12E-03	4.99E-03	4.59E-03	5.23E-03
Bromomethane	4.35E-04	< 3.73E-04	4.69E-04	<4.26E-04
2-butanone	1.44E-03	< 1.59E-03	2.60E-03	<1.88E-03
Carbon Disulfide	1.80E-04	1.63E-04	1.81E-04	1.75E-04
Carbon Tetrachloride	< 3.10E-06	< 3.09E-06	< 2.87E-06	<3.02E-06
Chloroform	< 3.10E-06	< 3.09E-06	< 2.87E-06	<3.02E-06
Chloromethane	1.29E-02	1.02E-02	1.35E-02	1.22E-02
Ethylbenzene	1.19E-04	6.89E-05	6.00E-05	8.27E-05
2-Hexanone	< 3.10E-06	< 3.09E-06	< 2.87E-06	<3.02E-06
Iodomethane	2.19E-03	2.17E-03	2.41E-03	2.26E-03
Methylene Chloride	2.07E-04	3.45E-04	6.79E-05	2.07E-04
M-/p-xylene	2.26E-04	1.47E-04	1.66E-04	1.80E-04
O-xylene	7.16E-05	4.65E-05	4.56E-05	5.46E-05
Styrene	< 8.52E-05	< 1.04E-04	< 2.62E-05	<7.18E-05
Tetrachloroethane	< 3.10E-06	< 3.09E-06	< 2.87E-06	<3.02E-06
Toluene	3.52E-03	2.93E-03	3.44E-03	3.30E-03
1,1,1-trichloroethane	< 3.10E-06	< 1.19E-05	< 2.87E-06	<5.97E-06
Trichloroethene	< 3.10E-06	< 3.09E-06	< 2.87E-06	<3.02E-06
Trichlorofluoromethane	1.05E-04	< 5.84E-05	8.71E-05	<8.35E-05
Vinyl Acetate	< 3.10E-06	< 3.09E-06	< 2.87E-06	<3.02E-06

Notes: Emission values for OB-VST-R1 represent the average of five separate vost tube analyses. Sample OB-M0030-R1D was lost due to laboratory computer failure (see Appendix G.5 case narrative accompanying laboratory data report). Emission values for runs IN-VST-R2 and IN-VST-R3 represent the averages of six separate vost tube analyses.

All VOST tubes were analyzed in tandem according to the guidelines of Methods 8240 and 5040. The response factors used are the average response factors from the initial calibration. Amounts reported for target compounds that are not detected are denoted as < 0.001. The reported laboratory values for non-detected target compounds are calculated using an area of 20 counts.

The acquisitions for samples OB-M0030-R1B and IN-M0030-R1D were lost due to laboratory computer failure.

All field samples were observed to contain condensation within the Tenax and Tenax-charcoal tubes prior to analysis. Saturation of target analytes or TICs may have inhibited target analyte recoveries. All saturated compounds should be considered underestimated and may interfere with the detection or quantitation of target analytes.

Compounds found in the field samples at levels less than five times the amount found in the associated blank should not be considered native to the samples. The majority of the samples had one or more compounds at levels over the calibration range. This occurrence is identified with an 'E' label, these quantitations should be considered estimates.

Ketone results for VOST matrices should be considered semi-quantitative as these compounds often experience erratic recovery from VOST.

See case narrative accompanying the volatile organics laboratory data, Appendix G.5, for additional information.

VOST SAMPLING DATA AND RESULTS

Run I.D.	Date	Start Time	End Time	Meter Temp. (Fo)	Meter Press. (in. wc)	Bar. Press. (in. Hg)	Initial Meter Volume (liters)	Final Meter Volume (liters)	Sample Volume (liters)	Corrected Sample Volume (dscm)
OB-VST-R1A	11/06/92	11:47	12:06	53.5	1.0	29.76	1028.390	1048.520	20.130	0.0206
OB-VST-R1B	11/06/92	12:28	12:48	59.0	1.0	29.76	1048.900	1068.428	19.528	0.0198
OB-VST-R1C	11/06/92	13:49	14:09	55.0	1.0	29.76	1069.070	1088.595	19.525	0.0200
OB-VST-R1D	11/06/92	14:30	14:50	55.0	1.0	29.76	1089.190	1109.957	20.767	0.0212
OB-VST-R1E	11/06/92	15:00	15:20	57.0	1.0	29.76	1110.423	1130.400	19.977	0.0203
OB-VST-R1F	11/06/92	16:17	16:37	52.0	1.0	29.76	1131.050	1150.455	19.405	0.0199
OB-VST-R1										
OB-VST-R2A	11/06/92	17:32	17:52	51.5	1.0	29.76	1152.545	1172.150	19.605	0.0202
OB-VST-R2B	11/06/92	18:08	18:28	51.5	1.0	29.76	1172.910	1193.193	20.283	0.0209
OB-VST-R2C	11/06/92	18:53	19:37	49.5	1.0	29.76	1193.735	1213.548	19.813	0.0205
OB-VST-R2D	11/06/92	20:08	20:28	47.0	1.0	29.76	1213.875	1234.630	20.755	0.0215
OB-VST-R2E	11/06/92	20:43	21:03	49.5	1.0	29.76	1241.190	1261.210	20.020	0.0207
OB-VST-R2F	11/06/92	21:26	21:46	48.5	1.0	29.76	1261.560	1280.690	19.130	0.0198
OB-VST-R2										
OB-VST-R3A	11/07/92	09:05	09:25	46.0	1.0	29.92	1282.902	1302.729	19.827	0.0207
OB-VST-R3B	11/07/92	09:44	10:04	51.0	1.0	29.92	1302.985	1323.154	20.169	0.0209
OB-VST-R3C	11/07/92	10:11	10:31	54.0	1.0	29.92	1323.775	1343.695	19.920	0.0205
OB-VST-R3D	11/07/92	11:14	11:34	54.5	1.0	29.92	1344.479	1364.317	19.838	0.0204
OB-VST-R3E	11/07/92	11:43	12:03	55.5	1.0	29.92	1365.081	1385.395	20.314	0.0208
OB-VST-R3F	11/07/92	12:09	12:45	56.0	1.0	29.92	1386.410	1406.287	19.877	0.0204
OB-VST-R3										

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D. OB-VST-R1A
DATE 11/06/92
START TIME 11:47
END TIME 12:06
CORR. SAMPLE VOL. 0.021 dscm
TOTAL GAS FLOWRATE 16895 dscfm
OXYGEN 17.19 %

POLLUTANT	SAMPLE TOTAL ug	GAS EMISSIONS CONCENTRATION ACTUAL ug/Nm3	GAS EMISSIONS CONCENTRATION @ 7% O2 ug/Nm3	MASS RATE lb/hr
Acetone	2.505*	130.321	488.264	7.68E-03
Acrylonitrile	0.060	3.121	11.695	1.84E-04
Benzene	2.713*	141.142	528.806	8.32E-03
Bromomethane	0.123	6.399	23.975	3.77E-04
2-butanone	0.341	17.740	66.466	1.05E-03
Carbon Disulfide	0.058	3.017	11.305	1.78E-04
Carbon Tetrachloride	< 0.001	< 0.052	< 0.195	<3.07E-06
Chloroform	< 0.001	< 0.052	< 0.195	<3.07E-06
Chloromethane	3.584*	186.455	698.578	1.10E-02
Ethylbenzene	0.076	3.954	14.814	2.33E-04
2-Hexanone	< 0.001	< 0.052	< 0.195	<3.07E-06
Iodomethane	0.657	34.180	128.060	2.02E-03
Methylene Chloride	0.139	7.231	27.093	4.26E-04
M-/p-xylene	0.121	6.295	23.585	3.71E-04
O-xylene	0.043*	2.237	8.381	1.32E-04
Styrene	< 0.001	< 0.052	< 0.195	<3.07E-06
Tetrachloroethene	< 0.001	< 0.052	< 0.195	<3.07E-06
Toluene	1.104*	57.435	215.187	3.39E-03
1,1,1-trichloroethane	< 0.001	< 0.052	< 0.195	<3.07E-06
Trichloroethene	< 0.001	< 0.052	< 0.195	<3.07E-06
Trichlorofluoromethane	0.041*	2.133	7.992	1.26E-04
Vinyl Acetate	< 0.001	< 0.052	< 0.195	<3.07E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	OB-VST-R1C
DATE	11/06/92
START TIME	13:49
END TIME	14:09
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	16895 dscfm
OXYGEN	17.19 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	2.862*	153.955	576.814	9.08E-03
Acrylonitrile	0.079	4.250	15.922	2.51E-04
Benzene	1.459*	78.484	294.050	4.63E-03
Bromomethane	0.147	7.908	29.627	4.66E-04
2-butanone	0.335	18.021	67.517	1.06E-03
Carbon Disulfide	0.050	2.690	10.077	1.59E-04
Carbon Tetrachloride	< 0.001	< 0.054	< 0.202	<3.17E-06
Chloroform	< 0.001	< 0.054	< 0.202	<3.17E-06
Chloromethane	3.914*	210.546	788.836	1.24E-02
Ethylbenzene	0.016*	0.861	3.225	5.08E-05
2-Hexanone	< 0.001	< 0.054	< 0.202	<3.17E-06
Iodomethane	0.643	34.589	129.592	2.04E-03
Methylene Chloride	0.090	4.841	18.139	2.85E-04
M-/p-xylene	0.047*	2.528	9.472	1.49E-04
O-xylene	0.013*	0.699	2.620	4.12E-05
Styrene	0.012*	0.646	2.419	3.81E-05
Tetrachloroethene	< 0.001	< 0.054	< 0.202	<3.17E-06
Toluene	0.962	51.749	193.884	3.05E-03
1,1,1-trichloroethane	< 0.001	< 0.054	< 0.202	<3.17E-06
Trichloroethene	< 0.001	< 0.054	< 0.202	<3.17E-06
Trichlorofluoromethane	0.039*	2.098	7.860	1.24E-04
Vinyl Acetate	< 0.001	< 0.054	< 0.202	<3.17E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	OB-VST-R1D
DATE	11/06/92
START TIME	14:30
END TIME	14:50
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	16895 dscfm
OXYGEN	17.19 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	4.042*	204.427	765.913	1.21E-02
Acrylonitrile	0.083	4.198	15.728	2.48E-04
Benzene	1.728*	87.395	327.437	5.15E-03
Bromomethane	0.144	7.283	27.286	4.29E-04
2-butanone	0.520	26.299	98.534	1.55E-03
Carbon Disulfide	0.063	3.186	11.938	1.88E-04
Carbon Tetrachloride	< 0.001	< 0.051	< 0.189	<2.98E-06
Chloroform	< 0.001	< 0.051	< 0.189	<2.98E-06
Chloromethane	4.474*	226.276	847.773	1.33E-02
Ethylbenzene	0.034*	1.720	6.443	1.01E-04
2-Hexanone	< 0.001	< 0.051	< 0.189	<2.98E-06
Iodomethane	0.697	35.251	132.074	2.08E-03
Methylene Chloride	0.021*	1.062	3.979	6.26E-05
M-/p-xylene	0.074*	3.743	14.022	2.21E-04
O-xylene	0.022*	1.113	4.169	6.56E-05
Styrene	0.060	3.035	11.369	1.79E-04
Tetrachloroethene	< 0.001	< 0.051	< 0.189	<2.98E-06
Toluene	1.228*	62.107	232.692	3.66E-03
1,1,1-trichloroethane	< 0.001	< 0.051	< 0.189	<2.98E-06
Trichloroethene	< 0.001	< 0.051	< 0.189	<2.98E-06
Trichlorofluoromethane	0.029*	1.467	5.495	8.65E-05
Vinyl Acetate	< 0.001	< 0.051	< 0.189	<2.98E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OB-VST-R1E**
DATE	11/06/92
START TIME	15:00
END TIME	15:20
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	16895 dscfm
OXYGEN	17.19 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	3.212*	169.529	635.164	1.00E-02
Acrylonitrile	0.069	3.642	13.645	2.15E-04
Benzene	1.965*	103.713	388.573	6.12E-03
Bromomethane	0.157	8.286	31.046	4.89E-04
2-butanone	0.506	26.707	100.060	1.57E-03
Carbon Disulfide	0.062	3.272	12.260	1.93E-04
Carbon Tetrachloride	< 0.001	< 0.053	< 0.198	<3.11E-06
Chloroform	< 0.001	< 0.053	< 0.198	<3.11E-06
Chloromethane	4.635*	244.635	916.558	1.44E-02
Ethylbenzene	0.035*	1.847	6.921	1.09E-04
2-Hexanone	< 0.001	< 0.053	< 0.198	<3.11E-06
Iodomethane	0.817	43.121	161.559	2.54E-03
Methylene Chloride	0.032*	1.689	6.328	9.96E-05
M-/p-xylene	0.060*	3.167	11.865	1.87E-04
O-xylene	0.019*	1.003	3.757	5.91E-05
Styrene	0.055	2.903	10.876	1.71E-04
Tetrachloroethene	< 0.001	< 0.053	< 0.198	<3.11E-06
Toluene	1.065*	56.211	210.601	3.31E-03
1,1,1-trichloroethane	< 0.001	< 0.053	< 0.198	<3.11E-06
Trichloroethene	< 0.001	< 0.053	< 0.198	<3.11E-06
Trichlorofluoromethane	0.035*	1.847	6.921	1.09E-04
Vinyl Acetate	< 0.001	< 0.053	< 0.198	<3.11E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OB-VST-R1F**
DATE	11/06/92
START TIME	16:17
END TIME	16:37
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	16895 dscfm
OXYGEN	17.19 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	2.903*	156.211	585.266	9.21E-03
Acrylonitrile	0.065	3.498	13.104	2.06E-04
Benzene	2.004*	107.836	404.021	6.36E-03
Bromomethane	0.130	6.995	26.209	4.13E-04
2-butanone	0.618	33.255	124.593	1.96E-03
Carbon Disulfide	0.058	3.121	11.693	1.84E-04
Carbon Tetrachloride	< 0.001	< 0.054	< 0.202	<3.17E-06
Chloroform	< 0.001	< 0.054	< 0.202	<3.17E-06
Chloromethane	4.161*	223.905	838.888	1.32E-02
Ethylbenzene	0.032*	1.722	6.451	1.02E-04
2-Hexanone	< 0.001	< 0.054	< 0.202	<3.17E-06
Iodomethane	0.722	38.851	145.560	2.29E-03
Methylene Chloride	0.051	2.744	10.282	1.62E-04
M-/p-xylene	0.064*	3.444	12.903	2.03E-04
O-xylene	0.019*	1.022	3.831	6.03E-05
Styrene	0.011*	0.592	2.218	3.49E-05
Tetrachloroethene	< 0.001	< 0.054	< 0.202	<3.17E-06
Toluene	1.319*	70.976	265.920	4.19E-03
1,1,1-trichloroethane	< 0.001	< 0.054	< 0.202	<3.17E-06
Trichloroethene	< 0.001	< 0.054	< 0.202	<3.17E-06
Trichlorofluoromethane	0.025*	1.345	5.040	7.93E-05
Vinyl Acetate	< 0.001	< 0.054	< 0.202	<3.17E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OB-VST-R2A**
DATE	11/06/92
START TIME	17:32
END TIME	17:52
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	16954 dscfm
OXYGEN	17.45 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	4.675*	248.754	1002.225	1.47E-02
Acrylonitrile	0.096	5.108	20.580	3.02E-04
Benzene	1.752*	93.223	375.593	5.52E-03
Bromomethane	0.151	8.035	32.371	4.75E-04
2-butanone	0.928	49.378	198.944	2.92E-03
Carbon Disulfide	0.066	3.512	14.149	2.08E-04
Carbon Tetrachloride	< 0.001	< 0.053	< 0.214	<3.15E-06
Chloroform	< 0.001	< 0.053	< 0.214	<3.15E-06
Chloromethane	5.131*	273.017	1099.982	1.62E-02
Ethylbenzene	0.041*	2.182	8.790	1.29E-04
2-Hexanone	< 0.001	< 0.053	< 0.214	<3.15E-06
Iodomethane	0.852	45.334	182.651	2.68E-03
Methylene Chloride	0.035*	1.862	7.503	1.10E-04
M-/p-xylene	0.058*	3.086	12.434	1.83E-04
O-xylene	0.017*	0.905	3.644	5.35E-05
Styrene	0.125	6.651	26.797	3.94E-04
Tetrachloroethene	< 0.001	< 0.053	< 0.214	<3.15E-06
Toluene	1.126*	59.914	241.391	3.55E-03
1,1,1-trichloroethane	< 0.001	< 0.053	< 0.214	<3.15E-06
Trichloroethene	< 0.001	< 0.053	< 0.214	<3.15E-06
Trichlorofluoromethane	0.024*	1.277	5.145	7.56E-05
Vinyl Acetate	< 0.001	< 0.053	< 0.214	<3.15E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D. **OB-VST-R2B**
DATE 11/06/92
START TIME 18:08
END TIME 18:28
CORR. SAMPLE VOL. 0.021 dscm
TOTAL GAS FLOWRATE 16954 dscfm
OXYGEN 17.45 %

POLLUTANT	SAMPLE TOTAL ug	GAS EMISSIONS CONCENTRATION ACTUAL ug/Nm3	@ 7% O2 ug/Nm3	MASS RATE lb/hr
Acetone	5.190*	266.925	1075.438	1.58E-02
Acrylonitrile	0.113	5.812	23.415	3.44E-04
Benzene	1.716*	88.255	355.578	5.22E-03
Bromomethane	0.155	7.972	32.118	4.72E-04
2-butanone	0.940	48.345	194.781	2.86E-03
Carbon Disulfide	0.066	3.394	13.676	2.01E-04
Carbon Tetrachloride	< 0.001	< 0.051	< 0.207	<3.04E-06
Chloroform	< 0.001	< 0.051	< 0.207	<3.04E-06
Chloromethane	5.174*	266.102	1072.123	1.57E-02
Ethylbenzene	0.024*	1.234	4.973	7.30E-05
2-Hexanone	< 0.001	< 0.051	< 0.207	<3.04E-06
Iodomethane	0.933	47.985	193.330	2.84E-03
Methylene Chloride	0.037*	1.903	7.667	1.13E-04
M-/p-xylene	0.045*	2.314	9.325	1.37E-04
O-xylene	0.014*	0.720	2.901	4.26E-05
Styrene	0.042*	2.160	8.703	1.28E-04
Tetrachloroethene	< 0.001	< 0.051	< 0.207	<3.04E-06
Toluene	0.990	50.916	205.141	3.01E-03
1,1,1-trichloroethane	< 0.001	< 0.051	< 0.207	<3.04E-06
Trichloroethene	< 0.001	< 0.051	< 0.207	<3.04E-06
Trichlorofluoromethane	0.030*	1.543	6.216	9.13E-05
Vinyl Acetate	< 0.001	< 0.051	< 0.207	<3.04E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OB-VST-R2C**
DATE	11/06/92
START TIME	18:53
END TIME	19:37
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	16954 dscfm
OXYGEN	17.45 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	4.574*	239.883	966.484	1.42E-02
Acrylonitrile	0.082	4.300	17.327	2.54E-04
Benzene	1.851*	97.075	391.116	5.74E-03
Bromomethane	0.127	6.660	26.835	3.94E-04
2-butanone	0.676	35.453	142.839	2.10E-03
Carbon Disulfide	0.062	3.252	13.101	1.92E-04
Carbon Tetrachloride	< 0.001	< 0.052	< 0.211	<3.10E-06
Chloroform	< 0.001	< 0.052	< 0.211	<3.10E-06
Chloromethane	3.786*	198.556	799.980	1.17E-02
Ethylbenzene	0.023*	1.206	4.860	7.14E-05
2-Hexanone	< 0.001	< 0.052	< 0.211	<3.10E-06
Iodomethane	0.864	45.312	182.563	2.68E-03
Methylene Chloride	0.015*	0.787	3.169	4.66E-05
M-/p-xylene	0.063*	3.304	13.312	1.96E-04
O-xylene	0.019*	0.996	4.015	5.90E-05
Styrene	< 0.001	< 0.052	< 0.211	<3.10E-06
Tetrachloroethene	< 0.001	< 0.052	< 0.211	<3.10E-06
Toluene	1.207*	63.301	255.039	3.75E-03
1,1,1-trichloroethane	< 0.001	< 0.052	< 0.211	<3.10E-06
Trichloroethene	< 0.001	< 0.052	< 0.211	<3.10E-06
Trichlorofluoromethane	< 0.001	< 0.052	< 0.211	<3.10E-06
Vinyl Acetate	< 0.001	< 0.052	< 0.211	<3.10E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OB-VST-R2D**
DATE	11/06/92
START TIME	20:08
END TIME	20:28
CORR. SAMPLE VOL.	0.022 dscm
TOTAL GAS FLOWRATE	16954 dscfm
OXYGEN	17.45 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	0.208	10.362	41.750	6.13E-04
Acrylonitrile	< 0.001	< 0.050	< 0.201	<2.95E-06
Benzene	0.048*	2.391	9.635	1.42E-04
Bromomethane	< 0.001	< 0.050	< 0.201	<2.95E-06
2-butanone	< 0.001	< 0.050	< 0.201	<2.95E-06
Carbon Disulfide	0.003*	0.149	0.602	8.84E-06
Carbon Tetrachloride	< 0.001	< 0.050	< 0.201	<2.95E-06
Chloroform	< 0.001	< 0.050	< 0.201	<2.95E-06
Chloromethane	0.090	4.484	18.065	2.65E-04
Ethylbenzene	0.004*	0.199	0.803	1.18E-05
2-Hexanone	< 0.001	< 0.050	< 0.201	<2.95E-06
Iodomethane	0.005*	0.249	1.004	1.47E-05
Methylene Chloride	0.032*	1.594	6.423	9.43E-05
M-/p-xylene	0.016*	0.797	3.212	4.72E-05
O-xylene	0.005*	0.249	1.004	1.47E-05
Styrene	< 0.001	< 0.050	< 0.201	<2.95E-06
Tetrachloroethene	< 0.001	< 0.050	< 0.201	<2.95E-06
Toluene	0.055	2.740	11.040	1.62E-04
1,1,1-trichloroethane	0.019*	0.947	3.814	5.60E-05
Trichloroethene	< 0.001	< 0.050	< 0.201	<2.95E-06
Trichlorofluoromethane	0.033*	1.644	6.624	9.73E-05
Vinyl Acetate	< 0.001	< 0.050	< 0.201	<2.95E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OB-VST-R2E**
DATE	11/06/92
START TIME	20:43
END TIME	21:03
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	16954 dscfm
OXYGEN	17.45 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	1.450*	75.259	303.217	4.45E-03
Acrylonitrile	0.054	2.803	11.292	1.66E-04
Benzene	2.631*	136.556	550.181	8.08E-03
Bromomethane	0.136	7.059	28.440	4.18E-04
2-butanone	0.295	15.311	61.689	9.06E-04
Carbon Disulfide	0.063	3.270	13.174	1.93E-04
Carbon Tetrachloride	< 0.001	< 0.052	< 0.209	<3.07E-06
Chloroform	< 0.001	< 0.052	< 0.209	<3.07E-06
Chloromethane	1.931*	100.224	403.801	5.93E-03
Ethylbenzene	0.027*	1.401	5.646	8.29E-05
2-Hexanone	< 0.001	< 0.052	< 0.209	<3.07E-06
Iodomethane	0.779	40.432	162.900	2.39E-03
Methylene Chloride	0.091	4.723	19.029	2.79E-04
M-/p-xylene	0.050*	2.595	10.456	1.54E-04
O-xylene	0.022*	1.142	4.601	6.76E-05
Styrene	0.030*	1.557	6.273	9.21E-05
Tetrachloroethene	< 0.001	< 0.052	< 0.209	<3.07E-06
Toluene	1.022*	53.044	213.715	3.14E-03
1,1,1-trichloroethane	< 0.001	< 0.052	< 0.209	<3.07E-06
Trichloroethene	< 0.001	< 0.052	< 0.209	<3.07E-06
Trichlorofluoromethane	0.026*	1.349	5.437	7.99E-05
Vinyl Acetate	< 0.001	< 0.052	< 0.209	<3.07E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OB-VST-R2F**
DATE	11/06/92
START TIME	21:26
END TIME	21:46
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	16954 dscfm
OXYGEN	17.45 %

POLLUTANT	SAMPLE TOTAL ug	GAS EMISSIONS CONCENTRATION ACTUAL ug/Nm3	GAS EMISSIONS CONCENTRATION @ 7% O2 ug/Nm3	MASS RATE lb/hr
Acetone	2.204*	119.480	481.385	7.07E-03
Acrylonitrile	0.047*	2.548	10.265	1.51E-04
Benzene	1.628*	88.255	355.578	5.22E-03
Bromomethane	0.148	8.023	32.325	4.75E-04
2-butanone	0.232	12.577	50.672	7.44E-04
Carbon Disulfide	0.055	2.982	12.013	1.76E-04
Carbon Tetrachloride	< 0.001	< 0.054	< 0.218	<3.21E-06
Chloroform	< 0.001	< 0.054	< 0.218	<3.21E-06
Chloromethane	3.564*	193.207	778.428	1.14E-02
Ethylbenzene	0.014*	0.759	3.058	4.49E-05
2-Hexanone	< 0.001	< 0.054	< 0.218	<3.21E-06
Iodomethane	0.748	40.550	163.374	2.40E-03
Methylene Chloride	0.445	24.124	97.194	1.43E-03
M-/p-xylene	0.052*	2.819	11.358	1.67E-04
O-xylene	0.013*	0.705	2.839	4.17E-05
Styrene	< 0.001	< 0.054	< 0.218	<3.21E-06
Tetrachloroethene	< 0.001	< 0.054	< 0.218	<3.21E-06
Toluene	1.239*	67.167	270.615	3.97E-03
1,1,1-trichloroethane	< 0.001	< 0.054	< 0.218	<3.21E-06
Trichloroethene	< 0.001	< 0.054	< 0.218	<3.21E-06
Trichlorofluoromethane	< 0.001	< 0.054	< 0.218	<3.21E-06
Vinyl Acetate	< 0.001	< 0.054	< 0.218	<3.21E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OB-VST-R3A**
DATE	11/07/92
START TIME	09:05
END TIME	09:25
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	15821 dscfm
OXYGEN	17.31 %

POLLUTANT	SAMPLE TOTAL ug	GAS EMISSIONS CONCENTRATION ACTUAL ug/Nm3	GAS EMISSIONS CONCENTRATION @ 7% O2 ug/Nm3	MASS RATE lb/hr
Acetone	2.684*	138.951	538.000	7.67E-03
Acrylonitrile	0.074	3.831	14.833	2.12E-04
Benzene	1.577*	81.642	316.105	4.51E-03
Bromomethane	0.175	9.060	35.078	5.00E-04
2-butanone	0.464	24.021	93.007	1.33E-03
Carbon Disulfide	0.067	3.469	13.430	1.92E-04
Carbon Tetrachloride	< 0.001	< 0.052	< 0.200	<2.86E-06
Chloroform	< 0.001	< 0.052	< 0.200	<2.86E-06
Chloromethane	4.676*	242.077	937.291	1.34E-02
Ethylbenzene	0.014*	0.725	2.806	4.00E-05
2-Hexanone	< 0.001	< 0.052	< 0.200	<2.86E-06
Iodomethane	0.875	45.299	175.391	2.50E-03
Methylene Chloride	0.050	2.589	10.022	1.43E-04
M-/p-xylene	0.046*	2.381	9.221	1.32E-04
O-xylene	0.012*	0.621	2.405	3.43E-05
Styrene	< 0.001	< 0.052	< 0.200	<2.86E-06
Tetrachloroethene	< 0.001	< 0.052	< 0.200	<2.86E-06
Toluene	1.070*	55.394	214.478	3.06E-03
1,1,1-trichloroethane	< 0.001	< 0.052	< 0.200	<2.86E-06
Trichloroethene	< 0.001	< 0.052	< 0.200	<2.86E-06
Trichlorofluoromethane	0.038*	1.967	7.617	1.09E-04
Vinyl Acetate	< 0.001	< 0.052	< 0.200	<2.86E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OB-VST-R3B**
DATE	11/07/92
START TIME	09:44
END TIME	10:04
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	15821 dscfm
OXYGEN	17.31 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	4.603*	236.572	915.976	1.31E-02
Acrylonitrile	0.089	4.574	17.711	2.53E-04
Benzene	1.471*	75.602	292.722	4.17E-03
Bromomethane	0.188	9.662	37.411	5.34E-04
2-butanone	0.447	22.974	88.951	1.27E-03
Carbon Disulfide	0.064	3.289	12.736	1.82E-04
Carbon Tetrachloride	< 0.001	< 0.051	< 0.199	<2.84E-06
Chloroform	< 0.001	< 0.051	< 0.199	<2.84E-06
Chloromethane	4.724*	242.791	940.054	1.34E-02
Ethylbenzene	0.014*	0.720	2.786	3.97E-05
2-Hexanone	< 0.001	< 0.051	< 0.199	<2.84E-06
Iodomethane	0.822	42.247	163.574	2.33E-03
Methylene Chloride	0.023*	1.182	4.577	6.53E-05
M-/p-xylene	0.064*	3.289	12.736	1.82E-04
O-xylene	0.015*	0.771	2.985	4.26E-05
Styrene	< 0.001	< 0.051	< 0.199	<2.84E-06
Tetrachloroethene	< 0.001	< 0.051	< 0.199	<2.84E-06
Toluene	1.320*	67.842	262.674	3.75E-03
1,1,1-trichloroethane	< 0.001	< 0.051	< 0.199	<2.84E-06
Trichloroethene	< 0.001	< 0.051	< 0.199	<2.84E-06
Trichlorofluoromethane	0.029*	1.490	5.771	8.23E-05
Vinyl Acetate	< 0.001	< 0.051	< 0.199	<2.84E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OB-VST-R3C**
DATE	11/07/92
START TIME	10:11
END TIME	10:31
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	15821 dscfm
OXYGEN	17.31 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	4.066*	212.827	824.039	1.18E-02
Acrylonitrile	0.088	4.606	17.835	2.54E-04
Benzene	1.522*	79.666	308.457	4.40E-03
Bromomethane	0.171	8.951	34.656	4.94E-04
2-butanone	0.509	26.643	103.157	1.47E-03
Carbon Disulfide	0.064	3.350	12.971	1.85E-04
Carbon Tetrachloride	< 0.001	< 0.052	< 0.203	<2.89E-06
Chloroform	< 0.001	< 0.052	< 0.203	<2.89E-06
Chloromethane	5.327*	278.832	1079.600	1.54E-02
Ethylbenzene	0.019*	0.995	3.851	5.49E-05
2-Hexanone	< 0.001	< 0.052	< 0.203	<2.89E-06
Iodomethane	0.831	43.497	168.415	2.40E-03
Methylene Chloride	0.018*	0.942	3.648	5.20E-05
M-/p-xylene	0.076*	3.978	15.403	2.20E-04
O-xylene	0.018*	0.942	3.648	5.20E-05
Styrene	< 0.001	< 0.052	< 0.203	<2.89E-06
Tetrachloroethene	< 0.001	< 0.052	< 0.203	<2.89E-06
Toluene	1.494*	78.201	302.783	4.32E-03
1,1,1-trichloroethane	< 0.001	< 0.052	< 0.203	<2.89E-06
Trichloroethene	< 0.001	< 0.052	< 0.203	<2.89E-06
Trichlorofluoromethane	0.030*	1.570	6.080	8.67E-05
Vinyl Acetate	< 0.001	< 0.052	< 0.203	<2.89E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OB-VST-R3D**
DATE	11/07/92
START TIME	11:14
END TIME	11:34
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	15821 dscfm
OXYGEN	17.31 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	2.651*	139.471	540.012	7.70E-03
Acrylonitrile	0.066	3.472	13.444	1.92E-04
Benzene	1.578*	83.020	321.441	4.58E-03
Bromomethane	0.152	7.997	30.963	4.42E-04
2-butanone	0.393	20.676	80.055	1.14E-03
Carbon Disulfide	0.058	3.051	11.815	1.68E-04
Carbon Tetrachloride	< 0.001	< 0.053	< 0.204	<2.91E-06
Chloroform	< 0.001	< 0.053	< 0.204	<2.91E-06
Chloromethane	4.240*	223.069	863.694	1.23E-02
Ethylbenzene	0.020*	1.052	4.074	5.81E-05
2-Hexanone	< 0.001	< 0.053	< 0.204	<2.91E-06
Iodomethane	0.751	39.511	152.980	2.18E-03
Methylene Chloride	0.012*	0.631	2.444	3.49E-05
M-/p-xylene	0.059*	3.104	12.018	1.71E-04
O-xylene	0.014*	0.737	2.852	4.07E-05
Styrene	0.014*	0.737	2.852	4.07E-05
Tetrachloroethene	< 0.001	< 0.053	< 0.204	<2.91E-06
Toluene	1.256*	66.079	255.849	3.65E-03
1,1,1-trichloroethane	< 0.001	< 0.053	< 0.204	<2.91E-06
Trichloroethene	< 0.001	< 0.053	< 0.204	<2.91E-06
Trichlorofluoromethane	0.024*	1.263	4.889	6.97E-05
Vinyl Acetate	< 0.001	< 0.053	< 0.204	<2.91E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OB-VST-R3E**
DATE	11/07/92
START TIME	11:43
END TIME	12:03
CORR. SAMPLE VOL.	0.021 dscm
TOTAL GAS FLOWRATE	15821 dscfm
OXYGEN	17.31 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	3.779*	194.534	753.211	1.07E-02
Acrylonitrile	0.077	3.964	15.347	2.19E-04
Benzene	1.586*	81.644	316.113	4.51E-03
Bromomethane	0.165	8.494	32.887	4.69E-04
2-butanone	1.019*	52.456	203.102	2.90E-03
Carbon Disulfide	0.065	3.346	12.955	1.85E-04
Carbon Tetrachloride	< 0.001	< 0.051	< 0.199	<2.84E-06
Chloroform	< 0.001	< 0.051	< 0.199	<2.84E-06
Chloromethane	4.705*	242.203	937.776	1.34E-02
Ethylbenzene	0.019*	0.978	3.787	5.40E-05
2-Hexanone	< 0.001	< 0.051	< 0.199	<2.84E-06
Iodomethane	0.915	47.102	182.373	2.60E-03
Methylene Chloride	0.017*	0.875	3.388	4.83E-05
M-/p-xylene	0.042*	2.162	8.371	1.19E-04
O-xylene	0.013*	0.669	2.591	3.70E-05
Styrene	0.037*	1.905	7.375	1.05E-04
Tetrachloroethene	< 0.001	< 0.051	< 0.199	<2.84E-06
Toluene	0.959	49.367	191.143	2.73E-03
1,1,1-trichloroethane	< 0.001	< 0.051	< 0.199	<2.84E-06
Trichloroethene	< 0.001	< 0.051	< 0.199	<2.84E-06
Trichlorofluoromethane	0.030*	1.544	5.979	8.53E-05
Vinyl Acetate	< 0.001	< 0.051	< 0.199	<2.84E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**OB-VST-R3F**
DATE	11/07/92
START TIME	12:09
END TIME	12:45
CORR. SAMPLE VOL.	0.020 dscm
TOTAL GAS FLOWRATE	15821 dscfm
OXYGEN	17.31 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
POLLUTANT	ug	ug/Nm3	ug/Nm3	lb/hr
Acetone	2.771*	145.922	564.991	8.06E-03
Acrylonitrile	0.051	2.686	10.399	1.48E-04
Benzene	1.839*	96.843	374.962	5.35E-03
Bromomethane	0.130	6.846	26.506	3.78E-04
2-butanone	2.580*	135.864	526.048	7.50E-03
Carbon Disulfide	0.060	3.160	12.234	1.74E-04
Carbon Tetrachloride	< 0.001	< 0.053	< 0.204	<2.91E-06
Chloroform	< 0.001	< 0.053	< 0.204	<2.91E-06
Chloromethane	4.457*	234.708	908.757	1.30E-02
Ethylbenzene	0.039*	2.054	7.952	1.13E-04
2-Hexanone	< 0.001	< 0.053	< 0.204	<2.91E-06
Iodomethane	0.840	44.235	171.271	2.44E-03
Methylene Chloride	0.022*	1.159	4.486	6.40E-05
M-/p-xylene	0.060*	3.160	12.234	1.74E-04
O-xylene	0.023*	1.211	4.690	6.69E-05
Styrene	< 0.001	< 0.053	< 0.204	<2.91E-06
Tetrachloroethene	< 0.001	< 0.053	< 0.204	<2.91E-06
Toluene	1.076*	56.663	219.390	3.13E-03
1,1,1-trichloroethane	< 0.001	< 0.053	< 0.204	<2.91E-06
Trichloroethene	< 0.001	< 0.053	< 0.204	<2.91E-06
Trichlorofluoromethane	0.031*	1.632	6.321	9.01E-05
Vinyl Acetate	< 0.001	< 0.053	< 0.204	<2.91E-06

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

B.6.4 M0030 DATA AND RESULTS - EPA AUDIT SAMPLES

SUMMARY OF VOLATILE EMISSIONS: EPA METHOD 0030: EPA GAS AUDIT CYLINDER #539.

RUN I.D.		C539-VST-R1A		C539-VST-R1B		C539-VST-R1C		AVERAGE
DATE		11/12/92		11/12/92		11/12/92		
POLLUTANT CONCENTRATION - ug/Nm3								
Acetone	<	0.110	<	0.089		2.857	<	1.019
Acrylonitrile	<	0.110	<	0.089	<	0.110	<	0.103
Benzene	<	0.110	<	0.089	<	0.110	<	0.103
Bromomethane		5.280		7.199		6.153		6.211
2-butanone		4.620		5.866		6.043		5.510
Carbon Disulfide	<	0.110	<	0.089	<	0.110	<	0.103
Carbon Tetrachloride	<	0.110	<	0.089	<	0.110	<	0.103
Chloroform	<	0.110		4.000	<	0.110	<	1.407
Chloromethane		11.220		11.021		11.098		11.113
Ethylbenzene	<	0.110	<	0.089	<	0.110	<	0.103
2-Hexanone	<	0.110	<	0.089	<	0.110	<	0.103
Iodomethane	<	0.110	<	0.089	<	0.110	<	0.103
Methylene Chloride		10.120		1.689		0.989		4.266
M-/p-xylene		1.430	<	0.089	<	0.110	<	0.543
O-xylene	<	0.110	<	0.089	<	0.110	<	0.103
Styrene	<	0.110	<	0.089	<	0.110	<	0.103
Tetrachloroethene	<	0.110	<	0.089	<	0.110	<	0.103
Toluene		4.510		0.622		0.440		1.857
1,1,1-trichloroethane		32.450		31.464		27.250		30.388
Trichloroethene		30.580		30.042		32.744		31.122
Trichlorofluoromethane		23.540		22.043		33.073		26.219
Vinyl Acetate	<	0.110	<	0.089	<	0.110	<	0.103

SUMMARY OF VOLATILE EMISSIONS: EPA METHOD 0030: EPA GAS AUDIT CYLINDER #540.

RUN I.D.		C540-VST-R1A		C540-VST-R1B		C540-VST-R1C		AVERAGE
DATE		11/12/92		11/12/92		11/12/92		

POLLUTANT CONCENTRATION - ug/Nm3

Acetone		141.184		26.843		17.146		61.724
Acrylonitrile	<	0.097	<	0.101	<	0.099	<	0.099
Benzene		2.221		1.013	<	0.099	<	1.111
Bromomethane	<	0.097	<	0.101	<	0.099	<	0.099
2-butanone		0.579	<	0.101		0.690	<	0.457
Carbon Disulfide	<	0.097	<	0.101	<	0.099	<	0.099
Carbon Tetrachloride	<	0.097	<	0.101	<	0.099	<	0.099
Chloroform		0.290		0.203		4.434		1.642
Chloromethane	<	0.097	<	0.101	<	0.099	<	0.099
Ethylbenzene	<	0.097	<	0.101	<	0.099	<	0.099
2-Hexanone	<	0.097	<	0.101	<	0.099	<	0.099
Iodomethane	<	0.097	<	0.101	<	0.099	<	0.099
Methylene Chloride		82.663		13.067		15.668		37.132
M-/p-xylene		3.187	<	0.101	<	0.099	<	1.129
O-xylene	<	0.097	<	0.101	<	0.099	<	0.099
Styrene	<	0.097	<	0.101	<	0.099	<	0.099
Tetrachloroethene	<	0.097	<	0.101	<	0.099	<	0.099
Toluene		44.518		30.996		31.631		35.715
1,1,1-trichloroethane		5.504		0.608		1.478		2.530
Trichloroethene		0.483	<	0.101	<	0.099	<	0.228
Trichlorofluoromethane		0.869		2.938		0.690		1.499
Vinyl Acetate	<	0.097	<	0.101	<	0.099	<	0.099

VOST SAMPLING DATA AND RESULTS

Run I.D.	Date	Start Time	End Time	Meter Temp. (Fo)	Meter Press. (in. wc)	Bar. Press. (in. Hg)	Initial Meter Volume (liters)	Final Meter Volume (liters)	Sample Volume (liters)	Corrected Sample Volume (dscm)
C539-VST-R1A	11/12/92	15:24	15:34	81.0	1.2	28.74	1451.100	1461.480	10.380	0.0098
C539-VST-R1B	11/12/92	15:50	16:00	82.0	1.2	28.74	1461.480	1474.350	12.870	0.0121
C539-VST-R1C	11/12/92	16:10	16:20	83.0	1.2	28.74	1474.350	1484.780	10.430	0.0098
C539-VST-R1										
C540-VST-R1A	11/12/92	13:31	13:46	73.0	1.5	28.74	1412.750	1424.390	11.640	0.0111
C540-VST-R1B	11/12/92	14:04	14:14	76.5	1.5	28.74	1426.200	1437.370	11.170	0.0106
C540-VST-R1C	11/12/92	14:36	14:46	82.0	1.5	28.74	1438.800	1450.400	11.600	0.0109
C540-VST-R1										

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**C539-VST-R1A**
DATE	11/12/92
START TIME	15:24
END TIME	15:34
CORR. SAMPLE VOL.	0.010 dscm
SAMPLE I.D.	283/285

	GAS EMISSIONS	
	SAMPLE	CONC.
	TOTAL	ACTUAL
POLLUTANT	ug	ug/Nm3
Acetone	< 0.001	< 0.110
Acrylonitrile	< 0.001	< 0.110
Benzene	< 0.001	< 0.110
Bromomethane	0.048	5.280
2-butanone	0.042	4.620
Carbon Disulfide	< 0.001	< 0.110
Carbon Tetrachloride	< 0.001	< 0.110
Chloroform	< 0.001	< 0.110
Chloromethane	0.102	11.220
Ethylbenzene	< 0.001	< 0.110
2-Hexanone	< 0.001	< 0.110
Iodomethane	< 0.001	< 0.110
Methylene Chloride	0.092	10.120
M-/p-xylene	0.013	1.430
O-xylene	< 0.001	< 0.110
Styrene	< 0.001	< 0.110
Tetrachloroethene	< 0.001	< 0.110
Toluene	0.041	4.510
1,1,1-trichloroethane	0.295	32.450
Trichloroethene	0.278	30.580
Trichlorofluoromethane	0.214	23.540
Vinyl Acetate	< 0.001	< 0.110

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**C539-VST-R1B**
DATE	11/12/92
START TIME	15:50
END TIME	16:00
CORR. SAMPLE VOL.	0.012 dscm
SAMPLE I.D.	286/288

	GAS EMISSIONS	
POLLUTANT	SAMPLE TOTAL ug	CONC. ACTUAL ug/Nm3
Acetone	< 0.001	< 0.089
Acrylonitrile	< 0.001	< 0.089
Benzene	< 0.001	< 0.089
Bromomethane	0.081	7.199
2-butanone	0.066	5.866
Carbon Disulfide	< 0.001	< 0.089
Carbon Tetrachloride	< 0.001	< 0.089
Chloroform	0.045	4.000
Chloromethane	0.124	11.021
Ethylbenzene	< 0.001	< 0.089
2-Hexanone	< 0.001	< 0.089
Iodomethane	< 0.001	< 0.089
Methylene Chloride	0.019	1.689
M-/p-xylene	< 0.001	< 0.089
O-xylene	< 0.001	< 0.089
Styrene	< 0.001	< 0.089
Tetrachloroethene	< 0.001	< 0.089
Toluene	0.007	0.622
1,1,1-trichloroethane	0.354	31.464
Trichloroethene	0.338	30.042
Trichlorofluoromethane	0.248	22.043
Vinyl Acetate	< 0.001	< 0.089

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**C539-VST-R1C**
DATE	11/12/92
START TIME	16:10
END TIME	16:20
CORR. SAMPLE VOL.	0.010 dscm
SAMPLE I.D.	289/291

POLLUTANT	GAS EMISSIONS SAMPLE TOTAL ug	CONC. ACTUAL ug/Nm3
Acetone	0.026	2.857
Acrylonitrile	< 0.001	< 0.110
Benzene	< 0.001	< 0.110
Bromomethane	0.056	6.154
2-butanone	0.055	6.043
Carbon Disulfide	< 0.001	< 0.110
Carbon Tetrachloride	< 0.001	< 0.110
Chloroform	< 0.001	< 0.110
Chloromethane	0.101	11.098
Ethylbenzene	< 0.001	< 0.110
2-Hexanone	< 0.001	< 0.110
Iodomethane	< 0.001	< 0.110
Methylene Chloride	0.009	0.989
M-/p-xylene	< 0.001	< 0.110
O-xylene	< 0.001	< 0.110
Styrene	< 0.001	< 0.110
Tetrachloroethene	< 0.001	< 0.110
Toluene	0.004	0.440
1,1,1-trichloroethane	0.248	27.250
Trichloroethene	0.298	32.744
Trichlorofluoromethane	0.301	33.073
Vinyl Acetate	< 0.001	< 0.110

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**C540-VST-R1A**
DATE	11/12/92
START TIME	13:31
END TIME	13:46
CORR. SAMPLE VOL.	0.011 dscm
SAMPLE I.D.	274/276

	GAS EMISSIONS	
	SAMPLE TOTAL	CONC. ACTUAL
POLLUTANT	ug	ug/Nm3
Acetone	1.462	141.184
Acrylonitrile	< 0.001	< 0.097
Benzene	0.023	2.221
Bromomethane	< 0.001	< 0.097
2-butanone	0.006	0.579
Carbon Disulfide	< 0.001	< 0.097
Carbon Tetrachloride	< 0.001	< 0.097
Chloroform	0.003	0.290
Chloromethane	< 0.001	< 0.097
Ethylbenzene	< 0.001	< 0.097
2-Hexanone	< 0.001	< 0.097
Iodomethane	< 0.001	< 0.097
Methylene Chloride	0.856	82.663
M-/p-xylene	0.033	3.187
O-xylene	< 0.001	< 0.097
Styrene	< 0.001	< 0.097
Tetrachloroethene	< 0.001	< 0.097
Toluene	0.461	44.518
1,1,1-trichloroethane	0.057	5.504
Trichloroethene	0.005	0.483
Trichlorofluoromethane	0.009	0.869
Vinyl Acetate	< 0.001	< 0.097

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**C540-VST-R1B**
DATE	11/12/92
START TIME	14:04
END TIME	14:14
CORR. SAMPLE VOL.	0.011 dscm
SAMPLE I.D.	277/279

POLLUTANT	GAS EMISSIONS SAMPLE TOTAL ug	GAS EMISSIONS CONC. ACTUAL ug/Nm3
Acetone	0.265	26.843
Acrylonitrile	< 0.001	< 0.101
Benzene	0.010	1.013
Bromomethane	< 0.001	< 0.101
2-butanone	< 0.001	< 0.101
Carbon Disulfide	< 0.001	< 0.101
Carbon Tetrachloride	< 0.001	< 0.101
Chloroform	0.002	0.203
Chloromethane	< 0.001	< 0.101
Ethylbenzene	< 0.001	< 0.101
2-Hexanone	< 0.001	< 0.101
Iodomethane	< 0.001	< 0.101
Methylene Chloride	0.129	13.067
M-/p-xylene	< 0.001	< 0.101
O-xylene	< 0.001	< 0.101
Styrene	< 0.001	< 0.101
Tetrachloroethene	< 0.001	< 0.101
Toluene	0.306	30.996
1,1,1-trichloroethane	0.006	0.608
Trichloroethene	< 0.001	< 0.101
Trichlorofluoromethane	0.029	2.938
Vinyl Acetate	< 0.001	< 0.101

ANALYTICAL DATA AND RESULTS FOR ORGANIC SAMPLING

RUN I.D.	**C540-VST-R1C**
DATE	11/12/92
START TIME	14:36
END TIME	14:46
CORR. SAMPLE VOL.	0.011 dscm
SAMPLE I.D.	280/282

POLLUTANT	GAS EMISSIONS SAMPLE TOTAL ug	CONC. ACTUAL ug/Nm3
Acetone	0.174	17.146
Acrylonitrile	< 0.001	< 0.099
Benzene	< 0.001	< 0.099
Bromomethane	< 0.001	< 0.099
2-butanone	0.007	0.690
Carbon Disulfide	< 0.001	< 0.099
Carbon Tetrachloride	< 0.001	< 0.099
Chloroform	0.045	4.434
Chloromethane	< 0.001	< 0.099
Ethylbenzene	< 0.001	< 0.099
2-Hexanone	< 0.001	< 0.099
Iodomethane	< 0.001	< 0.099
Methylene Chloride	0.159	15.668
M-/p-xylene	< 0.001	< 0.099
O-xylene	< 0.001	< 0.099
Styrene	< 0.001	< 0.099
Tetrachloroethene	< 0.001	< 0.099
Toluene	0.321	31.631
1,1,1-trichloroethane	0.015	1.478
Trichloroethene	< 0.001	< 0.099
Trichlorofluoromethane	0.007	0.690
Vinyl Acetate	< 0.001	< 0.099

B.7 DATA AND RESULTS FOR SEMIVOLATILE ORGANICS TESTING

B.7.1 M0010 DATA AND RESULTS - SAWDUST DRYER INLET

RUN NUMBER	IN-M0010-R1		
DATE	11/06/92		
START TIME	11:37		
END TIME	15:19		
STACK DIAM.	54	inches	
NOZZLE I.D.	0.250	inches	
METER BOX GAMMA	1.0069		
METER BOX dH@	1.6944		
BAROMETRIC	29.76	in.Hg	
Cp	0.84		
TEST DURATION	180	minutes	

METHOD 4 DATA

	INIT. (ml)	FINAL (ml)	NET (ml)
IMP.1	0.0	101.0	101.0
IMP.2	100.0	101.0	1.0
IMP.3	100.0	91.0	-9.0
IMP.4	0.0	0.0	0.0
IMP.5			0.0
IMP.6			0.0
IMP.7			0.0
TOTAL	200.0	293.0	93.0
S.G.	200.0	240.1	40.1

SAMPLING RESULTS

Metered Volume	104.311	dcf
Metered Volume	2.954	dcm
Volume @ Std.Cond.	105.646	dscf
Volume @ Std.Cond.	2.992	dscm
% Water	5.60	%
% Isokinetics	101.5	%

METHOD 3 DATA

%O2	16.42	Md	29.37
%CO2	4.45	Ms	28.73
%CO	0.0	Ps	29.75
%N2	79.1	Fo	1.007
O2+CO2	10.0	%EA	367.31

VOLUMETRIC RESULTS - USENG

Velocity	54.94	ft/sec
Actual Flow	52427	acfm
Std. Flow	28600	scfm
Dry Std. Flow	26998	dscfm

VOLUMETRIC RESULTS - SI

Velocity	16.75	m/sec
Actual Flow	89075	am3/hr
Std. Flow	48593	sm3/hr
Dry Std. Flow	45870	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	485	-0.18	0.34	0.65	427.342	65	65
2	493	-0.16	0.37	0.70		60	59
3	487		0.52	1.00		63	59
4	463		0.51	1.00		67	60
5	455		0.45	0.90		67	61
6	468		0.54	1.06	481.852	67	60
7	494		0.68	1.29	531.653	67	60
8	528		0.77	1.41		70	61
9	532		0.78	1.43		71	62
10	542		0.70	1.27		70	62
11	546		0.65	1.17		70	63
12	547		0.60	1.08		70	63
13	487		0.52	1.00		59	59
14	489		0.50	0.96		60	59
15	484		0.50	0.96		64	59
16	481		0.46	0.89		65	59
17	467		0.47	0.92		66	59
18	474		0.40	0.78		66	59
19	508		0.45	0.85		66	60
20	471		0.39	0.76		66	60
21	522		0.41	0.76		65	59
22	533		0.54	0.99		66	60
23	547		0.48	0.86		66	60
24	552		0.60	1.08		68	61
25							
AVG.	502	-0.17	0.53	0.99	104.311	63	

LABORATORY DATA AND RESULTS FOR
SEMIVOLATILE COMPOUNDS

RUN NUMBER	**IN-M0010-R1**
SAMPLE VOLUME	105.646 dscf
TOTAL GAS FLOWRATE	26998 dscfm
OXYGEN	16.42 %

			GAS EMISSIONS				
		SAMPLE	CONCENTRATION				MASS
		TOTAL	ACTUAL		@ 7% O2		RATE
COMPONENT		ug	ug/Nm3		ug/Nm3		lb/hr
Bis(2-ethylhexy)phthalate		19.21*	6.8912		21.3813		6.49E-04
Dibenzofuran		17.17*	6.1594		19.1107		5.81E-04
Dimethylphthalate	<	0.001	< 0.0004	<	0.0011	<	3.38E-08
Di-n-butylphthalate	<	0.001	< 0.0004	<	0.0011	<	3.38E-08
2-methylphenol	<	0.001	< 0.0004	<	0.0011	<	3.38E-08
Naphthalene		505.96*	181.5039		563.1483		1.71E-02
Phenol	<	0.00	< 0.0004	<	0.0011	<	3.38E-08

Note: Sample values are entered as < 0.001 ug if the sample does not contain five times the amount of target compound found in the laboratory blank.

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

RUN NUMBER	IN-M0010-R2					
DATE	11/06/92	**METHOD 4 DATA**				
START TIME	17:42			INIT. (ml)	FINAL (ml)	NET (ml)
END TIME	21:02					
STACK DIAM.	54	inches	IMP.1	0.0	75.0	75.0
NOZZLE I.D.	0.250	inches	IMP.2	100.0	98.0	-2.0
METER BOX GAMMA	1.0069		IMP.3	100.0	100.0	0.0
METER BOX dH@	1.6944		IMP.4	0.0	1.0	1.0
BAROMETRIC	29.76	in.Hg	IMP.5	0.0	0.0	0.0
Cp	0.84		IMP.6	0.0	0.0	0.0
TEST DURATION	180	minutes	IMP.7			0.0
			TOTAL	200.0	274.0	74.0
			S.G.	200.0	232.5	32.5

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	105.158	dcf	%O2	16.04	Md	29.33
Metered Volume	2.978	dcm	%CO2	4.28	Ms	28.83
Volume @ Std.Cond.	108.272	dscf	%CO	0.0	Ps	29.75
Volume @ Std.Cond.	3.066	dscm	%N2	79.7	Fo	1.136
% Water	4.43	%	O2+CO2	20.3	%EA	321.09
% Isokinetics	100.4	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	55.78	ft/sec	Velocity	17.00	m/sec
Actual Flow	53228	acfm	Actual Flow	90436	am3/hr
Std. Flow	29264	scfm	Std. Flow	49719	sm3/hr
Dry Std. Flow	27968	dscfm	Dry Std. Flow	47519	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	474	-0.19	0.38	0.74	533.541	50	50
2	479	-0.17	0.40	0.77		54	51
3	438		0.40	0.81		58	51
4	490		0.42	0.80		59	52
5	486		0.44	0.84		60	52
6	479		0.45	0.87	584.653	61	53
7	494		0.48	0.91	638.699	61	53
8	488		0.53	1.01		61	53
9	521		0.61	1.13		62	54
10	528		0.68	1.25		62	54
11	520		0.72	1.35		61	53
12	510		0.81	1.52		61	53
13	485		0.36	0.69		48	48
14	485		0.38	0.73		52	49
15	478		0.45	0.87		54	49
16	471		0.54	1.05		55	49
17	460		0.61	1.20		57	49
18	466		0.57	1.12		58	50
19	490		0.60	1.15		59	50
20	495		0.68	1.29		60	51
21	522		0.72	1.33		60	51
22	536		0.82	1.49		61	51
23	549		0.61	1.10		61	52
24	532		0.54	0.99		61	52
25					638.699		
AVG.	495	-0.18	0.55	1.04	105.158	55	

LABORATORY DATA AND RESULTS FOR SEMIVOLATILE COMPOUNDS

RUN NUMBER	**IN-M0010-R2**
SAMPLE VOLUME	108.272 dscf
TOTAL GAS FLOWRATE	27968 dscfm
OXYGEN	16.04 %

		GAS EMISSIONS		
		CONCENTRATION		MASS
	SAMPLE TOTAL	ACTUAL	@ 7% O2	RATE
COMPONENT	ug	ug/Nm3	ug/Nm3	lb/hr
Bis(2-ethylhexy)phthalate	13.68*	4.7884	13.6953	4.68E-04
Dibenzofuran	5.07*	1.7747	5.0757	1.73E-04
Dimethylphthalate	< 0.001	< 0.0004	< 0.0010	<3.42E-08
Di-n-butylphthalate	8.90*	3.1153	8.9099	3.04E-04
2-methylphenol	< 0.001	< 0.0004	< 0.0010	<3.42E-08
Naphthalene	< 0.001	< 0.0004	< 0.0010	<3.42E-08
Phenol	92.93	32.5284	93.0338	3.18E-03

Note: Sample values are entered as < 0.001 ug if the sample does not contain five times the amount of target compound found in the laboratory blank.

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

RUN NUMBER	IN-M0010-R3						
DATE	11/07/92		**METHOD 4 DATA**				
START TIME	09:02			INIT. (ml)	FINAL (ml)	NET (ml)	
END TIME	13:12						
STACK DIAM.	54	inches	IMP.1	0.0	100.0	100.0	
NOZZLE I.D.	0.250	inches	IMP.2	100.0	103.0	3.0	
METER BOX GAMMA	1.0069		IMP.3	100.0	104.0	4.0	
METER BOX dH@	1.6944		IMP.4	0.0	2.0	2.0	
BAROMETRIC	29.92	in.Hg	IMP.5	0.0	0.0	0.0	
Cp	0.84		IMP.6	0.0	0.0	0.0	
TEST DURATION	180	minutes	IMP.7			0.0	
			TOTAL	200.0	309.0	109.0	
			S.G.	200.0	236.2	36.2	

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	108.266	dcf	%O2	16.34	Md	29.36
Metered Volume	3.066	dcm	%CO2	4.39	Ms	28.70
Volume @ Std.Cond.	111.242	dscf	%CO	0.0	Ps	29.91
Volume @ Std.Cond.	3.150	dscm	%N2	79.3	Fo	1.039
% Water	5.79	%	O2+CO2	20.7	%EA	356.20
% Isokinetics	100.8	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	57.83	ft/sec	Velocity	17.63	m/sec
Actual Flow	55184	acfm	Actual Flow	93759	am3/hr
Std. Flow	30383	scfm	Std. Flow	51620	sm3/hr
Dry Std. Flow	28623	dscfm	Dry Std. Flow	48632	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	488	-0.19	0.37	0.71	650.246	48	45
2	488	-0.21	0.35	0.67		48	45
3	487		0.34	0.65		53	46
4	487		0.40	0.77		55	48
5	473		0.54	1.05		57	49
6	471		0.58	1.13	702.324	61	52
7	488		0.64	1.23	758.512	63	53
8	478		0.55	1.06		64	54
9	522		0.68	1.26		65	56
10	537		0.72	1.31		66	57
11	537		0.75	1.36		66	57
12	548		0.55	0.99		67	58
13	484		0.50	0.96		59	58
14	483		0.51	0.98		60	58
15	485		0.54	1.04		64	58
16	484		0.58	1.11		66	59
17	480		0.59	1.14		66	59
18	466		0.63	1.23		66	59
19	486		0.71	1.36		67	59
20	474		0.74	1.44		69	60
21	513		0.78	1.45		69	61
22	527		0.80	1.47		70	61
23	538		0.62	1.13		58	58
24	541		0.65	1.18		60	57
25					702.324		
AVG.	499	-0.20	0.59	1.11	108.266	59	

LABORATORY DATA AND RESULTS FOR SEMIVOLATILE COMPOUNDS

RUN NUMBER	**IN-M0010-R3**
SAMPLE VOLUME	111.242 dscf
TOTAL GAS FLOWRATE	28623 dscfm
OXYGEN	16.34 %

		GAS EMISSIONS		
	SAMPLE	CONCENTRATION		MASS
	TOTAL	ACTUAL	@ 7% O2	RATE
COMPONENT	ug	ug/Nm3	ug/Nm3	lb/hr
Bis(2-ethylhexy)phthalate	9.18*	3.1275	9.5333	3.13E-04
Dibenzofuran	< 0.001	< 0.0003	< 0.0010	<3.40E-08
Dimethylphthalate	14.99*	5.1069	15.5669	5.10E-04
Di-n-butylphthalate	< 0.001	< 0.0003	< 0.0010	<3.40E-08
2-methylphenol	< 0.001	< 0.0003	< 0.0010	<3.40E-08
Naphthalene	< 0.001	< 0.0003	< 0.0010	<3.40E-08
Phenol	12.82*	4.3676	13.3134	4.36E-04

Note: Sample values are entered as < 0.001 ug if the sample does not contain five times the amount of target compound found in the laboratory blank.

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

B.7.2 M0010 DATA AND RESULTS - SAWDUST DRYER OUTLET A

RUN NUMBER	OA-M0010-R1						
DATE	11/06/92		**METHOD 4 DATA**				
START TIME	11:37			INIT. (ml)	FINAL (ml)	NET (ml)	
END TIME	15:19						
STACK DIAM.	41	inches	IMP.1	0.0	252.0	252.0	
NOZZLE I.D.	0.250	inches	IMP.2	100.0	100.0	0.0	
METER BOX GAMMA	0.9925		IMP.3	100.0	97.0	-3.0	
METER BOX dH@	1.7326		IMP.4	0.0	0.0	0.0	
BAROMETRIC	29.76	in.Hg	IMP.5			0.0	
Cp	0.84		IMP.6			0.0	
TEST DURATION	180	minutes	IMP.7			0.0	
			TOTAL	200.0	449.0	249.0	
			S.G.	200.0	225.5	25.4	

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	120.273	dcf	%O2	16.97	Md	29.23
Metered Volume	3.406	dcm	%CO2	3.46	Ms	28.15
Volume @ Std.Cond.	120.642	dscf	%CO	0.0	Ps	28.99
Volume @ Std.Cond.	3.416	dscm	%N2	79.6	Fo	1.136
% Water	9.67	%	O2+CO2	10.0	%EA	420.42
% Isokinetics	102.0	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	44.93	ft/sec	Velocity	13.70	m/sec
Actual Flow	24718	acfm	Actual Flow	41997	am3/hr
Std. Flow	19584	scfm	Std. Flow	33273	sm3/hr
Dry Std. Flow	17689	dscfm	Dry Std. Flow	30055	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	185	-10.50	0.55	1.55	120.668	68	63
2	180	-10.50	0.53	1.50		58	54
3	181		0.52	1.48		63	56
4	179		0.56	1.60		63	56
5	178		0.54	1.51		65	57
6	178		0.50	1.40		66	58
7	181		0.45	1.28		65	58
8	191		0.43	1.20		65	58
9	193		0.47	1.35		67	59
10	195		0.50	1.40		67	60
11	198		0.52	1.48		70	62
12	196		0.52	1.48	181.276	68	60
13	185		0.44	1.25	181.675	56	55
14	181		0.44	1.25		63	56
15	179		0.46	1.30		65	57
16	180		0.46	1.30		64	56
17	183		0.46	1.30		64	56
18	178		0.43	1.20		65	57
19	180		0.42	1.18		66	58
20	190		0.51	1.40		65	57
21	190		0.52	1.40		66	58
22	192		0.54	1.55		65	58
23	191		0.56	1.60		65	58
24	192		0.57	1.62		66	57
25					241.340		
AVG.	186	-10.50	0.50	1.40	120.273	61	

LABORATORY DATA AND RESULTS FOR
SEMIVOLATILE COMPOUNDS

RUN NUMBER OA-M0010-R1
SAMPLE VOLUME 120.642 dscf
TOTAL GAS FLOWRATE 17689 dscfm
OXYGEN 16.97 %

COMPONENT		SAMPLE TOTAL ug		GAS EMISSIONS CONCENTRATION ACTUAL ug/Nm3		CONCENTRATION @ 7% O2 ug/Nm3		MASS RATE lb/hr
Bis(2-ethylhexy)phthalate		17.72*		5.5665		19.6883		3.44E-04
Dibenzofuran	<	0.001	<	0.0003	<	0.0011	<	1.94E-08
Dimethylphthalate	<	0.001	<	0.0003	<	0.0011	<	1.94E-08
Di-n-butylphthalate		18.70*		5.8744		20.7771		3.63E-04
2-methylphenol	<	0.001	<	0.0003	<	0.0011	<	1.94E-08
Naphthalene	<	0.001	<	0.0003	<	0.0011	<	1.94E-08
Phenol	<	0.001	<	0.0003	<	0.0011	<	1.94E-08

Note: Sample values are entered as < 0.001 ug if the sample does not contain five times the amount of target compound found in the laboratory blank.

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

RUN NUMBER OA-M0010-R2

DATE	11/06/92	**METHOD 4 DATA**				
START TIME	17:32		INIT. (ml)	FINAL (ml)	NET (ml)	
END TIME	21:02					
STACK DIAM.	41	inches	IMP.1	0.0	252.0	252.0
NOZZLE I.D.	0.250	inches	IMP.2	100.0	98.0	-2.0
METER BOX GAMMA	0.9915		IMP.3	100.0	97.0	-3.0
METER BOX dH@	1.7326		IMP.4	0.0	1.0	1.0
BAROMETRIC	29.76	in.Hg	IMP.5	0.0	0.0	0.0
Cp	0.84		IMP.6	0.0	0.0	0.0
TEST DURATION	180	minutes	IMP.7			0.0
			TOTAL	200.0	448.0	248.0
			S.G.	200.0	255.4	55.4

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	120.553	dcf	%O2	17.24	Md	29.23
Metered Volume	3.414	dcm	%CO2	3.35	Ms	28.05
Volume @ Std.Cond.	121.676	dscf	%CO	0.0	Ps	28.99
Volume @ Std.Cond.	3.445	dscm	%N2	79.4	Fo	1.093
% Water	10.51	%	O2+CO2	20.6	%EA	462.91
% Isokinetics	103.6	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	45.00	ft/sec	Velocity	13.72	m/sec
Actual Flow	24755	acfm	Actual Flow	42059	am3/hr
Std. Flow	19619	scfm	Std. Flow	33333	sm3/hr
Dry Std. Flow	17558	dscfm	Dry Std. Flow	29831	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	179	-10.50	0.49	1.40	248.020	50	49
2	177	-10.50	0.47	1.35		56	50
3	178		0.46	1.30		60	52
4	182		0.48	1.38		60	52
5	183		0.46	1.30		62	53
6	183		0.43	1.25		63	54
7	184		0.50	1.40		63	55
8	191		0.50	1.40		63	55
9	192		0.52	1.48		64	55
10	186		0.55	1.55		64	55
11	189		0.56	1.60		64	55
12	186		0.54	1.55	307.080	64	55
13	180		0.52	1.48	308.687	55	53
14	191		0.52	1.48		60	53
15	186		0.54	1.55		63	54
16	188		0.58	1.61		63	54
17	190		0.52	1.48		63	54
18	185		0.49	1.40		63	55
19	187		0.44	1.25		65	56
20	190		0.43	1.25		64	55
21	191		0.45	1.30		63	55
22	183		0.47	1.35		60	53
23	184		0.48	1.38		60	53
24	186		0.49	1.40		60	53
25					370.180		
AVG.	185	-10.50	0.50	1.41	120.553	58	

LABORATORY DATA AND RESULTS FOR
SEMIVOLATILE COMPOUNDS

RUN NUMBER	**OA-M0010-R2**
SAMPLE VOLUME	121.676 dscf
TOTAL GAS FLOWRATE	17558 dscfm
OXYGEN	17.24 %

COMPONENT		SAMPLE TOTAL ug		GAS EMISSIONS CONCENTRATION ACTUAL ug/Nm3		GAS EMISSIONS CONCENTRATION @ 7% O2 ug/Nm3		GAS EMISSIONS MASS RATE lb/hr
Bis(2-ethylhexy)phthalate	<	0.001	<	0.0003	<	0.0012	<	1.91E-08
Dibenzofuran	<	0.001	<	0.0003	<	0.0012	<	1.91E-08
Dimethylphthalate	<	0.001	<	0.0003	<	0.0012	<	1.91E-08
Di-n-butylphthalate	<	0.001	<	0.0003	<	0.0012	<	1.91E-08
2-methylphenol	<	0.001	<	0.0003	<	0.0012	<	1.91E-08
Naphthalene	<	0.001	<	0.0003	<	0.0012	<	1.91E-08
Phenol		69.55*		21.663		82.271		1.33E-03

Note: Sample values are entered as < 0.001 ug if the sample does not contain five times the amount of target compound found in the laboratory blank.

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

RUN NUMBER	OA-M0010-R3					

		METHOD 4 DATA	INIT. (ml)	FINAL (ml)	NET (ml)
DATE	11/07/92				
START TIME	09:02				
END TIME	13:12				
STACK DIAM.	41 inches	IMP.1	0.0	221.0	221.0
NOZZLE I.D.	0.250 inches	IMP.2	100.0	159.0	59.0
METER BOX GAMMA	0.9915	IMP.3	100.0	34.0	-66.0
METER BOX dH@	1.7326	IMP.4	0.0	1.0	1.0
BAROMETRIC	29.92 in.Hg	IMP.5	0.0	0.0	0.0
Cp	0.84	IMP.6	0.0	0.0	0.0
TEST DURATION	180 minutes	IMP.7			0.0
		TOTAL	200.0	415.0	215.0
		S.G.	200.0	260.7	60.7

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	121.899	dcf	%O2	17.17	Md	29.23
Metered Volume	3.452	dcm	%CO2	3.38	Ms	28.16
Volume @ Std.Cond.	123.588	dscf	%CO	0.0	Ps	29.15
Volume @ Std.Cond.	3.500	dscm	%N2	79.5	Fo	1.104
% Water	9.51	%	O2+CO2	20.6	%EA	451.27
% Isokinetics	103.1	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	45.21	ft/sec	Velocity	13.78	m/sec
Actual Flow	24869	acfm	Actual Flow	42252	am3/hr
Std. Flow	19800	scfm	Std. Flow	33641	sm3/hr
Dry Std. Flow	17918	dscfm	Dry Std. Flow	30443	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	175	-10.50	0.48	1.35	386.995	54	51
2	177	-10.50	0.47	1.30		54	51
3	180		0.45	1.30		63	54
4	186		0.55	1.55		61	53
5	187		0.51	1.50		62	54
6	185		0.51	1.50		63	54
7	188		0.50	1.40		61	53
8	187		0.45	1.30		62	54
9	185		0.46	1.30		63	53
10	187		0.48	1.35		64	56
11	191		0.52	1.52		71	56
12	191		0.52	1.52	446.885	63	55
13	180		0.45	1.30	448.478	53	51
14	182		0.46	1.30		59	53
15	183		0.45	1.30		63	55
16	187		0.48	1.35		63	56
17	190		0.49	1.40		63	56
18	190		0.46	1.30		63	56
19	188		0.53	1.50		64	56
20	187		0.57	1.65		61	55
21	189		0.60	1.70		63	57
22	190		0.60	1.70		63	57
23	189		0.55	1.55		61	55
24	191		0.57	1.65		61	54
25					510.487		
AVG.	186	-10.50	0.50	1.44	121.899		58

LABORATORY DATA AND RESULTS FOR
SEMIVOLATILE COMPOUNDS

RUN NUMBER	**OA-M0010-R3**
SAMPLE VOLUME	123.588 dscf
TOTAL GAS FLOWRATE	17918 dscfm
OXYGEN	17.17 %

COMPONENT		SAMPLE TOTAL ug		GAS EMISSIONS CONCENTRATION ACTUAL ug/Nm3		@ 7% O2 ug/Nm3		MASS RATE lb/hr
Bis(2-ethylhexy)phthalate		16.72*		5.1272		19.1068		3.21E-04
Dibenzofuran	<	0.001	<	0.0003	<	0.0011	<	1.92E-08
Dimethylphthalate	<	0.001	<	0.0003	<	0.0011	<	1.92E-08
Di-n-butylphthalate		6.67*		2.0454		7.6221		1.28E-04
2-methylphenol	<	0.001	<	0.0003	<	0.0011	<	1.92E-08
Naphthalene	<	0.001	<	0.0003	<	0.0011	<	1.92E-08
Phenol		83.07*		25.474		94.93		1.59E-03

Note: Sample values are entered as < 0.001 ug if the sample does not contain five times the amount of target compound found in the laboratory blank.

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

B.7.3 M0010 DATA AND RESULTS - SAWDUST DRYER OUTLET B

RUN NUMBER	OB-M0010-R1		
DATE	11/06/92		
START TIME	11:37		
END TIME	15:19		
STACK DIAM.	41	inches	
NOZZLE I.D.	0.250	inches	
METER BOX GAMMA	1.0082		
METER BOX dH@	1.7651		
BAROMETRIC	29.76	in.Hg	
Cp	0.84		
TEST DURATION	180	minutes	

METHOD 4 DATA

	INIT. (ml)	FINAL (ml)	NET (ml)
IMP.1	0.0	129.0	129.0
IMP.2	100.0	98.0	-2.0
IMP.3	100.0	95.0	-5.0
IMP.4	0.0	1.0	1.0
IMP.5	0.0	0.0	0.0
IMP.6	0.0	0.0	0.0
IMP.7			0.0
TOTAL	200.0	323.0	123.0
S.G.	200.0	240.9	40.9

METHOD 1-4 RESULTS

Metered Volume	110.613	dcf
Metered Volume	3.132	dcm
Volume @ Std.Cond.	111.720	dscf
Volume @ Std.Cond.	3.164	dscm
% Water	6.46	%
% Isokinetics	98.9	%

METHOD 3 DATA

%O2	17.19	Md	29.22
%CO2	3.30	Ms	28.49
%CO	0.0	Ps	29.05
%N2	79.5	Fo	1.124
O2+CO2	10.0	%EA	452.29

VOLUMETRIC RESULTS - USENG

Velocity	41.11	ft/sec
Actual Flow	22612	acfm
Std. Flow	18062	scfm
Dry Std. Flow	16895	dscfm

VOLUMETRIC RESULTS - SI

Velocity	12.53	m/sec
Actual Flow	38419	am3/hr
Std. Flow	30688	sm3/hr
Dry Std. Flow	28705	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	177	-9.60	0.37	1.04	360.718	59	58
2	177	-9.60	0.34	0.96		59	57
3	179		0.34	0.96		62	58
4	180		0.35	0.98		64	59
5	181		0.35	0.98		67	60
6	183		0.37	1.03		68	61
7	184		0.39	1.09		69	61
8	184		0.46	1.28		71	62
9	183		0.54	1.54		73	62
10	184		0.62	1.73		72	64
11	184		0.62	1.73		72	64
12	183		0.67	1.87	417.551	71	65
13	178		0.30	0.84	419.407	63	61
14	178		0.30	0.84		64	63
15	179		0.31	0.87		68	63
16	181		0.30	0.84		70	63
17	182		0.32	0.89		71	63
18	184		0.34	0.95		71	64
19	185		0.39	1.08		72	64
20	184		0.46	1.28		73	65
21	185		0.51	1.42		73	65
22	185		0.57	1.59		73	65
23	183		0.55	1.54		72	65
24	182		0.55	1.54		73	66
25					473.187		
AVG.	182	-9.60	0.43	1.20	110.613	66	

LABORATORY DATA AND RESULTS FOR SEMIVOLATILE COMPOUNDS

RUN NUMBER	**OB-M0010-R1**
SAMPLE VOLUME	111.720 dscf
TOTAL GAS FLOWRATE	16895 dscfm
OXYGEN	17.19 %

COMPONENT		SAMPLE TOTAL ug		GAS EMISSIONS CONCENTRATION ACTUAL ug/Nm3		GAS EMISSIONS CONCENTRATION @ 7% O2 ug/Nm3		MASS RATE lb/hr
Bis(2-ethylhexy)phthalate		44.67*		15.153		56.774		8.94E-04
Dibenzofuran	<	0.001	<	0.0003	<	0.0013	<	2.00E-08
Dimethylphthalate	<	0.001	<	0.0003	<	0.0013	<	2.00E-08
Di-n-butylphthalate		1.91*		0.6479		2.4275		3.82E-05
2-methylphenol	<	0.001	<	0.0003	<	0.0013	<	2.00E-08
Naphthalene	<	0.001	<	0.0003	<	0.0013	<	2.00E-08
Phenol		29.28*		9.9330		37.214		5.86E-04

Note: Sample values are entered as < 0.001 ug if the sample does not contain five times the amount of target compound found in the laboratory blank.

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

RUN NUMBER	OB-M0010-R2					
DATE	11/06/92		**METHOD 4 DATA**			
START TIME	17:32			INIT. (ml)	FINAL (ml)	NET (ml)
END TIME	21:02					
STACK DIAM.	41	inches	IMP.1	0.0	183.0	183.0
NOZZLE I.D.	0.250	inches	IMP.2	100.0	99.0	-1.0
METER BOX GAMMA	1.0082		IMP.3	100.0	94.0	-6.0
METER BOX dH@	1.7651		IMP.4	0.0	2.0	2.0
BAROMETRIC	29.76	in.Hg	IMP.5	0.0	0.0	0.0
Cp	0.84		IMP.6	0.0	0.0	0.0
TEST DURATION	180	minutes	IMP.7			0.0
			TOTAL	200.0	378.0	178.0
			S.G.	200.0	247.9	47.9

METHOD 1-4 RESULTS			**METHOD 3 DATA**			
Metered Volume	113.298	dcf	%O2	17.45	Md	29.21
Metered Volume	3.208	dcm	%CO2	3.19	Ms	28.26
Volume @ Std.Cond.	115.140	dscf	%CO	0.0	Ps	29.05
Volume @ Std.Cond.	3.260	dscm	%N2	79.4	Fo	1.082
% Water	8.46	%	O2+CO2	20.6	%EA	498.42
% Isokinetics	101.5	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	42.17	ft/sec	Velocity	12.85	m/sec
Actual Flow	23200	acfm	Actual Flow	39418	am3/hr
Std. Flow	18520	scfm	Std. Flow	31466	sm3/hr
Dry Std. Flow	16954	dscfm	Dry Std. Flow	28805	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	178	-9.60	0.35	0.98	483.949	56	54
2	178	-9.60	0.33	0.93		58	55
3	180		0.36	1.01		62	56
4	181		0.36	1.01		65	57
5	181		0.34	0.95		66	58
6	183		0.36	1.00		66	58
7	185		0.47	1.31		68	60
8	184		0.53	1.48		69	60
9	184		0.54	1.51		68	60
10	183		0.55	1.54		68	61
11	182		0.58	1.62		71	62
12	182		0.57	1.59	540.964	71	62
13	177		0.32	0.90	541.999	59	58
14	178		0.29	0.81		60	59
15	181		0.31	0.87		62	59
16	183		0.37	1.03		64	58
17	184		0.30	0.83		66	59
18	184		0.35	0.97		66	59
19	185		0.44	1.22		67	59
20	185		0.53	1.48		68	60
21	184		0.60	1.68		69	61
22	184		0.64	1.79		70	61
23	185		0.65	1.81		70	61
24	184		0.64	1.79		69	61
25					598.282		
AVG.	182	-9.60	0.45	1.25	113.298		62

LABORATORY DATA AND RESULTS FOR SEMIVOLATILE COMPOUNDS

RUN NUMBER	OB-M0010-R2
SAMPLE VOLUME	115.140 dscf
TOTAL GAS FLOWRATE	16954 dscfm
OXYGEN	17.45 %

COMPONENT		SAMPLE TOTAL ug		GAS EMISSIONS CONCENTRATION ACTUAL ug/Nm3		@ 7% O2 ug/Nm3		MASS RATE lb/hr
Bis(2-ethylhexy)phthalate		230.59*		75.8988		305.7951		4.49E-03
Dibenzofuran	<	0.001	<	0.0003	<	0.0013	<	1.95E-08
Dimethylphthalate	<	0.001	<	0.0003	<	0.0013	<	1.95E-08
Di-n-butylphthalate		4.43*		1.4581		5.8748		8.63E-05
2-methylphenol	<	0.001	<	0.0003	<	0.0013	<	1.95E-08
Naphthalene	<	0.001	<	0.0003	<	0.0013	<	1.95E-08
Phenol		47.41*		15.6050		62.8724		9.24E-04

Note: Sample values are entered as < 0.001 ug if the sample does not contain five times the amount of target compound found in the laboratory blank.

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

RUN NUMBER	OB-M0010-R3					
DATE	11/07/92		**METHOD 4 DATA**			
START TIME	09:02			INIT.	FINAL	NET
END TIME	13:12			(ml)	(ml)	(ml)
STACK DIAM.	41	inches	IMP.1	0.0	146.0	146.0
NOZZLE I.D.	0.250	inches	IMP.2	100.0	100.0	0.0
METER BOX GAMMA	1.0082		IMP.3	100.0	106.0	6.0
METER BOX dH@	1.7651		IMP.4	0.0	3.0	3.0
BAROMETRIC	29.92	in.Hg	IMP.5	0.0	0.0	0.0
Cp	0.84		IMP.6	0.0	0.0	0.0
TEST DURATION	180	minutes	IMP.7			0.0
			TOTAL	200.0	355.0	155.0
			S.G.	200.0	249.1	49.1

METHOD 1-4 RESULTS			**METHOD 3 DATA**			
Metered Volume	107.111	dcf	%O2	17.31	Md	29.21
Metered Volume	3.033	dcm	%CO2	3.21	Ms	28.30
Volume @ Std.Cond.	109.810	dscf	%CO	0.0	Ps	29.20
Volume @ Std.Cond.	3.109	dscm	%N2	79.5	Fo	1.118
% Water	8.05	%	O2+CO2	20.5	%EA	471.31
% Isokinetics	103.8	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	38.98	ft/sec	Velocity	11.88	m/sec
Actual Flow	21443	acfm	Actual Flow	36432	am3/hr
Std. Flow	17205	scfm	Std. Flow	29232	sm3/hr
Dry Std. Flow	15821	dscfm	Dry Std. Flow	26880	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	176	-9.70	0.27	0.76	602.471	51	49
2	177	-9.80	0.28	0.79		53	51
3	180		0.30	0.84		58	52
4	181		0.30	0.84		61	54
5	183		0.30	0.84		63	54
6	184		0.31	0.86		64	56
7	186		0.40	1.11		66	57
8	185		0.47	1.31		67	58
9	186		0.47	1.31		67	58
10	185		0.48	1.34		66	60
11	184		0.51	1.42		66	59
12	184		0.53	1.48	654.481	65	60
13	178		0.37	1.04	656.397	60	58
14	180		0.27	0.75		63	59
15	179		0.28	0.78		66	60
16	180		0.27	0.75		69	61
17	182		0.35	0.98		69	61
18	183		0.33	0.92		69	61
19	184		0.37	1.03		69	62
20	185		0.43	1.20		70	62
21	185		0.45	1.25		69	62
22	183		0.47	1.31		69	62
23	183		0.50	1.40		53	49
24	182		0.52	1.62		52	50
25					711.498		
AVG.	182	-9.75	0.38	1.08	107.111		60

LABORATORY DATA AND RESULTS FOR SEMIVOLATILE COMPOUNDS

RUN NUMBER OB-M0010-R3
SAMPLE VOLUME 109.810 dscf
TOTAL GAS FLOWRATE 15821 dscfm
OXYGEN 17.31 %

COMPONENT		SAMPLE TOTAL ug		GAS EMISSIONS CONCENTRATION ACTUAL ug/Nm3		@ 7% O2 ug/Nm3		MASS RATE lb/hr
Bis(2-ethylhexy)phthalate		47.62*		16.435		63.634		9.08E-04
Dibenzofuran	<	0.001	<	0.0003	<	0.0013	<	1.91E-08
Dimethylphthalate	<	0.001	<	0.0003	<	0.0013	<	1.91E-08
Di-n-butylphthalate		9.17*		3.1648		12.2538		1.75E-04
2-methylphenol	<	0.001	<	0.0003	<	0.0013	<	1.91E-08
Naphthalene	<	0.001	<	0.0003	<	0.0013	<	1.91E-08
Phenol		40.26*		13.895		53.799		7.67E-04

Note: Sample values are entered as < 0.001 ug if the sample does not contain five times the amount of target compound found in the laboratory blank.

(*) Laboratory data is estimated representing that the compound is detected but the amount is either below the quantitation limit or above the calibration range.

B.8 DATA AND RESULTS FOR TOTAL HYDROCARBONS TESTING

B.8.1 M25A DATA AND RESULTS - SAWDUST DRYER INLET

SUMMARY OF TOTAL HYDROCARBONS EMISSIONS
- SAWDUST DRYER INLET -

RUN I.D.	IN-M25A-R1	IN-M25A-R2	IN-M25A-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:42	09:02	
TIME ENDED	15:19	21:02	13:12	
SAMPLING PARAMETERS				
Metered Volume - dcf	104.311	105.158	108.266	105.912
Corrected Volume - dscf	105.646	108.272	111.242	108.387
Total Test Time - min	180	180	180	180
% Isokinetics	101.5	100.4	100.8	100.9
GAS PARAMETERS				
Gas Temperature - oF	502.3	494.8	498.5	498.6
Oxygen - %	16.42	16.0	16.3	16.3
Carbon Dioxide - %	4.5	4.3	4.4	4.4
Moisture - %	5.60	4.43	5.79	5.27
GAS FLOWRATE				
Velocity - ft/sec	54.94	55.78	57.83	56.18
Actual Volume - acfm	52427	53228	55184	53613
Standard Volume - dscfm	26998	27968	28623	27863
THC EMISSIONS				
Conc. - ppmwv (as Propane)	4.49	4.85	4.78	4.71
Conc. - ppmdv (as Propane)	4.76	5.07	5.07	4.97
Conc. - ppmdv (as Carbon)	14.27	15.22	15.22	14.90
Mass Rate - lb/hr (as Carbon)	0.72	0.80	0.81	0.78

B.8.2 M25A DATA AND RESULTS - SAWDUST DRYER OUTLET A

SUMMARY OF TOTAL HYDROCARBONS EMISSIONS
- SAWDUST DRYER OUTLET A -

RUN I.D.	**OA-M25A-R1**	**OA-M25A-R2**	**OA-M25A-R3**	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:32	09:02	
TIME ENDED	15:19	21:02	13:12	
SAMPLING PARAMETERS				
Metered Volume - dcf	120.273	120.553	121.899	120.908
Corrected Volume - dscf	120.642	121.676	123.588	121.969
Total Test Time - min	180	180	180	180
% Isokinetics	102.0	103.6	103.1	102.9
GAS PARAMETERS				
Gas Temperature - oF	185.7	185.5	186.0	185.7
Oxygen - %	16.97	17.2	17.2	17.1
Carbon Dioxide - %	3.5	3.4	3.4	3.4
Moisture - %	9.67	10.51	9.51	9.90
GAS FLOWRATE				
Velocity - ft/sec	44.93	45.00	45.21	45.05
Actual Volume - acfm	24718	24755	24869	24781
Standard Volume - dscfm	17689	17558	17918	17722
THC EMISSIONS				
Conc. - ppmwv (as Propane)	2.67	17.86	20.34	13.62
Conc. - ppmdv (as Propane)	2.96	19.96	22.48	15.13
Conc. - ppmdv (as Carbon)	8.87	59.87	67.43	45.39
Mass Rate - lb/hr (as Carbon)	0.29	1.97	2.26	1.51

B.8.3 M25A DATA AND RESULTS - SAWDUST DRYER OUTLET B

SUMMARY OF TOTAL HYDROCARBONS EMISSIONS
- SAWDUST DRYER OUTLET B -

RUN I.D.	OB-M25A-R1	OB-M25A-R2	OB-M25A-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:32	09:02	
TIME ENDED	15:19	21:02	13:12	
SAMPLING PARAMETERS				
Metered Volume - dcf	110.613	113.298	107.111	110.341
Corrected Volume - dscf	111.720	115.140	109.810	112.223
Total Test Time - min	180	180	180	180
% Isokinetics	98.9	101.5	103.8	101.4
GAS PARAMETERS				
Gas Temperature - oF	181.9	182.3	182.3	182.2
Oxygen - %	17.19	17.5	17.3	17.3
Carbon Dioxide - %	3.3	3.2	3.2	3.2
Moisture - %	6.46	8.46	8.05	7.65
GAS FLOWRATE				
Velocity - ft/sec	41.11	42.17	38.98	40.75
Actual Volume - acfm	22612	23200	21443	22419
Standard Volume - dscfm	16895	16954	15821	16557
THC EMISSIONS				
Conc. - ppmwv (as Propane)	9.70	7.57	12.87	10.05
Conc. - ppmdv (as Propane)	10.37	8.27	14.00	10.88
Conc. - ppmdv (as Carbon)	31.11	24.81	41.99	32.64
Mass Rate - lb/hr (as Carbon)	0.98	0.79	1.24	1.00

B.9 DATA AND RESULTS FOR METHANE AND ETHANE TESTING

B.9.1 M18 DATA AND RESULTS - SAWDUST DRYER INLET

SUMMARY OF ETHANE AND METHANE EMMISSIONS
- SAWDUST DRYER INLET -

RUN I.D.	IN-M18-R1	IN-M18-R2	IN-M18-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:42	09:02	
TIME ENDED	15:19	21:02	13:12	
GAS PARAMETERS*				
Gas Temperature - oF	502.3	494.8	498.5	498.6
Oxygen - %	16.42	16.0	16.3	16.3
Carbon Dioxide - %	4.5	4.3	4.4	4.4
Moisture - %	5.60	4.43	5.79	5.27
GAS FLOWRATE				
Velocity - ft/sec	54.94	55.78	57.83	56.18
Actual Volume - acfm	52427	53228	55184	53613
Standard Volume - dscfm	26998	27968	28623	27863
ETHANE EMISSIONS				
Conc. - ug/ml	< 0.050	< 0.050	< 0.050	< 0.050
Conc. - ppm	< 40.012	< 40.012	< 40.012	<40.012
Conc. - mg/m3	< 50.000	< 50.000	< 50.000	<50.000
Mass Rate - lb/hr	< 5.056	< 5.238	< 5.361	< 5.218
METHANE EMISSIONS				
Conc. - ug/ml	< 0.101	< 0.101	< 0.101	< 0.101
Conc. - ppm	<151.469	<151.469	<151.469	<151.469
Conc. - mg/m3	<101.000	<101.000	<101.000	<101.000
Mass Rate - lb/hr	< 10.214	< 10.581	< 10.829	< 10.541

(*) Gas flowrate data was taken from IN-M0010-R1,R2, and R3, respectively.

B.9.2 M18 DATA AND RESULTS - SAWDUST DRYER OUTLET A

SUMMARY OF ETHANE AND METHANE EMMISSIONS
- SAWDUST DRYER OUTLET A -

RUN I.D.	OA-M18-R1	OA-M18-R2	OA-M18-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:32	09:02	
TIME ENDED	15:19	21:02	13:12	
GAS PARAMETERS*				
Gas Temperature - oF	185.7	185.5	186.0	185.7
Oxygen - %	16.97	17.2	17.2	17.1
Carbon Dioxide - %	3.5	3.4	3.4	3.4
Moisture - %	9.67	10.51	9.51	9.90
GAS FLOWRATE				
Velocity - ft/sec	44.93	45.00	45.21	45.05
Actual Volume - acfm	24718	24755	24869	24781
Standard Volume - dscfm	17689	17558	17918	17722
ETHANE EMISSIONS				
Conc. - ug/ml	< 0.050	< 0.050	< 0.050	< 0.050
Conc. - ppm	< 40.012	< 40.012	< 40.012	<40.012
Conc. - mg/m3	< 50.000	< 50.000	< 50.000	<50.000
Mass Rate - lb/hr	< 3.313	< 3.288	< 3.356	< 3.319
METHANE EMISSIONS				
Conc. - ug/ml	< 0.101	6.150	< 0.101	< 2.117
Conc. - ppm	<151.469	9223.083	<151.469	<3175.340
Conc. - mg/m3	<101.000	6150.000	<101.000	<2117.333
Mass Rate - lb/hr	< 6.692	404.468	< 6.779	< 139.313

(*) Gas flowrate data was taken from OA-M0010-R1,R2, and R3, respectively.

B.9.3 M18 DATA AND RESULTS - SAWDUST DRYER OUTLET B

SUMMARY OF ETHANE AND METHANE EMMISSIONS
- SAWDUST DRYER OUTLET B -

RUN I.D.	OB-M18-R1	OB-M18-R2	OB-M18-R3	AVERAGE
DATE	11/06/92	11/06/92	11/07/92	
TIME STARTED	11:37	17:32	09:02	
TIME ENDED	15:19	21:02	13:12	
GAS PARAMETERS*				
Gas Temperature - oF	181.9	182.3	182.3	182.2
Oxygen - %	17.19	17.5	17.3	17.3
Carbon Dioxide - %	3.3	3.2	3.2	3.2
Moisture - %	6.46	8.46	8.05	7.65
GAS FLOWRATE				
Velocity - ft/sec	41.11	42.17	38.98	40.75
Actual Volume - acfm	22612	23200	21443	22419
Standard Volume - dscfm	16895	16954	15821	16557
ETHANE EMISSIONS				
Conc. - ug/ml	< 0.050	< 0.050	< 0.050	< 0.050
Conc. - ppm	< 40.012	< 40.012	< 40.012	<40.012
Conc. - mg/m3	< 50.000	< 50.000	< 50.000	<50.000
Mass Rate - lb/hr	< 3.164	< 3.175	< 2.963	< 3.101
METHANE EMISSIONS				
Conc. - ug/ml	< 0.101	< 0.101	< 0.101	< 0.101
Conc. - ppm	<151.469	<151.469	<151.469	<151.469
Conc. - mg/m3	<101.000	<101.000	<101.000	<101.000
Mass Rate - lb/hr	< 6.392	< 6.414	< 5.985	< 6.264

(*) Gas flowrate data was taken from OB-M0010-R1,R2, and R3, respectively.

B.10 DATA AND RESULTS FOR PARTICLE SIZING

B.10.1 ANDERSEN IMPACTOR DATA AND RESULTS
SAWDUST DRYER INLET

RUN NUMBER	IN-IMP-R1					
DATE	11/02/92	**METHOD 4 DATA**				
START TIME	13:11		INIT.	FINAL	NET	
END TIME	15:28		(ml)	(ml)	(ml)	
STACK DIAM.	54 inches	IMP.1	100.0	110.0	10.0	
NOZZLE I.D.	0.125 inches	IMP.2	100.0	100.0	0.0	
METER BOX GAMMA	1.0069	IMP.3	0.0	0.0	0.0	
METER BOX dH@	1.6944	IMP.4	0.0	0.0	0.0	
BAROMETRIC	29.48 in.Hg	IMP.5	0.0	0.0	0.0	
Cp	0.84	IMP.6	0.0	0.0	0.0	
TEST DURATION	120 minutes	IMP.7			0.0	
		TOTAL	200.0	210.0	10.0	
		S.G.	200.0	201.9	1.9	

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	12.089	dcf	%O2	15.22	Md	29.47
Metered Volume	0.342	dcm	%CO2	5.38	Ms	28.96
Volume @ Std.Cond.	12.012	dscf	%CO	0.0	Ps	29.58
Volume @ Std.Cond.	0.340	dscm	%N2	79.4	Fo	1.056
% Water	4.47	%	O2+CO2	10.0	%EA	265.08
% Isokinetics	68.5	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	54.90	ft/sec	Velocity	16.73	m/sec
Actual Flow	52390	acfm	Actual Flow	89012	am3/hr
Std. Flow	28568	scfm	Std. Flow	48537	sm3/hr
Dry Std. Flow	27292	dscfm	Dry Std. Flow	46369	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	265	1.35	0.30	0.03	873.022	65	64
2	475	1.30	0.40	0.03	885.111	65	64
3	510		0.46	0.03		65	64
4	508		0.48	0.03		65	65
5	497		0.45	0.03		66	65
6	481		0.51	0.03		66	65
7	484		0.87	0.03		66	65
8	534		0.55	0.03		67	65
9	484		0.46	0.03		67	66
10	563		0.33	0.03		67	66
11	581		0.28	0.03		67	66
12	605		0.26	0.03		67	66
13	299		0.49	0.03		67	66
14	492		0.46	0.03		67	67
15	490		0.55	0.03		68	67
16	565		0.69	0.03		69	68
17	516		0.73	0.03		69	67
18	521		0.78	0.03		69	68
19	510		0.84	0.03		69	68
20	508		0.74	0.03		70	68
21	493		0.68	0.03		70	69
22	473		0.63	0.03		70	69
23	535		0.49	0.03		70	69
24	544		0.45	0.03		70	69
25					885.111		
AVG.	497	1.33	0.54	0.03	12.089	67	

RUN NUMBER	**IN-IMP-R2**					
DATE	11/02/92	**METHOD 4 DATA**				
START TIME	17:33			INIT. (ml)	FINAL (ml)	NET (ml)
END TIME	19:42					
STACK DIAM.	54	inches	IMP.1	100.0	116.0	16.0
NOZZLE I.D.	0.122	inches	IMP.2	100.0	96.0	-4.0
METER BOX GAMMA	1.0069		IMP.3	0.0	0.0	0.0
METER BOX dH@	1.6944		IMP.4	0.0	0.0	0.0
BAROMETRIC	29.57	in.Hg	IMP.5			0.0
Cp	0.84		IMP.6			0.0
TEST DURATION	120	minutes	IMP.7			0.0
			TOTAL	200.0	212.0	12.0
			S.G.	200.0	202.5	2.5

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	16.822	dcf	%O2	14.46	Md	29.52
Metered Volume	0.476	dcm	%CO2	5.89	Ms	29.07
Volume @ Std.Cond.	16.735	dscf	%CO	0.0	Ps	29.67
Volume @ Std.Cond.	0.474	dscm	%N2	79.7	Fo	1.093
% Water	3.91	%	O2+CO2	20.4	%EA	220.17
% Isokinetics	100.3	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	55.55	ft/sec	Velocity	16.93	m/sec
Actual Flow	53009	acfm	Actual Flow	90063	am3/hr
Std. Flow	28359	scfm	Std. Flow	48183	sm3/hr
Dry Std. Flow	27249	dscfm	Dry Std. Flow	46297	dsm3/h

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	453	1.30	0.50	0.02	886.309	65	64
2	450	1.40	0.48	0.02		65	64
3	559		0.59	0.02		65	64
4	570		0.60	0.02		67	65
5	513		0.74	0.02		67	65
6	520		0.85	0.02		67	65
7	495		0.84	0.02		67	66
8	506		0.80	0.02		68	66
9	506		0.72	0.02		68	66
10	519		0.65	0.02		68	66
11	557		0.48	0.02		68	66
12	553		0.51	0.02		68	66
13	486		0.25	0.05		68	67
14	484		0.36	0.05		68	67
15	492		0.44	0.05		69	67
16	493		0.44	0.05		70	68
17	497		0.42	0.05		69	67
18	494		0.42	0.05		71	69
19	493		0.74	0.05		72	69
20	476		0.84	0.05		72	70
21	557		0.44	0.05		73	70
22	570		0.35	0.05		73	71
23	595		0.31	0.05		73	71
24	610		0.27	0.05		73	71
25					903.131		
AVG.	519	1.35	0.54	0.04	16.822	68	

Impactor Data

PINEHALL BRICK

Location: INLET   File Name: IN-R2.IMP
Condition: IN-IMP-R2
Date: 11/02/92
Time: 17:33-19:42
Impactor: Anderson

CO2	5.89	Molecular Wt. of Gas Dry	29.52
O2	14.46	Molecular Wt. of Gas Wet	29.07
N2	79.65	% Excess Air	220.17
CO	0.00	% Water	3.92

Impactor Flow Rate	0.270	ACFM
Nozzle Diameter	0.122	inches
% Isokinetics	99.19	%
Particle Density	1.62	(gm/cm3)
Sample Time	120.00	minutes

Meter Volume	16.822	cubic feet
Meter Temperature	68.0	°F
Stack Temperature	519.0	°F
Impactor Temperature	519.0	°F
Barometric Pressure	29.57	in. Hg
Impactor Pressure (vac.)	0.5	in. Hg
Static Pressure	1.35	in. H2O
Meter Pressure Delta H	0.04	in. H2O
Pitot Delta P	0.540	in. H2O
Viscosity of Gas	0.0002728	poise
Particulate Conc.	0.0253	gr./scf

Mass Gain in Stage 1	0.00345	grams
Mass Gain in Stage 2	0.00265	grams
Mass Gain in Stage 3	0.00310	grams
Mass Gain in Stage 4	0.00206	grams
Mass Gain in Stage 5	0.00112	grams
Mass Gain in Stage 6	0.00141	grams
Mass Gain in Stage 7	0.00107	grams
Mass Gain in Stage 8	0.00165	grams
Back-up Filter	0.01093	grams
Total Mass	0.02744	grams

Particle Sizing Results

PINEHALL BRICK
IN-IMP-R2
11/02/92 Time: 17:33-19:42

Stage	Cumulative % Less than Dia.	50% Cut-point Diameter (microns) Physical	50% Cut-point Diameter (microns) Aerodynamic*
1	87.43	14.040	17.870
2	77.77	13.234	16.844
3	66.47	8.244	10.493
4	58.96	5.494	6.993
5	54.88	3.074	3.912
6	49.74	1.372	1.746
7	45.85	0.824	1.048
8	39.83	0.429	0.546

* Aerodynamic Diameter uses a particle density of 1 gm/cm3.

RUN NUMBER	IN-IMP-R3					
DATE	11/03/92	**METHOD 4 DATA**				
START TIME	09:15		INIT.	FINAL	NET	
END TIME	11:32		(ml)	(ml)	(ml)	
STACK DIAM.	54	inches	IMP.1	100.0	123.0	23.0
NOZZLE I.D.	0.122	inches	IMP.2	100.0	100.0	0.0
METER BOX GAMMA	1.0069		IMP.3	0.0	0.0	0.0
METER BOX dH@	1.6944		IMP.4	0.0	0.0	0.0
BAROMETRIC	29.72	in.Hg	IMP.5			0.0
Cp	0.84		IMP.6			0.0
TEST DURATION	120	minutes	IMP.7			0.0
			TOTAL	200.0	223.0	23.0
			S.G.	200.0	203.0	3.0

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	16.630	dcf	%O2	15.59	Md	29.44
Metered Volume	0.471	dcm	%CO2	5.11	Ms	28.65
Volume @ Std.Cond.	16.508	dscf	%CO	0.0	Ps	29.71
Volume @ Std.Cond.	0.467	dscm	%N2	79.3	Fo	1.039
% Water	6.91	%	O2+CO2	20.7	%EA	291.66
% Isokinetics	105.7	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	51.22	ft/sec	Velocity	15.61	m/sec
Actual Flow	48878	acfm	Actual Flow	83044	am3/hr
Std. Flow	27403	scfm	Std. Flow	46558	sm3/hr
Dry Std. Flow	25509	dscfm	Dry Std. Flow	43340	dsm3/h

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	202	-0.18	0.28	0.03	907.111	56	54
2	245	-0.12	0.30	0.04		61	59
3	466		0.34	0.04		63	60
4	487		0.40	0.04		65	62
5	481		0.40	0.04		66	63
6	468		0.50	0.03		67	64
7	500		0.56	0.03		69	65
8	514		0.46	0.03		70	67
9	528		0.42	0.03		72	68
10	516		0.30	0.03		73	70
11	562		0.28	0.03		74	71
12	564		0.26	0.03		74	71
13	447		0.30	0.04		75	74
14	445		0.38	0.04		75	74
15	533		0.55	0.04		76	75
16	530		0.64	0.03		77	76
17	524		0.70	0.02		77	75
18	500		0.74	0.02		78	77
19	483		0.78	0.02		79	78
20	460		0.74	0.02		80	79
21	398		0.69	0.02		80	79
22	497		0.53	0.02		80	79
23	518		0.47	0.02		80	79
24	535		0.42	0.02		81	80
25					923.741		
AVG.	475	-0.15	0.48	0.03	16.630	72	

Impactor Data

PINEHALL BRICK

Location: INLET   File Name: IN-R3.IMP
Condition: IN-IMP-R3
Date: 11/03/92
Time: 09:15-11:32
Impactor: Anderson

CO_2	5.11	Molecular Wt. of Gas Dry	29.44
O_2	15.59	Molecular Wt. of Gas Wet	28.65
N_2	79.30	% Excess Air	291.66
CO	0.00	% Water	6.90

Impactor Flow Rate	0.262	ACFM
Nozzle Diameter	0.122	inches
% Isokinetics	104.18	%
Particle Density	1.62	(gm/cm3)
Sample Time	120.00	minutes

Meter Volume	16.630	cubic feet
Meter Temperature	72.0	°F
Stack Temperature	475.0	°F
Impactor Temperature	475.0	°F
Barometric Pressure	29.72	in. Hg
Impactor Pressure (vac.)	0.5	in. Hg
Static Pressure	-0.15	in. H2O
Meter Pressure Delta H	0.03	in. H2O
Pitot Delta P	0.477	in. H2O
Viscosity of Gas	0.0002623	poise
Particulate Conc.	0.0111	gr./scf

Mass Gain in Stage 1	0.00188	grams
Mass Gain in Stage 2	0.00000	grams
Mass Gain in Stage 3	0.00058	grams
Mass Gain in Stage 4	0.00031	grams
Mass Gain in Stage 5	0.00126	grams
Mass Gain in Stage 6	0.00046	grams
Mass Gain in Stage 7	0.00000	grams
Mass Gain in Stage 8	0.00049	grams
Back-up Filter	0.00694	grams
Total Mass	0.01192	grams

Stages 2 , 7 are assumed zero because of negative weight gain.

Particle Sizing Results

PINEHALL BRICK
IN-IMP-R3
11/03/92 Time: 09:15-11:32

Stage	Cumulative % Less than Dia.	50% Cut-point Diameter (microns) Physical	50% Cut-point Diameter (microns) Aerodynamic*
1	84.23	13.980	17.794
2	84.23	13.178	16.773
3	79.36	8.212	10.452
4	76.76	5.475	6.969
5	66.19	3.067	3.903
6	62.33	1.373	1.747
7	62.33	0.827	1.053
8	58.22	0.435	0.554

* Aerodynamic Diameter uses a particle density of 1 gm/cm3.

RUN NUMBER	IN-IMP-R4					
DATE	11/05/92		**METHOD 4 DATA**			
START TIME	16:44			INIT.	FINAL	NET
END TIME	17:55			(ml)	(ml)	(ml)
STACK DIAM.	54	inches	IMP.1	100.0	102.0	2.0
NOZZLE I.D.	0.125	inches	IMP.2	100.0	100.0	0.0
METER BOX GAMMA	1.0069		IMP.3	0.0	0.0	0.0
METER BOX dH@	1.6944		IMP.4	0.0	0.0	0.0
BAROMETRIC	29.37	in.Hg	IMP.5	0.0	0.0	0.0
Cp	0.84		IMP.6	0.0	0.0	0.0
TEST DURATION	60	minutes	IMP.7			0.0
			TOTAL	200.0	202.0	2.0
			S.G.	200.0	202.0	2.0

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	10.932	dcf	%O2	16.19	Md	29.36
Metered Volume	0.310	dcm	%CO2	4.47	Ms	29.17
Volume @ Std.Cond.	10.785	dscf	%CO	0.0	Ps	29.36
Volume @ Std.Cond.	0.305	dscm	%N2	79.3	Fo	1.054
% Water	1.72	%	O2+CO2	10.0	%EA	340.43
% Isokinetics	104.8	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	61.18	ft/sec	Velocity	18.65	m/sec
Actual Flow	58386	acfm	Actual Flow	99199	am3/hr
Std. Flow	32582	scfm	Std. Flow	55357	sm3/hr
Dry Std. Flow	32021	dscfm	Dry Std. Flow	54404	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	477	-0.17	0.30	0.08	389.678	70	70
2	408	-0.18	0.34	0.08		69	69
3	421	-0.16	0.44	0.08		69	69
4	420	-0.17	0.59	0.08		71	71
5	442		0.64	0.08		70	70
6	465		0.73	0.08		69	69
7	469		0.78	0.08		70	68
8	477		0.80	0.08		70	69
9	494		0.76	0.08		70	68
10	497		0.60	0.08		70	68
11	498		0.54	0.08		70	68
12	504		0.47	0.08	395.365	71	69
13	497		0.47	0.08	395.805	68	67
14	455		0.49	0.08		68	67
15	468		0.47	0.08		68	68
16	400		0.51	0.08		68	67
17	485		0.53	0.08		68	68
18	487		0.68	0.08		69	68
19	485		0.79	0.08		69	68
20	472		0.84	0.08		69	68
21	473		0.90	0.08		70	68
22	476		1.30	0.08		70	68
23	482		1.35	0.08		70	68
24	489		1.40	0.08		69	68
25					401.050		
AVG.	468	-0.17	0.70	0.08	10.932	69	

Impactor Data

PINEHALL BRICK

Location: INLET File Name: IN-R4.IMP
Condition: IN-IMP-R4
Date: 11/05/92
Time: 16:44-17:55
Impactor: Anderson

CO_2	4.47	Molecular Wt. of Gas Dry	29.36
O_2	16.19	Molecular Wt. of Gas Wet	29.17
N_2	79.34	% Excess Air	340.43
CO	0.00	% Water	1.72

Impactor Flow Rate	0.325	ACFM
Nozzle Diameter	0.125	inches
% Isokinetics	102.75	%
Particle Density	1.62	(gm/cm3)
Sample Time	60.00	minutes

Meter Volume	10.932	cubic feet
Meter Temperature	69.0	°F
Stack Temperature	468.0	°F
Impactor Temperature	468.0	°F
Barometric Pressure	29.37	in. Hg
Impactor Pressure (vac.)	0.7	in. Hg
Static Pressure	-0.17	in. H2O
Meter Pressure Delta H	0.08	in. H2O
Pitot Delta P	0.697	in. H2O
Viscosity of Gas	0.0002654	poise
Particulate Conc.	0.0163	gr./scf

Mass Gain in Stage 1	0.00166	grams
Mass Gain in Stage 2	0.00070	grams
Mass Gain in Stage 3	0.00077	grams
Mass Gain in Stage 4	0.00051	grams
Mass Gain in Stage 5	0.00005	grams
Mass Gain in Stage 6	0.00033	grams
Mass Gain in Stage 7	0.00000	grams
Mass Gain in Stage 8	0.00126	grams
Back-up Filter	0.00615	grams
Total Mass	0.01143	grams

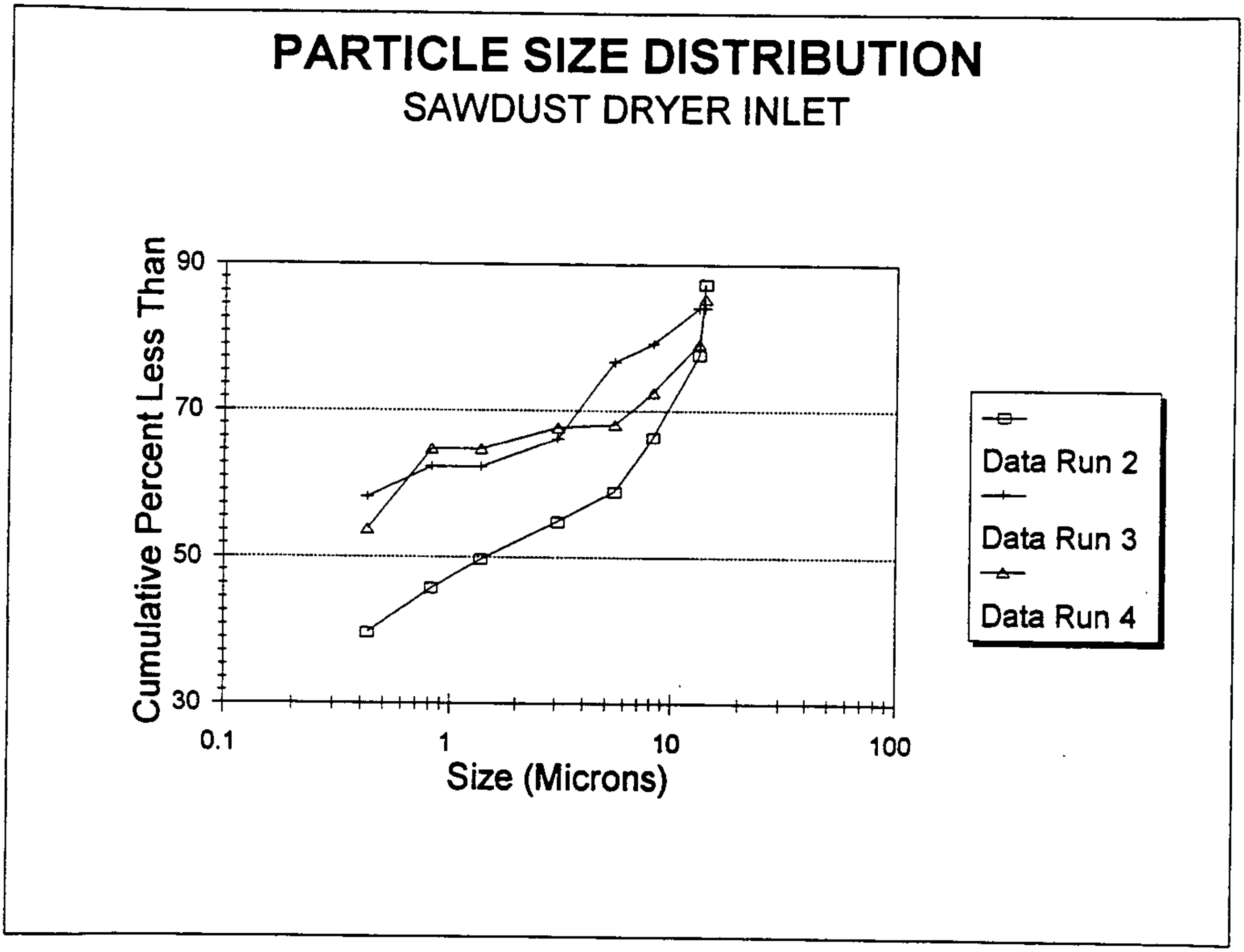
Stages 7 are assumed zero because of negative weight gain.

Particle Sizing Results

PINEHALL BRICK
IN-IMP-R4
11/05/92 Time: 16:44-17:55

Stage	Cumulative % Less than Dia.	50% Cut-point Diameter (microns) Physical	50% Cut-point Diameter (microns) Aerodynamic*
1	85.48	12.597	16.034
2	79.35	11.873	15.112
3	72.62	7.393	9.410
4	68.15	4.924	6.268
5	67.72	2.751	3.501
6	64.83	1.223	1.556
7	64.83	0.730	0.929
8	53.81	0.375	0.477

* Aerodynamic Diameter uses a particle density of 1 gm/cm3.


PARTICLE SIZE DISTRIBUTION
SAWDUST DRYER INLET
Cumulative Percent Less Than
90
70
50
30
0.1
1
10
100
Size (Microns)
Data Run 2
Data Run 3
Data Run 4

B.10.2 ANDERSEN IMPACTOR DATA AND RESULTS
SAWDUST DRYER OUTLET A

RUN NUMBER	OA-IMP-R1					
DATE	11/02/92	**METHOD 4 DATA**				
START TIME	13:11		INIT. (ml)	FINAL (ml)	NET (ml)	
END TIME	15:28					
STACK DIAM.	41 inches	IMP.1	100.0	131.0	31.0	
NOZZLE I.D.	0.125 inches	IMP.2	100.0	82.0	-18.0	
METER BOX GAMMA	1.0144	IMP.3	0.0	0.0	0.0	
METER BOX dH@	1.8838	IMP.4	0.0	0.0	0.0	
BAROMETRIC	29.48 in.Hg	IMP.5			0.0	
Cp	0.84	IMP.6			0.0	
TEST DURATION	120 minutes	IMP.7			0.0	
		TOTAL	200.0	213.0	13.0	
		S.G.	200.0	204.1	4.1	

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	16.117	dcf	%O2	16.79	Md	29.24
Metered Volume	0.456	dcm	%CO2	3.54	Ms	28.71
Volume @ Std.Cond.	16.244	dscf	%CO	0.0	Ps	28.71
Volume @ Std.Cond.	0.460	dscm	%N2	79.7	Fo	1.161
% Water	4.72	%	O2+CO2	20.3	%EA	395.72
% Isokinetics	83.4	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	42.15	ft/sec	Velocity	12.85	m/sec
Actual Flow	23185	acfm	Actual Flow	39392	am3/hr
Std. Flow	18344	scfm	Std. Flow	31168	sm3/hr
Dry Std. Flow	17478	dscfm	Dry Std. Flow	29696	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	126	-10.50	0.55	0.05	265.286	64	63
2	162	-10.50	0.52	0.05		63	64
3	159		0.47	0.05		63	62
4	172		0.50	0.05		63	63
5	193		0.46	0.05		64	63
6	195		0.41	0.05		63	63
7	197		0.36	0.05		63	63
8	198		0.41	0.05		64	64
9	197		0.41	0.05		62	62
10	197		0.41	0.05		63	63
11	199		0.40	0.05		63	63
12	198		0.39	0.05	273.430	64	63
13	93		0.57	0.05	273.750	64	63
14	135		0.50	0.05		63	63
15	155		0.42	0.05		64	63
16	184		0.46	0.05		63	63
17	200		0.45	0.05		63	63
18	204		0.50	0.05		64	63
19	197		0.47	0.05		65	65
20	197		0.42	0.05		65	64
21	193		0.44	0.05		64	64
22	192		0.39	0.05		64	65
23	192		0.40	0.05		63	64
24	192		0.37	0.05	281.723	64	65
25					281.723		
AVG.	180	-10.50	0.45	0.05	16.117	63	

RUN NUMBER	OA-IMP-R2					
DATE	11/02/92		**METHOD 4 DATA**			
START TIME	17:33			INIT. (ml)	FINAL (ml)	NET (ml)
END TIME	19:42					
STACK DIAM.	41	inches	IMP.1	100.0	122.0	22.0
NOZZLE I.D.	0.125	inches	IMP.2	100.0	100.0	0.0
METER BOX GAMMA	1.0144		IMP.3	0.0	0.0	0.0
METER BOX dH@	1.8838		IMP.4	0.0	0.0	0.0
BAROMETRIC	29.57	in.Hg	IMP.5			0.0
Cp	0.84		IMP.6			0.0
TEST DURATION	120	minutes	IMP.7			0.0
			TOTAL	200.0	222.0	22.0
			S.G.	200.0	202.3	2.3

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	16.642	dcf	%O2	16.65	Md	29.28
Metered Volume	0.471	dcm	%CO2	3.86	Ms	28.56
Volume @ Std.Cond.	16.733	dscf	%CO	0.0	Ps	28.82
Volume @ Std.Cond.	0.474	dscm	%N2	79.5	Fo	1.101
% Water	6.40	%	O2+CO2	20.5	%EA	384.05
% Isokinetics	89.5	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	41.12	ft/sec	Velocity	12.53	m/sec
Actual Flow	22622	acfm	Actual Flow	38435	am3/hr
Std. Flow	17921	scfm	Std. Flow	30448	sm3/hr
Dry Std. Flow	16774	dscfm	Dry Std. Flow	28499	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	100	-10.00	0.40	0.05	283.058	63	63
2	145	-10.30	0.45	0.05		66	65
3	182		0.41	0.05		66	65
4	183		0.43	0.05		66	65
5	187		0.41	0.05		66	65
6	197		0.41	0.05		67	66
7	191		0.46	0.05		66	65
8	203		0.41	0.05		66	65
9	204		0.37	0.05		67	65
10	205		0.29	0.05		67	65
11	205		0.35	0.05		67	66
12	204		0.34	0.05	291.700	67	65
13	128		0.48	0.05	292.000	66	65
14	151		0.52	0.05		66	65
15	175		0.53	0.05		67	65
16	182		0.53	0.05		68	66
17	191		0.48	0.05		68	66
18	190		0.45	0.05		68	66
19	187		0.38	0.05		68	67
20	192		0.38	0.05		69	67
21	190		0.40	0.05		69	67
22	192		0.38	0.05		68	67
23	193		0.44	0.05		69	67
24	193		0.44	0.05		68	67
25					300.000		
AVG.	182	-10.15	0.42	0.05	16.642		66

Impactor Data

PINEHALL BRICK

Location: OUTLET A   File Name: OA-R2.IMP
Condition: OA-IMP-R2
Date: 11/02/92
Time: 17:33-19:42
Impactor: Anderson

CO2	3.86	Molecular Wt. of Gas Dry	29.28
O2	16.65	Molecular Wt. of Gas Wet	28.56
N2	79.49	% Excess Air	384.05
CO	0.00	% Water	6.39

Impactor Flow Rate	0.186	ACFM
Nozzle Diameter	0.125	inches
% Isokinetics	89.61	%
Particle Density	0.41	(gm/cm3)
Sample Time	120.00	minutes

Meter Volume	16.642	cubic feet
Meter Temperature	66.0	°F
Stack Temperature	182.0	°F
Impactor Temperature	182.0	°F
Barometric Pressure	29.57	in. Hg
Impactor Pressure (vac.)	0.4	in. Hg
Static Pressure	-10.15	in. H2O
Meter Pressure Delta H	0.05	in. H2O
Pitot Delta P	0.420	in. H2O
Viscosity of Gas	0.0001999	poise
Particulate Conc.	1.4585	gr./scf

Mass Gain in Stage 1	0.00802	grams
Mass Gain in Stage 2	0.00080	grams
Mass Gain in Stage 3	0.00122	grams
Mass Gain in Stage 4	0.00091	grams
Mass Gain in Stage 5	0.00645	grams
Mass Gain in Stage 6	0.01315	grams
Mass Gain in Stage 7	0.82492	grams
Mass Gain in Stage 8	0.68892	grams
Back-up Filter	0.03881	grams
Total Mass	1.58320	grams

Particle Sizing Results

PINEHALL BRICK
OA-IMP-R2
11/02/92 Time: 17:33-19:42

Stage	Cumulative % Less than Dia.	50% Cut-point Diameter (microns) Physical	50% Cut-point Diameter (microns) Aerodynamic*
1	99.49	29.037	18.593
2	99.44	27.383	17.534
3	99.37	17.144	10.977
4	99.31	11.499	7.363
5	98.90	6.533	4.183
6	98.07	3.036	1.944
7	45.97	1.908	1.222
8	2.45	1.100	0.704

* Aerodynamic Diameter uses a particle density of 1 gm/cm3.

RUN NUMBER	OA-IMP-R3					
DATE	11/03/92		**METHOD 4 DATA**			
START TIME	09:15			INIT. (ml)	FINAL (ml)	NET (ml)
END TIME	11:32					
STACK DIAM.	41	inches	IMP.1	100.0	132.0	32.0
NOZZLE I.D.	0.125	inches	IMP.2	100.0	98.0	-2.0
METER BOX GAMMA	1.0144		IMP.3	0.0	0.0	0.0
METER BOX dH@	1.8838		IMP.4	0.0	0.0	0.0
BAROMETRIC	29.72	in.Hg	IMP.5			0.0
Cp	0.84		IMP.6			0.0
TEST DURATION	120	minutes	IMP.7			0.0
			TOTAL	200.0	230.0	30.0
			S.G.	200.0	203.8	3.8

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	17.760	dcf	%O2	17.76	Md	29.17
Metered Volume	0.503	dcm	%CO2	2.85	Ms	28.24
Volume @ Std.Cond.	17.571	dscf	%CO	0.0	Ps	28.95
Volume @ Std.Cond.	0.498	dscm	%N2	79.4	Fo	1.102
% Water	8.29	%	O2+CO2	20.6	%EA	555.18
% Isokinetics	92.6	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	41.96	ft/sec	Velocity	12.79	m/sec
Actual Flow	23081	acfm	Actual Flow	39215	am3/hr
Std. Flow	18570	scfm	Std. Flow	31550	sm3/hr
Dry Std. Flow	17029	dscfm	Dry Std. Flow	28933	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	85	-10.50	0.67	0.05	300.579	73	71
2	139	-10.50	0.51	0.05		75	72
3	165		0.47	0.05		75	72
4	180		0.50	0.05		75	72
5	186		0.45	0.05		76	73
6	189		0.42	0.05		76	73
7	195		0.36	0.05		76	74
8	198		0.40	0.05		76	73
9	198		0.40	0.05		75	73
10	200		0.43	0.05		76	74
11	199		0.43	0.05		77	76
12	203		0.42	0.05		79	77
13	87		0.50	0.05		79	79
14	119		0.47	0.05		81	80
15	157		0.40	0.05		82	81
16	163		0.40	0.05		81	81
17	190		0.43	0.05		81	81
18	197		0.42	0.05		81	81
19	198		0.45	0.05		81	81
20	190		0.46	0.05		81	81
21	190		0.55	0.05		81	81
22	191		0.39	0.05		81	80
23	190		0.32	0.05		80	80
24	190		0.36	0.05		80	80
25					318.339		
AVG.	175	-10.50	0.44	0.05	17.760	78	

Impactor Data

PINEHALL BRICK

Location: OUTLET A   File Name: OA-R3.IMP
Condition: OA-IMP-R3
Date: 11/03/92
Time: 09:15-11:32
Impactor: Anderson

CO2	2.85	Molecular Wt. of Gas Dry	29.17
O2	17.76	Molecular Wt. of Gas Wet	28.24
N2	79.39	% Excess Air	555.18
CO	0.00	% Water	8.31

Impactor Flow Rate	0.196	ACFM
Nozzle Diameter	0.125	inches
% Isokinetics	92.48	%
Particle Density	0.41	(gm/cm3)
Sample Time	120.00	minutes

Meter Volume	17.760	cubic feet
Meter Temperature	78.0	°F
Stack Temperature	175.0	°F
Impactor Temperature	175.0	°F
Barometric Pressure	29.72	in. Hg
Impactor Pressure (vac.)	0.4	in. Hg
Static Pressure	-10.50	in. H2O
Meter Pressure Delta H	0.05	in. H2O
Pitot Delta P	0.440	in. H2O
Viscosity of Gas	0.0001972	poise
Particulate Conc.	2.8588	gr./scf

Mass Gain in Stage 1	0.00935	grams
Mass Gain in Stage 2	0.00000	grams
Mass Gain in Stage 3	0.00140	grams
Mass Gain in Stage 4	0.00554	grams
Mass Gain in Stage 5	0.35436	grams
Mass Gain in Stage 6	0.55439	grams
Mass Gain in Stage 7	0.81578	grams
Mass Gain in Stage 8	0.60096	grams
Back-up Filter	0.91257	grams
Total Mass	3.25435	grams

Stages 2 are assumed zero because of negative weight gain.

Particle Sizing Results

PINEHALL BRICK
OA-IMP-R3
11/03/92 Time: 09:15-11:32

Stage	Cumulative % Less than Dia.	50% Cut-point Diameter (microns) Physical	50% Cut-point Diameter (microns) Aerodynamic*
1	99.71	28.086	17.984
2	99.71	26.486	16.959
3	99.67	16.582	10.618
4	99.50	11.122	7.121
5	88.61	6.318	4.045
6	71.58	2.935	1.879
7	46.51	1.844	1.181
8	28.04	1.062	0.680

* Aerodynamic Diameter uses a particle density of 1 gm/cm3.

RUN NUMBER	**OA-IMP-R4**					
DATE	11/05/92		**METHOD 4 DATA**			
START TIME	16:44			INIT. (ml)	FINAL (ml)	NET (ml)
END TIME	17:55					
STACK DIAM.	41	inches	IMP.1	100.0	117.0	17.0
NOZZLE I.D.	0.150	inches	IMP.2	100.0	98.0	-2.0
METER BOX GAMMA	0.9915		IMP.3	0.0	1.0	1.0
METER BOX dH@	1.7526		IMP.4	0.0	0.0	0.0
BAROMETRIC	29.37	in.Hg	IMP.5	0.0	0.0	0.0
Cp	0.84		IMP.6	0.0	0.0	0.0
TEST DURATION	60	minutes	IMP.7			0.0
			TOTAL	200.0	216.0	16.0
			S.G.	200.0	204.2	4.2

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	14.568	dcf	%O2	17.26	Md	29.21
Metered Volume	0.413	dcm	%CO2	3.25	Ms	28.50
Volume @ Std.Cond.	14.133	dscf	%CO	0.0	Ps	28.60
Volume @ Std.Cond.	0.400	dscm	%N2	79.5	Fo	1.120
% Water	6.30	%	O2+CO2	10.0	%EA	463.31
% Isokinetics	98.1	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	44.48	ft/sec	Velocity	13.56	m/sec
Actual Flow	24469	acfm	Actual Flow	41574	am3/hr
Std. Flow	19152	scfm	Std. Flow	32539	sm3/hr
Dry Std. Flow	17946	dscfm	Dry Std. Flow	30490	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	183	-10.50	0.50	0.16	103.116	70	70
2	183	-10.50	0.49	0.16		70	70
3	184		0.49	0.16		70	70
4	184		0.51	0.16		70	70
5	184		0.47	0.16		70	70
6	186		0.46	0.16		70	70
7	180		0.48	0.16		71	70
8	188		0.48	0.16		70	70
9	187		0.47	0.16		71	71
10	187		0.48	0.16		71	71
11	187		0.47	0.16		71	70
12	186		0.41	0.16		70	70
13	183		0.48	0.16		68	69
14	183		0.53	0.16		68	69
15	185		0.56	0.16		69	69
16	184		0.58	0.16		69	69
17	184		0.55	0.16		69	69
18	185		0.49	0.16		70	69
19	182		0.44	0.16		69	69
20	184		0.44	0.16		69	69
21	184		0.43	0.16		70	70
22	187		0.46	0.16		69	69
23	187		0.51	0.16		70	69
24	188		0.48	0.16		70	70
25					117.684		
AVG.	185	-10.50	0.49	0.16	14.568	70	

Impactor Data

PINEHALL BRICK

Location: OUTLET A   File Name: OA-R4.IMP
Condition: OA-IMP-R4
Date: 11/05/92
Time: 16:44-17:55
Impactor: Anderson

CO2	3.25	Molecular Wt. of Gas Dry	29.21
O2	17.26	Molecular Wt. of Gas Wet	28.50
N2	79.49	% Excess Air	463.31
CO	0.00	% Water	6.31

Impactor Flow Rate	0.324	ACFM
Nozzle Diameter	0.150	inches
% Isokinetics	98.05	%
Particle Density	0.41	(gm/cm3)
Sample Time	60.00	minutes

Meter Volume	14.568	cubic feet
Meter Temperature	70.0	°F
Stack Temperature	185.0	°F
Impactor Temperature	185.0	°F
Barometric Pressure	29.37	in. Hg
Impactor Pressure (vac.)	0.5	in. Hg
Static Pressure	-10.50	in. H2O
Meter Pressure Delta H	0.16	in. H2O
Pitot Delta P	0.486	in. H2O
Viscosity of Gas	0.0002010	poise
Particulate Conc.	1.9785	gr./scf

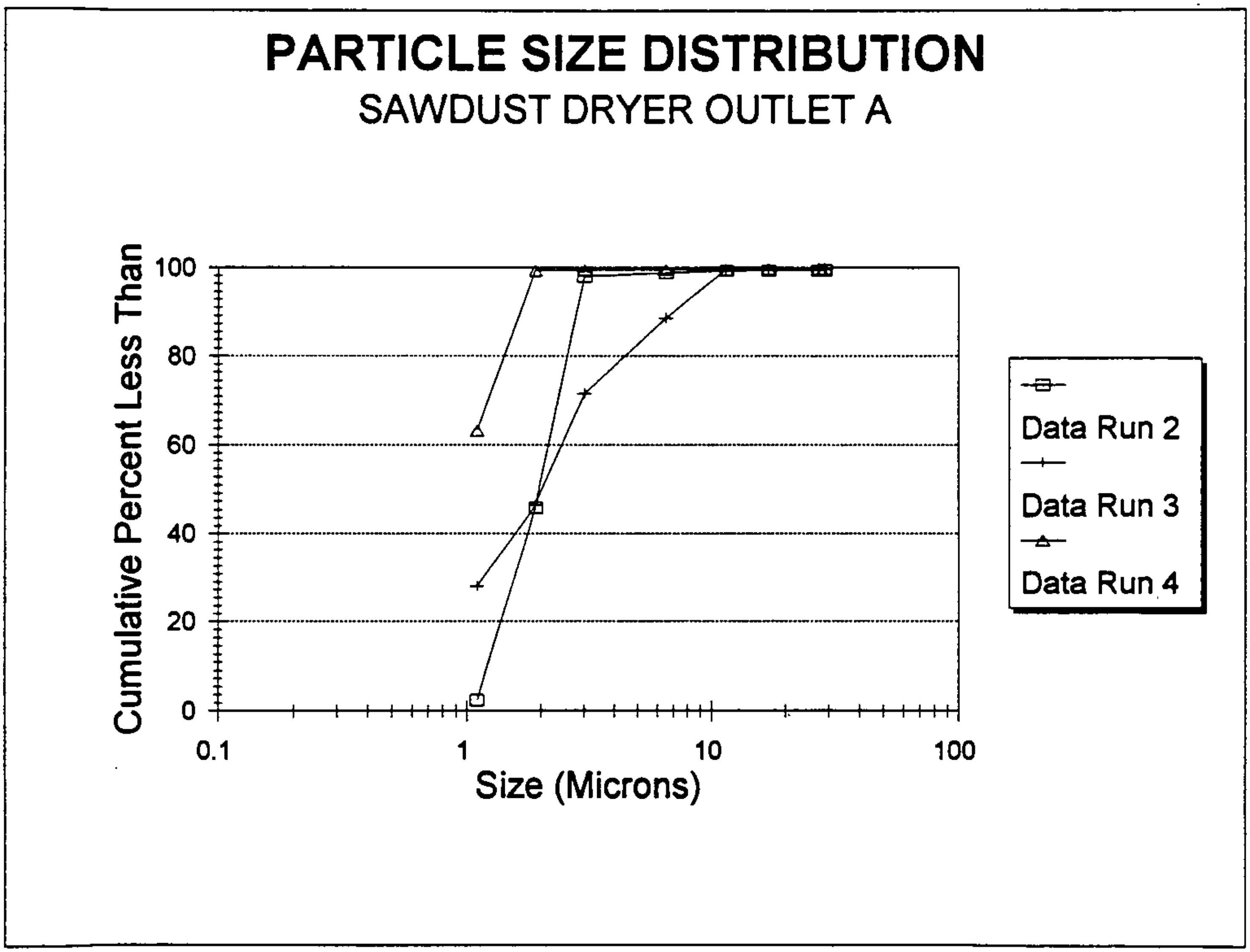
Mass Gain in Stage 1	0.00204	grams
Mass Gain in Stage 2	0.00101	grams
Mass Gain in Stage 3	0.00167	grams
Mass Gain in Stage 4	0.00187	grams
Mass Gain in Stage 5	0.00094	grams
Mass Gain in Stage 6	0.00141	grams
Mass Gain in Stage 7	0.00211	grams
Mass Gain in Stage 8	0.65419	grams
Back-up Filter	1.14669	grams
Total Mass	1.81193	grams

Particle Sizing Results

PINEHALL BRICK
OA-IMP-R4
11/05/92 Time: 16:44-17:55

Stage	Cumulative % Less than Dia.	50% Cut-point Diameter (microns) Physical	50% Cut-point Diameter (microns) Aerodynamic*
1	99.89	22.007	14.091
2	99.83	20.752	13.288
3	99.74	12.983	8.313
4	99.64	8.700	5.571
5	99.58	4.932	3.158
6	99.51	2.278	1.458
7	99.39	1.423	0.911
8	63.29	0.809	0.518

* Aerodynamic Diameter uses a particle density of 1 gm/cm3.



PARTICLE SIZE DISTRIBUTION
SAWDUST DRYER OUTLET A
Cumulative Percent Less Than
100
80
60
40
20
0
0.1
1
10
100
Size (Microns)
Data Run 2
Data Run 3
Data Run 4

B.10.3 ANDERSEN IMPACTOR DATA AND RESULTS
SAWDUST DRYER OUTLET B

RUN NUMBER	OB-IMP-R1					
DATE	11/02/92		METHOD 4 DATA			
START TIME	13:11			INIT.	FINAL	NET
END TIME	15:28			(ml)	(ml)	(ml)
STACK DIAM.	41	inches	IMP.1	100.0	122.0	22.0
NOZZLE I.D.	0.125	inches	IMP.2	100.0	100.0	0.0
METER BOX GAMMA	1.0082		IMP.3	0.0	0.0	0.0
METER BOX dH@	1.7651		IMP.4	0.0	0.0	0.0
BAROMETRIC	29.48	in.Hg	IMP.5			0.0
Cp	0.84		IMP.6			0.0
TEST DURATION	120	minutes	IMP.7			0.0
			TOTAL	200.0	222.0	22.0
			S.G.	200.0	204.2	4.2

SAMPLING RESULTS			METHOD 3 DATA			
Metered Volume	16.851	dcf	%O2	16.81	Md	29.24
Metered Volume	0.477	dcm	%CO2	3.52	Ms	28.46
Volume @ Std.Cond.	16.767	dscf	%CO	0.0	Ps	28.85
Volume @ Std.Cond.	0.475	dscm	%N2	79.7	Fo	1.162
% Water	6.86	%	O2+CO2	20.3	%EA	398.07
% Isokinetics	97.8	%				

VOLUMETRIC RESULTS - USENG			VOLUMETRIC RESULTS - SI		
Velocity	35.79	ft/sec	Velocity	10.91	m/sec
Actual Flow	19690	acfm	Actual Flow	33453	am3/hr
Std. Flow	16510	scfm	Std. Flow	28051	sm3/hr
Dry Std. Flow	15377	dscfm	Dry Std. Flow	26126	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	73	-8.70	0.31	0.05	881.915	67	66
2	76	-8.50	0.25	0.05	898.766	64	64
3	97		0.27	0.05		64	63
4	115		0.27	0.05		66	64
5	141		0.31	0.05		65	64
6	161		0.33	0.05		68	64
7	179		0.43	0.05		67	64
8	182		0.50	0.05		68	64
9	181		0.52	0.05		67	64
10	181		0.52	0.05		68	65
11	184		0.38	0.05		69	65
12	183		0.50	0.05		69	65
13	79		0.08	0.05		66	64
14	85		0.20	0.05		67	66
15	115		0.28	0.05		68	65
16	104		0.25	0.05		69	66
17	161		0.30	0.05		69	66
18	162		0.25	0.05		70	68
19	178		0.34	0.05		70	67
20	179		0.35	0.05		70	69
21	180		0.41	0.05		71	69
22	180		0.46	0.05		72	68
23	177		0.43	0.05		72	69
24	178		0.36	0.05		72	68
25					898.766		
AVG.	147	-8.60	0.35	0.05	16.851	67	

RUN NUMBER	OB-IMP-R2					
DATE	11/02/92		**METHOD 4 DATA**			
START TIME	17:33			INIT. (ml)	FINAL (ml)	NET (ml)
END TIME	19:42					
STACK DIAM.	41	inches	IMP.1	100.0	139.0	39.0
NOZZLE I.D.	0.125	inches	IMP.2	100.0	100.0	0.0
METER BOX GAMMA	1.0082		IMP.3	0.0	0.0	0.0
METER BOX dH@	1.7651		IMP.4	0.0	0.0	0.0
BAROMETRIC	29.57	in.Hg	IMP.5			0.0
Cp	0.84		IMP.6			0.0
TEST DURATION	120	minutes	IMP.7			0.0
			TOTAL	200.0	239.0	39.0
			S.G.	200.0	206.5	6.4

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	16.059	dcf	%O2	16.64	Md	29.27
Metered Volume	0.455	dcm	%CO2	3.75	Ms	27.94
Volume @ Std.Cond.	16.012	dscf	%CO	0.0	Ps	28.94
Volume @ Std.Cond.	0.453	dscm	%N2	79.6	Fo	1.136
% Water	11.79	%	O2+CO2	20.4	%EA	380.17
% Isokinetics	91.3	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	38.62	ft/sec	Velocity	11.77	m/sec
Actual Flow	21243	acfm	Actual Flow	36093	am3/hr
Std. Flow	17836	scfm	Std. Flow	30304	sm3/hr
Dry Std. Flow	15734	dscfm	Dry Std. Flow	26732	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	75	-8.60	0.35	0.05	899.194	65	64
2	88	-8.50	0.25	0.05		65	64
3	107		0.30	0.05		66	63
4	124		0.35	0.05		66	64
5	110		0.25	0.05		66	63
6	165		0.32	0.05		67	63
7	174		0.37	0.05		67	64
8	184		0.43	0.05		66	64
9	186		0.46	0.05		67	65
10	187		0.45	0.05		67	65
11	186		0.43	0.05		68	66
12	184		0.40	0.05		68	66
13	76		0.34	0.05		66	66
14	105		0.39	0.05		68	67
15	109		0.29	0.05		69	67
16	128		0.31	0.05		70	66
17	143		0.30	0.05		71	68
18	169		0.32	0.05		71	67
19	174		0.41	0.05		73	68
20	177		0.49	0.05		72	69
21	175		0.53	0.05		72	69
22	176		0.55	0.05		73	70
23	177		0.56	0.05		74	70
24	180		0.50	0.05		75	70
25					915.253		
AVG.	148	-8.55	0.39	0.05	16.059	68	

Impactor Data

PINEHALL BRICK

Location: OUTLET B File Name: OB-R2.IMP
Condition: OB-IMP-R2
Date: 11/02/92
Time: 17:33-19:42
Impactor: Anderson

CO2	3.75	Molecular Wt. of Gas Dry	29.27
O2	16.64	Molecular Wt. of Gas Wet	27.94
N2	79.61	% Excess Air	380.17
CO	0.00	% Water	11.78

Impactor Flow Rate	0.179	ACFM
Nozzle Diameter	0.125	inches
% Isokinetics	90.60	%
Particle Density	0.41	(gm/cm3)
Sample Time	120.00	minutes

Meter Volume	16.059	cubic feet
Meter Temperature	68.0	°F
Stack Temperature	148.0	°F
Impactor Temperature	148.0	°F
Barometric Pressure	29.57	in. Hg
Impactor Pressure (vac.)	0.4	in. Hg
Static Pressure	-8.55	in. H2O
Meter Pressure Delta H	0.05	in. H2O
Pitot Delta P	0.390	in. H2O
Viscosity of Gas	0.0001873	poise
Particulate Conc.	0.1501	gr./scf

Mass Gain in Stage 1	0.04745	grams
Mass Gain in Stage 2	0.03048	grams
Mass Gain in Stage 3	0.02858	grams
Mass Gain in Stage 4	0.01156	grams
Mass Gain in Stage 5	0.00381	grams
Mass Gain in Stage 6	0.00193	grams
Mass Gain in Stage 7	0.00139	grams
Mass Gain in Stage 8	0.00317	grams
Back-up Filter	0.02735	grams
Total Mass	0.15572	grams

Particle Sizing Results

PINEHALL BRICK
OB-IMP-R2
11/02/92 Time: 17:33-19:42

Stage	Cumulative % Less than Dia.	50% Cut-point Diameter (microns) Physical	50% Cut-point Diameter (microns) Aerodynamic*
1	69.53	28.665	18.354
2	49.96	27.033	17.309
3	31.60	16.927	10.839
4	24.18	11.356	7.272
5	21.73	6.454	4.133
6	20.49	3.003	1.923
7	19.60	1.890	1.210
8	17.56	1.093	0.700

* Aerodynamic Diameter uses a particle density of 1 gm/cm3.

RUN NUMBER	**OB-IMP-R3**
DATE	11/03/92
START TIME	09:15
END TIME	11:32
STACK DIAM.	41 inches
NOZZLE I.D.	0.125 inches
METER BOX GAMMA	1.0082
METER BOX dH@	1.7651
BAROMETRIC	29.72 in.Hg
Cp	0.84
TEST DURATION	120 minutes

METHOD 4 DATA

	INIT. (ml)	FINAL (ml)	NET (ml)
IMP.1	100.0	129.0	29.0
IMP.2	100.0	96.0	-4.0
IMP.3	0.0	0.0	0.0
IMP.4	0.0	0.0	0.0
IMP.5			0.0
IMP.6			0.0
IMP.7			0.0
TOTAL	200.0	225.0	25.0
S.G.	200.0	204.8	4.8

SAMPLING RESULTS

Metered Volume	16.643	dcf
Metered Volume	0.471	dcm
Volume @ Std.Cond.	16.432	dscf
Volume @ Std.Cond.	0.465	dscm
% Water	7.88	%
% Isokinetics	90.2	%

METHOD 3 DATA

%O2	16.91	Md	29.23
%CO2	3.46	Ms	28.35
%CO	0.0	Ps	29.06
%N2	79.6	Fo	1.153
O2+CO2	20.4	%EA	411.20

VOLUMETRIC RESULTS - USENG

Velocity	38.55	ft/sec
Actual Flow	21209	acfm
Std. Flow	17743	scfm
Dry Std. Flow	16346	dscfm

VOLUMETRIC RESULTS - SI

Velocity	11.75	m/sec
Actual Flow	36035	am3/hr
Std. Flow	30146	sm3/hr
Dry Std. Flow	27772	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	OUTLET (DegF)
1	68	-8.90	0.35	0.05	916.757	64	63
2	77	-9.00	0.38	0.05		66	64
3	94		0.24	0.05		67	64
4	128		0.30	0.05		70	66
5	156		0.33	0.05		70	66
6	161		0.33	0.05		71	67
7	182		0.45	0.05		72	68
8	185		0.53	0.05		73	68
9	188		0.57	0.05		74	69
10	190		0.59	0.05		74	70
11	190		0.52	0.05		76	72
12	193		0.45	0.05		73	77
13	93		0.26	0.05		78	76
14	100		0.30	0.05		78	77
15	108		0.29	0.05		80	78
16	138		0.29	0.05		80	78
17	157		0.30	0.05		81	79
18	174		0.30	0.05		83	81
19	186		0.37	0.05		83	81
20	185		0.44	0.05		85	82
21	180		0.48	0.05		85	83
22	180		0.48	0.05		86	83
23	180		0.48	0.05		87	83
24	180		0.42	0.05		86	83
25					933.400		
AVG.	153	-8.95	0.39	0.05	16.643		75

Impactor Data

PINEHALL BRICK

Location: OUTLET B — File Name: OB-R3.IMP
Condition: OB-IMP-R3
Date: 11/03/92
Time: 09:15-11:32
Impactor: Anderson

CO2	3.46	Molecular Wt. of Gas Dry	29.23
O2	16.91	Molecular Wt. of Gas Wet	28.35
N2	79.63	% Excess Air	411.20
CO	0.00	% Water	7.86

Impactor Flow Rate	0.176	ACFM
Nozzle Diameter	0.125	inches
% Isokinetics	89.95	%
Particle Density	0.41	(gm/cm3)
Sample Time	120.00	minutes

Meter Volume	16.643	cubic feet
Meter Temperature	75.0	°F
Stack Temperature	153.0	°F
Impactor Temperature	153.0	°F
Barometric Pressure	29.72	in. Hg
Impactor Pressure (vac.)	0.4	in. Hg
Static Pressure	-8.95	in. H2O
Meter Pressure Delta H	0.05	in. H2O
Pitot Delta P	0.390	in. H2O
Viscosity of Gas	0.0001921	poise
Particulate Conc.	1.4859	gr./scf

Mass Gain in Stage 1	0.06633	grams
Mass Gain in Stage 2	0.01655	grams
Mass Gain in Stage 3	0.00635	grams
Mass Gain in Stage 4	0.00094	grams
Mass Gain in Stage 5	0.00050	grams
Mass Gain in Stage 6	0.00389	grams
Mass Gain in Stage 7	0.00117	grams
Mass Gain in Stage 8	0.60222	grams
Back-up Filter	0.88631	grams
Total Mass	1.58426	grams

Particle Sizing Results

PINEHALL BRICK
OB-IMP-R3
11/03/92

Time: 09:15-11:32

Stage	Cumulative % Less than Dia.	50% Cut-point Diameter (microns) Physical	50% Cut-point Diameter (microns) Aerodynamic*
1	95.81	29.197	18.695
2	94.77	27.534	17.631
3	94.37	17.241	11.040
4	94.31	11.567	7.407
5	94.28	6.574	4.210
6	94.03	3.059	1.959
7	93.96	1.925	1.233
8	55.94	1.113	0.713

* Aerodynamic Diameter uses a particle density of 1 gm/cm3.

RUN NUMBER	OB-IMP-R4					
DATE	11/05/92		**METHOD 4 DATA**			
START TIME	16:44			INIT. (ml)	FINAL (ml)	NET (ml)
END TIME	17:55					
STACK DIAM.	41	inches	IMP.1	100.0	118.0	18.0
NOZZLE I.D.	0.150	inches	IMP.2	100.0	101.0	1.0
METER BOX GAMMA	1.0082		IMP.3	0.0	1.0	1.0
METER BOX dH@	1.7651		IMP.4	0.0	0.0	0.0
BAROMETRIC	29.37	in.Hg	IMP.5	0.0	0.0	0.0
Cp	0.84		IMP.6	0.0	0.0	0.0
TEST DURATION	60	minutes	IMP.7			0.0
			TOTAL	200.0	220.0	20.0
			S.G.	200.0	204.4	4.3

SAMPLING RESULTS			**METHOD 3 DATA**			
Metered Volume	13.972	dcf	%O2	17.40	Md	29.19
Metered Volume	0.396	dcm	%CO2	3.10	Ms	28.33
Volume @ Std.Cond.	13.683	dscf	%CO	0.0	Ps	28.66
Volume @ Std.Cond.	0.387	dscm	%N2	79.5	Fo	1.129
% Water	7.73	%	O2+CO2	10.0	%EA	484.95
% Isokinetics	107.8	%				

VOLUMETRIC RESULTS - USENG			**VOLUMETRIC RESULTS - SI**		
Velocity	39.49	ft/sec	Velocity	12.04	m/sec
Actual Flow	21726	acfm	Actual Flow	36913	am3/hr
Std. Flow	17140	scfm	Std. Flow	29122	sm3/hr
Dry Std. Flow	15815	dscfm	Dry Std. Flow	26870	dsm3/hr

POINT	STACK TEMP (DegF)	STATIC (in.WC)	DP (in.WC)	DH (in.WC)	METER VOLUME (dcf)	METER TEMPERATURE INLET (DegF)	METER TEMPERATURE OUTLET (DegF)
1	177	-9.70	0.28	0.16	344.039	76	76
2	178	-9.70	0.27	0.16		73	72
3	178		0.27	0.16		73	72
4	179		0.27	0.16		73	72
5	180		0.30	0.16		73	72
6	181		0.32	0.16		74	72
7	183		0.40	0.16		74	72
8	184		0.46	0.16		75	73
9	184		0.50	0.16		75	73
10	183		0.53	0.16		75	72
11	184		0.55	0.16		75	73
12	183		0.51	0.16		75	73
13	176		0.31	0.16		78	76
14	177		0.30	0.16		73	72
15	178		0.34	0.16		73	72
16	180		0.32	0.16		74	72
17	181		0.33	0.16		74	72
18	183		0.33	0.16		74	72
19	185		0.38	0.16		75	72
20	184		0.40	0.16		75	72
21	183		0.48	0.16		75	72
22	183		0.52	0.16		75	72
23	181		0.49	0.16		76	73
24	179		0.47	0.16		76	73
25					358.011		
AVG.	181	-9.70	0.39	0.16	13.972		74

Impactor Data

PINEHALL BRICK

Location: OUTLET B File Name: OB-R4.IMP
Condition: OB-IMP-R4
Date: 11/05/92
Time: 16:44-17:55
Impactor: Anderson

CO_2	3.10	Molecular Wt. of Gas Dry	29.19
O_2	17.40	Molecular Wt. of Gas Wet	28.33
N_2	79.50	% Excess Air	484.95
CO	0.00	% Water	7.72

Impactor Flow Rate	0.311	ACFM
Nozzle Diameter	0.150	inches
% Isokinetics	106.93	%
Particle Density	0.41	(gm/cm3)
Sample Time	60.00	minutes

Meter Volume	13.972	cubic feet
Meter Temperature	74.0	°F
Stack Temperature	181.0	°F
Impactor Temperature	181.0	°F
Barometric Pressure	29.37	in. Hg
Impactor Pressure (vac.)	0.4	in. Hg
Static Pressure	-9.70	in. H2O
Meter Pressure Delta H	0.16	in. H2O
Pitot Delta P	0.389	in. H2O
Viscosity of Gas	0.0001989	poise
Particulate Conc.	0.6383	gr./scf

Mass Gain in Stage	1	0.02868	grams
Mass Gain in Stage	2	0.01127	grams
Mass Gain in Stage	3	0.00504	grams
Mass Gain in Stage	4	0.00060	grams
Mass Gain in Stage	5	0.00000	grams
Mass Gain in Stage	6	0.00259	grams
Mass Gain in Stage	7	0.00172	grams
Mass Gain in Stage	8	0.00406	grams
Back-up Filter		0.51181	grams
Total Mass		0.56577	grams

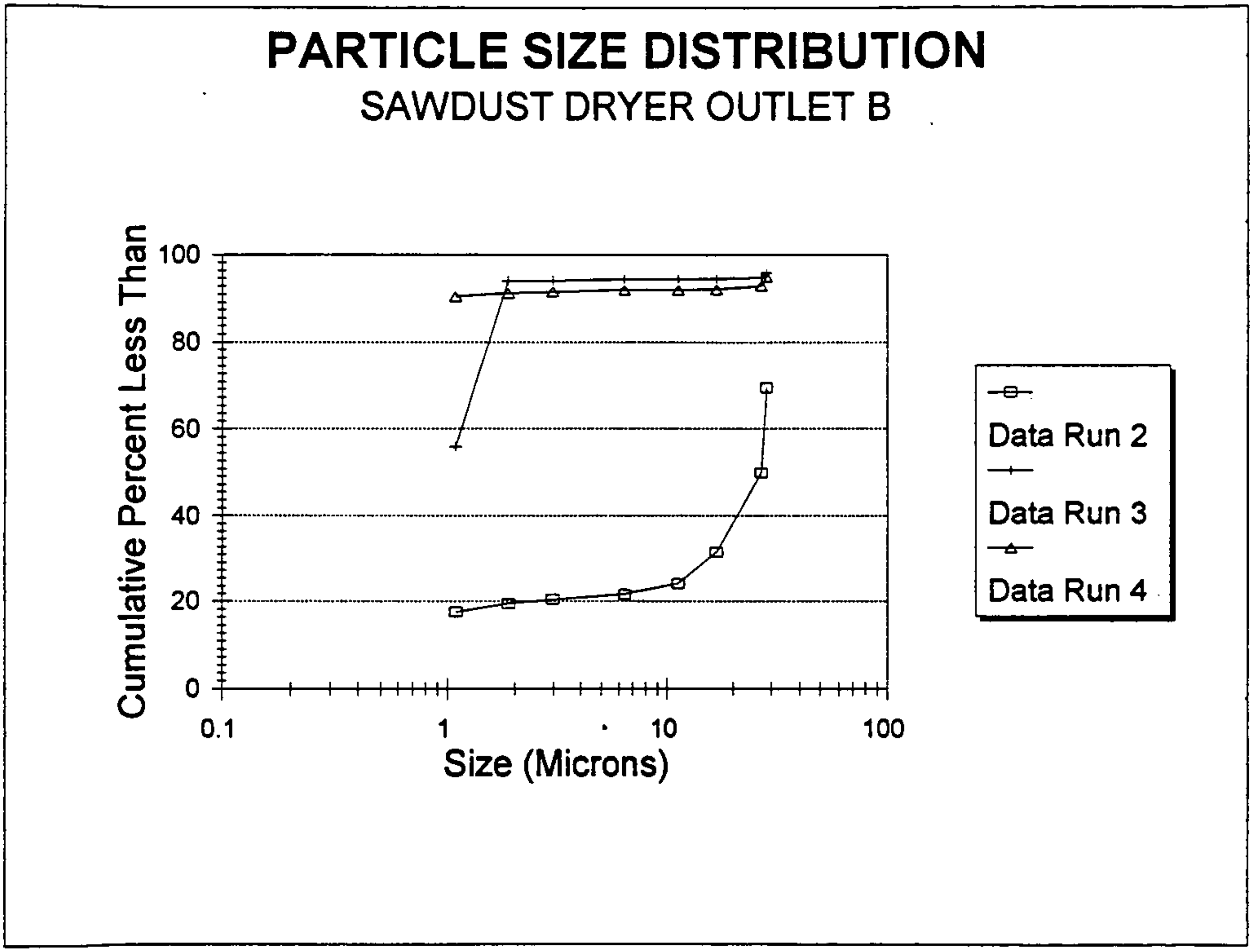
Stages 5 are assumed zero because of negative weight gain.

Particle Sizing Results

PINEHALL BRICK
OB-IMP-R4
11/05/92 Time: 16:44-17:55

Stage	Cumulative % Less than Dia.	50% Cut-point Diameter (microns) Physical	50% Cut-point Diameter (microns) Aerodynamic*
1	94.93	22.365	14.320
2	92.94	21.090	13.504
3	92.05	13.195	8.449
4	91.94	8.843	5.662
5	91.94	5.014	3.211
6	91.48	2.318	1.484
7	91.18	1.449	0.928
8	90.46	0.826	0.529

* Aerodynamic Diameter uses a particle density of 1 gm/cm3.


PARTICLE SIZE DISTRIBUTION
SAWDUST DRYER OUTLET B
Cumulative Percent Less Than
100
80
60
40
20
0
0.1
1
10
100
Size (Microns)
Data Run 2
Data Run 3
Data Run 4

B.11 SCREEN SIZING AND MOISTURE ANALYSIS

SIEVE AND MOISTURE ANALYSIS RESULTS

SAMPLE ID: SOIL SAMPLE FROM EXIT OF GRINDING ROOM
TIME: 4:15pm
DATE: 10/28/92

ETS ID : 4851D
ETSAS ID : 132518

PERCENT MOISTURE : 14.2%

	SAMPLE A	SAMPLE B	SAMPLE C	AVERAGE
PAN WEIGHT (gms) :	25.4072	25.4071	25.4106	
AS-IS SAMPLE WT. (gms) :	63.1490	68.3018	59.0550	
+ 20 MESH SAMPLE (gms) :	34.1515	36.2824	34.0613	
+ 200 MESH SAMPLE (gms):	51.6275	55.9315	48.4887	
- 200 MESH SAMPLE (gms):	27.3000	26.8807	26.7958	
PERCENT > 20 MESH :	23.1687	25.3535	25.7122	24.7448
PERCENT < 20 > 200 MESH:	69.4728	71.1612	68.5942	69.7428
PERCENT < 200 MESH :	5.0151	3.4354	4.1172	4.1892

Note All Sample Weights Include Pan Weight

SIEVE AND MOISTURE ANALYSIS RESULTS

SAMPLE ID: SOIL SAMPLE FROM EXIT OF GRINDING ROOM
TIME: 8:10am
DATE: 10/28/92

ETS ID : 4852D
ETSAS ID : 132519

PERCENT MOISTURE : 13.0%

	SAMPLE A	SAMPLE B	SAMPLE C	AVERAGE
PAN WEIGHT (gms) :	25.4105	25.4092	25.4071	
AS-IS SAMPLE WT.(gms) :	64.2148	66.3466	49.7138	
+ 20 MESH SAMPLE (gms) :	36.6672	38.2175	31.6308	
+ 200 MESH SAMPLE (gms):	50.3707	51.2361	41.5577	
- 200 MESH SAMPLE (gms):	27.5545	27.2696	26.8472	
PERCENT > 20 MESH :	29.0089	31.2875	25.6049	28.6338
PERCENT < 20 > 200 MESH:	64.3233	63.0888	66.4451	64.6190
PERCENT < 200 MESH :	5.5252	4.5445	5.9247	5.3315

Note All Sample Weights Include Pan Weight

SIEVE AND MOISTURE ANALYSIS RESULTS

SAMPLE ID: SOIL SAMPLE FROM EXIT OF GRINDING ROOM
TIME: 2:30pm
DATE: 10/27/92

ETS ID : 4853D
ETSAS ID : 132520

PERCENT MOISTURE : 13.0%

	SAMPLE A	SAMPLE B	SAMPLE C	
PAN WEIGHT (gms) :	25.4077	25.4059	25.4079	
AS-IS SAMPLE WT.(gms) :	58.2384	60.3763	65.1009	
+ 20 MESH SAMPLE (gms) :	39.4566	40.3380	42.0471	
+ 200 MESH SAMPLE (gms):	42.2822	43.4632	46.4280	
- 200 MESH SAMPLE (gms):	26.8762	26.9184	26.9100	
				AVERAGE
PERCENT > 20 MESH :	42.7920	42.6993	41.9197	42.4703
PERCENT < 20 > 200 MESH:	51.3985	51.6360	52.9567	51.9971
PERCENT < 200 MESH :	4.4729	4.3251	3.7843	4.1941

Note All Sample Weights Include Pan Weight

SIEVE AND MOISTURE ANALYSIS RESULTS

SAMPLE ID: SOIL SAMPLE FROM EXIT OF GRINDING ROOM
TIME: 1:00pm
DATE: 10/28/92

ETS ID : 4854D
ETSAS ID : 132521

PERCENT MOISTURE : 13.7%

	SAMPLE A	SAMPLE B	SAMPLE C	
PAN WEIGHT (gms) :	25.4055	25.4085	25.4037	
AS-IS SAMPLE WT.(gms) :	59.8417	57.0337	56.0731	
+ 20 MESH SAMPLE (gms) :	36.0245	33.5420	34.9487	
+ 200 MESH SAMPLE (gms):	47.4653	46.9486	44.9645	
- 200 MESH SAMPLE (gms):	26.7752	26.9089	26.5881	
				AVERAGE
PERCENT > 20 MESH :	30.8367	25.7184	31.1222	29.2258
PERCENT < 20 > 200 MESH:	64.0599	68.1106	63.7795	65.3167
PERCENT < 200 MESH :	3.9775	4.7443	3.8618	4.1945

Note All Sample Weights Include Pan Weight

SIEVE AND MOISTURE ANALYSIS RESULTS

SAMPLE ID: DRIED SAWDUST
TIME: 1:30pm
DATE: 10/29/92

ETS ID : 4855D
ETSAS ID : 132522

PERCENT MOISTURE : 2.7%

	SAMPLE A	SAMPLE B	SAMPLE C	AVERAGE
PAN WEIGHT (gms) :	10.6709	10.9222	10.9161	
AS-IS SAMPLE WT.(gms) :	37.2036	36.8525	37.5113	
+ 20 MESH SAMPLE (gms) :	32.2460	29.4874	28.6300	
+ 200 MESH SAMPLE (gms):	15.8866	18.3900	19.9214	
- 200 MESH SAMPLE (gms):	10.6782	10.9253	10.9192	
PERCENT > 20 MESH :	81.3151	71.5965	66.6056	73.1724
PERCENT < 20 > 200 MESH:	19.6576	28.7995	33.8606	27.4393
PERCENT < 200 MESH :	0.0275	0.0120	0.0117	0.0170

Note All Sample Weights Include Pan Weight

SIEVE AND MOISTURE ANALYSIS RESULTS

SAMPLE ID: DRIED SAWDUST
TIME: 10:45am
DATE: 10/30/92

ETS ID : 4856D
ETSAS ID : 132523

PERCENT MOISTURE : 1.80%

	SAMPLE A	SAMPLE B	SAMPLE C	
PAN WEIGHT (gms) :	10.9050	10.7800	10.6660	
AS-IS SAMPLE WT.(gms) :	46.4988	45.8229	38.3228	
+ 20 MESH SAMPLE (gms) :	38.4284	35.1883	27.1761	
+ 200 MESH SAMPLE (gms):	19.1886	21.4350	21.7491	
- 200 MESH SAMPLE (gms):	10.9062	10.7824	10.6688	
				AVERAGE
PERCENT > 20 MESH :	77.3264	69.6526	59.6963	68.8918
PERCENT < 20 > 200 MESH:	23.2726	30.4056	40.0737	31.2506
PERCENT < 200 MESH :	0.0034	0.0068	0.0101	0.0068

Note All Sample Weights Include Pan Weight

SIEVE AND MOISTURE ANALYSIS RESULTS

SAMPLE ID: DRIED SAWDUST
TIME: 2:15pm
DATE: 11/04/92

ETS ID : 4857D
ETSAS ID : 132524

PERCENT MOISTURE : 4.40%

	SAMPLE A	SAMPLE B	SAMPLE C	AVERAGE
PAN WEIGHT (gms) :	25.4145	25.4110	25.4108	
AS-IS SAMPLE WT.(gms) :	49.7505	50.7619	50.6970	
+ 20 MESH SAMPLE (gms) :	45.2603	45.8208	43.4871	
+ 200 MESH SAMPLE (gms):	29.8636	30.2988	32.6013	
- 200 MESH SAMPLE (gms):	25.4187	25.4163	25.4162	
PERCENT > 20 MESH :	81.5491	80.5092	71.4868	77.8484
PERCENT < 20 > 200 MESH:	18.2820	19.2806	28.4365	21.9997
PERCENT < 200 MESH :	0.0173	0.0209	0.0214	0.0198

Note All Sample Weights Include Pan Weight

SIEVE AND MOISTURE ANALYSIS RESULTS

SAMPLE ID: DRIED SAWDUST
TIME: 4:00pm
DATE: 11/03/92

ETS ID : 4858D
ETSAS ID : 132525

PERCENT MOISTURE : 2.50%

	SAMPLE A	SAMPLE B	SAMPLE C	
PAN WEIGHT (gms) :	25.4080	25.4061	25.4149	
AS-IS SAMPLE WT.(gms) :	51.0740	49.6451	50.1686	
+ 20 MESH SAMPLE (gms) :	43.5761	44.3300	44.0163	
+ 200 MESH SAMPLE (gms):	32.9504	30.7957	31.6062	
- 200 MESH SAMPLE (gms):	25.4109	25.4083	25.4169	
				AVERAGE
PERCENT > 20 MESH :	70.7866	78.0721	75.1459	74.6682
PERCENT < 20 > 200 MESH:	29.3867	22.2352	25.0116	25.5445
PERCENT < 200 MESH :	0.0113	0.0091	0.0081	0.0095

Note All Sample Weights Include Pan Weight

SIEVE AND MOISTURE ANALYSIS RESULTS

SAMPLE ID: DRIED SAWDUST
TIME: 3:30pm
DATE: 11/02/92

ETS ID : 4859D
ETSAS ID : 132526

PERCENT MOISTURE : 2.40%

	SAMPLE A	SAMPLE B	SAMPLE C	
PAN WEIGHT (gms) :	25.4059	25.4047	25.4075	
AS-IS SAMPLE WT.(gms) :	47.6120	49.0800	48.3558	
+ 20 MESH SAMPLE (gms) :	41.5019	43.6056	43.6854	
+ 200 MESH SAMPLE (gms):	31.5195	30.9031	30.0733	
- 200 MESH SAMPLE (gms):	25.4079	25.4073	25.4099	
				AVERAGE
PERCENT > 20 MESH :	72.4846	76.8772	79.6482	76.3366
PERCENT < 20 > 200 MESH:	27.5312	23.2242	20.3318	23.6957
PERCENT < 200 MESH :	0.0090	0.0110	0.0105	0.0101

Note All Sample Weights Include Pan Weight

SIEVE AND MOISTURE ANALYSIS RESULTS

SAMPLE ID: DRIED SAWDUST
TIME: 3:30pm
DATE: 11/06/92

ETS ID : 4860D
ETSAS ID : 132527

PERCENT MOISTURE : 2.80%

	SAMPLE A	SAMPLE B	SAMPLE C	
PAN WEIGHT (gms) :	25.4096	25.4092	25.4093	
AS-IS SAMPLE WT.(gms) :	51.7211	52.8468	53.1251	
+ 20 MESH SAMPLE (gms) :	44.2914	43.7429	45.4878	
+ 200 MESH SAMPLE (gms):	32.8221	34.4924	33.0279	
- 200 MESH SAMPLE (gms):	25.4121	25.4134	25.4134	
				AVERAGE
PERCENT > 20 MESH :	71.7625	66.8196	72.4442	70.3421
PERCENT < 20 > 200 MESH:	28.1721	33.1049	27.4883	29.5884
PERCENT < 200 MESH :	0.0095	0.0153	0.0148	0.0132

Note All Sample Weights Include Pan Weight

SIEVE AND MOISTURE ANALYSIS RESULTS

SAMPLE ID: DRIED SAWDUST
TIME: 3:30pm
DATE: 11/05/92

ETS ID : 4861D
ETSAS ID : 132528

PERCENT MOISTURE : 1.90%

	SAMPLE A	SAMPLE B	SAMPLE C	AVERAGE
PAN WEIGHT (gms) :	25.4087	25.4089	25.4091	
AS-IS SAMPLE WT.(gms) :	54.2986	53.9428	54.6821	
+ 20 MESH SAMPLE (gms) :	43.9842	44.5987	47.9142	
+ 200 MESH SAMPLE (gms):	35.6921	34.6789	32.1263	
- 200 MESH SAMPLE (gms):	25.4121	25.4124	25.4138	
PERCENT > 20 MESH :	64.2976	67.2526	76.8801	69.4768
PERCENT < 20 > 200 MESH:	35.5951	32.4877	22.9467	30.3432
PERCENT < 200 MESH :	0.0118	0.0123	0.0161	0.0134

Note All Sample Weights Include Pan Weight

SIEVE AND MOISTURE ANALYSIS RESULTS

SAMPLE ID: WET SAWDUST
TIME: 2:00pm
DATE: 11/04/92

ETS ID : 4862D
ETSAS ID : 132529

PERCENT MOISTURE : 47.2%

	SAMPLE A	SAMPLE B	SAMPLE C	
PAN WEIGHT (gms) :	25.4097	25.4115	25.4078	
AS-IS SAMPLE WT.(gms) :	52.6075	57.1940	58.9407	
+ 20 MESH SAMPLE (gms) :	46.8985	50.3778	52.6495	
+ 200 MESH SAMPLE (gms):	30.7192	31.6553	31.1497	
- 200 MESH SAMPLE (gms):	25.4134	25.4149	25.4102	
				AVERAGE
PERCENT > 20 MESH :	79.0093	78.5536	81.2387	79.6006
PERCENT < 20 > 200 MESH:	19.5218	19.6454	17.1232	18.7635
PERCENT < 200 MESH :	0.0136	0.0107	0.0072	0.0105

Note All Sample Weights Include Pan Weight

SIEVE AND MOISTURE ANALYSIS RESULTS

SAMPLE ID: DRIED SAWDUST
TIME: 9:40am
DATE: 11/07/92

ETS ID : 4863D
ETSAS ID : 132530

PERCENT MOISTURE : 3.10%

	SAMPLE A	SAMPLE B	SAMPLE C	
PAN WEIGHT (gms) :	25.4079	25.4068	25.4064	
AS-IS SAMPLE WT.(gms) :	52.5615	51.3253	52.3169	
+ 20 MESH SAMPLE (gms) :	44.5923	43.7224	45.6638	
+ 200 MESH SAMPLE (gms):	33.3685	32.9953	32.0361	
- 200 MESH SAMPLE (gms):	25.4109	25.4094	25.4098	
				AVERAGE
PERCENT > 20 MESH :	70.6514	70.6661	75.2769	72.1982
PERCENT < 20 > 200 MESH:	29.3169	29.2783	24.6361	27.7438
PERCENT < 200 MESH :	0.0110	0.0100	0.0126	0.0112

Note All Sample Weights Include Pan Weight

B.12 AMBIENT MONITORING DATA AND RESULTS

RECEIVED NOV 3 0 1992

ESC

November 24, 1992

Mr. Ted Handel
ETS, INC.
1401 Municipal Road, N.W.
Roanoke, VA 24012-1309

Dear Mr. Handel:

The results from the TSP and PM-10 runs completed between 10/27/92 and 11/06/92 for the Pine Hall site are enclosed. The Sample Records and filters from each run will be mailed separately in a few days.

All sampler run times were computed from the elapsed-time meter start and stop values except for those runs when the start or stop values were not reported. For those runs, the run time was calculated from the start and stop clock times reported by the operator. TSP flow rates were calculated by the operator from magnehelic readings and recorded on the Sample Record. PM-10 flow rates were assumed to be 40 CFM for every run because the flow controller was set for 40 CFM. The PM-10 flow chart recordings were checked to verify the flow rates during the run were consistant with the flow rates obtained during the flow calibration performed on 10/23/92.

Please call if you have further questions.

Sincerely,

ENVIRONMENTAL SYSTEMS CORPORATION

Hal Snodgrass

Hal F. Snodgrass
Senior Meteorologist

/hfs

Enclosures: Particulate report

ENVIRONMENTAL SYSTEMS CORPORATION

Phone: (615) 688-7900
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200 Tech Center Drive
Knoxville, Tennessee 37912

PINE HALL WEST END TSP

START DATE	START TIME	DURATION HH:MM	FILTER NUMBER	INITIAL WT GMS	FINAL WT GMS	NET WT GMS	FLOW CFM	CONCEN. UG/M3
10/27/92	7:28	8:19	23391	4.3724	4.3895	0.0171	36.48	33.2
10/28/92	7:36	8:34	23187	4.4354	4.4700	0.0346	42.05	56.6
10/29/92	7:42	7:59	23175	4.3568	4.4053	0.0485	41.81	85.6
11/02/92	8:32	8:56	23621	4.4331	4.4545	0.0214	41.53	34.0
11/03/92	7:38	9:14	23617	4.4333	4.4627	0.0294	40.84	45.9
11/04/92	7:00	8:20	23180	4.4339	4.4576	0.0237	43.18	38.8
11/06/92	7:15	8:48	23644	4.2133	4.2214	0.0081	41.30	13.1
11/06/92	16:15	16:48	23632	4.3849	4.3946	0.0097	43.83	7.8

PINE HALL WEST END PM10

START DATE	START TIME	DURATION HH:MM	FILTER NUMBER	INITIAL WT GMS	FINAL WT GMS	NET WT GMS	FLOW CFM	CONCEN. UG/M3
10/27/92	7:28	8:20	23392	4.3532	4.3759	0.0227	40.00	40.1
10/28/92	7:26	8:41	23188	4.4500	4.4770	0.0270	40.00	45.8
10/29/92	7:34	8:04	23183	4.4184	4.4465	0.0281	40.00	51.3
11/02/92	8:30	9:02	23622	4.4588	4.4705	0.0117	40.00	19.1
11/03/92	7:30	8:58	23174	4.4226	4.4392	0.0166	40.00	27.3
11/04/92	7: 5	8:15	23181	4.4422	4.4586	0.0164	40.00	29.3
11/06/92	7:15	8:30	23645	4.2329	4.2403	0.0074	40.00	12.8
11/06/92	16:16	16:16	23631	4.3711	4.3812	0.0101	40.00	9.1

PINE HALL EAST END TSP

START DATE	START TIME	DURATION HH:MM	FILTER NUMBER	INITIAL WT GMS	FINAL WT GMS	NET WT GMS	FLOW CFM	CONCEN. UG/M3
10/27/92	7:44	8:30	23393	4.3572	4.3646	0.0074	37.58	13.6
10/28/92	6:42	9:12	23191	4.4834	4.5345	0.0511	41.46	78.9
10/29/92	7:10	8:21	23186	4.3918	4.4357	0.0439	40.52	76.4
11/02/92	8:00	9:50	23624	4.4721	4.4908	0.0187	43.42	25.8
11/03/92	8:10	8:00	23620	4.4504	4.4855	0.0351	40.27	64.2
11/04/92	6:45	8:55	23182	4.3921	4.4185	0.0264	41.60	41.9
11/05/92	7:05	8:15	23176	4.4308	4.4394	0.0086	40.28	15.2
11/06/92	7:00	9:25	23629	4.4989	4.5926	0.0937	41.73	140.4
11/06/92	16:43	16:32	23633	4.3944	4.4216	0.0272	42.76	22.7

PINE HALL EAST END PM10

START DATE	START TIME	DURATION HH:MM	FILTER NUMBER	INITIAL WT GMS	FINAL WT GMS	NET WT GMS	FLOW CFM	CONCEN. UG/M3
10/27/92	7:44	8:34	23389	4.3629	4.3745	0.0116	40.00	19.9
10/28/92	6:38	VOIDED - FLOW RATE INCONSISTENT						
10/29/92	7:05	8:16	23184	4.4538	4.4791	0.0253	40.00	45.1
11/02/92	8:05	9:38	23625	4.4781	4.4844	0.0063	40.00	9.6
11/03/92	8:08	VOIDED - FLOW RATE INCONSISTENT						
11/04/92	6:45	9:01	23626	4.4929	4.5050	0.0121	40.00	19.8
11/05/92	7:05	8:14	23177	4.4550	4.4646	0.0096	40.00	17.2
11/06/92	7:05	9:17	23630	4.4768	4.5039	0.0271	40.00	43.0
11/06/92	16:48	16:26	23634	4.4072	4.4212	0.0140	40.00	12.5

PINE HALL CRUSHER TSP

START DATE	TIME	DURATION HH:MM	FILTER NUMBER	INITIAL WT GMS	FINAL WT GMS	NET WT GMS	FLOW CFM	CONCEN. UG/M3
11/02/92	7:00	VOIDED - FILTER NOT CENTERED IN SAMPLER						
11/03/92	6:55	8:16	23618	4.4654	5.3970	0.9316	41.52	1598.5
11/04/92	6:40	8:16	23179	4.3957	5.0626	0.6669	42.60	1115.3

PINE HALL CRUSHER PM10

START DATE	TIME	DURATION HH:MM	FILTER NUMBER	INITIAL WT GMS	FINAL WT GMS	NET WT GMS	FLOW CFM	CONCEN. UG/M3
11/02/92	7:00	8:27	23627	4.4861	4.6894	0.2033	40.00	354.2
11/03/92	6:50	8:14	23619	4.4670	4.7797	0.3127	40.00	559.2
11/04/92	6:45	8:21	23178	4.4408	4.7867	0.3459	40.00	609.9

PINE HALL GRINDING BUILDING TSP

START DATE	START TIME	DURATION HH:MM	FILTER NUMBER	INITIAL WT GMS	FINAL WT GMS	NET WT GMS	FLOW CFM	CONCEN. UG/M3
10/27/92	7:00	8:17	23394	4.3663	4.4093	0.0430	37.55	81.4
10/28/92	7:08	9:38	23190	4.4571	4.5406	0.0835	40.30	126.7

PINE HALL GRINDING BUILDING PM10

START DATE	START TIME	DURATION HH:MM	FILTER NUMBER	INITIAL WT GMS	FINAL WT GMS	NET WT GMS	FLOW CFM	CONCEN. UG/M3
10/27/92	7:00	8:19	23390	4.3464	4.3828	0.0364	40.00	64.4
10/28/92	7:00	9:37	23189	4.4153	4.4503	0.0350	40.00	53.6

FIELD CONTROLS

FILTER NUMBER	INITIAL WT GMS	FINAL WT GMS	DIFFERENCE MGMS
23616	4.4513	4.4480	-3.3
23636	4.0644	4.0610	-3.4
23637	4.0318	4.0288	-3.0
23638	4.0581	4.0551	-3.0
23639	4.0779	4.0742	-3.7
23640	4.0725	4.0695	-3.0
23641	4.1395	4.1360	-3.5
23642	4.2057	4.2022	-3.5
23643	4.2209	4.2170	-3.9
23646	4.1891	4.1850	-4.1

C.0 CONTINUOUS EMISSIONS MONITORING APPENDICES

C.1 CONTINUOUS EMISSIONS MONITORING DATA - SAWDUST DRYER INLET

C.1.1 CONTINUOUS EMISSIONS MONITORING DATA AND RESULTS (O_2, CO_2, CO, NO_x, THC) - SAWDUST DRYER INLET

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 1

Starting
11-02-92

Time	Inlet O2 %dv	Inlet CO2 %dv
13:12	15.17	5.49
13:13	15.33	5.37
13:14	15.24	5.45
13:15	14.75	5.89
13:16	14.64	5.98
13:17	14.61	6.00
13:18	14.64	5.97
13:19	14.81	5.81
13:20	14.69	5.93
13:21	14.64	6.01
13:22	14.70	5.92
13:23	14.72	5.87
13:24	14.89	5.71
13:25	14.96	5.65
13:26	14.78	5.87
13:27	14.92	5.67
13:28	15.07	5.53
13:29	14.95	5.64
13:30	14.85	5.81
13:31	14.85	5.74
13:32	14.86	5.72
13:33	15.02	5.57
13:34	14.97	5.61
13:35	14.82	5.64
13:36	14.80	5.77
13:37	14.79	5.76
13:38	14.86	5.71
13:39	14.88	5.66
13:40	14.71	5.84
13:41	14.57	5.97
13:42	14.58	5.96
13:43	14.67	5.88
13:44	14.59	5.94
13:45	14.52	6.01
13:46	14.52	6.01
13:47	14.58	5.97
13:48	14.95	5.61
13:49	18.90	2.30
13:50	18.86	1.97
13:51	17.64	3.08

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 1
(continued)

Starting
11-02-92

Time	Inlet O2 %dv	Inlet CO2 %dv
13:52	14.74	5.85
13:53	13.91	6.54
13:54	14.18	6.30
13:55	14.32	6.19
13:56	14.42	6.13
13:57	14.56	5.99
13:58	14.91	5.66
13:59	15.20	5.38
14:00	15.46	5.14
14:01	15.56	5.04
14:02	15.58	5.03
14:03	15.59	5.02
14:04	15.63	4.98
14:05	15.62	5.01
14:06	15.61	5.02
14:07	15.62	5.01
14:08	15.62	5.01
14:09	15.51	5.11
14:10	15.61	5.03
14:11	15.58	5.05
14:12	15.65P	4.98P
14:13	15.61P	5.03P
14:14	15.64P	5.01P
14:15	15.61P	5.03P
14:16	15.51P	5.14P
14:17	15.75P	4.91P
14:18	16.01P	4.67P
14:19	15.93P	4.77P
14:20	15.47P	5.17P
14:21	15.39P	5.23P
14:22	15.34P	5.28P
14:23	15.55P	5.10P
14:24	15.53P	5.11P
14:25	15.53P	5.12P
14:26	15.50P	5.15P
14:27	15.44P	5.21P
14:28	15.45P	5.22P
14:29	15.36	5.30
14:30	15.32	5.35
14:31	15.39	5.30

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 1
(continued)

Starting
11-02-92

Time	Inlet O2 %dv	Inlet CO2 %dv
14:32	15.34	5.33
14:33	15.37	5.29
14:34	15.39	5.28
14:35	15.47	5.21
14:36	15.38	5.29
14:37	15.40	5.27
14:38	15.42	5.27
14:39	15.31	5.37
14:40	15.26	5.41
14:41	15.21	5.48
14:42	15.23	5.46
14:43	15.28	5.41
14:44	15.19	5.49
14:45	15.16	5.54
14:46	15.05	5.68
14:47	15.14	5.60
14:48	15.13	5.61
14:49	15.20	5.54
14:50	15.29	5.47
14:51	15.23	5.51
14:52	15.35	5.41
14:53	15.41	5.36
14:54	15.42	5.36
14:55	15.49	5.29
14:56	15.64	5.16
14:57	15.70	5.12
14:58	15.79	5.04
14:59	15.79	5.03
15:00	15.72	5.11
15:01	15.69	5.14
15:02	15.73	5.10
15:03	15.80	5.04
15:04	15.72	5.11
15:05	15.62	5.21
15:06	15.53	5.30
15:07	15.40	5.41
15:08	15.20	5.38
15:09	15.15	5.39
15:10	15.92	4.68
15:11	18.68	2.15

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 1
(continued)

Starting
11-02-92

Time	Inlet O2 %dv	Inlet CO2 %dv
15:12	18.71	2.12
15:13	15.11	5.47
15:14	14.14	6.33
15:15	14.44	6.06
15:16	14.48	6.01
15:17	14.59	5.91
15:18	14.65	5.86
15:19	14.95	5.58
15:20	15.17	5.36
15:21	15.37	5.20
15:22	15.66	4.94
15:23	16.19	4.44
15:24	16.23	4.43
15:25	16.05	4.59
15:26	15.73	4.87
15:27	15.86	4.74
15:28	15.88	4.74
137 MinAvg	15.30	5.35

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 2

Starting
11-02-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
17:34	14.27	6.11	342.10	48.61
17:35	14.40	6.01	346.20	47.91
17:36	14.43	5.97	345.80	48.13
17:37	14.51	5.90	335.90	48.19
17:38	15.04	5.41	311.10	44.30
17:39	14.98	5.50	296.70	43.15
17:40	14.54	5.93	304.40	45.70
17:41	14.13	6.29	341.50	49.02
17:42	14.29	6.13	344.10	49.34
17:43	14.47	5.96	339.50	49.10
17:44	14.58	5.84	342.70	49.25
17:45	14.51	5.92	339.10	49.64
17:46	14.44	5.99	341.40	49.48
17:47	14.50	5.95	334.40	49.22
17:48	14.49	5.93	338.40	49.24
17:49	14.50	5.95	335.40	49.35
17:50	17.17	3.39	300.30	31.65
17:51	17.82	2.83	225.30	22.60
17:52	16.67	3.96	214.20	25.50
17:53	13.91	6.52	264.50	47.51
17:54	14.05	6.35	292.20	49.79
17:55	14.15	6.26	289.00	50.41
17:56	14.21	6.21	292.40	51.13
17:57	14.40	6.02	296.60	51.14
17:58	15.86	4.53	299.30	43.23
17:59	14.14	6.30	303.50	51.07
18:00	13.96	6.47	304.80	50.65
18:01	14.36	6.05	308.30	49.62
18:02	13.25	7.15	303.20	51.31
18:03	13.51	6.86	312.40	50.62
18:04	14.17	6.22	315.90	49.86
18:05	14.75	5.66	333.20	49.44
18:06	14.46	5.91	345.90	50.76
18:07	14.73	5.68	354.20	50.40
18:08	14.95	5.50	366.40	50.36
18:09	15.03	5.42	368.60	50.57
18:10	15.07	5.34	375.00	49.71
18:11	15.09	5.35	379.90	49.69
18:12	15.11	5.32	387.30	49.43
18:13	15.05	5.37	398.30	49.23

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 2
(continued)

Starting
11-02-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
18:14	15.05	5.38	407.00	49.14
18:15	14.95	5.50	414.00	49.09
18:16	14.80	5.63	415.10	49.26
18:17	14.69	5.74	408.90	48.83
18:18	14.43	5.93	402.80	48.78
18:19	14.51	5.97	406.70	48.50
18:20	14.22	6.18	384.90	49.10
18:21	14.21	6.19	374.30	49.17
18:22	14.29	6.09	372.90	48.29
18:23	14.19	6.16	357.70	48.82
18:24	14.03	6.24	342.80	48.64
18:25	14.04	6.21	335.20	48.79
18:26	13.84	6.28	328.10	48.47
18:27	13.85	6.35	330.60	48.14
18:28	13.88	6.33	321.10	47.60
18:29	14.01	6.17	330.40	46.81
18:30	14.07	6.09	335.50	46.32
18:31	14.15	5.98	345.80	45.59
18:32	14.32	5.82	355.70	45.03
18:33	14.45	5.68	367.30	44.76
18:34	14.54P	5.66P	369.70P	44.73P
18:35	14.48P	5.73P	377.00P	44.67P
18:36	14.53P	5.72P	381.80P	44.49P
18:37	14.59P	5.67P	383.60P	44.20P
18:38	14.50P	5.65P	386.10P	44.29P
18:39	14.45P	5.72P	381.20P	44.26P
18:40	14.37P	5.80P	369.70P	44.14P
18:41	14.28P	5.83P	365.00P	44.02P
18:42	14.22P	5.88P	363.00P	44.52P
18:43	14.25	5.89	356.90	44.55
18:44	14.68	5.51	348.90	42.46
18:45	14.73	5.46	308.90	40.18
18:46	14.59	5.60	307.20	39.82
18:47	14.18	5.98	311.60	41.72
18:48	13.94	6.22	350.00	44.16
18:49	13.87	6.16	345.60	44.91
18:50	14.03	6.11	342.20	44.73
18:51	14.11	6.02	339.20	44.36
18:52	14.12	6.04	336.90	44.27
18:53	14.11	5.99	327.40	44.38

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 2
(continued)

Starting
11-02-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
18:54	14.23	5.90	329.80	43.84
18:55	14.25	5.88	329.10	44.05
18:56	14.35	5.93	327.80	43.99
18:57	14.12	6.05	327.50	44.74
18:58	14.24	5.96	324.70	44.09
18:59	14.20	5.99	321.50	44.59
19:00	14.15	6.07	320.70	44.89
19:01	14.22	6.03	325.00	44.76
19:02	14.15	6.05	330.30	45.14
19:03	14.24	5.96	331.00	45.06
19:04	15.07	5.22	340.60	41.63
19:05	17.69	2.74	272.40	22.43
19:06	17.92	2.74	230.50	21.89
19:07	16.30	4.34	235.80	30.66
19:08	14.10	6.41	293.80	45.09
19:09	14.04	6.47	306.60	47.20
19:10	14.23	6.29	309.50	47.50
19:11	14.24	6.26	303.90	48.23
19:12	14.40	6.14	305.60	48.18
19:13	14.47	6.08	304.60	48.88
19:14	14.72	5.82	307.80	48.30
19:15	14.83	5.72	316.80	48.37
19:16	14.80	5.78	322.30	48.26
19:17	14.70	5.86	328.60	48.78
19:18	14.76	5.79	332.20	48.83
19:19	14.80	5.73	339.10	48.09
19:20	14.70	5.85	340.80	48.94
19:21	14.76	5.81	339.10	48.33
19:22	14.75	5.80	343.40	48.04
19:23	14.69	5.86	344.80	47.94
19:24	14.77	5.79	344.50	48.17
19:25	14.82	5.74	348.80	48.27
19:26	14.76	5.79	346.80	48.31
19:27	14.71	5.83	349.20	48.39
19:28	14.77	5.79	358.50	48.14
19:29	14.79	5.76	361.10	48.07
19:30	14.66	5.81	357.10	48.74
19:31	14.78	5.78	358.50	48.59
19:32	14.70	5.86	363.20	49.33
19:33	14.70	5.85	361.60	48.88

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 2
(continued)

Starting
11-02-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
19:34	14.57	5.96	358.10	49.09
19:35	14.69	5.84	357.70	48.67
19:36	14.66	5.86	360.70	48.44
19:37	14.81	5.72	362.20	47.40
19:38	14.52	5.99	349.40	48.24
19:39	14.57	5.95	346.90	48.81
19:40	14.43	6.08	345.50	49.15
19:41	14.44	6.09	346.10	48.33
19:42	14.20	6.27	344.50	49.11
129 MinAvg	14.59	5.81	334.89	46.52

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 3

Starting
11-03-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
09:16	15.65	5.01	553.40	39.07
09:17	15.80	4.91	566.80	38.50
09:18	15.81	4.92	588.10	38.32
09:19	15.72	5.00	594.70	38.70
09:20	15.61	5.10	595.20	39.07
09:21	15.57	5.20	593.10	39.37
09:22	15.43	5.32	598.60	39.77
09:23	15.46	5.30	596.00	39.85
09:24	15.48	5.30	591.80	40.01
09:25	15.55	5.25	595.50	40.29
09:26	15.56	5.25	601.80	40.38
09:27	15.61	5.21	595.90	40.44
09:28	15.64	5.18	593.10	40.33
09:29	15.72	5.16	596.40	39.96
09:30	15.65	5.21	593.40	40.01
09:31	15.51	5.34	586.30	40.74
09:32	15.47	5.38	574.60	40.66
09:33	15.49	5.33	572.60	40.65
09:34	15.41	5.42	572.30	40.88
09:35	18.43	2.55	459.90	23.13
09:36	18.85	2.20	302.40	17.12
09:37	17.92	3.12	310.20	19.46
09:38	14.50	6.28	391.50	40.46
09:39	14.43	6.30	566.30	42.87
09:40	14.74	5.99	544.50	42.27
09:41	14.78	5.95	531.20	42.61
09:42	14.97	5.76	528.10	43.10
09:43	15.16	5.59	534.40	43.06
09:44	15.29	5.47	518.20	42.95
09:45	15.66	5.11	489.40	41.86
09:46	15.88	4.91	406.30	40.93
09:47	15.95	4.86	376.20	40.68
09:48	15.99	4.83	383.20	40.61
09:49	15.92	4.92	391.60	40.90
09:50	15.84	5.00	395.10	41.06
09:51	15.88	4.95	389.70	40.75
09:52	16.06	4.80	385.70	39.98
09:53	16.15	4.71	384.00	39.81
09:54	16.08	4.77	387.40	40.20
09:55	16.09	4.78	387.50	40.08

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 3
(continued)

Starting
11-03-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
09:56	16.07	4.79	394.60	39.85
09:57	16.09	4.79	385.60	40.22
09:58	16.12	4.77	393.60	40.31
09:59	16.41	4.50	377.90	37.99
10:00	16.43	4.51	370.30	37.40
10:01	16.23	4.69	373.30	38.14
10:02	16.02	4.83	393.00	39.97
10:03	16.12	4.78	395.30	40.25
10:04	16.10	4.72	394.80	39.95
10:05	15.99	4.78	396.80	40.10
10:06	15.99	4.81	383.60	40.19
10:07	16.00	4.78	380.90	39.86
10:08	16.02	4.77	386.60	40.17
10:09	16.04	4.76	400.60	40.45
10:10	16.04	4.78	396.90	40.29
10:11	16.04	4.78	389.50	40.16
10:12	16.11	4.72	396.70	39.76
10:13	16.20	4.64	394.10	39.30
10:14	16.20	4.65	395.90	39.38
10:15	16.23	4.65	393.40	39.06
10:16	16.17P	4.70P	399.50P	39.26P
10:17	16.27P	4.64P	395.10P	38.88P
10:18	16.18P	4.72P	391.90P	39.02P
10:19	16.25P	4.67P	392.90P	38.61P
10:20	16.30P	4.63P	400.80P	38.20P
10:21	16.39P	4.57P	399.60P	37.82P
10:22	16.34P	4.62P	405.00P	38.21P
10:23	16.20P	4.63P	411.90P	38.62P
10:24	16.15P	4.71P	416.40P	38.61P
10:25	16.08P	4.78P	443.90P	38.80P
10:26	16.09P	4.77P	479.00P	38.78P
10:27	16.06P	4.81P	543.50P	38.72P
10:28	16.04P	4.84P	578.70P	38.98P
10:29	16.01P	4.87P	612.60P	39.18P
10:30	15.84P	5.00P	657.00P	39.82P
10:31	15.76P	5.09P	688.30P	40.42P
10:32	15.66P	5.20P	701.00P	40.91P
10:33	15.59	5.25	704.00	41.29
10:34	15.60	5.25	697.80	41.32
10:35	15.55	5.31	692.20	41.49

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 3
(continued)

Starting
11-03-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
10:36	15.52	5.33	674.60	41.53
10:37	15.48	5.40	652.80	41.69
10:38	15.44	5.46	639.00	41.68
10:39	15.42	5.49	642.30	41.71
10:40	15.26	5.63	640.70	42.32
10:41	15.27	5.63	625.10	42.29
10:42	15.32	5.61	600.60	42.16
10:43	15.25	5.68	585.80	42.33
10:44	15.23	5.70	574.00	42.24
10:45	15.25	5.67	577.20	42.37
10:46	15.16	5.77	565.20	42.52
10:47	15.18	5.79	542.90	42.62
10:48	15.21	5.74	524.10	42.75
10:49	15.31	5.65	510.50	42.62
10:50	15.28	5.68	501.90	42.83
10:51	15.22	5.75	498.90	43.19
10:52	15.24	5.76	494.30	42.80
10:53	15.33	5.68	499.30	42.85
10:54	15.38	5.64	490.20	43.27
10:55	16.13	4.96	478.40	38.94
10:56	15.49	5.58	442.50	43.03
10:57	15.45	5.62	489.50	43.24
10:58	15.48	5.61	485.10	43.10
10:59	15.49	5.62	474.00	43.68
11:00	16.63	4.57	463.40	38.78
11:01	19.04	2.42	270.10	20.76
11:02	18.70	2.78	224.50	21.26
11:03	16.41	4.89	249.40	32.20
11:04	15.42	5.73	407.90	43.30
11:05	15.60	5.39	400.40	42.65
11:06	15.47	5.34	395.00	42.66
11:07	15.54	5.28	398.20	42.62
11:08	15.51	5.30	406.40	43.10
11:09	15.26	5.54	416.30	44.93
11:10	15.22	5.54	425.90	46.16
11:11	15.26	5.54	427.70	46.31
11:12	15.35	5.41	419.60	45.78
11:13	15.55	5.26	417.70	44.99
11:14	15.67	5.18	425.40	44.51
11:15	15.74	5.11	426.00	44.21

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 3
(continued)

Starting
11-03-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
11:16	15.85	4.99	433.70	43.96
11:17	15.91	4.95	437.10	43.86
11:18	16.04	4.85	430.30	43.41
11:19	15.95	4.94	437.20	43.63
11:20	15.92	4.96	439.40	43.83
11:21	15.99	4.92	431.40	43.59
11:22	16.07	4.83	425.10	43.33
11:23	16.06	4.83	425.60	43.33
11:24	16.12	4.81	431.90	43.15
11:25	16.14	4.79	440.90	43.19
11:26	16.09	4.84	453.60	43.65
11:27	16.01	4.91	456.30	44.04
11:28	15.98	4.94	461.10	43.85
11:29	15.89	5.03	465.40	44.30
11:30	15.91	5.00	463.60	44.16
11:31	15.87	5.06	471.00	44.69
11:32	15.80	5.12	468.50	44.94
137 MinAvg	15.81	5.08	475.54	40.71

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 4

Starting
11-03-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
16:55	16.30	4.33	343.50	31.10
16:56	16.29	4.37	346.50	31.19
16:57	16.32	4.36	350.40	30.99
16:58	16.29	4.40	372.60	30.98
16:59	16.15	4.53	413.30	31.23
17:00	16.02	4.66	453.70	31.73
17:01	15.96	4.69	473.30	31.86
17:02	15.79	4.86	478.90	32.38
17:03	15.65	4.98	494.20	32.92
17:04	15.58	5.07	494.40	33.06
17:05	15.60	5.03	487.90	32.91
17:06	15.58	5.08	483.40	32.98
17:07	15.46	5.18	480.90	33.41
17:08	15.36	5.26	474.90	33.84
17:09	15.22	5.39	474.20	34.22
17:10	15.15	5.45	468.40	34.80
17:11	15.13	5.47	444.20	35.07
17:12	15.18	5.41	438.70	34.94
17:13	15.19	5.39	432.90	34.72
17:14	15.22	5.37	424.20	34.49
17:15	15.21	5.37	414.70	34.19
17:16	15.19	5.38	413.10	34.00
17:17	15.14	5.43	408.60	34.12
17:18	15.19	5.38	414.20	33.84
17:19	15.30	5.25	416.60	33.28
17:20	15.18	5.22	417.70	33.35
17:21	15.36	5.16	413.20	33.40
17:22	15.40	5.14	409.70	33.14
17:23	15.40	5.10	412.40	33.07
17:24	15.31	5.18	416.10	33.32
17:25	15.31	5.19	417.90	33.62
17:26	15.32	5.16	410.60	33.58
17:27	15.28	5.22	406.90	33.57
17:28	15.23	5.23	407.80	33.54
17:29	15.28	5.18	409.70	33.08
17:30	15.37	5.05	414.20	32.85
17:31	15.40	5.05	417.10	32.63
17:32	15.43	4.99	417.80	32.60
17:33	15.41	4.99	422.80	32.67
17:34	15.44	4.95	428.70	32.34

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 4
(continued)

Starting
11-03-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
17:35	15.54	4.85	428.60	32.01
17:36	15.69	4.69	411.90	30.45
17:37	15.69	4.69	411.00	30.23
17:38	15.65	4.72	418.30	30.38
17:39	15.55	4.79	438.90	31.57
17:40	15.72	4.63	431.50	31.71
17:41	15.55	4.64	425.90	31.83
17:42	15.60	4.84	423.30	31.69
17:43	15.68	4.74	421.90	31.07
17:44	15.81	4.60	415.30	30.54
17:45	15.91	4.52	408.70	29.95
17:46	15.97	4.43	404.60	29.53
17:47	15.92	4.39	401.70	29.52
17:48	15.87	4.42	394.40	29.76
17:49	15.80	4.51	396.30	29.76
17:50	15.75	4.54	398.00	29.76
17:51	15.81	4.45	400.10	29.19
17:52	15.83	4.39	401.50	28.89
17:53	15.85	4.37	401.20	28.51
17:54	15.77	4.44	414.10	28.73
17:55	15.62	4.49	430.50	28.94
17:56	15.57	4.63	440.60	29.74
17:57	15.56P	4.62P	440.10P	30.02P
17:58	15.55P	4.62P	442.20P	29.99P
17:59	15.92P	4.21P	447.00P	28.54P
18:00	18.41P	1.76P	310.80P	10.16P
18:01	18.31P	1.87P	248.90P	9.50P
18:02	16.49P	3.74P	283.50P	18.48P
18:03	14.76P	5.38P	441.70P	30.80P
18:04	14.79P	5.31P	433.20P	31.46P
18:05	14.81P	5.28P	421.90P	32.08P
18:06	14.74P	5.33P	398.40P	32.35P
18:07	14.70P	5.38P	394.70P	32.31P
18:08	14.63P	5.44P	386.70P	32.69P
18:09	14.54P	5.55P	385.10P	33.04P
18:10	14.45P	5.64P	384.10P	33.23P
18:11	14.41P	5.65P	377.50P	33.14P
18:12	14.47P	5.55P	375.90P	33.11P
18:13	14.53P	5.51P	376.10P	32.90P
18:14	14.53P	5.49P	377.20P	32.70P

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 4
(continued)

Starting
11-03-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
18:15	14.54P	5.47P	380.70P	32.53P
18:16	14.62P	5.41P	384.10P	32.42P
18:17	14.59P	5.43P	396.50P	32.68P
18:18	14.63P	5.36P	420.00P	33.21P
18:19	14.80P	5.22P	453.30P	33.17P
18:20	15.03P	5.22P	466.80P	33.77P
18:21	15.09P	5.17P	461.50P	33.40P
18:22	15.16P	5.11P	444.30P	33.15P
18:23	15.19P	5.14P	427.30P	33.24P
18:24	15.36P	5.13P	432.70P	33.33P
18:25	15.44P	5.06P	436.60P	32.90P
18:26	15.52P	4.97P	434.90P	32.40P
18:27	15.54P	4.97P	424.50P	32.13P
18:28	15.46P	5.04P	417.50P	32.35P
18:29	15.38	5.13	418.30	32.36
18:30	15.28	5.18	420.50	32.21
18:31	15.23	5.26	416.80	32.20
18:32	15.15	5.32	415.00	32.12
18:33	15.13	5.32	418.60	31.98
18:34	15.10	5.34	410.90	32.07
18:35	15.02	5.41	409.90	32.21
18:36	14.98	5.44	403.50	32.13
18:37	14.98	5.45	406.60	32.04
18:38	15.01	5.37	411.30	31.84
18:39	15.11	5.28	409.60	31.06
18:40	15.21	5.15	390.50	29.90
18:41	15.11	5.28	382.10	30.49
18:42	15.00	5.35	383.60	31.38
18:43	14.76	5.60	371.90	32.44
18:44	14.07	6.32	357.20	33.47
18:45	14.26	6.12	362.50	33.15
18:46	14.50	5.86	366.60	33.22
18:47	14.74	5.64	371.90	32.80
18:48	15.09	5.42	380.80	32.11
18:49	15.41	5.07	391.60	30.91
18:50	15.64	4.88	383.60	30.50
18:51	15.75	4.74	357.70	30.00
18:52	15.80	4.73	358.60	30.04
18:53	15.89	4.64	360.30	29.44
18:54	15.89	4.64	370.20	29.48

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 4
(continued)

Starting
11-03-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
18:55	15.84	4.70	376.10	29.80
18:56	15.84	4.68	381.20	29.97
18:57	16.26	4.23	366.90	28.03
18:58	16.77	3.73	352.60	24.60
18:59	15.82	4.80	387.80	28.86
19:00	15.90	4.65	387.90	28.51
19:01	15.99	4.59	381.00	28.51
19:02	16.09	4.49	384.30	28.44
19:03	16.13	4.44	386.20	27.87
19:04	16.21	4.39	388.30	27.75
19:05	16.27	4.31	386.90	27.59
19:06	16.30	4.30	395.50	27.68
19:07	16.24	4.38	394.20	28.02
19:08	16.14	4.49	391.30	28.14
19:09	16.49	4.13	390.20	26.66
19:10	18.25	2.44	343.10	14.95
19:11	19.06	1.69	224.80	7.57
19:12	18.15	2.63	253.80	10.96
19:13	15.54	5.10	412.80	27.46
19:14	15.35	5.29	441.00	29.78
19:15	15.49	5.16	449.20	30.12
19:16	15.69	4.93	465.80	29.83
19:17	15.79	4.89	450.00	29.68
19:18	15.94	4.74	439.30	29.34
19:19	16.05	4.63	440.80	28.86
19:20	16.03	4.68	442.70	29.14
19:21	16.04	4.67	431.50	29.09
19:22	16.12	4.58	401.60	28.80
19:23	16.24	4.52	374.80	28.51
19:24	16.21	4.55	377.20	28.01
19:25	16.24	4.53	387.30	28.41
19:26	16.28	4.53	394.10	28.40
19:27	16.23	4.57	390.00	28.56
19:28	16.14	4.66	390.90	28.86
19:29	16.17	4.61	395.20	29.16
19:30	16.23	4.55	390.60	29.08
19:31	16.23	4.54	383.20	29.08
19:32	16.16	4.59	372.90	29.24
19:33	16.12	4.65	382.70	29.20
19:34	16.11	4.65	393.60	29.08

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 4
(continued)

Starting
11-03-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
160 MinAvg	15.70	4.83	405.84	30.48

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	
*	Data was not used in calculated parameter averages.		

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 5

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
10:16	15.64	4.92	447.30	41.06
10:17	15.67	4.89	443.50	41.26
10:18	15.69	4.86	443.70	40.96
10:19	15.78	4.79	449.80	40.64
10:20	15.85	4.73	450.80	40.15
10:21	15.93	4.61	445.00	39.65
10:22	15.96	4.55	444.50	39.16
10:23	15.93	4.58	447.10	39.21
10:24	15.86	4.67	450.10	39.09
10:25	15.80	4.70	448.60	39.09
10:26	15.83	4.67	450.20	38.87
10:27	15.73	4.79	455.60	39.03
10:28	15.67	4.82	460.50	38.84
10:29	15.60	4.90	465.00	38.84
10:30	15.58	4.95	461.20	39.12
10:31	15.44	5.05	459.70	39.30
10:32	15.39	5.11	464.60	39.31
10:33	15.48	5.04	459.20	39.34
10:34	17.06	3.48	421.10	30.30
10:35	18.23	2.40	266.90	19.20
10:36	17.48	3.25	259.00	21.79
10:37	14.98	5.53	394.60	39.14
10:38	14.96	5.48	445.10	40.59
10:39	14.97	5.39	441.10	40.53
10:40	15.32	5.07	437.00	39.53
10:41	16.31	4.18	408.70	35.10
10:42	15.05	5.46	443.70	40.47
10:43	14.93	5.55	441.40	40.67
10:44	14.96	5.51	441.10	40.81
10:45	14.94	5.52	440.90	40.81
10:46	15.05	5.46	442.20	40.90
10:47	15.20	5.34	442.80	40.54
10:48	15.29	5.19	445.40	40.00
10:49	15.46	5.06	445.20	39.76
10:50	15.38	5.05	448.10	39.88
10:51	15.59	4.97	442.30	39.53
10:52	15.77	4.86	436.10	38.88
10:53	15.69	4.74	430.80	38.36
10:54	16.06	4.56	423.60	38.06
10:55	16.19	4.46	411.30	37.68

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 5
(continued)

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
10:56	16.04	4.55	403.50	37.70
10:57	16.05	4.50	406.50	37.53
10:58	16.06	4.51	405.10	37.73
10:59	16.07	4.49	405.20	37.93
11:00	16.11	4.45	416.20	37.72
11:01	16.24	4.45	414.40	37.78
11:02	16.17	4.48	425.00	37.88
11:03	16.20	4.40	420.20	36.96
11:04	16.07	4.47	426.10	36.57
11:05	15.83	4.72	447.80	37.75
11:06	15.80	4.76	476.60	38.48
11:07	15.86	4.74	483.20	38.62
11:08	15.89	4.69	484.30	38.44
11:09	16.06	4.63	487.80	38.33
11:10	15.93	4.68	503.70	38.19
11:11	15.88P	4.70P	504.40P	38.50P
11:12	15.82P	4.80P	503.20P	38.91P
11:13	15.71P	4.92P	511.00P	38.92P
11:14	15.62P	4.95P	506.80P	39.13P
11:15	15.65P	5.01P	502.00P	39.22P
11:16	15.63P	5.01P	495.90P	39.30P
11:17	15.71P	5.03P	490.50P	39.50P
11:18	15.59P	5.06P	501.80P	39.44P
11:19	15.51P	5.10P	504.50P	39.63P
11:20	15.61P	5.03P	508.00P	39.60P
11:21	15.72P	4.99P	511.40P	39.41P
11:22	15.61P	4.97P	507.40P	39.40P
11:23	15.67P	5.01P	518.20P	39.72P
11:24	15.56P	5.07P	517.00P	40.00P
11:25	15.49P	5.18P	514.70P	40.26P
11:26	15.51P	5.26P	510.00P	40.31P
11:27	15.49P	5.18P	511.40P	40.06P
11:28	15.50P	5.15P	509.60P	40.23P
11:29	15.48P	5.13P	507.00P	39.98P
11:30	15.57P	5.15P	510.10P	40.35P
11:31	15.51P	5.14P	518.90P	40.41P
11:32	15.58P	5.13P	521.50P	40.36P
11:33	15.57P	5.09P	515.80P	40.28P
11:34	15.65P	4.99P	511.90P	40.04P
11:35	15.71P	4.91P	506.50P	39.69P

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 5
(continued)

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
11:36	15.83P	4.86P	506.90P	39.38P
11:37	15.92P	4.80P	498.80P	39.13P
11:38	15.99P	4.71P	494.50P	39.00P
11:39	16.06P	4.65P	492.70P	38.91P
11:40	16.14P	4.60P	498.90P	38.62P
11:41	16.09P	4.62P	498.60P	38.54P
11:42	16.13P	4.61P	505.20P	38.28P
11:43	16.09P	4.67P	511.80P	38.45P
11:44	15.92P	4.80P	516.80P	38.76P
11:45	15.91P	4.84P	523.20P	38.94P
11:46	15.85	4.88	525.80	39.29
11:47	15.98	4.85	524.50	38.94
11:48	16.00	4.80	522.30	38.89
11:49	15.91	4.84	524.60	39.02
11:50	15.90	4.88	530.50	39.01
11:51	15.84	4.93	534.60	39.13
11:52	15.73	5.03	530.30	39.58
11:53	15.73	5.05	531.90	39.90
11:54	15.69	5.03	527.10	40.00
11:55	17.16	3.63	493.10	32.07
11:56	18.66	2.36	298.80	19.98
11:57	17.82	3.11	281.50	21.75
11:58	15.09	5.62	428.00	39.91
11:59	15.11	5.58	510.90	41.47
12:00	15.15	5.57	512.90	41.73
12:01	15.11	5.61	512.70	41.86
12:02	15.15	5.57	502.60	41.69
12:03	15.30	5.44	495.20	41.66
12:04	15.38	5.34	491.20	41.48
12:05	15.45	5.28	489.30	41.40
12:06	15.55	5.19	490.30	41.24
12:07	15.58	5.16	492.70	41.45
12:08	15.73	5.05	491.60	41.33
12:09	15.69	5.10	492.80	41.36
12:10	15.70	5.00	493.80	41.12
12:11	15.98	4.76	477.60	39.59
12:12	16.18	4.65	465.40	38.56
12:13	16.09	4.72	471.40	39.32
12:14	16.07	4.77	488.80	40.63
12:15	17.22	3.55	443.80	34.57

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 5
(continued)

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
12:16	16.02	4.84	496.00	40.54
12:17	15.77	5.03	507.40	40.41
12:18	15.81	4.95	507.20	40.43
12:19	16.02	4.83	492.60	40.08
12:20	16.07	4.79	488.40	39.76
12:21	16.09	4.77	489.00	39.83
12:22	15.96	4.80	491.30	40.00
12:23	16.09	4.76	484.40	39.97
12:24	16.14	4.68	477.20	39.85
12:25	16.22	4.59	474.40	39.71
12:26	16.19	4.56	481.70	39.53
12:27	16.30	4.52	488.30	39.09
12:28	16.10	4.65	504.10	39.36
12:29	16.12	4.70	511.10	39.63
12:30	16.19	4.72	527.30	39.50
12:31	15.93	4.85	536.00	39.80
12:32	15.56	4.91	541.70	39.89
12:33	15.88	4.95	555.70	39.76
12:34	15.82	4.99	560.70	40.25
12:35	15.73	5.04	556.60	40.53
12:36	15.54	5.19	550.10	41.35
12:37	15.50	5.30	549.00	41.40
12:38	15.47	5.30	542.10	41.37
12:39	15.47	5.32	537.70	41.39
12:40	15.48	5.23	523.50	41.00
12:41	15.57	5.24	512.80	40.73
12:42	15.53	5.18	510.90	40.39
12:43	15.71	5.07	511.80	40.36
12:44	15.92	4.90	516.30	40.01
12:45	16.15	4.80	521.00	39.96
12:46	15.94	4.90	522.30	40.37
12:47	15.93	4.99	520.80	40.85
12:48	15.95	4.94	522.40	40.69
12:49	15.88	4.88	529.90	40.46
12:50	15.84	4.88	526.70	40.17
12:51	16.02	4.83	533.30	39.91
12:52	15.95	4.91	530.90	39.96
12:53	15.84	4.91	530.90	40.12
12:54	15.86	4.84	526.50	39.87

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 5
(continued)

Starting
11-04-92

Time	Inlet O_2 %dv	Inlet CO_2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
12:55	15.76	5.00	525.70	40.58
160 MinAvg	15.85	4.83	474.02	38.96

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 6

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
14:13	15.12	5.41	484.90	38.37
14:14	15.18	5.36	487.10	38.22
14:15	15.30	5.24	485.60	37.66
14:16	15.44	5.14	488.70	37.29
14:17	15.46	5.09	491.20	37.31
14:18	15.52	5.10	491.70	37.63
14:19	15.60	5.00	492.10	36.76
14:20	15.70	4.89	478.30	35.75
14:21	15.68	4.91	474.90	35.99
14:22	15.67	4.98	481.20	37.68
14:23	15.76	4.91	478.40	37.28
14:24	15.81	4.87	476.10	36.96
14:25	15.78	4.86	474.10	36.76
14:26	15.93	4.69	465.50	36.39
14:27	16.00	4.63	461.80	36.67
14:28	16.01	4.61	456.30	36.67
14:29	16.04	4.59	445.50	36.47
14:30	15.98	4.64	435.10	36.42
14:31	15.99	4.62	438.20	36.54
14:32	16.08	4.52	420.10	36.33
14:33	16.07	4.55	416.60	36.11
14:34	16.00	4.60	451.10	35.93
14:35	15.83	4.77	493.90	36.37
14:36	15.72	4.88	520.30	36.65
14:37	15.63	4.96	541.40	36.92
14:38	17.27	3.33	500.30	26.35
14:39	18.37	2.32	307.90	14.15
14:40	17.77	2.92	295.60	14.76
14:41	14.38	6.17	448.60	35.17
14:42	14.39	6.04	585.70	39.56
14:43	14.33	5.98	563.90	39.52
14:44	14.51	6.02	547.60	39.28
14:45	14.56	5.98	557.40	39.10
14:46	14.57	5.94	534.30	39.09
14:47	14.59	5.90	523.70	39.18
14:48	14.54	5.97	514.10	39.86
14:49	14.63	5.86	511.20	39.83
14:50	14.66	5.87	497.50	39.96
14:51	14.68	5.84	500.10	40.03
14:52	14.75	5.79	496.90	40.20

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 6
(continued)

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
14:53	14.76	5.84	494.80	40.24
14:54	15.11	5.50	510.20	39.57
14:55	16.62	3.93	432.40	30.78
14:56	14.70	5.96	489.10	39.85
14:57	14.53	6.12	509.00	39.81
14:58	14.60	6.02	498.50	39.84
14:59	14.61	5.97	497.90	40.45
15:00	14.69	5.92	504.80	40.19
15:01	14.73	5.93	503.80	40.59
15:02	14.90	5.72	494.70	40.80
15:03	15.01	5.62	489.10	40.86
15:04	15.07	5.61	475.50	41.11
15:05	15.27	5.39	473.80	40.51
15:06	15.43	5.27	478.70	40.19
15:07	15.44	5.23	477.20	40.15
15:08	15.56	5.18	479.00	39.96
15:09	15.72	5.04	484.20	39.71
15:10	15.72	5.00	487.00	39.56
15:11	15.61P	5.15P	489.90P	39.88P
15:12	15.59P	5.20P	492.20P	40.06P
15:13	15.66P	5.10P	494.60P	39.92P
15:14	15.75P	5.06P	483.30P	39.85P
15:15	15.79P	5.00P	481.40P	39.38P
15:16	15.87P	4.98P	485.40P	39.15P
15:17	15.88P	4.95P	481.50P	39.03P
15:18	15.96P	4.84P	478.00P	38.53P
15:19	16.13P	4.74P	465.20P	38.47P
15:20	16.16P	4.78P	457.80P	38.40P
15:21	16.01P	4.86P	454.60P	38.82P
15:22	16.05P	4.82P	467.60P	38.49P
15:23	16.05P	4.82P	479.70P	38.07P
15:24	16.12P	4.79P	478.40P	38.09P
15:25	16.07P	4.82P	488.40P	38.50P
15:26	16.20P	4.69P	488.70P	36.83P
15:27	16.10P	4.79P	495.30P	37.33P
15:28	15.96P	4.95P	499.10P	38.11P
15:29	15.87P	5.00P	519.60P	39.36P
15:30	15.85P	5.01P	518.70P	39.50P
15:31	15.85P	5.05P	520.60P	39.48P
15:32	15.78P	5.11P	525.90P	39.47P

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 6
(continued)

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
15:33	15.71P	5.16P	526.50P	39.59P
15:34	15.71P	5.19P	520.30P	39.32P
15:35	15.73P	5.11P	520.40P	39.01P
15:36	15.74P	5.07P	517.00P	38.95P
15:37	15.78P	5.00P	493.10P	38.72P
15:38	15.86	4.89	479.20	38.08
15:39	15.95	4.84	477.10	37.32
15:40	16.06	4.74	464.70	36.89
15:41	16.10	4.68	462.50	36.78
15:42	16.21	4.63	467.90	36.44
15:43	16.31	4.51	473.30	36.01
15:44	16.22	4.61	486.00	36.08
15:45	16.16	4.68	492.40	36.19
15:46	16.14	4.68	494.40	36.12
15:47	16.12	4.68	496.30	36.24
15:48	16.03	4.83	494.30	36.46
15:49	16.07	4.75	493.90	36.12
15:50	16.19	4.64	488.30	35.90
15:51	16.32	4.54	493.50	35.57
15:52	16.41	4.44	502.00	35.37
15:53	16.33	4.55	505.20	35.71
15:54	16.15	4.74	513.50	36.26
15:55	16.06	4.81	521.10	36.50
15:56	15.98	4.87	512.90	36.58
15:57	15.82	5.04	509.60	37.10
15:58	17.22	3.61	457.10	31.29
15:59	18.61	2.40	353.40	18.25
16:00	18.20	2.86	253.30	17.20
16:01	16.12	4.79	279.60	26.46
16:02	15.03	5.68	493.00	37.88
16:03	14.88	5.77	517.50	38.83
16:04	14.78	5.61	512.60	38.80
16:05	15.17	5.49	522.90	38.78
16:06	15.17	5.44	505.40	39.01
16:07	15.12	5.47	496.30	39.31
16:08	15.21	5.45	494.20	39.13
16:09	15.24	5.43	488.60	39.38
16:10	15.32	5.31	484.00	38.79
16:11	15.48	5.18	485.20	38.49
16:12	15.56	5.05	477.30	38.42

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 6
(continued)

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
16:13	15.63	5.06	475.30	38.80
16:14	15.64	5.06	471.20	38.93
16:15	15.53	5.13	465.50	38.95
16:16	15.62	5.09	463.00	38.66
16:17	15.54	5.16	456.50	38.82
16:18	15.50	5.22	449.60	38.84
16:19	15.47	5.23	452.50	38.74
16:20	15.56	5.17	456.70	38.67
16:21	15.59	5.11	458.00	38.90
16:22	15.60	5.11	475.60	38.87
16:23	15.57	5.17	478.30	38.95
16:24	15.54	5.21	476.00	39.49
16:25	15.56	5.23	479.20	39.31
16:26	15.52	5.23	485.00	39.51
16:27	15.54	5.23	487.50	39.75
16:28	15.64	5.15	491.80	39.16
16:29	15.61	4.95	481.30	37.86
16:30	15.78	5.04	482.40	38.11
16:31	15.53	5.32	503.10	39.71
16:32	15.54	5.28	516.40	39.93
16:33	15.54	5.28	510.20	40.36
16:34	15.45	5.42	500.10	40.46
16:35	15.49	5.33	493.50	40.46
16:36	15.42	5.47	484.70	41.03
16:37	15.41	5.44	473.70	41.14
16:38	15.54	5.37	463.70	40.87
16:39	15.59	5.30	458.90	40.87
16:40	15.60	5.26	460.90	41.19
16:41	15.74	5.19	461.40	40.69
16:42	15.91	5.02	461.40	40.51
16:43	15.83	5.07	461.90	41.26
16:44	15.81	5.13	465.20	41.75
16:45	15.80	5.13	467.70	41.69
16:46	15.79	5.18	463.40	41.76
16:47	15.76	5.17	467.50	41.80
16:48	15.80	5.18	469.60	41.58
16:49	15.75	5.20	468.80	41.65
157 MinAvg	15.62	5.08	478.31	37.60

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 6
(continued)

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 7

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
19:41	15.81	4.53	446.20	34.90
19:42	15.92	4.41	435.90	34.49
19:43	15.97	4.41	436.10	34.82
19:44	16.03	4.38	430.90	34.24
19:45	16.06	4.34	438.80	33.96
19:46	16.03	4.36	448.00	33.49
19:47	15.94	4.41	452.10	33.80
19:48	16.00	4.39	456.90	33.62
19:49	16.01	4.37	458.90	32.99
19:50	16.02	4.39	452.60	31.80
19:51	15.88	4.51	475.60	32.31
19:52	15.67	4.71	497.60	34.15
19:53	15.68	4.83	513.60	35.08
19:54	15.46	4.89	531.80	35.37
19:55	15.37	4.97	519.80	35.38
19:56	15.31	5.04	504.70	35.46
19:57	15.28	5.07	500.60	35.70
19:58	15.21	5.11	497.40	35.99
19:59	16.96	3.43	452.10	25.12
20:00	17.85	2.54	247.80	13.82
20:01	17.69	2.74	232.60	13.87
20:02	15.48	4.94	315.60	27.78
20:03	14.93	5.36	436.50	34.83
20:04	15.04	5.28	491.30	36.34
20:05	15.02	5.30	471.00	37.16
20:06	15.01	5.32	460.70	37.63
20:07	14.97	5.38	455.90	37.87
20:08	14.96	5.37	453.70	37.89
20:09	15.06	5.27	445.20	37.69
20:10	15.10	5.20	444.20	37.42
20:11	15.22	5.11	444.10	36.65
20:12	15.28	5.07	454.60	36.71
20:13	15.41	4.95	456.20	36.43
20:14	15.48	4.90	447.50	36.04
20:15	15.51	4.85	440.90	36.20
20:16	15.48	4.82	452.80	36.37
20:17	15.52	4.83	444.00	36.33
20:18	15.53	4.81	445.30	36.19
20:19	15.51	4.73	456.60	36.03
20:20	15.65	4.69	461.70	36.30

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 7
(continued)

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
20:21	15.57	4.78	465.90	36.40
20:22	15.59	4.76	466.70	36.19
20:23	15.60	4.76	463.80	36.08
20:24	15.59	4.78	464.00	36.55
20:25	15.57	4.78	458.40	36.74
20:26	15.54	4.83	463.00	36.75
20:27	15.54	4.82	462.80	36.33
20:28	15.44	4.88	463.00	36.51
20:29	15.36	4.95	473.20	36.49
20:30	15.36	4.97	476.80	36.78
20:31	15.34	5.03	485.90	36.80
20:32	15.20	5.16	473.20	36.78
20:33	15.15	5.16	474.80	36.74
20:34	15.11	5.18	476.90	36.71
20:35	15.15	5.20	471.50	37.16
20:36	15.06	5.28	464.90	37.09
20:37	14.99	5.33	461.70	37.14
20:38	14.98	5.30	463.70	37.46
20:39	14.94	5.35	451.40	37.84
20:40	14.96	5.39	431.90	37.83
20:41	14.87P	5.45P	432.50P	38.12P
20:42	14.88P	5.39P	430.20P	38.51P
20:43	14.89P	5.44P	434.70P	38.13P
20:44	14.90P	5.41P	430.10P	38.20P
20:45	14.91P	5.33P	422.50P	38.07P
20:46	14.91P	5.36P	419.40P	37.97P
20:47	14.90P	5.40P	418.90P	37.90P
20:48	14.92P	5.35P	423.90P	37.84P
20:49	14.92P	5.37P	432.00P	37.89P
20:50	15.12P	5.18P	417.00P	35.98P
20:51	15.07P	5.24P	412.00P	36.48P
20:52	14.94P	5.32P	414.30P	37.65P
20:53	14.94P	5.30P	435.80P	38.19P
20:54	14.93P	5.32P	443.70P	37.93P
20:55	15.04P	5.30P	444.20P	37.93P
20:56	15.18P	5.09P	444.50P	37.14P
20:57	15.23P	5.07P	444.90P	36.68P
20:58	15.00P	5.25P	442.10P	36.61P
20:59	14.94P	5.35P	440.10P	36.76P
21:00	14.91P	5.30P	437.20P	37.08P

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 7
(continued)

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
21:01	14.83P	5.37P	435.00P	36.87P
21:02	14.73P	5.52P	438.10P	37.06P
21:03	14.65P	5.54P	440.60P	36.92P
21:04	14.60P	5.55P	443.30P	36.73P
21:05	14.57P	5.66P	445.00P	36.76P
21:06	14.57P	5.52P	450.10P	36.93P
21:07	14.59P	5.61P	444.70P	37.34P
21:08	14.58P	5.63P	451.80P	37.46P
21:09	14.65P	5.46P	461.40P	37.38P
21:10	14.68P	5.50P	456.00P	37.32P
21:11	14.73P	5.46P	471.40P	36.97P
21:12	14.73P	5.42P	449.60P	37.24P
21:13	14.78P	5.35P	460.40P	37.04P
21:14	14.87P	5.27P	464.30P	36.63P
21:15	17.35P	2.84P	396.50P	20.72P
21:16	17.88P	2.35P	245.90P	13.36P
21:17	17.64P	2.57P	231.70P	13.85P
21:18	15.05P	5.11P	312.20P	30.17P
21:19	14.57P	5.64P	396.60P	35.75P
21:20	14.54P	5.64P	419.70P	37.91P
21:21	14.59P	5.51P	425.10P	38.02P
21:22	14.58P	5.60P	424.90P	38.24P
21:23	14.70P	5.51P	433.00P	38.19P
21:24	14.68P	5.43P	431.10P	37.75P
21:25	14.77P	5.41P	440.80P	37.21P
21:26	14.90P	5.30P	445.70P	36.96P
21:27	14.98P	5.14P	453.20P	36.92P
21:28	15.10P	5.09P	454.40P	36.67P
21:29	15.22P	4.97P	445.50P	36.08P
21:30	15.26P	4.89P	454.80P	35.96P
21:31	15.29P	4.89P	445.00P	35.90P
21:32	15.31P	4.92P	439.70P	35.44P
21:33	15.49P	4.70P	435.70P	34.88P
21:34	15.48P	4.67P	442.30P	34.59P
21:35	15.46P	4.74P	447.50P	34.77P
21:36	15.42P	4.80P	447.50P	34.94P
21:37	15.48P	4.74P	456.30P	34.64P
21:38	15.57P	4.61P	460.50P	34.36P
21:39	15.58P	4.57P	460.30P	34.24P
21:40	15.50P	4.68P	467.90P	34.43P

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 7
(continued)

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
21:41	15.51P	4.72P	478.70P	34.36P
21:42	15.48	4.72	483.30	34.27
21:43	15.46	4.72	489.80	34.22
21:44	15.39	4.78	494.50	34.41
21:45	15.32	4.91	504.70	34.46
21:46	15.23	4.95	511.30	34.69
21:47	15.14	5.01	517.10	34.69
21:48	15.08	5.16	514.50	34.73
21:49	15.02	5.14	518.70	35.02
21:50	14.94	5.21	519.20	35.31
21:51	15.09	5.14	513.70	34.67
21:52	15.08	5.09	486.20	33.54
21:53	15.00	5.19	480.00	34.12
21:54	14.77	5.49	477.40	35.81
21:55	14.73	5.39	480.50	36.47
21:56	14.75	5.50	471.10	36.47
21:57	14.75	5.46	467.90	36.27
21:58	14.76	5.41	458.80	36.36
21:59	14.79	5.47	454.50	36.46
22:00	14.75	5.47	455.50	36.36
22:01	14.77	5.38	453.30	36.37
22:02	14.77	5.50	446.30	36.54
22:03	14.80	5.38	443.50	36.30
22:04	14.80	5.37	449.20	36.11
22:05	14.82	5.43	452.90	36.02
22:06	14.78	5.39	455.60	36.06
22:07	14.76	5.42	461.40	36.21
22:08	14.79	5.49	468.30	36.27
22:09	14.81	5.32	468.40	36.13
22:10	14.86	5.33	471.40	36.18
22:11	14.83	5.38	476.90	36.48
22:12	14.85	5.29	477.40	36.05
22:13	14.88	5.38	477.70	35.83
22:14	14.95	5.18	481.30	35.60
22:15	14.97	5.26	475.00	35.22
22:16	14.89	5.29	462.20	35.45
22:17	14.94	5.23	449.20	35.04
22:18	15.03	5.18	447.00	34.76
22:19	15.06	5.09	445.50	34.60
22:20	15.11	5.13	446.10	34.53

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 7
(continued)

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
22:21	15.14	4.97	446.50	34.22
22:22	15.19	5.09	443.40	34.05
22:23	15.17	4.97	439.20	34.05
22:24	15.24	5.03	437.30	33.28
22:25	15.23	4.93	439.50	33.37
22:26	15.21	5.03	443.90	33.46
22:27	15.21	5.00	444.10	33.37
22:28	15.27	4.96	447.60	33.23
22:29	15.24	5.04	442.30	33.64
22:30	15.23	4.96	438.70	34.02
22:31	15.26	5.05	435.40	34.31
22:32	15.74	4.45	435.90	32.08
22:33	15.21	5.14	429.60	35.02
22:34	15.13	5.10	430.90	35.22
22:35	15.17	5.20	430.20	35.31
22:36	15.29	5.00	429.00	35.18
22:37	17.99	2.37	331.30	16.53
22:38	17.97	2.43	235.10	13.54
22:39	17.44	2.98	235.30	14.99
22:40	15.02	5.33	351.90	32.99
22:41	15.00	5.29	411.10	35.44
181 MinAvg	15.36	4.93	452.56	34.47

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 8

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
09:29	15.53	5.12	412.70	40.37
09:30	15.56	5.09	424.80	40.64
09:31	15.56	5.07	421.40	40.44
09:32	15.55	5.10	433.60	40.06
09:33	15.88	4.78	431.40	38.06
09:34	15.59	5.02	408.90	39.15
09:35	15.59	5.00	430.20	40.02
09:36	16.41	4.16	411.30	36.81
09:37	16.29	4.32	393.50	36.61
09:38	15.56	5.11	422.50	40.04
09:39	15.46	5.15	443.80	40.14
09:40	15.46	5.16	456.00	40.06
09:41	15.45	5.12	457.30	39.83
09:42	15.50	5.13	457.50	39.75
09:43	15.63	4.97	449.10	39.18
09:44	15.51	5.07	443.40	39.68
09:45	15.50	5.09	450.20	39.67
09:46	15.50	5.09	449.40	39.91
09:47	15.49	5.15	445.40	40.02
09:48	15.54	5.13	442.20	39.55
09:49	15.51	5.13	440.00	39.55
09:50	15.56	5.10	445.60	39.34
09:51	15.52	5.13	446.30	39.85
09:52	15.46	5.14	445.00	39.94
09:53	15.49	5.14	439.10	39.82
09:54	15.48	5.15	426.10	40.03
09:55	15.46	5.16	429.90	39.94
09:56	15.52	5.10	433.20	39.36
09:57	15.47	5.14	430.00	39.83
09:58	15.47	5.18	423.70	39.96
09:59	15.54	5.13	421.70	39.53
10:00	15.52	5.13	414.20	39.46
10:01	15.59	5.09	413.20	39.22
10:02	15.69	5.02	398.20	38.38
10:03	15.70	5.00	393.30	38.85
10:04	15.65	5.08	391.20	39.04
10:05	15.53	5.19	403.10	39.85
10:06	15.49	5.23	402.00	39.92
10:07	15.56	5.22	401.70	39.98
10:08	15.53	5.21	404.90	40.16

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 8
(continued)

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
10:09	15.43	5.25	401.70	40.90
10:10	15.53	5.20	400.10	40.73
10:11	15.56	5.23	394.50	40.56
10:12	15.57	5.21	394.70	40.33
10:13	15.47	5.24	397.20	40.69
10:14	15.55	5.19	391.60	40.54
10:15	15.55	5.21	393.00	40.45
10:16	15.65	5.14	397.20	40.11
10:17	15.58	5.20	411.00	40.06
10:18	15.59	5.22	414.90	39.80
10:19	15.62	5.20	422.10	39.66
10:20	15.59	5.25	429.40	40.06
10:21	15.62	5.21	431.40	40.39
10:22	15.63	5.19	435.00	40.56
10:23	15.59	5.24	450.90	40.75
10:24	15.64	5.19	456.80	40.18
10:25	15.61	5.24	458.80	40.17
10:26	15.64	5.20	456.20	40.32
10:27	15.68	5.23	441.10	40.51
10:28	15.65	5.23	429.90	40.61
10:29	15.72P	5.18P	428.50P	40.36P
10:30	15.75P	5.15P	417.20P	40.08P
10:31	15.68P	5.21P	404.00P	40.30P
10:32	15.66P	5.24P	395.30P	40.36P
10:33	15.65P	5.29P	390.90P	40.83P
10:34	15.76P	5.20P	392.30P	40.39P
10:35	15.78P	5.17P	393.70P	40.24P
10:36	15.81P	5.14P	390.40P	39.70P
10:37	15.79P	5.18P	381.40P	39.87P
10:38	15.79P	5.22P	381.80P	40.22P
10:39	15.78P	5.19P	384.40P	40.54P
10:40	15.80P	5.18P	392.90P	40.75P
10:41	15.85P	5.19P	389.90P	40.96P
10:42	15.81P	5.23P	381.40P	41.19P
10:43	15.78P	5.26P	374.50P	41.59P
10:44	16.14P	4.91P	373.90P	41.14P
10:45	18.80P	2.46P	271.30P	23.12P
10:46	18.64P	2.64P	195.00P	22.09P
10:47	16.48P	4.66P	229.20P	33.30P
10:48	15.86P	5.19P	349.70P	41.44P

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 8
(continued)

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
10:49	15.84P	5.22P	359.70P	42.21P
10:50	15.92P	5.16P	359.10P	42.48P
10:51	15.99P	5.10P	358.50P	42.63P
10:52	16.11P	4.99P	359.60P	42.41P
10:53	16.16P	4.99P	363.40P	42.35P
10:54	16.18	4.95	364.60	42.35
10:55	16.30	4.84	367.30	42.20
10:56	16.46	4.70	369.70	41.66
10:57	16.57	4.61	372.40	41.23
10:58	16.67	4.54	373.70	41.45
10:59	16.71	4.52	368.00	41.27
11:00	16.73	4.49	371.30	41.16
11:01	16.74	4.49	374.20	41.49
11:02	16.69	4.56	378.50	41.67
11:03	16.69	4.56	379.00	41.98
11:04	17.34	3.89	366.10	39.56
11:05	17.68	3.60	347.60	36.44
11:06	16.65	4.64	373.30	41.27
11:07	16.49	4.78	374.00	41.60
11:08	16.31	4.92	378.60	42.89
11:09	16.21	5.03	381.70	43.54
11:10	16.25	4.99	381.30	43.64
11:11	16.27	4.96	381.10	43.48
11:12	16.25	4.99	376.60	43.49
11:13	16.27	4.99	379.90	43.66
11:14	16.26	5.00	372.90	43.62
11:15	16.32	4.93	372.20	43.27
11:16	16.36	4.89	365.40	43.60
11:17	16.42	4.85	362.40	43.64
11:18	16.44	4.85	361.10	43.50
11:19	16.48	4.81	365.90	43.38
11:20	16.55	4.73	372.40	43.23
11:21	16.67	4.62	380.10	43.06
11:22	16.72	4.59	378.00	42.94
11:23	16.73	4.55	378.50	42.78
11:24	16.74	4.53	378.40	42.66
11:25	16.79	4.47	371.20	42.60
11:26	16.89	4.37	373.50	42.23
11:27	16.96	4.26	369.60	41.59
11:28	16.95	4.27	369.20	41.48

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 8
(continued)

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
11:29	16.95	4.22	368.20	41.14
11:30	16.90	4.22	368.80	40.82
11:31	16.90	4.20	368.00	40.72
11:32	16.87	4.20	371.00	40.27
11:33	16.78	4.28	377.10	39.74
11:34	16.72	4.32	384.00	39.53
11:35	16.62	4.35	386.00	39.64
11:36	16.57	4.36	391.40	39.58
11:37	16.50	4.42	401.50	39.57
11:38	16.44	4.46	405.00	39.54
11:39	16.37	4.49	400.00	39.41
11:40	16.34	4.53	400.10	39.39
11:41	16.29	4.55	401.90	39.51
11:42	16.23	4.57	401.70	39.76
11:43	16.17	4.62	399.80	39.70
11:44	16.13	4.62	394.80	39.39
11:45	16.04	4.68	394.30	38.95
11:46	16.07	4.63	395.00	38.85
11:47	16.05	4.62	393.30	38.89
11:48	16.08	4.61	390.80	38.05
11:49	16.04	4.63	398.50	37.74
11:50	16.04	4.59	398.20	37.15
11:51	16.04	4.58	396.00	36.88
11:52	16.00	4.56	398.10	36.82
11:53	15.99	4.57	393.40	36.58
145 MinAvg	16.04	4.84	402.51	40.39

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 9

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
13:26	16.17	4.37	440.80	33.25
13:27	16.06	4.52	436.20	33.60
13:28	15.98	4.62	440.10	34.14
13:29	17.35	3.24	376.80	27.20
13:30	15.92	4.78	424.40	34.77
13:31	15.65	5.08	417.90	35.60
13:32	15.64	5.09	411.40	36.23
13:33	15.63	5.11	408.10	36.30
13:34	15.68	5.07	405.20	36.01
13:35	15.73	5.04	399.40	35.82
13:36	15.76	5.01	399.10	35.89
13:37	15.74	5.01	401.50	36.25
13:38	15.66	5.07	401.80	36.84
13:39	15.82	5.03	398.50	36.86
13:40	15.78	5.05	397.70	36.99
13:41	15.86	5.00	391.40	36.72
13:42	15.72	5.07	391.40	37.18
13:43	15.89	5.05	387.40	37.31
13:44	15.85	5.07	384.80	37.46
13:45	15.85	5.03	392.10	37.61
13:46	15.94	5.00	393.00	37.84
13:47	15.93	4.95	395.00	37.70
13:48	15.92	5.00	400.90	38.03
13:49	15.92	4.98	402.40	37.89
13:50	16.03	4.90	396.50	37.57
13:51	16.03	4.86	389.80	37.18
13:52	16.04	4.88	385.20	38.01
13:53	16.05	4.91	376.90	38.33
13:54	16.10	4.84	375.10	37.91
13:55	16.15	4.83	368.90	37.84
13:56	16.17	4.80	368.50	38.12
13:57	16.25	4.79	363.40	38.15
13:58	16.30	4.73	358.90	38.30
13:59	16.31	4.77	358.20	38.71
14:00	16.35	4.73	356.70	38.36
14:01	16.33	4.74	353.10	38.05
14:02	16.34	4.77	349.40	37.83
14:03	16.35	4.78	351.00	37.89
14:04	15.85	4.79	351.00	38.10
14:05	16.40	4.78	356.20	38.48

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 9
(continued)

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
14:06	17.20	3.92	353.80	34.97
14:07	19.14	2.25	213.00	20.26
14:08	19.15	2.50	171.60	20.67
14:09	17.31	4.18	201.00	30.58
14:10	16.33	4.89	321.70	39.04
14:11	16.39	4.86	332.50	39.83
14:12	16.40	4.83	337.40	40.22
14:13	16.45	4.81	338.70	40.09
14:14	16.42	4.85	337.60	40.50
14:15	16.56	4.78	333.30	40.39
14:16	16.60	4.67	334.00	40.20
14:17	16.80	4.57	339.10	39.90
14:18	16.79	4.48	342.70	40.08
14:19	16.89	4.51	343.70	39.86
14:20	16.88	4.46	342.40	39.48
14:21	17.02	4.37	346.00	39.42
14:22	17.08	4.31	328.10	39.13
14:23	17.06	4.33	326.20	39.74
14:24	16.89	4.50	337.10	40.72
14:25	16.94	4.48	357.30	41.23
14:26	16.87P	4.51P	346.50P	41.10P
14:27	16.90P	4.47P	352.70P	41.11P
14:28	16.88P	4.48P	356.30P	38.13P
14:29	16.83P	4.47P	357.00P	37.77P
14:30	16.79P	4.50P	355.50P	37.88P
14:31	16.77P	4.54P	361.50P	37.92P
14:32	16.77P	4.50P	359.40P	37.86P
14:33	16.75P	4.49P	365.10P	38.03P
14:34	16.72P	4.53P	358.60P	38.05P
14:35	16.60P	4.61P	353.80P	38.67P
14:36	16.61P	4.60P	351.00P	38.16P
14:37	17.15P	4.04P	334.00P	36.02P
14:38	17.41P	3.80P	321.50P	33.94P
14:39	16.58P	4.63P	346.80P	37.77P
14:40	16.45P	4.72P	355.30P	37.71P
14:41	16.40P	4.72P	356.40P	37.82P
14:42	16.39P	4.74P	361.10P	38.01P
14:43	16.43P	4.70P	365.40P	37.50P
14:44	16.43P	4.70P	359.20P	37.59P
14:45	16.44P	4.70P	365.80P	37.68P

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 9
(continued)

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
14:46	16.39P	4.72P	368.10P	37.65P
14:47	16.42P	4.66P	353.40P	37.01P
14:48	16.42P	4.66P	357.10P	37.30P
14:49	16.33P	4.70P	366.90P	37.30P
14:50	16.35P	4.68P	364.90P	37.08P
14:51	16.35	4.68	368.20	36.72
14:52	16.12	4.70	370.30	36.15
14:53	16.05	4.72	371.50	36.59
14:54	15.99	4.76	374.10	37.01
14:55	15.99	4.82	377.30	36.85
14:56	16.00	4.78	376.20	36.81
14:57	15.96	4.78	374.30	36.78
14:58	16.00	4.77	368.20	36.72
14:59	15.99	4.76	372.90	36.37
15:00	15.96	4.81	365.70	36.60
15:01	15.93	4.85	360.00	37.23
15:02	16.02	4.77	364.90	37.18
15:03	16.00	4.74	370.90	37.27
15:04	16.02	4.73	366.70	36.86
15:05	16.02	4.76	368.20	36.89
15:06	16.07	4.69	369.50	36.66
15:07	16.12	4.61	367.60	36.47
15:08	16.11	4.65	362.60	36.60
15:09	16.15	4.65	360.00	36.78
15:10	16.11	4.66	359.80	36.98
15:11	16.08	4.69	367.10	37.15
15:12	16.11	4.70	367.30	37.07
15:13	16.01	4.76	362.70	37.57
15:14	15.93	4.80	362.20	37.82
15:15	15.92	4.86	365.80	37.77
15:16	15.91	4.85	363.00	37.68
15:17	15.94	4.78	364.30	37.25
15:18	16.02	4.77	364.80	36.89
15:19	15.92	4.82	365.60	37.25
15:20	15.93	4.85	366.60	37.59
15:21	15.93	4.83	369.70	37.53
15:22	15.99	4.78	373.10	37.43
15:23	15.97	4.80	369.10	37.76
15:24	16.04	4.77	367.90	37.48
15:25	16.13	4.64	365.20	37.10

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 9
(continued)

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
15:26	16.29	4.52	356.90	36.23
15:27	16.26	4.54	362.00	36.66
15:28	16.21	4.59	374.00	37.47
15:29	16.22	4.57	380.00	37.37
15:30	16.26	4.60	382.10	37.56
15:31	16.24	4.58	382.50	37.31
15:32	16.34	4.52	382.20	36.82
15:33	16.47	4.44	374.70	36.65
15:34	16.45	4.40	376.60	36.61
15:35	16.45	4.43	376.50	36.85
15:36	16.46	4.40	378.90	36.88
15:37	16.48	4.43	380.70	36.79
15:38	16.53	4.38	378.30	36.54
15:39	16.55	4.40	381.50	36.31
15:40	16.53	4.38	393.10	36.48
15:41	16.51	4.43	402.50	36.99
15:42	19.09	1.99	292.80	19.61
15:43	18.99	2.12	206.00	18.40
15:44	17.26	3.73	250.60	30.11
15:45	15.93	5.00	378.60	39.36
15:46	15.92	5.03	383.40	39.77
15:47	15.87	5.05	381.50	39.81
15:48	15.88	5.08	383.50	39.94
15:49	15.82	5.14	378.20	40.11
15:50	15.85	5.11	374.90	40.06
145 MinAvg	16.29	4.64	365.40	36.77

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 10

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
16:45	15.77	4.81	401.80	32.17
16:46	15.84	4.72	399.30	32.26
16:47	15.90	4.64	400.20	32.16
16:48	15.94	4.62	399.20	31.91
16:49	15.89	4.64	395.80	32.03
16:50	15.86	4.72	393.00	32.20
16:51	15.83	4.76	396.30	32.41
16:52	15.80	4.79	398.80	32.65
16:53	15.84	4.78	399.70	32.66
16:54	15.78	4.80	408.90	32.79
16:55	15.71	4.86	404.10	33.20
16:56	15.73	4.83	406.80	33.10
16:57	15.95	4.66	401.70	32.31
16:58	16.08	4.52	407.40	32.17
16:59	16.14	4.48	416.00	31.94
17:00	16.22	4.45	410.90	31.79
17:01	16.18	4.46	405.10	31.91
17:02	16.07	4.53	405.10	32.30
17:03	16.11	4.51	403.00	32.30
17:04	16.07	4.54	402.60	32.04
17:05	16.02	4.59	408.90	32.01
17:06	16.24	4.37	407.70	31.00
17:07	16.85	3.79	350.80	26.21
17:08	16.74	3.90	333.50	26.98
17:09	16.68	3.93	328.70	26.44
17:10	16.72	3.99	339.70	26.08
17:11	16.56	4.09	342.60	26.12
17:12	16.52	4.13	341.50	26.03
17:13	16.34	4.29	340.90	26.85
17:14	16.31	4.34	322.40	27.20
17:15	16.22P	4.43P	307.60P	27.46P
17:16	16.23P	4.40P	298.80P	27.47P
17:17	16.26P	4.34P	296.90P	27.28P
17:18	16.22P	4.39P	301.30P	27.61P
17:19	16.26P	4.38P	279.50P	28.06P
17:20	16.13P	4.50P	263.40P	28.61P
17:21	18.71P	1.98P	215.60P	16.86P
17:22	19.35P	1.39P	54.11P	7.21P
17:23	18.13P	2.55P	144.60P	13.46P
17:24	16.29P	4.40P	172.30P	22.80P
17:25	15.10P	5.52P	283.70P	35.09P

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 10
(continued)

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
17:26	15.93	5.19	300.70	35.91
17:27	15.61	4.91	307.40	35.04
17:28	16.85	3.64	295.30	29.07
17:29	15.66	4.93	319.10	35.38
17:30	15.48	5.09	326.60	35.57
17:31	15.69	4.81	327.30	34.77
17:32	15.91	4.64	325.70	33.72
17:33	15.90	4.67	334.20	33.81
17:34	15.94	4.59	351.20	33.99
17:35	16.08	4.44	358.10	33.46
17:36	16.18	4.37	360.30	32.80
17:37	16.23	4.30	359.00	33.01
17:38	16.35	4.20	365.40	32.76
17:39	16.38	4.13	373.80	32.21
17:40	16.43	4.11	379.00	31.79
17:41	16.38	4.16	394.10	31.87
17:42	16.33	4.18	401.20	31.83
17:43	16.27	4.30	411.50	32.00
17:44	16.26	4.27	419.60	31.83
17:45	16.23	4.34	417.90	31.66
17:46	16.21	4.33	422.50	31.50
17:47	16.20	4.37	426.80	31.42
17:48	16.11	4.42	434.50	31.60
17:49	16.01	4.56	440.20	32.48
17:50	15.93	4.61	445.40	32.96
17:51	15.84	4.70	441.50	33.36
17:52	15.76	4.78	443.40	33.77
17:53	15.62	4.90	443.90	34.35
17:54	15.53	5.00	435.20	34.41
17:55	15.52	4.98	429.70	34.69
71 MinAvg	16.08	4.51	384.38	31.90

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 11

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
11:38	16.54	4.49	538.80	34.19
11:39	16.50	4.51	539.00	34.11
11:40	16.51	4.51	535.10	34.02
11:41	16.55	4.49	537.50	33.77
11:42	16.52	4.48	527.70	34.40
11:43	16.48	4.56	529.80	34.92
11:44	16.55D	4.51D	522.80D	34.64D
11:45	16.55D	4.52D	515.30D	34.76D
11:46	16.50D	4.54D	526.70D	34.97D
11:47	16.48D	4.60D	520.40D	35.00D
11:48	16.44	4.65	507.50	35.03
11:49	16.44	4.63	503.90	35.51
11:50	16.40	4.69	515.90	35.40
11:51	16.49	4.59	505.30	35.29
11:52	16.55	4.59	492.60	35.11
11:53	16.56	4.57	482.10	34.94
11:54	16.63	4.46	494.30	34.80
11:55	16.72	4.42	491.50	34.84
11:56	16.68	4.46	497.30	34.77
11:57	16.68	4.48	494.50	35.16
11:58	16.62	4.58	506.90	35.62
11:59	16.66	4.54	490.70	35.45
12:00	16.63	4.54	490.90	35.82
12:01	16.64	4.58	487.80	35.91
12:02	16.58	4.65	505.60	36.00
12:03	16.55	4.71	589.00	36.86
12:04	17.56	3.78	553.40	31.14
12:05	17.67	3.70	466.10	29.46
12:06	17.52	3.81	439.10	30.14
12:07	17.32	4.03	442.80	32.72
12:08	18.75	2.74	291.60	22.94
12:09	18.72	2.79	222.00	22.12
12:10	18.81	2.73	222.00	21.91
12:11	18.85	2.71	218.30	22.23
12:12	18.79	2.77	220.90	22.84
12:13	18.48	3.07	256.10	24.60
12:14	16.21	5.02	391.20	37.12
12:15	16.37	4.76	480.40	39.34
12:16	16.62	4.55	462.00	39.66
12:17	16.62	4.59	443.20	39.78

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 11
(continued)

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
12:18	16.68	4.59	448.40	40.21
12:19	16.69	4.54	432.00	40.12
12:20	16.32	4.56	413.80	40.16
12:21	16.08	4.56	417.40	39.99
12:22	16.30	4.37	398.70	38.76
12:23	16.20	4.45	393.00	39.99
12:24	16.24	4.40	411.20	40.18
12:25	16.32	4.36	416.80	40.30
12:26	16.35	4.36	426.10	40.30
12:27	16.35	4.35	422.00	40.73
12:28	16.44	4.25	424.30	40.39
12:29	16.47	4.23	422.50	40.46
12:30	16.52	4.21	418.60	40.10
12:31	16.55	4.18	418.60	40.19
12:32	16.54	4.20	419.60	40.46
12:33	16.53	4.20	420.40	40.78
12:34	16.52	4.26	418.30	40.89
12:35	16.42	4.37	430.10	41.05
12:36	16.35	4.45	440.90	41.32
12:37	16.31	4.50	438.20	41.32
12:38	16.23	4.56	440.80	41.73
12:39	16.18	4.61	448.20	42.03
12:40	16.17	4.64	448.50	42.50
12:41	16.22	4.61	445.50	42.47
12:42	16.23	4.59	449.20	42.43
12:43	16.25	4.61	443.60	42.66
12:44	16.27	4.60	439.10	42.91
12:45	16.32	4.55	439.20	42.58
12:46	16.36	4.53	423.20	42.58
12:47	16.37	4.53	417.30	42.76
12:48	16.36	4.53	419.70	43.12
12:49	16.33	4.56	424.40	42.30
12:50	16.30	4.61	436.20	42.31
12:51	16.17	4.71	457.80	43.24
12:52	16.17	4.73	451.80	43.23
12:53	16.11	4.79	437.50	43.66
12:54	16.09	4.80	438.10	44.00
12:55	16.13	4.75	432.90	43.90
12:56	16.15	4.77	432.60	43.83
12:57	16.12	4.80	429.70	44.11

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 11
(continued)

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
12:58	16.18	4.72	428.60	44.06
12:59	16.26	4.66	425.20	43.95
13:00	16.35	4.58	424.90	43.87
13:01	16.35	4.56	415.10	43.63
13:02	16.37	4.57	420.20	43.22
13:03	16.50	4.43	418.00	43.23
13:04	16.26	4.64	397.40	42.44
13:05	16.37	4.53	423.10	43.15
13:06	16.39	4.55	425.30	43.57
13:07	16.29	4.65	419.80	43.57
13:08	16.27	4.68	407.30	43.70
13:09	16.41	4.56	421.50	43.41
13:10	16.45	4.52	409.30	43.43
13:11	16.48	4.48	414.70	43.33
13:12	16.55P	4.50P	410.00P	43.38P
13:13	17.34P	3.64P	389.60P	39.17P
13:14	18.40P	2.67P	249.30P	29.03P
13:15	18.16P	2.93P	242.10P	30.28P
13:16	17.81P	3.30P	253.00P	30.88P
13:17	16.06P	4.92P	391.50P	42.88P
13:18	16.24P	4.73P	449.50P	44.57P
13:19	16.41P	4.54P	410.30P	44.64P
13:20	16.36P	4.60P	413.30P	44.95P
13:21	16.55P	4.46P	408.80P	44.47P
13:22	17.37P	3.70P	351.80P	37.62P
13:23	17.25P	3.81P	329.90P	37.76P
13:24	16.80P	4.28P	326.80P	39.23P
13:25	16.02P	4.96P	389.70P	45.57P
13:26	16.11P	4.87P	400.70P	45.63P
13:27	16.20P	4.81P	389.20P	46.02P
13:28	16.22P	4.79P	382.70P	46.16P
13:29	16.29P	4.73P	386.00P	45.91P
13:30	16.31P	4.70P	391.10P	45.64P
13:31	16.38P	4.67P	389.20P	45.18P
13:32	16.48P	4.54P	394.40P	45.22P
13:33	16.56P	4.45P	396.20P	45.12P
13:34	16.60P	4.44P	393.10P	44.98P
13:35	16.58P	4.46P	398.30P	44.85P
13:36	16.55P	4.46P	403.20P	45.34P
13:37	16.55P	4.47P	407.00P	45.60P

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 11
(continued)

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
13:38	16.54P	4.50P	409.50P	45.45P
13:39	16.59P	4.44P	413.00P	45.09P
13:40	16.51P	4.51P	410.30P	45.66P
13:41	16.48P	4.54P	398.00P	45.55P
13:42	16.48P	4.55P	399.70P	45.64P
13:43	16.58P	4.45P	398.90P	45.83P
13:44	16.59P	4.44P	403.30P	45.99P
13:45	16.60P	4.45P	412.00P	45.81P
13:46	16.64P	4.43P	405.20P	45.39P
13:47	16.71P	4.35P	399.00P	45.09P
13:48	17.36P	3.64P	376.80P	42.62P
13:49	17.54P	3.51P	355.10P	40.75P
13:50	16.45	4.67	414.40	45.15
13:51	16.40	4.67	422.60	45.48
13:52	16.41	4.61	421.20	45.97
13:53	16.37	4.66	421.50	46.16
13:54	16.39	4.64	423.90	46.08
13:55	16.39	4.62	427.60	46.20
13:56	16.42	4.58	426.00	45.88
13:57	16.40	4.61	415.80	45.68
13:58	16.38	4.63	407.80	45.93
13:59	16.42	4.58	400.80	46.06
14:00	16.43	4.55	400.90	45.91
14:01	16.42	4.58	396.50	45.88
14:02	16.53	4.45	396.50	45.52
14:03	16.49	4.52	405.60	45.46
14:04	16.46	4.57	405.40	45.25
14:05	16.47	4.54	400.50	45.19
14:06	16.46	4.54	400.10	45.34
14:07	16.35	4.64	405.80	45.63
14:08	16.28	4.71	406.10	45.88
14:09	16.27	4.73	397.70	46.16
14:10	16.23	4.75	404.60	45.88
14:11	16.24	4.71	401.40	46.12
14:12	16.27	4.69	397.60	46.48
14:13	16.33	4.64	399.30	46.56
14:14	16.33	4.62	401.20	46.56
14:15	16.38	4.52	407.90	46.10
14:16	16.36	4.56	408.40	46.20
14:17	17.84	3.14	362.50	37.48

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 11
(continued)

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
14:18	18.33	2.68	238.40	31.21
14:19	18.17	2.87	238.90	31.74
14:20	16.06	4.91	327.40	42.67
14:21	15.93	4.93	439.70	46.50
14:22	16.01	4.89	422.30	47.18
14:23	16.06	4.82	438.90	46.82
14:24	16.09	4.80	428.10	46.72
14:25	16.13	4.79	422.70	46.78
14:26	16.20	4.69	414.60	46.76
14:27	16.25	4.65	410.40	46.43
14:28	16.28	4.64	407.50	46.09
14:29	16.36	4.51	408.30	45.95
14:30	16.42	4.46	403.50	45.73
14:31	16.43	4.49	405.00	45.92
14:32	16.50	4.46	414.20	45.65
14:33	16.50	4.39	423.20	45.49
14:34	16.53	4.36	423.90	45.06
14:35	16.62	4.40	421.20	45.31
14:36	16.51	4.40	426.40	45.12
14:37	16.46	4.42	430.70	45.41
14:38	16.42	4.44	432.10	44.98
14:39	16.38	4.47	430.50	45.00
14:40	16.29	4.55	431.60	45.07
14:41	17.16	3.71	396.00	39.23
14:42	17.25	3.64	355.00	37.88
14:43	16.88	3.98	348.90	38.54
14:44	16.00	4.71	386.30	44.44
14:45	15.95	4.68	396.40	44.91
14:46	15.92	4.75	387.70	45.17
14:47	15.90	4.80	377.70	45.45
14:48	15.94	4.72	380.50	45.45
14:49	15.95	4.67	392.50	45.00
14:50	16.01	4.69	399.40	44.87
14:51	16.07	4.66	400.40	44.31
14:52	16.15	4.45	402.20	44.16
14:53	16.19	4.50	402.90	43.61
14:54	16.09	4.57	408.10	43.37
14:55	16.05	4.56	415.50	43.13
14:56	16.01	4.70	422.20	43.27
14:57	15.99	4.58	424.80	43.52

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 11
(continued)

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
14:58	16.03	4.57	424.60	42.79
14:59	16.02	4.64	431.20	42.74
15:00	16.00	4.63	432.60	42.88
15:01	15.98	4.58	429.30	43.15
15:02	15.97	4.59	423.90	43.58
15:03	15.96	4.65	424.80	43.62
15:04	15.92	4.69	428.90	43.53
15:05	16.02	4.61	423.70	42.73
15:06	16.01	4.62	419.00	42.68
15:07	15.96	4.66	425.80	42.56
15:08	15.97	4.63	427.70	42.58
15:09	15.91	4.68	428.20	42.66
15:10	15.86	4.71	431.20	42.56
15:11	15.80	4.77	427.80	43.13
15:12	15.76	4.84	419.40	42.82
15:13	15.77	4.81	418.80	42.87
15:14	15.75	4.77	418.60	42.78
15:15	15.71	4.90	413.60	43.16
15:16	15.74	4.78	410.70	43.26
15:17	15.79	4.75	411.20	43.18
15:18	15.80	4.80	407.30	43.43
15:19	15.81	4.71	396.80	42.71
222 MinAvg	16.44	4.47	422.22	41.36

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 12

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
17:43	15.84	4.30	466.40	31.87
17:44	15.85	4.26	470.00	31.97
17:45	15.87	4.24	472.80	31.32
17:46	15.86	4.25	472.90	31.36
17:47	15.82	4.29	476.20	31.36
17:48	15.81	4.30	483.70	31.48
17:49	15.85	4.27	500.20	30.97
17:50	15.83	4.30	501.00	30.62
17:51	15.78	4.36	491.40	30.63
17:52	15.73	4.40	501.00	30.67
17:53	15.75	4.37	504.60	30.71
17:54	15.80	4.33	507.60	30.74
17:55	15.75	4.34	500.90	30.52
17:56	15.65	4.42	505.80	30.83
17:57	15.61	4.45	504.80	30.81
17:58	15.68	4.36	505.50	30.23
17:59	15.68	4.38	509.90	30.20
18:00	15.59	4.46	505.40	30.39
18:01	15.55	4.49	502.60	30.23
18:02	15.53	4.48	504.10	30.21
18:03	15.50	4.51	505.60	30.45
18:04	15.53	4.48	506.10	29.83
18:05	15.50	4.50	508.60	29.61
18:06	15.59	4.40	500.80	29.44
18:07	15.60	4.39	503.70	29.31
18:08	15.61	4.37	504.00	28.90
18:09	15.61	4.34	504.10	28.70
18:10	15.55	4.41	500.90	28.74
18:11	15.43	4.49	500.80	29.11
18:12	15.48	4.46	502.30	28.97
18:13	15.54	4.37	496.50	28.43
18:14	15.52	4.39	500.50	28.38
18:15	15.49	4.41	501.80	28.52
18:16	15.51	4.39	497.50	28.32
18:17	15.54	4.37	495.20	28.12
18:18	15.59	4.30	485.80	27.46
18:19	15.67	4.31	486.40	21.25
18:20	15.73	4.38	488.50	23.70
18:21	15.74	4.25	487.30	23.99
18:22	15.74	4.31	484.30	22.74

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 12
(continued)

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
18:23	15.77	4.32	486.10	21.41
18:24	15.83	4.32	487.00	25.88
18:25	15.91	4.33	482.60	25.84
18:26	15.99	4.33	472.30	25.72
18:27	16.06M	4.32M	463.90M	18.43M
18:28	16.13M	4.32M	457.20M	2.20M
18:29	16.13M	4.30M	449.90M	1.58M
18:30	16.25M	4.29M	444.10M	0.99M
18:31	16.31M	4.31M	436.40M	0.96M
18:32	16.35M	4.30M	429.00M	0.74M
18:33	16.42M	4.29M	423.00M	0.66M
18:34	16.48M	4.21M	429.80M	0.35M
18:35	16.30M	4.23M	528.20M	0.37M
18:36	15.71M	4.19M	529.90M	19.88M
18:37	17.30M	2.54M	372.40M	15.26M
18:38	17.18M	2.64M	269.40M	14.68M
18:39	16.58M	3.28M	271.60M	15.84M
18:40	12.76M	4.87M	473.20M	25.79M
18:41	14.38M	4.59M	536.60M	27.22M
18:42	14.88M	4.45M	498.40M	27.36M
18:43	15.08M	4.47M	484.50M	27.39M
18:44	15.41M	4.13M	503.90M	25.81M
18:45	16.05M	3.64M	443.90M	21.34M
18:46	16.03M	3.68M	441.90M	21.61M
18:47	16.05M	3.65M	434.20M	21.68M
18:48	15.81M	3.97M	428.90M	22.76M
18:49	15.23M	4.61M	487.40M	27.18M
18:50	15.38M	4.37M	516.20M	27.26M
18:51	15.48M	4.33M	502.10M	27.25M
18:52	15.47M	4.43M	499.10M	27.28M
18:53	15.50M	4.29M	499.90M	27.24M
18:54	15.51M	4.37M	526.30M	27.37M
18:55	15.54M	4.36M	522.90M	27.48M
18:56	15.54M	4.30M	515.40M	27.73M
18:57	15.57M	4.29M	528.10M	27.42M
18:58	15.61M	4.32M	529.10M	27.50M
18:59	15.64M	4.29M	525.20M	27.61M
19:00	15.70M	4.15M	508.00M	27.19M
19:01	15.68M	4.24M	500.80M	27.02M
19:02	15.66M	4.27M	521.10M	27.25M

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 12
(continued)

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
19:03	15.66M	4.27M	518.80M	27.24M
19:04	15.77M	4.18M	531.10M	27.08M
19:05	15.80M	4.16M	513.40M	27.06M
19:06	15.83M	4.11M	509.30M	27.06M
19:07	15.84M	4.08M	479.10M	27.27M
19:08	15.79M	4.17M	487.90M	27.11M
19:09	15.71M	4.28M	486.30M	27.09M
19:10	15.70M	4.29M	494.60M	27.04M
19:11	15.69M	4.33M	500.20M	27.22M
19:12	15.67M	4.38M	502.10M	27.56M
19:13	15.58P	4.46P	501.20P	28.11P
19:14	15.63P	4.41P	500.90P	28.06P
19:15	15.65P	4.37P	505.40P	28.24P
19:16	15.68P	4.37P	504.30P	28.49P
19:17	15.64P	4.43P	493.80P	28.61P
19:18	15.58P	4.49P	492.10P	28.80P
19:19	15.64P	4.33P	492.50P	28.50P
19:20	15.70P	4.52P	491.40P	28.29P
19:21	15.80P	4.51P	490.60P	28.37P
19:22	15.88P	4.38P	492.30P	19.82P
19:23	15.96P	4.33P	489.20P	3.99P
19:24	16.02P	4.31P	491.60P	3.11P
19:25	16.07P	4.33P	492.00P	2.90P
19:26	16.11P	4.39P	489.50P	2.69P
19:27	16.16P	4.55P	492.20P	2.48P
19:28	16.20P	4.55P	490.30P	2.47P
19:29	16.24P	4.39P	491.00P	2.31P
19:30	16.27P	4.32P	490.80P	2.33P
19:31	16.31P	4.34P	491.60P	2.07P
19:32	16.35P	4.47P	491.50P	1.95P
19:33	16.38M	4.52M	490.20M	1.90M
19:34	16.40M	4.38M	492.00M	1.69M
19:35	16.43M	4.42M	493.30M	1.54M
19:36	16.46M	4.51M	492.30M	1.46M
19:37	16.51M	4.44M	491.20M	1.33M
19:38	16.51M	4.43M	490.90M	1.19M
19:39	16.52M	1.10M	491.70M	1.16M
19:40	16.55M	0.15M	490.60M	1.44M
19:41	16.57M	0.08M	493.10M	1.56M
19:42	16.58M	0.09M	491.30M	1.29M

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 12
(continued)

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
19:43	16.07M	1.99M	487.30M	7.20M
19:44	15.56	4.48	481.30	27.27
19:45	15.60	4.46	494.60	27.91
19:46	16.13	4.00	479.60	25.88
19:47	17.55	2.61	302.40	16.05
19:48	17.43	2.72	256.30	15.54
19:49	16.62	3.49	267.90	18.54
19:50	15.60	4.55	468.80	26.13
19:51	15.66	4.50	471.90	27.22
19:52	15.66	4.49	471.60	27.52
19:53	15.71	4.47	477.30	28.32
19:54	15.77	4.38	459.00	27.82
19:55	15.74	4.40	447.70	27.82
19:56	15.72	4.40	447.70	28.10
19:57	15.76	4.36	449.20	27.55
19:58	15.84	4.25	453.60	27.33
19:59	15.81	4.28	448.50	27.42
20:00	15.76	4.31	460.50	27.54
20:01	15.81	4.29	452.40	27.08
20:02	16.60	3.48	408.40	21.40
20:03	16.57	3.54	375.00	20.08
20:04	16.48	3.65	382.00	20.03
20:05	15.69	4.39	419.20	25.14
20:06	15.73	4.37	446.30	26.32
20:07	15.74	4.38	449.60	26.72
20:08	15.78	4.32	442.50	26.90
20:09	15.83	4.27	450.50	27.16
20:10	15.91	4.22	452.50	26.82
20:11	15.87	4.23	440.40	26.99
20:12	15.89	4.22	446.50	27.10
20:13	15.93	4.22	450.50	27.10
20:14	15.90	4.22	451.30	27.25
20:15	15.65	4.32	447.30	27.25
20:16	15.80	4.35	452.10	27.20
20:17	15.79	4.34	451.00	27.00
20:18	15.75	4.42	447.20	27.81
20:19	15.71	4.45	448.70	27.77
20:20	15.74	4.40	458.90	27.80
20:21	15.79	4.39	465.00	27.53
20:22	15.87	4.28	453.80	27.35

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 12
(continued)

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
20:23	15.93	4.23	454.50	26.98
20:24	16.01	4.16	455.60	27.09
20:25	16.05	4.16	469.80	27.16
20:26	16.01	4.19	468.40	26.40
20:27	15.96	4.24	468.80	26.15
20:28	15.95	4.27	480.70	26.00
20:29	15.98	4.25	491.70	26.14
20:30	16.05	4.19	488.60	26.09
20:31	16.01	4.25	480.70	26.25
20:32	15.91	4.36	488.00	26.32
20:33	15.86	4.43	491.00	26.41
20:34	15.85	4.46	486.10	26.60
20:35	15.81	4.51	476.70	27.32
20:36	15.79	4.53	477.90	27.73
20:37	15.83	4.49	481.70	27.71
20:38	15.78	4.56	486.20	28.03
20:39	15.80	4.58	477.80	28.16
20:40	15.84	4.54	482.50	28.42
20:41	15.92	4.46	479.70	28.66
20:42	15.88	4.50	480.40	29.12
20:43	15.86	4.54	476.10	29.36
20:44	15.83	4.60	472.30	29.73
20:45	15.88	4.55	475.50	29.98
20:46	15.99	4.44	480.90	30.39
20:47	15.96	4.44	478.90	30.62
20:48	15.93	4.50	487.00	30.42
20:49	15.89	4.54	507.40	30.78
20:50	15.85	4.59	500.90	31.25
20:51	15.81	4.64	492.10	31.84
20:52	15.77	4.67	504.30	32.07
20:53	15.78	4.68	518.70	32.18
20:54	15.75	4.68	518.70	32.09
20:55	17.19	3.51	456.10	24.65
20:56	17.88	2.69	258.70	18.20
20:57	17.49	2.92	256.90	18.72
20:58	15.48	4.98	438.80	30.30
20:59	15.53	4.95	526.80	32.07
21:00	15.66	4.81	501.70	32.58
21:01	15.75	4.74	489.70	32.35
21:02	15.75	4.74	483.30	32.26

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 12
(continued)

Starting 11-06-92				
200 MinAvg	15.86	4.31	469.07	27.76

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 13

Starting
11-07-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
09:03	16.32	4.36	441.50	29.37
09:04	16.29	4.36	447.40	29.43
09:05	16.33	4.35	429.60	29.19
09:06	16.42	4.25	429.40	28.76
09:07	16.52	4.16	435.20	28.55
09:08	16.50	4.20	432.90	28.76
09:09	16.45	4.28	433.40	28.75
09:10	16.46	4.30	429.00	28.52
09:11	16.54	4.22	443.90	28.21
09:12	16.78	4.24	446.40	28.29
09:13	16.61	4.32	474.70	28.51
09:14	16.35	4.43	499.00	28.59
09:15	16.30	4.48	512.70	29.02
09:16	16.30	4.52	517.40	29.32
09:17	16.28	4.42	514.30	29.57
09:18	16.24	4.51	510.30	29.92
09:19	16.53	4.12	490.60	27.38
09:20	16.84	3.83	446.20	24.68
09:21	16.81	3.95	443.90	25.25
09:22	16.32	4.48	457.10	28.17
09:23	16.07	4.72	498.10	30.95
09:24	16.09	4.74	505.20	31.28
09:25	16.18	4.66	516.00	31.32
09:26	16.31	4.56	500.30	31.37
09:27	16.37	4.51	503.90	31.40
09:28	16.31	4.60	500.80	31.78
09:29	16.33	4.60	512.30	31.96
09:30	16.37	4.56	514.70	32.31
09:31	16.38	4.57	517.10	32.48
09:32	16.39	4.59	524.50	32.63
09:33	16.39	4.63	527.30	32.61
09:34	16.42	4.59	527.00	32.76
09:35	16.32	4.69	523.90	32.96
09:36	16.29	4.75	526.20	33.27
09:37	16.39	4.68	533.10	33.50
09:38	16.63	4.56	516.80	32.68
09:39	16.60	4.47	499.10	31.92
09:40	16.69	4.34	484.50	31.63
09:41	16.79	4.29	480.70	31.73
09:42	16.80	4.25	458.70	31.19

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
09:43	16.79	4.27	454.20	31.36
09:44	16.77	4.25	462.40	31.67
09:45	16.66	4.33	471.90	32.12
09:46	16.24	4.43	499.20	32.22
09:47	16.21	4.41	528.70	32.34
09:48	16.14	4.53	547.30	32.64
09:49	16.01	4.62	558.70	32.49
09:50	15.96	4.66	557.20	33.03
09:51	16.03	4.58	549.60	32.47
09:52	16.04	4.57	559.60	32.39
09:53	16.00	4.59	571.50	32.57
09:54	17.56	3.10	469.40	24.81
09:55	18.05	2.60	281.10	19.28
09:56	17.83	2.85	267.70	19.48
09:57	17.49	3.19	291.00	20.60
09:58	17.44	3.23	299.80	19.91
09:59	15.83	4.76	396.10	27.65
10:00	15.37	5.21	603.30	32.67
10:01	15.64	4.87	548.00	33.06
10:02	15.62	4.90	534.80	33.85
10:03	15.65	4.92	527.60	34.09
10:04	15.62	4.92	515.10	34.34
10:05	15.64	4.89	502.30	34.34
10:06	15.72	4.88	500.50	34.01
10:07	15.69	4.88	503.60	33.30
10:08	15.80	4.79	507.50	32.64
10:09	15.86	4.71	480.80	32.80
10:10	15.94	4.63	490.90	32.67
10:11	16.04	4.53	502.50	32.80
10:12	16.22	4.32	501.10	32.32
10:13	16.34	4.23	478.40	31.94
10:14	16.49	4.07	469.80	31.74
10:15	16.51	4.05	496.10	31.82
10:16	16.42	4.19	521.60	31.66
10:17	16.34	4.26	535.50	31.70
10:18	16.34	4.26	548.70	31.74
10:19	17.01	3.57	490.30	29.34
10:20	16.70	3.88	483.60	30.55
10:21	16.08	4.57	542.00	32.12
10:22	16.07	4.58	540.40	32.51

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
10:23	16.08	4.58	523.40	32.99
10:24	16.20	4.45	512.70	32.58
10:25	16.17	4.49	516.90	32.65
10:26	16.12	4.57	518.30	33.37
10:27	16.06	4.59	531.50	33.79
10:28	16.12	4.57	535.30	33.93
10:29	16.13	4.56	532.30	34.06
10:30	16.13	4.55	531.90	33.83
10:31	16.34	4.37	530.10	33.14
10:32	16.39	4.33	528.80	32.77
10:33	16.30P	4.44P	539.60P	32.87P
10:34	16.31P	4.42P	540.70P	33.21P
10:35	16.33P	4.41P	534.50P	33.20P
10:36	16.30P	4.42P	540.50P	33.36P
10:37	16.25P	4.51P	534.60P	33.66P
10:38	16.18P	4.56P	541.00P	34.20P
10:39	16.16P	4.59P	542.30P	34.24P
10:40	16.15P	4.62P	527.50P	34.67P
10:41	16.23P	4.51P	516.10P	34.67P
10:42	16.24P	4.54P	526.20P	34.83P
10:43	16.28P	4.47P	525.40P	34.53P
10:44	16.22P	4.55P	527.80P	34.43P
10:45	16.26P	4.52P	527.20P	34.39P
10:46	16.24P	4.45P	519.80P	34.31P
10:47	16.07P	4.48P	521.30P	34.60P
10:48	16.06P	4.50P	515.80P	34.86P
10:49	16.01P	4.57P	521.40P	35.03P
10:50	16.34P	4.27P	519.40P	33.15P
10:51	16.89P	3.72P	464.10P	28.63P
10:52	16.85P	3.74P	453.40P	28.62P
10:53	16.17P	4.46P	467.50P	32.39P
10:54	15.88P	4.72P	513.60P	34.93P
10:55	15.89P	4.71P	516.40P	35.55P
10:56	15.92P	4.71P	513.00P	36.02P
10:57	15.93P	4.69P	523.10P	36.31P
10:58	15.94P	4.71P	537.40P	36.40P
10:59	17.47P	3.24P	461.90P	28.07P
11:00	18.08P	2.64P	273.90P	21.96P
11:01	17.89P	2.85P	269.70P	22.27P
11:02	15.78P	4.91P	408.10P	33.27P

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
11:03	15.73P	4.96P	566.90P	36.28P
11:04	15.87P	4.80P	550.60P	37.25P
11:05	15.92P	4.79P	534.70P	37.70P
11:06	15.97P	4.76P	527.90P	37.15P
11:07	16.04P	4.69P	515.30P	36.97P
11:08	16.10P	4.65P	512.00P	37.06P
11:09	16.14P	4.63P	514.00P	37.41P
11:10	16.21P	4.56P	507.70P	37.32P
11:11	16.25P	4.52P	509.20P	37.92P
11:12	16.38P	4.44P	518.80P	37.88P
11:13	16.39P	4.42P	515.40P	37.49P
11:14	16.42P	4.41P	515.70P	37.31P
11:15	16.46	4.38	513.50	37.68
11:16	16.53	4.32	509.40	37.82
11:17	16.59	4.25	506.20	37.68
11:18	16.54	4.33	503.30	37.84
11:19	16.54	4.35	513.40	37.81
11:20	16.59	4.30	517.10	37.35
11:21	16.69	4.24	516.10	37.03
11:22	16.67	4.23	522.80	37.37
11:23	16.59	4.35	534.30	38.47
11:24	16.52	4.41	539.80	39.09
11:25	16.51	4.43	565.10	39.01
11:26	16.52	4.44	549.40	38.96
11:27	16.64	4.36	537.20	38.44
11:28	17.54	3.35	432.00	34.05
11:29	16.25	4.76	537.00	39.38
11:30	16.22	4.79	534.50	40.09
11:31	16.25	4.69	528.30	41.04
11:32	16.22	4.60	533.80	40.88
11:33	16.18	4.64	529.00	41.07
11:34	16.22	4.62	532.40	40.48
11:35	16.20	4.62	532.60	40.80
11:36	16.26	4.61	538.90	40.70
11:37	16.31	4.54	530.10	40.84
11:38	16.31	4.55	526.90	40.71
11:39	16.35	4.51	533.10	40.58
11:40	16.48	4.39	541.00	40.22
11:41	16.52	4.36	523.60	40.09
11:42	16.44	4.41	533.30	40.00

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
11:43	16.39	4.48	538.00	39.87
11:44	16.36	4.51	527.30	39.92
11:45	16.33	4.51	525.70	40.25
11:46	16.32	4.52	532.50	40.47
11:47	16.29	4.55	543.90	40.47
11:48	16.24	4.61	540.90	40.35
11:49	16.27	4.57	535.60	40.46
11:50	16.26	4.58	542.00	40.40
11:51	16.23	4.60	546.30	40.57
11:52	16.27	4.56	525.20	40.34
11:53	16.29	4.53	510.60	39.98
11:54	16.08	4.77	522.20	40.53
11:55	16.13	4.70	520.80	40.33
11:56	16.20	4.60	515.60	40.10
11:57	16.17	4.65	528.70	39.91
11:58	16.41	4.41	533.60	38.34
11:59	17.09	3.75	468.40	33.60
12:00	16.97	3.86	463.70	34.08
12:01	16.31	4.50	489.20	37.41
12:02	15.97	4.82	540.20	40.73
12:03	15.92	4.87	529.20	40.71
12:04	15.93	4.89	524.60	40.55
12:05	15.97	4.83	523.60	40.68
12:06	17.59	3.28	450.90	31.92
12:07	18.00	2.89	249.70	26.00
12:08	17.70	3.16	253.60	26.47
12:09	15.50	5.30	404.10	39.06
12:10	15.64	5.11	508.60	40.45
12:11	15.83	4.93	497.30	40.69
12:12	15.85	4.90	483.70	41.27
12:13	15.91	4.83	481.30	41.16
12:14	15.97	4.79	473.10	41.40
12:15	16.06	4.69	473.30	41.11
12:16	16.05	4.72	482.40	40.83
12:17	16.09	4.70	493.40	40.67
12:18	16.14	4.62	478.70	40.62
12:19	16.15	4.64	471.20	40.89
12:20	16.03	4.73	467.10	41.50
12:21	15.96	4.83	473.20	42.05
12:22	16.07	4.72	476.30	42.04

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
12:23	16.26	4.55	474.90	41.25
12:24	16.05	4.78	480.90	41.76
12:25	16.03	4.81	492.80	41.61
12:26	15.98	4.85	496.60	41.93
12:27	15.97E	4.84E	500.80E	42.35E
12:28	15.98E	4.82E	505.20E	42.28E
12:29	15.87E	4.83E	506.00E	42.26E
12:30	16.00E	4.80E	481.70E	42.15E
12:31	16.06E	4.75E	480.80E	41.95E
12:32	16.04E	4.79E	475.50E	41.67E
12:33	16.03E	4.79E	465.20E	41.87E
12:34	16.11E	4.72E	457.30E	41.84E
12:35	16.15E	4.69E	454.30E	41.86E
12:36	16.17E	4.66E	444.10E	41.66E
12:37	16.19E	4.67E	452.80E	41.84E
12:38	16.23E	4.63E	458.90E	41.69E
12:39	16.22E	4.66E	452.40E	41.75E
12:40	16.18E	4.68E	466.00E	41.91E
12:41	16.15E	4.73E	465.20E	42.17E
12:42	16.16E	4.71E	458.30E	42.22E
12:43	16.11E	4.78E	460.20E	42.43E
12:44	16.02E	4.84E	465.20E	43.03E
12:45	16.04E	4.84E	471.30E	42.56E
12:46	16.11E	4.75E	479.10E	41.83E
12:47	16.16E	4.69E	483.90E	41.48E
12:48	16.19E	4.68E	493.40E	41.31E
12:49	16.18E	4.68E	491.60E	40.94E
12:50	16.18E	4.70E	489.40E	41.23E
12:51	16.19E	4.69E	481.70E	41.17E
12:52	16.20E	4.66E	483.90E	41.48E
12:53	16.29E	4.58E	477.10E	41.16E
12:54	16.26E	4.63E	466.60E	41.11E
12:55	16.25E	4.62E	464.30E	41.10E
12:56	16.25	4.63	467.50	41.30
12:57	16.24	4.64	466.00	41.38
12:58	16.31	4.56	466.30	41.18
12:59	16.35	4.54	460.70	41.22
13:00	16.29	4.58	467.90	41.10
13:01	16.29	4.56	489.80	41.23
13:02	16.34	4.53	491.30	41.21

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
13:03	16.40	4.48	498.20	41.08
13:04	16.41	4.46	493.70	41.26
13:05	16.41	4.46	486.30	41.29
13:06	16.45	4.42	488.40	40.99
13:07	16.55	4.30	492.30	40.88
13:08	16.59	4.28	492.00	41.05
13:09	18.14	2.81	414.10	31.91
13:10	18.39	2.57	270.60	27.49
13:11	18.02	2.92	271.60	27.63
13:12	15.75	5.10	399.70	40.03
250 MinAvg	16.37	4.42	492.61	35.03

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

C.1.2 CONTINUOUS EMISSIONS MONITORING DRIFT CALCULATIONS AND ADJUSTMENTS FOR THE SAWDUST DRYER INLET

PINE HALL BRICK
CEM CALIBRATION DRIFT DATA
SAWDUST DRYER INLET

LOCATION	DATE	RUN ID	START TIME	END TIME	MONITOR	ANALYZER UNITS	PRE-TEST CALIBRATION ZERO	PRE-TEST CALIBRATION HIGH	POST-TEST CALIBRATION ZERO	POST-TEST CALIBRATION HIGH	CALIBRATION DRIFT ZERO % span	CALIBRATION DRIFT HIGH % span
Inlet	11/02/92	RUN 1	13:11	15:28	O2	%dv	0.02	14.23	0.05	14.33	0.12	0.40
					CO2	%dv	0.02	13.85	0.00	13.63	-0.10	-1.10
					CO	ppmdv	----	----	----	----	----	----
					NOx	ppmdv	----	----	----	----	----	----
Inlet	11/02/92	RUN 2	17:33	19:42	O2	%dv	0.05	14.33	0.04	14.32	-0.04	-0.04
					CO2	%dv	0.00	13.63	0.03	13.58	0.15	-0.25
					CO	ppmdv	0.85	860	0.55	850	-0.03	-1.00
					NOx	ppmdv	0.11	212	4.52	218.6	1.76	2.64
Inlet	11/03/92	RUN 3	09:15	11:32	O2	%dv	0.03	14.20	0.04	14.60	0.04	1.60
					CO2	%dv	0.01	13.81	0.01	13.62	0.00	-0.95
					CO	ppmdv	0.85	863	0.86	834	0.00	-2.90
					NOx	ppmdv	0.78	211.8	7.2	216	2.57	1.68
Inlet	11/03/92	RUN 4	16:54	19:36	O2	%dv	0.03	14.21	0.17	14.34	0.56	0.52
					CO2	%dv	0.01	13.93	0.03	13.89	0.10	-0.20
					CO	ppmdv	0.84	859	0.4	859	-0.04	0.00
					NOx	ppmdv	0.21	212.3	-1.54	207.8	-0.70	-1.80
Inlet	11/04/92	RUN 5	10:15	12:55	O2	%dv	0.03	14.20	0.05	14.57	0.08	1.48
					CO2	%dv	0.01	13.87	0.01	13.44	0.00	-2.15
					CO	ppmdv	0.17	858	-0.37	844	-0.05	-1.40
					NOx	ppmdv	0.28	212.4	4.6	208.5	1.73	-1.56
Inlet	11/04/92	RUN 6	14:12	16:49	O2	%dv	0.03	14.21	0.03	14.61	0.00	1.60
					CO2	%dv	0.00	13.81	0.01	13.81	0.05	0.00
					CO	ppmdv	0.05	857	-0.28	838	-0.03	-1.90
					NOx	ppmdv	0.3	212.1	4.86	208.4	1.82	-1.48
Inlet	11/04/92	RUN 7	19:40	22:41	O2	%dv	0.02	14.17	0.02	14.04	0.00	-0.52
					CO2	%dv	0.01	13.86	0.03	13.84	0.10	-0.10
					CO	ppmdv	0.16	858	-0.77	859	-0.09	0.10
					NOx	ppmdv	0.24	211.4	1.07	209.9	0.33	-0.60
Inlet	11/05/92	RUN 8	09:28	11:53	O2	%dv	0.01	14.20	0.03	14.10	0.08	-0.40
					CO2	%dv	0.05	13.85	0.05	13.76	0.00	-0.45
					CO	ppmdv	0.38	861	0.72	859	0.03	-0.20
					NOx	ppmdv	-0.2	212.3	4.05	205.4	1.70	-2.76

PINE HALL BRICK
CEM DRIFT CALIBRATION DATA
SAWDUST DRYER INLET

							PRE-TEST CALIBRATION		POST-TEST CALIBRATION		CALIBRATION DRIFT	
LOCATION	DATE	RUN ID	START TIME	END TIME	MONITOR	ANALYZER UNITS	ZERO	HIGH	ZERO	HIGH	ZERO % span	HIGH % span
Inlet	11/05/92	RUN 9	13:25	15:50	O2	%dv	0.03	14.22	0.20	14.63	0.68	1.64
					CO2	%dv	0.09	13.83	0.05	13.82	-0.20	-0.05
					CO	ppmdv	0.19	858	-0.47	843	-0.07	-1.50
					NOx	ppmdv	0.02	211.7	6.57	211.9	2.62	0.08
Inlet	11/05/92	RUN 10	16:44	17:55	O2	%dv	0.02	14.20	0.04	14.02	0.08	-0.72
					CO2	%dv	0.05	13.84	0.06	13.84	0.05	0.00
					CO	ppmdv	1.46	851	0.28	856	-0.12	0.50
					NOx	ppmdv	0.7	211.7	1.82	205.5	0.45	-2.48
Inlet	11/06/92	RUN 11	11:37	15:19	O2	%dv	0.02	14.19	0.21	14.28	0.76	0.36
					CO2	%dv	0.05	13.87	0.05	13.67	0.00	-1.00
					CO	ppmdv	0.88	852	-0.17	823	-0.11	-2.90
					NOx	ppmdv	0.26	212.2	5.09	209.7	1.93	-1.00
					THC	ppmwv	-0.81	850	-0.04	822	0.08	-2.80
Inlet	11/06/92	RUN 12	17:42	21:02	O2	%dv	0.06	14.24	0.04	13.85	-0.08	-1.56
					CO2	%dv	0.05	13.89	0.06	13.72	0.05	-0.85
					CO	ppmdv	-0.48	856	1.06	842	0.15	-1.40
					NOx	ppmdv	0.14	213.2	2.23	214.7	0.84	0.60
					THC	ppmwv	-0.14	848	4.09	850	0.42	0.20
Inlet	11/07/92	RUN 13	09:02	13:12	O2	%dv	0.05	14.26	0.04	14.21	-0.04	-0.20
					CO2	%dv	0.05	13.82	0.05	13.81	0.00	-0.05
					CO	ppmdv	1.25	859	1.11	854	-0.01	-0.50
					NOx	ppmdv	-0.72	212.4	6.67	218.1	2.96	2.28
					THC	ppmwv	0.06	852	1.58	857	0.15	0.50

PINE HALL BRICK
CEM DATA ADJUSTMENTS
SAWDUST DRYER INLET

LOCATION	DATE	RUN ID	START TIME	END TIME	MONITOR	ANALYZER UNITS	RUN AVG	AVERAGE CALIBRATION ZERO	AVERAGE CALIBRATION HIGH	GAS VALUE	ADJUSTED DATA
Inlet	11/02/92	RUN 1	13:11	15:28	O2	%dv	15.30	0.04	14.28	14.20	15.22
					CO2	%dv	5.35	0.01	13.74	13.82	5.38
					CO	ppmdv	----	----	----	859.5	----
					NOx	ppmdv	----	----	----	211.9	----
Inlet	11/02/92	RUN 2	17:33	19:42	O2	%dv	14.59	0.05	14.33	14.20	14.46
					CO2	%dv	5.81	0.02	13.61	13.82	5.89
					CO	ppmdv	334.89	0.70	855.00	859.5	336.22
					NOx	ppmdv	46.52	2.32	215.30	211.9	43.98
Inlet	11/03/92	RUN 3	09:15	11:32	O2	%dv	15.81	0.04	14.40	14.20	15.59
					CO2	%dv	5.08	0.01	13.72	13.82	5.11
					CO	ppmdv	475.54	0.86	848.50	859.5	481.32
					NOx	ppmdv	40.71	3.99	213.90	211.9	37.07
Inlet	11/03/92	RUN 4	16:54	19:36	O2	%dv	15.70	0.10	14.28	14.20	15.63
					CO2	%dv	4.83	0.02	13.91	13.82	4.79
					CO	ppmdv	405.84	0.62	859.00	859.5	405.75
					NOx	ppmdv	30.48	-0.67	210.05	211.9	31.32
Inlet	11/04/92	RUN 5	10:15	12:55	O2	%dv	15.85	0.04	14.39	14.20	15.65
					CO2	%dv	4.83	0.01	13.66	13.82	4.88
					CO	ppmdv	474.02	-0.10	851.00	859.5	478.80
					NOx	ppmdv	38.96	2.44	210.45	211.9	37.20
Inlet	11/04/92	RUN 6	14:12	16:49	O2	%dv	15.62	0.03	14.41	14.20	15.39
					CO2	%dv	5.08	0.01	13.81	13.82	5.08
					CO	ppmdv	478.31	-0.12	847.50	859.5	485.13
					NOx	ppmdv	37.6	2.58	210.25	211.9	35.73
Inlet	11/04/92	RUN 7	19:40	22:41	O2	%dv	15.36	0.02	14.11	14.20	15.47
					CO2	%dv	4.93	0.02	13.85	13.82	4.91
					CO	ppmdv	452.56	-0.31	858.50	859.5	453.23
					NOx	ppmdv	34.47	0.66	210.65	211.9	34.12
Inlet	11/05/92	RUN 8	09:28	11:53	O2	%dv	16.04	0.02	14.15	14.20	16.10
					CO2	%dv	4.84	0.05	13.81	13.82	4.81
					CO	ppmdv	402.51	0.55	860.00	859.5	401.98
					NOx	ppmdv	40.39	1.93	208.85	211.9	39.39

PINE HALL BRICK
CEM DATA ADJUSTMENTS
SAWDUST DRYER INLET

LOCATION	DATE	RUN ID	START TIME	END TIME	MONITOR	ANALYZER UNITS	RUN AVG	AVERAGE CALIBRATION ZERO	AVERAGE CALIBRATION HIGH	GAS VALUE	ADJUSTED DATA
Inlet	11/05/92	RUN 9	13:25	15:50	O2	%dv	16.29	0.12	14.43	14.20	16.05
					CO2	%dv	4.64	0.07	13.83	13.82	4.59
					CO	ppmdv	365.4	-0.14	850.50	859.5	369.35
					NOx	ppmdv	36.77	3.30	211.80	211.9	34.02
Inlet	11/05/92	RUN 10	16:44	17:55	O2	%dv	16.08	0.03	14.11	14.20	16.19
					CO2	%dv	4.51	0.06	13.84	13.82	4.47
					CO	ppmdv	384.38	0.87	853.50	859.5	386.60
					NOx	ppmdv	31.9	1.26	208.60	211.9	31.31
Inlet	11/06/92	RUN 11	11:37	15:19	O2	%dv	16.44	0.12	14.24	14.20	16.42
					CO2	%dv	4.47	0.05	13.77	13.82	4.45
					CO	ppmdv	422.22	0.36	837.50	859.5	433.13
					NOx	ppmdv	41.36	2.68	210.95	211.9	39.36
					THC	ppmwv	3.99	-0.43	836.00	850.2	4.49
Inlet	11/06/92	RUN 12	17:42	21:02	O2	%dv	15.86	0.05	14.05	14.20	16.04
					CO2	%dv	4.31	0.06	13.81	13.82	4.28
					CO	ppmdv	469.07	0.29	849.00	859.5	474.74
					NOx	ppmdv	27.76	1.19	213.95	211.9	26.47
					THC	ppmwv	6.81	1.98	849.00	850.2	4.85
Inlet	11/07/92	RUN 13	09:02	13:12	O2	%dv	16.37	0.05	14.24	14.20	16.34
					CO2	%dv	4.42	0.05	13.82	13.82	4.39
					CO	ppmdv	492.61	1.18	856.50	859.5	493.83
					NOx	ppmdv	35.03	2.98	215.25	211.9	32.00
					THC	ppmwv	5.62	0.82	854.50	850.2	4.78

C.2 CONTINUOUS EMISSIONS MONITORING DATA - SAWDUST DRYER OUTLET A

C.2.1 CONTINUOUS EMISSIONS MONITORING DATA AND RESULTS (O_2, CO_2, CO, NO_x, THC) - SAWDUST DRYER OUTLET A

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 1

Starting
11-02-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv
13:12	16.93	3.48
13:13	17.76	2.73
13:14	17.62	2.88
13:15	16.77	3.73
13:16	16.33	4.07
13:17	16.41	3.97
13:18	16.48	3.91
13:19	16.56	3.85
13:20	16.51	3.89
13:21	16.60	3.76
13:22	16.64	3.74
13:23	16.76	3.62
13:24	16.76	3.60
13:25	16.76	3.61
13:26	16.71	3.66
13:27	16.68	3.67
13:28	16.75	3.59
13:29	16.68	3.67
13:30	16.60	3.71
13:31	16.60	3.76
13:32	16.58	3.76
13:33	16.97	3.38
13:34	16.68	3.67
13:35	16.64	3.66
13:36	16.61	3.73
13:37	16.68	3.65
13:38	16.72	3.63
13:39	16.70	3.63
13:40	16.65	3.68
13:41	16.62	3.72
13:42	16.64	3.71
13:43	16.73	3.62
13:44	16.51	3.83
13:45	16.51	3.83
13:46	16.50	3.85
13:47	16.52	3.82
13:48	16.83	3.51
13:49	17.71	2.64
13:50	17.94	2.45
13:51	17.66	2.74

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 1
(continued)

Starting
11-02-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv
13:52	16.45	3.89
13:53	16.18	4.13
13:54	16.30	4.00
13:55	16.29	4.01
13:56	16.32	3.98
13:57	16.36	3.95
13:58	16.65	3.66
13:59	16.60	3.70
14:00	16.64	3.66
14:01	16.74	3.56
14:02	16.77	3.54
14:03	16.82	3.49
14:04	16.90	3.42
14:05	16.82	3.48
14:06	16.81	3.51
14:07	16.84	3.49
14:08	16.87	3.45
14:09	16.94	3.39
14:10	17.18	3.16
14:11	17.09	3.24
14:12	17.14P	3.20P
14:13	17.11P	3.21P
14:14	17.15P	3.19P
14:15	17.01P	3.32P
14:16	17.12P	3.20P
14:17	17.42P	2.91P
14:18	17.88P	2.47P
14:19	17.81P	2.55P
14:20	16.75P	3.60P
14:21	16.38P	3.91P
14:22	16.42P	3.84P
14:23	16.52P	3.72P
14:24	16.52P	3.74P
14:25	16.51P	3.75P
14:26	16.54P	3.71P
14:27	16.87P	3.39P
14:28	16.67P	3.56P
14:29	16.72	3.52
14:30	16.80	3.45
14:31	16.73	3.50

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 1
(continued)

Starting
11-02-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv
14:32	16.72	3.51
14:33	16.73	3.51
14:34	16.76	3.47
14:35	16.68	3.56
14:36	16.62	3.62
14:37	16.59	3.65
14:38	16.77	3.47
14:39	16.58	3.65
14:40	16.52	3.71
14:41	16.49	3.74
14:42	16.55	3.66
14:43	16.52	3.68
14:44	16.50	3.70
14:45	16.47	3.73
14:46	16.44	3.76
14:47	16.52	3.68
14:48	16.47	3.74
14:49	16.47	3.73
14:50	16.52	3.68
14:51	16.46	3.73
14:52	16.64	3.54
14:53	16.90	3.33
14:54	16.50	3.69
14:55	16.54	3.66
14:56	16.53	3.67
14:57	16.62	3.57
14:58	16.67	3.55
14:59	16.70	3.50
15:00	16.67	3.55
15:01	16.65	3.58
15:02	16.74	3.48
15:03	16.72	3.50
15:04	16.65	3.57
15:05	16.62	3.60
15:06	16.58	3.63
15:07	16.58	3.64
15:08	16.63	3.58
15:09	16.66	3.54
15:10	16.70	3.50
15:11	17.65	2.50

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 1
(continued)

Starting
11-02-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv
15:12	17.94	2.32
15:13	16.96	3.34
15:14	16.20	4.00
15:15	16.34	3.85
15:16	16.43	3.76
15:17	16.38	3.82
15:18	16.39	3.80
15:19	16.43	3.77
15:20	16.50	3.68
15:21	16.59	3.62
15:22	16.66	3.53
15:23	17.53	2.69
15:24	17.86	2.41
15:25	17.64	2.67
15:26	16.37	3.86
15:27	16.88	3.32
15:28	17.38	2.84
137 MinAvg	16.72	3.56

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 2 - O2/CO2

Starting
11-02-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv
17:34	16.31	4.01
17:35	16.45	3.86
17:36	16.39	3.97
17:37	16.39	3.95
17:38	17.56	2.81
17:39	17.53	2.89
17:40	17.07	3.35
17:41	15.96	4.39
17:42	16.17	4.17
17:43	16.19	4.15
17:44	16.24	4.08
17:45	16.23	4.10
17:46	16.24	4.09
17:47	16.32	4.01
17:48	16.40	3.94
17:49	16.43	3.90
17:50	17.18	3.15
17:51	17.67	2.70
17:52	17.51	2.89
17:53	16.32	4.03
17:54	16.35	3.96
17:55	16.33	3.99
17:56	16.34	3.99
17:57	16.37	3.95
17:58	17.44	2.87
17:59	16.48	3.88
18:00	16.07	4.30
18:01	16.38	3.93
18:02	15.85	4.50
18:03	15.80	4.54
18:04	16.09	4.23
18:05	16.54	3.75
18:06	16.23	4.08
18:07	16.38	3.93
18:08	16.58	3.74
18:09	16.53	3.79
18:10	16.51	3.80
18:11	16.50	3.81
18:12	16.45	3.88
18:13	16.42	3.88

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 2 - O2/CO2
(continued)

Starting
11-02-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv
18:14	16.46	3.87
18:15	16.42	3.92
18:16	16.38	3.95
18:17	16.34	4.00
18:18	16.20	4.13
18:19	16.23	4.14
18:20	16.15	4.20
18:21	16.14	4.18
18:22	16.18	4.16
18:23	16.22	4.09
18:24	16.38	4.17
18:25	16.20	4.11
18:26	16.30	4.11
18:27	16.26	4.06
18:28	16.27	4.06
18:29	16.33	3.98
18:30	16.34	3.98
18:31	16.37	3.98
18:32	17.01	3.31
18:33	17.27	3.12
18:34	17.21P	3.15P
18:35	17.25P	3.14P
18:36	17.22P	3.14P
18:37	17.23P	3.13P
18:38	16.49P	3.85P
18:39	16.40P	3.91P
18:40	16.37P	3.97P
18:41	16.55P	3.79P
18:42	16.37P	3.96P
18:43	16.28	4.06
18:44	16.62	3.65
18:45	17.49	2.87
18:46	17.39	3.00
18:47	17.12	3.31
18:48	15.91	4.41
18:49	16.03	4.26
18:50	16.17	4.13
18:51	16.27	4.02
18:52	16.29	3.98
18:53	16.32	3.97

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 2 - O2/CO2
(continued)

Starting
11-02-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv
18:54	16.42	3.87
18:55	16.54	3.74
18:56	16.56	3.65
18:57	16.51	3.75
18:58	16.53	3.75
18:59	16.52	3.75
19:00	16.46	3.80
19:01	16.47	3.82
19:02	16.36	3.93
19:03	16.38	3.87
19:04	16.45	3.85
19:05	17.42	2.88
19:06	17.76	2.53
19:07	17.55	2.83
19:08	16.10	4.20
19:09	16.06	4.19
19:10	16.18	4.10
19:11	16.18	4.10
19:12	16.25	4.00
19:13	16.30	3.99
19:14	16.41	3.87
19:15	16.44	3.81
19:16	16.35	3.95
19:17	16.35	3.89
19:18	16.41	3.90
19:19	16.44	3.80
19:20	16.41	3.89
19:21	16.44	3.83
19:22	16.45	3.80
19:23	16.46	3.84
19:24	16.41	3.85
19:25	16.43	3.86
19:26	16.45	3.83
19:27	16.47	3.79
19:28	16.44	3.86
19:29	16.46	3.80
19:30	16.44	3.88
19:31	16.40	3.89
19:32	16.34	3.95
19:33	16.33	3.96

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 2 - O2/CO2
(continued)

Starting
11-02-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv
19:34	16.27	4.02
19:35	16.27	4.05
19:36	16.32	3.94
19:37	16.29	4.01
19:38	16.37	3.88
19:39	16.35	3.96
19:40	16.44	3.82
19:41	16.17	4.16
19:42	16.14	4.14
129 MinAvg	16.46	3.85

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 2 - CO/NOx

Starting
11-02-92

Time	Outlet A CO ppmdv	Outlet A NOx ppmdv
17:34	374.10	27.90
17:35	386.80	27.20
17:36	366.60	28.11
17:37	375.50	28.47
17:38	298.30	21.06
17:39	204.20	19.34
17:40	213.20	20.47
17:41	342.90	27.97
17:42	391.00	28.47
17:43	376.30	29.23
17:44	370.30	29.35
17:45	359.60	29.55
17:46	359.30	29.62
17:47	350.50	29.55
17:48	339.60	29.46
17:49	342.30	29.33
17:50	336.20	24.16
17:51	294.80	19.41
17:52	299.80	19.34
17:53	315.90	27.07
17:54	339.70	28.55
17:55	341.30	29.32
17:56	344.90	29.58
17:57	355.30	29.20
17:58	332.30	23.43
17:59	305.90	28.47
18:00	350.90	29.01
18:01	347.90	28.40
18:02	353.50	29.48
18:03	358.60	29.37
18:04	355.20	28.81
18:05	353.50	27.88
18:06	350.60	29.07
18:07	345.90	28.92
18:08	360.40	28.42
18:09	377.10	28.93
18:10	385.80	28.97
18:11	383.80	28.94
18:12	383.30	29.12
18:13	391.00	29.14

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 2 - CO/NOx
(continued)

Starting
11-02-92

Time	Outlet A CO ppmdv	Outlet A NOx ppmdv
18:14	388.50	29.04
18:15	393.20	28.91
18:16	403.80	28.97
18:17	386.40	29.02
18:18	384.50	29.14
18:19	405.30	29.25
18:20	388.30	29.19
18:21	383.00	28.95
18:22	393.00	28.71
18:23	391.60	28.94
18:24	363.70	29.50
18:25	345.80	29.45
18:26	353.40	29.17
18:27	351.20	28.17
18:28	345.10	28.11
18:29	341.40	28.03
18:30	338.40	27.93
18:31	350.30	27.45
18:32	334.50	23.67
18:33	292.40	22.29
60 MinAvg	352.46	27.70

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 3

Starting
11-03-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
09:16	17.50	2.82	302.70	21.35
09:17	17.51	2.80	310.20	21.31
09:18	17.53	2.76	313.10	21.00
09:19	17.50	2.80	317.50	21.26
09:20	17.51	2.79	316.80	21.29
09:21	17.47	2.82	306.90	21.44
09:22	17.39	2.90	302.70	22.23
09:23	17.38	2.89	305.30	22.12
09:24	17.39	2.88	305.70	21.38
09:25	17.36	2.90	308.60	20.95
09:26	17.41	2.87	310.00	20.66
09:27	17.40	2.88	310.90	20.39
09:28	17.41	2.86	306.40	20.30
09:29	17.38	2.88	308.50	20.06
09:30	17.35	2.92	311.40	20.02
09:31	17.34	2.94	311.90	20.09
09:32	17.32	2.94	310.50	20.08
09:33	17.37	2.90	308.60	19.81
09:34	17.33	2.95	311.30	19.91
09:35	17.80	2.46	310.20	17.17
09:36	18.28	2.03	245.40	13.24
09:37	18.20	2.12	239.80	13.33
09:38	17.27	3.08	262.70	18.21
09:39	17.05	3.24	308.30	20.46
09:40	17.05	3.24	310.60	20.89
09:41	17.11	3.18	307.30	21.06
09:42	17.16	3.19	305.50	21.44
09:43	17.28	3.12	303.90	21.48
09:44	17.40	3.00	301.80	21.29
09:45	17.47	2.93	292.30	21.38
09:46	17.53	2.87	273.00	21.32
09:47	17.54	2.85	259.00	21.43
09:48	17.56	2.81	264.50	21.28
09:49	17.59	2.80	263.10	21.04
09:50	17.55	2.84	264.70	21.21
09:51	17.50	2.89	266.20	21.42
09:52	17.45	2.93	272.90	21.70
09:53	17.55	2.83	268.00	21.41
09:54	17.48	2.90	264.60	21.78
09:55	17.45	2.93	267.80	21.78

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 3
(continued)

Starting
11-03-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
09:56	17.49	2.91	274.40	21.43
09:57	17.45	2.94	268.60	21.71
09:58	17.43	2.96	272.20	21.78
09:59	18.08	2.31	247.10	18.07
10:00	18.30	2.12	173.50	15.00
10:01	18.17	2.26	177.40	14.96
10:02	17.23	3.20	238.70	19.68
10:03	17.33	3.03	299.80	20.91
10:04	17.51	2.82	274.80	21.12
10:05	17.51	2.84	261.50	21.42
10:06	17.51	2.83	259.50	21.48
10:07	17.53	2.83	252.20	21.53
10:08	17.54	2.80	252.60	21.64
10:09	17.57	2.76	255.70	21.78
10:10	17.59	2.75	256.20	21.77
10:11	17.56	2.78	250.30	21.74
10:12	17.55	2.79	246.10	21.71
10:13	17.58	2.77	243.00	21.47
10:14	17.48	2.86	245.10	21.95
10:15	17.48	2.88	256.70	21.88
10:16	17.51P	2.83P	258.90P	21.72P
10:17	17.48P	2.86P	257.40P	21.94P
10:18	17.49P	2.85P	255.80P	21.94P
10:19	17.50P	2.83P	254.80P	21.90P
10:20	17.51P	2.81P	253.90P	21.69P
10:21	17.54P	2.80P	257.10P	21.62P
10:22	17.54P	2.79P	254.50P	21.78P
10:23	17.53P	2.79P	258.20P	21.85P
10:24	17.54P	2.78P	258.40P	21.60P
10:25	17.51P	2.83P	267.30P	21.77P
10:26	17.48P	2.84P	279.60P	21.67P
10:27	17.48P	2.85P	295.80P	21.53P
10:28	17.42P	2.90P	299.60P	21.81P
10:29	17.41P	2.90P	312.00P	21.89P
10:30	17.38P	2.94P	327.20P	22.03P
10:31	17.48P	2.84P	333.10P	21.49P
10:32	17.37P	2.94P	341.20P	22.08P
10:33	17.32	3.00	344.70	22.37
10:34	17.34	2.97	345.40	22.41
10:35	17.34	2.98	338.60	22.51

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 3
(continued)

Starting
11-03-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
10:36	17.39	2.90	330.60	22.30
10:37	17.44	2.88	304.60	21.87
10:38	17.36	2.94	305.30	22.45
10:39	17.36	2.94	307.20	22.52
10:40	17.37	2.93	304.60	22.66
10:41	17.35	2.95	298.60	22.70
10:42	17.38	2.91	292.50	22.29
10:43	17.29	3.00	287.50	22.62
10:44	17.26	3.04	279.90	22.66
10:45	17.21	3.09	278.80	22.81
10:46	17.17	3.13	283.90	22.91
10:47	17.18	3.11	275.50	22.72
10:48	17.12	3.15	273.70	23.11
10:49	17.15	3.13	271.20	23.28
10:50	17.13	3.14	270.80	23.65
10:51	17.01	3.28	267.00	24.31
10:52	16.99	3.31	274.60	24.32
10:53	16.95	3.33	278.90	24.68
10:54	17.04	3.23	275.80	24.69
10:55	17.02	3.26	274.40	24.94
10:56	17.08	3.19	273.90	24.76
10:57	17.12	3.16	270.70	24.61
10:58	17.09	3.18	274.80	24.75
10:59	17.03	3.25	266.20	25.32
11:00	17.05	3.20	267.40	25.48
11:01	18.00	2.27	226.00	18.48
11:02	18.10	2.18	187.30	16.89
11:03	17.54	2.78	182.10	19.21
11:04	17.19	3.05	247.20	23.70
11:05	17.79	2.47	188.60	18.85
11:06	17.82	2.45	180.50	18.17
11:07	17.81	2.48	184.60	17.92
11:08	17.77	2.52	193.60	18.36
11:09	17.14	3.16	210.20	22.03
11:10	16.80	3.46	284.40	26.15
11:11	16.95	3.30	276.80	26.68
11:12	17.13	3.14	258.80	26.04
11:13	17.09	3.18	252.20	26.37
11:14	17.22	3.04	256.80	25.93
11:15	17.28	2.98	256.80	25.77

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 3
(continued)

Starting
11-03-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
11:16	17.38	2.88	254.10	25.40
11:17	17.42	2.84	252.70	25.30
11:18	17.39	2.86	245.70	25.56
11:19	17.40	2.86	246.00	25.68
11:20	17.37	2.93	248.10	25.73
11:21	17.29	3.00	253.50	26.09
11:22	17.32	2.97	255.10	25.85
11:23	17.35	2.93	252.90	25.64
11:24	17.35	2.94	256.80	25.71
11:25	17.38	2.88	257.30	25.55
11:26	17.39	2.88	261.90	25.75
11:27	17.37	2.89	264.50	25.90
11:28	17.36	2.90	265.30	25.70
11:29	17.32	2.94	269.70	25.81
11:30	17.32	2.92	264.70	25.78
11:31	17.63	2.66	248.40	23.95
11:32	17.45	2.84	249.30	25.24
137 MinAvg	17.41	2.90	271.54	22.12

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 4

Starting
11-03-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
16:55	17.55	2.61	262.65	16.84
16:56	17.56	2.62	259.46	16.74
16:57	17.59	2.56	260.59	16.38
16:58	17.56	2.56	255.03	16.43
16:59	17.57	2.53	259.05	16.06
17:00	17.54	2.56	266.67	16.09
17:01	17.56	2.55	264.71	15.87
17:02	17.49	2.67	262.03	16.10
17:03	17.40	2.79	278.41	16.29
17:04	17.41	2.78	283.46	16.12
17:05	17.43	2.73	283.04	15.90
17:06	17.40	2.72	282.32	15.88
17:07	17.39	2.73	285.52	15.82
17:08	17.35	2.80	283.66	15.94
17:09	17.19	3.00	293.55	16.73
17:10	17.31	2.88	289.43	16.12
17:11	17.35	2.85	279.85	16.06
17:12	17.37	2.83	281.60	16.01
17:13	17.41	2.79	276.35	15.69
17:14	17.38	2.83	275.22	15.67
17:15	17.38	2.83	268.93	15.56
17:16	17.35	2.86	266.36	15.43
17:17	17.32	2.89	267.39	15.51
17:18	17.33	2.86	268.62	15.32
17:19	17.27	2.92	272.23	15.43
17:20	17.30	2.85	277.89	15.37
17:21	17.35	2.79	274.70	15.18
17:22	17.35	2.82	269.24	15.57
17:23	17.32	2.88	268.01	15.21
17:24	17.29	2.94	268.73	15.45
17:25	17.34	2.88	272.74	15.55
17:26	17.37	2.84	270.89	15.40
17:27	17.38	2.81	270.07	15.07
17:28	17.34	2.82	269.55	15.13
17:29	17.36	2.80	267.49	14.98
17:30	17.40	2.78	266.46	14.77
17:31	17.42	2.80	265.95	14.74
17:32	17.43	2.76	268.62	14.68
17:33	17.47	2.74	272.64	14.57
17:34	17.42	2.80	279.03	14.61

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 4
(continued)

Starting
11-03-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
17:35	17.46	2.75	282.43	14.40
17:36	18.20	2.02	227.32	10.38
17:37	18.20	2.02	177.78	10.61
17:38	17.97	2.27	186.12	10.58
17:39	17.36	2.87	277.69	13.64
17:40	17.46	2.75	293.34	14.10
17:41	17.53	2.66	277.48	14.31
17:42	17.54	2.69	274.29	14.18
17:43	17.57	2.67	269.96	14.01
17:44	17.60	2.62	268.11	13.79
17:45	17.70	2.51	263.17	13.30
17:46	17.75	2.48	259.35	13.13
17:47	17.77	2.47	258.02	12.97
17:48	17.80	2.43	251.32	12.76
17:49	17.77	2.48	238.96	12.79
17:50	17.65	2.60	245.96	13.20
17:51	17.64	2.60	257.71	13.12
17:52	17.70	2.55	263.58	12.78
17:53	17.69	2.58	258.43	12.85
17:54	17.67	2.59	263.06	12.99
17:55	17.63	2.61	263.17	13.08
17:56	17.62P	2.65P	267.90P	13.20P
17:57	17.62P	2.67P	274.39P	13.42P
17:58	17.62P	2.66P	272.74P	13.55P
17:59	17.62P	2.66P	276.55P	13.49P
18:00	18.24P	1.98P	249.98P	9.75P
18:01	18.44P	1.81P	206.82P	8.03P
18:02	18.19P	2.09P	210.43P	8.83P
18:03	17.53P	2.75P	249.67P	12.70P
18:04	17.48P	2.81P	257.40P	13.27P
18:05	17.46P	2.81P	255.23P	13.55P
18:06	17.43P	2.85P	255.65P	13.90P
18:07	17.46P	2.82P	251.01P	13.62P
18:08	17.46P	2.84P	241.74P	13.69P
18:09	17.37P	2.90P	237.41P	13.90P
18:10	17.37P	2.93P	237.62P	14.03P
18:11	17.34P	2.95P	233.09P	14.10P
18:12	17.40P	2.90P	232.26P	13.84P
18:13	17.41P	2.89P	232.06P	13.90P
18:14	17.43P	2.87P	235.66P	13.70P

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 4
(continued)

Starting
11-03-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
18:15	17.49P	2.82P	235.35P	13.39P
18:16	17.53P	2.76P	239.27P	13.30P
18:17	17.53P	2.78P	242.26P	13.09P
18:18	17.53P	2.78P	250.70P	13.07P
18:19	17.58P	2.73P	252.45P	12.92P
18:20	17.57P	2.75P	257.09P	13.11P
18:21	17.56P	2.77P	259.77P	13.34P
18:22	17.56P	2.75P	262.65P	13.36P
18:23	17.55P	2.77P	257.19P	13.40P
18:24	17.52P	2.81P	255.96P	13.63P
18:25	17.54P	2.77P	267.18P	13.64P
18:26	17.60P	2.72P	266.87P	13.41P
18:27	18.06P	2.21P	236.49P	10.96P
18:28	17.62P	2.70P	221.66P	13.07P
18:29	17.50	2.80	258.63	13.90
18:30	17.48	2.80	260.28	13.76
18:31	17.48	2.80	256.06	13.65
18:32	17.63	2.64	255.54	12.81
18:33	17.62	2.69	228.87	12.22
18:34	17.39	2.92	255.54	13.61
18:35	17.37	2.94	262.75	14.09
18:36	17.40	2.89	275.11	14.18
18:37	17.34	2.91	278.61	14.47
18:38	17.34	2.93	286.03	14.65
18:39	17.69	2.60	276.25	12.82
18:40	18.12	2.20	190.24	9.76
18:41	18.04	2.32	181.07	9.70
18:42	17.87	2.51	198.58	10.46
18:43	17.55	2.77	232.16	13.32
18:44	16.98	3.39	267.59	15.11
18:45	17.04	3.27	277.38	15.12
18:46	17.12	3.16	277.38	15.37
18:47	17.25	2.99	270.79	15.42
18:48	17.38	2.85	263.37	15.31
18:49	18.01	2.22	226.91	11.89
18:50	17.65	2.58	242.46	14.68
18:51	17.69	2.55	248.44	14.68
18:52	17.70	2.54	243.90	14.51
18:53	17.96	2.28	226.19	12.86
18:54	17.64	2.62	239.27	15.05

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 4
(continued)

Starting
11-03-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
18:55	17.62	2.63	259.05	15.47
18:56	17.65	2.61	257.71	15.71
18:57	17.84	2.39	244.93	14.98
18:58	18.19	2.01	225.57	12.79
18:59	17.52	2.76	246.07	15.41
19:00	17.52	2.73	264.92	15.79
19:01	17.61	2.62	257.09	15.86
19:02	17.59	2.62	257.60	16.35
19:03	17.65	2.54	264.30	16.23
19:04	17.94	2.25	236.59	14.61
19:05	17.70	2.48	256.78	16.37
19:06	17.71	2.46	260.28	16.43
19:07	17.71	2.47	258.63	16.49
19:08	17.67	2.54	254.93	16.50
19:09	17.96	2.25	239.06	14.81
19:10	17.91	2.33	241.33	13.80
19:11	18.30	1.92	214.86	10.02
19:12	18.22	2.01	223.51	10.22
19:13	17.42	2.82	260.69	15.31
19:14	17.39	2.79	275.83	15.94
19:15	17.37	2.77	276.35	16.84
19:16	17.51	2.64	270.48	16.67
19:17	17.54	2.63	275.83	16.81
19:18	17.62	2.58	276.04	16.86
19:19	17.70	2.54	271.51	16.64
19:20	17.72	2.52	272.23	16.58
19:21	17.70	2.55	278.82	16.74
19:22	17.72	2.52	277.28	16.83
19:23	17.71	2.49	268.21	16.87
19:24	17.70	2.48	261.93	16.81
19:25	17.65	2.51	265.64	17.20
19:26	17.69	2.47	267.59	16.94
19:27	17.74	2.43	269.45	16.53
153 MinAvg	17.57	2.65	260.47	14.75

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 4
(continued)

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	
*	Data was not used in calculated parameter averages.		

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 5

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
10:16	16.79	3.58	372.30	23.77
10:17	16.78	3.59	375.90	23.76
10:18	16.82	3.58	380.50	23.35
10:19	16.87	3.51	371.00	22.85
10:20	16.90	3.47	377.10	22.67
10:21	16.95	3.43	375.80	22.51
10:22	17.35	3.06	350.70	20.15
10:23	16.95	3.45	365.30	22.46
10:24	16.92	3.49	397.90	22.74
10:25	16.91	3.51	400.20	23.10
10:26	16.90	3.51	389.60	23.26
10:27	17.07	3.35	381.60	22.28
10:28	16.79	3.63	364.50	23.94
10:29	16.77	3.65	378.10	24.39
10:30	16.71	3.69	377.50	24.77
10:31	16.68	3.72	380.50	25.00
10:32	16.74	3.68	383.00	24.55
10:33	16.64	3.78	369.50	24.59
10:34	17.04	3.36	375.90	22.06
10:35	17.72	2.73	312.30	16.82
10:36	17.53	2.94	303.20	17.20
10:37	16.47	3.98	340.50	23.79
10:38	16.55	3.85	365.10	24.44
10:39	16.57	3.85	366.10	24.82
10:40	16.60	3.80	354.90	24.82
10:41	17.52	2.84	319.60	21.06
10:42	16.56	3.90	351.00	25.46
10:43	16.69	3.76	343.30	24.11
10:44	16.48	3.92	359.60	25.93
10:45	16.50	3.91	357.50	26.21
10:46	16.49	3.91	359.70	26.29
10:47	16.60	3.78	363.70	25.74
10:48	16.79	3.62	348.10	24.75
10:49	16.73	3.66	366.80	25.45
10:50	16.73	3.67	374.00	25.63
10:51	16.82	3.57	382.30	25.45
10:52	17.08	3.32	353.90	24.06
10:53	16.95	3.44	350.30	24.89
10:54	16.98	3.38	356.10	24.81
10:55	17.01	3.36	355.40	24.94

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 5
(continued)

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
10:56	17.04	3.33	359.90	24.54
10:57	17.00	3.39	356.50	24.83
10:58	17.00	3.38	363.90	24.80
10:59	16.95	3.42	359.80	25.00
11:00	16.93	3.44	352.80	25.07
11:01	16.97	3.40	348.30	24.74
11:02	16.83	3.54	357.60	25.28
11:03	17.68	2.71	330.80	19.79
11:04	17.86	2.58	230.00	16.99
11:05	17.12	3.33	262.50	20.06
11:06	16.52	3.87	439.50	24.65
11:07	16.51	3.84	453.90	25.91
11:08	16.60	3.74	459.90	26.06
11:09	16.66	3.67	428.30	25.92
11:10	16.71	3.62	417.80	25.78
11:11	16.80	3.54	402.20	25.64
11:12	16.85	3.47	391.20	25.42
11:13	16.86	3.49	389.30	24.98
11:14	16.86	3.48	387.10	24.95
11:15	17.29P	3.05P	368.00P	22.18P
11:16	16.89P	3.46P	353.00P	24.54P
11:17	16.82P	3.50P	386.00P	25.23P
11:18	16.78P	3.55P	391.60P	25.42P
11:19	16.75P	3.58P	392.50P	25.53P
11:20	16.76P	3.58P	386.80P	25.41P
11:21	16.71P	3.61P	383.10P	25.41P
11:22	16.68P	3.64P	385.20P	25.39P
11:23	16.65P	3.67P	399.40P	25.65P
11:24	16.63P	3.70P	404.10P	25.85P
11:25	16.59P	3.75P	397.20P	25.84P
11:26	16.57P	3.76P	398.70P	25.82P
11:27	16.60P	3.74P	396.00P	25.78P
11:28	16.62P	3.70P	394.30P	25.64P
11:29	16.64P	3.70P	393.30P	25.49P
11:30	16.58P	3.74P	394.60P	25.76P
11:31	16.61P	3.71P	406.70P	25.81P
11:32	16.64P	3.68P	410.00P	25.67P
11:33	16.63P	3.69P	408.80P	25.58P
11:34	16.65P	3.66P	400.70P	25.46P
11:35	16.67P	3.64P	388.20P	25.45P

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 5
(continued)

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
11:36	16.70P	3.61P	383.30P	25.48P
11:37	16.70P	3.62P	382.80P	25.54P
11:38	16.72P	3.59P	390.40P	25.71P
11:39	16.75P	3.54P	388.80P	25.84P
11:40	16.80P	3.50P	401.00P	25.74P
11:41	16.85P	3.46P	389.90P	25.68P
11:42	16.85P	3.45P	388.10P	25.55P
11:43	16.83P	3.48P	394.20P	25.44P
11:44	16.79P	3.53P	398.40P	25.46P
11:45	16.78P	3.53P	397.60P	25.46P
11:46	17.13	3.16	392.50	23.31
11:47	17.36	2.98	321.60	21.34
11:48	16.81	3.49	382.00	25.01
11:49	16.75	3.54	406.90	25.55
11:50	16.76	3.53	414.90	25.47
11:51	16.69	3.61	418.30	25.52
11:52	16.75	3.55	404.80	24.84
11:53	16.65	3.63	407.10	26.04
11:54	16.67	3.62	408.00	26.15
11:55	17.01	3.27	406.00	24.00
11:56	17.78	2.55	332.50	17.56
11:57	17.56	2.77	312.60	17.84
11:58	16.47	3.84	350.00	24.80
11:59	16.44	3.84	395.80	26.00
12:00	16.41	3.86	393.90	26.11
12:01	16.46	3.81	397.60	25.76
12:02	16.41	3.87	389.80	25.95
12:03	16.42	3.83	399.20	26.17
12:04	16.48	3.78	400.10	26.21
12:05	16.50	3.74	393.90	26.06
12:06	16.62	3.64	386.30	25.08
12:07	16.58	3.67	400.90	25.49
12:08	16.61	3.64	393.70	25.57
12:09	16.56	3.69	401.50	25.72
12:10	16.64	3.60	418.50	25.08
12:11	17.36	2.91	369.30	20.78
12:12	17.70	2.59	260.90	17.26
12:13	17.02	3.29	273.80	19.82
12:14	16.18	4.06	467.00	25.41
12:15	17.11	3.07	423.30	22.15

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 5
(continued)

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
12:16	16.76	3.48	369.40	25.17
12:17	16.27	4.02	413.10	25.93
12:18	16.37	3.87	417.20	25.91
12:19	16.54	3.69	405.20	25.78
12:20	16.73	3.51	390.00	25.09
12:21	16.74	3.49	392.20	25.45
12:22	16.80	3.47	392.60	25.41
12:23	16.78	3.50	390.70	25.62
12:24	16.80	3.48	391.90	25.56
12:25	16.84	3.43	383.00	25.53
12:26	16.83	3.44	387.20	25.54
12:27	16.81	3.46	400.60	25.67
12:28	16.76	3.51	415.00	25.87
12:29	16.77	3.52	409.50	25.85
12:30	16.72	3.55	415.20	25.73
12:31	16.71	3.57	425.60	25.77
12:32	16.64	3.67	426.50	25.89
12:33	16.56	3.73	432.00	25.77
12:34	16.52	3.76	435.80	25.91
12:35	16.52	3.77	436.60	26.11
12:36	16.45	3.82	438.10	26.41
12:37	16.42	3.83	437.90	26.48
12:38	16.44	3.83	439.40	26.33
12:39	16.42	3.82	430.30	26.59
12:40	16.50	3.75	412.60	26.38
12:41	16.55	3.70	398.40	26.16
12:42	16.60	3.64	387.40	26.28
147 MinAvg	16.80	3.54	381.36	24.39

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 6

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
14:13	17.14	3.41	351.40	24.34
14:14	17.14	3.41	353.60	24.24
14:15	17.19	3.34	338.90	23.90
14:16	17.24	3.28	335.40	23.67
14:17	17.22	3.30	336.00	23.93
14:18	17.25	3.27	341.70	24.03
14:19	17.79	2.87	337.80	20.60
14:20	18.25	2.31	233.90	16.32
14:21	17.95	2.52	226.30	16.94
14:22	16.88	3.64	344.00	23.42
14:23	17.03	3.52	413.80	24.05
14:24	17.18	3.34	376.50	23.71
14:25	17.23	3.29	358.80	23.29
14:26	17.29	3.26	350.70	23.29
14:27	17.45	3.10	330.10	22.59
14:28	17.53	3.01	318.90	22.35
14:29	17.58	2.95	319.60	22.46
14:30	17.61	2.94	315.70	22.31
14:31	17.65	2.90	324.10	22.19
14:32	17.65	2.91	318.70	22.30
14:33	17.60	2.95	315.70	22.25
14:34	17.55	3.00	323.20	22.15
14:35	17.47	3.06	330.60	22.32
14:36	17.36	3.18	368.20	22.78
14:37	17.31	3.21	385.80	23.01
14:38	17.69	2.96	374.30	20.47
14:39	18.21	2.37	299.80	15.53
14:40	18.04	2.54	284.70	15.70
14:41	16.99	3.45	316.10	21.47
14:42	16.86	3.68	383.70	23.78
14:43	17.02	3.64	373.80	23.76
14:44	16.93	3.61	366.20	23.86
14:45	16.88	3.64	370.50	24.04
14:46	16.98	3.56	368.20	23.96
14:47	16.98	3.54	367.80	24.43
14:48	17.02	3.50	375.60	24.56
14:49	17.06	3.43	363.50	24.68
14:50	17.06	3.46	361.10	24.84
14:51	17.02	3.49	359.60	25.15
14:52	17.03	3.48	357.60	25.32

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 6
(continued)

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
14:53	17.04	3.48	356.60	25.35
14:54	17.09	3.43	350.40	25.20
14:55	18.00	2.54	303.20	20.05
14:56	17.05	3.36	332.30	24.36
14:57	16.86	3.70	355.90	23.95
14:58	16.94	3.60	348.80	24.28
14:59	16.95	3.56	349.10	24.77
15:00	16.98	3.52	348.40	25.02
15:01	16.99	3.49	349.50	24.98
15:02	17.12	3.38	339.70	24.45
15:03	17.14	3.33	334.80	24.51
15:04	17.13	3.34	335.50	24.89
15:05	17.17	3.31	331.00	24.84
15:06	17.20	3.25	324.10	24.94
15:07	17.15	3.29	319.60	25.15
15:08	17.19	3.27	316.80	24.81
15:09	17.24	3.21	322.00	24.62
15:10	17.25	3.21	317.80	24.55
15:11	17.19	3.27	318.20	24.76
15:12	17.22	3.26	322.30	24.65
15:13	17.23	3.23	326.80	24.79
15:14	17.22	3.25	325.60	24.67
15:15	17.22	3.26	322.80	24.43
15:16	17.20	3.26	332.50	24.53
15:17	17.23	3.25	329.20	24.37
15:18	17.24	3.25	323.70	24.36
15:19	17.26	3.21	317.50	24.29
15:20	17.29P	3.18P	313.30P	23.96P
15:21	17.25P	3.23P	306.20P	24.32P
15:22	17.22P	3.26P	314.30P	24.28P
15:23	17.19P	3.30P	320.50P	23.99P
15:24	17.17P	3.31P	328.70P	23.70P
15:25	17.16P	3.33P	339.00P	23.78P
15:26	18.13P	2.49P	282.00P	16.96P
15:27	18.13P	2.40P	221.90P	15.44P
15:28	17.50P	2.90P	241.40P	18.02P
15:29	16.86P	3.65P	364.70P	22.65P
15:30	16.98P	3.53P	364.90P	23.10P
15:31	17.08P	3.40P	337.70P	23.13P
15:32	17.08P	3.40P	336.60P	23.33P

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 6
(continued)

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
15:33	17.11P	3.39P	336.30P	23.25P
15:34	17.18P	3.33P	340.10P	23.06P
15:35	17.26P	3.23P	335.50P	22.80P
15:36	17.34P	3.15P	337.90P	22.73P
15:37	17.40P	3.08P	320.90P	22.80P
15:38	17.39	3.10	309.00	23.01
15:39	17.48	3.05	305.70	22.59
15:40	17.63	2.81	274.10	21.37
15:41	17.35	3.12	306.50	23.20
15:42	17.32	3.15	318.50	23.35
15:43	17.35	3.13	320.10	23.19
15:44	17.30	3.17	323.10	23.13
15:45	17.31	3.15	334.00	23.14
15:46	17.30	3.17	341.80	23.26
15:47	17.33	3.15	338.40	23.16
15:48	17.32	3.15	334.20	23.14
15:49	17.36	3.13	329.20	22.99
15:50	17.41	3.07	327.40	22.68
15:51	17.42	3.03	341.90	22.64
15:52	17.45	2.97	349.40	22.57
15:53	17.37	3.05	348.30	22.93
15:54	17.36	3.08	346.10	22.80
15:55	17.25	3.18	350.10	22.95
15:56	17.22	3.23	347.90	22.99
15:57	17.17	3.29	348.70	23.33
15:58	17.82	2.60	309.10	20.05
15:59	17.90	2.62	309.40	16.80
16:00	17.83	2.67	269.10	15.84
16:01	17.44	2.98	275.50	18.26
16:02	16.98	3.43	335.00	22.97
16:03	17.08	3.48	351.90	23.40
16:04	16.90	3.44	351.20	23.12
16:05	17.04	3.39	357.80	23.10
16:06	17.13	3.30	347.80	23.03
16:07	17.26	3.16	332.50	22.56
16:08	17.16	3.26	337.70	23.44
16:09	17.11	3.31	343.30	23.94
16:10	17.17	3.27	342.70	23.83
16:11	17.17	3.23	342.20	23.97
16:12	17.18	3.23	338.70	24.19

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 6
(continued)

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
16:13	17.40	3.02	322.20	22.93
16:14	17.16	3.26	334.80	24.83
16:15	17.16	3.24	334.10	24.82
16:16	17.19	3.21	329.00	24.84
16:17	17.13	3.28	331.70	24.96
16:18	17.12	3.29	336.70	24.94
16:19	17.14	3.28	336.80	24.83
16:20	17.15	3.23	337.40	24.81
16:21	17.18	3.21	339.20	24.86
16:22	17.17	3.22	341.10	24.92
16:23	17.15	3.23	337.00	24.90
16:24	17.09	3.26	344.80	25.20
16:25	17.10	3.26	348.10	25.21
16:26	17.09	3.28	339.60	25.37
16:27	17.00	3.36	342.10	25.68
16:28	17.23	3.24	345.20	24.17
16:29	18.04	2.37	263.60	17.94
16:30	17.87	2.50	235.40	17.86
16:31	16.85	3.42	308.50	22.97
16:32	16.63	3.74	439.70	25.40
16:33	16.79	3.55	408.30	25.69
16:34	16.85	3.49	373.80	25.62
16:35	16.89	3.47	362.10	25.37
16:36	16.91	3.41	359.30	25.36
16:37	16.98	3.37	349.70	25.16
16:38	17.16	3.24	336.20	24.70
16:39	17.26	3.14	322.00	24.23
16:40	17.24	3.14	320.50	24.32
16:41	17.28	3.12	328.90	24.00
16:42	17.34	3.04	332.90	23.92
16:43	17.32	3.09	331.70	24.13
16:44	17.25	3.14	328.00	24.30
16:45	17.44	3.01	321.30	22.53
153 MinAvg	17.26	3.21	335.45	23.36

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 6
(continued)

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 7

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
19:41	17.24	3.33	348.80	24.42
19:42	17.26	3.39	347.80	24.44
19:43	17.27	3.33	340.10	24.71
19:44	17.35	3.22	333.40	24.88
19:45	17.34	3.29	332.50	25.14
19:46	17.33	3.25	332.50	24.80
19:47	17.30	3.30	336.80	24.63
19:48	17.30	3.31	342.10	24.48
19:49	17.70	3.06	338.00	21.62
19:50	18.35	2.33	240.40	15.49
19:51	18.18	2.43	238.90	15.64
19:52	17.27	3.10	306.10	20.46
19:53	17.24	3.37	424.50	21.92
19:54	17.02	3.61	430.80	23.97
19:55	17.05	3.57	438.50	24.25
19:56	17.03	3.58	405.20	24.74
19:57	17.04	3.58	383.40	24.95
19:58	17.20	3.42	371.50	24.17
19:59	17.48	3.32	371.90	21.98
20:00	18.02	2.64	294.30	16.74
20:01	17.95	2.72	275.90	16.67
20:02	17.23	3.26	287.90	21.37
20:03	17.06	3.50	341.60	23.47
20:04	16.96	3.67	391.60	25.11
20:05	17.00	3.58	374.10	25.33
20:06	17.00	3.61	375.10	25.54
20:07	16.97	3.61	379.30	25.72
20:08	17.01	3.59	373.80	25.28
20:09	16.95	3.66	376.20	25.85
20:10	17.00	3.61	367.40	25.70
20:11	17.03	3.58	355.90	25.75
20:12	17.08	3.55	359.00	25.85
20:13	17.23	3.41	345.90	25.29
20:14	17.25	3.35	343.80	25.36
20:15	17.29	3.32	340.90	25.27
20:16	17.32	3.30	325.80	25.16
20:17	17.28	3.32	323.70	25.17
20:18	17.27	3.34	335.50	25.26
20:19	17.31	3.33	343.70	25.07
20:20	17.42	3.31	348.50	24.14

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 7
(continued)

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
20:21	17.30	3.20	336.10	24.81
20:22	17.36	3.32	349.90	24.40
20:23	17.33	3.26	344.20	24.52
20:24	17.34	3.28	351.70	24.59
20:25	17.34	3.28	349.00	24.69
20:26	17.32	3.30	355.70	24.83
20:27	17.32	3.29	358.70	24.54
20:28	17.38	3.25	354.00	24.01
20:29	17.32	3.31	356.50	24.33
20:30	17.27	3.35	356.40	24.49
20:31	17.21	3.41	354.00	24.76
20:32	17.14	3.49	353.60	24.81
20:33	17.30	3.32	338.20	23.51
20:34	17.08	3.58	359.00	24.65
20:35	17.05	3.57	356.40	24.91
20:36	17.08	3.55	353.60	25.07
20:37	17.06	3.55	349.30	25.29
20:38	17.07	3.59	347.80	25.23
20:39	17.04	3.59	349.40	25.36
20:40	16.99	3.62	344.30	25.26
20:41	16.95P	3.69P	351.90P	25.33P
20:42	17.11P	3.58P	347.10P	24.64P
20:43	17.65P	3.04P	299.00P	20.93P
20:44	17.29P	3.26P	312.10P	23.48P
20:45	17.02P	3.58P	355.20P	25.41P
20:46	16.99P	3.60P	355.70P	25.47P
20:47	16.97P	3.65P	361.00P	25.36P
20:48	16.98P	3.68P	376.70P	25.34P
20:49	17.10P	3.62P	365.70P	24.84P
20:50	18.11P	2.64P	265.00P	17.31P
20:51	18.04P	2.64P	214.30P	16.61P
20:52	17.49P	2.97P	239.40P	19.16P
20:53	16.80P	3.79P	406.30P	24.47P
20:54	16.89P	3.74P	404.40P	24.87P
20:55	16.93P	3.71P	366.90P	24.84P
20:56	16.98P	3.64P	361.20P	24.65P
20:57	17.04P	3.57P	358.60P	24.13P
20:58	16.99P	3.65P	357.40P	24.26P
20:59	17.02P	3.61P	346.90P	24.18P
21:00	17.09P	3.58P	342.70P	24.00P

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 7
(continued)

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
21:01	17.09P	3.54P	346.40P	23.92P
21:02	17.08P	3.55P	344.60P	23.91P
21:03	17.07P	3.58P	337.70P	23.96P
21:04	17.01P	3.63P	337.70P	24.01P
21:05	16.96P	3.67P	342.80P	24.20P
21:06	16.94P	3.70P	356.50P	24.37P
21:07	16.95P	3.67P	343.40P	24.47P
21:08	16.88P	3.74P	353.40P	24.72P
21:09	16.84P	3.79P	362.70P	25.01P
21:10	16.84P	3.78P	358.10P	25.04P
21:11	16.86P	3.77P	352.90P	24.87P
21:12	16.88P	3.76P	349.80P	24.95P
21:13	16.91P	3.73P	359.60P	24.78P
21:14	16.98P	3.64P	355.50P	24.54P
21:15	17.69P	3.17P	342.20P	19.66P
21:16	18.11P	2.57P	279.60P	15.89P
21:17	18.02P	2.65P	263.90P	16.00P
21:18	17.15P	3.35P	284.90P	21.45P
21:19	16.91P	3.65P	324.40P	24.04P
21:20	16.86P	3.72P	343.20P	25.32P
21:21	16.92P	3.65P	346.60P	25.40P
21:22	16.89P	3.68P	350.90P	25.59P
21:23	16.93P	3.73P	351.40P	25.74P
21:24	16.94P	3.73P	340.80P	25.78P
21:25	16.93P	3.72P	350.20P	25.58P
21:26	16.94P	3.64P	349.00P	25.57P
21:27	16.98P	3.62P	354.40P	25.65P
21:28	17.02P	3.64P	348.00P	25.35P
21:29	17.07P	3.57P	350.60P	24.95P
21:30	17.08P	3.52P	360.30P	24.89P
21:31	17.13P	3.45P	357.10P	24.69P
21:32	17.14P	3.49P	342.40P	24.53P
21:33	17.19P	3.50P	337.20P	24.37P
21:34	17.26P	3.43P	338.30P	24.03P
21:35	17.23P	3.41P	342.80P	24.03P
21:36	17.21P	3.39P	342.10P	24.06P
21:37	17.26P	3.34P	354.90P	23.72P
21:38	17.30P	3.30P	359.50P	23.66P
21:39	17.32P	3.33P	354.50P	23.60P
21:40	17.29P	3.39P	357.50P	23.60P

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 7
(continued)

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
21:41	17.27P	3.43P	359.20P	23.60P
21:42	17.27	3.39	363.60	23.59
21:43	17.24	3.37	359.60	23.66
21:44	17.24	3.33	358.80	23.29
21:45	17.16	3.48	370.50	23.68
21:46	17.15	3.53	366.20	23.73
21:47	17.08	3.53	364.50	23.99
21:48	17.05	3.54	365.40	24.05
21:49	17.04	3.63	379.70	24.05
21:50	17.02	3.59	384.70	24.22
21:51	17.43	3.39	376.00	21.90
21:52	18.14	2.59	259.60	15.90
21:53	18.03	2.62	246.60	15.94
21:54	17.20	3.24	287.30	20.75
21:55	16.84	3.80	383.40	24.38
21:56	16.87	3.74	365.80	24.70
21:57	16.93	3.72	356.50	24.70
21:58	16.93	3.67	349.20	24.95
21:59	16.93	3.73	348.00	25.01
22:00	16.92	3.67	358.90	24.98
22:01	16.99	3.67	371.20	24.90
22:02	17.03	3.58	361.40	24.57
22:03	16.99	3.62	350.30	24.71
22:04	17.01	3.63	342.60	24.58
22:05	17.02	3.60	339.70	24.52
22:06	16.99	3.62	341.50	24.63
22:07	16.96	3.64	356.60	24.68
22:08	16.97	3.65	374.20	24.79
22:09	17.04	3.60	358.50	24.72
22:10	17.09	3.54	351.80	24.68
22:11	17.10	3.53	358.00	24.84
22:12	17.14	3.51	353.20	24.54
22:13	17.11	3.52	353.00	24.82
22:14	17.12	3.51	356.80	24.47
22:15	17.07	3.54	357.10	24.62
22:16	16.98	3.63	370.30	24.90
22:17	17.03	3.61	363.80	24.31
22:18	17.10	3.54	355.60	24.03
22:19	17.11	3.53	352.80	24.06
22:20	17.12	3.51	343.00	24.06

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 7
(continued)

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
22:21	17.11	3.52	343.30	24.43
22:22	17.10	3.50	341.10	24.74
22:23	17.07	3.55	349.00	25.09
22:24	17.11	3.53	352.10	25.01
22:25	17.11	3.52	344.00	25.22
22:26	17.11	3.51	340.60	25.41
22:27	17.12	3.50	337.20	25.10
22:28	17.11	3.49	340.90	25.31
22:29	17.09	3.51	336.80	25.52
22:30	17.07	3.52	331.00	25.95
22:31	17.07	3.52	333.40	26.10
22:32	17.22	3.39	333.60	25.25
22:33	17.09	3.49	334.40	26.23
22:34	17.05	3.55	338.10	26.38
22:35	17.05	3.55	335.20	26.31
22:36	17.06	3.52	331.00	26.47
22:37	17.86	2.99	313.40	20.44
22:38	17.98	2.60	267.80	18.37
22:39	17.88	2.73	273.10	18.50
22:40	17.07	3.42	303.20	24.57
22:41	17.05	3.50	319.30	25.89
181 MinAvg	17.21	3.41	346.63	24.04

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 8

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
09:29	17.07	3.64	387.40	27.02
09:30	17.10	3.62	392.10	27.24
09:31	17.09	3.64	397.00	27.39
09:32	17.08	3.64	411.80	27.37
09:33	17.20	3.58	409.10	26.84
09:34	17.23	3.46	393.50	26.54
09:35	17.25	3.49	399.10	27.12
09:36	17.45	3.41	402.20	26.48
09:37	18.08	2.58	339.10	23.53
09:38	17.18	3.54	399.70	27.46
09:39	17.12	3.64	418.40	27.62
09:40	17.19	3.55	416.00	27.21
09:41	17.13	3.61	406.80	27.60
09:42	17.13	3.61	404.10	27.60
09:43	17.16	3.59	395.20	27.50
09:44	17.16	3.57	401.60	27.61
09:45	17.20	3.54	397.00	27.29
09:46	17.15	3.58	401.30	27.59
09:47	17.17	3.56	402.50	27.45
09:48	17.20	3.53	403.00	27.23
09:49	17.23	3.50	401.80	26.96
09:50	17.26	3.46	399.50	26.51
09:51	17.18	3.55	416.30	26.99
09:52	17.24	3.52	409.00	26.80
09:53	17.23	3.50	402.50	26.72
09:54	17.21	3.51	403.10	26.70
09:55	17.22	3.51	403.70	26.26
09:56	17.19	3.54	410.80	26.26
09:57	17.19	3.56	403.80	26.32
09:58	17.11	3.60	403.40	26.39
09:59	17.13	3.58	396.20	26.15
10:00	17.16	3.55	390.40	25.87
10:01	17.38	3.47	385.60	24.70
10:02	18.25	2.54	265.00	18.06
10:03	18.14	2.62	230.80	17.83
10:04	17.90	2.79	246.20	18.72
10:05	16.90	3.77	341.40	25.07
10:06	16.89	3.79	397.40	26.08
10:07	16.97	3.71	388.50	26.45
10:08	16.97	3.70	383.20	26.67

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 8
(continued)

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
10:09	16.94	3.75	387.90	27.07
10:10	16.96	3.73	384.20	27.14
10:11	16.96	3.72	388.10	27.46
10:12	17.05	3.63	377.30	27.46
10:13	17.08	3.59	374.30	27.65
10:14	17.09	3.59	374.60	27.41
10:15	17.17	3.49	356.20	26.68
10:16	17.15	3.53	361.70	26.97
10:17	17.14	3.51	374.60	26.88
10:18	17.09	3.55	385.30	26.96
10:19	17.20	3.46	376.80	25.98
10:20	17.03	3.61	378.10	26.90
10:21	17.04	3.60	384.90	26.88
10:22	17.04	3.59	384.40	26.96
10:23	17.01	3.61	385.90	26.97
10:24	17.02	3.61	390.50	26.79
10:25	17.08	3.55	382.40	26.48
10:26	17.00	3.62	390.20	27.27
10:27	17.01	3.61	384.60	27.22
10:28	17.04	3.59	382.00	27.38
10:29	17.25P	3.38P	368.80P	26.32P
10:30	17.09P	3.53P	372.30P	27.51P
10:31	17.00P	3.60P	364.70P	27.83P
10:32	16.97P	3.65P	368.40P	27.98P
10:33	16.95P	3.67P	366.50P	28.21P
10:34	16.99P	3.62P	372.40P	28.03P
10:35	16.96P	3.64P	371.70P	28.19P
10:36	16.92P	3.66P	367.80P	28.19P
10:37	16.92P	3.66P	365.50P	28.16P
10:38	16.93P	3.66P	363.80P	28.08P
10:39	16.96P	3.64P	356.50P	28.08P
10:40	16.95P	3.65P	357.70P	28.12P
10:41	16.94P	3.64P	357.00P	28.31P
10:42	16.94P	3.64P	355.40P	28.47P
10:43	16.94P	3.64P	350.00P	28.58P
10:44	16.95P	3.64P	352.00P	28.70P
10:45	17.92P	2.83P	322.80P	21.09P
10:46	17.90P	2.71P	282.20P	19.78P
10:47	17.27P	3.21P	288.50P	24.10P
10:48	16.90P	3.67P	346.60P	28.36P

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 8
(continued)

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
10:49	16.94P	3.62P	360.90P	28.61P
10:50	16.96P	3.59P	357.10P	28.86P
10:51	16.98P	3.59P	355.60P	28.89P
10:52	17.02P	3.55P	355.30P	28.76P
10:53	17.02P	3.53P	358.20P	28.89P
10:54	17.06	3.50	353.80	28.69
10:55	17.41	3.18	331.90	26.42
10:56	17.09	3.49	345.40	28.87
10:57	17.16	3.42	362.00	28.56
10:58	17.23	3.35	361.70	28.21
10:59	17.23	3.34	355.10	28.31
11:00	17.24	3.32	358.80	28.33
11:01	17.23	3.33	357.90	28.50
11:02	17.18	3.38	354.50	28.89
11:03	17.18	3.39	359.00	28.89
11:04	17.34	3.36	358.20	27.85
11:05	18.58	2.07	282.90	19.92
11:06	18.26	2.31	223.30	19.82
11:07	17.90	2.60	225.10	20.67
11:08	16.82	3.71	322.90	28.23
11:09	16.86	3.71	373.10	28.77
11:10	17.05	3.51	354.80	28.13
11:11	16.95	3.60	360.80	28.95
11:12	16.92	3.64	364.70	28.98
11:13	16.92	3.64	363.20	28.94
11:14	16.95	3.67	357.80	28.73
11:15	16.97	3.57	345.60	28.74
11:16	16.95	3.61	349.80	29.09
11:17	16.98	3.60	343.50	29.05
11:18	17.00	3.58	342.10	29.15
11:19	17.11	3.47	342.00	28.62
11:20	17.07	3.51	341.10	29.08
11:21	17.15	3.43	347.60	29.00
11:22	17.17	3.38	345.20	28.92
11:23	17.17	3.40	347.20	28.75
11:24	17.28	3.37	349.40	27.94
11:25	17.20	3.29	328.60	27.99
11:26	17.19	3.37	342.00	27.91
11:27	17.22	3.33	344.70	27.45
11:28	17.24	3.33	344.10	27.22

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 8
(continued)

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
11:29	17.30	3.31	342.00	26.51
11:30	17.27	3.30	336.40	26.65
11:31	17.26	3.32	340.50	26.46
11:32	17.26	3.32	343.30	26.18
11:33	17.23	3.36	342.90	25.87
11:34	17.26	3.36	346.10	25.55
11:35	17.27	3.29	343.60	25.33
11:36	17.22	3.36	344.70	25.41
11:37	17.21	3.38	346.60	25.38
11:38	17.20	3.40	346.60	25.42
11:39	17.23	3.39	343.60	25.19
11:40	17.17	3.41	340.50	25.33
11:41	17.14	3.47	343.70	25.29
11:42	17.12	3.48	348.70	25.43
11:43	17.14	3.49	350.10	25.35
11:44	17.24	3.47	341.40	24.67
11:45	17.13	3.42	326.40	25.18
11:46	17.07	3.57	336.70	25.36
11:47	17.09	3.57	337.40	25.15
11:48	17.16	3.47	334.80	24.84
11:49	17.28	3.44	341.50	24.18
11:50	17.18	3.38	340.50	24.26
11:51	17.20	3.42	348.20	24.29
11:52	17.25	3.42	346.10	24.14
11:53	17.56	3.06	314.80	21.91
145 MinAvg	17.20	3.45	362.72	26.54

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 9

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
13:26	17.24	3.34	362.10	25.63
13:27	17.24	3.32	351.40	25.86
13:28	17.20	3.37	343.60	26.19
13:29	17.87	2.77	312.90	22.41
13:30	17.57	2.87	310.00	24.77
13:31	16.91	3.68	345.30	26.95
13:32	16.93	3.64	351.20	26.83
13:33	16.97	3.59	358.40	26.87
13:34	16.98	3.57	357.00	26.84
13:35	16.98	3.57	350.10	26.90
13:36	16.99	3.58	344.00	26.76
13:37	17.16	3.38	332.80	25.74
13:38	16.95	3.57	340.80	26.89
13:39	16.94	3.58	338.30	26.96
13:40	16.96	3.56	340.10	26.80
13:41	17.08	3.48	339.80	26.25
13:42	17.00	3.47	330.30	26.33
13:43	16.95	3.55	336.90	26.62
13:44	16.96	3.54	332.80	26.60
13:45	16.91	3.60	331.80	26.46
13:46	16.99	3.57	335.60	26.04
13:47	17.07	3.41	324.50	26.04
13:48	16.99	3.52	346.40	26.92
13:49	17.00	3.50	350.40	26.86
13:50	17.03	3.47	356.60	26.62
13:51	17.06	3.45	354.30	26.51
13:52	17.05	3.46	348.60	26.53
13:53	17.02	3.48	349.10	26.84
13:54	17.02	3.47	348.20	26.88
13:55	17.00	3.49	348.70	27.22
13:56	17.09	3.42	351.30	26.79
13:57	17.02	3.48	343.00	27.50
13:58	17.04	3.45	352.30	27.44
13:59	17.01	3.47	352.20	27.52
14:00	17.03	3.48	355.10	27.39
14:01	17.08	3.42	352.30	26.91
14:02	16.98	3.50	340.90	27.31
14:03	16.96	3.52	342.30	27.35
14:04	16.98	3.51	345.90	27.23
14:05	17.02	3.46	348.40	27.10

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 9
(continued)

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
14:06	17.22	3.33	341.40	26.05
14:07	17.97	2.54	296.40	19.73
14:08	17.88	2.61	291.10	19.81
14:09	17.39	3.04	286.80	23.17
14:10	16.95	3.52	334.90	27.17
14:11	17.02	3.44	341.90	27.07
14:12	16.95	3.49	338.30	27.59
14:13	16.95	3.49	341.60	27.65
14:14	16.89	3.56	343.00	27.76
14:15	16.91	3.53	344.30	27.70
14:16	17.01	3.44	347.50	27.27
14:17	16.97	3.44	344.10	27.48
14:18	16.97	3.46	351.30	27.53
14:19	16.98	3.44	373.70	27.52
14:20	16.98	3.44	395.00	27.35
14:21	17.29	3.22	394.80	25.51
14:22	18.15	2.35	252.20	18.78
14:23	18.02	2.46	213.50	18.85
14:24	17.11	3.26	284.40	24.25
14:25	17.16	3.35	413.30	25.37
14:26	16.92P	3.48P	397.60P	27.59P
14:27	16.97P	3.48P	399.60P	27.67P
14:28	16.99P	3.48P	391.50P	27.56P
14:29	16.96P	3.51P	391.20P	27.67P
14:30	16.93P	3.54P	393.50P	27.65P
14:31	16.92P	3.52P	388.90P	27.80P
14:32	16.96P	3.50P	373.70P	27.76P
14:33	16.98P	3.45P	373.20P	27.63P
14:34	17.03P	3.42P	372.50P	27.32P
14:35	17.01P	3.42P	366.00P	27.51P
14:36	17.00P	3.45P	367.50P	27.47P
14:37	17.14P	3.34P	354.40P	26.92P
14:38	17.83P	2.55P	302.90P	23.65P
14:39	16.97P	3.48P	349.50P	27.53P
14:40	16.93P	3.53P	371.60P	27.49P
14:41	16.98P	3.47P	380.00P	27.45P
14:42	16.99P	3.46P	371.20P	27.34P
14:43	17.02P	3.43P	361.60P	27.11P
14:44	17.06P	3.40P	361.60P	26.99P
14:45	17.09P	3.36P	354.90P	27.07P

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 9
(continued)

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
14:46	17.10P	3.36P	353.10P	26.95P
14:47	17.12P	3.34P	349.90P	26.85P
14:48	17.11P	3.32P	361.60P	26.87P
14:49	17.09P	3.36P	364.20P	26.97P
14:50	17.11P	3.33P	367.00P	26.93P
14:51	17.20	3.25	365.30	26.27
14:52	17.18	3.25	353.50	25.96
14:53	17.09	3.34	359.20	26.66
14:54	17.02	3.41	360.40	26.89
14:55	16.98	3.47	370.50	27.01
14:56	17.01	3.43	369.40	26.96
14:57	17.06	3.39	358.40	26.84
14:58	17.00	3.45	357.10	26.92
14:59	16.97	3.49	361.70	27.03
15:00	16.99	3.48	363.30	27.15
15:01	16.98	3.47	349.70	27.14
15:02	16.99	3.45	350.20	26.98
15:03	16.99	3.48	346.30	27.28
15:04	16.97	3.51	344.80	27.54
15:05	16.99	3.49	349.30	27.74
15:06	17.09	3.40	341.70	27.34
15:07	17.09	3.41	339.40	27.34
15:08	17.10	3.40	345.30	27.26
15:09	17.14	3.35	348.70	27.02
15:10	17.15	3.35	335.80	27.27
15:11	17.14	3.35	335.10	27.35
15:12	17.12	3.38	344.80	27.54
15:13	17.12	3.38	344.90	27.66
15:14	17.08	3.44	341.80	27.77
15:15	17.04	3.46	341.20	27.73
15:16	17.11	3.41	346.50	27.13
15:17	17.10	3.42	362.90	27.17
15:18	17.10	3.40	347.20	27.00
15:19	17.05	3.44	350.80	27.12
15:20	17.05	3.44	354.30	27.12
15:21	17.10	3.40	354.40	27.02
15:22	17.09	3.41	352.90	27.13
15:23	17.08	3.41	349.30	27.16
15:24	17.10	3.40	349.20	27.03
15:25	17.61	3.00	359.70	23.96

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 9
(continued)

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
15:26	18.25	2.32	229.20	18.99
15:27	18.07	2.46	225.30	19.71
15:28	17.06	3.44	333.50	26.24
15:29	17.05	3.47	413.30	26.96
15:30	17.10	3.39	409.30	27.39
15:31	17.15	3.37	388.70	27.45
15:32	17.14	3.37	385.90	27.52
15:33	17.17	3.34	363.70	27.26
15:34	17.21	3.34	360.60	27.32
15:35	17.20	3.33	361.20	27.38
15:36	17.24	3.31	357.50	27.22
15:37	17.17	3.33	368.30	27.55
15:38	17.18	3.33	363.30	27.41
15:39	17.21	3.31	347.00	27.21
15:40	17.16	3.37	357.60	27.41
15:41	17.07	3.44	379.60	27.77
15:42	17.93	2.69	370.70	21.36
15:43	18.02	2.52	320.70	20.16
15:44	18.03	2.43	286.20	21.85
15:45	17.03	3.39	354.90	28.15
15:46	16.86	3.65	392.70	28.57
15:47	16.93	3.57	389.50	28.65
15:48	16.97	3.53	377.60	28.43
15:49	17.04	3.47	373.30	28.12
15:50	17.00	3.48	352.00	28.31
145 MinAvg	17.14	3.36	346.27	26.40

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 10

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
16:45	17.20	3.42	353.30	25.37
16:46	17.26	3.39	351.00	25.21
16:47	17.30	3.35	356.00	25.18
16:48	17.30	3.33	357.90	25.08
16:49	17.29	3.32	356.60	25.17
16:50	17.26	3.30	360.00	25.30
16:51	17.27	3.27	359.70	25.18
16:52	17.30	3.25	354.60	25.07
16:53	17.31	3.27	357.50	25.07
16:54	17.28	3.35	362.10	25.49
16:55	17.31	3.34	359.80	25.43
16:56	17.31	3.29	360.00	25.39
16:57	17.32	3.24	359.50	25.16
16:58	17.33	3.22	358.40	24.97
16:59	17.36	3.18	355.00	24.82
17:00	17.35	3.22	352.90	24.82
17:01	17.35	3.22	354.40	24.93
17:02	17.28	3.35	362.40	25.29
17:03	17.28	3.34	360.00	25.20
17:04	17.26	3.31	353.20	25.24
17:05	17.25	3.29	356.40	25.29
17:06	17.25	3.35	360.20	25.08
17:07	17.48	3.17	342.10	23.01
17:08	17.46	3.19	328.90	23.16
17:09	17.46	3.21	327.80	23.09
17:10	17.48	3.11	332.90	22.75
17:11	17.42	3.13	331.50	22.54
17:12	17.39	3.22	332.80	22.41
17:13	17.36	3.28	337.30	22.45
17:14	17.39	3.26	328.40	22.33
17:15	17.48P	3.09P	310.30P	21.64P
17:16	17.36P	3.26P	317.30P	22.66P
17:17	17.77P	2.88P	294.70P	19.89P
17:18	17.33P	3.28P	326.20P	22.68P
17:19	17.32P	3.24P	324.10P	22.69P
17:20	17.35P	3.29P	318.40P	22.63P
17:21	17.34P	3.40P	333.00P	23.06P
17:22	18.11P	2.54P	296.60P	16.54P
17:23	17.95P	2.69P	279.50P	16.83P
17:24	17.45P	2.90P	283.90P	19.77P
17:25	16.80P	3.81P	321.60P	25.16P

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 10
(continued)

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
17:26	16.92	3.66	330.70	25.08
17:27	17.21	3.54	335.00	23.94
17:28	17.72	2.97	303.20	21.11
17:29	17.34	2.95	310.10	24.00
17:30	16.95	3.64	326.60	24.54
17:31	17.84	3.08	290.90	19.25
17:32	18.22	2.46	206.60	15.69
17:33	17.88	2.53	202.80	16.64
17:34	16.84	3.70	334.20	23.33
17:35	17.01	3.65	372.60	23.82
17:36	17.12	3.44	358.30	23.84
17:37	17.16	3.46	351.90	23.78
17:38	17.24	3.37	359.70	23.33
17:39	17.32	3.32	368.20	23.22
17:40	17.37	3.24	370.00	23.22
17:41	17.38	3.23	368.90	23.14
17:42	17.42	3.19	370.70	23.04
17:43	17.41	3.20	363.00	23.16
17:44	17.42	3.19	369.90	23.14
17:45	17.40	3.18	368.30	23.09
17:46	17.35	3.29	370.10	23.22
17:47	17.32	3.24	368.80	23.30
17:48	17.29	3.35	368.40	23.39
17:49	17.19	3.36	375.30	23.85
17:50	17.17	3.46	379.00	24.12
17:51	17.18	3.43	378.30	24.17
17:52	17.16	3.42	374.00	24.40
17:53	17.13	3.51	375.60	24.49
17:54	17.11	3.46	375.80	24.57
17:55	17.11	3.56	373.20	24.54
71 MinAvg	17.32	3.29	348.71	23.76

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 11

Starting
11-06-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
11:38	16.93	3.52	398.90	26.57
11:39	16.93	3.49	400.80	26.31
11:40	16.95	3.52	402.40	26.04
11:41	16.96	3.46	401.00	25.97
11:42	16.96	3.50	398.70	26.20
11:43	16.92	3.51	395.90	26.43
11:44	16.93D	3.54D	388.00D	26.38D
11:45	16.95D	3.47D	384.40D	26.45D
11:46	16.92D	3.53D	382.90D	26.65D
11:47	16.89D	3.54D	381.80D	26.74D
11:48	16.85	3.58	374.80	26.76
11:49	16.87	3.58	365.40	26.72
11:50	16.84	3.59	370.40	26.67
11:51	16.88	3.60	373.20	26.51
11:52	16.89	3.52	364.20	26.56
11:53	16.85	3.58	354.90	26.67
11:54	16.91	3.56	359.90	26.53
11:55	16.96	3.44	357.10	26.45
11:56	16.93	3.49	361.00	26.46
11:57	16.92	3.51	361.30	26.62
11:58	16.87	3.48	361.50	26.75
11:59	16.85	3.55	358.90	26.76
12:00	16.84	3.58	361.40	26.81
12:01	16.82	3.60	358.80	27.00
12:02	16.81	3.57	363.20	26.74
12:03	16.75	3.59	412.80	26.95
12:04	17.62	2.96	400.90	20.88
12:05	17.81	2.54	326.20	18.81
12:06	17.85	2.58	292.60	18.50
12:07	17.10	3.23	304.30	23.30
12:08	17.70	2.80	259.90	19.60
12:09	17.71	2.64	202.00	18.80
12:10	17.72	2.63	198.10	18.88
12:11	17.77	2.59	196.40	18.73
12:12	17.80	2.56	197.40	18.76
12:13	17.62	2.73	214.80	19.87
12:14	16.58	3.53	275.00	26.30
12:15	16.56	3.79	353.70	28.21
12:16	16.76	3.50	338.40	28.07
12:17	16.77	3.48	329.00	28.31

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 11
(continued)

Starting
11-06-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
12:18	16.86	3.51	328.40	28.36
12:19	16.84	3.51	314.90	28.09
12:20	16.85	3.49	295.70	27.95
12:21	16.93	3.36	290.40	27.16
12:22	17.04	3.31	287.20	26.34
12:23	16.95	3.32	278.00	27.14
12:24	16.94	3.40	292.40	27.49
12:25	16.98	3.33	294.80	27.45
12:26	17.02	3.27	301.30	27.23
12:27	17.01	3.32	299.30	27.32
12:28	17.10	3.28	300.40	26.89
12:29	17.09	3.28	298.90	27.16
12:30	17.11	3.21	298.20	27.09
12:31	17.14	3.15	295.60	27.00
12:32	17.15	3.19	298.90	26.93
12:33	17.12	3.24	300.70	27.03
12:34	17.13	3.16	300.30	27.06
12:35	17.04	3.27	308.90	27.17
12:36	16.96	3.38	328.00	27.41
12:37	16.90	3.37	333.50	27.50
12:38	16.86	3.46	337.80	27.68
12:39	16.79	3.56	350.70	27.96
12:40	16.77	3.53	350.20	28.09
12:41	16.78	3.51	345.50	27.90
12:42	16.74	3.61	345.70	28.02
12:43	16.75	3.55	344.70	28.14
12:44	16.74	3.54	340.40	28.33
12:45	16.74	3.60	340.50	28.23
12:46	16.77	3.53	333.60	28.20
12:47	16.77	3.49	329.90	28.19
12:48	16.75	3.56	328.70	28.37
12:49	16.72	3.59	333.70	28.06
12:50	16.70	3.54	337.80	27.85
12:51	16.61	3.67	349.80	27.73
12:52	16.61	3.69	345.30	27.48
12:53	16.58	3.70	336.50	27.48
12:54	16.54	3.80	334.50	27.71
12:55	16.57	3.76	330.80	27.62
12:56	16.55	3.72	329.60	27.72
12:57	16.52	3.79	325.10	27.93

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 11
(continued)

Starting
11-06-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
12:58	16.56	3.79	323.30	27.93
12:59	16.58	3.72	321.50	28.04
13:00	16.62	3.69	319.90	28.07
13:01	16.63	3.71	316.20	27.99
13:02	16.59	3.72	320.70	28.11
13:03	16.58	3.71	322.80	28.22
13:04	16.61	3.72	320.00	28.22
13:05	16.69	3.63	323.00	27.99
13:06	16.79	3.50	324.70	27.87
13:07	16.72	3.59	319.80	27.91
13:08	16.70	3.62	311.00	27.88
13:09	16.78	3.53	318.70	27.66
13:10	16.85	3.46	314.60	27.34
13:11	16.87	3.45	316.40	27.07
13:12	16.91P	3.39P	314.60P	27.06P
13:13	17.17P	3.33P	310.10P	25.39P
13:14	17.93P	2.45P	237.30P	18.89P
13:15	18.09P	2.26P	205.60P	17.15P
13:16	17.70P	2.60P	220.40P	19.34P
13:17	16.61P	3.49P	292.00P	26.11P
13:18	16.65P	3.67P	355.20P	27.54
13:19	16.74P	3.56P	324.90P	27.78
13:20	16.73P	3.57P	321.70P	27.89
13:21	16.76P	3.59P	323.40P	27.84
13:22	17.69P	2.79P	274.80P	20.37
13:23	17.62P	2.70P	239.60P	19.93
13:24	17.30P	2.81P	234.50P	21.22
13:25	16.33P	3.94P	291.40P	28.51
13:26	16.44P	3.91P	313.70P	28.79
13:27	16.53P	3.78P	305.70P	28.88
13:28	16.54P	3.78P	298.90P	29.22
13:29	16.64P	3.76P	298.10P	28.72
13:30	16.70P	3.60P	293.60P	28.25
13:31	16.63P	3.68P	303.00P	28.76
13:32	16.72P	3.64P	306.10P	28.56
13:33	16.79P	3.58P	304.40P	28.58
13:34	16.81P	3.51P	305.20P	28.48
13:35	16.78P	3.55P	306.70P	28.63
13:36	16.77P	3.60P	312.50P	28.78
13:37	16.77P	3.56P	313.80P	28.84

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 11
(continued)

Starting
11-06-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
13:38	16.76P	3.56P	314.40P	28.90
13:39	16.79P	3.55P	316.80P	28.73
13:40	16.76P	3.58P	314.60P	28.85
13:41	16.77P	3.60P	305.70P	28.72
13:42	16.79P	3.56P	303.00P	28.66
13:43	16.86P	3.49P	303.70P	28.71
13:44	16.96P	3.41P	305.30P	28.39
13:45	16.91P	3.41P	307.60P	28.80
13:46	16.95P	3.37P	307.10P	28.37
13:47	16.98P	3.37P	303.20P	28.34
13:48	17.20P	3.29P	295.50P	27.35
13:49	17.80P	2.41P	264.40P	23.59
13:50	16.87	3.35	316.00	28.22
13:51	16.75	3.60	328.50	28.45
13:52	16.75	3.62	328.80	28.63
13:53	16.73	3.62	327.40	28.63
13:54	16.76	3.59	330.60	28.49
13:55	16.78	3.59	333.60	28.45
13:56	16.77	3.60	335.20	28.35
13:57	16.78	3.57	328.00	28.11
13:58	16.76	3.59	323.20	28.24
13:59	16.78	3.59	318.70	28.20
14:00	16.79	3.60	316.60	28.26
14:01	16.77	3.59	312.60	28.33
14:02	16.81	3.58	311.80	28.33
14:03	16.84	3.49	316.10	28.25
14:04	16.80	3.55	319.30	28.23
14:05	16.80	3.56	315.70	27.89
14:06	16.79	3.56	314.50	27.74
14:07	16.72	3.62	318.70	28.01
14:08	16.66	3.70	319.80	28.17
14:09	16.64	3.70	316.20	28.30
14:10	16.65	3.68	318.30	28.26
14:11	16.66	3.70	316.80	28.46
14:12	16.69	3.65	311.10	28.51
14:13	16.69	3.64	311.80	28.73
14:14	16.81	3.56	310.40	28.04
14:15	16.75	3.56	307.10	28.37
14:16	16.70	3.63	315.70	28.70
14:17	17.29	3.30	301.70	24.73

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 11
(continued)

Starting
11-06-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
14:18	17.76	2.63	224.90	20.10
14:19	17.61	2.74	220.30	20.57
14:20	16.70	3.39	253.70	25.95
14:21	16.42	3.93	333.90	28.79
14:22	16.48	3.84	325.20	29.32
14:23	16.48	3.82	338.30	29.51
14:24	16.54	3.78	334.70	29.24
14:25	16.57	3.76	329.00	29.18
14:26	16.63	3.69	326.40	29.01
14:27	16.70	3.61	318.20	28.76
14:28	16.71	3.59	316.60	28.69
14:29	16.77	3.56	314.90	28.54
14:30	16.82	3.49	310.10	28.53
14:31	16.84	3.46	312.60	28.67
14:32	16.87	3.46	317.90	28.53
14:33	16.88	3.43	321.40	28.55
14:34	16.87	3.43	322.50	28.51
14:35	16.85	3.47	322.10	28.72
14:36	16.83	3.51	324.50	28.82
14:37	16.80	3.54	328.70	28.86
14:38	16.76	3.59	330.80	28.67
14:39	16.74	3.60	328.10	28.65
14:40	16.65	3.67	329.60	28.97
14:41	17.53	3.06	298.90	22.23
14:42	17.69	2.64	247.80	20.06
14:43	17.52	2.69	240.90	20.41
14:44	16.58	3.62	274.50	27.65
14:45	16.53	3.79	301.70	28.66
14:46	16.58	3.75	295.70	28.81
14:47	16.59	3.73	287.40	29.22
14:48	16.60	3.72	289.50	29.30
14:49	16.60	3.71	298.10	29.24
14:50	16.64	3.70	300.90	29.45
14:51	16.73	3.59	300.90	29.32
14:52	16.77	3.56	302.30	29.08
14:53	16.79	3.51	302.60	28.93
14:54	16.70	3.61	305.00	28.70
14:55	16.67	3.67	310.80	28.35
14:56	16.66	3.70	315.70	28.16
14:57	16.65	3.71	317.10	28.00

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 11
(continued)

Starting
11-06-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
14:58	16.67	3.72	314.30	27.74
14:59	16.67	3.68	314.70	27.46
15:00	16.67	3.69	318.90	27.54
15:01	16.65	3.71	318.60	27.72
15:02	16.65	3.71	319.60	28.06
15:03	16.66	3.69	322.00	28.24
15:04	16.63	3.73	324.70	28.46
15:05	16.69	3.67	321.80	28.27
15:06	16.69	3.64	317.00	28.41
15:07	16.67	3.69	318.90	28.67
15:08	16.67	3.70	321.80	28.80
15:09	16.64	3.70	321.90	28.83
15:10	16.60	3.74	321.80	29.04
15:11	16.55	3.78	321.10	29.40
15:12	16.52	3.82	314.90	29.61
15:13	16.52	3.82	315.30	29.66
15:14	16.51	3.84	314.30	29.80
15:15	16.49	3.87	309.50	30.05
15:16	16.50	3.87	308.70	30.24
15:17	16.50	3.86	307.10	30.36
15:18	16.53	3.83	305.40	30.51
15:19	16.56	3.82	295.30	30.39
222 MinAvg	16.83	3.51	319.34	27.38

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 12

Starting
11-06-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
17:33	18.19	2.73	271.70	19.36
17:34	18.20	2.59	215.90	18.44
17:35	17.94	2.65	216.70	19.22
17:36	16.94	3.79	318.20	26.05
17:37	17.16	3.68	364.10	26.59
17:38	17.20	3.54	350.70	26.54
17:39	17.23	3.53	337.40	26.33
17:40	17.29	3.48	337.00	25.98
17:41	17.29	3.47	341.90	25.84
17:42	17.41	3.44	343.50	25.67
17:43	17.42	3.36	345.30	25.45
17:44	17.43	3.33	347.90	25.55
17:45	17.47	3.29	350.80	25.28
17:46	17.45	3.31	352.90	25.34
17:47	17.40	3.35	354.70	25.58
17:48	17.37	3.39	359.50	25.74
17:49	17.38	3.37	371.00	25.61
17:50	17.35	3.41	377.20	25.60
17:51	17.29	3.46	368.40	25.74
17:52	17.26	3.48	377.40	25.58
17:53	17.26	3.50	380.40	25.30
17:54	17.34	3.44	378.60	24.84
17:55	17.32	3.45	374.50	24.22
17:56	17.29	3.51	376.90	23.99
17:57	17.27	3.53	374.80	23.85
17:58	17.32	3.48	378.50	23.57
17:59	17.34	3.45	381.00	23.55
18:00	17.30	3.49	376.60	23.75
18:01	17.30	3.51	374.40	23.96
18:02	17.29	3.54	377.80	24.22
18:03	17.35	3.57	377.20	24.60
18:04	17.29	3.52	375.90	24.27
18:05	17.24	3.55	382.70	24.20
18:06	17.31	3.51	377.00	23.96
18:07	17.33	3.49	378.50	23.88
18:08	17.37	3.47	380.10	23.88
18:09	17.37	3.43	381.10	23.81
18:10	17.32	3.48	378.10	23.76
18:11	17.25	3.56	378.80	23.93
18:12	17.31	3.51	376.60	23.47

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 12
(continued)

Starting
11-06-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
18:13	17.33	3.53	374.70	23.75
18:14	17.33	3.48	378.20	23.92
18:15	17.33	3.50	379.40	23.89
18:16	17.36	3.46	377.90	23.78
18:17	17.41	3.42	376.10	23.76
18:18	17.45	3.40	370.60	23.90
18:19	17.55	3.30	375.70	23.40
18:20	17.50	3.31	371.50	23.67
18:21	17.52	3.32	375.70	23.68
18:22	17.55	3.29	371.40	23.57
18:23	17.56	3.29	377.50	23.50
18:24	17.58	3.26	383.30	23.26
18:25	17.54	3.27	386.10	23.14
18:26	17.53	3.31	389.70	23.18
18:27	17.53	3.31	391.30	23.22
18:28	17.49	3.32	393.10	23.48
18:29	17.48	3.36	396.20	23.60
18:30	17.42	3.43	393.60	23.64
18:31	17.43	3.38	390.90	23.63
18:32	17.43	3.40	382.50	23.88
18:33	17.45	3.39	383.20	23.89
18:34	17.46	3.35	383.90	23.91
18:35	17.43	3.38	389.80	24.19
18:36	17.45	3.40	393.70	24.18
18:37	18.44	2.60	322.90	17.46
18:38	18.41	2.43	246.30	16.27
18:39	18.20	2.55	249.70	16.65
18:40	17.13	3.60	342.10	23.44
18:41	17.22	3.60	401.50	24.21
18:42	17.36	3.46	378.20	24.20
18:43	17.41	3.40	364.70	24.25
18:44	17.60	3.32	373.30	22.95
18:45	18.35	2.54	321.20	16.67
18:46	18.27	2.56	303.80	16.83
18:47	18.21	2.62	302.30	16.91
18:48	17.99	2.69	293.70	17.91
18:49	17.12	3.65	351.30	24.45
18:50	17.20	3.58	384.50	24.75
18:51	17.26	3.52	375.00	24.69
18:52	17.24	3.53	368.90	24.81

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 12
(continued)

Starting
11-06-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
18:53	17.27	3.50	374.40	24.74
18:54	17.28	3.52	383.50	24.73
18:55	17.30	3.48	385.20	24.54
18:56	17.33	3.45	382.00	24.49
18:57	17.33	3.48	387.40	24.52
18:58	17.39	3.43	389.10	24.49
18:59	17.42	3.36	387.90	24.49
19:00	17.47	3.33	378.10	24.35
19:01	17.44	3.36	373.50	24.44
19:02	17.43	3.35	380.10	24.41
19:03	17.44P	3.33P	380.30P	24.35P
19:04	17.50P	3.30P	384.20P	24.18P
19:05	17.71P	3.08P	361.90P	22.96P
19:06	17.59P	3.16P	369.70P	23.95P
19:07	17.58P	3.22P	358.00P	24.11P
19:08	17.54P	3.22P	360.90P	24.20P
19:09	17.46P	3.27P	367.10P	24.36P
19:10	17.43P	3.33P	374.00P	24.53P
19:11	17.39P	3.33P	381.10P	24.75P
19:12	17.35P	3.35P	385.10P	24.93P
19:13	17.25P	3.47P	386.80P	25.29P
19:14	17.22P	3.49P	384.50P	25.34P
19:15	17.24P	3.48P	387.60P	25.25P
19:16	17.20P	3.52P	384.10P	25.25P
19:17	17.18P	3.53P	379.70P	25.33P
19:18	17.13P	3.56P	377.40P	25.38P
19:19	17.07P	3.66P	379.60P	25.39P
19:20	17.11P	3.61P	375.50P	25.31P
19:21	17.14P	3.60P	365.60P	25.28P
19:22	17.15P	3.63P	360.10P	25.32P
19:23	17.21P	3.52P	353.60P	24.70P
19:24	17.37P	3.41P	345.90P	23.63P
19:25	17.13P	3.63P	361.90P	25.20P
19:26	17.11P	3.62P	363.60P	24.80P
19:27	17.13P	3.63P	366.60P	23.89P
19:28	17.20P	3.52P	371.80P	23.02P
19:29	17.19P	3.61P	362.70P	22.96P
19:30	17.18P	3.64P	358.70P	23.15P
19:31	17.20P	3.62P	355.50P	23.33P
19:32	17.22P	3.59P	356.00P	23.48P

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 12
(continued)

Starting
11-06-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
19:33	17.22	3.54	351.20	23.86
19:34	17.19	3.62	341.70	23.82
19:35	17.16	3.60	348.50	23.56
19:36	17.16	3.66	349.40	23.56
19:37	17.15	3.63	350.70	23.73
19:38	17.17	3.66	353.80	23.77
19:39	17.17	3.60	359.00	24.03
19:40	17.14	3.65	367.80	24.16
19:41	17.14	3.65	364.70	24.44
19:42	17.17	3.63	358.50	24.63
19:43	17.30	3.59	360.80	24.57
19:44	17.25	3.52	363.00	24.66
19:45	17.29	3.54	370.60	24.62
19:46	17.48	3.41	370.70	23.70
19:47	18.38	2.53	282.90	16.92
19:48	18.34	2.44	236.00	16.38
19:49	18.01	2.64	240.00	17.95
19:50	17.32	3.45	345.00	23.41
19:51	17.35	3.42	361.90	23.98
19:52	17.34	3.43	357.40	23.90
19:53	17.34	3.39	362.20	23.44
19:54	17.41	3.40	353.60	22.61
19:55	17.39	3.35	346.30	22.34
19:56	17.38	3.41	346.00	22.43
19:57	17.41	3.40	347.80	22.17
19:58	17.45	3.33	349.90	22.15
19:59	17.44	3.39	347.80	22.38
20:00	17.40	3.38	351.20	22.72
20:01	17.38	3.47	350.30	23.05
20:02	18.27	2.74	312.60	16.86
20:03	18.30	2.55	259.40	15.46
20:04	18.26	2.56	260.80	15.47
20:05	17.29	3.35	282.70	22.10
20:06	17.21	3.53	330.60	24.40
20:07	17.22	3.59	331.30	24.69
20:08	17.26	3.51	336.80	24.70
20:09	17.30	3.45	334.40	24.63
20:10	17.36	3.44	336.10	24.43
20:11	17.36	3.38	333.60	24.54
20:12	17.40	3.42	327.60	24.34

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 12
(continued)

Starting
11-06-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
20:13	17.36	3.39	336.80	24.88
20:14	17.34	3.46	338.10	24.97
20:15	17.59	3.46	336.10	24.82
20:16	17.30	3.52	338.80	24.78
20:17	17.29	3.50	339.00	24.81
20:18	17.25	3.49	336.70	25.02
20:19	17.23	3.59	334.80	25.19
20:20	17.35	3.45	333.30	24.50
20:21	17.28	3.48	340.30	25.01
20:22	17.32	3.51	340.30	24.97
20:23	17.37	3.39	336.70	24.82
20:24	17.42	3.38	340.40	24.65
20:25	17.43	3.34	347.90	24.64
20:26	17.42	3.33	350.20	24.69
20:27	17.43	3.38	349.30	24.52
20:28	17.37	3.37	359.90	24.90
20:29	17.37	3.40	368.60	25.00
20:30	17.40	3.37	367.70	25.10
20:31	17.35	3.34	362.10	25.33
20:32	17.24	3.50	367.80	25.50
20:33	17.19	3.49	373.30	25.53
20:34	17.15	3.57	367.60	25.49
20:35	17.09	3.61	361.20	25.86
20:36	17.06	3.63	362.90	26.14
20:37	17.07	3.67	365.20	26.01
20:38	17.02	3.63	364.50	26.16
20:39	16.99	3.74	363.30	26.27
20:40	17.01	3.66	363.00	26.30
20:41	17.06	3.63	365.20	26.43
20:42	17.05	3.65	361.60	26.54
20:43	17.05	3.60	356.30	26.51
20:44	17.00	3.72	351.90	26.50
20:45	17.06	3.62	359.40	26.40
20:46	17.14	3.56	360.00	26.31
20:47	17.13	3.56	355.90	26.41
20:48	17.10	3.57	359.60	26.46
20:49	17.04	3.68	371.30	26.68
20:50	17.01	3.64	370.10	26.91
20:51	16.98	3.74	367.40	27.17
20:52	16.96	3.74	369.30	27.30

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 12
(continued)

Starting
11-06-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
20:53	16.96	3.71	379.40	27.23
20:54	16.95	3.79	380.50	27.24
20:55	17.60	3.30	357.40	23.07
20:56	18.12	2.66	238.10	18.40
20:57	17.99	2.74	229.20	18.47
20:58	16.84	3.68	313.00	25.70
20:59	16.81	3.97	393.10	27.08
21:00	16.88	3.80	378.10	27.38
21:01	16.94	3.77	371.20	27.37
21:02	16.97	3.77	369.40	27.39
210 MinAvg	17.38	3.40	353.81	23.92

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	✓	
L	Local calibration(Initial Calibration or Drift Check)	✓	
P	Port Change(Data not included in average)	✓	
R	Remote Calibration(System Bias Check)	✓	

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 13

Starting
11-07-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
09:03	17.12	3.36	317.10	19.72
09:04	17.22	3.38	319.40	19.44
09:05	17.27	3.39	311.70	19.24
09:06	17.34	3.33	310.40	19.24
09:07	17.40	3.30	311.70	19.27
09:08	17.39	3.30	312.30	19.36
09:09	17.35	3.34	311.00	19.45
09:10	17.32	3.43	307.40	19.40
09:11	17.35	3.37	313.80	19.25
09:12	17.32	3.37	316.50	19.30
09:13	17.22	3.42	328.70	19.52
09:14	17.25	3.46	345.90	19.60
09:15	17.21	3.53	352.90	19.93
09:16	17.20	3.50	356.20	20.09
09:17	17.24	3.48	355.50	20.11
09:18	17.19	3.46	352.50	20.19
09:19	17.57	3.34	342.70	18.42
09:20	18.10	2.63	292.80	14.67
09:21	18.02	2.68	284.90	14.97
09:22	17.53	3.02	288.20	17.38
09:23	17.04	3.63	333.60	20.76
09:24	17.04	3.64	344.30	21.11
09:25	17.07	3.61	349.40	21.41
09:26	17.28	3.40	332.70	21.28
09:27	17.16	3.47	337.50	22.56
09:28	17.13	3.53	340.20	23.19
09:29	17.12	3.52	347.20	23.52
09:30	17.11	3.56	350.20	23.87
09:31	17.09	3.52	352.20	24.20
09:32	17.09	3.56	355.70	24.37
09:33	17.07	3.55	361.40	24.43
09:34	17.15	3.50	355.50	24.20
09:35	17.05	3.55	357.10	24.69
09:36	17.04	3.61	357.50	24.82
09:37	17.06	3.54	362.60	24.80
09:38	17.07	3.52	356.50	24.44
09:39	17.22	3.41	346.60	23.85
09:40	17.30	3.38	339.20	22.89
09:41	17.36	3.28	336.30	22.13
09:42	17.41	3.26	323.40	21.28

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
09:43	17.43	3.26	320.50	20.57
09:44	17.42	3.23	324.80	20.18
09:45	17.37	3.33	330.80	20.00
09:46	17.37	3.34	347.10	19.61
09:47	17.33	3.36	361.40	19.82
09:48	17.25	3.37	379.70	20.06
09:49	17.18	3.43	386.00	20.31
09:50	17.19	3.52	387.20	20.84
09:51	17.23	3.47	385.10	20.85
09:52	17.23	3.51	390.40	20.63
09:53	17.20	3.48	399.80	20.45
09:54	17.84	3.12	367.70	17.28
09:55	18.31	2.45	247.60	13.81
09:56	18.19	2.55	230.20	13.85
09:57	17.97	2.79	236.70	14.76
09:58	17.91	2.84	245.30	14.65
09:59	17.31	3.27	269.60	17.41
10:00	16.80	3.86	403.10	21.05
10:01	17.01	3.75	387.20	21.38
10:02	17.01	3.69	372.60	21.81
10:03	17.08	3.67	369.80	21.70
10:04	17.01	3.69	357.80	22.44
10:05	17.02	3.68	357.90	22.84
10:06	17.04	3.66	351.00	23.05
10:07	17.03	3.71	355.70	23.05
10:08	17.11	3.62	357.70	22.55
10:09	17.15	3.59	342.20	22.03
10:10	17.19	3.52	346.40	21.68
10:11	17.25	3.47	353.60	21.75
10:12	17.32	3.46	355.90	21.96
10:13	17.39	3.34	343.50	21.95
10:14	17.45	3.26	339.10	22.11
10:15	17.50	3.24	347.90	22.39
10:16	17.45	3.26	365.30	22.57
10:17	17.41	3.27	375.80	22.76
10:18	17.41	3.34	380.80	22.99
10:19	17.65	3.18	364.80	22.06
10:20	17.78	2.75	328.00	21.71
10:21	17.28	3.42	377.70	23.31
10:22	17.29	3.39	380.50	23.44

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
10:23	17.27	3.47	369.50	23.70
10:24	17.35	3.34	358.20	23.51
10:25	17.34	3.30	362.70	23.85
10:26	17.26	3.43	366.80	24.04
10:27	17.23	3.44	375.60	24.38
10:28	17.24	3.39	378.30	24.40
10:29	17.25	3.45	379.60	24.40
10:30	17.24	3.40	377.20	24.38
10:31	17.28	3.37	382.60	24.49
10:32	17.28	3.40	383.50	24.37
10:33	17.22P	3.38P	387.80P	24.35P
10:34	17.20P	3.46P	388.40P	24.32P
10:35	17.19P	3.48P	385.70P	24.11P
10:36	17.22P	3.40P	387.10P	23.93P
10:37	17.56P	3.22P	370.90P	21.65P
10:38	17.50P	3.07P	329.40P	21.38P
10:39	17.14P	3.48P	380.90P	23.91P
10:40	17.13P	3.55P	378.30P	24.17P
10:41	17.18P	3.50P	370.20P	24.14P
10:42	17.19P	3.44P	372.50P	24.20P
10:43	17.23P	3.48P	373.80P	24.00P
10:44	17.21P	3.46P	373.50P	24.01P
10:45	17.24P	3.41P	374.30P	23.98P
10:46	17.26P	3.44P	370.80P	24.19P
10:47	17.26P	3.40P	368.70P	24.41P
10:48	17.23P	3.41P	364.50P	24.53P
10:49	17.18P	3.52P	368.80P	24.74P
10:50	17.37P	3.42P	371.70P	23.49P
10:51	18.16P	2.58P	320.30P	17.35P
10:52	18.21P	2.49P	290.70P	16.90P
10:53	17.49P	2.93P	295.70P	21.25P
10:54	17.01P	3.67P	355.70P	25.49P
10:55	17.06P	3.60P	360.60P	25.64P
10:56	17.07P	3.54P	359.40P	25.74P
10:57	17.08P	3.57P	364.00P	25.80P
10:58	17.04P	3.59P	374.60P	26.15P
10:59	17.66P	3.16P	354.40P	22.39P
11:00	18.23P	2.46P	236.60P	17.77P
11:01	18.12P	2.52P	223.70P	17.86P
11:02	17.15P	3.22P	273.20P	23.37P

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
11:03	16.90P	3.76P	396.50P	25.97P
11:04	17.00P	3.60P	386.00P	26.25P
11:05	17.02P	3.54P	372.80P	26.44P
11:06	17.08P	3.52P	367.50P	26.26P
11:07	17.10P	3.54P	365.70P	26.13P
11:08	17.12P	3.44P	363.50P	26.07P
11:09	17.42P	3.17P	347.90P	24.23P
11:10	17.37P	3.24P	340.30P	24.50P
11:11	17.15P	3.43P	360.40P	26.09P
11:12	17.20P	3.35P	374.60P	26.12P
11:13	17.20P	3.40P	371.70P	26.00P
11:14	17.20P	3.39P	375.10P	25.95P
11:15	17.18	3.34	377.80	26.05
11:16	17.20	3.37	374.20	26.10
11:17	17.23	3.38	369.60	25.87
11:18	17.18	3.41	367.20	26.03
11:19	17.16	3.38	372.50	26.10
11:20	17.20	3.34	374.00	26.11
11:21	17.24	3.36	374.90	25.98
11:22	17.22	3.36	375.10	26.02
11:23	17.19	3.34	379.80	26.27
11:24	17.16	3.42	386.60	26.29
11:25	17.14	3.49	397.10	26.27
11:26	17.14	3.40	392.00	26.34
11:27	17.14	3.42	386.40	26.23
11:28	17.77	2.83	322.00	23.27
11:29	17.05	3.43	374.70	26.46
11:30	16.97	3.59	380.80	26.53
11:31	17.02	3.59	374.60	27.01
11:32	17.07	3.48	374.90	26.95
11:33	17.06	3.49	375.00	26.99
11:34	17.08	3.53	375.40	26.85
11:35	17.06	3.50	372.60	26.74
11:36	17.09	3.44	378.80	26.72
11:37	17.13	3.44	375.50	26.61
11:38	17.13	3.47	371.50	26.41
11:39	17.17	3.39	373.70	25.87
11:40	17.20	3.37	378.20	25.79
11:41	17.22	3.38	370.80	25.36
11:42	17.18	3.36	376.00	25.14

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
11:43	17.11	3.44	380.90	24.71
11:44	17.09	3.51	378.60	24.39
11:45	17.08	3.51	376.30	24.04
11:46	17.10	3.44	379.60	23.48
11:47	17.06	3.53	385.60	23.36
11:48	17.02	3.59	388.40	23.27
11:49	17.02	3.54	383.50	23.21
11:50	17.02	3.57	386.70	23.34
11:51	16.98	3.66	387.40	23.52
11:52	16.98	3.62	378.40	23.67
11:53	17.06	3.47	361.40	23.50
11:54	16.88	3.73	362.20	24.09
11:55	16.88	3.75	367.40	24.02
11:56	16.96	3.61	365.10	23.62
11:57	16.97	3.58	368.60	23.42
11:58	17.12	3.66	377.60	22.38
11:59	18.01	2.72	321.80	16.13
12:00	17.93	2.68	297.40	16.40
12:01	17.39	2.98	305.80	19.15
12:02	16.78	3.79	363.50	24.48
12:03	16.80	3.80	369.80	24.69
12:04	16.79	3.84	365.20	24.48
12:05	16.84	3.81	365.80	24.49
12:06	17.52	3.35	344.40	20.72
12:07	17.97	2.61	220.20	16.57
12:08	17.86	2.76	212.40	16.89
12:09	16.73	3.63	268.10	23.46
12:10	16.67	3.98	355.60	25.28
12:11	16.79	3.84	350.70	25.52
12:12	16.77	3.82	341.90	25.86
12:13	16.84	3.75	340.10	25.67
12:14	16.85	3.66	333.00	25.69
12:15	16.88	3.65	333.80	26.05
12:16	16.86	3.66	336.90	26.23
12:17	16.87	3.70	342.40	26.48
12:18	16.91	3.68	339.90	26.58
12:19	16.91	3.68	333.90	26.65
12:20	16.87	3.71	331.30	27.00
12:21	16.82	3.73	333.90	27.16
12:22	16.88	3.64	338.50	27.35

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
12:23	17.05	3.47	336.70	26.71
12:24	16.83	3.67	341.10	27.88
12:25	16.80	3.75	346.10	28.01
12:26	16.73	3.86	350.40	28.11
12:27	16.72E	3.85E	351.90E	28.05E
12:28	17.05E	3.81E	355.10E	27.98E
12:29	16.72E	3.76E	354.80E	28.09E
12:30	16.74E	3.74E	345.90E	28.04E
12:31	16.78E	3.73E	341.40E	27.84E
12:32	16.78E	3.75E	338.40E	27.59E
12:33	16.82E	3.75E	333.90E	27.51E
12:34	16.88E	3.70E	325.30E	27.21E
12:35	16.93E	3.63E	325.60E	27.06E
12:36	16.95E	3.59E	318.00E	26.75E
12:37	16.95E	3.56E	322.60E	26.61E
12:38	17.02E	3.48E	326.60E	26.31E
12:39	17.00E	3.50E	327.70E	26.45E
12:40	16.99E	3.51E	331.50E	26.43E
12:41	17.00E	3.52E	332.50E	26.38E
12:42	17.01E	3.54E	330.70E	26.31E
12:43	16.98E	3.58E	331.80E	26.49E
12:44	16.93E	3.62E	334.90E	26.77E
12:45	16.91E	3.67E	340.40E	26.75E
12:46	16.96E	3.63E	345.20E	26.33E
12:47	16.97E	3.62E	347.30E	26.16E
12:48	17.00E	3.61E	355.60E	25.92E
12:49	16.99E	3.61E	355.70E	25.57E
12:50	16.97E	3.62E	353.60E	25.65E
12:51	16.94E	3.65E	351.50E	25.63E
12:52	16.96E	3.64E	352.40E	25.44E
12:53	17.00E	3.60E	349.20E	25.27E
12:54	17.01E	3.58E	342.00E	25.39E
12:55	17.02E	3.60E	341.20E	25.20E
12:56	17.04	3.58	342.70	25.00
12:57	17.02	3.60	339.20	25.11
12:58	17.06	3.58	340.60	25.21
12:59	17.08	3.54	337.70	25.26
13:00	17.08	3.54	338.60	25.33
13:01	17.09	3.52	351.80	25.35
13:02	17.11	3.48	354.90	25.30

Pine Hall Brick
Cyclone Outlet A
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
13:03	17.16	3.43	359.40	25.31
13:04	17.18	3.38	356.40	25.29
13:05	17.17	3.41	351.20	25.37
13:06	17.20	3.40	351.10	25.45
13:07	17.26	3.34	355.10	25.34
13:08	17.28	3.32	356.90	25.45
13:09	17.94	2.89	328.60	21.13
13:10	18.26	2.39	237.50	17.67
13:11	18.05	2.60	234.40	18.08
13:12	16.90	3.51	286.30	24.32
250 MinAvg	17.21	3.42	348.61	22.97

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

C.2.2 CONTINUOUS EMISSIONS MONITORING DRIFT CALCULATIONS AND ADJUSTMENTS FOR THE SAWDUST DRYER OUTLET A

PINE HALL BRICK
CEM CALIBRATION DRIFT DATA
SAWDUST DRYER OUTLET A

							PRE-TEST CALIBRATION		POST-TEST CALIBRATION		CALIBRATION DRIFT	
LOCATION	DATE	RUN ID	START TIME	END TIME	MONITOR	ANALYZER UNITS	ZERO	HIGH	ZERO	HIGH	ZERO % span	HIGH % span
OUTLET A	11/02/92	RUN 1	13:11	15:28	O2	%dv	0.06	14.23	0.05	14.07	-0.04	-0.64
					CO2	%dv	0.06	13.86	0.05	13.64	-0.05	-1.10
					CO	ppmdv	---	---	---	---	---	----
					NOx	ppmdv	---	---	---	---	---	----
OUTLET A	11/02/92	RUN 2	17:33	19:42	O2	%dv	0.05	14.07	0.05	14.02	0.00	-0.20
					CO2	%dv	0.05	13.64	0.11	13.53	0.30	-0.55
			17:33	18:33	CO	ppmdv	0.84	858.00	0.78	852.00	-0.01	-0.60
					NOx	ppmdv	0.05	211.80	1.08	212.80	0.41	0.40
OUTLET A	11/03/92	RUN 3	09:15	11:32	O2	%dv	0.05	14.21	0.05	13.65	0.00	-2.24
					CO2	%dv	0.05	13.81	0.05	13.90	0.00	0.45
					CO	ppmdv	0.20	858.00	-0.13	837.00	-0.03	-2.10
					NOx	ppmdv	0.14	211.70	2.36	218.90	0.89	2.88
OUTLET A	11/03/92	RUN 4	16:54	19:27	O2	%dv	0.05	14.18	0.06	14.28	0.04	0.40
					CO2	%dv	0.06	13.95	0.07	13.87	0.05	-0.40
					CO	ppmdv	0.76	859.00	0.72	861.00	0.00	0.20
					NOx	ppmdv	0.03	212.40	-1.08	208.90	-0.44	-1.40
OUTLET A	11/04/92	RUN 5	10:15	12:42	O2	%dv	0.04	14.21	0.06	13.94	0.08	-1.08
					CO2	%dv	0.05	13.83	0.05	13.72	0.00	-0.55
					CO	ppmdv	0.07	858.00	0.01	841.00	-0.01	-1.70
					NOx	ppmdv	0.06	211.60	1.10	208.50	0.42	-1.24
OUTLET A	11/04/92	RUN 6	14:12	16:45	O2	%dv	0.03	14.22	0.05	14.09	0.08	-0.52
					CO2	%dv	0.05	13.82	0.05	13.88	0.00	0.30
					CO	ppmdv	-0.04	858.00	-0.06	849.00	0.00	-0.90
					NOx	ppmdv	0.57	211.90	1.02	216.70	0.18	1.92
OUTLET A	11/04/92	RUN 7	19:40	22:41	O2	%dv	0.01	14.24	0.02	14.19	0.04	-0.20
					CO2	%dv	0.05	13.87	0.11	13.91	0.30	0.20
					CO	ppmdv	-0.14	861.00	-0.14	857.00	0.00	-0.40
					NOx	ppmdv	0.35	211.40	-0.11	204.30	-0.18	-2.84
OUTLET A	11/05/92	RUN 8	09:29	11:53	O2	%dv	0.03	14.24	0.07	14.29	0.16	0.20
					CO2	%dv	0.06	13.82	0.05	13.75	-0.05	-0.35
					CO	ppmdv	-0.24	862.00	-0.05	866.00	0.02	0.40
					NOx	ppmdv	-0.23	211.40	0.32	206.80	0.22	-1.84

PINE HALL BRICK
CEM CALIBRATION DRIFT DATA
SAWDUST DRYER OUTLET A

							PRE-TEST CALIBRATION		POST-TEST CALIBRATION		CALIBRATION DRIFT	
LOCATION	DATE	RUN ID	START TIME	END TIME	MONITOR	ANALYZER UNITS	ZERO	HIGH	ZERO	HIGH	ZERO % span	HIGH % span
OUTLET A	11/05/92	RUN 9	13:25	15:50	O2	%dv	0.04	14.24	0.27	14.10	0.92	-0.56
					CO2	%dv	0.05	13.80	0.06	13.83	0.05	0.15
					CO	ppmdv	0.01	859.00	-0.15	843.00	-0.02	-1.60
					NOx	ppmdv	0.28	212.30	13.30	218.70	5.21*	2.56
OUTLET A	11/05/92	RUN 10	16:44	17:55	O2	%dv	0.04	14.24	0.06	14.27	0.08	0.12
					CO2	%dv	0.06	13.81	0.06	13.78	0.00	-0.15
					CO	ppmdv	-0.19	854.00	-0.14	854.00	0.01	0.00
					NOx	ppmdv	0.44	211.60	-1.04	205.10	-0.59	-2.60
OUTLET A	11/06/92	RUN 11	11:37	15:19	O2	%dv	0.03	14.23	0.38	14.00	1.40	-0.92
					CO2	%dv	0.05	13.84	0.05	13.91	0.00	0.35
					CO	ppmdv	0.06	852.00	-0.11	836.00	-0.02	-1.60
					NOx	ppmdv	0.13	212.30	8.44	207.80	3.32*	-1.80
					THC	ppmwv	1.13	852.00	0.50	844.00	-0.06	-0.80
OUTLET A	11/06/92	RUN 12	17:32	21:02	O2	%dv	0.06	14.27	0.09	14.38	0.12	0.44
					CO2	%dv	0.05	13.89	0.05	13.88	0.00	-0.05
					CO	ppmdv	-0.10	860.00	-0.07	861.00	0.00	0.10
					NOx	ppmdv	0.71	212.10	-0.47	206.50	-0.47	-2.24
					THC	ppmwv	-0.24	852.00	1.39	828.00	0.16	-2.40
OUTLET A	11/07/92	RUN 13	09:02	13:12	O2	%dv	0.03	14.22	0.07	14.26	0.16	0.16
					CO2	%dv	0.05	13.86	0.05	13.83	0.00	-0.15
					CO	ppmdv	0.02	858.00	0.01	855.00	0.00	-0.30
					NOx	ppmdv	-0.23	212.70	0.40	204.80	0.25	-3.16*
					THC	ppmwv	0.17	852.00	0.64	872.00	0.05	2.00

(*) Monitor exceeded allowable calibration drift according to 40 CFR, Part 60, Appendix A, Method 7E. The data was adjusted to reflect this drift.

PINE HALL BRICK
CEM DATA ADJUSTMENTS
SAWDUST DRYER OUTLET A

LOCATION	DATE	RUN ID	START TIME	END TIME	MONITOR	ANALYZER UNITS	RUN AVG	AVERAGE CALIBRATION ZERO	AVERAGE CALIBRATION HIGH	GAS VALUE	ADJUSTED DATA
OUTLET A	11/02/92	RUN 1	13:11	15:28	O2	%dv	16.72	0.06	14.15	14.20	16.79
					CO2	%dv	3.56	0.06	13.75	13.82	3.54
					CO	ppmdv	----	----	----	859.50	----
					NOx	ppmdv	----	----	----	211.90	----
OUTLET A	11/02/92	RUN 2	17:33	19:42	O2	%dv	16.46	0.05	14.05	14.20	16.65
					CO2	%dv	3.85	0.08	13.59	13.82	3.86
			17:33	18:33	CO	ppmdv	352.46	0.81	855.00	859.50	353.84
					NOx	ppmdv	27.70	0.57	212.30	211.90	27.16
OUTLET A	11/03/92	RUN 3	09:15	11:32	O2	%dv	17.41	0.05	13.93	14.20	17.76
					CO2	%dv	2.90	0.05	13.86	13.82	2.85
					CO	ppmdv	271.54	0.04	847.50	859.50	275.36
					NOx	ppmdv	22.12	1.25	215.30	211.90	20.66
OUTLET A	11/03/92	RUN 4	16:54	19:27	O2	%dv	17.57	0.06	14.23	14.20	17.55
					CO2	%dv	2.65	0.07	13.91	13.82	2.58
					CO	ppmdv	260.47	0.74	860.00	859.50	259.80
					NOx	ppmdv	14.75	-0.53	210.65	211.90	15.33
OUTLET A	11/04/92	RUN 5	10:15	12:42	O2	%dv	16.80	0.05	14.08	14.20	16.96
					CO2	%dv	3.54	0.05	13.78	13.82	3.51
					CO	ppmdv	381.36	0.04	849.50	859.50	385.83
					NOx	ppmdv	24.39	0.58	210.05	211.90	24.09
OUTLET A	11/04/92	RUN 6	14:12	16:45	O2	%dv	17.26	0.04	14.16	14.20	17.32
					CO2	%dv	3.21	0.05	13.85	13.82	3.16
					CO	ppmdv	335.45	-0.05	853.50	859.50	337.84
					NOx	ppmdv	23.36	0.80	214.30	211.90	22.40
OUTLET A	11/04/92	RUN 7	19:40	22:41	O2	%dv	17.21	0.02	14.22	14.20	17.20
					CO2	%dv	3.41	0.08	13.89	13.82	3.33
					CO	ppmdv	346.63	-0.14	859.00	859.50	346.92
					NOx	ppmdv	24.04	0.12	207.85	211.90	24.40
OUTLET A	11/05/92	RUN 8	09:29	11:53	O2	%dv	17.20	0.05	14.27	14.20	17.13
					CO2	%dv	3.45	0.06	13.79	13.82	3.42
					CO	ppmdv	362.72	-0.15	864.00	859.50	360.91
					NOx	ppmdv	26.54	0.05	209.10	211.90	26.86

PINE HALL BRICK
CEM DATA ADJUSTMENTS
SAWDUST DRYER OUTLET A

LOCATION	DATE	RUN ID	START TIME	END TIME	MONITOR	ANALYZER UNITS	RUN AVG	AVERAGE CALIBRATION ZERO	AVERAGE CALIBRATION HIGH	GAS VALUE	ADJUSTED DATA
OUTLET A	11/05/92	RUN 9	13:25	15:50	O2	%dv	17.14	0.16	14.17	14.20	17.21
					CO2	%dv	3.36	0.06	13.82	13.82	3.32
					CO	ppmdv	346.27	-0.07	851.00	859.50	349.77
					NOx	ppmdv	26.40	6.79	215.50	211.90	19.91
OUTLET A	11/05/92	RUN 10	16:44	17:55	O2	%dv	17.32	0.05	14.26	14.20	17.26
					CO2	%dv	3.29	0.06	13.80	13.82	3.25
					CO	ppmdv	348.71	-0.17	854.00	859.50	351.05
					NOx	ppmdv	23.76	-0.30	208.35	211.90	24.43
OUTLET A	11/06/92	RUN 11	11:37	15:19	O2	%dv	16.83	0.21	14.12	14.20	16.97
					CO2	%dv	3.51	0.05	13.88	13.82	3.46
					CO	ppmdv	319.34	-0.03	844.00	859.50	325.22
					NOx	ppmdv	27.38	4.29	210.05	211.90	23.78
					THC	ppmwv	3.48	0.82	848.00	850.20	2.67
OUTLET A	11/06/92	RUN 12	17:32	21:02	O2	%dv	17.38	0.08	14.33	14.20	17.24
					CO2	%dv	3.40	0.05	13.89	13.82	3.35
					CO	ppmdv	353.81	-0.09	860.50	859.50	353.45
					NOx	ppmdv	23.92	0.12	209.30	211.90	24.11
					THC	ppmwv	18.21	0.58	840.00	850.20	17.86
OUTLET A	11/07/92	RUN 13	09:02	13:12	O2	%dv	17.21	0.05	14.24	14.20	17.17
					CO2	%dv	3.42	0.05	13.85	13.82	3.38
					CO	ppmdv	348.61	0.02	856.50	859.50	349.82
					NOx	ppmdv	22.97	0.09	208.75	211.90	23.24
					THC	ppmwv	21.02	0.41	862.00	850.20	20.34

C.3 CONTINUOUS EMISSIONS MONITORING DATA - SAWDUST DRYER OUTLET B

C.3.1 CONTINUOUS EMISSIONS MONITORING DATA AND RESULTS (O_2, CO_2, CO, NO_X, THC) - SAWDUST DRYER OUTLET B

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 1

Starting
11-02-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
13:12	16.77	3.65
13:13	17.76	2.73
13:14	17.70	2.80
13:15	17.01	3.47
13:16	16.37	4.03
13:17	16.44	3.95
13:18	16.50	3.89
13:19	16.73	3.69
13:20	16.57	3.84
13:21	16.67	3.75
13:22	16.68	3.71
13:23	16.95	3.47
13:24	16.85	3.56
13:25	16.84	3.57
13:26	16.82	3.57
13:27	16.78	3.64
13:28	16.83	3.59
13:29	16.79	3.63
13:30	16.66	3.77
13:31	16.68	3.75
13:32	16.68	3.73
13:33	16.77	3.64
13:34	16.77	3.64
13:35	16.72	3.68
13:36	16.71	3.70
13:37	16.82	3.59
13:38	16.80	3.62
13:39	16.80	3.61
13:40	16.76	3.65
13:41	16.72	3.69
13:42	16.72	3.69
13:43	16.63	3.78
13:44	16.61	3.80
13:45	16.61	3.80
13:46	16.60	3.81
13:47	16.62	3.79
13:48	16.71	3.70
13:49	17.38	2.99
13:50	18.04	2.43

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 1
(continued)

Starting
11-02-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
13:51	17.87	2.59
13:52	16.65	3.79
13:53	16.33	4.07
13:54	16.34	4.04
13:55	16.40	3.99
13:56	16.43	3.96
13:57	16.46	3.92
13:58	16.58	3.80
13:59	16.69	3.69
14:00	17.18	3.20
14:01	16.91	3.48
14:02	16.88	3.49
14:03	16.90	3.47
14:04	16.93	3.43
14:05	16.94	3.43
14:06	16.91	3.45
14:07	16.89	3.47
14:08	16.92	3.43
14:09	16.96	3.39
14:10	16.95	3.42
14:11	16.91	3.46
14:12	17.15P	3.23P
14:13	16.94P	3.43P
14:14	16.89P	3.49P
14:15	16.81P	3.55P
14:16	16.80P	3.57P
14:17	16.85P	3.50P
14:18	17.92P	2.50P
14:19	17.83P	2.59P
14:20	17.01P	3.39P
14:21	16.45P	3.89P
14:22	16.49P	3.83P
14:23	16.59P	3.72P
14:24	16.63P	3.69P
14:25	16.68P	3.66P
14:26	16.71P	3.62P
14:27	16.80P	3.53P
14:28	16.77P	3.55P
14:29	16.81	3.50

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 1
(continued)

Starting
11-02-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
14:30	16.84	3.48
14:31	16.83	3.48
14:32	16.82	3.49
14:33	16.83	3.46
14:34	16.86	3.43
14:35	16.78	3.51
14:36	16.74	3.56
14:37	16.69	3.60
14:38	16.66	3.63
14:39	16.67	3.61
14:40	16.70	3.58
14:41	16.59	3.69
14:42	16.59	3.68
14:43	16.64	3.62
14:44	16.61	3.66
14:45	16.58	3.68
14:46	16.55	3.71
14:47	16.70	3.56
14:48	16.57	3.68
14:49	16.57	3.67
14:50	16.71	3.61
14:51	16.58	3.66
14:52	16.57	3.66
14:53	16.90	3.35
14:54	16.59	3.66
14:55	16.64	3.60
14:56	16.62	3.63
14:57	16.66	3.59
14:58	16.70	3.54
14:59	16.79	3.45
15:00	16.76	3.48
15:01	16.74	3.51
15:02	16.78	3.47
15:03	17.01	3.25
15:04	16.76	3.48
15:05	16.72	3.53
15:06	16.68	3.57
15:07	16.67	3.57
15:08	16.71	3.54

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 1
(continued)

Starting
11-02-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
15:09	16.76	3.49
15:10	16.76	3.49
15:11	17.72	2.58
15:12	17.94	2.37
15:13	17.25	3.07
15:14	16.30	3.93
15:15	16.42	3.80
15:16	16.47	3.76
15:17	16.47	3.75
15:18	16.49	3.74
15:19	16.52	3.71
15:20	16.60	3.64
15:21	16.68	3.57
15:22	16.76	3.49
15:23	17.47	2.80
15:24	17.94	2.38
15:25	17.80	2.53
15:26	16.57	3.72
15:27	16.91	3.35
15:28	16.70	3.52
137 MinAvg	16.80	3.54

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 2 - O2/CO2

Starting
11-02-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
17:34	16.46	3.87
17:35	16.52	3.82
17:36	16.48	3.85
17:37	16.53	3.81
17:38	17.39	2.97
17:39	17.64	2.76
17:40	17.36	3.04
17:41	16.12	4.22
17:42	16.20	4.11
17:43	16.31	4.00
17:44	16.36	3.95
17:45	16.36	3.94
17:46	16.36	3.94
17:47	16.44	3.86
17:48	16.50	3.80
17:49	16.55	3.76
17:50	17.00	3.31
17:51	17.77	2.58
17:52	17.66	2.70
17:53	16.62	3.72
17:54	16.40	3.90
17:55	16.44	3.85
17:56	16.46	3.84
17:57	16.48	3.82
17:58	17.15	3.13
17:59	16.77	3.54
18:00	16.24	4.09
18:01	16.51	3.79
18:02	16.10	4.23
18:03	15.93	4.39
18:04	16.20	4.11
18:05	16.66	3.62
18:06	16.38	3.93
18:07	16.50	3.81
18:08	16.62	3.70
18:09	16.67	3.65
18:10	16.66	3.66
18:11	16.65	3.67
18:12	16.60	3.73

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 2 - O2/CO2
(continued)

Starting
11-02-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
18:13	16.56	3.76
18:14	16.60	3.71
18:15	16.54	3.77
18:16	16.52	3.80
18:17	16.50	3.82
18:18	16.42	3.97
18:19	16.38	3.97
18:20	16.31	4.01
18:21	16.29	4.02
18:22	16.32	3.98
18:23	16.38	3.93
18:24	16.40	3.98
18:25	16.34	3.97
18:26	16.32	3.98
18:27	16.28	4.04
18:28	16.31	4.01
18:29	16.38	3.94
18:30	16.41	3.91
18:31	16.53	3.79
18:32	16.71	3.62
18:33	17.38	2.97
18:34	17.59P	2.79P
18:35	17.58P	2.79P
18:36	17.59P	2.78P
18:37	17.60P	2.77P
18:38	17.58P	2.77P
18:39	17.55P	2.80P
18:40	17.53P	2.84P
18:41	17.50P	2.87P
18:42	16.87P	3.55P
18:43	16.43	3.89
18:44	16.61	3.69
18:45	17.61	2.76
18:46	17.46	2.92
18:47	17.28	3.11
18:48	16.02	4.29
18:49	16.11	4.15
18:50	16.26	4.01
18:51	16.34	3.94

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 2 - O2/CO2
(continued)

Starting
11-02-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
18:52	16.38	3.90
18:53	16.45	3.81
18:54	16.50	3.75
18:55	16.61	3.65
18:56	16.64	3.60
18:57	16.62	3.64
18:58	16.63	3.63
18:59	16.64	3.63
19:00	16.56	3.70
19:01	16.49	3.76
19:02	16.46	3.81
19:03	16.48	3.77
19:04	16.52	3.73
19:05	17.38	2.88
19:06	17.75	2.53
19:07	17.70	2.58
19:08	16.21	4.05
19:09	16.15	4.08
19:10	16.27	3.93
19:11	16.26	3.95
19:12	16.33	3.89
19:13	16.39	3.81
19:14	16.49	3.73
19:15	16.54	3.66
19:16	16.46	3.77
19:17	16.44	3.77
19:18	16.48	3.73
19:19	16.52	3.69
19:20	16.49	3.72
19:21	16.52	3.70
19:22	16.54	3.67
19:23	16.53	3.68
19:24	16.49	3.73
19:25	16.50	3.71
19:26	16.52	3.71
19:27	16.55	3.67
19:28	16.53	3.71
19:29	16.54	3.70
19:30	16.52	3.70

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 2 - O2/CO2
(continued)

Starting
11-02-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
19:31	16.48	3.77
19:32	16.42	3.80
19:33	16.41	3.83
19:34	16.36	3.86
19:35	16.35	3.89
19:36	16.40	3.82
19:37	16.38	3.86
19:38	16.47	3.77
19:39	16.47	3.76
19:40	16.81	3.46
19:41	16.26	3.98
19:42	16.30	3.92
129 MinAvg	16.56	3.73

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 2 - CO/NOx

Starting
11-02-92

Time	Outlet B CO ppmdv	Outlet B NOx ppmdv
18:43	346.40	27.04
18:44	354.60	27.00
18:45	239.20	20.24
18:46	196.50	19.78
18:47	207.80	20.09
18:48	303.40	26.90
18:49	355.90	28.51
18:50	331.00	28.96
18:51	324.30	29.10
18:52	315.30	29.27
18:53	307.10	29.19
18:54	307.20	29.22
18:55	315.80	28.82
18:56	315.40	28.24
18:57	316.30	28.44
18:58	315.60	28.58
18:59	300.70	28.82
19:00	300.00	29.33
19:01	308.10	29.54
19:02	322.50	29.72
19:03	317.90	29.66
19:04	328.00	29.64
19:05	320.60	23.46
19:06	287.00	20.55
19:07	263.70	20.86
19:08	306.80	29.06
19:09	319.40	30.03
19:10	319.20	30.48
19:11	312.60	31.02
19:12	312.60	31.07
19:13	310.20	30.96
19:14	293.70	30.78
19:15	282.30	30.43
19:16	287.30	30.82
19:17	296.20	31.33
19:18	304.90	31.27
19:19	306.20	31.19
19:20	309.10	30.79
19:21	314.70	29.62

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 2 - CO/NOx
(continued)

Starting
11-02-92

Time	Outlet B CO ppmdv	Outlet B NOx ppmdv
19:22	318.80	29.02
19:23	321.30	28.92
19:24	322.00	29.06
19:25	327.30	29.03
19:26	321.30	28.81
19:27	322.50	28.40
19:28	324.20	28.30
19:29	325.10	28.25
19:30	328.50	28.54
19:31	323.20	28.84
19:32	327.50	29.12
19:33	328.30	29.26
19:34	320.90	29.37
19:35	319.10	29.24
19:36	325.50	29.21
19:37	324.50	29.49
19:38	323.80	28.93
19:39	321.90	29.13
19:40	287.50	26.97
19:41	322.60	29.97
19:42	335.70	29.76
60 MinAvg	310.78	28.46

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 3

Starting
11-03-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
09:16	16.97	3.45
09:17	16.95	3.46
09:18	16.98	3.42
09:19	16.97	3.42
09:20	16.94	3.46
09:21	16.88	3.52
09:22	16.77	3.62
09:23	16.67	3.65
09:24	16.74	3.62
09:25	16.71	3.65
09:26	16.74	3.62
09:27	16.71	3.64
09:28	16.71	3.64
09:29	16.73	3.63
09:30	16.73	3.64
09:31	16.68	3.69
09:32	16.68	3.70
09:33	16.72	3.66
09:34	16.69	3.70
09:35	17.18	3.21
09:36	17.93	2.52
09:37	17.85	2.61
09:38	16.79	3.69
09:39	16.39	4.05
09:40	16.47	3.98
09:41	16.56	3.90
09:42	16.55	3.91
09:43	16.63	3.84
09:44	16.75	3.72
09:45	16.86	3.61
09:46	16.95	3.52
09:47	17.00	3.46
09:48	17.03	3.43
09:49	17.03	3.43
09:50	16.99	3.47
09:51	16.97	3.49
09:52	16.95	3.50
09:53	16.99	3.45
09:54	16.94	3.50

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 3
(continued)

Starting
11-03-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
09:55	16.88	3.56
09:56	16.86	3.59
09:57	16.84	3.62
09:58	16.79	3.65
09:59	17.49	2.96
10:00	17.91	2.58
10:01	17.77	2.69
10:02	16.49	3.87
10:03	16.59	3.80
10:04	16.87	3.54
10:05	16.90	3.52
10:06	16.89	3.55
10:07	16.90	3.53
10:08	16.96	3.46
10:09	17.03	3.40
10:10	17.10	3.33
10:11	16.99	3.44
10:12	17.01	3.41
10:13	17.10	3.33
10:14	16.94	3.49
10:15	16.90	3.52
10:16	16.94P	3.48P
10:17	17.24P	3.20P
10:18	17.23P	3.21P
10:19	17.21P	3.22P
10:20	17.24P	3.18P
10:21	17.24P	3.18P
10:22	17.24P	3.17P
10:23	17.25P	3.17P
10:24	17.25P	3.18P
10:25	17.21P	3.22P
10:26	17.17P	3.25P
10:27	17.19P	3.23P
10:28	17.16P	3.28P
10:29	17.02P	3.33P
10:30	17.15P	3.26P
10:31	17.03P	3.41P
10:32	16.83P	3.61P
10:33	16.68	3.75

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 3
(continued)

Starting
11-03-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
10:34	16.69	3.74
10:35	16.69	3.75
10:36	16.70	3.72
10:37	16.74	3.70
10:38	16.70	3.74
10:39	16.71	3.72
10:40	16.70	3.72
10:41	16.67	3.77
10:42	16.68	3.75
10:43	16.64	3.79
10:44	16.53	3.89
10:45	16.50	3.92
10:46	16.45	3.96
10:47	16.41	4.01
10:48	16.41	4.01
10:49	16.45	3.94
10:50	16.49	3.90
10:51	16.44	3.96
10:52	16.43	3.98
10:53	16.45	3.95
10:54	16.52	3.87
10:55	16.55	3.83
10:56	16.59	3.79
10:57	16.61	3.77
10:58	16.62	3.77
10:59	16.58	3.80
11:00	16.53	3.84
11:01	17.62	2.76
11:02	17.62	2.78
11:03	17.24	3.19
11:04	16.64	3.71
11:05	17.51	2.88
11:06	17.55	2.85
11:07	17.55	2.86
11:08	17.48	2.92
11:09	16.89	3.55
11:10	16.30	4.08
11:11	16.45	3.91
11:12	16.45	3.83

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 3
(continued)

Starting
11-03-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
11:13	16.64	3.75
11:14	16.77	3.62
11:15	16.89	3.51
11:16	16.98	3.42
11:17	17.00	3.41
11:18	16.99	3.42
11:19	16.98	3.44
11:20	16.89	3.54
11:21	16.86	3.57
11:22	16.90	3.55
11:23	16.93	3.52
11:24	16.92	3.52
11:25	16.95	3.48
11:26	16.95	3.49
11:27	16.92	3.52
11:28	16.93	3.50
11:29	16.77	3.55
11:30	16.79	3.53
11:31	16.96	3.47
11:32	17.00	3.42
137 MinAvg	16.85	3.56

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 4

Starting
11-03-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
16:55	16.97	3.33	346.20	20.72
16:56	16.95	3.37	341.30	20.66
16:57	17.00	3.35	341.50	20.51
16:58	17.00	3.35	334.30	20.55
16:59	16.98	3.37	338.70	20.42
17:00	16.98	3.35	350.70	20.39
17:01	16.88	3.42	349.40	20.94
17:02	16.85	3.45	348.90	21.09
17:03	16.77	3.54	364.10	21.23
17:04	16.78	3.57	367.40	21.18
17:05	16.74	3.61	373.70	21.36
17:06	16.74	3.62	371.50	21.32
17:07	16.71	3.63	379.40	21.34
17:08	16.71	3.60	370.90	21.28
17:09	16.60	3.70	372.40	21.74
17:10	16.64	3.68	374.20	21.77
17:11	16.68	3.65	365.90	21.82
17:12	16.78	3.56	360.80	21.40
17:13	16.75	3.59	361.60	21.58
17:14	16.75	3.60	357.40	21.37
17:15	16.73	3.62	351.50	21.40
17:16	16.67	3.70	348.00	21.44
17:17	16.66	3.71	350.00	21.33
17:18	16.62	3.76	351.30	21.22
17:19	16.60	3.80	355.70	21.09
17:20	16.69	3.75	355.80	20.99
17:21	16.65	3.69	357.00	20.88
17:22	16.74	3.59	348.30	20.44
17:23	16.68	3.65	343.60	20.36
17:24	16.64	3.71	349.20	20.40
17:25	16.64	3.72	352.00	20.38
17:26	16.69	3.69	353.40	20.38
17:27	16.69	3.70	352.70	20.52
17:28	16.69	3.69	349.60	20.51
17:29	16.70	3.67	346.80	20.31
17:30	16.72	3.63	344.00	20.18
17:31	16.74	3.62	347.00	20.13
17:32	16.75	3.60	347.10	19.92
17:33	16.77	3.59	357.10	19.99

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 4
(continued)

Starting
11-03-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
17:34	16.73	3.65	365.10	19.82
17:35	16.74	3.65	371.10	19.69
17:36	17.67	2.72	311.90	15.32
17:37	17.81	2.62	235.50	13.57
17:38	17.63	2.81	243.60	13.78
17:39	16.62	3.79	344.60	18.08
17:40	16.73	3.66	392.50	18.88
17:41	16.96	3.51	368.00	19.10
17:42	16.84	3.56	362.10	19.17
17:43	16.86	3.57	360.30	19.15
17:44	16.92	3.51	356.80	19.02
17:45	17.02	3.39	351.90	18.61
17:46	17.10	3.32	346.10	18.50
17:47	17.12	3.32	346.20	18.30
17:48	17.14	3.30	340.60	18.28
17:49	17.09	3.37	326.10	18.41
17:50	17.37	3.10	312.20	16.79
17:51	17.42	3.06	296.70	16.22
17:52	17.02	3.45	338.40	17.93
17:53	17.05P	3.43P	345.20P	17.77P
17:54	17.02P	3.45P	348.90P	17.76P
17:55	17.00P	3.48P	350.00P	17.73P
17:56	16.94P	3.54P	355.10P	17.93P
17:57	16.95P	3.52P	362.50P	18.03P
17:58	16.98P	3.49P	357.90P	18.10P
17:59	17.00P	3.47P	359.70P	18.05P
18:00	17.72P	2.74P	330.10P	14.24P
18:01	18.15P	2.37P	270.70P	11.53P
18:02	17.92P	2.60P	274.00P	12.12P
18:03	16.83P	3.65P	323.90P	17.48P
18:04	16.77P	3.70P	340.80P	18.09P
18:05	16.75P	3.71P	334.40P	18.40P
18:06	16.74P	3.73P	331.30P	18.75P
18:07	16.74P	3.72P	327.80P	18.72P
18:08	16.72P	3.76P	318.40P	18.84P
18:09	16.67P	3.81P	311.70P	19.01P
18:10	16.64P	3.85P	308.80P	19.17P
18:11	16.63P	3.85P	304.80P	19.17P
18:12	16.69P	3.79P	300.90P	19.07P

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 4
(continued)

Starting
11-03-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
18:13	16.72P	3.77P	302.30P	19.03P
18:14	16.72P	3.78P	305.10P	18.97P
18:15	16.76P	3.73P	309.20P	18.79P
18:16	16.82P	3.67P	312.50P	18.63P
18:17	16.83P	3.67P	318.10P	18.54P
18:18	16.85P	3.67P	326.00P	18.29P
18:19	16.91P	3.60P	328.30P	18.14P
18:20	16.89P	3.62P	336.40P	18.25P
18:21	16.88P	3.63P	339.20P	18.55P
18:22	16.88P	3.63P	341.70P	18.40P
18:23	16.86P	3.66P	337.20P	18.44P
18:24	16.86P	3.66P	334.20P	18.51P
18:25	16.86P	3.65P	344.80P	18.49P
18:26	16.93P	3.59P	349.80P	18.23P
18:27	16.92P	3.60P	338.40P	18.20P
18:28	17.11P	3.41P	328.30P	17.35P
18:29	16.95	3.63	319.30	18.31
18:30	16.95	3.65	335.20	18.34
18:31	16.99	3.51	314.60	17.51
18:32	17.00	3.58	322.90	17.58
18:33	16.85	3.71	328.00	17.92
18:34	16.84	3.63	322.70	17.58
18:35	16.82	3.71	328.00	17.72
18:36	16.87	3.69	343.10	17.43
18:37	16.81	3.75	348.70	17.68
18:38	16.80	3.74	358.00	17.79
18:39	17.19	3.37	350.90	16.02
18:40	17.87	2.71	242.80	12.13
18:41	17.80	2.78	223.90	11.90
18:42	17.00	3.56	255.30	14.87
18:43	16.89	3.64	344.80	17.09
18:44	16.37	4.22	330.50	17.97
18:45	16.43	4.16	344.90	17.82
18:46	16.50	4.07	347.00	18.18
18:47	16.65	3.91	343.10	18.26
18:48	16.79	3.75	333.50	18.09
18:49	16.99	3.55	333.40	17.72
18:50	17.54	3.00	311.50	15.61
18:51	17.29	3.26	296.00	17.12

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 4
(continued)

Starting
11-03-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
18:52	17.27	3.28	309.60	17.17
18:53	17.28	3.27	305.50	17.17
18:54	17.27	3.28	312.10	17.11
18:55	17.22	3.33	321.80	17.41
18:56	17.23	3.31	324.60	17.53
18:57	17.43	3.11	312.70	16.94
18:58	17.88	2.61	284.40	14.85
18:59	17.07	3.50	324.70	16.94
19:00	17.06	3.49	332.30	17.03
19:01	17.17	3.36	327.80	17.11
19:02	17.18	3.34	327.50	17.32
19:03	17.24	3.26	335.60	17.22
19:04	17.31	3.20	328.60	17.16
19:05	17.38	3.13	325.50	16.91
19:06	17.35	3.14	328.50	17.06
19:07	17.34	3.13	326.30	17.10
19:08	17.26	3.22	325.30	17.29
19:09	17.43	3.02	323.40	16.88
19:10	17.55	2.93	316.90	15.09
19:11	18.19	2.35	273.30	10.82
19:12	18.07	2.46	281.80	11.09
19:13	16.97	3.55	327.60	16.40
19:14	16.78	3.74	362.30	17.73
19:15	16.94	3.57	355.60	17.74
19:16	17.01	3.48	344.60	17.96
19:17	17.09	3.39	351.20	17.84
19:18	17.18	3.29	352.10	17.77
19:19	17.27	3.20	350.90	17.62
19:20	17.30	3.18	353.30	17.55
19:21	17.54	2.96	348.00	16.30
19:22	17.46	3.06	325.60	16.73
19:23	17.31	3.21	345.90	17.59
19:24	17.28	3.25	338.00	17.62
150 MinAvg	17.01	3.44	336.68	18.38

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 4
(continued)

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	✓	
D	Sampling halted due to power loss(Data not averaged)	✓	
E	Equipment failure at Outlet A(Data not averaged)	✓	
L	Local calibration(Initial Calibration or Drift Check)	✓	
M	Maintenance on sampling system(Data not averaged)	✓	
P	Port Change(Data not included in average)	✓	
R	Remote Calibration(System Bias Check)	✓	

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 5

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
10:16	16.95	3.39	362.40	21.52
10:17	16.98	3.39	365.10	21.73
10:18	16.99	3.39	368.50	21.60
10:19	17.06	3.33	360.90	21.38
10:20	17.09	3.29	365.00	21.18
10:21	17.14	3.25	363.70	21.05
10:22	17.15	3.24	361.10	20.97
10:23	17.14	3.26	372.00	20.85
10:24	17.11	3.29	384.70	20.81
10:25	17.09	3.31	389.60	20.93
10:26	17.10	3.29	374.50	20.84
10:27	17.02	3.37	376.10	21.14
10:28	16.96	3.42	371.80	21.41
10:29	16.94	3.44	366.90	21.56
10:30	16.88	3.48	366.60	21.82
10:31	16.85	3.50	368.10	21.77
10:32	16.79	3.57	370.50	21.80
10:33	16.77	3.58	369.60	21.49
10:34	17.06	3.28	365.40	19.80
10:35	17.79	2.58	306.20	14.90
10:36	17.65	2.74	293.40	15.02
10:37	16.65	3.74	325.40	20.33
10:38	16.61	3.77	359.60	21.54
10:39	16.68	3.69	355.50	21.60
10:40	16.70	3.67	344.00	21.54
10:41	17.56	2.74	311.00	18.12
10:42	16.72	3.66	337.70	21.56
10:43	16.54	3.85	351.10	21.67
10:44	16.60	3.76	352.50	21.75
10:45	16.61	3.74	346.10	21.93
10:46	16.59	3.75	348.00	22.06
10:47	16.65	3.69	351.90	21.88
10:48	16.76	3.57	352.80	21.54
10:49	16.82	3.51	355.20	21.38
10:50	16.81	3.52	363.10	21.50
10:51	16.88	3.46	371.80	21.39
10:52	16.98	3.34	356.30	21.02
10:53	17.01	3.31	346.30	20.77
10:54	17.07	3.25	346.90	20.62

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 5
(continued)

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
10:55	17.11	3.21	345.10	20.59
10:56	17.04	3.27	349.90	20.63
10:57	17.05	3.26	355.80	20.48
10:58	17.07	3.23	354.80	20.50
10:59	17.02	3.29	351.00	20.67
11:00	17.01	3.30	343.00	20.62
11:01	16.96	3.35	341.20	20.87
11:02	16.91	3.40	353.20	20.99
11:03	17.60	2.72	329.30	17.38
11:04	17.88	2.47	223.90	14.48
11:05	17.28	3.07	249.90	16.61
11:06	16.49	3.83	428.60	21.29
11:07	16.60	3.70	452.00	21.76
11:08	16.68	3.61	450.70	21.94
11:09	16.77	3.52	419.10	21.97
11:10	16.79	3.50	408.30	21.93
11:11	16.89	3.40	393.50	21.90
11:12	17.02	3.35	382.80	21.85
11:13	17.04	3.34	380.20	21.60
11:14	17.03	3.35	377.90	21.55
11:15	16.99	3.38	380.20	21.66
11:16	17.01	3.36	381.10	21.59
11:17	17.03	3.34	375.30	21.56
11:18	16.98	3.39	379.80	21.56
11:19	16.95	3.43	382.90	21.58
11:20	16.94	3.42	375.30	21.56
11:21	16.91	3.46	371.30	21.70
11:22	16.88	3.48	372.60	21.67
11:23	16.84	3.51	387.10	21.79
11:24	16.82	3.53	392.60	21.90
11:25	16.78	3.57	384.70	21.88
11:26	16.76	3.60	388.00	21.90
11:27	16.77	3.58	385.60	21.89
11:28	16.79	3.54	384.20	21.82
11:29	16.81	3.53	381.80	21.65
11:30	16.77	3.57	383.20	21.73
11:31	16.78	3.55	395.20	21.79
11:32	16.85P	3.48P	397.50P	21.55P
11:33	17.05P	3.28P	367.30P	20.19P

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 5
(continued)

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
11:34	16.82P	3.50P	387.80P	21.47P
11:35	16.86P	3.47P	376.50P	21.42P
11:36	16.88P	3.44P	371.80P	21.45P
11:37	16.87P	3.46P	371.30P	21.53P
11:38	16.89P	3.43P	379.40P	21.62P
11:39	16.93P	3.39P	377.30P	21.69P
11:40	16.97P	3.35P	389.10P	21.58P
11:41	17.02P	3.30P	378.80P	21.42P
11:42	17.03P	3.29P	377.70P	21.23P
11:43	17.01P	3.31P	382.60P	21.15P
11:44	16.97P	3.36P	385.50P	21.27P
11:45	16.96P	3.37P	386.60P	21.24P
11:46	17.01	3.32	386.30	20.94
11:47	16.92	3.42	386.50	21.34
11:48	16.95	3.38	395.80	21.17
11:49	17.02	3.31	389.30	20.86
11:50	16.98	3.35	399.20	21.07
11:51	16.93	3.40	402.20	21.08
11:52	16.86	3.48	400.50	21.14
11:53	16.91	3.41	393.00	21.26
11:54	16.86	3.45	391.10	21.83
11:55	17.10	3.22	395.90	20.63
11:56	18.05	2.48	325.20	15.21
11:57	17.72	2.61	309.00	15.10
11:58	16.74	3.58	337.20	20.51
11:59	16.66	3.64	383.40	21.79
12:00	16.64	3.68	381.00	22.04
12:01	16.60	3.71	386.00	22.05
12:02	16.61	3.70	385.40	22.08
12:03	16.64	3.66	386.50	22.06
12:04	16.67	3.62	389.10	22.06
12:05	16.71	3.58	384.00	22.02
12:06	16.71	3.58	385.50	21.91
12:07	16.78	3.52	391.30	21.79
12:08	16.82	3.47	383.00	21.86
12:09	16.77	3.53	389.80	22.03
12:10	16.77	3.52	406.40	21.89
12:11	17.41	2.90	378.30	18.52
12:12	17.85	2.47	256.20	15.00

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 5
(continued)

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
12:13	17.30	3.01	259.00	16.50
12:14	16.40	3.91	441.40	21.25
12:15	17.02	3.23	436.60	19.75
12:16	17.05	3.19	360.30	20.69
12:17	16.48	3.83	400.70	21.61
12:18	16.57	3.72	406.30	21.61
12:19	16.74	3.55	396.40	21.61
12:20	16.84	3.44	386.50	21.32
12:21	16.93	3.35	383.80	21.17
12:22	16.97	3.31	381.40	21.13
12:23	16.96	3.34	378.40	21.34
12:24	16.98	3.32	380.10	21.32
12:25	17.02	3.28	371.40	21.39
12:26	17.03	3.28	374.10	21.36
12:27	17.00	3.31	387.20	21.33
12:28	16.95	3.36	401.50	21.48
12:29	16.93	3.36	398.40	21.54
12:30	16.91	3.39	401.90	21.52
12:31	16.89	3.41	412.90	21.62
12:32	16.83	3.50	414.50	21.80
12:33	16.75	3.56	420.10	21.73
12:34	16.71	3.60	423.30	21.79
12:35	16.71	3.60	423.40	21.99
12:36	16.65	3.65	426.30	22.25
12:37	16.62	3.68	426.60	22.27
12:38	16.64	3.66	426.50	22.15
12:39	16.63	3.67	420.10	22.30
12:40	16.69	3.61	403.00	22.12
12:41	16.75	3.55	387.70	21.97
12:42	16.79	3.49	376.80	22.02
12:43	16.80	3.47	381.80	22.26
12:44	16.85	3.43	391.50	22.18
12:45	16.93	3.35	396.00	22.07
12:46	16.90	3.38	395.70	22.33
12:47	16.85	3.43	394.70	22.53
12:48	16.85	3.43	394.50	22.50
12:49	16.82	3.44	400.20	22.52
12:50	16.82	3.44	396.00	22.58
12:51	16.87	3.39	386.40	22.31

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 5
(continued)

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
12:52	16.83	3.43	375.10	22.43
12:53	16.84	3.41	381.50	22.32
12:54	16.94	3.32	383.40	21.82
12:55	17.22	3.04	352.40	20.03
160 MinAvg	16.92	3.41	375.49	21.12

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 6

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
14:13	16.84	3.61	380.10	24.85
14:14	16.83	3.62	384.10	24.91
14:15	16.90	3.55	366.00	24.71
14:16	16.95	3.49	363.20	24.68
14:17	17.00	3.45	361.70	24.51
14:18	17.00	3.45	362.10	24.84
14:19	17.45	3.02	367.60	22.06
14:20	18.06	2.45	257.60	17.17
14:21	17.86	2.65	242.90	17.37
14:22	16.65	3.83	350.40	24.00
14:23	16.74	3.72	448.40	25.14
14:24	16.91	3.56	409.30	25.13
14:25	16.95	3.52	391.90	24.92
14:26	17.03	3.45	379.80	24.73
14:27	17.15	3.34	359.40	24.28
14:28	17.21	3.28	351.50	24.19
14:29	17.30	3.19	349.50	23.99
14:30	17.34	3.15	344.20	23.69
14:31	17.37	3.13	353.30	23.66
14:32	17.40	3.11	348.70	23.70
14:33	17.36	3.16	342.00	23.67
14:34	17.31	3.21	350.50	23.74
14:35	17.24	3.29	356.50	23.80
14:36	17.11	3.41	398.10	24.22
14:37	17.07	3.44	418.00	24.38
14:38	17.35	3.16	410.10	22.49
14:39	18.03	2.52	329.40	16.78
14:40	17.85	2.70	307.80	16.91
14:41	16.81	3.72	337.10	22.43
14:42	16.70	3.94	417.80	25.35
14:43	18.31	3.84	403.00	25.25
14:44	16.65	3.86	395.10	25.43
14:45	16.64	3.88	401.30	25.42
14:46	16.69	3.82	400.50	25.32
14:47	16.75	3.74	396.10	25.30
14:48	16.80	3.68	403.60	25.40
14:49	16.84	3.64	390.80	25.52
14:50	16.84	3.65	388.20	25.61
14:51	16.80	3.70	386.90	25.96

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 6
(continued)

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
14:52	16.80	3.70	385.70	26.22
14:53	16.82	3.68	383.30	26.29
14:54	16.86	3.64	378.50	26.22
14:55	17.76	2.69	332.70	21.49
14:56	16.87	3.65	355.40	25.64
14:57	16.49	4.05	393.90	25.72
14:58	16.56	3.94	389.10	25.88
14:59	16.63	3.85	386.60	26.10
15:00	16.65	3.83	385.30	26.29
15:01	16.65	3.83	387.40	26.46
15:02	16.74	3.73	381.40	26.35
15:03	16.79	3.67	377.10	26.30
15:04	16.80	3.67	374.70	26.45
15:05	16.84	3.62	368.90	26.34
15:06	16.90	3.55	361.30	26.26
15:07	16.87	3.58	354.00	26.46
15:08	16.90	3.55	348.30	26.34
15:09	16.97	3.47	354.40	26.04
15:10	16.98	3.46	350.50	25.94
15:11	16.93	3.53	348.80	26.06
15:12	16.93	3.52	354.30	25.95
15:13	16.97	3.48	359.20	25.90
15:14	16.94	3.51	358.00	25.93
15:15	16.94	3.51	355.90	25.57
15:16	16.94	3.51	362.60	25.54
15:17	17.10P	3.34P	359.50P	24.50P
15:18	17.30P	3.16P	316.40P	23.19P
15:19	17.01P	3.43P	339.80P	25.26P
15:20	17.01P	3.43P	340.40P	25.20P
15:21	16.99P	3.45P	337.50P	25.51P
15:22	16.96P	3.48P	342.30P	25.74P
15:23	16.91P	3.53P	349.80P	25.76P
15:24	16.92P	3.52P	357.80P	25.67P
15:25	16.91P	3.53P	367.40P	25.80P
15:26	17.83P	2.63P	318.30P	19.67P
15:27	17.95P	2.54P	240.20P	17.46P
15:28	17.42P	3.10P	253.80P	19.49P
15:29	16.58P	3.88P	387.40P	24.92P
15:30	16.68P	3.75P	399.40P	25.67P

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 6
(continued)

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
15:31	16.81P	3.63P	368.20P	26.03P
15:32	16.82P	3.63P	367.00P	26.10P
15:33	16.85P	3.61P	365.10P	26.02P
15:34	16.92P	3.53P	369.00P	25.79P
15:35	17.01P	3.43P	363.60P	25.48P
15:36	17.08P	3.36P	367.90P	25.28P
15:37	17.14P	3.31P	352.60P	25.27P
15:38	17.15	3.31	337.00	25.19
15:39	17.37	3.09	314.70	23.58
15:40	17.15	3.30	326.10	25.00
15:41	17.13	3.32	335.40	25.07
15:42	17.11	3.35	345.30	24.92
15:43	17.11	3.34	348.00	24.87
15:44	17.06	3.39	351.60	24.74
15:45	17.08	3.38	363.30	24.64
15:46	17.10	3.36	373.30	24.47
15:47	17.09	3.36	366.30	24.56
15:48	17.08	3.36	364.30	24.57
15:49	17.11	3.32	361.00	24.39
15:50	17.15	3.29	359.10	24.10
15:51	17.19	3.24	370.50	23.92
15:52	17.23	3.20	381.80	23.80
15:53	17.17	3.25	380.40	23.94
15:54	17.11	3.31	377.80	24.08
15:55	17.02	3.40	384.70	24.26
15:56	16.94	3.47	384.60	24.64
15:57	16.91	3.51	382.90	24.84
15:58	17.61	2.76	339.60	21.83
15:59	17.66	2.80	342.30	19.01
16:00	17.63	2.83	293.90	17.46
16:01	17.26	3.19	296.60	19.48
16:02	16.57	3.73	368.70	24.81
16:03	19.38	3.71	384.30	25.25
16:04	16.84	3.68	384.40	25.13
16:05	16.84	3.58	386.60	24.72
16:06	16.88	3.54	379.90	25.05
16:07	16.95	3.47	370.40	24.90
16:08	16.93	3.49	372.00	25.06
16:09	16.89	3.53	375.20	25.29

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 6
(continued)

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
16:10	16.93	3.50	373.80	25.10
16:11	16.94	3.48	375.10	25.13
16:12	16.96	3.45	370.50	25.22
16:13	16.94	3.46	371.70	25.48
16:14	16.96	3.44	370.20	25.64
16:15	16.94	3.48	362.90	25.62
16:16	16.97	3.44	360.30	25.59
16:17	16.93	3.48	361.50	25.51
16:18	16.92	3.48	367.10	25.41
16:19	16.91	3.49	366.80	25.43
16:20	16.92	3.46	368.70	25.35
16:21	16.95	3.42	372.10	25.46
16:22	16.95	3.42	374.00	25.41
16:23	16.92	3.44	370.50	25.42
16:24	16.87	3.50	376.80	25.60
16:25	16.89	3.47	381.90	25.55
16:26	16.88	3.47	370.70	25.70
16:27	16.79	3.58	374.60	26.06
16:28	16.93	3.45	377.50	25.26
16:29	18.77	2.55	297.60	18.85
16:30	17.75	2.63	257.10	18.46
16:31	16.74	3.63	321.50	22.63
16:32	16.38	3.97	481.90	25.52
16:33	16.54	3.79	451.50	26.13
16:34	16.62	3.71	411.50	26.42
16:35	16.67	3.65	395.90	26.37
16:36	16.70	3.63	392.90	26.41
16:37	16.75	3.58	383.40	26.28
16:38	16.88	3.43	367.90	26.08
16:39	16.96	3.36	356.20	25.89
16:40	17.14	3.19	349.70	24.90
16:41	17.09	3.25	336.80	25.03
149 MinAvg	17.05	3.44	366.75	24.56

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 6
(continued)

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 7

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
19:41	17.23	3.05	314.50	18.20
19:42	17.23	3.02	325.50	18.24
19:43	17.25	3.00	317.70	18.19
19:44	17.31	2.94	310.80	18.12
19:45	17.30	2.92	309.80	18.28
19:46	17.26	2.97	308.90	18.23
19:47	17.00	3.21	327.20	19.32
19:48	16.98	3.24	346.80	19.45
19:49	17.31	2.95	343.30	18.05
19:50	18.04	2.23	247.30	13.49
19:51	17.88	2.40	237.50	13.21
19:52	17.12	3.12	286.70	15.43
19:53	16.66	3.58	455.40	18.27
19:54	16.73	3.53	437.50	18.76
19:55	16.75	3.48	443.10	18.75
19:56	16.90	3.43	408.00	18.72
19:57	17.06	3.51	384.10	19.17
19:58	17.03	3.52	392.00	19.44
19:59	17.39	3.19	379.30	19.31
20:00	18.10	2.50	299.30	17.65
20:01	17.95	2.65	272.20	14.14
20:02	17.28	3.30	284.70	14.45
20:03	16.97	3.56	350.30	16.80
20:04	16.94	3.57	395.70	17.35
20:05	16.99	3.55	378.30	17.98
20:06	16.97	3.48	377.60	20.58
20:07	5.69M	0.19M	377.30M	3.18M
20:08	5.54M	0.08M	377.10M	2.01M
20:09	5.68M	0.09M	377.20M	1.77M
20:10	5.83M	0.09M	377.00M	1.63M
20:11	5.98M	0.09M	377.20M	1.54M
20:12	6.14M	0.09M	377.40M	1.44M
20:13	6.29M	0.10M	377.50M	1.34M
20:14	6.44M	0.10M	377.10M	1.31M
20:15	6.59M	0.10M	377.00M	1.08M
20:16	6.76M	0.10M	377.30M	1.03M
20:17	6.91M	0.10M	377.30M	1.11M
20:18	7.15M	0.10M	377.30M	0.85M
20:19	8.69M	0.10M	376.80M	0.77M

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 7
(continued)

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
20:20	7.35M	0.10M	376.80M	0.74M
20:21	4.17M	0.09M	318.40M	0.58M
20:22	0.03M	0.06M	0.10M	0.15M
20:23	0.02M	0.06M	0.21M	0.12M
20:24	0.01M	0.06M	0.19M	0.09M
20:25	0.01M	0.05M	0.20M	0.06M
20:26	0.01M	0.06M	0.18M	0.03M
20:27	0.01M	0.06M	0.21M	0.01M
20:28	0.01M	0.06M	0.22M	0.00M
20:29	10.12M	4.23M	0.23M	0.20M
20:30	13.76M	5.72M	0.24M	0.29M
20:31	13.70M	5.72M	0.24M	0.23M
20:32	13.68M	5.71M	0.19M	0.20M
20:33	13.67M	5.71M	0.20M	0.15M
20:34	13.67M	5.67M	0.20M	0.15M
20:35	13.70M	5.69M	0.24M	0.15M
20:36	13.72M	5.68M	0.21M	0.15M
20:37	13.75M	5.67M	0.19M	0.14M
20:38	13.79M	5.68M	0.36M	0.14M
20:39	13.83M	5.71M	0.32M	0.15M
20:40	13.88M	5.68M	0.15M	0.11M
20:41	13.94M	5.66M	0.18M	0.12M
20:42	13.99M	5.70M	0.17M	0.10M
20:43	14.12M	5.65M	0.20M	0.11M
20:44	14.25M	5.64M	0.14M	0.10M
20:45	14.22M	5.69M	0.08M	0.07M
20:46	13.83M	5.66M	0.18M	0.02M
20:47	13.06M	5.64M	0.09M	0.05M
20:48	12.20M	5.66M	0.23M	-0.01M
20:49	11.41M	5.69M	0.17M	-0.04M
20:50	10.73M	5.64M	0.14M	-0.06M
20:51	10.32M	5.61M	0.15M	-0.07M
20:52	10.06M	5.66M	0.11M	-0.07M
20:53	9.64M	5.66M	0.18M	-0.14M
20:54	9.33M	5.61M	0.13M	-0.14M
20:55	9.34M	5.59M	0.19M	-0.18M
20:56	9.49M	5.61M	0.23M	-0.21M
20:57	9.73M	5.61M	0.22M	-0.24M
20:58	10.02M	5.60M	0.21M	-0.24M

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 7
(continued)

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
20:59	10.31M	5.61M	0.14M	-0.21M
21:00	2.33M	2.19M	0.15M	-0.27M
21:01	0.02P	0.06P	0.19P	0.27P
21:02	0.02P	0.06P	0.21P	-0.27P
21:03	0.01P	0.06P	0.24P	0.01P
21:04	7.73P	3.21P	0.14P	0.08P
21:05	14.34P	5.86P	0.16P	0.16P
21:06	14.29P	5.87P	0.23P	0.11P
21:07	11.62P	9.25P	0.20P	0.11P
21:08	6.41P	13.82P	0.21P	0.13P
21:09	6.10P	13.83P	0.25P	0.14P
21:10	6.09P	13.83P	0.22P	0.14P
21:11	2.42P	4.46P	56.41P	0.14P
21:12	0.13P	0.07P	794.00P	0.12P
21:13	0.11P	0.08P	856.00P	0.12P
21:14	0.09P	0.06P	854.00P	0.11P
21:15	0.14P	0.06P	795.00P	22.23P
21:16	0.04P	0.06P	84.20P	177.30P
21:17	0.03P	0.07P	0.22P	203.50P
21:18	0.02P	0.06P	0.19P	211.40P
21:19	0.02P	0.05P	0.18P	211.80P
21:20	9.82P	2.39P	107.90P	76.80P
21:21	16.88P	3.60P	337.10P	24.37P
21:22	16.79P	3.68P	346.20P	24.11P
21:23	16.81P	3.65P	349.90P	24.10P
21:24	16.82P	3.60P	338.30P	24.10P
21:25	16.81P	3.58P	347.10P	23.76P
21:26	16.81P	3.60P	346.60P	23.74P
21:27	16.85P	3.60P	352.80P	23.94P
21:28	16.91P	3.52P	347.20P	23.83P
21:29	16.99P	3.44P	348.50P	23.65P
21:30	17.02P	3.45P	356.90P	23.67P
21:31	17.09P	3.45P	357.50P	23.68P
21:32	17.14P	3.44P	341.60P	23.69P
21:33	17.21P	3.37P	334.00P	23.73P
21:34	17.27P	3.28P	335.70P	23.73P
21:35	17.27P	3.31P	341.20P	24.03P
21:36	17.27P	3.34P	340.10P	24.36P
21:37	17.32P	3.33P	352.40P	24.21P

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 7
(continued)

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
21:38	17.37P	3.30P	358.90P	24.23P
21:39	17.38P	3.30P	353.30P	24.21P
21:40	17.36P	3.31P	356.60P	24.32P
21:41	17.34P	3.29P	358.70P	24.43P
21:42	17.36	3.26	361.80	24.40
21:43	17.53	3.13	340.50	23.32
21:44	17.29	3.40	360.30	24.64
21:45	17.25	3.45	370.70	24.77
21:46	17.24	3.40	366.20	24.91
21:47	17.17	3.47	363.00	25.22
21:48	17.15	3.54	363.50	25.27
21:49	17.13	3.51	376.30	25.16
21:50	17.02	3.50	382.50	24.91
21:51	17.23	3.25	377.80	22.46
21:52	17.96	2.47	268.30	16.48
21:53	17.83	2.61	244.00	16.24
21:54	17.10	3.24	272.10	19.54
21:55	16.66	3.68	381.30	22.73
21:56	16.65	3.66	363.90	23.21
21:57	16.68	3.62	358.40	23.22
21:58	16.69	3.62	348.20	23.29
21:59	16.68	3.58	346.40	23.40
22:00	16.78	3.51	350.40	22.66
22:01	16.72	3.53	362.60	23.10
22:02	16.72	3.54	361.20	23.04
22:03	16.70	3.52	351.10	23.01
22:04	16.70	3.51	342.40	22.96
22:05	16.74	3.47	337.90	22.86
22:06	16.71	3.52	335.50	23.45
22:07	16.65	3.57	356.80	23.38
22:08	16.66	3.54	371.00	23.18
22:09	16.73	3.47	357.50	23.09
22:10	16.82	3.37	347.00	22.64
22:11	16.78	3.41	353.90	22.89
22:12	16.76	3.44	355.00	22.85
22:13	16.76	3.44	353.80	22.67
22:14	16.76	3.43	357.80	22.60
22:15	16.77	3.41	356.30	22.66
22:16	16.73	3.45	358.40	22.63

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 7
(continued)

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
22:17	16.69	3.48	359.60	22.76
22:18	16.77	3.41	350.30	22.48
22:19	16.80	3.37	347.70	22.40
22:20	16.82	3.36	336.50	22.30
22:21	16.80	3.37	337.30	22.40
22:22	16.79	3.39	335.90	22.32
22:23	16.76	3.41	341.20	22.22
22:24	16.78	3.38	346.60	21.93
22:25	16.80	3.34	338.20	21.96
22:26	16.78	3.34	334.80	21.95
22:27	16.74	3.39	334.30	21.70
22:28	16.78	3.34	335.30	21.66
22:29	16.75	3.37	331.10	21.77
22:30	16.74	3.36	327.40	22.06
22:31	16.73	3.37	326.90	22.29
22:32	16.87	3.23	327.80	21.71
22:33	16.74	3.34	329.90	22.70
22:34	16.71	3.40	332.10	22.44
22:35	16.70	3.38	329.20	22.44
22:36	16.71	3.39	326.30	22.88
22:37	17.37	2.73	313.40	18.84
22:38	17.59	2.55	265.10	16.87
22:39	17.52	2.57	267.70	16.80
22:40	16.65	3.43	294.70	21.52
22:41	16.85	3.24	321.50	21.64
181 MinAvg	17.00	3.29	341.61	20.96

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 8

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
09:29	17.27	3.47	373.10	21.01
09:30	17.30	3.45	377.40	21.47
09:31	17.30	3.47	381.60	21.36
09:32	17.30	3.48	395.30	20.83
09:33	17.38	3.40	392.90	20.46
09:34	17.47	3.32	378.60	19.95
09:35	17.46	3.34	383.50	20.47
09:36	17.60	3.20	386.80	20.12
09:37	18.31	2.47	324.00	17.05
09:38	17.44	3.41	384.20	20.45
09:39	17.35	3.48	402.10	20.36
09:40	17.37	3.45	405.40	20.44
09:41	17.38	3.44	393.10	20.43
09:42	17.38	3.44	388.60	20.46
09:43	17.41	3.41	379.70	20.39
09:44	17.42	3.40	386.20	20.40
09:45	17.40	3.42	384.70	20.33
09:46	17.40	3.42	387.60	20.28
09:47	17.43	3.40	387.20	20.10
09:48	17.48	3.35	385.40	21.24
09:49	17.49	3.34	382.30	24.00
09:50	17.46	3.36	387.70	23.91
09:51	17.44	3.37	400.50	23.98
09:52	17.48	3.34	393.00	23.87
09:53	17.49	3.35	386.70	23.87
09:54	17.47	3.36	386.70	23.93
09:55	17.43	3.39	392.00	23.91
09:56	17.44	3.37	394.00	23.70
09:57	17.42	3.39	387.10	23.87
09:58	17.39	3.42	386.90	24.01
09:59	17.41	3.40	378.10	23.78
10:00	17.36	3.44	377.70	24.03
10:01	17.55	3.26	372.80	22.95
10:02	18.43	2.44	257.40	16.34
10:03	18.34	2.53	221.60	15.89
10:04	18.15	2.69	236.20	16.59
10:05	17.14	3.66	325.80	22.71
10:06	17.14	3.65	383.00	23.70
10:07	17.22	3.56	373.10	24.13

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 8
(continued)

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
10:08	17.22	3.55	368.50	24.27
10:09	17.18	3.59	372.20	24.54
10:10	17.18	3.59	373.00	24.64
10:11	17.21	3.56	374.10	24.52
10:12	17.29	3.48	363.40	24.29
10:13	17.32	3.44	359.20	24.31
10:14	17.33	3.42	359.60	24.27
10:15	17.34	3.41	349.30	24.26
10:16	17.38	3.37	349.10	24.11
10:17	17.38	3.36	360.20	24.00
10:18	17.35	3.40	371.00	24.01
10:19	17.31	3.44	372.20	24.03
10:20	17.26	3.49	370.10	24.15
10:21	17.27	3.47	372.00	24.16
10:22	17.27	3.46	371.50	24.30
10:23	17.25	3.48	373.50	24.37
10:24	17.26	3.47	379.10	24.17
10:25	17.23	3.50	378.10	24.41
10:26	17.25	3.48	379.50	24.48
10:27	17.26	3.48	372.00	24.40
10:28	17.45	3.29	358.10	23.21
10:29	17.31P	3.42P	367.20P	24.37P
10:30	17.34P	3.38P	361.20P	24.36P
10:31	17.27P	3.46P	352.00P	24.69P
10:32	17.23P	3.50P	356.30P	24.89P
10:33	17.21P	3.52P	354.00P	25.15P
10:34	17.25P	3.46P	359.00P	25.01P
10:35	17.22P	3.49P	359.40P	25.14P
10:36	17.19P	3.52P	355.80P	25.19P
10:37	17.18P	3.53P	354.10P	25.18P
10:38	17.19P	3.52P	352.80P	25.18P
10:39	17.21P	3.48P	344.80P	25.20P
10:40	17.21P	3.49P	345.90P	25.22P
10:41	17.20P	3.49P	345.20P	25.43P
10:42	17.20P	3.51P	344.10P	25.55P
10:43	17.20P	3.50P	338.40P	25.57P
10:44	17.21P	3.48P	339.00P	25.63P
10:45	18.08P	2.65P	313.40P	18.71P
10:46	18.13P	2.60P	273.10P	17.05P

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 8
(continued)

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
10:47	17.58P	3.12P	278.00P	20.87P
10:48	17.17P	3.50P	333.40P	25.30P
10:49	17.22P	3.46P	348.30P	25.49P
10:50	17.24P	3.43P	344.40P	25.76P
10:51	17.25P	3.42P	343.80P	25.93P
10:52	17.29P	3.38P	343.00P	25.89P
10:53	17.28P	3.39P	346.30P	25.95P
10:54	17.33	3.35	345.40	25.67
10:55	17.35	3.31	337.90	25.60
10:56	17.34	3.32	341.40	25.99
10:57	17.41	3.25	349.30	25.71
10:58	17.50	3.17	349.60	25.33
10:59	17.49	3.19	341.10	25.59
11:00	17.49	3.18	346.40	25.50
11:01	17.49	3.18	346.90	25.62
11:02	17.44	3.23	342.00	25.98
11:03	17.44	3.22	345.40	25.95
11:04	17.49	3.18	346.80	25.76
11:05	18.73	1.95	283.20	17.66
11:06	18.48	2.25	216.60	17.84
11:07	18.17	2.55	217.00	18.98
11:08	17.11	3.57	307.50	26.36
11:09	17.11	3.54	359.20	24.92
11:10	17.20	3.44	352.10	25.27
11:11	17.21	3.44	348.60	25.37
11:12	17.18	3.49	352.30	25.52
11:13	17.18	3.48	349.90	25.33
11:14	17.17	3.50	345.90	26.89
11:15	17.20	3.46	338.50	29.63
11:16	17.21	3.44	337.80	29.11
11:17	17.23	3.43	330.80	24.60
11:18	17.28	3.39	327.40	24.31
11:19	17.28	3.39	330.90	24.57
11:20	17.31	3.35	334.30	22.13
11:21	17.39	3.27	334.20	22.12
11:22	17.47	3.20	331.90	21.94
11:23	17.43	3.23	329.20	22.32
11:24	17.42	3.24	337.40	22.44
11:25	17.44	3.23	327.60	22.50

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 8
(continued)

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
11:26	17.46	3.21	329.50	22.38
11:27	17.50	3.17	331.20	22.16
11:28	17.53	3.15	328.20	21.91
11:29	17.50	3.18	329.40	21.93
11:30	17.51	3.17	328.70	21.88
11:31	17.53	3.17	327.60	21.91
11:32	17.53	3.18	330.10	21.85
11:33	17.55	3.16	325.50	21.38
11:34	17.50	3.22	332.30	21.63
11:35	17.53	3.18	334.90	21.66
11:36	17.49	3.22	331.60	21.66
11:37	17.48	3.24	333.80	21.75
11:38	17.48	3.25	332.50	21.75
11:39	17.46	3.28	330.60	21.92
11:40	17.44	3.30	331.50	21.85
11:41	17.41	3.35	330.20	21.80
11:42	17.41	3.35	334.80	21.77
11:43	17.44	3.33	333.50	21.72
11:44	17.43	3.34	328.40	21.97
11:45	17.41	3.36	321.90	22.09
11:46	17.35	3.42	322.70	22.16
11:47	17.36	3.39	324.10	21.97
11:48	17.45	3.33	320.10	21.46
11:49	17.45	3.34	326.60	21.42
11:50	17.46	3.30	338.60	21.10
11:51	17.49	3.29	334.60	20.85
11:52	17.55	3.26	331.70	20.68
11:53	17.69	3.11	315.10	19.81
145 MinAvg	17.44	3.31	350.25	22.79

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 9

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
13:26	17.40	3.19	349.50	25.16
13:27	17.41	3.17	340.00	25.39
13:28	17.37	3.21	331.70	25.71
13:29	17.92	2.63	305.30	22.33
13:30	17.80	2.78	295.30	23.91
13:31	17.09	3.51	333.40	26.53
13:32	17.10	3.47	339.40	26.42
13:33	17.14	3.43	346.40	26.54
13:34	17.15	3.41	344.30	26.61
13:35	17.15	3.41	339.10	26.66
13:36	17.15	3.40	333.20	26.60
13:37	17.20	3.37	335.30	26.59
13:38	17.14	3.41	330.20	26.80
13:39	17.13	3.43	326.20	27.04
13:40	17.17	3.38	328.40	26.88
13:41	17.19	3.35	326.50	26.91
13:42	17.17	3.36	326.70	26.85
13:43	17.14	3.39	325.20	26.97
13:44	17.14	3.39	320.60	26.90
13:45	17.10	3.43	319.10	26.80
13:46	17.10	3.43	324.30	26.75
13:47	17.15	3.37	327.60	26.99
13:48	17.16	3.35	334.50	27.15
13:49	17.16	3.35	339.30	27.10
13:50	17.22	3.28	341.90	26.70
13:51	17.16	3.29	342.80	26.81
13:52	17.21	3.29	337.80	26.91
13:53	17.18	3.32	337.70	27.15
13:54	17.18	3.31	336.30	27.08
13:55	17.19	3.30	334.70	27.02
13:56	17.15	3.33	340.00	27.49
13:57	17.17	3.30	340.20	27.87
13:58	17.19	3.29	342.40	27.78
13:59	17.17	3.32	341.20	27.94
14:00	17.19	3.29	342.00	27.72
14:01	17.17	3.30	341.40	27.78
14:02	17.13	3.34	335.90	27.96
14:03	17.10	3.38	332.60	27.96
14:04	17.39	3.36	335.90	27.78

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 9
(continued)

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
14:05	17.16	3.29	337.60	27.57
14:06	17.27	3.17	331.10	27.06
14:07	18.03	2.44	294.00	19.96
14:08	17.96	2.52	282.90	19.84
14:09	17.62	2.93	278.30	22.99
14:10	17.08	3.35	323.10	27.55
14:11	17.08	3.35	333.30	27.97
14:12	17.07	3.35	335.00	28.29
14:13	17.08	3.35	333.00	28.39
14:14	17.04	3.38	334.40	28.41
14:15	17.04	3.38	333.60	28.47
14:16	17.09	3.34	338.90	28.38
14:17	17.10	3.31	339.50	28.34
14:18	17.09	3.31	341.60	28.33
14:19	17.11	3.30	361.70	28.32
14:20	17.11	3.31	383.80	28.13
14:21	17.33	3.06	389.70	26.66
14:22	18.19	2.26	259.20	19.38
14:23	18.09	2.37	206.30	19.27
14:24	17.38	3.07	260.30	23.66
14:25	17.00	3.42	402.20	27.42
14:26	17.04P	3.37P	406.50P	28.12P
14:27	17.09P	3.33P	390.00P	28.19P
14:28	17.10P	3.30P	380.60P	28.16P
14:29	17.09P	3.35P	380.20P	28.17P
14:30	17.07P	3.37P	381.80P	28.12P
14:31	17.07P	3.36P	377.50P	28.21P
14:32	17.10P	3.33P	364.30P	28.22P
14:33	17.13P	3.30P	362.50P	28.15P
14:34	17.18P	3.24P	361.90P	27.76P
14:35	17.18P	3.26P	355.80P	27.90P
14:36	17.18P	3.27P	356.10P	27.91P
14:37	17.27P	3.17P	344.70P	27.56P
14:38	17.97P	2.46P	293.20P	23.76P
14:39	17.16P	3.32P	337.20P	28.07P
14:40	17.10P	3.38P	359.20P	27.99P
14:41	17.16P	3.30P	369.40P	27.97P
14:42	17.18P	3.29P	361.10P	27.96P
14:43	17.20P	3.29P	352.30P	27.76P

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 9
(continued)

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
14:44	17.23P	3.24P	351.00P	27.72P
14:45	17.26P	3.22P	345.10P	27.76P
14:46	17.27P	3.20P	342.90P	27.68P
14:47	17.29P	3.19P	339.80P	27.53P
14:48	17.30P	3.17P	349.10P	27.50P
14:49	17.32P	3.14P	354.60P	27.35P
14:50	17.36P	3.15P	346.10P	26.96P
14:51	17.42	3.06	351.50	26.58
14:52	17.25	3.24	356.00	27.53
14:53	17.29	3.20	350.90	27.20
14:54	17.29	3.20	348.00	27.02
14:55	17.18	3.32	355.60	27.51
14:56	17.21	3.28	358.50	27.43
14:57	17.24	3.26	349.60	27.40
14:58	17.20	3.31	346.80	27.51
14:59	17.19	3.31	351.30	27.53
15:00	17.18	3.32	348.00	27.78
15:01	17.14	3.36	341.80	28.18
15:02	17.18	3.33	343.40	27.85
15:03	17.15	3.36	339.00	28.15
15:04	17.13	3.38	336.50	28.42
15:05	17.14	3.36	341.40	28.63
15:06	17.21	3.28	333.00	28.29
15:07	17.22	3.27	334.30	28.28
15:08	17.22	3.27	338.30	28.31
15:09	17.28	3.23	341.70	28.09
15:10	17.28	3.22	329.60	28.37
15:11	17.32	3.19	325.70	28.17
15:12	17.24	3.26	334.90	28.74
15:13	17.24	3.26	338.60	28.86
15:14	17.20	3.30	335.00	29.05
15:15	17.18	3.33	334.10	28.96
15:16	17.31	3.19	336.20	27.70
15:17	17.20	3.29	349.50	28.58
15:18	17.22	3.28	342.30	28.37
15:19	17.19	3.33	344.00	28.45
15:20	17.18	3.32	347.60	28.38
15:21	17.30	3.18	343.70	27.77
15:22	17.20	3.28	344.40	28.57

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 9
(continued)

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
15:23	17.20	3.30	344.70	28.60
15:24	17.22	3.30	342.80	28.38
15:25	17.63	2.87	358.60	25.43
15:26	18.36	2.19	225.00	19.35
15:27	18.16	2.39	218.80	20.34
15:28	17.18	3.31	320.20	27.19
15:29	17.15	3.33	407.70	28.17
15:30	17.21	3.28	404.20	28.70
15:31	17.24	3.25	385.50	28.90
15:32	17.25	3.24	381.70	28.86
15:33	17.29	3.20	359.20	28.61
15:34	17.29	3.19	355.20	28.73
15:35	17.30	3.18	355.70	28.85
15:36	17.30	3.19	353.40	28.83
15:37	17.29	3.20	363.10	29.01
15:38	17.30	3.20	358.30	28.88
15:39	17.32	3.19	342.00	28.69
15:40	17.27	3.24	351.60	28.86
15:41	17.19	3.31	373.10	29.09
15:42	17.93	2.57	369.20	22.66
15:43	18.09	2.43	316.90	20.95
15:44	18.13	2.34	283.40	22.52
15:45	17.19	3.29	346.30	29.62
15:46	16.98	3.53	386.30	30.09
15:47	17.04	3.45	386.30	30.21
15:48	17.09	3.40	373.70	29.95
15:49	17.19	3.28	366.40	29.30
15:50	17.38	3.10	330.20	27.83
145 MinAvg	17.28	3.22	337.79	27.10

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 10

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
16:45	17.43	3.14	326.30	22.02
16:46	17.38	3.16	342.40	22.67
16:47	17.42	3.13	348.40	22.65
16:48	17.43	3.15	351.20	22.52
16:49	17.40	3.21	349.10	22.59
16:50	17.38	3.24	351.70	22.69
16:51	17.41	3.21	349.90	22.49
16:52	17.42	3.18	346.40	22.63
16:53	17.43	3.14	349.50	22.67
16:54	17.43	3.11	352.20	22.80
16:55	17.42	3.12	352.00	23.00
16:56	17.41	3.16	352.60	22.98
16:57	17.45	3.17	351.60	22.70
16:58	17.44	3.16	351.10	22.68
16:59	17.47	3.12	348.00	22.51
17:00	17.47	3.09	342.10	22.50
17:01	17.47	3.06	348.10	22.67
17:02	17.48	3.03	348.10	22.47
17:03	17.40	3.14	348.70	22.99
17:04	17.38	3.21	345.70	22.95
17:05	17.37	3.22	349.50	22.91
17:06	17.38	3.18	348.70	22.71
17:07	17.56	2.97	336.00	21.01
17:08	17.54	2.99	322.90	21.15
17:09	17.55	3.02	320.80	21.12
17:10	17.57	3.03	326.00	20.88
17:11	17.52	3.09	325.60	20.70
17:12	17.48	3.08	326.30	20.66
17:13	17.45	3.08	331.50	20.77
17:14	17.48	3.11	323.30	20.67
17:15	17.51P	3.12P	305.70P	20.42P
17:16	17.43P	3.14P	316.10P	21.03P
17:17	17.43P	3.13P	322.10P	21.08P
17:18	17.50P	3.12P	329.90P	20.61P
17:19	17.47P	3.12P	306.90P	20.72P
17:20	17.46P	3.08P	311.30P	20.97P
17:21	17.39P	3.21P	325.90P	21.64P
17:22	18.17P	2.45P	292.90P	15.35P
17:23	18.02P	2.57P	273.00P	15.54P

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 10
(continued)

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
17:24	17.61P	2.98P	276.30P	17.96P
17:25	16.93P	3.60P	314.20P	23.40P
17:26	17.03	3.55	323.00	23.40
17:27	17.12	3.30	327.90	22.73
17:28	17.70	2.88	310.00	20.23
17:29	17.52	2.97	299.50	22.04
17:30	17.00	3.63	323.90	23.28
17:31	17.98	2.75	289.90	18.35
17:32	18.22	2.41	202.20	15.06
17:33	17.98	2.61	206.00	15.72
17:34	16.97	3.64	323.70	21.55
17:35	17.11	3.44	363.60	22.05
17:36	17.23	3.33	349.90	22.17
17:37	17.26	3.32	343.50	22.15
17:38	17.35	3.22	350.60	21.69
17:39	17.43	3.18	357.90	21.45
17:40	17.52	3.04	355.80	21.11
17:41	17.51	3.09	355.50	21.21
17:42	17.52	3.03	360.10	21.30
17:43	17.50	3.10	353.50	21.47
17:44	17.52	3.03	360.60	21.40
17:45	17.50	3.10	359.00	21.41
17:46	17.45	3.10	360.50	21.45
17:47	17.42	3.17	360.10	21.46
17:48	17.39	3.16	358.80	21.57
17:49	17.31	3.31	366.40	22.01
17:50	17.28	3.27	368.60	22.30
17:51	17.29	3.29	368.20	22.41
17:52	17.27	3.31	364.70	22.56
17:53	17.24	3.32	366.40	22.69
17:54	17.21	3.39	366.60	22.69
17:55	17.20	3.34	363.40	22.68
71 MinAvg	17.42	3.15	340.42	21.79

Marker	Description	Display	Average
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 11

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
11:38	17.26	3.32	389.40	23.88
11:39	17.26	3.36	391.30	23.74
11:40	17.28	3.31	392.60	23.44
11:41	17.29	3.33	391.30	23.36
11:42	17.29	3.31	390.00	23.61
11:43	17.25	3.36	387.20	23.85
11:44	17.27D	3.35D	378.50D	23.84D
11:45	17.30D	3.31D	375.30D	23.91D
11:46	17.27D	3.35D	374.80D	24.19D
11:47	17.24D	3.36D	373.50D	24.33D
11:48	17.21	3.42	365.40	24.38
11:49	17.22	3.38	357.50	24.42
11:50	17.18	3.45	362.10	24.37
11:51	17.23	3.37	364.60	24.25
11:52	17.24	3.37	355.80	24.37
11:53	17.20	3.42	347.10	24.49
11:54	17.25	3.33	352.50	24.35
11:55	17.29	3.31	349.50	24.30
11:56	17.28	3.32	353.70	24.26
11:57	17.27	3.30	353.50	24.46
11:58	17.23	3.36	355.10	24.66
11:59	17.21	3.40	351.80	24.64
12:00	17.21	3.37	355.50	24.74
12:01	17.20	3.36	351.50	24.92
12:02	17.18	3.38	354.60	24.74
12:03	17.12	3.45	404.20	24.93
12:04	17.88	2.73	397.40	19.69
12:05	18.13	2.49	322.30	17.45
12:06	18.02	2.58	298.90	17.77
12:07	17.47	3.10	297.20	21.55
12:08	18.02	2.54	259.20	18.43
12:09	18.05	2.52	197.50	17.67
12:10	18.08	2.52	191.40	17.43
12:11	18.10	2.50	191.90	17.56
12:12	18.13	2.45	193.10	17.55
12:13	17.96	2.59	209.70	18.59
12:14	17.03	3.47	265.20	24.21
12:15	16.94	3.54	349.10	26.25
12:16	17.15	3.33	332.60	26.24

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 11
(continued)

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
12:17	17.16	3.35	321.30	26.69
12:18	17.20	3.34	321.90	26.91
12:19	17.22	3.28	310.10	26.86
12:20	17.21	3.27	290.30	26.77
12:21	17.22	3.28	291.40	26.63
12:22	17.39	3.14	282.70	25.42
12:23	17.33	3.17	271.50	25.98
12:24	17.30	3.17	286.10	26.39
12:25	17.33	3.15	288.00	26.40
12:26	17.36	3.14	296.10	26.28
12:27	17.35	3.17	294.60	26.37
12:28	17.39	3.12	297.70	26.31
12:29	17.42	3.06	294.60	26.36
12:30	17.44	3.04	292.90	26.31
12:31	17.47	3.04	290.90	26.26
12:32	17.47	3.04	293.50	26.21
12:33	17.45	3.03	295.70	26.33
12:34	17.46	3.04	295.50	26.36
12:35	17.39	3.11	302.90	26.48
12:36	17.30	3.18	322.70	26.67
12:37	17.25	3.26	328.40	26.77
12:38	17.21	3.30	332.70	26.94
12:39	17.14	3.33	344.40	27.18
12:40	17.11	3.36	345.60	27.43
12:41	17.13	3.37	341.40	27.27
12:42	17.08	3.39	341.30	27.38
12:43	17.09	3.37	340.30	27.53
12:44	17.09	3.40	336.90	27.75
12:45	17.09	3.37	335.50	27.66
12:46	17.11	3.34	329.80	27.66
12:47	17.11	3.37	325.10	27.64
12:48	17.10	3.36	323.80	27.76
12:49	17.06	3.37	328.70	27.45
12:50	17.04	3.42	331.10	27.21
12:51	16.95	3.49	343.70	27.10
12:52	16.92	3.50	340.00	26.89
12:53	16.89	3.57	331.10	26.89
12:54	16.85	3.59	329.40	27.03
12:55	16.88	3.55	325.10	26.94

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 11
(continued)

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
12:56	16.86	3.60	324.10	27.06
12:57	16.83	3.64	319.30	27.17
12:58	16.86	3.57	318.20	27.10
12:59	16.89	3.55	316.20	27.17
13:00	16.93	3.54	314.70	27.18
13:01	16.94	3.50	310.90	27.11
13:02	16.90	3.54	315.30	27.22
13:03	16.90	3.57	317.50	27.37
13:04	16.93	3.51	314.70	27.35
13:05	17.00	3.43	317.70	27.09
13:06	17.10	3.38	319.60	26.93
13:07	17.03	3.42	314.90	26.96
13:08	17.01	3.42	306.80	27.04
13:09	17.08	3.37	313.40	26.77
13:10	17.15	3.31	309.80	26.56
13:11	17.19	3.25	310.90	26.33
13:12	17.21P	3.26P	310.10P	26.32P
13:13	17.63P	2.85P	297.00P	23.40P
13:14	18.18P	2.29P	221.80P	18.40P
13:15	18.02P	2.48P	219.40P	18.81P
13:16	17.97P	2.51P	226.90P	18.89P
13:17	16.98P	3.46P	282.90P	24.91P
13:18	16.95P	3.50P	350.70P	26.55P
13:19	17.06P	3.39P	319.20P	27.01P
13:20	17.05P	3.38P	316.90P	27.13P
13:21	17.04P	3.41P	318.00P	27.23P
13:22	17.98P	2.50P	271.80P	19.85P
13:23	18.16P	2.31P	216.90P	17.92P
13:24	18.01P	2.48P	202.30P	18.30P
13:25	17.14P	3.32P	249.50P	24.51P
13:26	17.02P	3.42P	275.10P	26.12P
13:27	16.85P	3.61P	297.70P	28.09P
13:28	16.85P	3.62P	293.60P	28.55P
13:29	16.90P	3.56P	293.10P	28.44P
13:30	16.92P	3.54P	299.20P	28.34P
13:31	16.96P	3.53P	299.00P	28.17P
13:32	17.03P	3.44P	300.80P	28.00P
13:33	17.09P	3.36P	299.10P	28.02P
13:34	17.11P	3.36P	300.00P	27.95P

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 11
(continued)

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
13:35	17.08P	3.41P	301.90P	28.12P
13:36	17.07P	3.40P	306.70P	28.29P
13:37	17.08P	3.38P	308.60P	28.38P
13:38	17.07P	3.41P	309.30P	28.45P
13:39	17.12P	3.38P	310.70P	28.10P
13:40	17.09P	3.38P	307.60P	28.34P
13:41	17.08P	3.38P	300.50P	28.27P
13:42	17.10P	3.38P	297.90P	28.30P
13:43	17.49P	3.02P	286.60P	26.09P
13:44	17.29P	3.18P	278.10P	27.80P
13:45	17.22P	3.24P	307.00P	28.54P
13:46	17.24P	3.26P	303.90P	28.28P
13:47	17.29P	3.19P	299.10P	28.11P
13:48	17.45P	3.00P	293.10P	27.42P
13:49	18.11P	2.29P	257.60P	23.34P
13:50	17.20	3.30	310.60	27.83
13:51	17.06	3.45	323.30	27.93
13:52	17.05	3.42	324.30	28.23
13:53	17.02	3.43	322.70	28.31
13:54	17.05	3.44	325.40	28.07
13:55	17.06	3.41	328.00	28.04
13:56	17.07	3.39	330.00	27.93
13:57	17.07	3.39	322.60	27.80
13:58	17.05	3.44	317.70	27.90
13:59	17.07	3.43	313.10	27.86
14:00	17.07	3.40	310.40	27.96
14:01	17.07	3.39	307.70	27.99
14:02	17.10	3.37	305.80	28.00
14:03	17.14	3.34	310.60	27.91
14:04	17.10	3.41	313.30	27.84
14:05	17.10	3.41	310.30	27.57
14:06	17.10	3.38	308.80	27.52
14:07	17.03	3.43	312.60	27.73
14:08	16.98	3.49	314.20	27.88
14:09	16.96	3.52	310.60	28.03
14:10	16.97	3.53	312.60	27.91
14:11	16.97	3.53	311.50	28.10
14:12	16.99	3.51	305.50	28.13
14:13	17.00	3.49	306.20	28.34

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 11
(continued)

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
14:14	17.01	3.48	307.30	28.38
14:15	17.03	3.46	311.00	28.30
14:16	17.02	3.46	310.70	28.32
14:17	17.50	2.99	299.20	24.90
14:18	18.02	2.48	220.90	20.17
14:19	17.90	2.59	215.70	20.58
14:20	17.09	3.37	245.70	25.31
14:21	16.72	3.72	329.80	28.43
14:22	16.82	3.62	320.60	28.90
14:23	16.83	3.61	332.80	29.02
14:24	16.88	3.57	329.80	28.87
14:25	16.90	3.55	323.30	28.87
14:26	16.96	3.49	320.80	28.64
14:27	17.02	3.43	312.90	28.46
14:28	17.04	3.42	311.70	28.38
14:29	17.07	3.39	309.90	28.33
14:30	17.12	3.35	306.90	28.17
14:31	17.15	3.33	307.70	28.29
14:32	17.14	3.33	313.20	28.21
14:33	17.19	3.30	316.30	28.16
14:34	17.20	3.30	318.00	28.16
14:35	17.17	3.32	316.40	28.29
14:36	17.14	3.33	320.20	28.44
14:37	17.11	3.35	323.70	28.45
14:38	17.07	3.38	325.60	28.28
14:39	17.05	3.40	323.10	28.22
14:40	16.96	3.49	324.30	28.60
14:41	17.74	2.75	296.70	22.48
14:42	18.04	2.54	243.60	20.08
14:43	17.85	2.65	237.00	20.22
14:44	16.87	3.61	271.40	27.43
14:45	16.84	3.63	298.60	28.30
14:46	16.87	3.59	292.10	28.51
14:47	16.89	3.59	284.20	28.90
14:48	16.90	3.58	285.60	29.02
14:49	16.92	3.57	294.30	28.94
14:50	16.94	3.55	297.10	28.89
14:51	17.03	3.45	296.50	28.88
14:52	17.06	3.41	298.70	28.77

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 11
(continued)

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
14:53	17.09	3.37	297.90	28.70
14:54	17.01	3.47	300.70	28.59
14:55	16.98	3.50	306.40	28.32
14:56	16.95	3.51	311.00	28.14
14:57	16.94	3.52	312.50	28.00
14:58	16.94	3.52	309.40	27.84
14:59	16.94	3.52	311.80	27.75
15:00	16.95	3.53	314.00	27.64
15:01	16.94	3.55	314.10	27.66
15:02	16.94	3.55	314.10	27.86
15:03	16.95	3.54	315.80	27.90
15:04	16.91	3.59	320.30	28.05
15:05	16.98	3.53	316.80	27.78
15:06	16.99	3.52	312.10	27.84
15:07	16.95	3.57	314.50	27.97
15:08	16.95	3.57	316.80	28.00
15:09	16.94	3.58	317.00	28.07
15:10	16.90	3.61	316.70	28.20
15:11	16.86	3.65	316.50	28.53
15:12	16.82	3.67	309.70	28.78
15:13	16.82	3.66	310.60	28.82
15:14	16.80	3.67	310.20	29.07
15:15	16.79	3.68	305.20	29.31
15:16	16.80	3.68	304.80	29.53
15:17	16.81	3.65	302.90	29.65
15:18	16.84	3.63	301.00	29.83
15:19	16.93	3.64	291.40	29.71
222 MinAvg	17.15	3.35	314.14	26.54

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 12

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
17:33	18.27	2.53	268.90	21.37
17:34	18.33	2.49	208.50	19.95
17:35	18.16	2.64	208.50	20.45
17:36	17.13	3.62	302.00	28.16
17:37	17.27	3.50	352.20	28.72
17:38	17.38	3.37	339.20	28.73
17:39	17.39	3.36	326.00	28.05
17:40	17.47	3.31	324.90	27.43
17:41	17.47	3.31	329.80	27.30
17:42	17.51	3.27	331.20	27.07
17:43	17.64	3.19	332.90	26.78
17:44	17.60	3.18	336.00	26.89
17:45	17.64	3.15	338.50	26.46
17:46	17.62	3.16	340.10	26.55
17:47	17.58	3.20	342.60	26.76
17:48	17.55	3.24	347.70	26.97
17:49	17.57	3.22	358.30	26.87
17:50	17.55	3.25	364.70	26.91
17:51	17.48	3.31	356.00	27.10
17:52	17.45	3.33	363.20	27.03
17:53	17.44	3.34	366.40	27.03
17:54	17.59	3.29	365.20	26.72
17:55	17.49	3.30	360.40	26.38
17:56	17.44	3.35	363.30	23.27
17:57	17.42	3.37	362.30	21.08
17:58	17.50	3.29	360.50	20.54
17:59	17.50	3.30	366.40	20.54
18:00	17.45	3.34	361.60	20.56
18:01	17.46	3.35	359.80	20.64
18:02	17.44	3.37	363.40	20.75
18:03	17.31	3.40	363.00	20.97
18:04	17.42	3.39	363.20	20.76
18:05	17.41	3.40	367.80	20.60
18:06	17.47	3.34	362.90	20.43
18:07	17.50	3.32	364.20	20.31
18:08	17.54	3.32	365.30	20.34
18:09	17.55	3.29	366.70	20.29
18:10	17.48	3.34	362.70	20.39
18:11	17.39	3.42	363.80	20.61

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 12
(continued)

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
18:12	17.42	3.40	365.10	20.44
18:13	17.48	3.36	362.50	20.27
18:14	17.49	3.33	363.10	20.26
18:15	17.48	3.34	364.70	20.19
18:16	17.52	3.31	362.70	20.00
18:17	17.67	3.25	360.80	19.81
18:18	17.63	3.21	352.50	19.74
18:19	17.66	3.18	362.30	19.66
18:20	17.66	3.18	360.90	19.67
18:21	17.66	3.18	361.20	19.63
18:22	17.71	3.13	356.80	19.55
18:23	17.74	3.11	362.70	19.35
18:24	17.73	3.12	367.30	19.33
18:25	17.70	3.14	372.10	19.27
18:26	17.68	3.16	375.50	19.36
18:27	17.68	3.17	377.60	19.36
18:28	17.66	3.19	378.50	19.54
18:29	17.63	3.21	382.40	19.65
18:30	17.60	3.26	379.50	19.60
18:31	17.60	3.25	377.30	19.61
18:32	17.60	3.24	368.10	19.81
18:33	17.63	3.23	368.90	19.83
18:34	17.63	3.22	370.80	19.86
18:35	17.62	3.23	375.70	19.99
18:36	17.63	3.24	379.70	20.02
18:37	18.53	2.40	316.60	14.48
18:38	18.61	2.36	237.20	13.30
18:39	18.41	2.50	239.90	13.39
18:40	17.61	3.52	325.70	19.33
18:41	17.43	3.44	387.90	20.14
18:42	17.55	3.30	366.20	20.21
18:43	17.60	3.26	352.10	20.18
18:44	17.75	3.12	360.70	19.27
18:45	18.50	2.40	311.00	13.58
18:46	18.44	2.48	293.30	13.63
18:47	18.38	2.52	292.70	13.73
18:48	18.23	2.66	283.10	14.31
18:49	17.35	3.52	337.50	20.12
18:50	17.42	3.43	371.30	20.44

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 12
(continued)

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
18:51	17.49	3.35	361.50	20.46
18:52	17.48	3.39	356.20	20.66
18:53	17.54	3.37	361.10	20.66
18:54	17.50	3.35	369.40	20.65
18:55	17.53	3.35	370.80	20.54
18:56	17.55	3.31	367.60	20.49
18:57	17.55	3.31	372.60	20.46
18:58	17.61	3.27	376.20	20.40
18:59	17.64	3.22	374.20	20.35
19:00	17.69	3.17	364.80	20.21
19:01	17.67	3.20	359.60	20.28
19:02	17.66	3.20	365.70	20.29
19:03	17.67P	3.18P	367.00P	20.16P
19:04	17.79P	3.07P	364.40P	19.58P
19:05	17.77P	3.09P	362.10P	19.94P
19:06	17.83P	3.02P	358.90P	19.76P
19:07	18.08P	2.80P	334.20P	18.26P
19:08	17.88P	2.98P	318.60P	19.18P
19:09	17.72P	3.13P	352.80P	19.99P
19:10	17.69P	3.16P	359.60P	20.14P
19:11	17.66P	3.18P	366.60P	20.31P
19:12	17.61P	3.22P	369.30P	20.49P
19:13	17.53P	3.31P	372.00P	20.77P
19:14	17.50P	3.34P	369.60P	20.94P
19:15	17.50P	3.32P	373.40P	20.91P
19:16	17.49P	3.34P	368.70P	21.00P
19:17	17.46P	3.36P	365.30P	21.10P
19:18	17.40P	3.41P	363.00P	21.24P
19:19	17.35P	3.47P	364.60P	21.31P
19:20	17.36P	3.47P	361.60P	21.32P
19:21	17.40P	3.41P	351.90P	21.32P
19:22	17.41P	3.43P	346.30P	21.33P
19:23	17.37P	3.46P	349.50P	21.43P
19:24	17.62P	3.23P	347.80P	20.05P
19:25	17.83P	3.02P	309.40P	18.67P
19:26	17.56P	3.26P	317.30P	20.28P
19:27	17.40P	3.43P	348.90P	21.27P
19:28	17.45P	3.39P	357.10P	20.89P
19:29	17.41P	3.43P	348.40P	20.82P

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 12
(continued)

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
19:30	17.41P	3.45P	343.90P	20.88P
19:31	17.43P	3.41P	339.90P	20.85P
19:32	17.45P	3.40P	340.10P	20.80P
19:33	17.45	3.39	337.00	20.85
19:34	17.78	3.43	327.40	20.84
19:35	17.40	3.44	333.50	20.79
19:36	17.38	3.48	335.10	20.85
19:37	17.40	3.47	335.60	20.89
19:38	17.42	3.47	338.20	20.68
19:39	17.40	3.45	345.10	20.67
19:40	17.39	3.49	353.20	20.56
19:41	17.37	3.47	350.10	20.69
19:42	17.40	3.46	344.10	20.79
19:43	17.58	3.41	345.80	20.66
19:44	17.49	3.38	348.60	20.62
19:45	17.53	3.34	355.40	20.58
19:46	17.66	3.19	356.70	20.01
19:47	18.54	2.38	277.10	14.09
19:48	18.54	2.35	227.10	13.50
19:49	18.27	2.63	229.10	14.55
19:50	17.56	3.28	326.90	19.38
19:51	17.60	3.26	348.10	20.02
19:52	17.59	3.25	342.20	20.25
19:53	17.59	3.27	347.20	20.97
19:54	17.64	3.21	339.60	21.37
19:55	17.63	3.22	331.40	21.41
19:56	17.58	3.25	330.80	21.52
19:57	17.59	3.25	333.90	21.38
19:58	17.64	3.18	333.10	21.17
19:59	17.61	3.23	333.30	21.36
20:00	17.57	3.26	336.90	21.53
20:01	17.56	3.29	336.60	21.61
20:02	18.35	2.52	303.40	15.77
20:03	18.46	2.44	249.10	14.05
20:04	18.40	2.51	251.40	14.13
20:05	17.58	3.27	270.00	19.77
20:06	17.41	3.39	317.70	22.34
20:07	17.42	3.41	317.80	22.62
20:08	17.47	3.34	322.60	22.65

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 12
(continued)

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
20:09	17.51	3.32	320.80	22.62
20:10	17.56	3.25	322.90	22.41
20:11	17.57	3.25	320.40	22.45
20:12	17.53	3.30	320.20	22.73
20:13	17.56	3.26	324.10	22.70
20:14	17.55	3.28	325.60	22.79
20:15	17.56	3.32	323.50	22.65
20:16	17.50	3.35	324.80	22.59
20:17	17.50	3.33	326.10	22.63
20:18	17.47	3.37	322.30	22.78
20:19	17.45	3.41	322.20	22.98
20:20	17.46	3.36	324.50	22.88
20:21	17.49	3.35	329.40	22.77
20:22	17.54	3.31	327.00	22.65
20:23	17.57	3.25	323.40	22.58
20:24	17.64	3.22	327.10	22.37
20:25	17.65	3.17	335.00	22.30
20:26	17.64	3.20	337.00	22.37
20:27	17.61	3.24	340.20	22.55
20:28	17.59	3.24	346.10	22.59
20:29	17.60	3.25	355.20	22.65
20:30	17.64	3.18	353.90	22.74
20:31	17.59	3.23	350.00	22.95
20:32	17.50	3.33	355.00	23.17
20:33	17.45	3.36	359.00	23.17
20:34	17.41	3.42	354.80	23.14
20:35	17.35	3.45	347.90	23.50
20:36	17.31	3.50	350.40	23.74
20:37	17.32	3.48	353.00	23.67
20:38	17.30	3.51	352.30	23.80
20:39	17.26	3.55	349.60	24.01
20:40	17.28	3.51	350.20	24.02
20:41	17.33	3.47	353.00	24.20
20:42	17.31	3.47	349.40	24.36
20:43	17.31	3.48	343.60	24.35
20:44	17.28	3.53	339.90	24.43
20:45	17.32	3.46	345.90	24.31
20:46	17.40	3.40	348.10	24.25
20:47	17.40	3.37	344.10	24.31

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 12
(continued)

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
20:48	17.35	3.43	346.50	24.39
20:49	17.30	3.48	357.90	24.63
20:50	17.27	3.50	357.20	24.84
20:51	17.24	3.56	354.60	25.18
20:52	17.21	3.56	357.00	25.32
20:53	17.20	3.58	366.20	25.35
20:54	17.20	3.59	367.30	25.32
20:55	17.74	3.04	349.50	21.66
20:56	18.29	2.55	230.90	17.05
20:57	18.21	2.61	220.50	16.99
20:58	17.11	3.69	296.70	23.49
20:59	17.05	3.74	380.20	24.98
21:00	17.12	3.63	365.10	25.45
21:01	17.17	3.61	358.90	25.47
21:02	17.20	3.57	356.90	25.48
210 MinAvg	17.59	3.25	340.77	21.59

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 13

Starting
11-07-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
09:03	17.43	3.23	307.60	21.84
09:04	17.40	3.26	310.50	21.81
09:05	17.40	3.26	302.60	21.78
09:06	17.44	3.21	301.50	24.29
09:07	17.50	3.16	303.30	23.15
09:08	17.49	3.16	301.90	19.78
09:09	17.45	3.20	302.40	19.86
09:10	17.42	3.26	297.40	19.81
09:11	17.43	3.21	303.60	19.75
09:12	17.44	3.21	306.50	19.80
09:13	17.37	3.26	317.80	19.95
09:14	17.33	3.32	334.70	20.06
09:15	17.30	3.34	341.60	20.31
09:16	17.29	3.34	344.00	20.34
09:17	17.36	3.29	343.30	20.30
09:18	17.34	3.31	341.00	20.37
09:19	17.66	3.07	333.20	18.47
09:20	18.15	2.51	284.50	14.02
09:21	18.08	2.57	276.00	14.31
09:22	17.68	2.98	277.40	16.69
09:23	17.15	3.46	322.00	20.63
09:24	17.16	3.47	332.40	20.86
09:25	17.20	3.41	338.00	20.84
09:26	17.26	3.36	330.00	20.89
09:27	17.29	3.30	330.80	20.85
09:28	17.25	3.36	328.70	21.01
09:29	17.24	3.36	335.60	20.99
09:30	17.23	3.37	338.80	21.11
09:31	17.22	3.36	340.60	21.29
09:32	17.23	3.38	343.50	21.29
09:33	17.24	3.38	349.30	21.26
09:34	17.23	3.36	347.20	21.17
09:35	17.18	3.39	346.10	21.31
09:36	17.16	3.43	345.70	21.34
09:37	17.21	3.37	351.40	21.31
09:38	17.52	3.31	345.00	21.02
09:39	17.33	3.23	334.80	20.76
09:40	17.39	3.17	327.60	21.26
09:41	17.45	3.12	324.00	19.96

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
09:42	17.48	3.08	311.00	19.58
09:43	17.50	3.08	308.30	19.26
09:44	17.48	3.08	312.30	19.04
09:45	17.43	3.15	317.20	18.92
09:46	17.37	3.19	332.80	18.86
09:47	17.36	3.21	351.40	18.72
09:48	17.69	3.21	364.10	18.62
09:49	17.60	3.25	370.70	18.69
09:50	17.23	3.34	372.00	19.09
09:51	17.26	3.30	369.40	19.03
09:52	17.27	3.32	372.80	18.98
09:53	17.24	3.32	382.90	19.00
09:54	17.76	2.85	356.40	16.27
09:55	18.28	2.34	237.90	12.59
09:56	18.17	2.47	220.50	12.45
09:57	18.17	2.67	226.40	13.09
09:58	17.91	2.72	235.30	12.93
09:59	17.38	3.24	253.80	15.23
10:00	16.84	3.74	392.30	18.76
10:01	17.05	3.55	372.30	18.96
10:02	17.07	3.50	357.10	19.27
10:03	17.08	3.51	354.50	19.24
10:04	17.08	3.55	347.70	19.38
10:05	17.08	3.51	343.10	19.41
10:06	17.29	3.51	336.60	19.46
10:07	17.09	3.52	340.90	19.46
10:08	17.38	3.45	343.00	19.28
10:09	17.23	3.41	327.20	19.09
10:10	17.24	3.35	330.50	18.92
10:11	17.29	3.32	338.00	18.78
10:12	17.36	3.26	341.20	18.74
10:13	17.43	3.17	329.30	18.57
10:14	17.49	3.11	324.60	18.57
10:15	17.56	3.06	332.30	18.64
10:16	17.52	3.09	349.50	18.62
10:17	17.49	3.13	359.40	18.75
10:18	17.48	3.15	365.40	18.86
10:19	17.64	2.95	355.20	18.41
10:20	17.89	2.69	311.60	17.45

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
10:21	17.38	3.25	362.70	19.02
10:22	17.38	3.24	365.20	19.06
10:23	17.37	3.26	355.80	19.30
10:24	17.44	3.16	344.40	19.12
10:25	17.44	3.16	348.60	19.31
10:26	17.37	3.24	352.10	19.54
10:27	17.34	3.25	360.40	19.82
10:28	17.34	3.24	362.90	19.90
10:29	17.35	3.26	365.30	19.93
10:30	17.33	3.24	365.00	20.05
10:31	17.40	3.19	365.90	19.97
10:32	17.41	3.18	367.30	19.98
10:33	17.35P	3.22P	370.80P	20.11P
10:34	17.52P	3.08P	365.20P	19.09P
10:35	17.51P	3.08P	337.40P	18.96P
10:36	17.34P	3.22P	368.20P	20.00P
10:37	17.30P	3.29P	368.20P	20.11P
10:38	17.28P	3.32P	370.50P	20.04P
10:39	17.43P	3.15P	359.80P	19.07P
10:40	17.46P	3.15P	341.40P	18.93P
10:41	17.50P	3.10P	334.10P	18.89P
10:42	17.50P	3.10P	336.70P	18.96P
10:43	17.53P	3.09P	338.80P	18.87P
10:44	17.52P	3.09P	338.10P	18.78P
10:45	17.53P	3.08P	339.70P	18.77P
10:46	17.57P	3.06P	336.70P	18.77P
10:47	17.57P	3.03P	332.70P	18.85P
10:48	17.57P	3.05P	328.60P	18.87P
10:49	17.50P	3.13P	332.80P	19.06P
10:50	17.59P	3.03P	339.30P	18.50P
10:51	18.36P	2.29P	293.50P	13.04P
10:52	18.30P	2.33P	271.00P	13.24P
10:53	17.85P	2.76P	271.90P	15.75P
10:54	17.34P	3.26P	321.80P	19.48P
10:55	17.39P	3.18P	326.70P	19.62P
10:56	17.42P	3.17P	324.70P	19.69P
10:57	17.41P	3.19P	330.30P	19.88P
10:58	17.40P	3.18P	338.20P	20.00P
10:59	17.87P	2.73P	324.70P	17.46P

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
11:00	18.43P	2.20P	216.90P	13.47P
11:01	18.32P	2.28P	204.60P	13.50P
11:02	17.54P	3.04P	242.60P	17.43P
11:03	17.25P	3.33P	359.80P	19.83P
11:04	17.38P	3.17P	347.70P	19.98P
11:05	17.41P	3.14P	334.60P	20.20P
11:06	17.42P	3.15P	333.10P	20.28P
11:07	17.39P	3.16P	333.00P	20.38P
11:08	17.49P	3.04P	332.00P	19.98P
11:09	17.33P	3.21P	337.90P	21.03P
11:10	17.30P	3.24P	350.40P	21.15P
11:11	17.30P	3.22P	353.30P	21.18P
11:12	17.34P	3.18P	360.10P	21.17P
11:13	17.34P	3.20P	357.90P	21.15P
11:14	17.34P	3.18P	360.50P	21.09P
11:15	17.33	3.17	363.80	21.18
11:16	17.33	3.19	359.90	21.25
11:17	17.36	3.16	355.90	21.04
11:18	17.30	3.19	353.60	21.23
11:19	17.29	3.20	359.20	21.29
11:20	17.33	3.18	359.50	21.25
11:21	17.37	3.16	360.30	21.11
11:22	17.35	3.15	360.70	21.17
11:23	17.31	3.18	365.90	21.49
11:24	17.29	3.24	372.80	21.52
11:25	17.26	3.25	382.00	21.48
11:26	17.27	3.22	378.50	21.58
11:27	17.26	3.24	373.30	21.52
11:28	17.85	2.61	309.70	18.93
11:29	17.19	3.30	360.30	21.70
11:30	17.10	3.41	368.00	21.76
11:31	17.14	3.36	361.50	22.22
11:32	17.19	3.29	361.20	22.24
11:33	17.19	3.31	361.50	22.22
11:34	17.20	3.30	361.80	22.10
11:35	17.20	3.29	359.40	21.98
11:36	17.21	3.27	365.40	21.98
11:37	17.24	3.26	362.30	21.95
11:38	17.24	3.25	358.50	21.83

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
11:39	17.24	3.23	362.70	21.72
11:40	17.31	3.19	365.70	21.56
11:41	17.32	3.16	356.00	21.35
11:42	17.29	3.17	360.80	21.35
11:43	17.23	3.27	366.60	21.17
11:44	17.19	3.30	364.30	21.15
11:45	17.18	3.29	361.80	21.32
11:46	17.16	3.31	365.40	21.27
11:47	17.15	3.35	372.90	20.95
11:48	17.12	3.37	372.30	20.82
11:49	17.11	3.37	368.10	20.71
11:50	17.10	3.40	370.60	20.67
11:51	17.06	3.44	371.50	20.71
11:52	17.06	3.41	364.40	20.75
11:53	17.14	3.33	347.20	20.44
11:54	16.92	3.59	350.20	21.26
11:55	16.97	3.51	355.10	20.99
11:56	17.04	3.41	350.10	20.61
11:57	17.05	3.42	353.20	20.27
11:58	17.14	3.37	361.90	19.58
11:59	18.02	2.50	310.40	13.68
12:00	17.95	2.55	284.80	13.80
12:01	17.44	3.06	294.30	16.22
12:02	16.88	3.61	351.80	20.78
12:03	16.90	3.61	354.20	21.02
12:04	16.90	3.61	350.30	20.90
12:05	16.93	3.57	350.30	20.72
12:06	17.50	3.01	334.00	17.78
12:07	18.00	2.52	211.80	13.77
12:08	17.88	2.64	203.90	13.95
12:09	16.90	3.61	252.80	18.89
12:10	16.77	3.74	341.10	20.73
12:11	16.89	3.60	336.30	20.91
12:12	16.89	3.59	327.40	21.26
12:13	16.92	3.54	326.10	21.23
12:14	16.95	3.51	321.90	21.23
12:15	16.98	3.48	319.80	21.32
12:16	16.98	3.51	322.90	21.40
12:17	16.98	3.51	327.90	21.57

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
12:18	17.03	3.46	325.70	21.54
12:19	17.03	3.44	319.50	21.62
12:20	16.98	3.49	318.80	22.16
12:21	16.94	3.52	319.60	22.24
12:22	17.00	3.45	324.90	22.40
12:23	17.15	3.30	322.50	21.87
12:24	16.97	3.52	326.90	22.78
12:25	16.93	3.55	333.20	22.96
12:26	16.86	3.61	336.40	22.99
12:27	16.85E	3.60E	337.90E	22.95E
12:28	18.14E	3.58E	341.40E	22.89E
12:29	16.86E	3.57E	341.80E	23.09E
12:30	16.88E	3.56E	333.30E	23.07E
12:31	16.92E	3.53E	329.30E	22.96E
12:32	16.93E	3.54E	325.50E	22.77E
12:33	16.95E	3.52E	320.20E	22.69E
12:34	17.01E	3.45E	311.90E	22.49E
12:35	17.07E	3.39E	312.50E	22.44E
12:36	17.08E	3.37E	304.90E	22.30E
12:37	17.08E	3.36E	309.20E	22.27E
12:38	17.14E	3.30E	312.70E	22.01E
12:39	17.12E	3.32E	314.40E	22.14E
12:40	17.11E	3.34E	317.80E	22.02E
12:41	17.12E	3.35E	320.00E	22.00E
12:42	17.13E	3.36E	317.80E	21.89E
12:43	17.10E	3.39E	318.50E	22.04E
12:44	17.06E	3.43E	320.90E	22.21E
12:45	17.04E	3.46E	326.90E	22.30E
12:46	17.09E	3.40E	330.90E	22.01E
12:47	17.09E	3.40E	333.20E	21.93E
12:48	17.11E	3.38E	341.60E	21.85E
12:49	17.10E	3.39E	342.20E	21.55E
12:50	17.09E	3.41E	340.00E	21.71E
12:51	17.07E	3.43E	337.50E	21.76E
12:52	17.07E	3.43E	338.00E	21.72E
12:53	17.11E	3.38E	335.40E	21.59E
12:54	17.12E	3.38E	328.20E	21.72E
12:55	17.12E	3.39E	327.10E	21.62E
12:56	17.12	3.39	330.30	21.44

Pine Hall Brick
Cyclone Outlet B
Raw CEM Data
Run 13
(continued)

Starting
11-07-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
12:57	17.10	3.42	327.70	21.48
12:58	17.13	3.38	328.70	21.39
12:59	17.16	3.36	326.30	21.40
13:00	17.16	3.35	325.80	21.38
13:01	17.16	3.35	339.80	21.41
13:02	17.18	3.32	343.70	21.36
13:03	17.21	3.28	347.70	21.38
13:04	17.25	3.24	345.30	21.33
13:05	17.23	3.27	339.70	21.38
13:06	17.26	3.24	339.40	21.41
13:07	17.31	3.18	344.50	21.27
13:08	17.34	3.16	346.00	21.27
13:09	17.89	2.64	325.20	17.84
13:10	18.25	2.29	231.80	14.55
13:11	18.06	2.48	226.90	14.92
13:12	17.05	3.46	269.40	20.00
250 MinAvg	17.31	3.25	335.80	20.00

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

C.3.2 CONTINUOUS EMISSIONS MONITORING DRIFT CALCULATIONS AND ADJUSTMENTS FOR THE SAWDUST DRYER OUTLET B

PINE HALL BRICK
CEM CALIBRATION DRIFT DATA
SAWDUST DRYER OUTLET B

							PRE-TEST CALIBRATION		POST-TEST CALIBRATION		CALIBRATION DRIFT	
LOCATION	DATE	RUN ID	START TIME	END TIME	MONITOR	ANALYZER UNITS	ZERO	HIGH	ZERO	HIGH	ZERO % span	HIGH % span
OUTLET B	11/02/92	RUN 1	13:11	15:28	O2	%dv	0.03	14.20	0.04	14.19	0.04	-0.04
					CO2	%dv	0.05	13.82	0.06	13.64	0.05	-0.90
					CO	ppmdv	---	---	---	---	----	----
					NOx	ppmdv	---	---	---	---	----	----
OUTLET B	11/02/92	RUN 2	17:33	19:42	O2	%dv	0.04	14.19	0.02	14.09	-0.08	-0.40
					CO2	%dv	0.06	13.64	0.06	13.54	0.00	-0.50
			18:42	19:42	CO	ppmdv	0.84	858	0.78	852	-0.01	-0.60
					NOx	ppmdv	0.05	211.8	1.08	212.8	0.41	0.40
OUTLET B	11/03/92	RUN 3	09:15	11:32	O2	%dv	0.03	14.21	0.47	14.17	1.76	-0.16
					CO2	%dv	0.06	13.83	0.24	13.72	0.90	-0.55
					CO	ppmdv	---	---	---	---	---	---
					NOx	ppmdv	---	---	---	---	---	---
OUTLET B	11/03/92	RUN 4	16:54	19:24	O2	%dv	0.15	14.11	0.03	14.21	-0.48	0.40
					CO2	%dv	0.05	13.67	0.05	13.89	0.00	1.10
					CO	ppmdv	0.43	861	0.21	846	-0.02	-1.50
					NOx	ppmdv	-0.02	212.4	-0.9	206.1	-0.35	-2.52
OUTLET B	11/04/92	RUN 5	10:15	12:55	O2	%dv	0.38	14.20	0.02	14.00	-1.44	-0.80
					CO2	%dv	0.06	13.78	0.05	13.91	-0.05	0.65
					CO	ppmdv	0.15	862	-0.08	858	-0.02	-0.40
					NOx	ppmdv	0.15	212.2	1.1	217.2	0.38	2.00
OUTLET B	11/04/92	RUN 6	14:12	16:41	O2	%dv	0.01	14.21	0.02	14.08	0.04	-0.52
					CO2	%dv	0.05	13.82	0.05	13.86	0.00	0.20
					CO	ppmdv	-0.09	857	-0.25	860	-0.02	0.30
					NOx	ppmdv	0.68	211.4	2.23	217.8	0.62	2.56
OUTLET B	11/04/92	RUN 7	19:40	22:41	O2	%dv	0.00	14.22	0.01	13.73	0.04	-1.96
					CO2	%dv	0.05	13.89	0.06	13.58	0.05	-1.55
					CO	ppmdv	-0.22	860	-0.17	839	0.01	-2.10
					NOx	ppmdv	0.42	211.4	1.81	214.5	0.56	1.24
OUTLET B	11/05/92	RUN 8	09:28	11:53	O2	%dv	0.02	14.22	0.04	14.45	0.08	0.92
					CO2	%dv	0.06	13.83	0.06	13.85	0.00	0.10
					CO	ppmdv	-0.24	855	-0.15	856	0.01	0.10
					NOx	ppmdv	-0.04	210.6	-1.01	204.7	-0.39	-2.36

PINE HALL BRICK
CEM CALIBRATION DRIFT DATA
SAWDUST DRYER OUTLET B

LOCATION	DATE	RUN ID	START TIME	END TIME	MONITOR	ANALYZER UNITS	PRE-TEST CALIBRATION ZERO	PRE-TEST CALIBRATION HIGH	POST-TEST CALIBRATION ZERO	POST-TEST CALIBRATION HIGH	CALIBRATION DRIFT ZERO % span	CALIBRATION DRIFT HIGH % span
OUTLET B	11/05/92	RUN 9	13:25	15:50	O2	%dv	0.01	14.27	0.02	14.09	0.04	-0.72
					CO2	%dv	0.06	13.85	0.06	13.83	0.00	-0.10
					CO	ppmdv	-0.2	863	-0.32	867	-0.01	0.40
					NOx	ppmdv	0.14	212.5	3.43	217.9	1.32	2.16
OUTLET B	11/05/92	RUN 10	16:44	17:55	O2	%dv	0.01	14.23	0.03	14.21	0.08	-0.08
					CO2	%dv	0.06	13.84	0.06	13.81	0.00	-0.15
					CO	ppmdv	-0.26	862	-0.2	857	0.01	-0.50
					NOx	ppmdv	0.49	212	-0.67	204.9	-0.46	-2.84
OUTLET B	11/06/92	RUN 11	11:37	15:19	O2	%dv	0.01	14.22	0.06	14.13	0.20	-0.36
					CO2	%dv	0.05	13.84	0.06	13.86	0.05	0.10
					CO	ppmdv	-0.08	856	-0.29	865	-0.02	0.90
					NOx	ppmdv	0.07	211.9	2.94	218.29	1.15	2.56
					THC	ppmwv	1.87	851	2.77	852	0.09	0.10
OUTLET B	11/06/92	RUN 12	17:32	21:02	O2	%dv	0.01	14.26	0.05	14.38	0.16	0.48
					CO2	%dv	0.05	13.89	0.06	13.88	0.05	-0.05
					CO	ppmdv	-0.3	863	-0.16	853	0.01	-1.00
					NOx	ppmdv	0.55	212.4	-1.26	213.9	-0.72	0.60
					THC	ppmwv	0	850	0.22	839	0.02	-1.10
OUTLET B	11/07/92	RUN 13	09:02	13:12	O2	%dv	0.01	14.25	0.04	14.16	0.12	-0.36
					CO2	%dv	0.05	13.83	0.05	13.81	0.00	-0.10
					CO	ppmdv	-0.11	851	-0.2	855	-0.01	0.40
					NOx	ppmdv	-0.34	212.1	-0.43	206.9	-0.04	-2.08
					THC	ppmwv	0.06	852	0.81	849	0.08	-0.30

PINE HALL BRICK
CEM DATA ADJUSTMENTS
SAWDUST DRYER OUTLET B

LOCATION	DATE	RUN ID	START TIME	END TIME	MONITOR	ANALYZER UNITS	RUN AVG	AVERAGE CALIBRATION ZERO	AVERAGE CALIBRATION HIGH	GAS VALUE	ADJUSTE DATA
OUTLET B	11/02/92	RUN 1	13:11	15:28	O2	%dv	16.80	0.04	14.20	14.20	16.81
					CO2	%dv	3.54	0.06	13.73	13.82	3.52
					CO	ppmdv	----	----	----	859.5	----
					NOx	ppmdv	----	----	----	211.9	----
OUTLET B	11/02/92	RUN 2	17:33	19:42	O2	%dv	16.56	0.03	14.14	14.20	16.64
					CO2	%dv	3.73	0.06	13.59	13.82	3.75
			18:42	19:42	CO	ppmdv	310.78	0.81	855.00	859.5	311.90
					NOx	ppmdv	28.46	0.57	212.30	211.9	27.92
OUTLET B	11/03/92	RUN 3	09:15	11:32	O2	%dv	16.85	0.25	14.19	14.20	16.91
					CO2	%dv	3.56	0.15	13.78	13.82	3.46
					CO	ppmdv	---	---	---	859.5	---
					NOx	ppmdv	---	---	---	211.9	---
OUTLET B	11/03/92	RUN 4	16:54	19:24	O2	%dv	17.01	0.09	14.16	14.20	17.08
					CO2	%dv	3.44	0.05	13.78	13.82	3.41
					CO	ppmdv	336.68	0.32	853.50	859.5	338.85
					NOx	ppmdv	18.38	-0.46	209.25	211.9	19.04
OUTLET B	11/04/92	RUN 5	10:15	12:55	O2	%dv	16.92	0.20	14.10	14.20	17.08
					CO2	%dv	3.41	0.06	13.85	13.82	3.36
					CO	ppmdv	375.49	0.04	860.00	859.5	375.25
					NOx	ppmdv	21.12	0.63	214.70	211.9	20.29
OUTLET B	11/04/92	RUN 6	14:12	16:41	O2	%dv	17.05	0.02	14.15	14.20	17.12
					CO2	%dv	3.44	0.05	13.84	13.82	3.40
					CO	ppmdv	366.75	-0.17	858.50	859.5	367.27
					NOx	ppmdv	24.56	1.46	214.60	211.9	22.97
OUTLET B	11/04/92	RUN 7	19:40	22:41	O2	%dv	17.00	0.01	13.98	14.20	17.27
					CO2	%dv	3.29	0.06	13.74	13.82	3.27
					CO	ppmdv	341.61	-0.20	849.50	859.5	345.75
					NOx	ppmdv	20.96	1.12	212.95	211.9	19.85
OUTLET B	11/05/92	RUN 8	09:28	11:53	O2	%dv	17.44	0.03	14.34	14.20	17.28
					CO2	%dv	3.31	0.06	13.84	13.82	3.26
					CO	ppmdv	350.25	-0.20	855.50	859.5	352.00
					NOx	ppmdv	22.79	-0.53	207.65	211.9	23.73

PINE HALL BRICK
CEM DATA ADJUSTMENTS
SAWDUST DRYER OUTLET B

LOCATION	DATE	RUN ID	START TIME	END TIME	MONITOR	ANALYZER UNITS	RUN AVG	AVERAGE CALIBRATION ZERO	AVERAGE CALIBRATION HIGH	GAS VALUE	ADJUSTE DATA
OUTLET B	11/05/92	RUN 9	13:25	15:50	O2	%dv	17.28	0.02	14.18	14.20	17.31
					CO2	%dv	3.22	0.06	13.84	13.82	3.17
					CO	ppmdv	337.79	-0.26	865.00	859.5	335.80
					NOx	ppmdv	27.1	1.79	215.20	211.9	25.14
OUTLET B	11/05/92	RUN 10	16:44	17:55	O2	%dv	17.42	0.02	14.22	14.20	17.40
					CO2	%dv	3.15	0.06	13.83	13.82	3.10
					CO	ppmdv	340.42	-0.23	859.50	859.5	340.56
					NOx	ppmdv	21.79	-0.09	208.45	211.9	22.23
OUTLET B	11/06/92	RUN 11	11:37	15:19	O2	%dv	17.15	0.04	14.18	14.20	17.19
					CO2	%dv	3.35	0.06	13.85	13.82	3.30
					CO	ppmdv	314.14	-0.19	860.50	859.5	313.89
					NOx	ppmdv	26.54	1.51	215.10	211.9	24.84
					THC	ppmwv	12.01	2.32	851.50	850.2	9.70
OUTLET B	11/06/92	RUN 12	17:32	21:02	O2	%dv	17.59	0.03	14.32	14.20	17.45
					CO2	%dv	3.25	0.06	13.89	13.82	3.19
					CO	ppmdv	340.77	-0.23	858.00	859.5	341.50
					NOx	ppmdv	21.59	-0.36	213.15	211.9	21.78
					THC	ppmwv	7.63	0.11	844.50	850.2	7.57
OUTLET B	11/07/92	RUN 13	09:02	13:12	O2	%dv	17.31	0.03	14.21	14.20	17.31
					CO2	%dv	3.25	0.05	13.82	13.82	3.21
					CO	ppmdv	335.8	-0.16	853.00	859.5	338.45
					NOx	ppmdv	20	-0.39	209.50	211.9	20.58
					THC	ppmwv	13.30	0.44	850.50	850.2	12.87

D.0 CALCULATIONS

D.1 EPA METHODS 1-4 CALCULATIONS

EPA METHODS 1-4 CALCULATIONS

1. Metered Gas Sample Volume at Standard Conditions

$$V_{m(std)} = V_m \times \gamma \times \frac{528}{29.92} \times \left[\frac{P_B + \frac{\Delta H}{13.6}}{T_m + 460} \right]$$

2. Gas Volume of Water Vapor Collected in Impinger Liquid

$$V_{WC(std)} = (v_f - v_i) \times 0.04707$$

3. Gas Volume of Water Vapor Collected in Silica Gel

$$V_{wsg(std)} = (w_f - w_i) \times 0.04715$$

4. Moisture Volume Fraction in Flue Gas

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

5. Moisture Volume Percentage in Flue Gas

$$\%H_2O = B_{ws} \times 100$$

6. Absolute Pressure of Flue Gas

$$P_s = P_B + \frac{P_{static}}{13.6}$$

7. Nitrogen Content of Flue Gas

$$\%N_2 = 100 - (\%CO_2 + \%O_2 + \%CO)$$

8. Dry Molecular Weight of Flue Gas

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

9. Wet Molecular Weight of Flue Gas

$$M_s = M_d \times (1 - B_{ws}) + 18 \times B_{ws}$$

10. Fuel Factor Based on Flue Gas Composition

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

11. Excess Air of Flue Gas

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

12. Average Gas Velocity, ft/sec

$$v_s = 85.49 \times C_p \times (\Delta P)^{1/2}{}_{avg} \times \frac{(T_s + 460)^{1/2}}{(P_s \times M_s)^{1/2}}$$

13. Area of Round Duct or Stack

$$A_s = \frac{\pi \times D^2}{4 \times 144} \quad (\textit{round ducts})$$

14. Area of Rectangular Duct

$$A_s = \frac{L \times W}{144} \quad (\textit{rectangular ducts})$$

15. Actual Volumetric Flow Rate of Flue Gas

$$Q_a = v_s \times A_s \times 60$$

16. Flow Rate of Flue Gas at Standard Temperature and Pressure

$$Q_s = Q_a \times \left[\frac{P_s \times 528}{(T_s + 460) \times 29.92}\right]$$

17. Dry Flow Rate of Flue Gas at Std. Temperature and Pressure

$$Q_{sd} = Q_s \times (1 - B_{ws})$$

NOMENCLATURE FOR EPA METHODS 1-4

A_s	=	Stack area, ft^2
B_{ws}	=	Moisture volume fraction
C_p	=	Pitot tube coefficient (≈0.84)
D_s	=	Stack diameter, inches
ΔH	=	Average meter orifice pressure, in.W.C.
ΔP	=	Pitot tube differential pressure, in.W.C.
F_o	=	Combustion factor
γ	=	Meter calibration factor, gamma
L	=	Length of rectangular stack or duct, inches
M_D	=	Dry molecular weight, lb/lb-mole
M_s	=	Wet molecular weight, lb/lb-mole
P_B	=	Barometric pressure, in.Hg
P_s	=	Absolute stack pressure, in.Hg
P_{static}	=	Average static pressure, in.W.C.
Q_a	=	Actual gas flow rate, acfm
Q_s	=	Standard gas flow rate, scfm
Q_{sd}	=	Dry standard gas flow rate, dscfm
T_m	=	Average meter temperature, °F
T_s	=	Average stack temperature, °F
v_f	=	Final impinger volume, ml
v_i	=	Initial impinger volume, ml
V_m	=	Uncorrected metered gas volume, dcf
$V_{m(std)}$	=	Corrected gas volume, dscf
v_s	=	Average gas velocity, ft/sec
$V_{wc(std)}$	=	Gas volume of water caught in impingers, scf
$V_{wsg(std)}$	=	Gas volume of water caught in silica gel, scf
W	=	Width of rectangular stack or duct, inches
w_f	=	Final silica gel mass, grams
w_i	=	Initial silica gel mass, grams
$\%O_2$	=	Dry volumetric concentration of O_2, %dv
$\%CO_2$	=	Dry volumetric concentration of CO_2, %dv
%CO	=	Dry volumetric concentration of CO, %dv
$\%N_2$	=	Dry volumetric concentration of N_2, %dv
%EA	=	Percent excess air

D.2 PARTICULATE EMISSIONS CALCULATIONS

EPA METHOD 5 GRAVIMETRIC CALCULATIONS

1. PM Collected in Probe Wash - M_{pw}

$$M_{pw} = (W_{pw})_{final} - (W_{pw})_{tare}$$

2. Applicable Acetone Blank Correction - B_{apw}

$$B_{apw} = \left[(W_{ab})_{final} - (W_{ab})_{tare}\right] \times \frac{V_{pw}}{V_{ab}}$$

3. Maximum Allowable Acetone Blank - B_{amax}

$$B_{amax} = 0.7845 \times 0.00001 \times V_{pw}$$

4. Actual Probe Wash Blank Correction - B_{pw}

$$B_{pw} = MINIMUM\ [B_{apw},\ B_{amax}]$$

5. PM Collected on Filter - M_f

$$M_f = (W_f)_{final} - (W_f)_{tare}$$

6. Total PM Collected for Method 5 Calculations - M_5

$$M_5 = M_{pw} + M_f - B_{pw}$$

NOMENCLATURE

B_{amax}	=	Maximum allowable acetone blank correction, based on weight of acetone in probe wash, grams
B_{apw}	=	Acetone blank correction based on residue of blank, grams
B_{pw}	=	Acetone blank correction actually used, grams
M_5	=	Total mass of particulate in train corrected for acetone blank, grams
M_f	=	Mass gain of filter, grams
M_{pw}	=	Probe wash residue, grams
V_{ab}	=	Liquid volume of acetone blank, ml
V_{pw}	=	Liquid volume of probe wash, ml
$(W_{ab})_{final}$	=	Final weight of beaker containing acetone blank residue, grams
$(W_{ab})_{tare}$	=	Tare weight of beaker containing acetone blank residue, grams
$(W_f)_{final}$	=	Final weight of filter, grams
$(W_f)_{tare}$	=	Tare weight of filter, grams
$(W_{pw})_{final}$	=	Final weight of beaker containing probe wash residue, grams
$(W_{pw})_{tare}$	=	Tare weight of beaker containing probe wash residue, grams

METHOD 202 GRAVIMETRIC CALCULATIONS

1. Organic CPM - M_o

$$M_o = (W_o)_{final} - (W_o)_{tare}$$

2. Organic Blank Correction - B_o

$$B_o = \left[(W_{ob})_{final} - (W_{ob})_{tare}\right] \times \frac{V_o}{V_{ob}}$$

3. Inorganic CPM (Uncorrected for NH4 and Cl ions) - M_{iu}

$$M_{iu} = \left[(W_i)_{final} - (W_i)_{tare}\right] \times \frac{V_4}{V_4 - 5}$$

4. Inorganic Blank Correction - B_i

$$B_i = \left[(W_{ib})_{final} - (W_{ib})_{tare}\right] \times \frac{V_i}{V_{ib}}$$

5. Inorganic Correction for Ammonia addition - m_a

$$m_a = \frac{0.020502 \times C_{SO_4} \times V_4}{10^6}$$

6. Inorganic Correction for NH_4Cl in Sample - m_{cl}

$$m_{cl} = \frac{1.509 \times C_{Cl} \times 100}{10^6}$$

7. Inorganic CPM (Corrected for NH4 and Cl ions) - M_{ic}

$$M_{ic} = M_{iu} - m_a - m_{Cl}$$

8. Total CPM - M_{CPM}

$$M_{CPM} = M_o + M_{ic} - B_o - B_i$$

METHOD 202 GRAVIMETRIC NOMENCLATURE

B_i	=	Inorganic blank correction, grams
B_o	=	Organic blank correction, grams
C_{Cl}	=	Concentration of chloride in reconstituted inorganic fraction, mg/liter
C_{SO4}	=	Concentration of sulfate in inorganic fraction, mg/liter
m_a	=	Inorganic correction for ammonia addition step, grams
m_{Cl}	=	Inorganic correction for ammonium chloride in reconstituted sample, grams
M_{CPM}	=	Total Mass of CPM in sample, grams
M_{ic}	=	Inorganic CPM corrected for NH4 and Cl ions, grams
M_{iu}	=	Inorganic CPM uncorrected for NH4 and Cl ions, grams
M_o	=	Mass of organic CPM in sample, grams
V_4	=	Liquid volume of container 4 (Impingers + water rinses), ml
V_i	=	Liquid volume of water used in sample collection and rinses, ml
V_{ib}	=	Liquid volume of water used in blank, ml
V_o	=	Liquid volume of Methylene Chloride used in sample recovery and extractions, ml
V_{ob}	=	Liquid volume of Methylene Chloride used in blank, ml
$(W_{ib})_{final}$	=	Final weight of beaker containing H2O blank residue, grams
$(W_{ib})_{tare}$	=	Tare weight of beaker containing H2O blank residue, grams
$(W_i)_{final}$	=	Final weight of beaker containing inorganic sample residue, grams
$(W_i)_{tare}$	=	Tare weight of beaker containing inorganic sample residue, grams
$(W_{ob})_{final}$	=	Final weight of beaker containing MeCl2 blank residue, grams
$(W_{ob})_{tare}$	=	Tare weight of beaker containing MeCl2 blank residue, grams
$(W_o)_{final}$	=	Final weight of beaker containing organic sample residue, grams
$(W_o)_{tare}$	=	Tare weight of beaker containing organic sample residue, grams

PARTICULATE EMISSIONS CALCULATIONS

1. Particulate Concentration - M_p

$$C_{sd} = \frac{\Sigma(M_i)}{V_{m(std)}} \times \frac{7000}{453.593}$$

2. Particulate Concentration Corrected to 7% O_2 - C_{sd}@7%O_2

$$C_{sd@7\%} = C_{sd} \times \frac{20.9 - 7.0}{20.9 - \%O_2}$$

3. Particulate Concentration Corrected to 12% CO_2 - C_{sd}@12%CO_2

$$C_{sd@12\%} = C_{sd} \times \frac{12}{\%CO_2}$$

4. Particulate Concentration Corrected to 50% Excess Air - C_{sd}@50%EA

$$C_{sd@50\%EA} = C_{sd} \times \frac{100 + \%EA}{150}$$

5. Particulate Mass Rate - M_p

$$M_p = \frac{\Sigma(M_i)}{V_{m(std)}} \times Q_{sd} \times \frac{60}{453.593}$$

6. Isokinetic Variation - %ISO

$$\%Iso = \frac{0.09450 \times (T_s + 460) \times V_{m(std)}}{P_s \times v_s \times A_n \times time \times (1 - B_{ws})}$$

NOMENCLATURE

A_n	=	Nozzle area, ft^2
C_{sd}	=	Particulate concentration, grains/dscf
D_n	=	Nozzle diameter, inches
ΣM_i	=	Summation of PM collected in sample train, grams
M_p	=	Mass rate of particulate emissions, lb/hr
P_s	=	Absolute stack pressure, in.Hg
Q_{sd}	=	Dry standard gas flow rate, dscfm
time	=	Net sampling time, minutes
T_s	=	Average stack temperature, °F
$V_{m(std)}$	=	Corrected gas volume, dscf
v_s	=	Average gas velocity, ft/sec
$\%O_2$	=	Dry volumetric concentration of O_2, %dv
$\%CO_2$	=	Dry volumetric concentration of CO_2, %dv
%EA	=	Percent excess air
%Iso	=	Percent isokinetics

CALCULATIONS FOR EPA METHOD 201A

Determination of cyclone flow rate and orifice pressure head:

Molecular weight of stack gas, dry basis, M_d:

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

where M_d = lb/lbmol.

Molecular weight of stack gas, wet basis, M_w:

$$M_w = M_d(1 - B_{ws}) + 18(B_{ws})$$

where B_{ws} = moisture fraction of the stack gas;
M_w = lb/lbmol.

Absolute stack pressure, P_s:

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

where P_{bar} = barometric pressure ("Hg);
P_g = stack static pressure ("H_2O);
P_s = "Hg.

Viscosity of stack gas, μ_s:

$$\mu_s = 152.418 + 0.2552 t_s + 3.2355 x 10^{-5} t_s^2 + 0.53147(\%O_2) - 74.143 B_{ws}$$

where t_s = average stack temperature (°F);
μ_s = micropoise.

Cyclone flow rate, Q_s:

$$Q_s = 0.002837 \mu_s \left[\frac{(t_s + 460)}{M_w P_s}\right]^{0.2949}$$

where Q_s = ft³/min.

Orifice pressure head, ΔH, needed for cyclone flow rate:

$$\Delta H = \left[\frac{Q_s(1-B_{ws})P_s}{t_s+460}\right]^2 \frac{(t_m+460)M_d 1.083\,\Delta H_@}{P_{bar}}$$

where t_m = meter temperature (°F);
ΔH = "H_2O.

Equations for Nozzle Selection:

Nozzle velocity, v_n:

$$v_n = \frac{3.056\,Q_s}{D_n^2}$$

where D_n = nozzle diameter (in.);
v_n = ft/sec.

Minimum and maximum velocities, v_{min} and v_{max}, in ft/sec:

Calculate R_{min}:

$$R_{min} = 0.2457 + \sqrt{0.3072 - \frac{0.2603\sqrt{Q_s}\,\mu_s}{v_n^{1.5}}}$$

If R_{min} is less than 0.5 or imaginary then:

$$v_{min} = 0.5\,v_n$$

Otherwise use:

$$v_{min} = v_n R_{min}$$

CALCULATIONS FOR EPA METHOD 201A (continued)

Calculate R_{max}:

$$R_{max} = 0.4457 + \sqrt{0.5690 + \frac{0.2603\sqrt{Q_s}\,\mu_s}{v_n^{1.5}}}$$

If R_{max} is greater than 1.5 then:

$$v_{max} = 1.5 v_n$$

Otherwise use:

$$v_{max} = v_n R_{max}$$

Minimum and maximum velocity head values, Δp_{min} and Δp_{max}:

$$\Delta p_{min} = 1.3686x10^{-4} \frac{P_s M_w v_{min}^2}{(t_s + 460)\, C_p^2}$$

$$\Delta p_{max} = 1.3686x10^{-4} \frac{P_s M_w v_{max}^2}{(t_s + 460)\, C_p^2}$$

where C_p = pitot coefficient
Δp_{min} and Δp_{max} = "H_2O.

Dwell time:

Dwell time at first traverse point, t_1:

$$t_1 = \frac{\theta}{N}\sqrt{\frac{\Delta p_1'}{\Delta p_{avg}'}}$$

where θ = total run time (min);
N = total number of traverse points;
$\Delta p'_1$ = velocity head at the first traverse point (from a previous traverse) ("H_2O);
$\Delta p'_{avg}$ = the square of the average square root of the Δp's (from a previous traverse) ("H_2O);
t_1 = min.

Dwell time at subsequent traverse points, t_n:

$$t_n = \frac{t_1}{\sqrt{\Delta p_1}} \sqrt{\Delta p_n} \quad , n = 2, 3, \ldots N$$

Δp_n = measured velocity head at point n ("H_2O);
Δp_1 = measured velocity heat at point 1 ("H_2O);
t_n = min.

Determination of D_{50}:

Stack gas viscosity, μ_{cyc}:

$$\mu_{cyc} = C_1 + C_2 T_s + C_3 T_s^2 + C_4 f_{O_2} - C_5 B_{ws}$$

where C_1 = 51.05 micropoise;
C_2 = 0.207 micropoise/R;
C_3 = 3.24×10^{-5} micropoise/R_2;
C_4 = 53.147 micropoise/fraction O_2;
C_5 = 74.143 micropoise/fraction H_2O;
T_s = average absolute stack gas temperature (R);
f_{O2} = stack gas O_2 volume fraction, dry basis;
B_{ws} = stack gas moisture volume fraction;
μ_{cyc} = micropoise.

Total cyclone flow rate at standard conditions, $Q_{s(std)}$:

$$Q_{s(std)} = \frac{V_{m(std)}}{\theta}$$

where $V_{m(std)}$ = volume of gas measured by DGM corrected to standard conditions (dscf);
θ = total sampling time (min);
$Q_{s(std)}$ = dscf/min.

PM_{10} flow rate, at actual cyclone conditions, Q_s:

$$Q_s = \frac{T_s}{K_1 P_s}\left[Q_{s(std)} + \frac{V_{w(std)}}{\theta}\right]$$

CALCULATIONS FOR EPA METHOD 201A (continued)

where K_1 = 17.64 R/"Hg;
$V_{w(std)}$ = volume of water vapor in gas sample at standard conditions (scf);
Q_s = ft_3/min.

Diameter of particles having a 50% probability of penetration, D_{50}:

$$D_{50} = \beta_1 \left[\frac{T_s}{M_w P_s}\right]^{0.2091} \left[\frac{\mu_{cyc}}{Q_s}\right]^{0.7091}$$

where β_1 = 0.15625
D_{50} = µm.

D.3 MULTIPLE METALS CALCULATIONS

METALS CALCULATIONS

LABORATORY CALCULATIONS:

1. Percent recovery - (%R)

$$\%R = \frac{SpikeResult - SampleResult}{SpikeAdded} * 100$$

2. Total mass of each metal in the front half (except Hg)

$$M_{fh} = C_{a1} * F_d * V_{sol,1}$$

where M_{fh} = total mass of each metal (except Hg) collected in the front half of the sampling train.

C_{a1} = concentration of metal in sample Fraction 1A as read from the standard curve (ug/ml).

F_d = dilution factor (F_d = the inverse of the fractional portion of the concentrated sample in the solution actually used in the instrument to produce the reading C_{a1}).

$V_{soln,1}$ = total volume of digested sample solution (Fraction 1), ml.

3. Total mass of each metal in the back half (except Hg)

$$M_{bh} = C_{a2} * F_a * V_a$$

where M_{bh} = total mass of each metal (except Hg) collected in the back half of the sampling train (Fraction 2), ug.

C_{a2} = Concentration of metal in sample concentrated Fraction 2A, as read from the standard curve (ug/ml).

F_a = aliquot factor, volume of Fraction 2 divided by volume of aliquot Fraction 2A.

V_a = total volume of digested sample solution (concentrated Fraction 2A), ml.

4. Total mass of mercury in front half

$$Hg_{fh} = \frac{Q_{fh}}{V_{f1B}} * V_{sol,1}$$

where Hg_{fh} = total mass of mercury collected in the front half of the sampling train (Fraction 1), ug.

Q_{fh} = quantity of mercury in analyzed sample, ug

V_{f1B} = volume of fraction 1B analyzed, ml.

$V_{soln,1}$ = total volume of digested sample solution (Fraction 1), ml.

5. Total mass of mercury in back half Fraction 2

$$Hg_{bh2} = \frac{Q_{bh2}}{V_{f2B}} * V_{sol,2}$$

where Hg_{bh2}	=	total mass of mercury collected in Fraction 2, ug.
Q_{bh2}	=	quantity of mercury in analyzed sample, ug
V_{f2B}	=	volume of fraction 2B analyzed, ml.
$V_{soln,2}$	=	total volume of Fraction 2, ml.

6. Back half mercury calculation for Fractions 3A, 3B, and 3C

$$Hg_{bh3(A,B,C)} = \frac{Q_{bh3(A,B,C)}}{V_{f3(A,B,C)}} * V_{soln,3(A,B,C)}$$

where $Hg_{bh3(A,B,C)}$	=	total mass of mercury collected separately in Fraction 3a,3b, or 3c, ug.
$Q_{bh3(A,B,C)}$	=	quantity of mercury in separately analyzed samples, ug.
$V_{f3(A,B,C)}$	=	volume of Fraction 3A,3B, or 3C analyzed, ml.
$V_{soln,3(A,B,C)}$	=	total volume of Fraction 3A, 3B, or 3C, ml.

__METALS EMISSIONS CALCULATIONS__:

1. Total sample weight - W_i (micrograms)

$$W_i = [m_{front} - mb_{front}] + [m_{back} - mb_{back}]$$

where m_{front}	=	total sample weight collected in front half of sample train (micrograms)
m_{back}	=	total sample weight collected in back half of sample train (micrograms)
mb_{front}	=	front half blank correction (micrograms)
mb_{back}	=	back half blank correction (micrograms)

2. Gas Concentration - Cm_i (micrograms/Nm^3)

$$Cm_i = \frac{W_i \times 35.3145}{Vmstd} \times \frac{528}{492}$$

where W_i	=	total sample weight of (i) (micrograms)
Vmstd	=	the volume of gas sampled at STP (dscf)
35.3145	=	cubic feet per cubic meter
528/492	=	temperature conversion from 68°F to 32°F

Note that Normal m^3 is defined at 32°F and 1 Atm.

3. Concentration corrected to 7% O_2, C_i7 is:

$$C_{i_7} = C_i \times \frac{13.9}{20.9 - \%O_2}$$

where $\%O_2$ = oxygen content in stack gas, dry %

4. The mass flow rate of substance (i), G_i (lb/hr), is:

$$G_i = \frac{W_i \times Q_{sd} \times 60}{V_{mstd} \times 10^6 \times 453.593}$$

where W_i	=	total sample weight of (i) (micrograms)
Vmstd	=	the volume of gas sampled at STP (dscf)
Q_{sd}	=	stack gas flow rate (dscfm)
60	=	min/hr
10^6	=	micrograms per gram
453.593	=	grams/lb

5. The mass flow rate of substance (i), Ga_i (tons/year), is

$$Ga_i = \frac{G_i \times 365 \times 24 \times C_f}{2000}$$

where 24	=	24 hours per day
365	=	365 days per year
2000	=	2000 pounds per ton
C_f	=	plant capacity factor

D.4 GASEOUS EMISSIONS CALCULATIONS

GENERAL EQUATIONS AND CONVERSIONS

GAS TEMPERATURE AND PRESSURE CONVENTIONS

Standard Temperature	=	68°F (528 R, 20°C)
Normal Temperature	=	32°F (492 R, 0°C)
Standard Pressure	=	29.92 inches Hg (101.325 kPa)

ENGLISH ENGINEERING TO METRIC (SI) CONVERSIONS

$$\frac{m}{\text{sec}} = \frac{ft}{\text{sec}} \times \frac{1}{3.2808}$$

$$\frac{m^3}{hr} = cfm \times \frac{60}{35.3145}$$

TEMPERATURE CORRECTIONS

$$t(^\circ F) = [t(^\circ C) \times 1.8] + 32$$

$$T(^\circ R) = t(^\circ F) + 460$$

$$Volume \text{ @ } t_2(^\circ F) = (Volume \text{ @ } t_1(^\circ F)) \times \frac{t_2 + 460}{t_1 + 460}$$

CONCENTRATION CORRECTIONS

$$Conc.\, c_2 \text{@} t_2(^\circ F) = (Conc. \text{@} t_1(^\circ F))\, x \frac{t_1+460}{t_2+460}$$

GASEOUS EMISSIONS MONITORING CALCULATIONS

1. Conversion of wet basis to dry basis concentration (THC only)

$$C_d = \frac{C_w}{1 - \frac{\%H_2O}{100}}$$

where C_d = Dry basis total hydrocarbon concentration, ppmdv
C_w = Wet basis total hydrocarbon concentration, ppmwv
$\%H_2O$ = Moisture content of stack gas, %

2. Conversion of total hydrocarbon concentration as propane to total hydrocarbon concentration as carbon:

$$C_c = K \times C_d$$

where C_c = Hydrocarbon concentration as carbon, ppmdv
C_d = Hydrocarbon concentration as propane, ppmdv
K = Carbon equivalent correction factor (3 for propane)

3. CONCENTRATION AT 7% O_2

$$C_{7i} = C_i \times \frac{20.9 - 7.0}{20.9 - \%O_2}$$

where C_{7i} = Concentration of gas i corrected to 7% O_2
$\%O_2$ = Actual gas concentration of O_2, % dry volume

GASEOUS EMISSIONS MONITORING CALCULATIONS (Continued)

4. Hourly emissions rate - M_i

$$M_i = \frac{C_i \times Q_{sd} \times 60 \times MW_i}{10^6 \times 0.84948 \times 453.593}$$

where	i	=	NO_x, CO, or total hydrocarbons (as carbon)
	M_i	=	Mass emissions rate of i, lb/hr
	C_i	=	Concentration of i in stack gas, ppmdv
	MW_i	=	Molecular weight of i
		=	28.01 for CO
		=	46.01 for NO_2
		=	12.00 for Carbon
	Q_{sd}	=	Average flue gas flow rate, dscfm
	60	=	Minutes per hour
	0.84948	=	Molar volume of ideal gas, ft^3/mole
	453.593	=	grams per pound
	10^6	=	parts per million

HYDROGEN FLOURIDE AND TOTAL FLUORIDE CALCULATIONS

1. Concentration of Total F and HF, ppmdv

$$C_i = \frac{m_o \times v_o}{Vm_{std} \times 1000} \times \frac{0.84948}{1000 \times 18.998} \times 10^6$$

where
- m_o = concentration of fluoride reported, mg/l
- v_o = sample volume, liters
- 0.84948 = molar volume of ideal gas, ft^3/mole
- V_{mstd} = gas sample volume at standard conditions, dscf
- 1000 = milligrams per gram or milliliters per liter
- 18.998 = molecular weight of fluoride
- 10^6 = parts per million

2. Mass emissions rate, lb/hr

$$M_i = \frac{C_i \times Q_{sd} \times 60 \times MW_i}{10^6 \times 0.84948 \times 453.593}$$

where
- i = Total F or HF
- M_i = Mass emissions rate of i, lb/hr
- C_i = Concentration of i in stack gas, ppmdv
- MW_i = Molecular weight of i,
  20.01 for HF
  18.998 for F
- Q_{sd} = Average flue gas flow rate, dscfm
- 60 = Minutes per hour
- 0.84948 = Molar volume of ideal gas, ft^3/mole
- 453.593 = grams per pound
- 10^6 = parts per million

ETHANE AND METHANE EMISSIONS CALCULATIONS

1. Gas Concentration - C_i (ppm):

$$C_i = c_i \times \frac{1000 \times 24.055 \times 10^6}{MW_i \times 10^6}$$

where	c_i	= reported concentration of sample (i), ug/ml
	MW_i	= molecular weight of substance (i), 16.04 for methane 30.06 for ethane
	1000	= milliliters per liter
	24.055	= standard liters per gram mole of ideal gas.
	10^6	= micrograms per gram
	10^6	= parts per million

2. Gas Concentration - Cm_i (milligrams/cu.m.)

$$Cm_i = c_i \times \frac{1000 \times 1000}{1000}$$

where	1000	= micrograms per milligram
	1000	= milliliters per liter
	1000	= liters per cubic meter

3. Hourly emissions rate - M_i

$$M_i = \frac{C_i \times Q_{sd} \times 60 \times MW_i}{10^6 \times 0.84948 \times 453.593}$$

where	M_i	=	Mass emissions rate of i, lb/hr
	C_i	=	Concentration of i in stack gas, ppmdv
	MW_i	=	Molecular weight of i
	Q_{sd}	=	Average flue gas flow rate, dscfm
	60	=	Minutes per hour
	0.84948	=	Molar volume of ideal gas, ft^3/mole
	453.593	=	grams per pound
	10^6	=	parts per million

D.5 PARTICLE SIZING CALCULATIONS

Particulate Sizing Theory and Equations Used in Calculations

The plates of each stage in the impactor have calibrated orifices. The area of the orifices on each plate are progressively smaller from stage to stage causing the jet velocities to increase over each stage. The theory on particle behavior is to calculate the particle size required to produce the inertia to overcome the aerodynamic drag of the air stream. If the particle is large enough, the inertia will be great enough to deposit the particle on the given stage. Thus, the larger particles will deposit towards the beginning of the impactor. Equations 1 and 2 model this theory.

Eq. 1 $$D_{50} = \frac{18 \times U \times DJ_{(x)}}{rho \times VJ_{(x)} \times C} \times SI_{(x)}$$

Eq. 2 $$C = 1 + \frac{2L}{D_{50}} \quad 1.23 + 0.41\exp(-.44D_{50}/L)$$

C = Cunningham Factor

D_{50} is the particle diameter at which the stage achieves 50% collection efficiency. Particle distribution is done on a cummulative weight basis.

Eq. 3 $$\text{wt.\% less then } D_{50i} = \frac{m_i}{m_{total}} \times 100\%$$

The cut-off diameter is reported by Physical Diameter and Aerodynamic Diameter. The Physical Diameter assumes a spherical particle and the true density of the particles are estimated. The Aerodynamic Diameter assumes a spherical particle and a unit density.

L is the mean free path. The mean free path is the distance the particle travels before it collides and the path is interupted.

Eq. 4 $$L_{(x)} = \frac{.337 \times U}{P5_i} \quad \frac{T_{imp}}{mw}$$

The viscosity is calculated as a function of gas temperature. The individual viscosity components are calculated using formulas derived at Southern Research Institute.

$$\text{Eq. 5} \qquad U = \sum_{i=1} \{U_i \times 10E\text{-}6/[1 + \sum_{\substack{j=1 \\ j\neq i}} (F_i \times O_{ij})/F_i]\}$$

$$\text{Eq. 6-9} \qquad U_{co2} = 138.494 + T(.449 + T(-.286E^{-3} + T \times .972E^{-7}))$$

$$U_{n2} = 168.086 + T(.417 + T(-.139E^{-3}))$$

$$U_{02} = 190.187 + T(.558 + T(-.336E^{-3} + T \times .139E^{-6}))$$

$$U_{h20} = 87.8 \quad + T(.374 + T(-.283E^{-4}))$$

$$\text{Eq. 10} \qquad O_{ij} = \frac{\{1 + U_i/U_j \quad mw_j/mw_i\}^2}{4 \times \quad (1 + mw_i/mw_j)/2}$$

Equations 11-14 determine the jet velocity and pressure drop for each stage. Only the total pressure drop is known, therefore the pressure at each stage is estimated. This is done by relating the square of the velocity to the pressure drop.

$$\text{Eq. 11} \qquad VJ^7 = \sum_{i=1} (471.95 \times Q_I/JA_i/JN_i)^2$$

$$\text{Eq. 12} \qquad DP_i = \frac{(VJ^7{}_i)^2 \times DP}{VJ^7}$$

$$\text{Eq. 13} \qquad Ps_i = (P_b + P/13.6) - \sum_{j=1}^{i} DP_j$$

$$\text{Eq. 14} \qquad VJ_{(x)} = VJ^7{}_i \times (P_b + P/13.6)/Ps_i$$

Calculation format and equations were taken from Southern Research Institute papers and the impactor operation manuals.

Impactor Nomenclature

C = Cunningham factor; factor used in D_{50} calculations.
D_{50} = 50% cut-point diameter for given stage (microns).
DJ(x) = Diameter of Jets in impactor stage (cm).
DPi = Intermediate value in pressure drop calculations.
Fi = Weight fraction of individual components of gas stream.
JAi = Area of each jet in impactor stage (cm. sq.).
JNi - Number of jets per stage.
L = Mean free path (cm).
mi = Mass collected at each individual stage (g).
mtotal = Total mass collected on all filters (g).
mw = Molecular weight of gas stream.
Pb = Barometric Pressure (inches Hg).
Psi = Pressure at each impactor stage (inches Hg).
QI = Impactor flow rate (ACFM).
rho = Particle density (gr/cc).
SI(x) = Impactor calibration factor.
T = Gas temperature (C).
Timp = Impactor temperature (K).
U = Viscosity of gas stream (poise).
Ui = Viscosity of gas components (poise).
VJ' = Intermediate value for jet velocity calculations.
VJ(x) = Jet velocity at each stage (cm/sec).
Oij = Viscosity Intermediate Value.

D.6 CEM CALCULATIONS

CONTINUOUS EMISSIONS MONITORING CALCULATIONS

1. Calibration Drift is determined by:

$$D_c = \frac{F_c - I_c}{V_s} \times 100$$

where
D_c = Calibration drift
F_c = Post-test calibration value
I_c = Pre-test calibration value
V_s = Span value of monitor:
25 for O_2
20 for CO_2
1000 for CO
250 for NO_x

2. The Average Calibration Value is determined by:

$$C_a = \frac{(I_c + F_c)}{2}$$

where C_a = average calibration value

3. The Adjusted Data Value is determined by:

$$A = \frac{(V_a - C_0) \times G_v}{(C_H - C_0)}$$

where
V_a = the average run value of the analyte
C_o = the average zero calibration value
G_v = the value of the calibration gas:
14.20 for O_2
13.82 for CO_2
859.50 for CO
211.90 for NO_x
C_H = the average high calibration value

E.0 SAMPLING LOG AND CHAIN OF CUSTODY RECORDS

E.1 SAMPLE LOG AND CHAIN OF CUSTODY RECORDS FOR MULTIPLE METALS AND PARTICULATE MATTER SAMPLING

ETS 246

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November 25, 1992

Rob Ledger
ETS Analytical Services
1401 Municipal Rd.
Roanoke, VA

RE: EPA Brick Plant Project
ETS, Inc. Contract # 92-655-6

Dear Rob,

This letter accompanies twelve multiple metals trains to be analyzed for antimony, arsenic, beryllium, cadmium, chromium, lead, manganese, mercury, nickel, phosphorus and selenium. The lowest practical detection limit is desired. Any questions regarding methods of analysis and/or detection limits should be directed to Mike Visneski or Tony Underwood. A 21 calendar day turnaround time is requested.

Sincerely,

Nancy K. Lewis

133268- 133327

679

E T S , I N C .

F I E L D S A M P L E L O G

Contract No. 92-655
Job I.D.
Test Method Multiple Metals

Print Date 11/11/92 Time 15:18:52
Page 1

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00500	F1	Q02/07/92-0037	IN -MM -R1	Quartz Filter				11/11/92	
~~00501~~	~~F2~~		~~IN -MM -R1~~	~~FH Acetone Rinse~~				~~11/11/92~~	
00502	F3		IN -MM -R1	FH Nitric Rinse				11/11/92	
00503	F4A		IN -MM -R1	Imp. 1 + Rinses				11/11/92	
00504	F4B		IN -MM -R1	Imp. 2+3+Rinses				11/11/92	
00505	F5A		IN -MM -R1	Imp. 4 + Rinses				11/11/92	
00506	F5B		IN -MM -R1	IMP 5,6 + RINSE				11/11/92	
00507	F5C		IN -MM -R1	Water+HCl Rinse 5+6				11/11/92	
~~00508~~	~~F6~~		~~IN -MM -R1~~	~~Imp. 7 Silica Gel~~				~~11/11/92~~	
~~00509~~	~~F7~~		~~IN -MM -R1~~	~~Tedlar Bag~~				~~11/11/92~~	
00510	F1	Q08/28/92-0013	IN -MM -R2	Quartz Filter				11/11/92	
~~00511~~	~~F2~~		~~IN -MM -R2~~	~~FH Acetone Rinse~~				~~11/11/92~~	
00512	F3		IN -MM -R2	FH Nitric Rinse				11/11/92	
00513	F4A		IN -MM -R2	Imp. 1 + Rinses				11/11/92	
00514	F4B		IN -MM -R2	Imp. 2+3+Rinses				11/11/92	
00515	F5A		IN -MM -R2	Imp. 4 + Rinses				11/11/92	
00516	F5B		IN -MM -R2	IMP 5,6 + RINSE				11/11/92	
00517	F5C		IN -MM -R2	Water+HCl Rinse 5+6				11/11/92	
~~00518~~	~~F6~~		~~IN -MM -R2~~	~~Imp. 7 Silica Gel~~				~~11/11/92~~	
~~00519~~	~~F7~~		~~IN -MM -R2~~	~~Tedlar Bag~~				~~11/11/92~~	
00520	F1	Q02/07/92-0033	IN -MM -R3	Quartz Filter				11/11/92	
~~00521~~	~~F2~~		~~IN -MM -R3~~	~~FH Acetone Rinse~~				~~11/11/92~~	
00522	F3		IN -MM -R3	FH Nitric Rinse				11/11/92	
00523	F4A		IN -MM -R3	Imp. 1 + Rinses				11/11/92	
00524	F4B		IN -MM -R3	Imp. 2+3+Rinses				11/11/92	
00525	F5A		IN -MM -R3	Imp. 4 + Rinses				11/11/92	
00526	F5B		IN -MM -R3	IMP 5,6 + RINSE				11/11/92	

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E T S ,   I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method Multiple Metals

Print Date 11/11/92
Page 2

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00527	F5C		IN -MM -R3	Water+HCl Rinse 5+6				11/11/92	
~~00528~~	~~F6~~		~~IN -MM -R3~~	~~Imp. 7 Silica Gel~~				~~11/11/92~~	
~~00529~~	~~F7~~		~~IN -MM -R3~~	~~Tedlar Bag~~				~~11/11/92~~	
00530	F1	Q02/07/92-0036	OA -MM -R1	Quartz Filter				11/11/92	
~~00531~~	~~F2~~		~~OA -MM -R1~~	~~FH Acetone Rinse~~				~~11/11/92~~	
00532	F3		OA -MM -R1	FH Nitric Rinse				11/11/92	
00533	F4A		OA -MM -R1	Imp. 1 + Rinses				11/11/92	
00534	F4B		OA -MM -R1	Imp. 2+3+Rinses				11/11/92	
00535	F5A		OA -MM -R1	Imp. 4 + Rinses				11/11/92	
00536	F5B		OA -MM -R1	IMP 5,6 + RINSE				11/11/92	
00537	F5C		OA -MM -R1	Water+HCl Rinse 5+6				11/11/92	
~~00538~~	~~F6~~		~~OA -MM -R1~~	~~Imp. 7 Silica Gel~~				~~11/11/92~~	
~~00539~~	~~F7~~		~~OA -MM -R1~~	~~Tedlar Bag~~				~~11/11/92~~	
00540	F1	Q02/07/92-0038	OA -MM -R2	Quartz Filter				11/11/92	
~~00541~~	~~F2~~		~~OA -MM -R2~~	~~FH Acetone Rinse~~				~~11/11/92~~	
00542	F3		OA -MM -R2	FH Nitric Rinse				11/11/92	
00543	F4A		OA -MM -R2	Imp. 1 + Rinses				11/11/92	
00544	F4B		OA -MM -R2	Imp. 2+3+Rinses				11/11/92	
00545	F5A		OA -MM -R2	Imp. 4 + Rinses				11/11/92	
00546	F5B		OA -MM -R2	IMP 5,6 + RINSE				11/11/92	
00547	F5C		OA -MM -R2	Water+HCl Rinse 5+6				11/11/92	
~~00548~~	~~F6~~		~~OA -MM -R2~~	~~Imp. 7 Silica Gel~~				~~11/11/92~~	
~~00549~~	~~F7~~		~~OA -MM -R2~~	~~Tedlar Bag~~				~~11/11/92~~	
00550	F1	Q02/07/92-0039	OA -MM -R3	Quartz Filter				11/11/92	
~~00551~~	~~F2~~		~~OA -MM -R3~~	~~FH Acetone Rinse~~				~~11/11/92~~	
00552	F3		OA -MM -R3	FH Nitric Rinse				11/11/92	
00553	F4A		OA -MM -R3	Imp. 1 + Rinses				11/11/92	

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ETS, INC.

FIELD SAMPLE LOG

Contract No. 92-655
Job I.D.
Test Method Multiple Metals

Print Date 11/11/92
Page 3

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00554	F4B		OA -MM -R3	Imp. 2+3+Rinses				11/11/92	
00555	F5A		OA -MM -R3	Imp. 4 + Rinses				11/11/92	
00556	F5B		OA -MM -R3	IMP 5,6 + RINSE				11/11/92	
00557	F5C		OA -MM -R3	Water+HCl Rinse 5+6				11/11/92	
~~00558~~	~~F6~~		~~OA -MM -R3~~	~~Imp. 7 Silica Gel~~				~~11/11/92~~	
~~00559~~	~~F7~~		~~OA -MM -R3~~	~~Tedlar Bag~~				~~11/11/92~~	
00560	F1	Q02/07/92-0035	OB -MM -R1	Quartz Filter				11/11/92	
~~00561~~	~~F2~~		~~OB -MM -R1~~	~~FH Acetone Rinse~~				~~11/11/92~~	
00562	F3		OB -MM -R1	FH Nitric Rinse				11/11/92	
00563	F4A		OB -MM -R1	Imp. 1 + Rinses				11/11/92	
00564	F4B		OB -MM -R1	Imp. 2+3+Rinses				11/11/92	
00565	F5A		OB -MM -R1	Imp. 4 + Rinses				11/11/92	
00566	F5B		OB -MM -R1	IMP 5,6 + RINSE				11/11/92	
00567	F5C		OB -MM -R1	Water+HCl Rinse 5+6				11/11/92	
~~00568~~	~~F6~~		~~OB -MM -R1~~	~~Imp. 7 Silica Gel~~				~~11/11/92~~	
~~00569~~	~~F7~~		~~OB -MM -R1~~	~~Tedlar Bag~~				~~11/11/92~~	
00570	F1	Q08/28/92-0012	OB -MM -R2	Quartz Filter				11/11/92	
~~00571~~	~~F2~~		~~OB -MM -R2~~	~~FH Acetone Rinse~~				~~11/11/92~~	
00572	F3		OB -MM -R2	FH Nitric Rinse				11/11/92	
00573	F4A		OB -MM -R2	Imp. 1 + Rinses				11/11/92	
00574	F4B		OB -MM -R2	Imp. 2+3+Rinses				11/11/92	
00575	F5A		OB -MM -R2	Imp. 4 + Rinses				11/11/92	
00576	F5B		OB -MM -R2	IMP 5,6 + RINSE				11/11/92	
00577	F5C		OB -MM -R2	Water+HCl Rinse 5+6				11/11/92	
~~00578~~	~~F6~~		~~OB -MM -R2~~	~~Imp. 7 Silica Gel~~				~~11/11/92~~	
~~00579~~	~~F7~~		~~OB -MM -R2~~	~~Tedlar Bag~~				~~11/11/92~~	
00580	F1	Q08/28/92-0014	OB -MM -R3	Quartz Filter				11/11/92	

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E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method Multiple Metals

Print Date 11/11/92
Page 4

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
~~00581~~	~~F2~~		~~OB -MM -R3~~	~~FH Acetone Rinse~~				~~11/11/92~~	
00582	F3		OB -MM -R3	FH Nitric Rinse				11/11/92	
00583	F4A		OB -MM -R3	Imp. 1 + Rinses				11/11/92	
00584	F4B		OB -MM -R3	Imp. 2+3+Rinses				11/11/92	
00585	F5A		OB -MM -R3	Imp. 4 + Rinses				11/11/92	
00586	F5B		OB -MM -R3	IMP 5,6 + RINSE				11/11/92	
00587	F5C		OB -MM -R3	Water+HCl Rinse 5+6				11/11/92	
~~00588~~	~~F6~~		~~OB -MM -R3~~	~~Imp. 7 Silica Gel~~				~~11/11/92~~	
~~00589~~	~~F7~~		~~OB -MM -R3~~	~~Tedlar Bag~~				~~11/11/92~~	
00590	F1	Q08/28/92-0015	IN -MM -RO	Quartz Filter				11/11/92	
~~00591~~	~~F2~~		~~IN -MM -RO~~	~~FH Acetone Rinse~~				~~11/11/92~~	
00592	F3		IN -MM -RO	FH Nitric Rinse				11/11/92	
00593	F4A		IN -MM -RO	Imp. 1 + Rinses				11/11/92	
00594	F4B		IN -MM -RO	Imp. 2+3+Rinses				11/11/92	
00595	F5A		IN -MM -RO	Imp. 4 + Rinses				11/11/92	
00596	F5B		IN -MM -RO	IMP 5,6 + RINSE				11/11/92	
00597	F5C		IN -MM -RO	Water+HCl Rinse 5+6				11/11/92	
~~00598~~	~~F6~~		~~IN -MM -RO~~	~~Imp. 7 Silica Gel~~				~~11/11/92~~	
~~00599~~	~~F7~~		~~IN -MM -RO~~	~~Tedlar Bag~~				~~11/11/92~~	
00600	F1	Q08/28/92-0016	OA -MM -RO	Quartz Filter				11/11/92	
~~00601~~	~~F2~~		~~OA -MM -RO~~	~~FH Acetone Rinse~~				~~11/11/92~~	
00602	F3		OA -MM -RO	FH Nitric Rinse				11/11/92	
00603	F4A		OA -MM -RO	Imp. 1 + Rinses				11/11/92	
00604	F4B		OA -MM -RO	Imp. 2+3+Rinses				11/11/92	
00605	F5A		OA -MM -RO	Imp. 4 + Rinses				11/11/92	
00606	F5B		OA -MM -RO	IMP 5,6 + RINSE				11/11/92	
00607	F5C		OA -MM -RO	Water+HCl Rinse 5+6				11/11/92	

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ETS, INC.

FIELD SAMPLE LOG

Contract No. 92-655
Job I.D.
Test Method Multiple Metals

Print Date 11/11/92
Page 5

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
~~00608~~	~~F6~~		~~0A -MM -R0~~	~~Imp. 7 Silica Gel~~				~~11/11/92~~	
~~00609~~	~~F7~~		~~0A -MM -R0~~	~~Tedlar Bag~~				~~11/11/92~~	
00610	F1	Q08/28/92-0017	OB -MM -RO	Quartz Filter				11/11/92	
~~00611~~	~~F2~~		~~0B -MM -R0~~	~~FH Acetone Rinse~~				~~11/11/92~~	
00612	F3		OB -MM -RO	FH Nitric Rinse				11/11/92	
00613	F4A		OB -MM -RO	Imp. 1 + Rinses				11/11/92	
00614	F4B		OB -MM -RO	Imp. 2+3+Rinses				11/11/92	
00615	F5A		OB -MM -RO	Imp. 4 + Rinses				11/11/92	
00616	F5B		OB -MM -RO	IMP 5,6 + RINSE				11/11/92	
00617	F5C		OB -MM -RO	Water+HCl Rinse 5+6				11/11/92	
~~00618~~	~~F6~~		~~0B -MM -R0~~	~~Imp. 7 Silica Gel~~				~~11/11/92~~	
~~00619~~	~~F7~~		~~0B -MM -R0~~	~~Tedlar Bag~~				~~11/11/92~~	

E.2 SAMPLE LOG AND CHAIN OF CUSTODY RECORDS FOR PM_{10} AND CONDENSIBLE PM SAMPLING

Proudly serving industry and government since 1973. Providing: Toxic Emission Measurement & Control

A subsidiary of ETS International, Inc.

November 11, 1992

ETS Analytical Services, Inc.
1401 Municipal Road, NW
Roanoke, Virginia 24012

RE: Condensible Particulate Matter Analysis
ETS Contract No.: EPA Brick Plan 92-655-T
Work Assignment 6-5.3.1

Dear Dave:

Accompanying this letter are 12 aqueous samples and 12 methylene chloride samples to be analyzed for total condensible particulate matter in accordance with the ion chromatography and gravimetric procedures outlined in the Code of Federal Regulations, Method 202 entitled "Method for Measurement of Condensible Particulate Emissions from Stationary Sources".

The data report should include all applicable quality assurance data and intermediate data such as aliquot volumes and ammonium chloride weights.

This is a part of the EPA Project (ETS Contract No. 92-655-T), which should be used to reference all billing.

Please feel free to contact me or Mike Visneski if you have any questions. Thank you.

Sincerely,

ETS, Inc.

W. Tony Underwood

W. Tony Underwood
Project Manager

Rec'd Susan Sheppard
11-11-92 1600

/WTU
Enclosure(s)

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method 201A/202

Print Date 11/11/92   Time 15:16:51
Page 1

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
~~01100~~	~~F1~~	~~91-0952~~	~~IN -1A2-R1~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01101~~	~~F2~~		~~IN -1A2-R1~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01102~~	~~F3~~		~~IN -1A2-R1~~	~~<=PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01103	F4		IN -1A2-R1	IMPINGER CONTENTS			NKL	11/11/92	
~~01104~~	~~F5~~		~~IN -1A2-R1~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01105~~	~~F6~~		~~IN -1A2-R1~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01106	F7		IN -1A2-R1	BACK HALF McCL2			NKL	11/11/92	
~~01107~~	~~F8~~		~~IN -1A2-R1~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01108~~	~~F1~~	~~91-0956~~	~~IN -1A2-R2~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01109~~	~~F2~~		~~IN -1A2-R2~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01110~~	~~F3~~		~~IN -1A2-R2~~	~~<=PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01111	F4		IN -1A2-R2	IMPINGER CONTENTS			NKL	11/11/92	
~~01112~~	~~F5~~		~~IN -1A2-R2~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01113~~	~~F6~~		~~IN -1A2-R2~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01114	F7		IN -1A2-R2	BACK HALF McCL2			NKL	11/11/92	
~~01115~~	~~F8~~		~~IN -1A2-R2~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01116~~	~~F1~~	~~91-0960~~	~~IN -1A2-R3~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01117~~	~~F2~~		~~IN -1A2-R3~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01118~~	~~F3~~		~~IN -1A2-R3~~	~~<=PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01119	F4		IN -1A2-R3	IMPINGER CONTENTS			NKL	11/11/92	
~~01120~~	~~F5~~		~~IN -1A2-R3~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01121~~	~~F6~~		~~IN -1A2-R3~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01122	F7		IN -1A2-R3	BACK HALF McCL2			NKL	11/11/92	
~~01123~~	~~F8~~		~~IN -1A2-R3~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01124~~	~~F1~~	~~91-0964~~	~~OA -1A2-R1~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01125~~	~~F2~~		~~OA -1A2-R1~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01126~~	~~F3~~		~~OA -1A2-R1~~	~~<=PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	

E T S , I N C .

F I E L D S A M P L E L O G

Contract No. 92-655
Job I.D.
Test Method 201A/202

Print Date 11/11/92
Page 2

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
01127	F4		OA -1A2-R1	IMPINGER CONTENTS			NKL	11/11/92	
~~01128~~	~~F5~~		~~OA -1A2-R1~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01129~~	~~F6~~		~~OA -1A2-R1~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01130	F7		OA -1A2-R1	BACK HALF MeCL2			NKL	11/11/92	
~~01131~~	~~F8~~		~~OA -1A2-R1~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01132~~	~~F1~~	~~91-0956~~	~~OA -1A2-R2~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01133~~	~~F2~~		~~OA -1A2-R2~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01134~~	~~F3~~		~~OA -1A2-R2~~	~~<-PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01135	F4		OA -1A2-R2	IMPINGER CONTENTS			NKL	11/11/92	
~~01136~~	~~F5~~		~~OA -1A2-R2~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01137~~	~~F6~~		~~OA -1A2-R2~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01138	F7		OA -1A2-R2	BACK HALF MeCL2			NKL	11/11/92	
~~01139~~	~~F8~~		~~OA -1A2-R2~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01140~~	~~F1~~	~~91-0959~~	~~OA -1A2-R3~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01141~~	~~F2~~		~~OA -1A2-R3~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01142~~	~~F3~~		~~OA -1A2-R3~~	~~<-PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01143	F4		OA -1A2-R3	IMPINGER CONTENTS			NKL	11/11/92	
~~01144~~	~~F5~~		~~OA -1A2-R3~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01145~~	~~F6~~		~~OA -1A2-R3~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01146	F7		OA -1A2-R3	BACK HALF MeCL2			NKL	11/11/92	
~~01147~~	~~F8~~		~~OA -1A2-R3~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01148~~	~~F1~~	~~91-0953~~	~~OB -1A2-R1~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01149~~	~~F2~~		~~OB -1A2-R1~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01150~~	~~F3~~		~~OB -1A2-R1~~	~~<-PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01151	F4		OB -1A2-R1	IMPINGER CONTENTS			NKL	11/11/92	
~~01152~~	~~F5~~		~~OB -1A2-R1~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01153~~	~~F6~~		~~OB -1A2-R1~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method 201A/202

Print Date 11/11/92
Page 3

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
01154	F7		OB -1A2-R1	BACK HALF MeCL2			NKL	11/11/92	
~~01155~~	~~F8~~		~~OB -1A2-R1~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01156~~	~~F1~~	~~91-0957~~	~~OB -1A2-R2~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01157~~	~~F2~~		~~OB -1A2-R2~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01158~~	~~F3~~		~~OB -1A2-R2~~	~~<=PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01159	F4		OB -1A2-R2	IMPINGER CONTENTS			NKL	11/11/92	
~~01160~~	~~F5~~		~~OB -1A2-R2~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01161~~	~~F6~~		~~OB -1A2-R2~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01162	F7		OB -1A2-R2	BACK HALF MeCL2			NKL	11/11/92	
~~01163~~	~~F8~~		~~OB -1A2-R2~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01164~~	~~F1~~	~~91-0958~~	~~OB -1A2-R3~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01165~~	~~F2~~		~~OB -1A2-R3~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01166~~	~~F3~~		~~OB -1A2-R3~~	~~<=PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01167	F4		OB -1A2-R3	IMPINGER CONTENTS			NKL	11/11/92	
~~01168~~	~~F5~~		~~OB -1A2-R3~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01169~~	~~F6~~		~~OB -1A2-R3~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01170	F7		OB -1A2-R3	BACK HALF MeCL2			NKL	11/11/92	
~~01171~~	~~F8~~		~~OB -1A2-R3~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01172~~	~~F1~~	~~91-0962~~	~~IN -1A2-RO~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01173~~	~~F2~~		~~IN -1A2-RO~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01174~~	~~F3~~		~~IN -1A2-RO~~	~~<=PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01175	F4		IN -1A2-RO	IMPINGER CONTENTS			NKL	11/11/92	
~~01176~~	~~F5~~		~~IN -1A2-RO~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01177~~	~~F6~~		~~IN -1A2-RO~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01178	F7		IN -1A2-RO	BACK HALF MeCL2			NKL	11/11/92	
~~01179~~	~~F8~~		~~IN -1A2-RO~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01180~~	~~F1~~	~~91-0961~~	~~OB -1A2-RO~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method 201A/202

Print Date 11/11/92
Page 4

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
~~01181~~	~~F2~~		~~OA -1A2-RO~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01182~~	~~F3~~		~~OA -1A2-RO~~	~~<-PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01183	F4		OA -1A2-RO	IMPINGER CONTENTS			NKL	11/11/92	
~~01184~~	~~F5~~		~~OA -1A2-RO~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01185~~	~~F6~~		~~OA -1A2-RO~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01186	F7		OA -1A2-RO	BACK HALF MeCL2			NKL	11/11/92	
~~01187~~	~~F8~~		~~OA -1A2-RO~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01188~~	~~F1~~	~~91-0963~~	~~CB -1A2-RO~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01189~~	~~F2~~		~~OB -1A2-RO~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01190~~	~~F3~~		~~OB -1A2-RO~~	~~<-PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01191	F4		OB -1A2-RO	IMPINGER CONTENTS			NKL	11/11/92	
~~01192~~	~~F5~~		~~OB -1A2-RO~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01193~~	~~F6~~		~~OB -1A2-RO~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01194	F7		OB -1A2-RO	BACK HALF MeCL2			NKL	11/11/92	
~~01195~~	~~F8~~		~~OB -1A2-RO~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	

E.3 SAMPLE LOG AND CHAIN OF CUSTODY RECORDS FOR TOTAL FLUORIDES SAMPLING

ETS Analytical Services • A Division of ETS, Inc.
A USEPA Contract Laboratory

ETS Analytical Services, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012-1309
Phone (703) 265-0004 / FAX (703) 563-4866

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
92-655-6	EPA Brick Plant

SAMPLERS: (Signature)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Total Fluorides						REMARKS
					1-M13-F2								empty, did not sealed.
					2-M13-LocF2								empty, did not sealed
					1-M13-F1								
					2-M13-LocF1								
					3 M13-LocF1								
					3A M13-LocF1								
					1-M13-E								
					2-M13-LocE								
					3 M13-LocE								
					2A M13-LocE								
					3A M13-LocE								
					M13-Blank								

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	11/3/92 08:14				

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

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
		N. Deal	11/3/92 08:15	

Original Accompanies Shipment

E.4 SAMPLE LOG AND CHAIN OF CUSTODY RECORDS FOR HYDROGEN FLUORIDE SAMPLING

ETS, INC.

Proudly serving industry and government since 1973. Providing: Toxic Emission Measurement & Control

A subsidiary of ETS International, Inc.

November 6, 1992

Rob Ledger
ETS Analytical Services
1401 Municipal Rd.
Roanoke VA

RE: ETS Inc. Contract # 92-655-6
EPA Brick Plant Project

Dear Rob,

This letter accompanies twelve Method 26 samples to analyzed for hydrogen fluoride. Dave Tompkins, Tony Underwood and Mike Visneski have been in contact regarding this testing program. They would be your best source of information regarding these samples.

Sincerely,

NKL

Nancy K. Lewis

RL Jones 11/6/92 0800.

ETS, INC. - 1401 Municipal Road, NW - Roanoke, Virginia 24012-1309 - Telephone: 703-265-0004 - FAX: 703-265-0131

"Pollution Engineering National 5-STAR Environmental Award Winner"

Printed on recycled paper Printed on recyclable paper

ETS, INC.

FIELD SAMPLE LOG

Contract No. 92-655
Job I.D.
Test Method 26

Print Date 11/05/92 Time 11:45:07
Page 1

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00300	F2		IN -M26-R1	Imps. 1-3 / Rinses			NKL	11/05/92	
~~00301~~	~~P3~~		~~IN -M26-R1~~	~~Imp. 4+5 NaOH~~			~~NKL~~	~~11/05/92~~	
~~00302~~	~~P5~~		~~IN -M26-R1~~	~~Imp. 6 Silica Gel~~			~~NKL~~	~~11/05/92~~	
~~00303~~	~~P6~~		~~IN -M26-R1~~				~~NKL~~	~~11/05/92~~	
00304	F2		IN -M26-R2	Imps. 1-3 / Rinses			NKL	11/05/92	
~~00305~~	~~P3~~		~~IN -M26-R2~~	~~Imp. 4+5 NaOH~~			~~NKL~~	~~11/05/92~~	
~~00306~~	~~P5~~		~~IN -M26-R2~~	~~Imp. 6 Silica Gel~~			~~NKL~~	~~11/05/92~~	
~~00307~~	~~P6~~		~~IN -M26-R2~~				~~NKL~~	~~11/05/92~~	
00308	F2		IN -M26-R3	Imps. 1-3 / Rinses			NKL	11/05/92	
~~00309~~	~~P3~~		~~IN -M26-R3~~	~~Imp. 4+5 NaOH~~			~~NKL~~	~~11/05/92~~	
~~00310~~	~~P5~~		~~IN -M26-R3~~	~~Imp. 6 Silica Gel~~			~~NKL~~	~~11/05/92~~	
~~00311~~	~~P6~~		~~IN -M26-R3~~				~~NKL~~	~~11/05/92~~	
00312	F2		OA -M26-R1	Imps. 1-3 / Rinses			NKL	11/05/92	
~~00313~~	~~P3~~		~~OA -M26-R1~~	~~Imp. 4+5 NaOH~~			~~NKL~~	~~11/05/92~~	
~~00314~~	~~P5~~		~~OA -M26-R1~~	~~Imp. 6 Silica Gel~~			~~NKL~~	~~11/05/92~~	
~~00315~~	~~P6~~		~~OA -M26-R1~~				~~NKL~~	~~11/05/92~~	
00316	F2		OA -M26-R2	Imps. 1-3 / Rinses			NKL	11/05/92	
~~00317~~	~~P3~~		~~OA -M26-R2~~	~~Imp. 4+5 NaOH~~			~~NKL~~	~~11/05/92~~	
~~00318~~	~~P5~~		~~OA -M26-R2~~	~~Imp. 6 Silica Gel~~			~~NKL~~	~~11/05/92~~	
~~00319~~	~~P6~~		~~OA -M26-R2~~				~~NKL~~	~~11/05/92~~	
00320	F2		OA -M26-R3	Imps. 1-3 / Rinses			NKL	11/05/92	
~~00321~~	~~P3~~		~~OA -M26-R3~~	~~Imp. 4+5 NaOH~~			~~NKL~~	~~11/05/92~~	
~~00322~~	~~P5~~		~~OA -M26-R3~~	~~Imp. 6 Silica Gel~~			~~NKL~~	~~11/05/92~~	
~~00323~~	~~P6~~		~~OA -M26-R3~~				~~NKL~~	~~11/05/92~~	
00324	F2		OB -M26-R1	Imps. 1-3 / Rinses			NKL	11/05/92	
~~00325~~	~~P3~~		~~OB -M26-R1~~	~~Imp. 4+5 NaOH~~			~~NKL~~	~~11/05/92~~	
~~00326~~	~~P5~~		~~OB -M26-R1~~	~~Imp. 6 Silica Gel~~			~~NKL~~	~~11/05/92~~	

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Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
~~00327~~	~~F6~~		~~OB -M26-R1~~				~~NKL~~	~~11/05/92~~	
00328 ✓	F2		OB -M26-R2	Imps. 1-3 / Rinses			NKL	11/05/92	
~~00329~~	~~F3~~		~~OB -M26-R2~~	~~Imp. 4+5 NaOH~~			~~NKL~~	~~11/05/92~~	
~~00330~~	~~F5~~		~~OB -M26-R2~~	~~Imp. 6 Silica Gel~~			~~NKL~~	~~11/05/92~~	
~~00331~~	~~F6~~		~~OB -M26-R2~~				~~NKL~~	~~11/05/92~~	
00332 ✓	F2		OB -M26-R3	Imps. 1-3 / Rinses			NKL	11/05/92	
~~00333~~	~~F3~~		~~OB -M26-R3~~	~~Imp. 4+5 NaOH~~			~~NKL~~	~~11/05/92~~	
~~00334~~	~~F5~~		~~OB -M26-R3~~	~~Imp. 6 Silica Gel~~			~~NKL~~	~~11/05/92~~	
~~00335~~	~~F6~~		~~OB -M26-R3~~				~~NKL~~	~~11/05/92~~	
00336 ✓	F2		IN -M26-R0	Imps. 1-3 / Rinses			NKL	11/05/92	
~~00337~~	~~F3~~		~~IN -M26-R0~~	~~Imp. 4+5 NaOH~~			~~NKL~~	~~11/05/92~~	
~~00338~~	~~F5~~		~~IN -M26-R0~~	~~Imp. 6 Silica Gel~~			~~NKL~~	~~11/05/92~~	
~~00339~~	~~F6~~		~~IN -M26-R0~~				~~NKL~~	~~11/05/92~~	
00340 ✓	F2		OA -M26-R0	Imps. 1-3 / Rinses			NKL	11/05/92	
~~00341~~	~~F3~~		~~OA -M26-R0~~	~~Imp. 4+5 NaOH~~			~~NKL~~	~~11/05/92~~	
~~00342~~	~~F5~~		~~OA -M26-R0~~	~~Imp. 6 Silica Gel~~			~~NKL~~	~~11/05/92~~	
~~00343~~	~~F6~~		~~OA -M26-R0~~				~~NKL~~	~~11/05/92~~	
00344 ✓	F2		OB -M26-R0	Imps. 1-3 / Rinses			NKL	11/05/92	
~~00345~~	~~F3~~		~~OB -M26-R0~~	~~Imp. 4+5 NaOH~~			~~NKL~~	~~11/05/92~~	
~~00346~~	~~F5~~		~~OB -M26-R0~~	~~Imp. 6 Silica Gel~~			~~NKL~~	~~11/05/92~~	
~~00347~~	~~F6~~		~~OB -M26-R0~~				NKL	~~11/05/92~~	

E.5 SAMPLE LOG AND CHAIN OF CUSTODY RECORDS FOR VOLATILE ORGANICS SAMPLING

ETS, INC.

FIELD SAMPLE LOG

Contract No. 92-655
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Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00100	F1		IN -VST-R1A	VOST TUBE - CHARCOAL			NKL	12/15/92	
00101	F3		IN -VST-R1A	TEDLAR BAG			NKL	12/15/92	
00102	F2		IN -VST-R1A	VOST TUBE -TENAX			NKL	12/15/92	
00103	F1		IN -VST-R2A	VOST TUBE - CHARCOAL			NKL	12/15/92	
00104	F3		IN -VST-R2A	TEDLAR BAG			NKL	12/15/92	
00105	F2		IN -VST-R2A	VOST TUBE -TENAX			NKL	12/15/92	
00106	F1		IN -VST-R3A	VOST TUBE - CHARCOAL			NKL	12/15/92	
00107	F3		IN -VST-R3A	TEDLAR BAG			NKL	12/15/92	
00108	F2		IN -VST-R3A	VOST TUBE -TENAX			NKL	12/15/92	
00109	F1		OA -VST-R1A	VOST TUBE - CHARCOAL			NKL	12/15/92	
00110	F3		OA -VST-R1A	TEDLAR BAG			NKL	12/15/92	
00111	F2		OA -VST-R1A	VOST TUBE -TENAX			NKL	12/15/92	
00112	F1		OA -VST-R2A	VOST TUBE - CHARCOAL			NKL	12/15/92	
00113	F3		OA -VST-R2A	TEDLAR BAG			NKL	12/15/92	
00114	F2		OA -VST-R2A	VOST TUBE -TENAX			NKL	12/15/92	
00115	F1		OA -VST-R3A	VOST TUBE - CHARCOAL			NKL	12/15/92	
00116	F3		OA -VST-R3A	TEDLAR BAG			NKL	12/15/92	
00117	F2		OA -VST-R3A	VOST TUBE -TENAX			NKL	12/15/92	
00118	F1		OB -VST-R1A	VOST TUBE - CHARCOAL			NKL	12/15/92	
00119	F3		OB -VST-R1A	TEDLAR BAG			NKL	12/15/92	
00120	F2		OB -VST-R1A	VOST TUBE -TENAX			NKL	12/15/92	
00121	F1		OB -VST-R2A	VOST TUBE - CHARCOAL			NKL	12/15/92	
00122	F3		OB -VST-R2A	TEDLAR BAG			NKL	12/15/92	
00123	F2		OB -VST-R2A	VOST TUBE -TENAX			NKL	12/15/92	
00124	F1		OB -VST-R3A	VOST TUBE - CHARCOAL			NKL	12/15/92	
00125	F3		OB -VST-R3A	TEDLAR BAG			NKL	12/15/92	
00126	F2		OB -VST-R3A	VOST TUBE -TENAX			NKL	12/15/92	

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Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00136	F1		IN -VST-R1B	VOST TUBE - CHARCOAL			NKL	12/15/92	
00137	F3		IN -VST-R1B	TEDLAR BAG			NKL	12/15/92	
00138	F2		IN -VST-R1B	VOST TUBE -TENAX			NKL	12/15/92	
00139	F1		IN -VST-R1C	VOST TUBE - CHARCOAL			NKL	12/15/92	
00140	F3		IN -VST-R1C	TEDLAR BAG			NKL	12/15/92	
00141	F2		IN -VST-R1C	VOST TUBE -TENAX			NKL	12/15/92	
00142	F1		OA -VST-R1B	VOST TUBE - CHARCOAL			NKL	12/15/92	
00143	F3		OA -VST-R1B	TEDLAR BAG			NKL	12/15/92	
00144	F2		OA -VST-R1B	VOST TUBE -TENAX			NKL	12/15/92	
00145	F1		OA -VST-R1C	VOST TUBE - CHARCOAL			NKL	12/15/92	
00146	F3		OA -VST-R1C	TEDLAR BAG			NKL	12/15/92	
00147	F2		OA -VST-R1C	VOST TUBE -TENAX			NKL	12/15/92	
00148	F1		OB -VST-R1B	VOST TUBE - CHARCOAL			NKL	12/15/92	
00149	F3		OB -VST-R1B	TEDLAR BAG			NKL	12/15/92	
00150	F2		OB -VST-R1B	VOST TUBE -TENAX			NKL	12/15/92	
00151	F1		OB -VST-R1C	VOST TUBE - CHARCOAL			NKL	12/15/92	
00152	F3		OB -VST-R1C	TEDLAR BAG			NKL	12/15/92	
00153	F2		OB -VST-R1C	VOST TUBE -TENAX			NKL	12/15/92	
00154	F1		IN -VST-R2B	VOST TUBE - CHARCOAL			NKL	12/15/92	
00155	F3		IN -VST-R2B	TEDLAR BAG			NKL	12/15/92	
00156	F2		IN -VST-R2B	VOST TUBE -TENAX			NKL	12/15/92	
00157	F1		IN -VST-R2C	VOST TUBE - CHARCOAL			NKL	12/15/92	
00158	F3		IN -VST-R2C	TEDLAR BAG			NKL	12/15/92	
00159	F2		IN -VST-R2C	VOST TUBE -TENAX			NKL	12/15/92	
00160	F1		OA -VST-R2B	VOST TUBE - CHARCOAL			NKL	12/15/92	
00161	F3		OA -VST-R2B	TEDLAR BAG			NKL	12/15/92	
00162	F2		OA -VST-R2B	VOST TUBE -TENAX			NKL	12/15/92	

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00163	F1		OA -VST-R2C	VOST TUBE - CHARCOAL			NKL	12/15/92	
00164	F3		OA -VST-R2C	TEDLAR BAG			NKL	12/15/92	
00165	F2		OA -VST-R2C	VOST TUBE -TENAX			NKL	12/15/92	
00166	F1		OB -VST-R2B	VOST TUBE - CHARCOAL			NKL	12/15/92	
00167	F3		OB -VST-R2B	TEDLAR BAG			NKL	12/15/92	
00168	F2		OB -VST-R2B	VOST TUBE -TENAX			NKL	12/15/92	
00169	F1		OB -VST-R2C	VOST TUBE - CHARCOAL			NKL	12/15/92	
00170	F3		OB -VST-R2C	TEDLAR BAG			NKL	12/15/92	
00171	F2		OB -VST-R2C	VOST TUBE -TENAX			NKL	12/15/92	
00172	F1		IN -VST-R3B	VOST TUBE - CHARCOAL			NKL	12/15/92	
00173	F3		IN -VST-R3B	TEDLAR BAG			NKL	12/15/92	
00174	F2		IN -VST-R3B	VOST TUBE -TENAX			NKL	12/15/92	
00175	F1		IN -VST-R3C	VOST TUBE - CHARCOAL			NKL	12/15/92	
00176	F3		IN -VST-R3C	TEDLAR BAG			NKL	12/15/92	
00177	F2		IN -VST-R3C	VOST TUBE -TENAX			NKL	12/15/92	
00178	F1		OA -VST-R3B	VOST TUBE - CHARCOAL			NKL	12/15/92	
00179	F3		OA -VST-R3B	TEDLAR BAG			NKL	12/15/92	
00180	F2		OA -VST-R3B	VOST TUBE -TENAX			NKL	12/15/92	
00181	F1		OA -VST-R3C	VOST TUBE - CHARCOAL			NKL	12/15/92	
00182	F3		OA -VST-R3C	TEDLAR BAG			NKL	12/15/92	
00183	F2		OA -VST-R3C	VOST TUBE -TENAX			NKL	12/15/92	
00184	F1		OB -VST-R3B	VOST TUBE - CHARCOAL			NKL	12/15/92	
00185	F3		OB -VST-R3B	TEDLAR BAG			NKL	12/15/92	
00186	F2		OB -VST-R3B	VOST TUBE -TENAX			NKL	12/15/92	
00187	F1		OB -VST-R3C	VOST TUBE - CHARCOAL			NKL	12/15/92	
00188	F3		OB -VST-R3C	TEDLAR BAG			NKL	12/15/92	
00189	F2		OB -VST-R3C	VOST TUBE -TENAX			NKL	12/15/92	

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00190	F1		IN -VST-R1D	VOST TUBE - CHARCOAL			NKL	12/15/92	
00191	F3		IN -VST-R1D	TEDLAR BAG			NKL	12/15/92	
00192	F2		IN -VST-R1D	VOST TUBE -TENAX			NKL	12/15/92	
00193	F1		IN -VST-R1E	VOST TUBE - CHARCOAL			NKL	12/15/92	
00194	F3		IN -VST-R1E	TEDLAR BAG			NKL	12/15/92	
00195	F2		IN -VST-R1E	VOST TUBE -TENAX			NKL	12/15/92	
00196	F1		IN -VST-R1F	VOST TUBE - CHARCOAL			NKL	12/15/92	
00197	F3		IN -VST-R1F	TEDLAR BAG			NKL	12/15/92	
00198	F2		IN -VST-R1F	VOST TUBE -TENAX			NKL	12/15/92	
00199	F1		OA -VST-R1D	VOST TUBE - CHARCOAL			NKL	12/15/92	
00200	F3		OA -VST-R1D	TEDLAR BAG			NKL	12/15/92	
00201	F2		OA -VST-R1D	VOST TUBE -TENAX			NKL	12/15/92	
00202	F1		OA -VST-R1E	VOST TUBE - CHARCOAL			NKL	12/15/92	
00203	F3		OA -VST-R1E	TEDLAR BAG			NKL	12/15/92	
00204	F2		OA -VST-R1E	VOST TUBE -TENAX			NKL	12/15/92	
00205	F1		OA -VST-R1F	VOST TUBE - CHARCOAL			NKL	12/15/92	
00206	F3		OA -VST-R1F	TEDLAR BAG			NKL	12/15/92	
00207	F2		OA -VST-R1F	VOST TUBE -TENAX			NKL	12/15/92	
00208	F1		OB -VST-R1D	VOST TUBE - CHARCOAL			NKL	12/15/92	
00209	F3		OB -VST-R1D	TEDLAR BAG			NKL	12/15/92	
00210	F2		OB -VST-R1D	VOST TUBE -TENAX			NKL	12/15/92	
00211	F1		OB -VST-R1E	VOST TUBE - CHARCOAL			NKL	12/15/92	
00212	F3		OB -VST-R1E	TEDLAR BAG			NKL	12/15/92	
00213	F2		OB -VST-R1E	VOST TUBE -TENAX			NKL	12/15/92	
00214	F1		OB -VST-R1F	VOST TUBE - CHARCOAL			NKL	12/15/92	
00215	F3		OB -VST-R1F	TEDLAR BAG			NKL	12/15/92	
00216	F2		OB -VST-R1F	VOST TUBE -TENAX			NKL	12/15/92	

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Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00217	F1		IN -VST-R2D	VOST TUBE - CHARCOAL			NKL	12/15/92	
00218	F3		IN -VST-R2D	TEDLAR BAG			NKL	12/15/92	
00219	F2		IN -VST-R2D	VOST TUBE -TENAX			NKL	12/15/92	
00220	F1		IN -VST-R2E	VOST TUBE - CHARCOAL			NKL	12/15/92	
00221	F3		IN -VST-R2E	TEDLAR BAG			NKL	12/15/92	
00222	F2		IN -VST-R2E	VOST TUBE -TENAX			NKL	12/15/92	
00223	F1		IN -VST-R2F	VOST TUBE - CHARCOAL			NKL	12/15/92	
00224	F3		IN -VST-R2F	TEDLAR BAG			NKL	12/15/92	
00225	F2		IN -VST-R2F	VOST TUBE -TENAX			NKL	12/15/92	
00226	F1		OA -VST-R2D	VOST TUBE - CHARCOAL			NKL	12/15/92	
00227	F3		OA -VST-R2D	TEDLAR BAG			NKL	12/15/92	
00228	F2		OA -VST-R2D	VOST TUBE -TENAX			NKL	12/15/92	
00229	F1		OA -VST-R2E	VOST TUBE - CHARCOAL			NKL	12/15/92	
00230	F3		OA -VST-R2E	TEDLAR BAG			NKL	12/15/92	
00231	F2		OA -VST-R2E	VOST TUBE -TENAX			NKL	12/15/92	
00232	F1		OA -VST-R2F	VOST TUBE - CHARCOAL			NKL	12/15/92	
00233	F3		OA -VST-R2F	TEDLAR BAG			NKL	12/15/92	
00234	F2		OA -VST-R2F	VOST TUBE -TENAX			NKL	12/15/92	
00235	F1		OB -VST-R2D	VOST TUBE - CHARCOAL			NKL	12/15/92	
00236	F3		OB -VST-R2D	TEDLAR BAG			NKL	12/15/92	
00237	F2		OB -VST-R2D	VOST TUBE -TENAX			NKL	12/15/92	
00238	F1		OB -VST-R2E	VOST TUBE - CHARCOAL			NKL	12/15/92	
00239	F3		OB -VST-R2E	TEDLAR BAG			NKL	12/15/92	
00240	F2		OB -VST-R2E	VOST TUBE -TENAX			NKL	12/15/92	
00241	F1		OB -VST-R2F	VOST TUBE - CHARCOAL			NKL	12/15/92	
00242	F3		OB -VST-R2F	TEDLAR BAG			NKL	12/15/92	
00243	F2		OB -VST-R2F	VOST TUBE -TENAX			NKL	12/15/92	

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Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00244	F1		IN -VST-R3D	VOST TUBE - CHARCOAL			NKL	12/15/92	
00245	F3		IN -VST-R3D	TEDLAR BAG			NKL	12/15/92	
00246	F2		IN -VST-R3D	VOST TUBE -TENAX			NKL	12/15/92	
00247	F1		IN -VST-R3E	VOST TUBE - CHARCOAL			NKL	12/15/92	
00248	F3		IN -VST-R3E	TEDLAR BAG			NKL	12/15/92	
00249	F2		IN -VST-R3E	VOST TUBE -TENAX			NKL	12/15/92	
00250	F1		IN -VST-R3F	VOST TUBE - CHARCOAL			NKL	12/15/92	
00251	F3		IN -VST-R3F	TEDLAR BAG			NKL	12/15/92	
00252	F2		IN -VST-R3F	VOST TUBE -TENAX			NKL	12/15/92	
00253	F1		OA -VST-R3D	VOST TUBE - CHARCOAL			NKL	12/15/92	
00254	F3		OA -VST-R3D	TEDLAR BAG			NKL	12/15/92	
00255	F2		OA -VST-R3D	VOST TUBE -TENAX			NKL	12/15/92	
00256	F1		OA -VST-R3E	VOST TUBE - CHARCOAL			NKL	12/15/92	
00257	F3		OA -VST-R3E	TEDLAR BAG			NKL	12/15/92	
00258	F2		OA -VST-R3E	VOST TUBE -TENAX			NKL	12/15/92	
00259	F1		OA -VST-R3F	VOST TUBE - CHARCOAL			NKL	12/15/92	
00260	F3		OA -VST-R3F	TEDLAR BAG			NKL	12/15/92	
00261	F2		OA -VST-R3F	VOST TUBE -TENAX			NKL	12/15/92	
00262	F1		OB -VST-R3D	VOST TUBE - CHARCOAL			NKL	12/15/92	
00263	F3		OB -VST-R3D	TEDLAR BAG			NKL	12/15/92	
00264	F2		OB -VST-R3D	VOST TUBE -TENAX			NKL	12/15/92	
00265	F1		OB -VST-R3E	VOST TUBE - CHARCOAL			NKL	12/15/92	
00266	F3		OB -VST-R3E	TEDLAR BAG			NKL	12/15/92	
00267	F2		OB -VST-R3E	VOST TUBE -TENAX			NKL	12/15/92	
00268	F1		OB -VST-R3F	VOST TUBE - CHARCOAL			NKL	12/15/92	
00269	F3		OB -VST-R3F	TEDLAR BAG			NKL	12/15/92	
00270	F2		OB -VST-R3F	VOST TUBE -TENAX			NKL	12/15/92	

E T S , I N C .

F I E L D S A M P L E L O G

Contract No. 92-655
Job I.D.
Test Method VOST

Print Date 12/16/92
Page 7

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00274	F1		540-VST-ROA	VOST TUBE - CHARCOAL			NKL	12/15/92	AUDIT
00275	F3		540-VST-ROA	TEDLAR BAG			NKL	12/15/92	AUDIT
00276	F2		540-VST-ROA	VOST TUBE -TENAX			NKL	12/15/92	AUDIT
00277	F1		540-VST-ROB	VOST TUBE - CHARCOAL			NKL	12/15/92	AUDIT
00278	F3		540-VST-ROB	TEDLAR BAG			NKL	12/15/92	AUDIT
00279	F2		540-VST-ROB	VOST TUBE -TENAX			NKL	12/15/92	AUDIT
00280	F1		540-VST-ROC	VOST TUBE - CHARCOAL			NKL	12/15/92	AUDIT
00281	F3		540-VST-ROC	TEDLAR BAG			NKL	12/15/92	AUDIT
00282	F2		540-VST-ROC	VOST TUBE -TENAX			NKL	12/15/92	AUDIT
00283	F1		539-VST-ROA	VOST TUBE - CHARCOAL			NKL	12/15/92	AUDIT
00284	F3		539-VST-ROA	TEDLAR BAG			NKL	12/15/92	AUDIT
00285	F2		539-VST-ROA	VOST TUBE -TENAX			NKL	12/15/92	AUDIT
00286	F1		539-VST-ROB	VOST TUBE - CHARCOAL			NKL	12/15/92	AUDIT
00287	F3		539-VST-ROB	TEDLAR BAG			NKL	12/15/92	AUDIT

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method VOST

Print Date 12/16/92
Page 8

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00288	F2		539-VST-ROB	VOST TUBE -TENAX			NKL	12/15/92	AUDIT
00289	F1		539-VST-ROC	VOST TUBE - CHARCOAL			NKL	12/15/92	AUDIT
00290	F3		539-VST-ROC	TEDLAR BAG			NKL	12/15/92	AUDIT
00291	F2		539-VST-ROC	VOST TUBE -TENAX			NKL	12/15/92	AUDIT

Proudly serving industry and government since 1973. Providing: Toxic Emission Measurement &

A subsidiary of ETS International, Inc.

November 13, 1992

Mr. Hani Karam
Triangle Laboratories, Inc.
801-10 Capitola Drive
Durham, NC 27713

RE: TLI Work Order Reference Number:0100000852
ETS Purchase Order: 4023

Dear Mr. Karam:

Accompanying this letter is one (1) cooler of EPA Method 0030 sampling train components. These samples are from a total of two (2) sampling trains. Each train consists of three (3) pairs of sorbent traps. Each pair of sorbent traps consists of a Tenax trap and a Tenax/GC trap. A total of six (6) pairs of sorbent traps are included in the shipment. Chain of custody information is included which lists the identification number for each.

Please analyze the samples for chloromethane, bromomethane, methylene chloride, chloroform, trichlorofluoromethane, iodomethane, carbon tetrachloride, trichloroethene, benzene, tetrachloroethene, acetone, carbon disulfide, acrylonitrile, 2-butanone, (1,1,1)- trichloroethane, vinyl acetate, 2-hexanone, toluene, ethylbenzene, styrene, o-xylene, and m-/p-xylene, using Method 0030 procedures. Please feel free to call me or Mike Visneski if you have any questions.

Sincerely,

ETS, Inc.

W. Tony Underwood

W. Tony Underwood
Project Manager

/WTU
Enclosure(s)

ETS, INC. - 1401 Municipal Road, NW - Roanoke, Virginia 24012-1309 - Telephone: 703-265-0004 - FAX: 703-265-[illegible]

FTS Analytical Services • A Division of FTS, Inc

CHAIN OF CUSTODY RECORD

NEW LOCATION & PHONE
FTS Analytical Services, Inc.
1101 Municipal Road N.W.
Roanoke, VA 24012-1309
Phone (703) 265-0001 / FAX (703) 561-4866

PROJ. NO: 92-655-6

PROJECT NAME: EPA Brick

SAMPLERS: (Signature)

Sample ~~STA NO~~	DATE	TIME	COMP	GRAB	STATION LOCATION	NO OF CONTAINERS							REMARKS
274					540A								Charcoal
276					540A								Tenax
277					540B								Charcoal
279					540B								Tenax
280					540C								Charcoal
282					540C								Tenax
283					539A								Charcoal
285					539A								Tenax
286					539B								Charcoal
288					539B								Tenax
289					539C								Charcoal
291					539C								Tenax

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

Original Accompanies Shipment

ETS Analytical Services • A Division of ETS, Inc.

CHAIN OF CUSTODY RECORD

ETS Analytical Services, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012-1309
Phone (703) 265-0004 / FAX (703) 563-4866

PROJ. NO. 926556 | PROJECT NAME EPA Brick

SAMPLERS: (Signature)

Sample Number			COMP	GRAB	Run I.D.	NO. OF CONTAINERS							REMARKS
111					OA-M0030-R1A								Tenex (11/6/92)
169					OA-M0030-R1A								Charcoal
144					OA-M0030-R1B								Tenex
142					OA-M0030-R1B								Charcoal
147					OA-M0030-R1C								Tenex
145					OA-M0030-R1C								Charcoal
201					OA-M0030 R1D								Tenex
199					OA-M0030 R1D								Charcoal
204					OA-M0030 R1E								Tenex
202					OA-M0030 R1E								Charcoal
207					OA-M0030 R1F								Tenex
205					OA-M0030 R1F								

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

Original Accompanies Shipment

ETS Analytical Services • A Division of ETS, Inc

ETS

CHAIN OF CUSTODY RECORD

NEW LOCATION & PHONE
ETS Analytical Services, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012-1309
Phone (703) 265-0004 / FAX (703) 563-4866

PROJ. NO.: 92-655-6
PROJECT NAME: EPA Brick.
SAMPLERS (Signature)

Sample Number			COMP	GRAB	RUN I.D.	NO. OF CONTAINERS							REMARKS
114					OA-M0030-R2A								Tenax (11/6/92)
112					OA-M0030-R2A								Charcoal
162					OA-M0030 R2B								Tenax
160					OA-M0030-R2B								Charcoal
165					OA-M0030-R2C								Tenax
163					OA-M0030 R2C								Charcoal
228					OA-M0030 R2D								Tenax
226					OA-M0030 R2D								Charcoal
231					OA-M0030 R2E								Tenax
229					OA-M0030 R2E								Charcoal
234					OA-M0030 R2F								Tenax
232					OA-M0030 R2F								Charcoal

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

Original Accompanies Shipment

ETS Analytical Services • A Division of ETS Inc

ETS Analytical Services, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012-1309
Phone (703) 265-0004 / FAX (703) 563-1866

CHAIN OF CUSTODY RECORD

PROJ. NO. 92-655-6

PROJECT NAME: EPA Brick

SAMPLERS (Signature)

Sample Number			COMP.	GRAB	Run I.D.	NO. OF CONTAINERS							REMARKS
117					OA-MM030-R3A								Tenex (11/7/92)
115					OA-MM030-R3A								Charcoal
180					OA-MM030 R3B								Tenex
178					OA-MM030 R3B								Charcoal.
183					OA-MM030 R3C								Tenex
181					OA-MM030 R3C								Charcoal
255					OA-MM030 R3D								Tenex
253					OA-MM030 R3D								Charcoal
258					OA-MM030 R3E								Tenex
256					OA-MM030 R3E								Charcoal
261					OA-MM030 R3F								Tenex
259					OA-MM030 R3F								Charcoal

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

Original Accompanies Shipment

ETS Analytical Services • A Division of ETS Inc.

ETS

CHAIN OF CUSTODY RECORD

NEW LOCATION & PHONE
ETS Analytical Services, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012-1309
Phone (703) 265-0004 / FAX (703) 563-1866

PROJ. NO: 92-655-6

PROJECT NAME: EPA Brick

SAMPLERS (Signature)

Sample Number			COMP	GRAB	RUN I.D.	NO. OF CONTAINERS							REMARKS
120					OB-MW030-R1A								Tenax (11/4/92)
118					OB-MW030-R1A								Charcoal
150					OB-MW030-R1B								Tenax
148					OB-MW030-R1B								Charcoal
153					OB-MW030 R1C								Tenax
151					OB-MW030 R1C								Charcoal
210					OB-MW030 R1D								Tenax
208					OB-MW030 R1D								Charcoal
213					OB-MW030 R1E								Tenax
211					OB-MW030 R1E								Charcoal
216					OB-MW030 R1F								Tenax
214					OB-MW030 R1F								Charcoal

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

Original Accompanies Shipment

ETS Analytical Services • A Division of ETS, Inc

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CHAIN OF CUSTODY RECORD

ETS Analytical Services, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012-1309
Phone (703) 265-0004 / FAX (703) 563-4866

PROJ. NO.	PROJECT NAME
92655-6	EPA Brick

SAMPLERS: (Signature)

Sample Number			COMP	GRAB	RUN I.D.	NO. OF CONTAINERS							REMARKS
123					OB-M0030-R2A								Tenax (11/6/92)
121					OB-M0030 R2A								Charcoal
168					OB-M0030 R2B								Tenax
166					OB-M0030 R2B								Charcoal
171					OB-M0030 R2C								Tenax
169					OB-M0030 R2C								Charcoal
237					OB-M0030 R2D								Tenax
235					OB-M0030 R2D								Charcoal
240					OB-M0030 R2E								Tenax
238					OB-M0030 R2E								Charcoal
243					OB-M0030 R2F								Tenax
241					OB-M0030 R2F								Charcoal

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

Original Accompanies Shipment

ETS Analytical Services • A Division of ETS Inc

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CHAIN OF CUSTODY RECORD

NEW LOCATION & PHONE
ETS Analytical Services, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012-1309
Phone (703) 265-0001 / FAX (703) 561-1866

PROJ. NO: 92-655-6
PROJECT NAME: EPA Brick
SAMPLERS: (Signature)

Sample Number			COMP	GRAB	RUN I.D.	NO. OF CONTAINERS							REMARKS
126					OB-MW030-R3A								Tenax (11/7/92)
124					OB-MW030-R3A								Charcoal
156					OB-MW030-R3B								Tenax
154					OB-MW030-R3B								Charcoal
189					OB MW030-R3C								Tenax
157					OB-MW030-R3C								Charcoal
264					OB-MW030 R3D								Tenax
262					OB-MW030 R3D								Charcoal
267					OB-MW030 R3E								Tenax
265					OB-MW030 R3E								Charcoal
270					OB MW030 R3F								Tenax
268					OB MW030 R3F								Charcoal

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

Original Accompanies Shipment

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CHAIN OF CUSTODY RECORD

NEW LOCATION & PHONE
ETS Analytical Services, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012-1309
Phone (703) 265-0001 / FAX (703) 563-4866

PROJ. NO. | PROJECT NAME

SAMPLERS (Signature)

Sample Number			COMP.	GRAB	RUN I.D.	NO. OF CONTAINERS							REMARKS
102					IN-MW030 R1A								Tenax (11/6/92)
100					IN-MW030 R1A								Charcoal
138					IN MW030 R1B								Tenax
136					IN MW030 R1B								Charcoal
141					IN MW030 R1C								Tenax
139					IN MW030 R1C								Charcoal
192					IN MW030 R1D								Tenax
190					IN MW030 R1D								Charcoal
195					IN MW030 R1E								Tenax
193					IN MW030 R1E								Charcoal
198					IN MW030 R1F								Tenax
196					IN MW030 R1F								Charcoal

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

Original Accompanies Shipment

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CHAIN OF CUSTODY RECORD

NEW LOCATION & PHONE
ETS Analytical Services, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012 1309
Phone (703) 265 0004 / FAX (703) 563 4866

PROJ. NO: 92-655-6

PROJECT NAME: EPA Brick

SAMPLERS. (Signature)

Sample Number			COMP	GRAB	RUN I.D.	NO. OF CONTAINERS							REMARKS
105					IN-MW030 R2A								Tenax (11/6/92)
103					IN-MW030 R2A								Charcoal
156					IN-MW030 R2B								Tenax
154					IN-MW030 R2B								Charcoal
159					IN-MW030 R2C								Tenax
157					IN-MW030 R2C								Charcoal
219					IN-MW030 R2D								Tenax
217					IN MW030 R2D								Charcoal
222					IN MW030 R2E								Tenax
220					IN MW030 R2E								Charcoal
225					IN MW030 R2F								Tenax
223					IN MW030 R2F								Charcoal

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

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

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

Original Accompanies Shipment

ETS Analytical Services • A Division of ETS, Inc

CHAIN OF CUSTODY RECORD

ETS Analytical Services, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012-1309
Phone (703) 265-0004 / FAX (703) 563-1866

PROJ. NO. 92-655-6 | PROJECT NAME EPA BRICK

SAMPLERS (Signature)

Sample Number			COMP	GRAB	RUN I.D.	NO. OF CONTAINERS							REMARKS
108					IN MW030 R3A								Tenax (11-7-92)
106					IN MW030 R3A								Charcoal
174					IN MW030 R3B								Tenax
172					IN MW030 R3B								Charcoal
177					IN MW030 R3C								Tenax
175					IN MW030 R3C								Charcoal
246					IN MW030 R3D								Tenax
244					IN MW030 R3D								Charcoal
249					IN MW030 R3E								Tenax
247					IN MW030 R3E								Charcoal
252					IN MW030 R3F								Tenax
250					IN MW030 R3F								Charcoal.

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

Original Accompanies Shipment

RECEIVED NOV 16 1992

TRIANGLE LABORATORIES OF RTP, INC.
801 CAPITOLA DRIVE
DURHAM, NC 27713

PHONE: (919) 544-5729
FAX: (919) 544-5491

THIS REPORT IS PROVIDED TO ACKNOWLEDGE RECEIPT OF YOUR SAMPLE(S), AND TO ADVISE YOU OF THE STATUS OF YOUR ORDER.

JAMES WRIGHT/NANCY LEWIS
ETS INTERNATIONAL, INC.
1401 MUNICIPAL DRIVE
ROANOKE, VA 24012

TYPE AND NUMBER OF SAMPLES

VOST_57

PROJECT NAME: EPA BRICK #92-655-6
PURCHASE ORDER NO.: 3975
REFERENCE NO.: 0100000795

TRIANGLE LABORATORIES INFORMATION

DATE SAMPLES RECEIVED: 11/10/92

UPON RECEIPT, A TLI PROJECT WAS INITIATED TO PROCESS YOUR SAMPLES. PLEASE REFER TO THE TLI PROJECT NUMBER GIVEN BELOW WHEN INQUIRING ABOUT THE STATUS OF YOUR SAMPLES:

TLI PROJECT NUMBER: 22355

ANTICIPATED DATA PACKAGE SHIP DATE: 12/01/92

PARAMETERS TO BE ANALYZED:

DIOXIN DEPT		ORGANICS DEPT		INORGANICS DEPT		OTHER
DD/DF		VOLATILES	✓	M-M TRAIN		
2378 TCDF ONLY		SEMIVOLATILES		TCLP		
2378 TCDD ONLY		PESTICIDES		METALS IN WATER		
TETRA-OCTA		PCB'S		NON-ROUTINE:		
MONO-OCTA		CBCP'S				
CONFIRMATION		PAH'S				
TCDD/DF		AOX/TOX				
OTHERS:		OTHERS:				

CONTACT(S):
SALES: Vicki Wray
DATA INTERPRETATION: Hani Karam
PROJECT STATUS: Robert Smith

Signature: [signature] Date: 11/10/92

Custody Seal : Present/Intact Chain of Custody : Present Sample Tags : Present Sample Tag Numbers : Listed SMO Forms : Absent	TLI Project Number : 22355		Book
	Client: ETS02	ETS INTERNATIONAL, INC.	61
	Date Received	11/10/92 By Robert Hall	Page
Ice Chest Ice Temp 40.0 F	Carrier and Number	FEDX#1840313554	37

Sample ID TLI	Sample ID Client	Matrix	Storage Location	To Lab Date/Initial	To Storage Date/Initial	To Lab Date/Initial
61-37-1	OA-M0030-R1A TENAX	VOST TUBE	FRIG#3			
61-37-2	OA-M0030-R1A TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-3	OA-M0030-R1B TENAX	VOST TUBE	FRIG#3			
61-37-4	OA-M0030-R1B TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-5	OA-M0030-R1C TENAX	VOST TUBE	FRIG#3			
61-37-6	OA-M0030-R1C TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-7	OA-M0030-R1D TENAX	VOST TUBE	FRIG#3			
61-37-8	OA-M0030-R1D TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-9	OA-M0030-R1E TENAX	VOST TUBE	FRIG#3			
61-37-10	OA-M0030-R1E TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-11	OA-M0030-R1F TENAX	VOST TUBE	FRIG#3			
61-37-12	OA-M0030-R1F TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-13	OA-M0030-R2A TENAX	VOSTTUBE	FRIG#3			
61-37-14	OA-M0030-R2A TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-15	OA-M0030-R2B TENAX	VOSTTUBE	FRIG#3			
61-37-16	OA-M0030-R2B TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-17	OA-M0030-R2C TENAX	VOSTTUBE	FRIG#3			

Receiving Remarks: TENEX,TENEX CHARCOAL SAMPLE NO's OA- M0030-R0,OB-M0030-R0 AND IN-M0030-R0 WERE NOT LISTED ON C.O.C.	Archive Remarks:

TRIANGLE LABORATORIES OF RTP, INC.--CHAIN OF CUSTODY---REVISED 07/23/92

Custody Seal : Present/Intact Chain of Custody : Present Sample Tags : Present Sample Tag Numbers : Listed SMO Forms : Absent	TLI Project Number	22355	Book
	Client: ETS02	ETS INTERNATIONAL, INC.	6
	Date Received	11/10/92 By *Robert Hall*	Page
Ice Chest Ice Temp 40.0 F	Carrier and Number	FEDX#1840313554	37

Sample ID TLI	Client	Matrix	Storage Location	To Lab Date/Initial	To Storage Date/Initial	To Lab Date/Initia
61-37-18	OA-M0030-R2C TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-19	OA-M0030-R2D TENAX	VOSTTUBE	FRIG#3			
61-37-20	OA-M0030-R2D TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-21	OA-M0030-R2E TENAX	VOSTTUBE	FRIG#3			
61-37-22	OA-M0030-R2E TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-23	OA-M0030-R2F TENAX	VOSTTUBE	FRIG#3			
61-37-24	OA-M0030-R2F TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-25	OA-M0030-R3A TENAX	VOSTTUBE	FRIG#3			
61-37-26	OA-M0030-R3A TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-27	OA-M0030-R3B TENAX	VOSTTUBE	FRIG#3			
61-37-28	OA-M0030-R3B TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-29	OA-M0030-R3C TENAX	VOSTTUBE	FRIG#3			
61-37-30	OA-M0030-R3C TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-31	OA-M0030-R3D TENAX	VOSTTUBE	FRIG#3			
61-37-32	OA-M0030-R3D TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-33	OA-M0030-R3E TENAX	VOSTTUBE	FRIG#3			
61-37-34	OA-M0030-R3E TENAX CHARC.	VOSTTUBE	FRIG#3			

Receiving Remarks: TENEX,TENEX CHARCOAL SAMPLE NO's OA-	Archive Remarks:
M0030-RO,OB-M0030-RO AND IN-M0030-RO	
WERE NOT LISTED ON C.O.C.	

TRIANGLE LABORATORIES OF RTP, INC.--CHAIN OF CUSTODY---REVISED 07/23/92

Custody Seal : Present/Intact Chain of Custody : Present Sample Tags : Present Sample Tag Numbers : Listed SMO Forms : Absent	TLI Project Number	22355		Book
	Client: ETS02	ETS INTERNATIONAL, INC.		61
	Date Received	11/10/92	By Robert Hall	Page
Ice Chest Ice Temp 40.0 F	Carrier and Number	FEDX#1840313554		37

Sample ID TLI	Client	Matrix	Storage Location	To Lab Date/Initial		To Storage Date/Initial		To Lab Date/Initial	
61-37-35	OA-M0030-R3F TENAX	VOSTTUBE	FRIG#3						
61-37-36	OA-M0030-R3F TENAX CHARC.	VOSTTUBE	FRIG#3						
61-37-37	OB-M0030-R1A TENAX	VOSTTUBE	FRIG#3						
61-37-38	OB-M0030-R1A TENAX CHARC.	VOSTTUBE	FRIG#3						
61-37-39	OB-M0030-R1B TENAX	VOSTTUBE	FRIG#3						
61-37-40	OB-M0030-R1B TENAX CHARC.	VOSTTUBE	FRIG#3						
61-37-41	OB-M0030-R1C TENAX	VOSTTUBE	FRIG#3						
61-37-42	OB-M0030-R1C TENAX CHARC.	VOSTTUBE	FRIG#3						
61-37-43	OB-M0030-R1D TENAX	VOSTTUBE	FRIG#3						
61-37-44	OB-M0030-R1D TENAX CHARC.	VOSTTUBE	FRIG#3						
61-37-45	OB-M0030-R1E TENAX	VOSTTUBE	FRIG#3						
61-37-46	OB-M0030-R1E TENAX CHARC.	VOSTTUBE	FRIG#3						
61-37-47	OB-M0030-R1F TENAX	VOSTTUBE	FRIG#3						
61-37-48	OB-M0030-R1F TENAX CHARC.	VOSTTUBE	FRIG#3						
61-37-49	OB-M0030-R2A TENAX	VOSTTUBE	FRIG#3						
61-37-50	OB-M0030-R2A TENAX CHARC.	VOSTTUBE	FRIG#3						
61-37-51	OB-M0030-R2B TENAX	VOSTTUBE	FRIG#3						

Receiving Remarks: TENEX,TENEX CHARCOAL SAMPLE NO's OA-	Archive Remarks:
M0030-RO,OB-M0030-RO AND IN-M0030-RO	
WERE NOT LISTED ON C.O.C.	

TRIANGLE LABORATORIES OF RTP, INC.--CHAIN OF CUSTODY---REVISED 07/23/92-

Custody Seal : Present/Intact Chain of Custody : Present Sample Tags : Present Sample Tag Numbers : Listed SMO Forms : Absent	TLI Project Number	22355	Book
	Client: ETS02	ETS INTERNATIONAL, INC.	61
	Date Received	11/10/92 By	Page
Ice Chest Ice Temp 40.0 F	Carrier and Number	FEDX#1840313554	37

Sample ID TLI	Sample ID Client	Matrix	Storage Location	To Lab Date/Initial	To Storage Date/Initial	To Lab Date/Initial
61-37-52	OB-M0030-R2B TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-53	OB-M0030-R2C TENAX	VOSTTUBE	FRIG#3			
61-37-54	OB-M0030-R2C TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-55	OB-M0030-R2D TENAX	VOSTTUBE	FRIG#3			
61-37-56	OB-M0030-R2D TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-57	OB-M0030-R2E TENAX	VOSTTUBE	FRIG#3			
61-37-58	OB-M0030-R2E TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-59	OB-M0030-R2F TENAX	VOSTTUBE	FRIG#3			
61-37-60	OB-M0030-R2F TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-61	OB-M0030-R3A TENAX	VOSTTUBE	FRIG#3			
61-37-62	OB-M0030-R3A TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-63	OB-M0030-R3B TENAX	VOSTTUBE	FRIG#3			
61-37-64	OB-M0030-R3B TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-65	OB-M0030-R3C TENAX	VOSTTUBE	FRIG#3			
61-37-66	OB-M0030-R3C TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-67	OB-M0030-R3D TENAX	VOSTTUBE	FRIG#3			
61-37-68	OB-M0030-R3D TENAX CHARC.	VOSTTUBE	FRIG#3			

Receiving Remarks:	Archive Remarks:
TENEX,TENEX CHARCOAL SAMPLE NO's OA-	
M0030-RO,OB-M0030-RO AND IN-M0030-RO	
WERE NOT LISTED ON C.O.C.	

TRIANGLE LABORATORIES OF RTP, INC.--CHAIN OF CUSTODY---REVISED 07/23/92

Custody Seal : Present/Intact Chain of Custody : Present Sample Tags : Present Sample Tag Numbers : Listed SMO Forms : Absent	TLI Project Number	22355	Book
	Client: ETS02	ETS INTERNATIONAL, INC.	61
	Date Received	11/10/92 By Robert O. Hall	Page
Ice Chest Ice Temp 40.0 F	Carrier and Number	FEDX#1840313554	37

Sample ID TLI	Client	Matrix	Storage Location	To Lab Date/Initial	To Storage Date/Initial	To Lab Date/Initial
61-37-69	OB-M0030-R3E TENAX	VOSTTUBE	FRIG#3			
61-37-70	OB-M0030-R3E TENAX CHARC.	VOSTTUBE	FRIG#3			
61-37-71	OB-M0030-R3F TENAX	VOSTTUBE	FRIG#3			
61-37-72	OB-M0030-R3F TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-73	IN-M0030-R1A TENAX	VOST TUBE	FRIG#3			
61-37-74	IN-M0030-R1A TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-75	IN-M0030-R1B TENAX	VOST TUBE	FRIG#3			
61-37-76	IN-M0030-R1B TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-77	IN-M0030-R1C TENAX	VOST TUBE	FRIG#3			
61-37-78	IN-M0030-R1C TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-79	IN-M0030-R1D TENAX	VOST TUBE	FRIG#3			
61-37-80	IN-M0030-R1D TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-81	IN-M0030-R1E TENAX	VOST TUBE	FRIG#3			
61-37-82	IN-M0030-R1E TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-83	IN-M0030-R1F TENAX	VOST TUBE	FRIG#3			
61-37-84	IN-M0030-R1F TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-85	IN-M0030-R2A TENAX	VOST TUBE	FRIG#3			

Receiving Remarks	Archive Remarks
TENEX,TENEX CHARCOAL SAMPLE NO's OA- M0030-RO,OB-M0030-RO AND IN-M0030-RO WERE NOT LISTED ON C.O.C.	

TRIANGLE LABORATORIES OF RTP, INC.--CHAIN OF CUSTODY---REVISED 07/23/92

Custody Seal : Present/Intact Chain of Custody : Present Sample Tags : Present Sample Tag Numbers : Listed SMO Forms : Absent	TLI Project Number	22355	Book
	Client: ETS02	ETS INTERNATIONAL, INC.	6
	Date Received	11/10/92 By [signature]	Page
Ice Chest Ice Temp 40.0 F	Carrier and Number	FEDX#1840313554	3

Sample ID TLI	Client	Matrix	Storage Location	To Lab Date/Initial	To Storage Date/Initial	To Lab Date/Initial
61-37-86	IN-M0030-R2A TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-87	IN-M0030-R2B TENAX	VOST TUBE	FRIG#3			
61-37-88	IN-M0030-R2B TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-89	IN-M0030-R2C TENAX	VOST TUBE	FRIG#3			
61-37-90	IN-M0030-R2C TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-91	IN-M0030-R2D TENAX	VOST TUBE	FRIG#3			
61-37-92	IN-M0030-R2D TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-93	IN-M0030-R2E TENAX	VOST TUBE	FRIG#3			
61-37-94	IN-M0030-R2E TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-95	IN-M0030-R2F TENAX	VOST TUBE	FRIG#3			
61-37-96	IN-M0030-R2F TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-97	IN-M0030-R3A TENAX	VOST TUBE	FRIG#3			
61-37-98	IN-M0030-R3A TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-99	IN-M0030-R3B TENAX	VOST TUBE	FRIG#3			
61-37-100	IN-M0030-R3B TENAX CHARC.	VOST TUBE	FRIG#3			
61-37-101	IN-M0030-R3C TENAX	VOST TUBE	FRIG#3			
61-37-102	IN-M0030-R3C TENAX CHARC.	VOST TUBE	FRIG#3			

Receiving Remarks: TENEX,TENEX CHARCOAL SAMPLE NO's OA-M0030-R0,OB-M0030-R0 AND IN-M0030-R0 WERE NOT LISTED ON C.O.C.

Archive Remarks:

TRIANGLE LABORATORIES OF RTP, INC.--CHAIN OF CUSTODY---REVISED 07/23/9

Custody Seal : Present/Intact Chain of Custody : Present Sample Tags : Present Sample Tag Numbers : Listed SMC Forms : Absent	TLI Project Number	22355	Book
	Client: ETS02	ETS INTERNATIONAL, INC.	61
	Date Received	11/10/92 By	Page
Ice Chest Ice Temp 40.0 F	Carrier and Number	FEDX#1840313554	37

Sample ID TLI	Client	Matrix	Storage Location	To Lab Date/Initial		To Storage Date/Initial		To Lab Date/Initial	
61-37-103	IN-M0030-R3D TENAX	VOST TUBE	FRIG#3						
61-37-104	IN-M0030-R3D TENAX CHARC.	VOST TUBE	FRIG#3						
61-37-105	IN-M0030-R3E TENAX	VOST TUBE	FRIG#3						
61-37-106	IN-M0030-R3E TENAX CHARC.	VOST TUBE	FRIG#3						
61-37-107	IN-M0030-R3F TENAX	VOST TUBE	FRIG#3						
61-37-108	IN-M0030-R3F TENAX CHARC.	VOST TUBE	FRIG#3						
61-37-109	OA-M0030-RO TENAX	VOST TUBE	FRIG#3						
61-37-110	OA-M0030-RO TENAX CHARC.	VOST TUBE	FRIG#3						
61-37-111	OB-M0030-RO TENAX	VOST TUBE	FRIG#3						
61-37-112	OB-M0030-RO TENAX CHARC.	VOST TUBE	FRIG#3						
61-37-113	IN-M0030-RO TENAX	VOST TUBE	FRIG#3						
61-37-114	IN-M0030-RO TENAX CHARC.	VOST TUBE	FRIG#3						

Receiving Remarks: TENEX,TENEX CHARCOAL SAMPLE NO's OA-	Archive Remarks:
M0030-RO,OB-M0030-RO AND IN-M0030-RO	
WERE NOT LISTED ON C.O.C.	

TRIANGLE LABORATORIES OF RTP, INC.--CHAIN OF CUSTODY---REVISED 07/23/92

RECEIVED NOV 19 1992

TRIANGLE LABORATORIES OF RTP, INC.
801 CAPITOLA DRIVE
DURHAM, NC 27713

PHONE: (919) 544-5729
FAX: (919) 544-5491

THIS REPORT IS PROVIDED TO ACKNOWLEDGE RECEIPT OF YOUR SAMPLE(S), AND TO ADVISE YOU OF THE STATUS OF YOUR ORDER.

W. TONY UNDERWOOD
ETS INTERNATIONAL, INC.
1401 MUNICIPAL DRIVE
ROANOKE, VA 24012

TYPE AND NUMBER OF SAMPLES

VOSTTUBE_6
PAIRS

PROJECT NAME: #92-655-6/EPA BRICK
PURCHASE ORDER NO.: 4023
REFERENCE NO.: 0100000852

TRIANGLE LABORATORIES INFORMATION

DATE SAMPLES RECEIVED: 11/14/92

UPON RECEIPT, A TLI PROJECT WAS INITIATED TO PROCESS YOUR SAMPLES. PLEASE REFER TO THE TLI PROJECT NUMBER GIVEN BELOW WHEN INQUIRING ABOUT THE STATUS OF YOUR SAMPLES:

TLI PROJECT NUMBER: 22402

ANTICIPATED DATA PACKAGE SHIP DATE: 12/05/92

PARAMETERS TO BE ANALYZED:

DIOXIN DEPT		ORGANICS DEPT		INORGANICS DEPT		OTHER
DD/DF	___	VOLATILES	✓	M-M TRAIN	___	
2378 TCDF ONLY	___	SEMIVOLATILES	___	TCLP	___	
2378 TCDD ONLY	___	PESTICIDES	___	METALS IN WATER	___	
TETRA-OCTA	___	PCB'S	___	NON-ROUTINE:	___	
MONO-OCTA	___	CBCP'S	___			
CONFIRMATION	___	PAH'S	___			
TCDD/DF	___	AOX/TOX	___			
OTHERS:	___	OTHERS:	___			

CONTACT(S):

SALES:	Vicki Wray
DATA INTERPRETATION:	Hani Karam
PROJECT STATUS:	Robert Smith

Signature: Mary C. Colle   Date: 11/16/92

Custody Seal : Present/Intact		TLI Project Number	22402	Book
Chain of Custody : Present		Client: ETS02	ETS INTERNATIONAL, INC.	61
Sample Tags : Present				
Sample Tag Numbers : Listed				
SMO Forms : Absent		Date Received	11/14/92 By	Page
Ice Chest	Ice Temp 40.0 F	Carrier and Number	FEDX.1840313296	78

Sample ID TLI	Client	Matrix	Storage Location	To Lab Date/Initial	To Storage Date/Initial	To Lab Date/Initial
61-78-1	92-655-00274	VOSTTUBE	FRIG#3			
61-78-2	92-655-00276	VOSTTUBE	FRIG#3			
61-78-3	92-655-00277	VOSTTUBE	FRIG#3			
61-78-4	92-655-00279	VOSTTUBE	FRIG#3			
61-78-5	92-655-00280	VOSTTUBE	FRIG#3			
61-78-6	92-655-00282	VOSTTUBE	FRIG#3			
61-78-7	92-655-00283	VOSTTUBE	FRIG#3			
61-78-8	92-655-00285	VOSTTUBE	FRIG#3			
61-78-9	92-655-00286	VOSTTUBE	FRIG#3			
61-78-10	92-655-00288	VOSTTUBE	FRIG#3			
61-78-11	92-655-00289	VOSTTUBE	FRIG#3			
61-78-12	92-655-00291	VOSTTUBE	FRIG#3			

Receiving Remarks:	Archive Remarks:
SAMPLE NUMBERS ON SAMPLES DIFFERS FROM CLIENT'S CHAIN OF CUSTODY.	

TRIANGLE LABORATORIES OF RTP, INC.--CHAIN OF CUSTODY---REVISED 07/23/92

E.6 SAMPLE LOG AND CHAIN OF CUSTODY RECORDS FOR SEMIVOLATILE ORGANICS SAMPLING

ETS, INC.

Proudly serving industry and government since 1973.   Providing: Toxic Emission Measurement & Control

A subsidiary of ETS International, Inc.

November 10, 1992

Mr. Hani Karam
Triangle Laboratories, Inc.
801-10 Capitola Drive
Durham, NC 27713

RE: TLI Work Order Reference Number: 0100000795
ETS Purchase Order: 3975

Dear Mr. Karam:

Accompanying this letter are two (2) coolers and two (2) boxes of EPA Method 0010 sampling train components. These samples are from a total of twelve (12) Method 0010 sampling trains (I.D.'s of Runs IN-1,2,3 and Blank, OA-1,2,3 and Blank, and OB-1,2,3 and Blank). Each train consists of one sorbent trap, one filter, and four to six liquid samples, except for OB-Run 3. Run OB-3 has two sorbent (XAD) traps (Sample #'s 979 and 1015), two filters (Sample #'s 972 and 1008), and two condensate collection containers (Sample #'s 975 and 1011), each item labeled A and B. For Run OB-3, each type of sample, (the two sorbent traps, the two filters, and the two condensate containers) should each be combined into single samples. A total of 13 solid sorbent (XAD) traps, 13 quartz glass filters in petri dishes, and 49 liquid samples are included in the shipment. The liquid samples include front half acetone/methylene chloride rinses, front half toluene rinses, back half toluene rinses, and back half water catches (first impinger only). Chain of custody information is included which lists the sample type and identification number for each.

Please analyze the samples for phenol, naphthalene, 2-methylphenol, dimethylphthalate, dibenzofuran, di-n-butylphthalate, bis(2-ethylhexy)phthalate, and scan for the 189 HAP (hazardous air pollutants. Please feel free to call me or Mike Visneski if you have any questions.

Sincerely,

ETS, Inc.

W. Tony Underwood

W. Tony Underwood
Project Manager

/WTU
Enclosure(s)

TRIANGLE LABS

.TE: 10/27/92 | TRIANGLE LABORATORIES OF RTP, INC. SAMPLE ANALYSIS QUOTATION FORM | Ship Samples To: 801 Capitola Drive RTP, NC 27713

VALID THRU: 11/30/92 Phone: (919)544-5729 Fax: (919)544-5491

Client Information | Client Code: ETS02

Client: ETS INTERNATIONAL, INC.
Contact: NANCE LEWIS
Phone No: 703-265-0004
Fax No: 703-265-0131

NOTES:
1. Send this quote w/samples.
2. Re-extractions or Dilutions due to matrix problems will have additional billing. Client will be notified.
3. Payment Terms - NET 30 Days

REFERENCE NO.: 0100000795
PRODUCT MANAGER: Hani Karam 919-544-5729
SALES REP: Lisa Hill 919-544-5729

TO BE FILLED IN BY CUSTOMER
Billing Address
____

Shipping Address
(No PO Box)
____

Purchase Order No.
____

Sample/Analysis Information

Start Date: 11/04/92
Frequency: ________
Turn-Around Time: 30 Days
Minimum Amount Needed: ______ g ______ L
Percent Moisture/Lipids: yes / no

Legislation
TSCA ______
FIFRA ______
RCRA ______
NPDES ______
Other ______

PREPS	Qty	Price Unit	Price Total
Grinding			
Compositing			
% Lipid			
XAD Prep.			
PUF Prep.			
Filter Prep.			
VOST Prep.			
Other			
Pooled FH/BH:	yes	no	
Tandem VOST:	yes	no	

#	Matrix	ANALYSIS Analysis/Method	PRICE Unit	PRICE Total
60	VOSTPREP	E02101 CLEAN/PACK (NO SPIKE)	80.00	4800.00
15	XAD PREP	E00061 CLEAN/PACK/SPIKE (OTHERS)	110.00	1650.00
60	VOST	B99101 MISCELLANEOUS	315.00	18900.00
12	MM5	C99061 MISCELLANEOUS	550.00	6600.00

GRAND TOTAL 31950.00

SPECIAL REQUIREMENTS: SEE SPECIAL LIST

Report Generation | Dry Weight: yes / no
Toxic Equivalency Factors: yes / no Type: ____
No. Copies: 1

Authorized Signatures:
TLI Contact: Deborah E. Hage
Deborah E. Hage
Customer: ______________

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method 23

Print Date 11/10/92   Time 12:37:09
Page 1

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00900	F1		IN -M23-R1	Quartz Filter			NKL	11/10/92	
00901	F2A		IN -M23-R1	FH Acetone / MeCl2			NKL	11/10/92	
00902	F3		IN -M23-R1	FH Toluene Rinse			NKL	11/10/92	
00903	F4A		IN -M23-R1	Impinger 1			NKL	11/10/92	
00904	F4B		IN -M23-R1	Imp. 1 Tol. Rinse			NKL	11/10/92	
~~00905~~	~~F5A~~		~~IN -M23-R1~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
~~00906~~	~~F5B~~		~~IN -M23-R1~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
00907	F6		IN -M23-R1	XAD Resin Trap			NKL	11/10/92	
~~00908~~	~~F7~~		~~IN -M23-R1~~	~~TEDLAR BAG~~			~~NKL~~	~~11/10/92~~	
00909	F1		IN -M23-R2	Quartz Filter			NKL	11/10/92	
00910	F2A		IN -M23-R2	FH Acetone / MeCl2			NKL	11/10/92	
00911	F3		IN -M23-R2	FH Toluene Rinse			NKL	11/10/92	
00912	F4A		IN -M23-R2	Impinger 1			NKL	11/10/92	
00913	F4B		IN -M23-R2	Imp. 1 Tol. Rinse			NKL	11/10/92	
~~00914~~	~~F5A~~		~~IN -M23-R2~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
~~00915~~	~~F5B~~		~~IN -M23-R2~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
00916	F6		IN -M23-R2	XAD Resin Trap			NKL	11/10/92	
~~00917~~	~~F7~~		~~IN -M23-R2~~	~~TEDLAR BAG~~			~~NKL~~	~~11/10/92~~	
00918	F1		IN -M23-R3	Quartz Filter			NKL	11/10/92	
00919	F2A		IN -M23-R3	FH Acetone / MeCl2			NKL	11/10/92	
00920	F3		IN -M23-R3	FH Toluene Rinse			NKL	11/10/92	
00921	F4A		IN -M23-R3	Impinger 1			NKL	11/10/92	
00922	F4B		IN -M23-R3	Imp. 1 Tol. Rinse			NKL	11/10/92	
~~00923~~	~~F5A~~		~~IN -M23-R3~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
~~00924~~	~~F5B~~		~~IN -M23-R3~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
00925	F6		IN -M23-R3	XAD Resin Trap			NKL	11/10/92	
~~00926~~	~~F7~~		~~IN -M23-R3~~	~~TEDLAR BAG~~			~~NKL~~	~~11/10/92~~	

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method 23

Print Date 11/10/92
Page 2

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00927	F1		OA -M23-R1	Quartz Filter			NKL	11/10/92	
00928	F2A		OA -M23-R1	FH Acetone / MeCl2			NKL	11/10/92	
00929	F3		OA -M23-R1	FH Toluene Rinse			NKL	11/10/92	
00930	F4A		OA -M23-R1	Impinger 1			NKL	11/10/92	
00931	F4B		OA -M23-R1	Imp. 1 Tol. Rinse			NKL	11/10/92	
~~00932~~	~~F5A~~		~~OA -M23-R1~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
~~00933~~	~~F5B~~		~~OA -M23-R1~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
00934	F6		OA -M23-R1	XAD Resin Trap			NKL	11/10/92	
~~00935~~	~~F7~~		~~OA -M23-R1~~	~~TEDLAR BAG~~			~~NKL~~	~~11/10/92~~	
00936	F1		OA -M23-R2	Quartz Filter			NKL	11/10/92	
00937	F2A		OA -M23-R2	FH Acetone / MeCl2			NKL	11/10/92	
00938	F3		OA -M23-R2	FH Toluene Rinse			NKL	11/10/92	
00939	F4A		OA -M23-R2	Impinger 1			NKL	11/10/92	
00940	F4B		OA -M23-R2	Imp. 1 Tol. Rinse			NKL	11/10/92	
~~00941~~	~~F5A~~		~~OA -M23-R2~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
~~00942~~	~~F5B~~		~~OA -M23-R2~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
00943	F6		OA -M23-R2	XAD Resin Trap			NKL	11/10/92	
~~00944~~	~~F7~~		~~OA -M23-R2~~	~~TEDLAR BAG~~			~~NKL~~	~~11/10/92~~	
00945	F1		OA -M23-R3	Quartz Filter			NKL	11/10/92	
00946	F2A		OA -M23-R3	FH Acetone / MeCl2			NKL	11/10/92	
00947	F3		OA -M23-R3	FH Toluene Rinse			NKL	11/10/92	
00948	F4A		OA -M23-R3	Impinger 1			NKL	11/10/92	
00949	F4B		OA -M23-R3	Imp. 1 Tol. Rinse			NKL	11/10/92	
~~00950~~	~~F5A~~		~~OA -M23-R3~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
~~00951~~	~~F5B~~		~~OA -M23-R3~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
00952	F6		OA -M23-R3	XAD Resin Trap			NKL	11/10/92	
~~00953~~	~~F7~~		~~OA -M23-R3~~	~~TEDLAR BAG~~			~~NKL~~	~~11/10/92~~	

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method 23

Print Date 11/10/92
Page 3

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00954	F1		OB -M23-R1	Quartz Filter			NKL	11/10/92	
00955	F2A		OB -M23-R1	FH Acetone / MeCl2			NKL	11/10/92	
00956	F3		OB -M23-R1	FH Toluene Rinse			NKL	11/10/92	
00957	F4A		OB -M23-R1	Impinger 1			NKL	11/10/92	
00958	F4B		OB -M23-R1	Imp. 1 Tol. Rinse			NKL	11/10/92	
~~00959~~	~~F5A~~		~~OB -M23-R1~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
~~00960~~	~~F5B~~		~~OB -M23-R1~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
00961	F6		OB -M23-R1	XAD Resin Trap			NKL	11/10/92	
~~00962~~	~~F7~~		~~OB -M23-R1~~	~~TEDLAR BAG~~			~~NKL~~	~~11/10/92~~	
00963	F1		OB -M23-R2	Quartz Filter			NKL	11/10/92	
00964	F2A		OB -M23-R2	FH Acetone / MeCl2			NKL	11/10/92	
00965	F3		OB -M23-R2	FH Toluene Rinse			NKL	11/10/92	
00966	F4A		OB -M23-R2	Impinger 1			NKL	11/10/92	
00967	F4B		OB -M23-R2	Imp. 1 Tol. Rinse			NKL	11/10/92	
~~00968~~	~~F5A~~		~~OB -M23-R2~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
~~00969~~	~~F5B~~		~~OB -M23-R2~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
00970	F6		OB -M23-R2	XAD Resin Trap			NKL	11/10/92	
~~00971~~	~~F7~~		~~OB -M23-R2~~	~~TEDLAR BAG~~			~~NKL~~	~~11/10/92~~	
00972	F1		OB -M23-R3	Quartz Filter			NKL	11/10/92	OB RUN 3 HAD TWO FILTERS
00973	F2A		OB -M23-R3	FH Acetone / MeCl2			NKL	11/10/92	
00974	F3		OB -M23-R3	FH Toluene Rinse			NKL	11/10/92	
00975	F4A		OB -M23-R3	Impinger 1			NKL	11/10/92	OB RUN 3 HAS TWO IMPINGER 1 SAMPLES

E T S , I N C .

F I E L D S A M P L E L O G

Contract No. 92-655
Job I.D.
Test Method 23

Print Date 11/10/92
Page 4

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00976	F4B		OB -M23-R3	Imp. 1 Tol. Rinse			NKL	11/10/92	
~~00977~~	~~F5A~~		~~OB -M23-R3~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
~~00978~~	~~F5B~~		~~OB -M23-R3~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
00979	F6		OB -M23-R3	XAD Resin Trap			NKL	11/10/92	OB RUN 3 HAS TWO XAD TRAPS
~~00980~~	~~F7~~		~~OB -M23-R3~~	~~TEDLAR BAG~~			~~NKL~~	~~11/10/92~~	
00981	F1		IN -M23-RO	Quartz Filter			NKL	11/10/92	
00982	F2A		IN -M23-RO	FH Acetone / MeCl2			NKL	11/10/92	
00983	F3		IN -M23-RO	FH Toluene Rinse			NKL	11/10/92	
00984	F4A		IN -M23-RO	Impinger 1			NKL	11/10/92	
00985	F4B		IN -M23-RO	Imp. 1 Tol. Rinse			NKL	11/10/92	
~~00986~~	~~F5A~~		~~IN -M23-RO~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
~~00987~~	~~F5B~~		~~IN -M23-RO~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
00988	F6		IN -M23-RO	XAD Resin Trap			NKL	11/10/92	
~~00989~~	~~F7~~		~~IN -M23-RO~~	~~TEDLAR BAG~~			~~NKL~~	~~11/10/92~~	
00990	F1		OA -M23-RO	Quartz Filter			NKL	11/10/92	
00991	F2A		OA -M23-RO	FH Acetone / MeCl2			NKL	11/10/92	
00992	F3		OA -M23-RO	FH Toluene Rinse			NKL	11/10/92	
00993	F4A		OA -M23-RO	Impinger 1			NKL	11/10/92	
00994	F4B		OA -M23-RO	Imp. 1 Tol. Rinse			NKL	11/10/92	
~~00995~~	~~F5A~~		~~OA -M23-RO~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
~~00996~~	~~F5B~~		~~OA -M23-RO~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
00997	F6		OA -M23-RO	XAD Resin Trap			NKL	11/10/92	
~~00998~~	~~F7~~		~~OA -M23-RO~~	~~TEDLAR BAG~~			~~NKL~~	~~11/10/92~~	
00999	F1		OB -M23-RO	Quartz Filter			NKL	11/10/92	
01000	F2A		OB -M23-RO	FH Acetone / MeCl2			NKL	11/10/92	

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F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method 23

Print Date 11/10/92
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Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
01001	F3		OB -M23-R0	FH Toluene Rinse			NKL	11/10/92	
01002	F4A		OB -M23-R0	Impinger 1			NKL	11/10/92	
01003	F4B		OB -M23-R0	Imp. 1 Tol. Rinse			NKL	11/10/92	
~~01004~~	~~F5A~~		~~OB -M23-R0~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
~~01005~~	~~F5B~~		~~OB -M23-R0~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
01006	F6		OB -M23-R0	XAD Resin Trap			NKL	11/10/92	
~~01007~~	~~F7~~		~~OB -M23-R0~~	~~TEDLAR BAG~~			~~NKL~~	~~11/10/92~~	
01008	F1		OB -M23-R3	Quartz Filter			NKL	11/10/92	OB RUN 3 USED TWO FILTERS
~~01009~~	~~F2A~~		~~OB -M23-R3~~	~~FH Acetone / MeCl2~~			~~NKL~~	~~11/10/92~~	
~~01010~~	~~F3~~		~~OB -M23-R3~~	~~FH Toluene Rinse~~			~~NKL~~	~~11/10/92~~	
01011	F4A		OB -M23-R3	Impinger 1			NKL	11/10/92	OB RUN 3 HAS TWO IMPINGER CATCH SAMPLES
~~01012~~	~~F4B~~		~~OB -M23-R3~~	~~Imp. 1 Tol. Rinse~~			~~NKL~~	~~11/10/92~~	
~~01013~~	~~F5A~~		~~OB -M23-R3~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
~~01014~~	~~F5B~~		~~OB -M23-R3~~	~~Silica Gel (Imp. 4)~~			~~NKL~~	~~11/10/92~~	
01015	F6		OB -M23-R3	XAD Resin Trap			NKL	11/10/92	OB RUN 3 HAS TWO XAD TRAPS
~~01016~~	~~F7~~		~~OB -M23-R3~~	~~TEDLAR BAG~~			~~NKL~~	~~11/10/92~~	

RECEIVED NOV 18 1992

TRIANGLE LABORATORIES OF RTP, INC.
801 CAPITOLA DRIVE
DURHAM, NC 27713

PHONE: (919) 544-5729
FAX: (919) 544-5491

THIS REPORT IS PROVIDED TO ACKNOWLEDGE RECEIPT OF YOUR SAMPLE(S), AND TO ADVISE YOU OF THE STATUS OF YOUR ORDER.

JAMES WRIGHT/NANCY LEWIS
ETS INTERNATIONAL, INC.
1401 MUNICIPAL DRIVE
ROANOKE, VA 24012

TYPE AND NUMBER OF SAMPLES

M23UNITS_12

PROJECT NAME: 92-655
PURCHASE ORDER NO.: 3975
REFERENCE NO.: 0100000844

TRIANGLE LABORATORIES INFORMATION

DATE SAMPLES RECEIVED: 11/11/92

UPON RECEIPT, A TLI PROJECT WAS INITIATED TO PROCESS YOUR SAMPLES. PLEASE REFER TO THE TLI PROJECT NUMBER GIVEN BELOW WHEN INQUIRING ABOUT THE STATUS OF YOUR SAMPLES:

TLI PROJECT NUMBER: 22367

ANTICIPATED DATA PACKAGE SHIP DATE: 12/11/92

PARAMETERS TO BE ANALYZED:

DIOXIN DEPT		ORGANICS DEPT		INORGANICS DEPT		OTHER
DD/DF	___	VOLATILES	✓	M-M TRAIN	___	___
2378 TCDF ONLY	___	SEMIVOLATILES	✓	TCLP	___	___
2378 TCDD ONLY	___	PESTICIDES	___	METALS IN WATER	___	___
TETRA-OCTA	___	PCB'S	___	NON-ROUTINE: ___		___
MONO-OCTA	___	CBCP'S	___			
CONFIRMATION	___	PAH'S	___			
TCDD/DF	___	AOX/TOX	___			
OTHERS: ___		OTHERS: ___				

CONTACT(S):
SALES: Vicki Wray
DATA INTERPRETATION: Hani Karam
PROJECT STATUS: Robert Smith

Signature: V. Wray Date: 11/12/92

Custody Seal : Present/Intact	TLI Project Number	22367	Book
Chain of Custody : Present			
Sample Tags : Present	Client: ETS02	ETS INTERNATIONAL, INC.	61
Sample Tag Numbers : Listed			
SMO Forms : Absent	Date Received	11/11/92 By [signature]	Page
Ice Chest Ice Temp 40.0 F	Carrier and Number	FEDX.1840313495	50

Sample ID TLI	Client	Matrix	Storage Location	To Lab Date/Initial	To Storage Date/Initial	To Lab Date/Initial
61-50-1A	92-655-00900	FILTER	COOLER#2			
61-50-1B	92-655-00901	FH ACE/MECL2	COOLER#2			
61-50-1C	92-655-00902	FH TOLUENE RINSE	COOLER#2			
61-50-1D	92-655-00903	IMPINGER 1	COOLER#2			
61-50-1E	92-655-00904	IMP.1 TOL.RINSE	COOLER#2			
61-50-1F	92-655-00907	XAD	COOLER#2			
61-50-2A	92-655-00909	FILTER	COOLER#2			
61-50-2B	92-655-00910	FH ACE/MECL2	COOLER#2			
61-50-2C	92-655-00911	FH TOLUENE RINSE	COOLER#2			
61-50-2D	92-655-00912	IMPINGER 1	COOLER#2			
61-50-2E	92-655-00913	IMP.1 TOL. RINSE	COOLER#2			
61-50-2F	92-655-00916	XAD	COOLER#2			
61-50-3A	92-655-00918	FILTER	COOLER#2			
61-50-3B	92-655-00919	FH ACE/MECL2	COOLER#2			
61-50-3C	92-655-00920	FH TOLUENE RINSE	COOLER#2			
61-50-3D	92-655-00921	IMPINGER 1	COOLER#2			
61-50-3E	92-655-00922	IMP.1 TOL.RINSE	COOLER#2			

Receiving Remarks: MISSING FROM SHIPMENT WAS 00984,00993,	Archive Remarks:
01002;ALL IMPINGER 1.	

TRIANGLE LABORATORIES OF RTP, INC.--CHAIN OF CUSTODY---REVISED 07/23/92

Custody Seal : Present/Intact Chain of Custody : Present Sample Tags : Present Sample Tag Numbers : Listed SMO Forms : Absent	TLI Project Number: 22367	Book
	Client: ETS02 — ETS INTERNATIONAL, INC.	61
	Date Received: 11/11/92 By [signature]	Page
Ice Chest Ice Temp 40.0 F	Carrier and Number: FEDX.1840313495	50

Sample ID TLI	Sample ID Client	Matrix	Storage Location	To Lab Date/Initial	To Storage Date/Initial	To Lab Date/Initial
61-50-3F	92-655-00925	XAD	COOLER#2			
61-50-4A	92-655-00927	FILTER	COOLER#2			
61-50-4B	92-655-00928	FH ACE/MECL2	COOLER#2			
61-50-4C	92-655-00929	FH TOLUENE RINSE	COOLER#2			
61-50-4D	92-655-00930	IMPINGER 1	COOLER#2			
61-50-4E	92-655-00931	IMP.1 TOL.RINSE	COOLER#2			
61-50-4F	92-655-00934	XAD	COOLER#2			
61-50-5A	92-655-00936	FILTER	COOLER#2			
61-50-5B	92-655-00937	FH ACE/MECL2	COOLER#2			
61-50-5C	92-655-00938	FH TOLUENE RINSE	COOLER#2			
61-50-5D	92-655-00939	IMPINGER 1	COOLER#2			
61-50-5E	92-655-00940	IMP.1 TOL.RINSE	COOLER#2			
61-50-5F	92-655-00943	XAD	COOLER#2			
61-50-6A	92-655-00945	FILTER	COOLER#2			
61-50-6B	92-655-00946	FH ACE/MECL2	COOLER#2			
61-50-6C	92-655-00947	FH TOLUENE RINSE	COOLER#2			
61-50-6D	92-655-00948	IMPINGER 1	COOLER#2			

Receiving Remarks: MISSING FROM SHIPMENT WAS 00984,00993,
01002;ALL IMPINGER 1.

Archive Remarks:

TRIANGLE LABORATORIES OF RTP, INC.--CHAIN OF CUSTODY---REVISED 07/23/92

Custody Seal : Present/Intact Chain of Custody : Present Sample Tags : Present Sample Tag Numbers : Listed SMO Forms : Absent	TLI Project Number	22367	Book
	Client: ETS02	ETS INTERNATIONAL, INC.	61
	Date Received	11/11/92 By [signature]	Page
Ice Chest Ice Temp 40.0 F	Carrier and Number	FEDX.1840313495	50

Sample ID TLI	Client	Matrix	Storage Location	To Lab Date/Initial		To Storage Date/Initial		To Lab Date/Initial	
1-50-6E	92-655-00949	IMP.1 TOL.RINSE	COOLER#2						
1-50-6F	92-655-00952	XAD	COOLER#2						
1-50-7A	92-655-00954	FILTER	COOLER#2						
61-50-7B	92-655-00955	FH ACE/MECL2	COOLER#2						
1-50-7C	92-655-00956	FH TOLUENE	COOLER#2						
1-50-7D	92-655-00957	IMPINGER	COOLER#2						
61-50-7E	92-655-00958	IMP.1 TOL.RINSE	COOLER#2						
1-50-7F	92-655-00961	XAD	COOLER#2						
61-50-8A	92-655-00963	FILTER	COOLER#2						
61-50-8B	92-655-00964	FH ACE/MECL2	COOLER#2						
61-50-8C	92-655-00965	FH TOLUENE RINSE	COOLER#2						
61-50-8D	92-655-00966	IMPINGER 1	COOLER#2						
61-50-8E	92-655-00967	IMP.1 TOL.RINSE	COOLER#2						
61-50-8F	92-655-00970	XAD	COOLER#2						
61-50-9A	92-655-00972	FILTER	COOLER#2						
61-50-9B	92-655-00973	FH ACE/MECL2	COOLER#2						
61-50-9C	92-655-00974	FH TOLUENE RINSE	COOLER#2						

Receiving Remarks: MISSING FROM SHIPMENT WAS 00984,00993, 01002;ALL IMPINGER 1.	Archive Remarks:

TRIANGLE LABORATORIES OF RTP, INC.--CHAIN OF CUSTODY---REVISED 07/23/92

Custody Seal : Present/Intact Chain of Custody : Present Sample Tags : Present Sample Tag Numbers : Listed SMO Forms : Absent	TLI Project Number	22367		Book
	Client: ETS02	ETS INTERNATIONAL, INC.		61
	Date Received	11/11/92	By	Page
Ice Chest Ice Temp 40.0 F	Carrier and Number	FEDX.1840313495		50

Sample ID TLI	Client	Matrix	Storage Location	To Lab Date/Initial		To Storage Date/Initial		To Lab Date/Initial	
61-50-9D	92-655-00975	IMPINGER 1	COOLER#2						
61-50-9E	92-655-00976	IMP.1 TOL.RINSE	COOLER#2						
61-50-9F	92-655-00979	XAD	COOLER#2						
61-50-10A	92-655-00981	FILTER	COOLER#2						
61-50-10B	92-655-00982	FH ACE/MECL2	COOLER#2						
61-50-10C	92-655-00983	FH TOLUENE RINSE	COOLER#2						
61-50-10D	92-655-00985	IMP.1 TOL.RINSE	COOLER#2						
61-50-10E	92-655-00988	XAD	COOLER#2						
61-50-11A	92-655-00990	FILTER	COOLER#2						
61-50-11B	92-655-00991	FHACE/MECL2	COOLER#2						
61-50-11C	92-655-00992	FH TOLUENE RINSE	COOLER#2						
61-50-11D	92-655-00994	IMP.1 TOL.RINSE	COOLER#2						
61-50-11E	92-655-00997	XAD	COOLER#2						
61-50-12A	92-655-00999	FILTER	COOLER#2						
61-50-12B	92-655-01000	FH ACE/MECL2	COOLER#2						
61-50-12C	92-655-01001	FH TOLUENE RINSE	COOLER#2						
61-50-12D	92-655-01003	IMP 1 TOL.RINSE	COOLER#2						

Receiving Remarks: MISSING FROM SHIPMENT WAS 00984,00993,	Archive Remarks:
01002;ALL IMPINGER 1.	

TRIANGLE LABORATORIES OF RTP, INC.--CHAIN OF CUSTODY---REVISED 07/23/92

Custody Seal : Present/Intact	TLI Project Number	22367	Book
Chain of Custody : Present			
Sample Tags : Present	Client: ETS02	ETS INTERNATIONAL, INC.	61
Sample Tag Numbers : Listed			
SMO Forms : Absent	Date Received	11/11/92 By	Page
Ice Chest Ice Temp 40.0 F	Carrier and Number	FEDX.1840313495	50

Sample ID TLI	Client	Matrix	Storage Location	To Lab Date/Initial	To Storage Date/Initial	To Lab Date/Initial
61-50-12E	92-655-01006	XAD	COOLER#2			
61-50-13A	92-655-01008	FILTER	COOLER#2			
61-50-13B	92-655-01011	IMPINGER 1	COOLER#2			
61-50-13C	92-655-01015	XAD	COOLER#2			

Receiving Remarks: MISSING FROM SHIPMENT WAS 00984,00993, 01002;ALL IMPINGER 1.

Archive Remarks:

TRIANGLE LABORATORIES OF RTP, INC.--CHAIN OF CUSTODY---REVISED 07/23/92

E.7 SAMPLE LOG AND CHAIN OF CUSTODY RECORDS FOR ETHANE AND METHANE SAMPLING

ETS, INC.

Proudly serving industry and government since 1973. Providing: Toxic Emission Measurement & Control

A subsidiary of ETS International, Inc.

November 13, 1992

ETS Analytical Services, Inc.
1401 Municipal Road, NW
Roanoke, Virginia 24012

RE: Method 18 Analyses (Methane and Ethane)
ETS Contract No.: EPA Brick Plan 92-655-T
Work Assignment 6-5.3.1

Dear Dave:

Accompanying this letter are 11 Tedlar bag samples to be analyzed for methane and ethane in accordance with the gas chromatography procedures outlined in 40 CFR 60, Method 18 entitled "Measurement of Gaseous Organic Compound Emissions by Gas Chromatography". A sample chain-of-custody sheet is included with the samples.

This is a part of the EPA Project (ETS Contract No. 92-655-T), which should be used to reference all billing.

Please feel free to contact me or Mike Visneski if you have any questions. Thank you.

Sincerely,

ETS, Inc.

W. Tony Underwood

W. Tony Underwood
Project Manager

/WTU
Enclosure(s)

Rec'd @ ETSAS
11/13/92
1718

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method TEDLAR BAG

Print Date 11/13/92   Time 16:17:26
Page 1

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
02100	F1		OB -TED-R1	GAS SAMPLE			NKL	11/11/92	
02101	F1		OB -TED-R3	GAS SAMPLE			NKL	11/11/92	
02102	F1		OB -TED-R2	GAS SAMPLE			NKL	11/11/92	
02103	F1		OA -TED-R1	GAS SAMPLE			NKL	11/11/92	
02104	F1		IN -TED-R1	GAS SAMPLE			NKL	11/11/92	MAY HAVE LEAKED
02105	F1		OA -TED-R2	GAS SAMPLE			NKL	11/11/92	
02106	F1		IN -TED-R2	GAS SAMPLE			NKL	11/11/92	MAY HAVE LEAKED
02109	F1		CYL-TED-RO	GAS SAMPLE			NKL	11/13/92	CYLINDER # 533A
02110	F1		IN -TED-R3	GAS SAMPLE			NKL	11/11/92	
~~[illegible]~~	~~[illegible]~~		~~BLK-TED-RO~~	~~[illegible]~~			~~[illegible]~~	~~11/1[illegible]/92~~	
02112	F1		OA -TED-R3	GAS SAMPLE			NKL	11/11/92	
02114	F1		CYL-TED-RO	GAS SAMPLE			NKL	11/13/92	CYLINDER # 533B

E.8 SAMPLE LOG AND CHAIN OF CUSTODY RECORDS FOR MOISTURE ANALYSIS

ETS Analytical Services • A Division of ETS, Inc.
A USEPA Contract Laboratory

ETS

CHAIN OF CUSTODY RECORD

ETS Analytical Services, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012-1309
Phone (703) 265-0004 / FAX (703) 563-4866

PROJ. NO.: 92-6556

PROJECT NAME: EPA Brick

SAMPLERS: (Signature)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS							REMARKS
	10/28	16:15			Grinding Room Exit	Soil							Taken by Brian Shreger
	10/28	08:10			Grinding Building Exit	Soil							Taken by Brian Shreger
	10/27	14:30			Grinding Building Exit	Soil							Taken by Richard Meninshaw & Brian Shreger
	10/28	13:00			Grinding Room Exit	Soil							Taken by Brian Shreger
	10/29	13:30			Dried Sawdust								Taken by Richard Meninshaw
	10/30	10:45			Dried Sawdust								Taken by Brian Shreger
	11/4	14:15			Dried Sawdust								Taken by Brian Shreger
	11/3	16:00			Dried Sawdust								Taken by Brian Shreger
	11/2	15:30			Dried Sawdust								Taken By Brian Shreger
	11/6	15:30			Dried Sawdust								Taken By Brian Shreger
	11/5	15:30			Dried Sawdust								Taken By Brian Shreger
	11/4	14:00			Wet Sawdust								Taken By John Brown
	11/7	09:40			Dried Sawdust								Taken By Brian Shreger

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

Original Accompanies Shipment

Proudly serving industry and government since 1975. Providing: Toxic Emission Measurement & Cont.

A subsidiary of ETS International, Inc.

DATE: November 13, 1992

TO: Chris Southworth

FROM: Mike Visneski

SUBJECT: Free Moisture Analysis

Thirteen samples are being submitted to ETSAS for free moisture analysis. There are four (4) soil samples, eight (8) dried sawdust samples, and one (1) wet sawdust sample.

I am not sure if there is an ASTM method for free moisture analyses for these types of samples. If there is, please reference the method when reporting the results.

Please use as little of each sample as possible, because a screen size analysis also needs to be performed on the samples. Following the moisture analyses please return the samples to Nancy Lewis and she will forward them to Terry Williamson. Terry will be performing the screen size analysis.

Reference Contract No. 92-655 and Work Code 6-6.2 for billing purposes. If you have any questions, please contract me directly.

xc: Nancy Lewis
With Sample Custody forms

Rec'd by Susan Sheppard
11-13-92 1240

ETS, INC. - 1401 Municipal Road, NW - Roanoke, Virginia 24012-1309 - Telephone: 703-265-0004 - FAX: 703-265-0131

AP-42 Section 11.3
Reference 11 (VOL. 3)

FINAL TEST REPORT

(APPENDICES F - I)

FOR

USEPA TEST PROGRAM

CONDUCTED AT

PINE HALL BRICK PLANT
MADISON, NORTH CAROLINA

USEPA CONTRACT NO. 68-D2-0029

EMB WORK ASSIGNMENT 6

AUGUST 1993

ETS CONTRACT NO. 92-655

F.0 RAW FIELD DATA APPENDICES

F.1 RAW FIELD SAMPLING DATA FOR PARTICULATE MATTER AND MULTIPLE METALS TESTING

F.1.1 TSP/MM RAW FIELD SAMPLING DATA - SAWDUST DRYER INLET

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Pine Hall Brick TEST LOCATION SAWDUST DRYER INLET DATE Nov. 4 - 92

START TIME 1940 POLLUTANT Multi Metals RUN I.D. IN -M-mm -R-1

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A1	0	1940		451	.38	.72	120.294	62	62	260	64	3.0
2	5		.72	489	.40	.73	122.7	62	62	266	51	3.0
3	10			425	.39	.76	125.3	66	62	263	50	3.0
4	15			483	.37	.70	127.8	68	63	260	50	3.0
5	20			467	.37	.71	130.4	69	63	267	53	3.0
6	25			477	.57	1.1	132.9	71	64	264	55	5.0
7	30			475	.60	1.14	136.0	73	64	265	49	5.0
8	35			501	.63	1.17	139.1	73	64	268	48	5.0
9	40			522	.50	.91	142.4	74	65	265	48	4.0
10	45			525	.45	.81	145.3	73	65	266	49	4.0
11	50			530	.44	.79	148.0	73	65	268	49	3.0
12	55			529	.42	.76	150.6	73	65	267	53	3.0
B	60	2040					153.320					
1	60	2141		512	.35	.64	163.233	66	65	250	65	2.5
2	65			532	.63	1.13	165.6	72	67	251	57	4.0
3	70		.70	479	1.0	1.90	168.9	77	68	251	56	5.0
4	75			521	.79	1.43	172.5	79	68	265	56	5.5
5	80			512	.84	1.54	176.2	81	70	272	58	5.0
6	85			500	.87	1.61	179.8	81	70	271	59	5.0
7	90			492	.81	1.52	183.5	82	71	270	60	5.0
8	95			492	.88	1.65	187.2	82	72	273	61	5.0
9	100			498	.80	1.49	190.8	82	72	270	63	5.0
10	105			504	.77	1.42	194.4	82	72	274	63	5.0
11	110			510	.70	1.29	198.0	81	72	274	64	4.0
12	115			499	.45	.84	201.3	80	72	271	65	3.0
							204.294					

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	500	Filter
F2	501	FH Acetone Rinse
F3	502	FH Nitric Rinse
F4A	503	Imp 1 + Rinse
F4B	504	Imp 2+3 + Rinse
F5A	505	Imp 4 Rinse
F5B	506	Imp 5&6 + Rinse
F5C	507	H_2O + HCl + F Sol
F6	508	Silica Gel

LEAK CHECK

Vacuum	15"				
Rate	.010				

IMPINGER VOLUMES

	Initial	Final
#1	0	53
#2	100	116
#3	100	105
#4	0	40
#5	100	93
#6	100 SG	113

NOZZLE SIZE	.25
METER BOX I.D.	#5
GAMMA	1.0069
DELTA H@	1.6944
BAR. PRESS.	29.61
FILTER I.D.	2-7MM37
OPERATOR	RICHARDSON-PARKER

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Pine Hall Brick TEST LOCATION SAWDUST DRYER INLET DATE NOV. 5-92

START TIME 9:28 POLLUTANT Multi-METALS RUN I.D. IN -MAM-R-2

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A 1	0	9:28		467	.30	.58	228.229	64	64	270	65	2.5
2	5		.35	463	.34	.66	230.5	66	64	274	60	2.5
3	10			470	.33	.64	232.9	68	64	273	58	2.5
4	15			474	.44	.85	235.4	71	65	273	58	3.0
5	20			468	.65	1.26	238.0	73	66	273	57	4.0
6	25			460	.65	1.27	241.3	76	67	272	57	4.0
7	30			479	.80	1.53	244.6	76	67	272	58	4.5
8	35			481	.77	1.47	248.1	78	68	271	59	4.5
9	40			515	.76	1.40	251.7	79	69	271	60	4.5
10	45		.75	531	.50	.91	255.2	78	69	270	60	4.0
11	50			534	.50	.90	258.1	79	70	272	62	4.0
12	55			539	.56	1.01	260.9	79	71	273	63	4.0
B	60	10:28					264.183					
1	60	10:53		501	.53	.99	264.467	71	70	251	66	3.5
2	65			505	.64	1.19	267.4	75	72	269	55	4.0
3	70			510	1.30	2.41	270.6	78	71	269	55	6.0
4	75			511	1.50	2.78	275.4	83	72	271	55	7.0
5	80		.18	501	.62	1.16	279.6	83	73	271	57	4.0
6	85			492	.70	1.32	283.1	82	73	271	58	4.5
7	90			490	.87	1.65	286.5	82	73	271	58	5.0
8	95			482	.90	1.72	290.2	83	73	271	58	5.0
9	100			488	1.20	2.28	294.0	83	73	270	59	6.0
10	105			501	1.20	2.24	298.4	84	74	269	61	6.0
11	110			503	1.30	2.43	302.8	85	74	269	62	7.0
12	115			505	1.30	2.42	307.1	85	74	270	64	7.0
							311.553					

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	510	Front Filter
F2	511	FH Acetone Rinse
F3	512	FH Acetone Rinse
F4A	513	Imp1+Rinse
F4B	514	Imp2+3+Rinse
F5A	515	Imp4+Rinse
F5B	516	Imp5+6+Rinse
F5C	517	H_2O+HCl of 5+6
F6	518	Silica Gel

LEAK CHECK

Vacuum	15"	8"			
Rate	.010	.015			

IMPINGER VOLUMES

	Initial	Final
#1	0	70
#2	100	120
#3	100	100
#4	0	2
#5	100	104
#6	100	105

SG

NOZZLE SIZE	11 (.25)
METER BOX I.D.	#5
GAMMA	1.0069
DELTA H@	1.6944
BAR. PRESS.	29.63
FILTER I.D.	8-28 mm B
OPERATOR	RICHARDSON/PARKER

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

FACILITY Pine Hall Br... TEST LOCATION SAWDUST DRYER INLET DATE NOV. 1-92

START TIME 1325 POLLUTANT MULTI-METALS RUN I.D. IN -MMM-R-3

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
B1	0	1325		500	.45	.84	312.984	71	70	244	67	2.5
2	5			503	.36	.67	315.7	70	69	270	54	2.0
3	10		-.14	516	.42	.77	318.2	72	69	271	53	2.0
4	15			516	.53	.98	320.8	74	70	271	54	3.0
5	20			503	.67	1.25	323.7	77	70	271	54	3.5
6	25			490	.90	1.70	327.1	78	70	271	56	4.0
7	30			477	1.30	2.49	330.8	81	72	271	56	6.0
8	35			487	1.30	2.47	335.3	83	73	271	57	6.0
9	40			486	1.30	2.47	339.8	83	73	271	56	6.0
10	45			483	.89	1.70	344.4	83	73	271	58	4.5
11	50		-.18	493	.78	1.49	348.2	84	74	271	59	4.0
12	55			505	.61	1.14	351.7	84	75	272	63	3.0
A	60	1425					355.130					
1	60	1450		483	.24	.46	355.249	72	72	248	68	1.5
2	65			484	.25	.48	357.4	76	73	261	55	1.5
3	70			488	.28	.53	359.5	77	74	268	55	1.5
4	75			488	.30	.57	361.8	78	74	267	53	1.5
5	80			485	.54	1.03	364.0	79	74	269	52	2.0
6	85			486	.68	1.30	366.8	80	74	269	52	3.0
7	90			475	.74	1.42	370.1	81	74	269	53	3.5
8	95			470	.83	1.60	373.4	81	74	269	54	4.0
9	100		-.15	519	.80	1.47	377.1	82	74	270	56	4.0
10	105			525	.63	1.15	380.7	82	74	270	55	4.0
11	110			539	.54	.97	383.9	82	74	269	56	3.0
12	115	1550		478	.32	.61	386.9	82	74	268	58	2.5
							389.307					

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	520	Quartz Filter
F2	521	FH Acetone
F3	522	FH Nitric
F4A	523	Imp1+Rinse
F4B	524	Imp2+3+Rinse
F5A	525	Imp4+Rinse
F5B	526	Imp5&6+Rinse
F5C	527	H_2O_2+HCl of 5+6
F6	528	Silica Gel

LEAK CHECK

Vacuum	10"	8"			
Rate	.015	.017			

IMPINGER VOLUMES

	Initial	Final
#1	0	71
#2	100	124
#3	100	112
#4	0	1
#5	100	103
#6	100	104

NOZZLE SIZE	.25
METER BOX I.D.	#5
GAMMA	1.0069
DELTA H@	1.6944
BAR. PRESS.	29.41
FILTER I.D.	2-7 MM 33
OPERATOR	Richards W Parker

F.1.2 TSP/MM RAW FIELD SAMPLING DATA - SAWDUST DRYER OUTLET A

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Pine Hall Brick TEST LOCATION Outlet A DATE 11-5-92

START TIME ________ POLLUTANT MM, TSP RUN I.D. OA -MMM-R1

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A1	0	19:40		170	.46	1.30	834.382	72	70	263	60	5
2	5			168	.47	1.30	838.1	81	73	269	60	5
3	10			171	.51	1.42	841.4	82	73	266	60	5.5
4	15			171	.53	1.50	844.8	83	73	253	61	5.5
5	20			175	.50	1.40	848.3	84	74	242	60	5.5
6	25			176	.50	1.40	851.8	84	74	245	59	5.5
7	30			180	.44	1.25	855.2	84	75	248	59	5.5
8	35			184	.44	1.25	858.5	84	74	249	59	5.5
9	40		-0.5	187	.46	1.30	861.7	84	75	252	60	5.5
10	45			189	.50	1.40	865.0	83	74	255	61	5.5
11	50			185	.56	1.55	868.3	84	75	253	61	5.5
12	55			186	.56	1.55	871.8	84	75	254	61	5.5
	60				~~4~~		875.954	84	72	252		
B1	60	21:41		172	.48	1.32	876.068	~~84~~	~~72~~	~~252~~	61	5.5
2	65			175	.46	1.30	879.1	75	68	262	61	5.5
3	70			178	.48	1.32	882.4	80	70	265	62	5.5
4	75		-0.5	172	.46	1.30	885.8	83	72	265	62	5.5
5	80			179	.45	1.25	889.0	84	73	267	61	5.5
6	85			186	.46	1.30	892.3	85	74	268	61	5.5
7	90			187	.53	1.50	895.6	87	75	269	60	5.5
8	95			190	.53	1.50	899.0	87	76	267	59	5.5
9	100			191	.53	1.50	902.5	88	76	260	59	5.5
10	105			191	.47	1.30	906.0	88	77	254	58	5.5
11	110			189	.46	1.30	909.5	87	77	246	58	5.5
12	115			190	.47	1.30	912.6	86	77	242	58	5.5
							915.973					

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	530	Filter
F2	531	FH Acetone Rinse
F3	532	FH Nitric Rinse
F4A	533	Imp 1 + Rinse
F4B	534	Imp 2 & 3 + Rinse
F5A	535	Imp 4 + Rinse
F5B	536	Imp 5 & 6 + Rinse
F5C	537	H_2O HCl of 5 & 6
F6	538	Silica Gel

LEAK CHECK

Vacuum	10				
Rate	.007				

IMPINGER VOLUMES

	Initial	Final
#1	0	139
#2	100	156
#3	100	107
#4	0	1
#5	100	100
#6	100 SG	104

NOZZLE SIZE	.25
METER BOX I.D.	6
GAMMA	0.9915
DELTA H@	1.7326
BAR. PRESS.	29.61
FILTER I.D.	2-7MM36
OPERATOR	DM

<u>FIELD DATA SHEET FOR ISOKINETIC SAMPLING</u>

PAGE 1

FACILITY Pine Hall Brick TEST LOCATION Outlet A DATE 11-5-97

START TIME ______ POLLUTANT MM / TSP RUN I.D. OA-MMM-R2

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A1	0	9:28		177	.44	1.25	923.951	70	68	245	59	3.5
2	5			180	.42	1.20	927.2	74	69	244	44	3.5
3	10		-10.5	185	.40	1.15	930.4	79	71	254	47	3.5
4	15			179	.40	1.15	933.5	82	73	263	49	3.5
5	20			186	.43	1.20	936.6	83	73	265	50	3.5
6	25			197	.43	1.20	939.8	85	74	265	52	3.5
7	30			196	.50	1.42	943.1	85	75	263	51	3.5
8	35			194	.51	1.45	946.5	85	76	261	52	3.5
9	40			197	.50	1.42	950.0	85	75	261	53	3.5
10	45			197	.45	1.28	953.4	86	76	260	53	3.5
11	50			198	.44	1.25	956.7	86	77	262	54	3.5
12	55			198	.40	1.10	960.0	86	77	262	55	3.5
	60						963.131					
B1	60	10:53		180	.51	1.42	963.64	77	75	256	53	3.5
2	65			187	.50	1.42	966.9	79	75	257	50	3.5
3	70			185	.52	1.50	970.4	82	75	260	49	3.5
4	75		-10.5	187	.52	1.50	974.0	85	76	261	50	3.5
5	80			185	.51	1.42	977.5	85	76	263	52	4
6	85			193	.46	1.30	981.0	85	76	262	52	4
7	90			191	.40	1.10	984.5	86	77	247	53	4
8	95			197	.43	1.20	987.7	86	77	246	53	4
9	100			196	.47	1.32	990.8	86	78	257	56	4
10	105			197	.50	1.42	994.1	87	79	257	57	4
11	110			198	.51	1.42	997.6	88	79	259	57	4
12	115			198	.50	1.42	001.0	89	79	268	59	4
	120											

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	540	Quartz filter
F2	541	FH Acetone Rinse
F3	542	FH Nitric Rinse
F4A	543	Imp 1+ Rinse
F4B	544	Imp 2+3+ Rinse
F5A	545	Imp 4+ Rinse
F5B	546	Imp 5+6+ Rinse
F5C	547	H_2O_2+HCl of 5+6
F6	548	Silica Gel

LEAK CHECK 004.506

Vacuum	7				
Rate	.005				

IMPINGER VOLUMES

	Initial	Final
#1	0	114
#2	100	160
#3	100	110
#4	0	1 ml
#5	100	104
#6	100	105

56

NOZZLE SIZE	.25
METER BOX I.D.	6
GAMMA	~~9.915~~ 0.9915
DELTA H@	1.7326
BAR. PRESS.	29.63
FILTER I.D.	2-7MM38
OPERATOR	D. Morris

FIELD DATA SHEET FOR ISOKINETIC SAMPLING — PAGE 1

FACILITY Pine Hall BRKK TEST LOCATION Outlet A DATE 11-4-92

START TIME 13:25 POLLUTANT MM/TSP RUN I.D. 04-MMM-R3

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A1	0	13:25		180	.53	1.50	016.910	74	74	241	60	4.5
2	5			179	.52	1.46	020.6	79	75	245	60	4.5
3	10			180	.52	1.46	024.3	81	76	251	60	4.5
4	15		-10.5	178	.52	1.46	027.7	82	76	252	59	4.5
5	20			196	.51	1.46	031.3	82	76	252	59	4.5
6	25			196	.50	1.40	034.8	83	77	259	60	4.5
7	30			196	.45	1.30	038.3	83	77	260	60	4.5
8	35			195	.45	1.30	041.8	82	77	259	60	4.5
9	40			195	.50	1.40	045.1	83	77	261	59	5
10	45			196	.52	1.46	048.5	83	77	263	59	5
11	50			196	.56	1.60	051.9	83	77	264	60	5
12	55			195	.58	1.65	055.4	83	77	267	60	5
	60						059.154					
1	60	14:50		181	.46	1.32	059.472	72	72	224	59	5
2	65			179	.46	1.32	063.0	74	73	268	59	5
3	70			182	.44	1.25	066.4	76	73	263	58	5
4	75			199	.44	1.25	069.6	77	73	257	59	5
5	80			203	.44	1.25	072.8	77	73	254	59	5
6	85			208	.50	1.40	076.0	77	73	256	60	5
7	90		-10.5	210	.51	1.46	079.4	79	74	260	61	4.5
8	95			206	.56	1.60	082.8	79	74	263	61	4.5
9	100			209	.55	1.58	086.4	80	74	262	62	4.5
10	105			204	.52	1.46	090.1	79	74	260	62	4.5
11	110			200	.53	1.50	093.8	79	74	262	61	4.5
12	115			198	.53	1.50	097.1	79	74	265	62	5.0

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	550	Quartz filter
F2	551	FH Acetone
F3	552	FH Nitric
F4A	553	Imp1+Rinse
F4B	554	Imp2+3+Rinse
F5A	555	Imp4+Rinse
F5B	556	Imp5+6+Rinse
F5C	557	H2O+HCl of 5+6
F6	558	Silica Gel

LEAK CHECK 100.643

Vacuum	8				
Rate	.000				

IMPINGER VOLUMES

	Initial	Final
#1	0	146
#2	100	156
#3	100	98
#4	0	1
#5	100	105
#6	100	104

NOZZLE SIZE	.25
METER BOX I.D.	6
GAMMA	0.9915
DELTA H@	1.7326
BAR. PRESS.	29.41
FILTER I.D.	27-mm-39
OPERATOR	D. Morris

86

F.1.3 TSP/MM RAW FIELD SAMPLING DATA - SAWDUST DRYER OUTLET B

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

FACILITY Pine Hall Brick TEST LOCATION outlet B DATE 11-04-92

START TIME 19:40 POLLUTANT MM/TSP RUN I.D. OB -MM/TSP- R1

	Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
B	1	0	19:40		179	.30	.84	111.103	64	64	240	64	5.5
	2	5			180	.32	.90	113.7	65	64	237	48	5.8
	3	10			180	.31	.87	116.3	66	64	239	48	5.5
	4	15			181	.37	1.03	119.0	68	65	239	51	6.0
	5	20			181	.35	.98	121.8	72	65	238	52	5.8
	6	25		-9.7	181	.41	1.15	124.6	73	66	240	52	6.3
	7	30			182	.50	1.40	127.7	75	67	239	52	7.0
	8	35			182	.55	1.54	131.2	76	67	240	52	7.3
	9	40			183	.62	1.73	134.6	77	68	239	51	8.3
	10	45			181	.65	1.82	138.3	77	68	239	51	10
	11	50			181	.66	1.85	142.1	78	69	239	52	10
	12	55			180	.60	1.68	145.9	78	70	239	52	9.8
		60	20:40					150.292					
A	1	60	21:41		177	.35	.99	150.597	72	68	242	56	6.0
19	2	65			179	.34	.96	152.9	65	64	238	49	6.0
	3	70			179	.34	.96	155.7	67	64	240	49	6.0
	4	75			180	.32	.90	158.5	72	66	241	50	5.8
17	5	80			180	.39	1.09	161.1	74	67	240	49	7.0
	6	85			181	.38	1.06	164.1	77	68	240	49	6.8
	7	90			182	.43	1.20	167.1	78	69	240	49	6.8
20	8	95			182	.46	1.29	170.1	79	70	240	49	7.0
	9	100			182	.53	1.48	173.3	80	71	241	49	8.0
22	10	105		-9.7	182	.57	1.60	176.6	81	71	240	50	8.2
	11	110			181	.55	1.54	180.1	81	72	240	51	8.0
	12	115			179	.57	1.60	183.6	81	72	240	51	8.2

120 22:41 186.811

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	560	Filter
F2	561	FH Acetone Rinse
F3	562	FH Nitric Rinse
F4A	563	Imp 1 + Rinse
F4B	564	Imp 2+3 + Rinse
F5A	565	Imp 4 + Rinse
F5B	566	Imp 5+6 + Rinse
F5C	567	H_2O+HCl of 5+6
F6	568	Silica Gel

LEAK CHECK

Vacuum	11.5			
Rate	.007			

IMPINGER VOLUMES

	Initial	Final
#1	0	128
#2	100	156
#3	100	110
#4	0	34
#5	100	110
#6	100	60

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NOZZLE SIZE	.25
METER BOX I.D.	#7
GAMMA	1.0082
DELTA H@	1.7651
BAR. PRESS.	29.61
FILTER I.D.	27mm 35
OPERATOR	C. Ferguson

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Pine Hall Brick TEST LOCATION Outlet B DATE 11-05-92

START TIME 09:28 POLLUTANT MM / TSP RUN I.D. OB -MM/TSP R 2

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
1	0	09:28		177	.34	.96	192.253	63	62	238	63	2.2
2	5			177	.36	1.01	195.0	64	62	238	44	2.5
3	10			178	.31	.87	197.9	67	63	239	46	2.0
4	15			178	.36	1.01	200.5	70	64	240	49	2.5
5	20			179	.39	1.09	203.6	72	65	240	50	2.8
6	25			180	.35	.98	206.5	73	66	240	51	2.5
7	30			178	.38	1.07	209.3	75	67	241	52	2.8
8	35			185	.46	1.28	212.3	76	67	240	53	3.0
9	40			184	.49	1.37	215.6	77	68	239	55	3.0
10	45		-9.7	182	.52	1.45	218.9	78	69	240	56	3.2
11	50			185	.55	1.53	222.4	79	70	240	57	3.3
12	55			183	.53	1.48	225.8	79	70	239	58	3.2
	60	10:28					229.555					
1	60	10:53		177	.35	.98	229.722	73	70	241	57	2.8
2	65			178	.27	.76	232.3	73	70	238	53	2.2
15 3	70			180	.28	.78	234.8	75	71	240	51	2.2
4	75			180	.31	.87	237.3	77	71	239	50	2.3
5	80			181	.32	.89	240.0	78	72	241	50	2.3
18 6	85		-9.7	183	.35	.98	242.7	79	72	239	51	2.5
7	90			184	.40	1.11	245.5	80	73	240	52	3.0
8	95			184	.47	1.31	248.7	81	73	240	52	3.2
9	100			183	.51	1.42	251.9	82	74	240	53	3.3
10	105			185	.55	1.53	255.5	83	74	240	55	3.3
23 11	110			189	.58	1.60	259.0	84	75	240	56	3.3
12	115			187	.59	1.64	262.6	84	75	241	57	3.5
	120	11:53					265.326					

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	570	Quartz Filter
F2	571	FH Acetone Rinse
F3	572	FH Nitric Rinse
F4A	573	Imp 1 + Rinse
F4B	574	Imp 2&3 + Rinse
F5A	575	Imp 4 + Rinse
F5B	576	Imp 5&6 + Rinse
F5C	577	H_2O_2 + HCl of 5&6
F6	578	Silica Gel

LEAK CHECK

Vacuum	7.8"				
Rate	.005				

IMPINGER VOLUMES

	Initial	Final
#1	0	54
#2	100	168
#3	100	135
#4	0	4
#5	100	105
#6	100 SG	100

NOZZLE SIZE	.25
METER BOX I.D.	#7
GAMMA	1.0092
DELTA H@	1.7651
BAR. PRESS.	29.63
FILTER I.D.	828 MM 12
OPERATOR	C. Fusun

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

FACILITY Pine Hall Brick TEST LOCATION Outlet B DATE 11-05-92

START TIME 13:25 POLLUTANT MM/TSP RUN I.D. OB-MM/TSP-R3

	Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
B	1	0	13:25		176	.25	.70	269.942	71	69	241	64	4
	2	5			176	.28	.79	272.3	72	70	240	63	4.2
	3	10			177	.28	.79	274.9	75	71	239	63	4.2
	4	15			178	.31	.87	277.4	78	72	239	63	4.5
	5	20			179	.32	.90	280.1	79	72	240	63	4.5
	6	25			180	.34	.95	282.8	82	75	239	62	4.5
	7	30		-9.6	183	.39	1.09	285.6	82	74	240	60	4.8
	8	35			184	.48	1.34	288.6	82	74	239	59	5.2
	9	40			185	.54	1.50	291.9	84	75	239	60	5.7
	10	45			183	.56	1.56	295.5	85	76	240	61	5.8
	11	50			182	.57	1.59	299.0	85	76	239	61	5.8
	12	55			181	.57	1.60	302.6	86	77	239	62	5.8
		60	14:25					306.321					
A	1	60	14:50		175	.34	.96	306.583	75	75	241	64	4.5
14	2	65			177	.35	.98	309.1	78	75	240	58	4.7
	3	70		-9.7	178	.33	.93	311.9	79	76	238	58	4.5
16	4	75			179	.33	.93	314.7	81	75	238	59	4.5
	5	80			180	.33	.93	317.0	83	76	238	60	4.5
	6	85			180	.35	.99	320.3	83	76	238	59	4.7
19	7	90			180	.40	1.13	323.2	84	77	239	58	5.0
	8	95			181	.42	1.18	326.2	85	77	241	57	5.0
21	9	100			183	.45	1.26	329.2	86	78	241	57	5.5
	10	105			182	.48	1.35	332.4	85	77	240	56	6.0
	11	110			182	.49	1.37	335.8	86	78	241	57	6.0
	12	115			181	.48	1.35	339.4	88	79	241	58	6.0
		120	15:50					342.819					

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	580	Quartz filter
F2	581	FH Acetone
F3	582	FH Nitric
F4A	583	Imp1+Rinse
F4B	584	Imp2&3+Rinse
F5A	585	Imp4+Rinse
F5B	586	Imp5&6+Rinse
F5C	587	H_2O+HCl of 5&6
F6	588	Silica Gel

LEAK CHECK

Vacuum	9.0				
Rate	0.005				

IMPINGER VOLUMES

	Initial	Final
#1	0	124
#2	100	135
#3	100	104
#4	0	2
#5	100	107
#6	100	104

SG

NOZZLE SIZE	.25
METER BOX I.D.	#7
GAMMA	1.0082
DELTA H@	1.7651
BAR. PRESS.	29.41
FILTER I.D.	8-28 no 14
OPERATOR	C. Ferguson

F.2 RAW FIELD SAMPLING DATA FOR PM_{10} AND CONDENSIBLE PM TESTING

F.2.1 M201A/M202 RAW FIELD SAMPLING DATA - SAWDUST DRYER INLET

FACILITY *Pine Hall Brick* — **FIELD DATA SHEET FOR METHOD 201A** — PAGE 1

DATE *11-3-92*

START TIME *1654* — TEST LOCATION *SAWDUST DRYER INLET* — RUN NUMBER [illegible]

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Dwell Time	Meter dH	Meter Volume cu.ft.	Meter Temp Inlet	Meter Temp Outlet	Imp. Temp.	Meter Vac.
A1	0	1654		356	.25	4.15	.58	925.793	91	89	51	3.0
2	4.25			357	.26	4.23		927.7	83	85	48	3.0
3	8.50		-.15	380	.33	4.77		929.6	81	83	47	3.0
4	13.25			464	.35	4.91		931.8	81	82	43	3.0
5	18.25			483	.37	5.05		934.1	81	80	44	3.0
6	23.25			486	.40	5.25		936.3	80	79	45	3.0
7	28.50			511	.68	6.84		938.7	79	78	47	3.0
8	35.25			538	.55	6.16		941.8	78	76	43	3.0
9	41.50			551	.45	5.57		944.6	77	75	45	3.0
10	47.00			555	.43	5.44		947.2	76	74	47	3.0
11	52.5			568	.40	5.25		949.3	76	73	47	3.0
12	57.75			570	.37	5.05		952.1	75	73	49	3.0
B	62.75	(1756.75)						954.348				
1	62.75	1828		397	.27	4.31	.58	⊛957.44	67	66	47	3.0
2	67.00			483	.30	4.55		959.3	66	65	46	3.0
3	71.50			509	.62	6.54		961.3	68	65	45	3.0
4	78.00			455	.72	7.04		964.2	69	65	47	3.0
5	85.00			504	.78	7.33		967.3	69	64	47	3.0
6	92.25		-.47	496	.85	7.65		970.6	68	64	45	3.0
7	100.00			477	.44	5.51		974.0	68	64	46	3.0
8	105.5			489	.46	5.63		976.3	68	63	49	3.0
9	111.25			496	.40	5.25		979.0	68	63	52	3.0
10	116.50			513	.38	5.12		981.5	68	63	54	3.0
11	121.5			517	.40	5.25		983.7	67	63	54	3.0
12	126.75			519	.31	4.62		986.0	67	62	56	3.0
								988.065				

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LOR. ⊛957.44

11 25

3 25

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	1100	Filter
F2	1101	> PM10 Rinse
F3	1102	< = PM10 Rinse
F4	1103	Imp. Contents
F5	1104	Extra Storage
F6	1105	BH Acetone
F7	1106	BH MeCl₂
F8	1107	Silica Gel

LEAK CHECK

Vacuum	15"				
Rate	.015				

Dwell Time for Point 1 = *4.15*

$t_1/\sqrt{P_1}$ = *8.30*

IMPINGER VOLUMES

	Initial	Final
#1	100	169
#2	100	104
#3	100	101
#4	0	0
#5	SG	

METER BOX I.D.	#5
GAMMA	1.0069
DELTA H@	1.6944
OPERATOR	Richardson
BAR. PRESS.	29.84
FILTER I.D.	91-952

FACILITY Pine Hall

FIELD DATA SHEET FOR METHOD 201A

PAGE 1

DATE 11-4-92

START TIME 10:15

TEST LOCATION Sawdust Dryer Inlet

RUN NUMBER IN-M201A-R2

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Dwell Time	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Imp. Temp.	Meter Vac.
A 1	0	10:15		395	.40	4.25	0.55	997.224	57	57	65	2.0
2	4.25			477	.39	4.00		999.1	58	57	47	2.0
3	8.25			480	.41	4.20		1000.8	59	56	43	2.0
4	12.50		-70	480	.42	4.25		1002.7	60	57	44	2.0
5	16.75			466	.69	5.45		1004.6	61	57	45	2.0
6	22.25			471	.71	5.53		1007.0	62	57	45	2.0
7	27.75			497	.74	5.64		1009.5	63	58	46	2.0
8	33.50			517	.63	5.21		1012.1	65	59	46	2.0
9	38.75			526	.48	4.55		1014.4	64	58	47	2.0
10	43.25			535	.42	4.25		1016.4	66	59	47	2.0
11	47.50			510	.39	4.10		1018.3	66	60	50	2.0
12	51.50			548	.34	3.83		1020.1	69	62	51	2.0
	55.25	~~11:15~~ 11:10 T.R.						1021.747				
B 1	55.25	11:45		510	.70	5.49	.55	1022.215	62	61	58	2.0
2	60.75			511	.71	5.53		1024.7	68	63	49	2.0
3	66.25			498	.67	5.37		1027.1	70	64	49	2.0
4	71.50			488	.88	6.16		1029.4	72	65	47	2.0
5	77.75			480	.94	6.36		1032.1	73	66	47	2.0
6	84.00			478	.95	6.40		1035.0	74	67	49	2.0
7	90.50			475	.90	6.23		1038.0	74	67	51	2.0
8	96.75			483	.91	6.26		1040.8	74	67	54	2.0
9	103.0			490	.80	5.87		1043.6	74	68	54	2.0
10	108.75			498	.71	5.53		1046.3	75	68	55	2.0
11	114.25			497	.74	5.64		1048.8	74	68	58	2.0
12	120.00	1255		496	.73	5.61		1051.3	74	68	59	2.0
								1053.832				

VP TIME 25.50

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	1108	Filter
F2	1109	> PM10 Rinse
F3	1110	<= PM10 Rinse
F4	1111	Imp. Contents
F5	1112	Extra Storage
F6	1113	BH Acetone
F7	1114	BH MeCl2
F8	1115	Silica Gel

LEAK CHECK

Vacuum	15"	5"			
Rate	.010	.004			

Dwell Time for Point 1 = 4.15

$t_1/\sqrt{F_1}$ = 6.56

IMPINGER VOLUMES

	Initial	Final
#1	100	167
#2	100	103
#3	100	100
#4	0	0
#5	56	

METER BOX I.D.	#5
GAMMA	1.0069
DELTA H@	1.6944
OPERATOR	RICHARDSON PARKER
BAR. PRESS.	29.76
FILTER I.D.	9-956

FIELD DATA SHEET FOR METHOD 201A

PAGE 1

FACILITY Pine Hall Brick

DATE Nov. 4-92

START TIME 1312

TEST LOCATION Sawdust Dryer Inlet

RUN NUMBER IN-MPM10-R-3

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Dwell Time	Meter dH	Meter Volume cu.ft.	Meter Temp Inlet	Meter Temp Outlet	Imp. Temp.	Meter Vac.
A 1	0	1312		489	.35	4.15	.55	54.314	65	65	63	3.0
2	4.25			490	.41	4.49		56.2	66	65	47	3.0
3	8.75			484	.48	4.86		58.3	66	64	45	3.0
4	13.50			486	.54	5.15		60.4	66	64	45	3.0
5	18.75		-.72	483	.48	4.86		62.7	68	64	46	3.0
6	23.50			481	.45	4.70		64.9	69	64	48	3.0
7	28.25			490	.82	6.35		67.0	70	65	49	3.0
8	34.50			526	.60	5.43		69.8	72	65	50	3.0
9	40.00			542	.47	4.81		72.3	71	65	50	3.0
10	44.75			554	.42	4.54		74.5	71	65	52	3.0
11	49.25			560	.40	4.43		76.5	71	65	52	3.0
12	53.75	15:22		564	.36	4.21		78.5	71	66	55	3.0
B	58.00							80.472				
1	58.00	1537		509	.64	5.60		81.180	67	66	66	3.0
2	63.50			519	.59	5.38		83.6	71	67	55	3.0
3	69.00			515	.55	5.20		86.0	73	68	48	3.0
4	74.25			513	.68	5.78		88.4	75	69	49	3.0
5	80.00		-.81	488	.80	6.27		91.0	76	69	45	3.0
6	86.25			475	.96	6.87		93.9	77	70	41	3.0
7	93.00			478	.89	6.61		96.9	78	71	43	3.0
8	99.50			484	.77	6.15		99.9	78	71	44	3.0
9	105.75			484	.79	6.23		102.7	79	72	46	3.0
10	112.00			484	.72	5.95		105.5	78	72	47	3.0
11	118.00			489	.70	5.87		108.3	79	73	47	3.0
12	123.75			490	.74	6.03		110.9	79	73	47	3.0
								113.625				

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	1116	Filter
F2	1117	> PM10 Rinse
F3	1118	<= PM10 Rinse
F4	1119	Imp-Contents
F5	1120	ExtraStorage
F6	1121	BH Acetone
F7	1122	BH $MeCl_2$
F8	1123	Silica Gel

LEAK CHECK

Vacuum	15"				
Rate	.004				

Dwell Time for Point 1 = 4.15

$t_1/\sqrt{P_1}$ = 7.01

IMPINGER VOLUMES

	Initial	Final
#1	100	171
#2	100	97
#3	100	86
#4	0	18
#5	56	

METER BOX I.D.	#5
GAMMA	1.0069
DELTA H@	1.6944
OPERATOR	Richardson - Parker
BAR. PRESS.	29.61
FILTER I.D.	91-960

F.2.2 M201A/M202 RAW FIELD SAMPLING DATA - SAWDUST DRYER OUTLET A

FIELD DATA SHEET FOR METHOD 201A

PAGE 1

FACILITY Pine Hall Brick

DATE 11-3-92

START TIME ______

TEST LOCATION Outlet A

RUN NUMBER DA-M201A/202-K1

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Dwell Time	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Imp. Temp.	Meter Vac.
A1	0	16:54		185	.47	5.11	.62	319.421	72	72	57	3.5
2	5.10			189	.48	5.16	.62	321.9	78	76	57	3.5
3	10.30			192	.49	5.21	.62	324.1	79	76	56	3.5
4	15.50			193	.53	5.42	.62	326.4	81	77	53	4.0
5	20.90		-10.5	189	.49	5.21	.62	328.7	81	77	51	4.0
6	26.10			187	.46	5.05	.62	330.9	81	76	49	4.0
7	31.20			187	.41	4.77	.62	333.1	81	77	48	4.0
8	36.00			190	.42	4.82	.62	335.2	80	76	47	4.0
9	40.90			186	.45	4.99	.62	337.3	80	76	47	4.0
10	45.90			183	.49	5.21	.62	339.4	79	76	46	4.0
11	51.10			182	.50	5.21	.62	341.7	79	75	47	4.0
12	56.30			182	.47	5.11	.62	343.9	79	76	47	4.0
	61.40							346.069				
B1	61.40	18:28		183	.41	4.77	.62	346.175	72	72	59	4.0
2	66.2			182	.34	4.34	.62	348.4	70	71	41	4.0
3	70.6			189	.47	5.11	.62	350.5	72	71	41	4.0
4	75.7			187	.44	4.94	.62	352.6	72	70	42	4.0
5	80.7			187	.43	4.88	.62	354.7	72	70	42	4.0
6	85.6		-10.5	190	.49	5.21	.62	357.1	72	70	42	4.0
7	90.8			189	.51	5.32	.62	359.4	72	69	43	4.0
8	96.1			187	.51	5.32	.62	361.6	72	69	42	4.0
9	101.4			185	.47	5.11	.62	363.9	71	68	43	4.0
10	106.5			187	.41	4.77	.62	366.1	71	68	43	4.0
11	111.2			189	.43	4.88	.62	368.1	71	68	43	5.0
12	116.1			185	.42	4.82	.62	369.9	72	69	44	6.0
								372.179				

CHAIN OF CUSTODY INFORMATION 20.0 21.75

Container Number	Sample I.D.	Description
F1	1124	Filter
F2	1125	> PM10 Rinse
F3	1126	<= PM10 Rinse
F4	1127	Imp. Contents
F5	1128	Extra Storage
F6	1129	BH Acetone
F7	1130	BH MeCl2
F8	1131	Silica Gel

LEAK CHECK

Vacuum	10				
Rate	.002				

Dwell Time for Point 1 = 5.11

$t_1/\sqrt{P_1}$ = 7.45

IMPINGER VOLUMES

	Initial	Final
#1	100	213
#2	100	114
#3	100	102
#4	0	0
#5	SG	

METER BOX I.D.	8
GAMMA	1.0144
DELTA H@	1.8838
OPERATOR	DM
BAR. PRESS.	~~84.76~~ 29.84
FILTER I.D.	91-954

FIELD DATA SHEET FOR METHOD 201A

PAGE 1

FACILITY Dine Hall Brick DATE 11-4-92

START TIME ________ TEST LOCATION Sawdust Dryer Outlet A RUN NUMBER OA-M201A-R1

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Dwell Time	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Imp. Temp.	Meter Vac.
A1	0	10:15		179	.57	5.28	0.50	378.737	63	61	50	4
2	5.30			183	.56	5.23	.50	380.8	66	62	49	4
3	10.50			181	.56	5.23	.50	382.9	67	62	50	4
4	15.80			180	.55	5.18	.50	384.9	68	63	51	4
5	20.00			182	.49	4.89	.50	386.9	68	63	51	4
6	25.6			184	.47	4.79	.50	388.9	68	63	51	4
7	30.7			189	.42	4.53	.50	390.7	68	63	51	4
8	[illegible]		-10.5	187	.42	4.53	.50	392.5	68	62	51	4
9	39.8			190	.47	4.79	.50	394.3	68	63	51	4
10	44.6			188	.51	4.99	.50	396.2	68	63	51	4
11	49.6			187	.47	4.79	.50	398.2	67	62	52	4
12	54.4			189	.50	4.94	.50	400.0	68	63	52	4
	59.4							402.212				
B1	64.0	11.45		179	.42	4.53	.50	402.455	64	62	47	4
2	68.9			181	.49	4.89	.50	404.5	64	61	47	4
3	73.7		-10.3	181	.46	4.74	.50	406.4	65	61	47	4
4	78.2			185	.42	4.53	.50	408.3	67	62	48	4
5	82.8			187	.43	4.58	.50	410.0	67	62	49	4
6	87.5			190	.44	4.68	.50	411.8	69	63	50	4
7	92.5			189	.51	4.99	.50	413.7	69	63	50	4
8	97.5			190	.52	5.04	.50	415.6	70	62	50	4
9	102.5			193	.53	5.08	.50	417.6	70	64	50	4
10	107.4			193	.49	4.89	.50	419.6	70	64	50	4
11	112.1			182	.45	4.68	.50	421.6	70	64	50	4
12	116.9	12:42		193	.46	4.74	.50	423.5	70	64	50	4

425.361

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	1132	Filter
F2	1133	>PM10 Rinse
F3	1134	<=PM10 Rinse
F4	1135	Imp-Contents
F5	1136	EtingStorage
F6	1137	BH Acetone
F7	1138	BH MeCl2
F8	1139	Silica Gel

LEAK CHECK

Vacuum	5				
Rate	.005				

Dwell Time for Point 1 = 5.28

$t_1/\sqrt{P_1}$ = 6.99

IMPINGER VOLUMES

	Initial	Final
#1	100	204
#2	100	111
#3	100	103
#4	0	0
#5	5G	

METER BOX I.D.	8	
GAMMA	~~1.8838~~	1.0144
DELTA H@	1.8838	
OPERATOR	DM	
BAR. PRESS.	29.76	
FILTER I.D.	91-955	

FIELD DATA SHEET FOR METHOD 201A

PAGE 1

FACILITY Pine Mall Brick .47

DATE 11-4-92

START TIME ________ TEST LOCATION OUTLET 1A RUN NUMBER OA-M201A-PB

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack ΔP	Dwell Time	Meter dH	Meter Volume cu.ft.	Meter Temp Inlet	Meter Temp Outlet	Imp. Temp.	Meter Vac.
A1	0	14:12		177	~~.52~~	.58	.50	740.774	61	61	53	3.5
2	5.28			178	.53	5.60	.50	743.0	66	62	47	3.5
3	10.90			179	.54	5.65	.50	745.3	67	62	48	3.5
4	16.6			185	.45	5.16	.50	747.7	70	64	48	3.5
5	21.7			182	.47	5.27	.50	749.9	71	65	50	3.5
6	27.0			186	.47	5.27	.50	752.0	72	68	50	3.5
7	32.3			187	.57	5.81	.50	754.2	72	68	50	3.5
8	38.1			188	.60	5.96	.50	756.8	72	66	50	3.5
9	44.0		-10.5	185	.61	6.01	.50	759.2	73	66	51	3.5
10	50.0			182	.60	5.96	.50	761.7	73	67	51	3.5
11	56.0			189	.54	5.65	.50	764.2	74	67	50	3.5
12	61.6	15:19		187	.52	5.55	.50	766.5	74	67	51	3.5
	67.1							768.875	~~68~~	~~65~~	~~50~~	~~3.5~~
B1	67.1	15:37		177	.55	5.71	.50	768.876	68	65	50	3.5
2	72.8			179	.53	5.60	.50	770.9	68	65	50	3.5
3	78.4			182	.61	6.01	.50	773.5	71	66	51	4.0
4	84.4			185	.57	5.81	.50	776.1	72	66	51	4.0
5	90.2			177	.56	5.76	.50	778.5	72	66	51	4.0
6	95.9			180	.52	5.55	.50	780.8	74	68	54	4.0
7	101.4			185	.47	5.27	.50	783.1	76	69	54	4.0
8	106.7			189	.47	5.27	.50	785.5	76	69	55	4.0
9	112.0		-10.5	188	.51	5.49	.50	787.8	72	66	52	4.0
10	117.5			185	.58	5.86	.50	790.2	72	67	52	4.0
11	123.4			187	.58	5.86	.50	792.7	73	67	52	4.0
12	129.3			189	.57	5.81	.50	795.2	73	67	52	4.0

797.769

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	1140	Filter
F2	1141	> PM10 Rinse
F3	1142	< = PM10 Rinse
F4	1143	Imp. Contents
F5	1144	Extra Storage
F6	1145	BH Acetone
F7	1146	BH MeCl₂
F8	1147	Silica Gel

LEAK CHECK

Vacuum	8"				
Rate	.007				

Dwell Time for Point 1 = ~~5.11~~ 5.28

$t_1/\sqrt{P_1}$ = ~~7.57~~ 7.70

IMPINGER VOLUMES

	Initial	Final
#1	100	226
#2	100	113
#3	100	102
#4	0	0
#5	56	

METER BOX I.D.	6
GAMMA	0.9915
DELTA H@	1.8326
OPERATOR	DM
BAR. PRESS.	29.61
FILTER I.D.	91-959

F.2.3 M201A/M202 RAW FIELD SAMPLING DATA - SAWDUST DRYER OUTLET B

FIELD DATA SHEET FOR METHOD 201A

PAGE 1

FACILITY Pine Hall Brick

DATE 11-03-92

START TIME 16:54

TEST LOCATION Outlet B

RUN NUMBER OB-M201A-R1

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Dwell Time	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Imp. Temp.	Meter Vac.
1	0	16:54		180	.42	4.28	.48	936.422	73	73	61	2.9
2	4:25 ~~4:[illegible]~~			179 ~~[illegible]~~	.39	4.12	.48	938.3	75	73	47	2.9
3	8:25 ~~8:40~~			163	.40	4.18	.48	939.6	75	73	47	2.9
4	12:40			176	.40	4.18	.48	941.3	77	74	48	2.9
5	16:60		-9.8	179	.42	4.28	.48	942.9	78	75	50	2.9
6	20:90			178	.54	4.85	.48	944.6	79	75	50	2.9
7	25:70			184	.63	5.24	.48	946.6	80	75	51	2.9
8	31:00			183	.70	5.53	.48	948.6	81	76	52	2.9
9	36:50			182	.70	5.53	.48	950.8	82	77	52	2.9
10	42:00			180	.71	5.56	.48	953.0	82	77	52	2.9
11	47.60			176	.67	5.41	.48	955.2	83	77	52	2.9
12	53:00			175	.68	5.45	.48	957.4	83	77	52	2.9
	58:40	17:52						959.565				
1	58:40	1828		164	.14	2.47	.48	975.569	83	78	53	3
2	60:87			168	.47	4.53	.48	976.4	83	78	53	3
3	65.40			170	.45	4.43	.48	978.4	82	78	53	3.
4	69:80			174	.44	4.38	.48	980.2	82	77	51	3
5	74.20		-9.7	174	.47	4.53	.48	981.9	81	77	51	3
6	78:70			171	.46	4.48	.48	983.7	81	77	51	3
7	83:20			177	.52	4.76	.48	985.5	81	76	51	3
8	88:00			180	.56	4.94	.48	987.4	80	76	50	3
9	92.90			181	.62	5.20	.48	989.3	80	76	50	3
10	98:10			179	.66	5.37	.48	991.4	79	76	50	3
11	103:50			178	.68	5.45	.48	993.5	80	75	51	3
12	108.90			177	.62	5.20	.48	995.7	79	75	51	3

997.853

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	1148	Filter
F2	1149	> PM10 Rinse
F3	1150	<= PM10 Rinse
F4	1151	Imp-Contents
F5	1152	Extra Storage
F6	1153	BH Acetone
F7	1154	BH ~~[illegible]~~ MeCl2
F8	1155	Silica Gel

LEAK CHECK

Vacuum	4.8"				
Rate	.005				

Dwell Time for Point 1 = 4.28

$t_1/\sqrt{P_1}$ = 6.6

IMPINGER VOLUMES

	Initial	Final
#1	100	155
#2	100	147
#3	100	107
#4	0	0
#5	SG	

METER BOX I.D.	#7
GAMMA	1.0082
DELTA H@	1.7651
OPERATOR	C. Ferguson
BAR. PRESS.	29.94
FILTER I.D.	91-953

FIELD DATA SHEET FOR METHOD 201A

PAGE 1

FACILITY Pine Hill Brick DATE 11-04-92

START TIME 10:15 TEST LOCATION Sawdust Dryer Outlet B RUN NUMBER OB-M201A-R2

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Dwell Time	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Imp. Temp.	Meter Vac.
A1	0	10:15		171	.30	4.70	0.47	989.436	55	54	65	3
2	4.70			172	.47	5.98	0.47	1000.2	56	55	64	3
3	10.60		-9.7	174	.43	5.63	0.47	1002.0	59	55	63	3
4	16.20			174	.44	5.69	0.47	1004.6	61	56	61	3
5	21.90			175	.45	5.76	0.47	1006.8	65	58	61	3
6	27.70			177	.43	5.63	0.47	1009.0	64	58	61	3
7	33.30			177	.56	6.42	0.47	1011.2	64	58	62	3
8	39.70			181	.65	6.92	0.47	1013.7	65	59	63	3
9	46.60			181	.75	7.43	0.47	1016.4	68	61	64	3
10	54.10			181	.77	7.53	0.47	1019.1	68	62	64	3
11	61.60			183	.73	7.33	0.47	1022.1	69	63	64	3
12	68.90			184	.72	7.28	0.47	1024.7	70	64	64	3
	76.20	~~11:01~~	11:31		~~.30~~			1027.925				
B1	76.20	11:45		174	.30	4.70	0.47	1027.925	67	64	62	3.2
2	80.90			176	.28	4.54	0.47	1029.4	68	63	60	3.2
3	85.40			178	.35	5.07	0.47	1031.4	69	65	60	3.2
4	90.50			178	.32	4.85	0.47	1033.3	70	65	59	3.2
5	95.37		-9.7	179	.57	6.48	0.47	1035.2	71	66	59	3.2
6	101.80			181	.48	5.95	0.47	1037.8	72	66	61	3.2
7	107.80			181	.46	5.82	0.47	1040.1	73	67	62	3.2
8	113.60			184	.48	5.95	0.47	1042.4	74	67	62	3.2
9	~~119.6~~ 119.40			182	.54	6.31	0.47	1044.7	74	67	62	3.2
10	125.90			182	.70	7.18	0.47	1047.2	74	68	63	3.2
11	133.00			180	.66	6.97	0.47	1049.9	74	69	63	3.2
12	140.00			180	.60	6.65	0.47	1052.6	75	69	64	3.2

146.70 12:55 1055.325

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	1156	Filter
F2	1157	> PM10 Rinse
F3	1158	C-Amc Rinse
F4	1159	Imp. Contents
F5	1160	Extra Storage
F6	1161	BH Acetone
F7	1162	BH MeCl2
F8	1163	Silica Gel

LEAK CHECK

Vacuum	8"				
Rate	.005				

Dwell Time for Point 1 = 4.70

$t_1/\sqrt{P_1}$ = 8.58

IMPINGER VOLUMES

	Initial	Final
#1	100	198
#2	100	124
#3	100	106
#4	0	0
#5	SG	

METER BOX I.D.	#7
GAMMA	1.0082
DELTA H@	1.7651
OPERATOR	C Ferguson
BAR. PRESS.	29.76
FILTER I.D.	91-957

FIELD DATA SHEET FOR METHOD 201A

PAGE 1

FACILITY Pine Hall Brick

DATE 11-3-92

START TIME 14:12

TEST LOCATION OUTLET B

RUN NUMBER OB-M201A/202-RB

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Dwell Time	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Imp. Temp.	Meter Vac.
A 1	0	14:12		171	.42	4.70	.47	055.429	67	67	57	3
2	4:70			173	.34	5.33	.47	057.6	64	63	45	3
3	10:00		-9.8	~~174~~	.51	5.18	.47	059.7	64	64	45	3
4	15:20			175	.47	4.97	.47	061.8	67	64	48	3
5	20.20			175	.47	4.97	.47	063.7	69	64	49	3
6	25:10			176	.48	5.02	.47	065.6	71	66	50	3
7	30:20			177	.54	5.33	.47	067.6	71	66	51	3
8	35:50			176	.57	5.48	.47	069.7	72	67	52	3
9	41:00			178	.64	5.80	.47	071.8	72	66	51	3
10	46:80			178	.67	5.94	.47	074.1	73	67	51	3
11	52.70			178	.64	5.80	.47	076.4	74	68	52	3
12	58:50			187	.64	5.80	.47	078.6	74	68	52	3
~~13~~	64:30	15:16						081.047				
B 1	64:30	15:37		187	.42	4.70	.47	081.047	66	65	48	3
2	69:00			185	.40	4.59	.47	082.8	67	65	47	3
3	73:60		-9.8	185	.42	4.70	.47	084.3	68	66	47	3
4	78:30			183	.41	4.64	.47	086.4	69	67	48	3
5	82:90			183	.41	4.64	.47	088.2	70	67	50	3
6	87:60			184	.41	4.64	.47	090.1	71	67	52	3
7	92:20			179	.56	5.43	.47	091.9	72	67	54	3
8	97.70			181	.63	5.76	.47	094.1	73	68	56	3
9	103.50			181	.70	6.07	.47	096.4	73	68	57	3
10	109.50			180	.74	6.24	.47	098.7	76	67	57	3
11	115.80			176	.72	6.15	.47	101.2	73	67	57	3
12	121.90			178	.68	5.98	.47	103.6	73	68	59	3
								106.059				

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	1164	Filter
F2	1165	> PM10 Rinse
F3	1166	<= PM10 Rinse
F4	1167	Imp. Contents
F5	1168	Ext. Storage
F6	1169	BH Acetone
F7	1170	BH MeCl2
F8	1171	Silica Gel

LEAK CHECK

Vacuum	7"				
Rate	.008				

Dwell Time for Point 1 = 4.70

$t_1/\sqrt{P_1}$ = ~~[illegible]~~ 7.25

IMPINGER VOLUMES

	Initial	Final
#1	100 mL	179
#2	100 ml	132
#3	100 ml	105
#4	0	0
#5	SG	

METER BOX I.D.	# 7
GAMMA	1.0082
DELTA H@	1.7651
OPERATOR	C. Figura
BAR. PRESS.	29.61
FILTER I.D.	91-958

F.3 RAW FIELD SAMPLING DATA FOR PM_{10} AND TOTAL PM TESTING

F.3.1 M201 RAW FIELD SAMPLING DATA - GRINDING-SCREENING BUILDING DUCT #1

Run Code	Run 1-EGR-D1	Date	10-27-92	Stack Temperature	57 (deg F)	Gas Composition %CO2 %O2 %CO	
Sampler ID		Start Time	9:15	Stack Static Pressure	-.38 (in H2O)	Moisture Content	
Filter ID		End Time		Ambient Temperature	52 (deg F)		
Sampler Orientation		Sampling Duration	(min)	Ambient Pressure	29.49 (in H2O)		
Sampling Location	#1 DUCT/ LEFT PORT	D G M (initial)	142.359	Gas Velocity	35 FPS (Ft/s)	Pitot Leak Check (pos) (neg)	✓
Nozzle Diameter - ID	.141 (in)	D G M (final)	205.00	System Leak Check (>= 15 in Hg)	OK - Solomon, Roy 0.005 @ 15 in Hg	Notes	GRINDER LEFT #1 RIGHT #2 defected: recycle flow fine adjustment
Operator(s)	Solomon + Shea	Sample Volume	62.641 (cu ft)				
Dual Manometer Leveled and Zeroed?							
Magnehelics Zeroed?							

near port

Run Time	Port No / Trav Pt	Delta P Pitot	Delta H Sample	D G M Volume	Delta P Total	P Inlet.	Delta P Recycle	T 1 Stack	T 2 Recycle	T 3 Probe	T 4 LFE	T 5 D G M
0	Left 1	.25	1.05	142.359	1.9	7.5	2.1	58	—	58	57	57
10	2	.28	1.15	144.90	1.7	7.5	1.95	58	—	58	60	58
20	3	.31	1.3	147.54	1.8	7.8	1.95	62	—	60	65	60
30	4	.29	1.2	149.90	1.8	7.9	2.1	61	—	61	68	62
40	5	.27	1.15	152.80	1.8	7.5	2.0	65	—	63	70	62
50	6!	.25	1.05	155.60	1.8	7.5	2.0	65	—	64	71	64
60	Finito!	↓	↓	158.38	↓	↓	↓	~~60~~	—	~~66~~	~~72~~	~~60~~
70									—			
80									—			
45		avg: 0.30	1.13		1.95	13.18	2.16	71.3 ~~74.0~~	—	72.3	80.4	73.8

far side

EGR Procedure Data

(2)

Run Code: Run 1-EGR-D1	Date	Stack Temperature: 73 (deg F)	Gas Composition %CO2 %O2 %CO
Sampler ID	Start Time: 10:55 a.m.	Stack Static Pressure: -0.38 (in H2O)	Moisture Content
Filter ID	End Time: 11:55 a.m.	Ambient Temperature: 73 (deg F)	
Sampler Orientation	Sampling Duration (min)	Ambient Pressure (in H2O)	
Sampling Location: Duct #1, Right port	DGM (initial): 158.348	Gas Velocity	Pitot Leak Check (pos) (neg)
Nozzle Diameter - ID: .161 (in)	DGM (final): 173.660	System Leak Check (>= 15 in Hg)	Notes
Operator(s)	Sample Volume (cu ft)		
Dual Manometer Leveled and Zeroed?			
Magnehelics Zeroed?			

Run Time	Port No / Trav Pt	Delta P Pitot	Delta H Sample	DGM Volume	Delta P Total	P Inlet	Delta P Recycle	T1 Stack	T2 Recycle	T3 Probe	T4 LFE	T5 DGM
		.21	1.1	158.348	1.9 ~~2.2~~	8.0	2.2 ~~1.9~~	73	—	73	71	70
10		.19	1.1	160.75	1.9 ~~2.2~~	8.0	2.2 ~~1.9~~	73	—	75	76	74
20		.21	0.8	163.36	1.9	13.5	2.1	72	—	75	81	75
30		.29	1.2	165.53	1.95	17	2.1	74	—	75	84	75
40		.31	1.25	168.16	2.0	17.5	2.0	74	—	75	85	76
50		.34	1.3	170.88	1.95	17.5	1.9	74	—	75	86	76
60		.34		173.660				~~74~~	—	~~75~~	~~86~~	~~77~~

Port

Far end

EGR Procedure Data

Run Code: Run 1 - EGR - D1	Date:	Stack Temperature: 75 (deg F)
Sampler ID:	Start Time: 12:05	Stack Static Pressure: -0.38 (in H2O)
Filter ID:	End Time: 1305	Ambient Temperature: 75 (deg F)
Sampler Orientation:	Sampling Duration: 60 (min)	Ambient Pressure: (in H2O)
Sampling Location: Duct 1, Right Port	DGM (initial): ~~173.000~~ 173.800	Gas Velocity:
Nozzle Diameter - ID: .161 (in)	DGM (final): 189.173	System Leak Check (> = 15 in Hg):
Operator(s): Solomon & Shea	Sample Volume: (cu ft)	

Gas Composition: %CO2 %O2 %CO

Moisture Content

Pitot Leak Check (pos) (neg)

Notes

Dual Manometer Leveled and Zeroed?

Magnehelics Zeroed?

FAR END → PORT

Run Time	Port No / Trav Pt	Delta P Pitot	Delta H Sample	D G M Volume	Delta P Total	P Inlet	Delta P Recycle	T 1 Stack	T 2 Recycle	T 3 Probe	T 4 L F E	T 5 D G M
0	1	.36	1.4	173.800	2.0	18	1.8	73	—	75	82	78
10	2	.30	1.2	176.39	2.0	17.5	2.1	76	—	75	84	78
20	3	.36	1.25	179.105	2.0	17	2.1	77	—	75	86	78
30	4	.24	1.1	181.82	2.1	16	2.4	77	—	76	88	79
40	5	.20	.85	184.43	2.0	13.5	2.6	76	—	76	89	79
50	6	.22	.85	186.76	2.1	13.5	2.65	76	—	77	89	80
60		.22		189.173				~~76~~	—	~~77~~	~~89~~	~~80~~

EGR Procedure Data

(4)

Run Code	Run 1 - EGR-D1	Date	10-27-92	Stack Temperature (deg F)		Gas Composition %CO2 %O2 %CO	
Sampler ID		Start Time	1:18:00	Stack Static Pressure (in H2O)	-.38	Moisture Content	
Filter ID		End Time		Ambient Temperature (deg F)	75		
Sampler Orientation	Lest Port/Duct 1	Sampling Duration (min)	60	Ambient Pressure (in H2O)			
Sampling Location		D G M (initial)	189.173	Gas Velocity		Pitot Leak Check (pos) (neg)	✓
Nozzle Diameter - ID (in)	.161	D G M (final)	205.00	System Leak Check (> = 15 in Hg)	✓	Notes	
Operator(s)	Solomon & Shea	Sample Volume (cu ft)					
Dual Manometer Leveled and Zeroed?							
Magnehelics Zeroed?							

Run Time	Port No / Trav Pt	Delta P Pitot	Delta H Sample	D G M Volume	Delta P Total	P Inlet	Delta P Recycle	T 1 Stack	T 2 Recycle	T 3 Probe	T 4 L F E	T 5 D G M
0	1	.24	.85	189.173	2.1	13.5	2.6	76	—	78	86	81
10	2	.27	1.10	191.485	2.0	16.5	2.2	76	—	79	87	81
20	3	.31	1.30	194.00	2.0	18.0	2.0	75		79	89	82
30	4	.32	1.35	196.78	1.9	18.0	1.95	74	—	78	91	82
40	5	.29	1.2	199.60	2.1	17.0	2.2	74	—	78	92	82
50	6	.26	1.0	202.32	2.0	15.5	2.4	72		77	92	82
60				205.00								

Near Port

FAR

EGR Procedure Data

Run Code 2-EGR-DL(Left port)	Date	Stack Temperature (deg F)	Gas Composition %CO2 / %O2 / %CO
Sampler ID	Start Time 1041	Stack Static Pressure (in H2O)	Moisture Content
Filter ID	End Time 1211	Ambient Temperature (deg F)	
Sampler Orientation	Sampling Duration 90 (min)	Ambient Pressure 29.52 (in H2O)	
Sampling Location Grinder outlet	D G M (initial) 230.123	Gas Velocity	Pitot Leak Check (pos) (neg)
Nozzle Diameter - ID (in)	D G M (final) 257.387	System Leak Check (>= 15 in Hg) <0.02 @ 15 in Hg Post test leak check: <0.02 @ 5 in Hg	Notes
Operator(s) Ricks & O'Shea	Sample Volume (cu ft)		
Dual Manometer Leveled and Zeroed?			
Magnehelics Zeroed?			

Run Time	Port No / Trav Pt	Delta P Pitot	Delta H Sample	D G M Volume	Delta P Total	P Inlet	Delta P Recycle	T 1 Stack	T 2 Recycle	T 3 Probe	T 4 L F E	T 5 D G M
	1	.32	1.3	230.123	1.8	17.5	1.8	62	—	68	75	70
15	2	.36 .40	1.50 1.65	233.96	1.9 1.9	18.5 20	1.7 1.5	66	—	68	77	71
30	3	.43	1.75	238.28	1.9	21	1.4	67	—	68	79	71
45	4	.45	1.8	242.91	1.8	22	1.3	67	—	69	80	72
60	5	.48	1.95	247.72	1.9	23	1.3	66	—	69	81	73
75	6	.40	1.6	252.65	1.9	20	1.5	64	—	69	82	73
90		.40		257.387				66	—	69	81	73

EGR Procedure Data

A: RUN 2.3

Run Code: 2-EGR-D1 (Right port)	Date:	Stack Temperature (deg F):	Gas Composition %CO2 %O2 %CO:
Sampler ID:	Start Time: 0901	Stack Static Pressure (in H2O):	Moisture Content:
Filter ID:	End Time: 1031	Ambient Temperature (deg F):	
Sampler Orientation:	Sampling Duration: 90 (min)	Ambient Pressure: 29.52 (in H2O)	
Sampling Location: Grinder outlet	DGM (initial): ~~206.175~~ 206.279	Gas Velocity:	Pitot Leak Check (pos) (neg):
Nozzle Diameter - ID (in):	DGM (final): 230.110 257.387	System Leak Check (>= 15 in Hg): <0.02 cfm @ 15 in Hg	Notes:
Operator(s): Ricks + O'Shea	Sample Volume: 51.108 (cu ft)		
Dual Manometer Leveled and Zeroed?			
Magnehelics Zeroed?			

Run Time	Port No / Trav Pt	Delta P Pitot	Delta H Sample	D G M Volume	Delta P Total	P Inlet	Delta P Recycle	T 1 Stack	T 2 Recycle	T 3 Probe	T 4 L F E	T 5 D G M
	1	.27	1.15	206.279	1.8	15	2.2	53	—	60	64	64
15	2	.21	.89	209.87	1.9	13	2.4	54	—	62	68	64
30	3	.27	1.10	213.275	1.9	15	2.1	52	—	63	73	66
45	4	.35	1.4	217.03	1.8	18	1.7	54	—	63	75	66
60	5	.37	1.5	221.16	1.9	19	1.6	59	—	65	76	68
75	6	.40	1.6	225.475	1.9	20	1.5	62	—	66	77	69
90		.40		230.110				65	—	66	77	70
		.358 ~~.44~~	1.474		1.87	18.6	1.67	60.5	67	65.8	75.6	68.9

EGR Procedure Data

F

Run Code 3-EGR-D1 (Left port)	Date	Stack Temperature (deg F)	Gas Composition %CO2 %O2 %CO
Sampler ID	Start Time 1318	Stack Static Pressure (in H2O)	Moisture Content
Filter ID	End Time 1448	Ambient Temperature (deg F)	
Sampler Orientation	Sampling Duration 90 (min)	Ambient Pressure 29.54 (in H2O)	
Sampling Location Grinder outlet	D G M (initial) 257.542	Gas Velocity	Pitot Leak Check (pos) (neg)
Nozzle Diameter - ID (in)	D G M (final) 310.225	System Leak Check (> = 15 in Hg) Pretest: <0.01 @ 15 in Hg	Notes
Operator(s) Ricks & O'Shea	Sample Volume 52.683 (cu ft)		
Dual Manometer Leveled and Zeroed?			
Magnehelics Zeroed?			

Run Time	Port No / Trav Pt	Delta P Pitot	Delta H Sample	D G M Volume	Delta P Total	P Inlet	Delta P Recycle	T 1 Stack	T 2 Recycle	T 3 Probe	T 4 LFE	T 5 D G M
	1	.36	1.6	257.542	1.9	19.5	1.7	70	—	78	77	76
15	2	.38	1.6	261.24	1.89	20	1.6	70	—	76	78	76
30	3	.42	1.7	265.88	1.9	20	1.5	69	—	75	81	75
45	4	.48	1.9	270.559	1.85	22.5	1.2	69	—	73	82	75
60	5	.48	1.9	275.425	1.85	22.5	1.2	69	—	72	82	75
75	6	.41	1.7	280.490	1.9	20.5	1.4	68	—	71	83	75
90				285.221								
		.379	1.56		1.80	19.1	1.61	69.0	75	72.3	80.6	75.1

EGR Procedure Data

Run Code	3~~A~~ EGR D1 Right	Date	10-28-92	Stack Temperature (deg F)		Gas Composition %CO2 %O2 %CO	
Sampler ID		Start Time	1458	Stack Static Pressure (in H2O)		Moisture Content	
Filter ID		End Time		Ambient Temperature (deg F)			
Sampler Orientation		Sampling Duration (min)		Ambient Pressure (in H2O)	29.52		
Sampling Location		D G M (initial)	285.300	Gas Velocity		Pitot Leak Check (pos) (neg)	
Nozzle Diameter - ID (in)		D G M (final)		System Leak Check (>= 15 in Hg)		Notes	
Operator(s)		Sample Volume (cu ft)					

Dual Manometer Leveled and Zeroed?

Magnehelics Zeroed?

Run Time	Port No / Trav Pt	Delta P Pitot	Delta H Sample	D G M Volume	Delta P Total	P Inlet	Delta P Recycle	T 1 Stack	T 2 Recycle	T 3 Probe	T 4 L F E	T 5 D G M
0	1	.31	1.3	285.300	1.9	16	1.90	67	—	70	80	75
15	2	.25	1.0	288.02	1.9	14	2.3	67	—	71	80	75
30	3	~~.27~~ .37	1.1	292.65	1.9	15	2.1	67	—	71	82	75
45	4	.38	1.5 ~~1.45~~	296.40	1.9	18.5	1.6	67		71	82	75
60	5	.41	1.6	300.73	1.9	20	1.5	67	—	71	82	75
75	6	.44	1.8	305.33	1.8	21	1.3	66	—	69	81	74
90				310.225								

EGR Procedure Data

1.5

1.6

ANALYTICAL DATA

PLANT Pine Hall Brick

DATE Oct 27, 1992

SAMPLING LOCATION DI Screening/Grinding Outlet 1

SAMPLE TYPE EGR

RUN NUMBER 1

SAMPLE BOX NUMBER

CLEAN-UP MAN RRS

COMMENTS:

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER ______ ______ mg

FILTER NUMBER 403 ______ — CONTAINER ______ ______ mg

FRONT HALF SUBTOTAL ______ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ______ ______ mg

ETHER-CHLOROFORM EXTRACTION ______ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ______ ______ mg

BACK HALF SUBTOTAL ______ mg

TOTAL WEIGHT ______ mg

MOISTURE

IMPINGERS

FINAL VOLUME	0	ml
INITIAL VOLUME	0	ml
NET VOLUME	0	ml

SILICA GEL

FINAL WEIGHT	NA g	g	g
INITIAL WEIGHT	g	g	g
NET WEIGHT	g	g	g

TOTAL MOISTURE ______ g

EPA (Dur) 231
4/72

ANALYTICAL DATA

PLANT Pine Hall Brick

DATE Oct 27, 1992

SAMPLING LOCATION D2 Screening/Grinding Outlet 2

SAMPLE TYPE EGR -

RUN NUMBER Run 1

SAMPLE BOX NUMBER

CLEAN-UP MAN RRS

COMMENTS:

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER ______ ______

FILTER NUMBER 402 ______ — CONTAINER ______ ______

FRONT HALF SUBTOTAL ______

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ______ ______ mg

ETHER-CHLOROFORM EXTRACTION ______

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ______ ______

BACK HALF SUBTOTAL ______

TOTAL WEIGHT ______

MOISTURE

IMPINGERS

FINAL VOLUME 8 ml

INITIAL VOLUME 0 ml

NET VOLUME 8 ml

SILICA GEL

FINAL WEIGHT	NA g	g	g
INITIAL WEIGHT	g	g	g
NET WEIGHT	g	g	g

TOTAL MOISTURE ______ g

EPA (Dur) 231
4/72

ANALYTICAL DATA

PLANT Pine Hall Brick

DATE Oct 28, 1992

SAMPLING LOCATION D1 Screening/Grinding Outlet 1

SAMPLE TYPE EGR

RUN NUMBER Run 2

SAMPLE BOX NUMBER ____

CLEAN-UP MAN RRS

COMMENTS:

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER	CONTAINER ____	____ mg
FILTER NUMBER 406	CONTAINER ____	____ mg
	FRONT HALF SUBTOTAL	____ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER	CONTAINER ____	____ mg
	ETHER-CHLOROFORM EXTRACTION	____ mg
ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER	CONTAINER ____	____ mg
	BACK HALF SUBTOTAL	____ mg
	TOTAL WEIGHT	____ mg

MOISTURE

IMPINGERS ← may be yesterday's (Run 1 + Run 2)

FINAL VOLUME 22 ml

INITIAL VOLUME 0 ml

NET VOLUME ____ ml

SILICA GEL

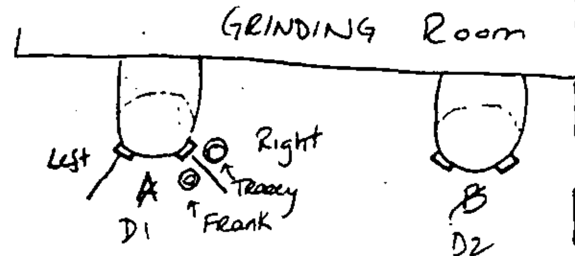
FINAL WEIGHT	NA g	____ g	____ g
INITIAL WEIGHT	____ g	____ g	____ g
NET WEIGHT	____ g	____ g	____ g

TOTAL MOISTURE ____

EPA (Dur) 231
4/72

PRELIMINARY VELOCITY TRAVERSE

PLANT Pine Hall Brick Mnfctr
DATE 10-26-92
LOCATION Duct A
STACK I.D.
BAROMETRIC PRESSURE, in. Hg
STACK GAUGE PRESSURE, in. H_2O – .25 RT / –.20 LEFT
OPERATORS Dr Shea + Dr Clay



SCHEMATIC OF TRAVERSE POINT LAYOUT

LEFT PORT / DUCT A

	TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
Port Opening	1	.29	
	2	.38	
	3	.43	
	4	.51	
	5	.50	
FAR WALL	6	.35	
	AVERAGE		

RIGHT PORT / DUCT A

	TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
Port Opening	1	.33	
	2	.32	
	3	.30	
	4	.41	
	5	.33	
FAR WALL	6	.44	
	AVERAGE		

EPA (Dur) 233
4/72

+.25

```
         XROM "METH 2"
SITE ?
A
                          RUN
STACK DIA INCH?
                   48.    RUN
NO TRAV PTS. ?
                   12.    RUN
BAR PRESS ?
                 29.48    RUN
STATIC IN H0H ?
                   .25    RUN
% MOISTURE ?
                    2.    RUN
PITOT CP ?
                   .84    RUN
% CO2 ?
                    .7    RUN
% OXYGEN ?
                   21.    RUN
% CO ?
                    0.    RUN
MOL WT OTHER ?
                          RUN

MWd = 28.95
MW WET = 28.73


DELTA P 1.
                   .29    RUN
STACK TEMP?
                   70.    RUN
FPS = 31.

DELTA P 2.
                   .38    RUN
STACK TEMP?
                   70.    RUN
FPS = 35.

DELTA P 3.
                   .43    RUN
STACK TEMP?
                   70.    RUN
FPS = 37.

DELTA P 4.
                   .51    RUN
STACK TEMP?
                   70.    RUN
FPS = 41.

DELTA P 5.
                    .5    RUN
STACK TEMP?
                   70.    RUN
FPS = 40.
```

DELTA P 6.	.35	RUN
STACK TEMP?	70.	RUN
FPS = 34.		
DELTA P 7.	.33	RUN
STACK TEMP?	70.	RUN
FPS = 33.		
DELTA P 8.	.32	RUN
STACK TEMP?	70.	RUN
FPS = 32.		
DELTA P 9.	.3	RUN
STACK TEMP?	70.	RUN
FPS = 31.		
DELTA P 10.	.41	RUN
STACK TEMP?	70.	RUN
FPS = 36.		
DELTA P 11.	.33	RUN RUN
STACK TEMP?	70.	RUN
FPS = 33.		
DELTA P 12.	.44	RUN
STACK TEMP?	70.	RUN
FPS = 38.		

AVE FPS = 35.
AVE FPM = 2,098.
AVE DELTA P = 0.38
STK PRS. ABS = 29.50
AVE STK TEMP = 70.
STACK ACFM = 26,366.
DSCFM = 25,378.

EGR DATA SHEET FOR LFE SETTINGS

Test ID EGR2
Test Date 10/26/92
Test Location .... MADISON
Operator(s) ...... ROY/JOHN

Avg Stack Temp (F) ..... = 65
Avg Stack Velocity (fps) = 20
Stack Pressure (in wg) = .1
Bar Pressure (in Hg) ... = 29.92

Stack Gas Water Content (%) = 2
Stack Gas Oxygen Content .... = 20.9
Stack Gas CO2 (%) .... = 0
Dry Molecular Wt (lb/lb mole) = 28.836
Wet Molecular Wt (lb/lb mole) =
28.61928

Nozzle Diameter (inches) = .161
D50 for SRI Cyclone I = 10

*** TARGET PRESSURE DROPS ***

Pitot	Temperature (F)										
DP	55	57	59	62	64	66	68	71	73	75	Item
0.031	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	A
	1.68	1.68	1.68	1.69	1.69	1.69	1.69	1.69	1.69	1.69	B
	3.00	3.01	3.01	3.01	3.01	3.02	3.02	3.02	3.02	3.02	C
	80	80	80	80	80	81	81	81	81	81	D
0.046	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	A
	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.69	1.69	B
	2.85	2.85	2.86	2.86	2.86	2.86	2.87	2.87	2.87	2.87	C
	76	76	76	76	76	76	76	76	76	76	D
0.062	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	A
	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	B
	2.72	2.72	2.73	2.73	2.73	2.74	2.74	2.74	2.74	2.75	C
	72	72	72	72	72	72	72	72	72	73	D
0.078	0.26	0.26	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	A
	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	B
	2.61	2.61	2.61	2.62	2.62	2.62	2.63	2.63	2.63	2.64	C
	69	69	69	69	69	69	69	69	69	69	D
0.094	0.31	0.31	0.31	0.30	0.30	0.30	0.30	0.30	0.30	0.30	A
	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	B
	2.51	2.51	2.51	2.52	2.52	2.52	2.52	2.53	2.53	2.53	C
	66	66	66	66	66	66	66	66	66	66	D
0.109	0.36	0.36	0.36	0.36	0.35	0.35	0.35	0.35	0.35	0.35	A
	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	B
	2.41	2.41	2.42	2.42	2.43	2.43	2.43	2.44	2.44	2.44	C
	63	63	63	63	63	63	63	63	64	64	D
0.125	0.41	0.41	0.41	0.41	0.40	0.40	0.40	0.40	0.40	0.40	A
	1.67	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	B
	2.32	2.33	2.33	2.33	2.34	2.34	2.35	2.35	2.35	2.36	C
	60	60	60	61	61	61	61	61	61	61	D
0.141	0.46	0.46	0.46	0.46	0.46	0.45	0.45	0.45	0.45	0.45	A
	1.67	1.67	1.67	1.67	1.68	1.68	1.68	1.68	1.68	1.68	B
	2.24	2.25	2.25	2.25	2.26	2.26	2.26	2.27	2.27	2.28	C
	58	58	58	58	58	58	58	59	59	59	D

	56	56	56	56	56	56	56	56	56	56	D
0.172	0.57	0.56	0.56	0.56	0.56	0.56	0.55	0.55	0.55	0.55	A
	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.68	1.68	B
	2.09	2.09	2.10	2.10	2.11	2.11	2.11	2.12	2.12	2.13	C
	53	53	54	54	54	54	54	54	54	54	D
0.188	0.62	0.62	0.61	0.61	0.61	0.61	0.60	0.60	0.60	0.60	A
	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	B
	2.02	2.02	2.03	2.03	2.04	2.04	2.05	2.05	2.05	2.06	C
	51	51	51	52	52	52	52	52	52	52	D
0.204	0.67	0.67	0.67	0.66	0.66	0.66	0.65	0.65	0.65	0.65	A
	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	B
	1.95	1.96	1.96	1.97	1.97	1.97	1.98	1.98	1.99	1.99	C
	49	49	50	50	50	50	50	50	50	50	D
0.219	0.72	0.72	0.72	0.71	0.71	0.71	0.70	0.70	0.70	0.70	A
	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	B
	1.89	1.89	1.90	1.90	1.91	1.91	1.91	1.92	1.92	1.93	C
	47	47	48	48	48	48	48	48	48	48	D
0.235	0.77	0.77	0.77	0.76	0.76	0.76	0.76	0.75	0.75	0.75	A
	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	B
	1.82	1.83	1.83	1.84	1.84	1.85	1.85	1.86	1.86	1.87	C
	45	46	46	46	46	46	46	46	47	47	D
0.251	0.83	0.82	0.82	0.82	0.81	0.81	0.81	0.80	0.80	0.80	A
	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	B
	1.76	1.77	1.77	1.78	1.78	1.79	1.79	1.80	1.80	1.81	C
	44	44	44	44	44	44	44	45	45	45	D
0.267	0.88	0.87	0.87	0.87	0.86	0.86	0.86	0.85	0.85	0.85	A
	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	B
	1.70	1.71	1.71	1.72	1.72	1.73	1.73	1.74	1.74	1.75	C
	42	42	42	42	43	43	43	43	43	43	D

A = Sample Flow DP   B = Total Flow DP   C = Recycle Flow DP   D = % Recycle

EGR DATA SHEET FOR LFE SETTINGS

Tracy /Solomon

Test ID .... BRICK
Test Date 10/27/92
Test Location .... GRINDER OUTLET
Operator(s) ...... TS/SR

Avg Stack Temp (F) ..... = 72
Avg Stack Velocity (fps) = 42
Stack Pressure (in wg) = .1
Bar Pressure (in Hg) ... = 29.92

Stack Gas Water Content (%) = 2
Stack Gas Oxygen Content .... = 20.9
Stack Gas CO2 (%) .... = 0
Dry Molecular Wt (lb/lb mole) = 28.836
Wet Molecular Wt (lb/lb mole) =
28.61928

[illegible]

Nozzle Diameter (inches) = .161
D50 for SRI Cyclone I = 10

*** TARGET PRESSURE DROPS ***

Pitot DP	Temperature (F) 50	53	57	60	63	67	70	73	77	80	Item
0.399	1.68	1.67	1.66	1.64	1.63	1.62	1.61	1.60	1.59	1.58	A
	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.95	B
	1.47	1.49	1.50	1.51	1.52	1.54	1.55	1.56	1.58	1.59	C
	30	31	31	31	31	32	32	32	32	32	D
0.424	1.78	1.77	1.76	1.75	1.74	1.72	1.71	1.70	1.69	1.68	A
	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	B
	1.36	1.38	1.39	1.40	1.42	1.43	1.44	1.46	1.47	1.48	C
	28	28	29	29	29	29	30	30	30	30	D
0.448	1.89	1.87	1.86	1.85	1.84	1.83	1.81	1.80	1.79	1.78	A
	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	B
	1.26	1.27	1.29	1.30	1.31	1.33	1.34	1.35	1.37	1.38	C
	26	26	27	27	27	27	28	28	28	28	D
0.473	1.99	1.98	1.96	1.95	1.94	1.93	1.91	1.90	1.89	1.88	A
	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	B
	1.16	1.17	1.19	1.20	1.21	1.23	1.24	1.25	1.27	1.28	C
	24	24	25	25	25	25	26	26	26	26	D
0.498	2.09	2.08	2.07	2.05	2.04	2.03	2.01	2.00	1.99	1.98	A
	1.93	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	B
	1.06	1.07	1.09	1.10	1.12	1.13	1.14	1.16	1.17	1.19	C
	22	22	23	23	23	24	24	24	24	25	D
0.522	2.20	2.18	2.17	2.16	2.14	2.13	2.12	2.10	2.09	2.08	A
	1.93	1.93	1.93	1.94	1.94	1.94	1.94	1.94	1.94	1.94	B
	0.96	0.98	0.99	1.01	1.02	1.03	1.05	1.06	1.08	1.09	C
	20	21	21	21	21	22	22	22	22	23	D
0.547	2.30	2.29	2.27	2.26	2.24	2.23	2.22	2.20	2.19	2.17	A
	1.93	1.93	1.93	1.93	1.94	1.94	1.94	1.94	1.94	1.94	B
	0.87	0.88	0.90	0.91	0.93	0.94	0.96	0.97	0.99	1.00	C
	18	19	19	19	20	20	20	20	21	21	D
0.572	2.41	2.39	2.38	2.36	2.35	2.33	2.32	2.30	2.29	2.27	A

	1.93	1.93	1.93	1.93	1.93	1.94	1.94	1.94	1.94	1.94	B
	0.77	0.79	0.80	0.82	0.84	0.85	0.87	0.88	0.90	0.91	C
	17	17	17	17	18	18	18	19	19	19	D
0.596	2.51	2.50	2.48	2.46	2.45	2.43	2.42	2.40	2.39	2.37	A
	1.93	1.93	1.93	1.93	1.93	1.93	1.94	1.94	1.94	1.94	B
	0.68	0.70	0.71	0.73	0.75	0.76	0.78	0.79	0.81	0.82	C
	15	15	15	16	16	16	17	17	17	17	D
0.621	2.62	2.60	2.58	2.57	2.55	2.53	2.52	2.50	2.49	2.47	A
	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.94	1.94	1.94	B
	0.59	0.61	0.63	0.64	0.66	0.67	0.69	0.71	0.72	0.74	C
	13	13	14	14	14	15	15	15	15	16	D
0.646	2.72	2.70	2.69	2.67	2.65	2.63	2.62	2.60	2.59	2.57	A
	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.94	1.94	B
	0.51	0.52	0.54	0.56	0.57	0.59	0.60	0.62	0.64	0.65	C
	11	12	12	12	13	13	13	13	14	14	D
0.670	2.83	2.81	2.79	2.77	2.75	2.74	2.72	2.70	2.68	2.67	A
	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.94	B
	0.42	0.44	0.46	0.47	0.49	0.50	0.52	0.54	0.55	0.57	C
	10	10	10	11	11	11	12	12	12	12	D
0.695	2.93	2.91	2.89	2.87	2.86	2.84	2.82	2.80	2.78	2.77	A
	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	B
	0.34	0.36	0.37	0.39	0.41	0.42	0.44	0.46	0.47	0.49	C
	8	8	9	9	9	10	10	10	11	11	D
0.720	3.04	3.02	3.00	2.98	2.96	2.94	2.92	2.90	2.88	2.87	A
	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	B
	0.26	0.27	0.29	0.31	0.32	0.34	0.36	0.37	0.39	0.41	C
	6	7	7	7	8	8	8	9	9	9	D
0.744	3.14	3.12	3.10	3.08	3.06	3.04	3.02	3.00	2.98	2.96	A
	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	B
	0.18	0.19	0.21	0.23	0.25	0.26	0.28	0.30	0.31	0.33	C
	5	5	5	6	6	6	7	7	7	8	D
0.769	3.25	3.22	3.20	3.18	3.16	3.14	3.12	3.10	3.08	3.06	A
	1.92	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	B
	0.10	0.11	0.13	0.15	0.17	0.18	0.20	0.22	0.24	0.25	C
	3	4	4	4	5	5	5	6	6	6	D

A = Sample Flow DP   B = Total Flow DP   C = Recycle Flow DP   D = % Recycle

F.3.2 M201 RAW FIELD SAMPLING DATA - GRINDING-SCREENING BUILDING DUCT #2

Run Code: Run 1-EGL-D2 D-2-1	Date: 10/27/92	Stack Temperature: 58 (deg F)	Gas Composition %CO2 %O2 %CO
Sampler ID:	Start Time: 9:49 / 10:53	Stack Static Pressure: +.38 (in H2O)	Moisture Content
Filter ID:	End Time:	Ambient Temperature: 58 (deg F)	
Sampler Orientation: Horizontal	Sampling Duration: 240 (min)	Ambient Pressure: 29.49 (in H2O)	
Sampling Location: D-2 Screen outlet	DGM (initial): 147.487	Gas Velocity:	Pitot Leak Check (pos) ok (neg) ok
Nozzle Diameter - ID: 0.125 (in)	DGM (final): 187.518	System Leak Check (>= 15 in Hg) initial .018 @ 15	Notes: D1 D2
Operator(s): HARRISON/Huntley	Sample Volume: 45.031 (cu ft)		
Dual Manometer Leveled and Zeroed? ✓			
Magnehelics Zeroed? ✓			

Run Time	Port No / Trav Pt	Delta P Pitot	Delta H Sample	DGM Volume	Delta P Total	P Inlet	Delta P Recycle	T1 Stack	T2 Recycle	T3 Probe	T4 LFE	T5 DGM
0	1/1	.38	.40	142.487	1.58	7.5	2.30	58	72	58	59	59
10	1/2	.26	.20 ~~.26~~	144.200	1.40	14.5	2.50	61	72	61	69	62
20	1/3	.26	.30	145.700	1.40	14.0	2.50	63	72	63	74	64
30	1/4	.52	.50	147.15	1.8	7.0	2.5	64	72	64	77	66
40	1/5	.44	.49		1.8	7.0	9.17	66	72	66	80	67
50	1/6	.35	.40	150.5	1.85	6.5	2.32	69	72	82	82	69
60	1/6	.35	.40	152.51	1.70	6.3	2.32	72	72	81	83	72
70	1/5	.38	.42	154.	1.75	6.5	2.30	72	72	80	84	74
80	1/4	.39	.44	156.03	1.75	6.5	2.25	72	72	80	86	75
90	1/3	.26	.28	158.	1.60	15.	2.53	74	74	80	88	76
Run Avgs		.45	0.50		1.72	9.86	2.18	~~68.54~~ 71.6	75.9	76.46	82.63	75.58

⇐ adj magnehelic zero's

EGR Procedure Data

21.5

②

Run Code D-2-1	Date 10/27	Stack Temperature (deg F)	Gas Composition %CO2 %O2 %CO
Sampler ID	Start Time	Stack Static Pressure (in H2O)	Moisture Content
Filter ID	End Time	Ambient Temperature (deg F)	
Sampler Orientation Horizontal	Sampling Duration (min)	Ambient Pressure (in H2O)	
Sampling Location D-2	D G M (initial)	Gas Velocity	Pitot Leak Check (pos) (neg)
Nozzle Diameter - ID .125 (in)	D G M (final)	System Leak Check (> = 15 in Hg)	Notes
Operator(s)	Sample Volume (cu ft)		
Dual Manometer Leveled and Zeroed?			
Magnehelics Zeroed?			

Run Time	Port No / Trav Pt	Delta P Pitot	Delta H Sample	D G M Volume	Delta P Total	P Inlet	Delta P Recycle	T 1 Stack	T 2 Recycle	T 3 Probe	T 4 LFE	T 5 D G M
100	1/2	.28	.30	159.1	1.65	16	2.49	74	74	80	88	76
110	1/1	.37	.42	160.7	1.70	21	2.29	74	80	81	89	77
120	Port Change ~~.39~~			162.485					~~76~~			
130	2/1	.40	.44	162.485	~~2.06~~ 1.70	21	2.26	75	80	80	85	78
140	2/2	.45	~~.45~~ .48	164.29	1.75	23	2.19	75	80	80	85	79
150	2/3	.49	.54	166.10	1.80	7.5	2.10	75	76	80	87	79
160	2/4	.68	.74	168.10	1.78	5.5	1.80	75	78	79	90	80
170	2/5	.65	.72	170.30	1.8	5.5	1.80	75	79	79	91	80
180	2/6	.61	.67	172.570	1.75	5.5	1.78	75	79	80	92	81
190	2/6	.58	.64	174.78	1.78	6.5	1.90	75	81	80	93	82

same point as before

EGR Procedure Data

Run Code D-2-1	Date 10-27/92	Stack Temperature (deg F)	Gas Composition %CO2 %O2 %CO
Sampler ID	Start Time	Stack Static Pressure (in H2O)	Moisture Content
Filter ID	End Time	Ambient Temperature (deg F)	
Sampler Orientation Horizontal	Sampling Duration (min)	Ambient Pressure (in H2O)	
Sampling Location	D G M (initial)	Gas Velocity	Pitot Leak Check (pos) OK (neg) OK
Nozzle Diameter - ID (in) .125	D G M (final)	System Leak Check (> = 15 in Hg) <.002@15"Hg initial .002@5"Hg final	Notes
Operator(s) RH/TH	Sample Volume (cu ft)		
Dual Manometer Leveled and Zeroed?			
Magnehelics Zeroed?			

Run Time	Port No / Trav Pt	Delta P Pitot	Delta H Sample	D G M Volume	Delta P Total	P Inlet	Delta P Recycle	T 1 Stack	T 2 Recycle	T 3 Probe	T 4 LFE	T 5 D G M
200	2/5	.67	.74	176.84	1.82	6.5	1.8	75	78	80	93	83
210	2/4	.67	.74	179.27	1.80	6.4	1.8	75	78	80	94	83
220	2/3	.58	.60	181.64	1.80	7.0	2.0	75	78	80	95	84
230	2/2	.45	.50	183.75	1.8	7.5	2.2	75	78	81	95	84
240	2/1	.42	.45	185.70	1.78	7.0	2.2	75	81	80	95	84
				187.518								

Run2-ECR-D2 (D: Run2TH) ECR#3 winter box cycling #2

Run Code ECR-D-2-2	Date 10/28/92	Stack Temperature 55 (deg F)	Gas Composition %CO2 %O2 %CO
Sampler ID	Start Time 8:01 am	Stack Static Pressure (in H2O)	Moisture Content
Filter			

Run2-ECE-D2 Ai Run... EGR #3 ... Cycling #2

Run Code EGR-P-2-2	Date 10/28/92	Stack Temperature ~~55~~ 59 (deg F)	Gas Composition %CO2 %O2 0 %CO
Sampler ID	Start Time 8:01 am	Stack Static Pressure .35 (in H2O)	Moisture Content
Filter ID	End Time 9:31	Ambient Temperature 5.8 (deg F)	
Sampler Orientation Horizontal	Sampling Duration 180 (min)	Ambient Pressure 24.52 (in H2O)	
Sampling Location S: Grinder Screening Outlet	D G M (initial) 187.802	Gas Velocity	Pitot Leak Check (pos) ✓ (neg) ✓
Nozzle Diameter - ID .125 (in)	D G M (final) 223.682	System Leak Check (>= 15 in Hg) ... .01 cfm @ 15" Hg	Notes
Operator(s) Harrison / Huntley	Sample Volume 35.880 (cu ft)		
Dual Manometer Leveled and Zeroed?			
Magnehelics Zeroed?			

Run Time	Port No / Trav Pt	Delta P Pitot	Delta H Sample	D G M Volume	Delta P Total	P Inlet	Delta P Recycle	T 1 Stack	T 2 Recycle	T 3 Probe	T 4 LFE	T 5 D G M
~~15~~ 15	2-1	.40	.47	187.802	1.6	7.5	2.29	54	~~84~~ 58	57	61	58
~~20~~ 30	2-2	.45	.55	190.80	1.6	1.8	2.2	58	58	58	64	59
45	2-3	.52	.60	193.70	1.6	5.0	2.1	58	58	58	65	61
60	2-4	~~.67~~ .72	.85	196.15	1.6	10.3	1.8	59	59	60	74	63
75 ~~60~~	2-5	.72	.85	200.40	1.65	10.5	1.8	61	61	61	76	65
90	2-6	.69	.81	204.10	1.65	10.5	1.80	60	60	61	77	66
				207.895								

Average .58 .469 .568 1.61 10.38 2.17 60.3 64.8 61.6 74.5 65.5

EGR Procedure Data

Run Code	Run 2-EGR-D2	Date	10/28/92	Stack Temperature (deg F)		Gas Composition	0 %CO2 20.9 %O2 0 %CO
Sampler ID	EGR box #3, cyclone #2	Start Time		Stack Static Pressure (in H2O)		Moisture Content	
Filter ID		End Time		Ambient Temperature (deg F)			
Sampler Orientation	horiz.	Sampling Duration (min)		Ambient Pressure (in H2O)	29.54 (end		
Sampling Location	Grinder outlet	D G M (initial)		Gas Velocity		Pitot Leak Check (pos) ✓ (neg) ✓	final
Nozzle Diameter - ID (in)		D G M (final)		System Leak Check (> = 15 in Hg)	final leak check after removing cyclone 0.00 @ 5" Hg	Notes	final
Operator(s)		Sample Volume (cu ft)					
Dual Manometer Leveled and Zeroed?	✓						
Magnehelics Zeroed?	✓						

Run Time	Port No / Trav Pt	Delta P Pitot	Delta H Sample	D G M Volume	Delta P Total	P Inlet	Delta P Recycle	T 1 Stack	T 2 Recycle	T 3 Probe	T 4 LFE	T 5 D G M
15	1/1	.35	.40	207.910 ~~.85~~	1.6	9.4	2.4	63	63	63	76	67 ~~76~~
30	1/2	.32	.4	210.270	1.6	9.5	2.4	63	63	63	74	67
45	1/3	.24	.28	212.60	1.6	8.5	2.6	62	63	63	78	68
60	1/4	.44	.57 ~~.57~~	214.7	1.60	14.5	2.15	62	78	64	81	70
75	1/5	.44	.52	217.6	1.6	14.0	2.22	62	78	65	82	70
90	1/6	.44	.52	220.6	1.6	14.0	2.22	62	78	66	83	72
				223.682								

EGR Procedure Data

Stack D

Run Code: Run 3 EGR-D2	Date: 10/28/92	Stack Temperature (deg F)	Gas Composition: 0 %CO2 20.4 %O2 0 %CO
Sampler ID: EGR #3 Cyclone #2	Start Time: 12:50 RN	Stack Static Pressure (in H2O)	Moisture Content
Filter ID	End Time	Ambient Temperature (deg F)	
Sampler Orientation: horizontal	Sampling Duration (min)	Ambient Pressure 29.54 (in H2O)	
Sampling Location: Grinder outlet D-2	DGM (initial): ~~223.775~~ RN 223.775	Gas Velocity	Pitot Leak Check (pos) (neg)
Nozzle Diameter - ID .125 (in)	DGM (final): 260.466	System Leak Check (> = 15 in Hg): ✓	Notes: pretest leak check @ 15 in vacuum StackD1 < .02 StackD2 (b+1) 2.0
Operator(s): Roy/Terry	Sample Volume: 36.691 (cu ft)		
Dual Manometer Leveled and Zeroed? ✓			
Magnehelics Zeroed? ✓			

Run Time	Port No / Trav Pt	Delta P Pitot	Delta H Sample	D G M Volume	Delta P Total	P Inlet	Delta P Recycle	T 1 Stack	T 2 Recycle	T 3 Probe	T 4 LFE	T 5 D G M
15	1-1	.39	.46	223.775	1.6	12.0	2.31	66	80	79	76	73
30	1-2	.34	.40	226	1.62	11.5	2.40	65	80	80	78	74
45	1-3	~~.58~~ .32 ATL	.38	229.01	1.65	10.9	2.44	65	80	81	82	75
60	1-4	.54	.63	231.50	1.7	15.5	2.1	71	81	72	84	75
75	1-5	.51	.6	234.625	1.7	15.0	2.1	69	79	72	85	76
90	1-6	.50	.57	237.735	1.86	15	2.5	68	80	71	86	76
				240.753								

EGR Procedure Data

Run Code Run3 -EGR- 12	Date 10/28/92	Stack Temperature (deg F)	Gas Composition %CO2 %O2 %CO
Sampler ID LCR#3 Cyclone#2	Start Time 2:25 port D-2	Stack Static Pressure (in H2O)	Moisture Content 1 [illegible]
Filter ID	End Time 3 55	Ambient Temperature (deg F)	
Sampler Orientation horizontal	Sampling Duration 180 (min)	Ambient Pressure (in H2O)	
Sampling Location [illegible] outlet D-2	DGM (initial)	Gas Velocity	Pitot Leak Check (pos) ✓ (neg) ✓
Nozzle Diameter - ID .125 (in)	DGM (final) 260.466	System Leak Check (>= 15 in Hg) Post test leak check 0.00 at 6 in	Notes [illegible] D-2 port
Operator(s) Roy/Terry	Sample Volume (cu ft)		
Dual Manometer Leveled and Zeroed? ✓			
Magnehelics Zeroed? ✓			

Run Time	Port No / Trav Pt	Delta P Pitot	Delta H Sample	DGM Volume	Delta P Total	P Inlet	Delta P Recycle	T1 Stack	T2 Recycle	T3 Probe	T4 LFE	T5 DGM
15	2/1	.45	.50	240.753	1.86	13.0	2.8	66	80	71	85	76
30	2/2	.49	.56	243.59	1.86	13.0	2.78	66	80	71	83	76
45	2/3	.53	.62	246.7	1.86	13.5	2.40	64	81	69	87	76
60	2/4	.65	.75	249.8	1.86	6.6	2.00	67	81	70	89	77
75	2/5	.65	.75	253.4	1.86	6.4	2.00	70	81	79 ~~70~~	89	77
90	2/6	.62 ~~[illegible]~~	.71	257.1	1.86	6.0	2.05	69	81	70	90	77
				260.466								

EGR Procedure Data

Average .443 .515 1.77 11.1 2.32 67.2 80.3 73.0 84.5 75.7

ANALYTICAL DATA

PLANT Pine Hall Brick

DATE Oct 28, 1992

SAMPLING LOCATION D2 Screening/Grinding Outlet 2

SAMPLE TYPE EGR

RUN NUMBER Run 2

SAMPLE BOX NUMBER ______

CLEAN-UP MAN RRS

COMMENTS:

FRONT HALF

LABORATORY RESULT

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER ______ ______

FILTER NUMBER 405 ______ — CONTAINER ______ ______

FRONT HALF SUBTOTAL ______

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ______ ______

ETHER-CHLOROFORM EXTRACTION ______

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ______ ______

BACK HALF SUBTOTAL ______

TOTAL WEIGHT ______

MOISTURE

IMPINGERS

FINAL VOLUME 12 ml

INITIAL VOLUME 0 ml

NET VOLUME ______ ml

SILICA GEL

FINAL WEIGHT	NA g	______ g	______ g
INITIAL WEIGHT	______ g	______ g	______ g
NET WEIGHT	______ g	______ g	______ g

TOTAL MOISTURE ______

EPA (Dur) 231
4/72

ANALYTICAL DATA

PLANT Pike Hall Brick

DATE Oct 28, 1992

SAMPLING LOCATION D1 Screening/Grinding Outlet 1

SAMPLE TYPE EGR

RUN NUMBER Run 3

SAMPLE BOX NUMBER ________

CLEAN-UP MAN RRS

COMMENTS:

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER ________ ________ mg

FILTER NUMBER 408 — CONTAINER ________ ________ mg

FRONT HALF SUBTOTAL ________ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ________ ________ mg

ETHER-CHLOROFORM EXTRACTION ________ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ________ ________ mg

BACK HALF SUBTOTAL ________ mg

TOTAL WEIGHT ________ mg

MOISTURE

IMPINGERS
FINAL VOLUME 13 ml
INITIAL VOLUME 0 ml
NET VOLUME ________ ml

SILICA GEL
FINAL WEIGHT NA g ________ g ________ g
INITIAL WEIGHT ________ g ________ g ________ g
NET WEIGHT ________ g ________ g ________ g

TOTAL MOISTURE ________ g

EPA (Dur) 231
4/72

ANALYTICAL DATA

PLANT Pine Hall Brick

DATE Oct 28, 1992

SAMPLING LOCATION D2 Screening/Grinding Outlet 2

SAMPLE TYPE EGR

RUN NUMBER Run 3

SAMPLE BOX NUMBER ____

CLEAN-UP MAN RRS

COMMENTS:

FRONT HALF

LABORATORY RESULT

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER ____ ____

FILTER NUMBER 407 ____ — CONTAINER ____ ____

FRONT HALF SUBTOTAL ____ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ____ ____

ETHER-CHLOROFORM EXTRACTION ____

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ____ ____

BACK HALF SUBTOTAL ____

TOTAL WEIGHT ____ mg

MOISTURE

IMPINGERS

FINAL VOLUME 7 ml

INITIAL VOLUME 0 ml

NET VOLUME ____ ml

SILICA GEL

FINAL WEIGHT	NA g	g	g
INITIAL WEIGHT	g	g	g
NET WEIGHT	g	g	g

TOTAL MOISTURE ____

EPA (Dur) 231
4/72

ANALYTICAL DATA

PLANT Pine Hall Brick

DATE Oct 27, 1992

SAMPLING LOCATION ₤

SAMPLE TYPE Blank ~~Acetone~~ for EGR

RUN NUMBER Blank

SAMPLE BOX NUMBER

CLEAN-UP MAN RRS

COMMENTS:

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER Acetone 200 ml ______ mg

FILTER NUMBER 404 ______ — CONTAINER ______ ______ mg

FRONT HALF SUBTOTAL ______ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ______ ______ mg

ETHER-CHLOROFORM EXTRACTION ______ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ______ ______ mg

BACK HALF SUBTOTAL ______ mg

TOTAL WEIGHT ______ mg

MOISTURE

IMPINGERS

FINAL VOLUME ______ ml

INITIAL VOLUME ______ ml

NET VOLUME ______ ml

SILICA GEL

FINAL WEIGHT ______ g ______ g ______ g

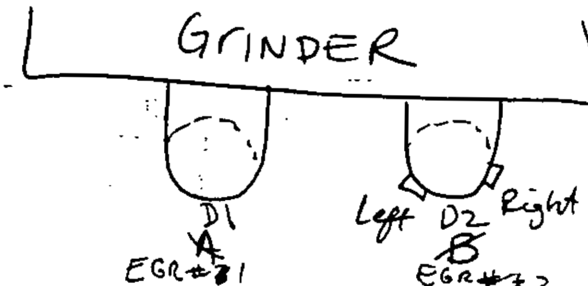
INITIAL WEIGHT ______ g ______ g ______ g

NET WEIGHT ______ g ______ g ______ g

TOTAL MOISTURE ______

PRELIMINARY VELOCITY TRAVERSE

PLANT Pine Hall Brick
DATE 10-26-92
LOCATION
STACK I.D. Duct B
BAROMETRIC PRESSURE, in. Hg
STACK GAUGE PRESSURE, in. H_2O -.38
OPERATORS Terry + Teacey Delta



SCHEMATIC OF TRAVERSE POINT LAYOUT

Left Port / Duct B (D2)

	TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
opening	1	.37	
	2	.44	
	3	.47	
	4	.58	
	5	.58	
far end	6	.58	
	AVERAGE		

Right Port / Duct B (D2

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
1	.31	
2	.32	
3	.25	
4	.51	
5	.41	
6	.45	
AVERAGE		

EPA (Dur) 233
4/72

XROM "METH 2"

```
SITE ?
B
                              RUN
STACK DIA INCH?
                 48.00        RUN
NO TRAV PTS. ?
                 12.00        RUN
BAR PRESS ?
                 29.48        RUN
STATIC IN HOH ?
                   .38        RUN
% MOISTURE ?
                  2.00        RUN
PITOT CP ?
                   .84        RUN
% CO2 ?
                   .70        RUN
% OXYGEN ?
                  .00         RUN
% CO ?
                  0.00        RUN
MOL WT OTHER ?
                              RUN

MWd = 28.95
MW WET = 28.73

DELTA P 1.
                   .37        RUN
STACK TEMP?
                   70.        RUN
FPS = 35.

DELTA P 2.
                   .44        RUN
STACK TEMP?
                   70.        RUN
FPS = 38.

DELTA P 3.
                   .47        RUN
STACK TEMP?
                   70.        RUN
FPS = 39.

DELTA P 4.
                   .58        RUN
STACK TEMP?
                   70.        RUN
FPS = 43.

DELTA P 5.
                   .58        RUN
STACK TEMP?
                   70.        RUN
```

FPS = 43.

DELTA P 6. .58 RUN
STACK TEMP? 70. RUN
FPS = 43.

DELTA P 7. .31 RUN
STACK TEMP? 70. RUN
FPS = 32.

DELTA P 8. .32 RUN
STACK TEMP? 70. RUN
FPS = 32.

DELTA P 9. .25 RUN
STACK TEMP? 70. RUN
FPS = 28.

DELTA P 10. .51 RUN
STACK TEMP? 70. RUN
FPS = 41.

DELTA P 11. .41 RUN
STACK TEMP? 70. RUN
FPS = 36.

DELTA P 12. .45 RUN
STACK TEMP? 70. RUN
FPS = 38.

AVE FPS = 37.
AVE FPM = 2,240.
AVE DELTA P = 0.44
STK PRS. ABS = 29.51
AVE STK TEMP = 70.
STACK ACFM = 28,146.
DSCFM = 27,100.

EGR DATA SHEET FOR LFE SETTINGS

Test ID .... BRICK
Test Date 10/27/92
Test Location .... GRINDER OUTLET
Operator(s) ...... TS/SR

Avg Stack Temp (F) ..... = 72
Avg Stack Velocity (fps) = 27
Stack Pressure (in wg) = .1
Bar Pressure (in Hg) ... = 29.92

Stack Gas Water Content (%) = 2
Stack Gas Oxygen Content .... = 20.9
Stack Gas CO2 (%) .... = 0
Dry Molecular Wt (lb/lb mole) = 28.836
Wet Molecular Wt (lb/lb mole) =
28.61928

Nozzle Diameter (inches) = .161
D50 for SRI Cyclone I = 10

*** TARGET PRESSURE DROPS ***

Pitot DP	Temperature (F) 50	53	57	60	63	67	70	73	77	80	Item
0.130	0.55	0.54	0.54	0.54	0.53	0.53	0.53	0.52	0.52	0.52	A
	1.95	1.95	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	B
	2.99	3.00	3.01	3.02	3.03	3.04	3.04	3.05	3.06	3.07	C
	60	60	60	61	61	61	61	61	61	61	D
0.147	0.62	0.61	0.61	0.60	0.60	0.60	0.59	0.59	0.58	0.58	A
	1.95	1.95	1.95	1.96	1.96	1.96	1.96	1.96	1.96	1.96	B
	2.87	2.88	2.89	2.90	2.90	2.91	2.92	2.93	2.94	2.95	C
	58	58	58	58	58	58	59	59	59	59	D
0.163	0.68	0.68	0.68	0.67	0.67	0.66	0.66	0.65	0.65	0.65	A
	1.95	1.95	1.95	1.95	1.95	1.96	1.96	1.96	1.96	1.96	B
	2.75	2.76	2.77	2.78	2.79	2.80	2.81	2.81	2.82	2.83	C
	55	56	56	56	56	56	56	57	57	57	D
0.180	0.75	0.75	0.74	0.74	0.73	0.73	0.72	0.72	0.72	0.71	A
	1.95	1.95	1.95	1.95	1.95	1.95	1.96	1.96	1.96	1.96	B
	2.64	2.65	2.66	2.67	2.68	2.69	2.70	2.71	2.71	2.72	C
	53	53	54	54	54	54	54	54	55	55	D
0.196	0.82	0.82	0.81	0.81	0.80	0.80	0.79	0.79	0.78	0.78	A
	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.96	1.96	B
	2.53	2.54	2.55	2.56	2.57	2.58	2.59	2.60	2.61	2.62	C
	51	51	51	52	52	52	52	52	52	53	D
0.212	0.89	0.89	0.88	0.87	0.87	0.86	0.86	0.85	0.85	0.84	A
	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.96	B
	2.43	2.44	2.45	2.46	2.47	2.48	2.49	2.50	2.51	2.52	C
	49	49	49	50	50	50	50	50	51	51	D
0.229	0.96	0.95	0.95	0.94	0.94	0.93	0.92	0.92	0.91	0.91	A
	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	B
	2.33	2.34	2.35	2.36	2.37	2.38	2.39	2.40	2.41	2.43	C
	47	47	48	48	48	48	48	48	49	49	D
0.245	1.03	1.02	1.02	1.01	1.00	1.00	0.99	0.98	0.98	0.97	A

	50	53									
	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	B
	2.24	2.25	2.26	2.27	2.28	2.29	2.30	2.31	2.32	2.33	C
	45	46	46	46	46	46	46	47	47	47	D
0.262	1.10	1.09	1.08	1.08	1.07	1.06	1.06	1.05	1.04	1.04	A
	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	B
	2.15	2.16	2.17	2.18	2.19	2.20	2.21	2.22	2.23	2.24	C
	44	44	44	44	44	45	45	45	45	45	D
0.278	1.17	1.16	1.15	1.15	1.14	1.13	1.12	1.12	1.11	1.10	A
	1.94	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	B
	2.06	2.07	2.08	2.09	2.10	2.11	2.12	2.14	2.15	2.16	C
	42	42	42	42	43	43	43	43	43	44	D
0.295	1.24	1.23	1.22	1.21	1.21	1.20	1.19	1.18	1.18	1.17	A
	1.94	1.94	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	B
	1.97	1.98	1.99	2.01	2.02	2.03	2.04	2.05	2.06	2.07	C
	40	40	41	41	41	41	41	42	42	42	D
0.311	1.31	1.30	1.29	1.28	1.27	1.27	1.26	1.25	1.24	1.23	A
	1.94	1.94	1.94	1.95	1.95	1.95	1.95	1.95	1.95	1.95	B
	1.89	1.90	1.91	1.92	1.93	1.95	1.96	1.97	1.98	1.99	C
	38	39	39	39	39	40	40	40	40	40	D
0.328	1.38	1.37	1.36	1.35	1.34	1.33	1.32	1.32	1.31	1.30	A
	1.94	1.94	1.94	1.94	1.95	1.95	1.95	1.95	1.95	1.95	B
	1.81	1.82	1.83	1.84	1.85	1.87	1.88	1.89	1.90	1.91	C
	37	37	37	38	38	38	38	38	39	39	D
0.344	1.45	1.44	1.43	1.42	1.41	1.40	1.39	1.38	1.37	1.36	A
	1.94	1.94	1.94	1.94	1.94	1.95	1.95	1.95	1.95	1.95	B
	1.73	1.74	1.75	1.76	1.77	1.79	1.80	1.81	1.82	1.83	C
	35	36	36	36	36	36	37	37	37	37	D
0.360	1.51	1.50	1.49	1.49	1.48	1.47	1.46	1.45	1.44	1.43	A
	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.95	1.95	1.95	B
	1.65	1.66	1.67	1.69	1.70	1.71	1.72	1.73	1.75	1.76	C
	34	34	34	34	35	35	35	35	36	36	D
0.377	1.58	1.57	1.56	1.55	1.54	1.53	1.52	1.51	1.50	1.50	A
	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.95	1.95	B
	1.57	1.58	1.60	1.61	1.62	1.64	1.65	1.66	1.67	1.69	C
	32	32	33	33	33	33	34	34	34	34	D

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A = Sample Flow DP   B = Total Flow DP   C = Recycle Flow DP   D = % Recycle

EGR DATA SHEET FOR LFE SETTINGS

Test ID .... BRICK
Test Date 10/27/92
Test Location .... GRINDER OUTLET
Operator(s) ...... ROY/TERRY

Avg Stack Temp (F) ..... = 72
Avg Stack Velocity (fps) = 27
Stack Pressure (in wg) = .1
Bar Pressure (in Hg) ... = 29.92

Stack Gas Water Content (%) = 2
Stack Gas Oxygen Content .... = 20.9
Stack Gas CO2 (%) .... = 0
Dry Molecular Wt (lb/lb mole) = 28.836
Wet Molecular Wt (lb/lb mole) =
28.61928

Nozzle Diameter (inches) = .125
D50 for SRI Cyclone I = 10

*** TARGET PRESSURE DROPS ***

Pitot DP	Temperature (F) 50	53	57	60	63	67	70	73	77	80	Item
0.130	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	A
	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.88	B
	2.90	2.90	2.91	2.91	2.92	2.92	2.92	2.93	2.93	2.93	C
	76	76	76	76	76	76	76	77	77	77	D
0.147	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	A
	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	B
	2.85	2.85	2.86	2.86	2.87	2.87	2.87	2.88	2.88	2.88	C
	75	75	75	75	75	75	75	75	75	75	D
0.163	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.18	0.18	A
	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	B
	2.80	2.81	2.81	2.81	2.82	2.82	2.83	2.83	2.83	2.84	C
	73	73	73	73	74	74	74	74	74	74	D
0.180	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.20	0.20	0.20	A
	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	B
	2.76	2.76	2.76	2.77	2.77	2.78	2.78	2.79	2.79	2.79	C
	72	72	72	72	72	72	72	72	73	73	D
0.196	0.23	0.23	0.23	0.23	0.23	0.23	0.22	0.22	0.22	0.22	A
	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	B
	2.71	2.72	2.72	2.73	2.73	2.73	2.74	2.74	2.75	2.75	C
	71	71	71	71	71	71	71	71	71	71	D
0.212	0.25	0.25	0.25	0.25	0.25	0.24	0.24	0.24	0.24	0.24	A
	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	B
	2.67	2.68	2.68	2.68	2.69	2.69	2.70	2.70	2.71	2.71	C
	69	69	70	70	70	70	70	70	70	70	D
0.229	0.27	0.27	0.27	0.27	0.27	0.26	0.26	0.26	0.26	0.26	A
	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	B
	2.63	2.64	2.64	2.64	2.65	2.65	2.66	2.66	2.67	2.67	C
	68	68	68	69	69	69	69	69	69	69	D
0.245	0.29	0.29	0.29	0.29	0.28	0.28	0.28	0.28	0.28	0.28	A

	T 50	53	57	60	63 .28	67	70	73	77	80	
	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	B
	2.59	2.60	2.60	2.61	2.61	2.62	2.62	2.62	2.63	2.63	C
	67	67	67	67	68	68	68	68	68	68	D
0.262	0.31	0.31	0.31	0.31	0.30	0.30	0.30	0.30	0.30	0.29	A
	1.86	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	B
	2.55	2.56	2.56	2.57	2.57	2.58	2.58	2.59	2.59	2.60	C
	66	66	66	66	66	67	67	67	67	67	D
0.278	0.33	0.33	0.33	0.32	0.32	0.32	0.32	0.32	0.31	0.31	A
	1.86	1.86	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	B
	2.52	2.52	2.53	2.53	2.54	2.54	2.55	2.55	2.56	2.56	C
	65	65	65	65	65	66	66	66	66	66	D
0.295	0.35	0.35	0.35	0.34	0.34	0.34	0.34	0.34	0.33	0.33	A
	1.86	1.86	1.86	1.87	1.87	1.87	1.87	1.87	1.87	1.87	B
	2.48	2.49	2.49	2.50	2.50	2.51	2.51	2.52	2.52	2.53	C
	64	64	64	64	64	65	65	65	65	65	D
0.311	0.37	0.37	0.37	0.36	0.36	0.36	0.36	0.35	0.35	0.35	A
	1.86	1.86	1.86	1.87	1.87	1.87	1.87	1.87	1.87	1.87	B
	2.45	2.45	2.46	2.46	2.47	2.47	2.48	2.49	2.49	2.50	C
	63	63	63	63	63	64	64	64	64	64	D
0.328	0.39	0.39	0.38	0.38	0.38	0.38	0.37	0.37	0.37	0.37	A
	1.86	1.86	1.86	1.86	1.87	1.87	1.87	1.87	1.87	1.87	B
	2.42	2.42	2.43	2.43	2.44	2.44	2.45	2.45	2.46	2.46	C
	62	62	62	62	62	63	63	63	63	63	D
0.344	0.41	0.41	0.40	0.40	0.40	0.40	0.39	0.39	0.39	0.39	A
	1.86	1.86	1.86	1.86	1.86	1.87	1.87	1.87	1.87	1.87	B
	2.38	2.39	2.39	2.40	2.40	2.41	2.42	2.42	2.43	2.43	C
	61	61	61	61	62	62	62	62	62	62	D
0.360	0.43	0.43	0.42	0.42	0.42	0.42	0.41	0.41	0.41	0.40	A
	1.86	1.86	1.86	1.86	1.86	1.87	1.87	1.87	1.87	1.87	B
	2.35	2.36	2.36	2.37	2.37	2.38	2.38	2.39	2.40	2.40	C
	60	60	60	60	61	61	61	61	61	61	D
0.377	0.45	0.45	0.44	0.44	0.44	0.43	0.43	0.43	0.43	0.42	A
	1.86	1.86	1.86	1.86	1.86	1.86	1.87	1.87	1.87	1.87	B
	2.32	2.33	2.33	2.34	2.34	2.35	2.35	2.36	2.36	2.37	C
	59	59	59	60	60	60	60	60	60	60	D

A = Sample Flow DP   B = Total Flow DP   C = Recycle Flow DP   D = % Recycle

EGR DATA SHEET FOR LFE SETTINGS

Test ID .... BRICK
Test Date 10/27/92
Test Location .... GRINDER OUTLET
Operator(s) ...... ROY/TERRY

Avg Stack Temp (F) ..... = 72
Avg Stack Velocity (fps) = 42
Stack Pressure (in wg) = .1
Bar Pressure (in Hg) ... = 29.92

Stack Gas Water Content (%) = 2
Stack Gas Oxygen Content .... = 20.9
Stack Gas CO2 (%) .... = 0
Dry Molecular Wt (lb/lb mole) = 28.836
Wet Molecular Wt (lb/lb mole) =
28.61928

Nozzle Diameter (inches) = .125
D50 for SRI Cyclone I = 10

*** TARGET PRESSURE DROPS ***

Pitot DP	Temperature (F) 50	53	57	60	63	67	70	73	77	80	Item
0.399	0.47	0.47	0.47	0.47	0.46	0.46	0.46	0.45	0.45	0.45	A
	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.87	1.87	1.87	B
	2.28	2.29	2.29	2.30	2.30	2.31	2.31	2.32	2.33	2.33	C
	58	58	58	58	59	59	59	59	59	59	D
0.424	0.50	0.50	0.50	0.49	0.49	0.49	0.49	0.48	0.48	0.48	A
	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.87	1.87	B
	2.24	2.24	2.25	2.25	2.26	2.26	2.27	2.28	2.28	2.29	C
	57	57	57	57	57	57	58	58	58	58	D
0.448	0.53	0.53	0.53	0.52	0.52	0.52	0.51	0.51	0.51	0.50	A
	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.87	1.87	B
	2.19	2.20	2.20	2.21	2.22	2.22	2.23	2.23	2.24	2.25	C
	55	56	56	56	56	56	56	57	57	57	D
0.473	0.56	0.56	0.56	0.55	0.55	0.55	0.54	0.54	0.53	0.53	A
	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.87	B
	2.15	2.16	2.16	2.17	2.18	2.18	2.19	2.19	2.20	2.21	C
	54	54	55	55	55	55	55	55	56	56	D
0.498	0.59	0.59	0.58	0.58	0.58	0.57	0.57	0.57	0.56	0.56	A
	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	B
	2.11	2.12	2.12	2.13	2.14	2.14	2.15	2.15	2.16	2.17	C
	53	53	53	54	54	54	54	54	54	55	D
0.522	0.62	0.62	0.61	0.61	0.61	0.60	0.60	0.59	0.59	0.59	A
	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	B
	2.07	2.08	2.08	2.09	2.10	2.10	2.11	2.12	2.12	2.13	C
	52	52	52	52	53	53	53	53	53	53	D
0.547	0.65	0.65	0.64	0.64	0.63	0.63	0.63	0.62	0.62	0.61	A
	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	B
	2.03	2.04	2.05	2.05	2.06	2.06	2.07	2.08	2.08	2.09	C
	51	51	51	51	51	52	52	52	52	52	D
0.572	0.68	0.68	0.67	0.67	0.66	0.66	0.65	0.65	0.65	0.64	A

T	50	53	57	60	63	67	70	73	77	80	T
	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	B
	1.99	2.00	2.01	2.01	2.02	2.03	2.03	2.04	2.05	2.05	C
	50	50	50	50	50	51	51	51	51	51	D
0.596	0.71	0.71	0.70	0.70	0.69	0.69	0.68	0.68	0.67	0.67	A
	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	B
	1.96	1.96	1.97	1.98	1.98	1.99	2.00	2.00	2.01	2.02	C
	49	49	49	49	49	50	50	50	50	50	D
0.621	0.74	0.73	0.73	0.73	0.72	0.72	0.71	0.71	0.70	0.70	A
	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	B
	1.92	1.93	1.94	1.94	1.95	1.96	1.96	1.97	1.98	1.98	C
	48	48	48	48	48	48	49	49	49	49	D
0.646	0.77	0.76	0.76	0.75	0.75	0.74	0.74	0.74	0.73	0.73	A
	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	B
	1.89	1.89	1.90	1.91	1.91	1.92	1.93	1.93	1.94	1.95	C
	47	47	47	47	47	47	48	48	48	48	D
0.670	0.80	0.79	0.79	0.78	0.78	0.77	0.77	0.76	0.76	0.75	A
	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	B
	1.85	1.86	1.87	1.87	1.88	1.89	1.89	1.90	1.91	1.91	C
	46	46	46	46	46	46	47	47	47	47	D
0.695	0.83	0.82	0.82	0.81	0.81	0.80	0.80	0.79	0.79	0.78	A
	1.85	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	B
	1.82	1.82	1.83	1.84	1.85	1.85	1.86	1.87	1.87	1.88	C
	45	45	45	45	45	46	46	46	46	46	D
0.720	0.86	0.85	0.85	0.84	0.84	0.83	0.82	0.82	0.81	0.81	A
	1.85	1.85	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	B
	1.78	1.79	1.80	1.81	1.81	1.82	1.83	1.83	1.84	1.85	C
	44	44	44	44	44	45	45	45	45	45	D
0.744	0.89	0.88	0.88	0.87	0.86	0.86	0.85	0.85	0.84	0.84	A
	1.85	1.85	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	B
	1.75	1.76	1.77	1.77	1.78	1.79	1.79	1.80	1.81	1.82	C
	43	43	43	43	43	44	44	44	44	44	D
0.769	0.92	0.91	0.90	0.90	0.89	0.89	0.88	0.88	0.87	0.86	A
	1.85	1.85	1.85	1.86	1.86	1.86	1.86	1.86	1.86	1.86	B
	1.72	1.73	1.73	1.74	1.75	1.76	1.76	1.77	1.78	1.79	C
	42	42	42	42	42	43	43	43	43	43	D

A = Sample Flow DP   B = Total Flow DP   C = Recycle Flow DP   D = % Recycle

F.4 RAW FIELD SAMPLING DATA FOR TOTAL FLUORIDES TESTING

F.4.1 M13B RAW FIELD SAMPLING DATA - SAWDUST DRYER INLET

FIELD DATA

Plant: PINE HILL BRICK
Date: 10-29-92
Sampling Location: E DRYER INLET
Sample Type: M-13
Run Number: 1-E
Operator: SG
Ambient Temperature:
Barometric Pressure: 29.53
Static Pressure (Ps): .27
Filter Number(s):

Probe Length & Type: 5' SS
Nozzle ID: .26
Assumed Moisture %:
Sample Box Number: RAC-87
Meter Box Number: 1.9152
Meter Delta H@:
C Factor: .84
Probe Heater Setting:
Heater Box Setting:
Reference Delta p:

Schematic of Traverse Point Layout
Read and Record Data Every ____ Minutes

TRAVERSE POINT NUMBER	SAMPLE TIME min / CLOCK TIME 10:4?	GAS METER READING (Vm) cu ft	VELOCITY (delta p) in H2O	ORIFICE PRESSURE DIFFERENTIAL (delta H) in H2O DESIRED	ACTUAL	STACK TEMP. (Ts) deg F	DRY GAS METER TEMPERATURE (Tm) deg F INLET	OUTLET	PUMP VACUUM in Hg	SAMPLE BOX TEMPERATURE deg F	IMPINGER TEMPERATURE deg F
1U	0	728.855	.29	5.85	5.85	79	60	64	14		
2	5	736	.35	6.39	6	150	80	70	16.5		
3	10	741.25	.52	6.43	6	454	92	74	16.5		
4	15	748.1	.48	5.91	5.8	468	100	78	16.5		
5	20	753.9	.63	7.99	6	449	105	80	16.5		
6	25	760.4	.7	8.62	6	485	112	86	16.5		
7	30	767	.73	9.04	6	435	115	90	16.5		
8	35	773.6	.583	6.68	6	486	116	92	16.2		
9	40	780.1	.45	5.66	5.65	476	118	94	15		
10	45	786.5	.43	5.32	5.3	495	120	96	14		
11	50	792.8	.37	4.56	4.5	502	120	100	11.5		
12	55	798.8	.32	3.92	4	508	120	100	9.5		
OFF	60	801.325									

INITIAL LEAK CHECK - 0.017" FINAL - 0.019"

H- Horz.
V- Vert.

FIELD DATA

Plant Pine Hall Brick
Date 10/29/92
Sampling Location E Dryer Inlet
Sample Type I E
Run Number 1E7
Operator TO
Ambient Temperature 70
Barometric Pressure 29.50
Static Pressure (Ps) .21
Filter Number(s)

Probe Length & Type 5' SS
Nozzle ID .375
Assumed Moisture % 6.6
Sample Box Number 2AC2
Meter Box Number 1.9737
Meter Delta H@
C Factor
Probe Heater Setting
Heater Box Setting
Reference Delta p

Schematic of Traverse Point Layout
Read and Record Data Every ____ Minutes

TRAVERSE POINT NUMBER	CLOCK TIME / SAMPLE TIME min	GAS METER READING (Vm) cu ft	VELOCITY (delta p) in H2O	ORIFICE PRESSURE DIFFERENTIAL (delta H) in H2O		STACK TEMP. (Ts) deg F	DRY GAS METER TEMPERATURE (Tm) deg F		PUMP VACUUM in Hg	SAMPLE BOX TEMPERATURE deg F	IMPINGER TEMPERATURE deg F
				DESIRED	ACTUAL		INLET	OUTLET			
1H	0	801.325	.28	3.47	3.45	459	86	88	8		
2H	5	806.1	.28	3.48	3.45	461	90	90	8.5		
3	10	811	.27	3.33	3.3	476	100	90	9		
4	15	815.9	.29	3.64	3.6	465	106	90	11		
5	20	820.9	.3	3.85	3.85	450	110	92	13		
6	25	826.2	.46	5.82	5	469	114	96	17		
7	30	832.1	.58	7.37	4.85	470	118	98	17		
8	35	838.1	.4	5.03	4.7	483	120	100	17		
9	40	844	.3	3.72	3.7	499	120	102	13		
10	45	849.9	.27	3.31	3.3	513	122	104	12		
11	50	854.2	.25	3.04	3.0	521	124	104	11.5		
12	55	858.9	.21	2.55	2.55	525	122	106	10		
Off	60	863.325									

ANALYTICAL DATA

PLANT Pine Hall Brick

DATE 10/28-29/92

SAMPLING LOCATION Kiln Exhaust E

SAMPLE TYPE M13

RUN NUMBER 1

SAMPLE BOX NUMBER ____

CLEAN-UP MAN GM

COMMENTS:
Silica Gel completely DISCHARGED.

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER ____ ____ mg

FILTER NUMBER 469 ✓ — CONTAINER ____ ____ mg

FRONT HALF SUBTOTAL ____ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ____ ____ m

ETHER-CHLOROFORM EXTRACTION ____ m

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ____ ____ m

BACK HALF SUBTOTAL ____ m

TOTAL WEIGHT ____ m

MOISTURE

IMPINGERS

W/L 398.8 Weight 390.4 wo/L

FINAL VOLUME ____ ml ~~385.6~~ ~~377.1~~

INITIAL VOLUME 200 ml 291.7g

NET VOLUME ____ ml

SILICA GEL

FINAL WEIGHT 241.8 w/L g 239.1 wo/L g ____ g

INITIAL WEIGHT 212.3 g ____ g ____ g

NET WEIGHT ____ g ____ g ____ g

TOTAL MOISTURE 146.6

EPA (Dur) 231
4/72

FIELD DATA

1 = VERTICAL

= HORIZONTAL

Plant: Pine Hall ...
Date: 10/29/96
Sampling Location: ... Inlet
Sample Type: M-13
Run Number: 2-E
Operator: ...
Ambient Temperature: ...
Barometric Pressure: ... 5.8
Static Pressure (Ps): .21
Filter Number(s):

Probe Length & Type: 5' SS
Nozzle ID: 3/16
Assumed Moisture %: 4.6
Sample Box Number: ...
Meter Box Number: ...
Meter Delta H@: ...
C Factor: .84
Probe Heater Setting:
Heater Box Setting:
Reference Delta p:

Schematic of Traverse Point Layout
Read and Record Data Every ____ Minutes

TRAVERSE POINT NUMBER	SAMPLE TIME min / CLOCK TIME	GAS METER READING (Vm) cu ft	VELOCITY (delta p) in H2O	ORIFICE PRESSURE DIFFERENTIAL (delta H) in H2O DESIRED	ACTUAL	STACK TEMP. (Ts) deg F	DRY GAS METER TEMPERATURE (Tm) deg F INLET	OUTLET	PUMP VACUUM in Hg	SAMPLE BOX TEMPERATURE deg F	IMPINGER TEMPERATURE deg F
V1	0	863.355	.32	2.05	2.0	378	74	78	4		
2	5	867.37	.4	3.88	3.9	99	80	80	5		
3	10	872.35	.55	5.12	5.1	128	92	80	8		
4	15	878.21	.6	3.48	3.5	497	106	82	6.5		
5	20	883.14	.7	4.1	4.1	496	110	86	10		
6	25	888.1	.69	4.09	[illegible]	488	110	90	20		
7	30	891.44									
~~8~~ 7	~~30~~	892.09	.73	4.4	4.4	450	86	88	4.5		
8	35	897.5	.6	3.6	3.6	466	98	90	3.5		
~~10~~ 9	40	902.7	.55	3.57	3.6	400	104	90	3.5		
10	45	907.75	.45	2.72	2.7	470	108	92	3		
11	50	912.1	.42	2.48	2.5	495	108	94	3		
OFF 12	60 55	916.48	.39	2.3	2.3	493	108	94	3		
Off	60	926.463					108	94			-

Line closed → Change filter

INITIAL LEAK CHECK - 0.005"   FINAL - 0.005"

FIELD DATA

Plant: Pipe Hall Brick
Date: 10-29-92
Sampling Location: E Dryer Inlet
Sample Type: M-13
Run Number: 2 E
Operator: JWB
Ambient Temperature: 65
Barometric Pressure: 29.58
Static Pressure (Ps): .21
Filter Number(s):

Probe Length & Type: 5' SS
Nozzle ID: .3125
Assumed Moisture %: 6.2
Sample Box Number:
Meter Box Number:
Meter Delta H@: 1.9757
C Factor: .84
Probe Heater Setting:
Heater Box Setting:
Reference Delta p:

Schematic of Traverse Point Layout
Read and Record Data Every 5 Minutes

TRAVERSE POINT NUMBER	SAMPLE TIME min / CLOCK TIME	GAS METER READING (Vm) cu ft	VELOCITY (delta p) in H2O	ORIFICE PRESSURE DIFFERENTIAL (delta H) in H2O		STACK TEMP. (Ts) deg F	DRY GAS METER TEMPERATURE (Tm) deg F		PUMP VACUUM in Hg	SAMPLE BOX TEMPERATURE deg F	IMPINGER TEMPERATURE deg F
				DESIRED	ACTUAL		INLET	OUTLET			
		920.465									
H1	0	924.001	.26	1.9	1.9	266	80	80	3.0		
2	5	927.888	.29	1.8	1.8	432	94	91	3.0		
3	10	931.638	.28	2.13	2.1	272	98	91	3.0		
4	15	934.412	.29	1.78	1.8	443	101	91	3.0		
5	20	938.272	.31	2.02	2.0	400	102	91	3.0		
6	25	943.280	.32	1.96	2.0	453	103	92	3.0		
7	30	947.408	.40	2.46	2.5	454	106	93	5.0		
8	35	950.982	.45	2.45	2.5	475	82	84	5.0		
9	40	955.396	.34	1.96	2.0	497	90	86	5.0		
10	45	958.792	.28	1.60	1.6	510	96	86	5.5		
11	50	961.323	.24	1.36	1.4	516	99	86	6.0		
12	55	964.898	.22	1.25	1.25	518	99	86	6.5		
OFF	60										

STOP FOR OUTLET EQUIPMENT CHANGE

ANALYTICAL DATA

PLANT Pine Hall Brick

DATE 10/28-29/92

SAMPLING LOCATION Kiln Exhaust E

SAMPLE TYPE M13

RUN NUMBER Run 2

SAMPLE BOX NUMBER ____

CLEAN-UP MAN G Mc

COMMENTS:
2 Bottles for sample recover
Filter change during run
Silica Gel Nearly discharged

FRONT HALF

LABORATORY RESULT

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER ____ ____ mg

FILTER NUMBER 467 & ~~464~~ — CONTAINER ____ ____ mg

FRONT HALF SUBTOTAL ____ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ____ ____ mg

ETHER-CHLOROFORM EXTRACTION ____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ____ ____ mg

BACK HALF SUBTOTAL ____ mg

TOTAL WEIGHT ____ mg

MOISTURE

IMPINGERS

w/c Weight

FINAL VOLUME	____ ml	367.9	352.1 w/c
INITIAL VOLUME	200 ml	292.7	
NET VOLUME	____ ml		

SILICA GEL

	w/c	w/c	
FINAL WEIGHT	260.7 g	357.0 g	____ g
INITIAL WEIGHT	228.8 g	____ g	____ g
NET WEIGHT	____ g	____ g	____ g

TOTAL MOISTURE 117.1

EPA (Dur) 231
4/72

FIELD DATA

Plant Pine Hall Brick
Date 10/30/92
Sampling Location E Dryer Inlet
Sample Type M-13
Run Number 3 E
Operator REM
Ambient Temperature 63
Barometric Pressure 29.52
Static Pressure (Ps) -.21
Filter Number(s)

Probe Length & Type 5' SS
Nozzle ID .3125
Assumed Moisture % 6.6
Sample Box Number
Meter Box Number
Meter Delta H@ 1.9
C Factor .89
Probe Heater Setting
Heater Box Setting
Reference Delta p

Schematic of Traverse Point Layout
Read and Record Data Every ____ Minutes

TRAVERSE POINT NUMBER	SAMPLE TIME min / CLOCK TIME	GAS METER READING (Vm) cu ft	VELOCITY (delta p) in H2O	ORIFICE PRESSURE DIFFERENTIAL (delta H) in H2O		STACK TEMP. (Ts) deg F	DRY GAS METER TEMPERATURE (Tm) deg F		PUMP VACUUM in Hg	SAMPLE BOX TEMPERATURE deg F	IMPINGER TEMPERATURE deg F
				DESIRED	ACTUAL		INLET	OUTLET			
1V	0	965.11	.35	2.15	2.1	400	65	68	3		
2	5	969.49	.45	3.36	3.35	250	70	68	5		
3	10	974.19	.44	2.53	2.5	474	80	70	4		
4	15	878.365	.52	2.93	3	498	84	72	5.5		
5	20	982.84	.66	3.5	3.5	500	90	74	7		
6	25	987.875	.7	4.07	4	490	96	78	8.5		
7	30	992.045	.78	4.62	4.6	471	100	80	11		
8	35	998.58	.7	4.18	4.2	471	105	84	10.5		
9	40	3.97	.52	3.11	3.1	473	106	88	9		
10	45	8.55	.45	2.7	2.7	475	108	90	9		
11	50	12.82	.44	2.61	2.6	486	106	92	11		
12	55	16.76	.42	2.6	2.6	442	108	92	20		
OFF	60	20.423									

INITIAL LEAK CHECK - 0.015" FINAL. 0.007"

XSQ INITIAL ...

FIELD DATA

Plant Pine Hall Brick
Date 10-31-9?
Sampling Location E Dryer Inlet
Sample Type M-13
Run Number 3 E
Operator JNB
Ambient Temperature 65
Barometric Pressure 29.32
Static Pressure (Ps) -0.41
Filter Number(s)

Probe Length & Type 5' SS
Nozzle ID .3125
Assumed Moisture % 6.2
Sample Box Number
Meter Box Number
Meter Delta H@ 1.9757
C Factor .84
Probe Heater Setting
Heater Box Setting
Reference Delta p

Schematic of Traverse Point Layout
Read and Record Data Every 5 Minutes

CHANGED FILTER AFTER VERTICAL TR.

STOP TO OIL VANES RETURN TRAVERSES

TRAVERSE POINT NUMBER	SAMPLE TIME min / CLOCK TIME	GAS METER READING (Vm) cu ft	VELOCITY (delta p) in H2O	ORIFICE PRESSURE DIFFERENTIAL (delta H) in H2O DESIRED	ACTUAL	STACK TEMP. (Ts) deg F	DRY GAS METER TEMPERATURE (Tm) deg F INLET	OUTLET	PUMP VACUUM in Hg	SAMPLE BOX TEMPERATURE deg F	IMPINGER TEMPERATURE deg F
		20.884									
1H	~~0~~ 5	23.320 ~~20.884~~	.28	1.70	1.7	425	77	81	1.5		
2	~~5~~ 10	26.197	.31	1.86	1.9	451	87	85	2.0		
3	~~10~~ 15	30.676	.32	1.95	1.95	442	92	86	4.0		
4	~~15~~ 20	34.420	.32	2.01	2.0	425	96	90	5.0		
5	~~20~~ 25	38.117	.32	1.95	1.95	451	96	92	5.5		
6	~~25~~ 30	42.360	.45	2.13	2.7	457	97	92	8.0		
7	~~30~~ 35	47.340	.56	3.37	3.4	460	98	93	11.0		
8	~~35~~ 40	51.608	.42	2.50	2.5	479	99	94	9.0		
9	~~40~~ 45	56.302	.33	1.93	1.9	496	99	94	8.0		
10	~~45~~ 50	58.827	.30	1.65	1.65	470	96	92	7.5		
11	~~50~~ 55	62.368	.27	1.59	1.6	486	96	92	7.5		
12	~~55~~ 60	65.570	.22	1.49	1.5	360	94	91	7.5		
		-2.496	(VOLUME USED TO OIL VANES)								-

ANALYTICAL DATA

PLANT Pine Hall Brick

DATE 10/30/92

SAMPLING LOCATION Kiln Exhaust E

SAMPLE TYPE M 13

RUN NUMBER 3

SAMPLE BOX NUMBER ____

CLEAN-UP MAN GMc

COMMENTS: FILTER WAS CHANGED DURING RU

SILICA GEL WAS NEARLY DISCHARGED

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER ____ ____ mg

FILTER NUMBER 465 & 450 — CONTAINER ____ ____ mg

FRONT HALF SUBTOTAL ____ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ____ ____ mg

ETHER-CHLOROFORM EXTRACTION ____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ____ ____ mg

BACK HALF SUBTOTAL ____ mg

TOTAL WEIGHT ____ mg

MOISTURE

IMPINGERS

Weight.

FINAL VOLUME ____ ml ~~464.1~~ 370.3

INITIAL VOLUME 200 ml 289.5

NET VOLUME ____ ml

SILICA GEL

FINAL WEIGHT	~~244.5~~ 242.7 g	____ g	____ g
INITIAL WEIGHT	218.6 g	____ g	____ g
NET WEIGHT	____ g	____ g	____ g

TOTAL MOISTURE 104.9 g

EPA (Dur) 231
4/72

DRY MOLECULAR WEIGHT DETERMINATION

PLANT Pine Hall Brick

DATE 10-28-92

SAMPLING TIME (24-hr CLOCK)

SAMPLING LOCATION Dryer Inlet E

SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS)

ANALYTICAL METHOD

AMBIENT TEMPERATURE

OPERATOR

COMMENTS:

Fyrite - CO_2 Fyrite - O_2

GAS \ RUN	1 ACTUAL READING	1 NET	2 ACTUAL READING	2 NET	3 ACTUAL READING	3 NET	AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb/lb-mole
CO_2	2.2		3.4		3.3		3.0	44/100	
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	20.6	18.4	21.7	18.3	21.5	18.2	18.3	32/100	
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)	20.6	0	21.7	0	21.5	0	0.0	28/100	
N_2 (NET IS 100 MINUS ACTUAL CO READING)								28/100	
								TOTAL	29.21

TRAVERSE POINT LOCATION FOR CIRCULAR DUCTS

54" I.D.

PLANT Pine Hall Brick - Madison N.C.
DATE 27 Oct 92
SAMPLING LOCATION Eastern E Dryer Inlet
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) 57.25"
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) 3.75"
STACK I.D., (DISTANCE A - DISTANCE B) 54.60"
NEAREST UPSTREAM DISTURBANCE 90"
NEAREST DOWNSTREAM DISTURBANCE 9[illegible]
CALCULATOR [illegible]

SCHEMATIC OF SAMPLING LOCATION

TRAVERSE POINT NUMBER	MARK PROBE ~~FRACTION OF STACK I.D.~~	STACK I.D.	PRODUCT OF COLUMNS 2 AND 3 (TO NEAREST 1/8 INCH)	DISTANCE B	TRAVERSE POINT LOCATION FROM OUTSIDE OF NIPPLE (SUM OF COLUMNS 4 & 5)
1	4.4				4.4
2	6.9				~~7.4~~ [illegible]
3	9.6				9.[illegible]
4	12.8				13.5
5	16.8				17.0 16.5
6	22.5				22.7 [illegible]
7	38.0				38.3 [illegible]
8	43.8				44.0 43.5
9	47.7				47.9 47.7
10	50.9				51.1
11	53.6				53.9
12	56.1				56.4

EPA (Dur) 232
4/72

← Flow

METHOD 1-4 DATA SHEET

Date 10-27-92

Run Number

Start Time

End Time

Box Number 4

Delta Hg

Gamma

CONTRACT NUMBER

JOB NAME

SAMPLING LOCATION Dryer Inlet (E)

BOX OPERATOR

STACK SIZE 54"

%O2

%CO2

%CO

BAROMETRIC PRESSURE in.Hg

AVERAGE DELTA H in.W.C.

STATIC PRESSURE +0.21 in.W.C.

INITIAL METER VOLUME dcf

FINAL METER VOLUME dcf

METER TEMPERATURE °F

IMPINGER VOLUMES / WEIGHTS

	Initial	Final
#1	ml	ml
#2	ml	ml
#3	ml	ml
SG	gm	gm

TRAVERSE DATA

Port	dP	Stack Temp. Deg. F	Port	dP	Stack Temp. Deg. F	Port	dP	Stack Temp. Deg. F
A1	0.29	370	B1	0.16	460			
2	0.31	378	2	0.16	497			
3	0.29	430	3	0.17	515			
4	0.31	463	4	0.18	524			
5	0.38	476	5	0.21	530			
6	0.52	478	6	0.21	534			
7	0.42	497	7	0.23	536			
8	0.34	519	8	0.21	537			
9	0.29	530	9	0.21	537			
10	0.26	541	10	0.23	541			
11	0.24	547	11	0.19	541			
12	0.17	548	12	0.16	543			

CYCLONIC FLOW DATA SHEET

Date 10-27-92

Run Number

Start Time

End Time

Box Number

CONTRACT NUMBER

JOB NAME Eine Hall Brick Plant

SAMPLING LOCATION Dryer Inlet

BOX OPERATOR

STACK SIZE 54"

POINT	ANGLE
A1	15°
2	5°
3	5°
4	13°
5	18°
6	21°
7	11°
8	17°
9	19°
10	12°
11	14°
12	7°

POINT	ANGLE
B1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

POINT	ANGLE

$\bar{X} = 13°$

AVERAGE ANGLE

F.4.2 M13B RAW FIELD SAMPLING DATA - SAWDUST DRYER OUTLET A

FIELD DATA

Plant: Pine Hall
Date: 10/28/92
Sampling Location: E1/Part A
Sample Type: M13
Run Number: 1
Operator: Ricks/Shea
Ambient Temperature:
Barometric Pressure: 29.55
Static Pressure (Ps):
Filter Number(s):

Probe Length & Type:
Nozzle ID: .25
Assumed Moisture %: 5.2
Sample Box Number:
Meter Box Number: 090976
Meter Delta H@: 1.6312
C Factor:
Probe Heater Setting:
Heater Box Setting:
Reference Delta p:

Schematic of Traverse Point Layout
Read and Record Data Every ____ Minutes

TRAVERSE POINT NUMBER	SAMPLE TIME min / CLOCK TIME	GAS METER READING (Vm) cu ft	VELOCITY (delta p) in H2O	ORIFICE PRESSURE DIFFERENTIAL (delta H) in H2O		STACK TEMP. (Ts) deg F	DRY GAS METER TEMPERATURE (Tm) deg F		PUMP VACUUM in Hg	SAMPLE BOX TEMPERATURE deg F	IMPINGER TEMPERATURE deg F
				DESIRED	ACTUAL		INLET	OUTLET			
1	0	295.196	.44	1.56	1.55	70	100	93	4		66
2	5	298.37	.43	1.54	1.55	73	110	98	3		66
3	10	301.42	.48	1.72	1.7	74	110	98	4		68
4	15	304.74	.59	1.93	1.9	122	110	97	4		68
5	20	308.22	.54	1.70	1.7	148	116	97	3		69
6	25	311.61	.47	1.46	1.45	159	117	98	3		69
7	30	314.77	.43	1.31	1.30	170	113	99	3		69
8	35	317.78	.45	1.33	1.30	185	110	98	3		69
9	40	320.78	.46	1.36	1.35	185	111	98	3		70
10	45	323.79	.48	1.42	1.40	186	114	98	3		70
11	50	326.87	.48	1.42	1.40	187	110	98	3		72
12	55	329.96	.48	1.42	1.40	186	109	97	3		72
	60	333.052	.48	1.41		187	105	97	3		

FIELD DATA

Plant: Pine Hall
Date: 10/21/92
Sampling Location: F1/Port B
Sample Type: M13
Run Number: 1
Operator: Ricks/Shea
Ambient Temperature:
Barometric Pressure: 29.58
Static Pressure (Ps):
Filter Number(s):

Probe Length & Type:
Nozzle ID: .65in
Assumed Moisture %: 5.2
Sample Box Number: 090976
Meter Box Number: 1.6312
Meter Delta H@:
C Factor:
Probe Heater Setting:
Heater Box Setting:
Reference Delta p:

Schematic of Traverse Point Layout
Read and Record Data Every ____ Minutes

TRAVERSE POINT NUMBER	SAMPLE TIME / CLOCK TIME min	GAS METER READING (Vm) cu ft	VELOCITY (delta p) in H2O	ORIFICE PRESSURE DIFFERENTIAL (delta H) in H2O		STACK TEMP. (Ts) deg F	DRY GAS METER TEMPERATURE (Tm) deg F		PUMP VACUUM in Hg	SAMPLE BOX TEMPERATURE deg F	IMPINGER TEMPERATURE deg F
				DESIRED	ACTUAL		INLET	OUTLET			
1	0	225.594	3.2	10.87	5.2	65	~~72~~ 68	~~70~~ 66	20		67
2	5	231.52	3.2	11.02	5.2	66	82	68			67
3	10	236.82	3.2	11.07	5.2	71	95	70			83
4	15	242.73	3.3	11.03	5.2	97	106	74			90
5	20	248.08	2.1	6.53	5.2	143	111	77			92
6	25	253.79	2.0	5.94	5.2	177	117	81			96
7	30	259.82	2.4	7.11	5.2	183	120	85			96
8	35	265.57	2.3	6.89	5.2	180	124	88			87
9	40	271.45	2.3	6.93	5.2	181	130	91			87
10	45	277.39	2.3	6.92	5.2	182	128	93			86
11	50	283.25	2.2	6.65	5.2	182	131	95			88
12	55	289.15	2.4	7.28	5.2	182	133	98			88
	60	295.195	2.4	7.29		183	134	100			90

ANALYTICAL DATA

PLANT Pine Hall Brick

DATE 10/28-29/92

SAMPLING LOCATION Sawdust Dryer/Cyclone Exhaust Outlet 1 F1

SAMPLE TYPE M13

RUN NUMBER 1

SAMPLE BOX NUMBER

CLEAN-UP MAN GMc

COMMENTS:
SILICA GEL Completely DISCHARG

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER ______ ______ mg

FILTER NUMBER 468 ✓ — CONTAINER ______ ______ mg

FRONT HALF SUBTOTAL ______ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ______ ______ mg

ETHER-CHLOROFORM EXTRACTION ______ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ______ ______ mg

BACK HALF SUBTOTAL ______ mg

TOTAL WEIGHT ______ mg

MOISTURE

IMPINGERS		W/ L Weight	W/o L
FINAL VOLUME	______ ml	395.8	377.1
INITIAL VOLUME	200 ml	290.5 g	
NET VOLUME	______ ml		

Some silica gel in final impinger.

SILICA GEL			
FINAL WEIGHT	266.5 W/L g	264.1 W/oL g	______ g
INITIAL WEIGHT	237.5 g	______ g	______ g
NET WEIGHT	______ g	______ g	______ g

TOTAL MOISTURE 147.3

EPA (Dur) 231
4/72

FIELD DATA

Plant: Pine Hall
Date: 10/29/92
Sampling Location: E1/Port A
Sample Type: 2
Run Number: 2
Operator: Ricks/Shea
Ambient Temperature: 29.58
Barometric Pressure:
Static Pressure (Ps): -10.6
Filter Number(s):

Probe Length & Type:
Nozzle ID: .185
Assumed Moisture %: 5.6
Sample Box Number: 090976
Meter Box Number:
Meter Delta H@: 1.6312
C Factor:
Probe Heater Setting:
Heater Box Setting:
Reference Delta p:

Schematic of Traverse Point Layout
Read and Record Data Every ____ Minutes

TRAVERSE POINT NUMBER	SAMPLE TIME min / CLOCK TIME	GAS METER READING (Vm) cu ft	VELOCITY (delta p) in H2O	ORIFICE PRESSURE DIFFERENTIAL (delta H) in H2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (delta H) in H2O ACTUAL	STACK TEMP (Ts) deg F	DRY GAS METER TEMPERATURE (Tm) deg F INLET	DRY GAS METER TEMPERATURE (Tm) deg F OUTLET	PUMP VACUUM in Hg	SAMPLE BOX TEMPERATURE deg F	IMPINGER TEMPERATURE deg F
1	0	374.673	.50	1.73	1.70	74	87	86	5		60
2	5	378.61	.46	1.62	1.60	70	95	88	5		60
3	10	382.21	.45	1.60	1.60	71	104	88	6		60
4	15	385.75	.61	2.17	2.2	72	108	89	9		60
5	20	389.79	.60	1.91	1.90	138	112	90	9		60
6	25	393.48	.55	1.70	1.70	155	114	90	Meter box stopped at 394.281		60
7	30	Switched meter box	Sampled previous point 1 min + 55 sec				ΔH@ = 1.889				
8	3 min 5 sec ~~35~~	395.182	.52	1.66	1.65	175	60	56	10		60
9	~~40~~ 35	397.01	.49	1.56	1.55 ~~1.55~~	178	62	56	5 ~~8~~		60
		*397.912					-				
10	~~45~~ 40	398.067									60
11	~~50~~ 45	400.12	.46	1.47	1.45	187	72	60	3		60
12	~~55~~ 50	403.31	.46	1.48	1.50	188	80	64	4		60
	~~60~~ 55	406.51	.46	1.50	1.50	188	92	66	4		60
	60	410.00	.47	1.55	1.55	188	98	70	5		60
		413.10	.47	1.56	1.55	189	104	74	7		
		416.417									
			RAC 3 (Y = 1.0349) ΔH@ = 1.8997								

* Changed filter (10/30) Leak check = 0.000 @ 15 in Hg
End of run, leak check = 0.000 @ 10 in Hg

FIELD DATA

Plant Pine Hall
Date 10/29/92
Sampling Location FL/Port B
Sample Type
Run Number 2
Operator Ricks/Shea
Ambient Temperature 29.58
Barometric Pressure -10.6
Static Pressure (Ps)
Filter Number(s) 4606

Probe Length & Type
Nozzle ID
Assumed Moisture % 5.2
Sample Box Number 090976
Meter Box Number
Meter Delta H@ 1.6312
C Factor
Probe Heater Setting
Heater Box Setting
Reference Delta p

Schematic of Traverse Point Layout
Read and Record Data Every ____ Minutes

TRAVERSE POINT NUMBER	SAMPLE TIME min / CLOCK TIME	GAS METER READING (Vm) cu ft	VELOCITY (delta p) in H2O	ORIFICE PRESSURE DIFFERENTIAL (delta H) in H2O DESIRED	ACTUAL	STACK TEMP. (Ts) deg F	DRY GAS METER TEMPERATURE (Tm) deg F INLET	OUTLET	PUMP VACUUM in Hg	SAMPLE BOX TEMPERATURE deg F	IMPINGER TEMPERATURE deg F
1	0	334.904	.41	1.41	1.40	76	84	83	5		60
2	5	338.05	.46	1.59	1.60	76	90	85	6		63
3	10	341.33	.43	1.50	1.50	77	98	86	6		63
4	15	344.61	.53	1.87	1.90	74	104	87	7		65
5	20	348.34	.50	1.57	1.60	142	110	88	6		65
6	25	351.93	.47	1.41	1.40	172	113	90	6		80
7	30	355.37	.54	1.63	1.60	173	114	92	6		75
8	35	358.91	.57	1.70	1.70	182	116	94	7		75
9	40	362.500	.54	1.61	1.60	182	117	95	8		70
10	45	366.01	.56	1.55	1.55	180	108	97	10		60
11	50	369.42	.51	1.53	1.55	179	112	97	17		60
12	55	372.73	.50	1.50	1.50	178	112	98			
	60	374.649									

Filter change at end of run; performed leak check prior to 2nd traverse

ANALYTICAL DATA

PLANT Pike Hall Brick

DATE 10/28-29/92

SAMPLING LOCATION Sawdust Dryer/Cyclone Exhaust Outlet F1

SAMPLE TYPE M13

RUN NUMBER 2

SAMPLE BOX NUMBER

CLEAN-UP MAN G Mc

COMMENTS: RUN INTERUPTED BY M. BOX FAILURE - COMPLETED 10/29

FILTER CHANGED TWICE

Silica Gel Nearly discharged

Silica Gel Impinger Changed Before Run

MOISTURE (COND. H_2O) MUCH HIGHER THAN OTHER RUNS

LABORATORY RESULTS

FRONT HALF

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER ______ ______ mg

FILTER NUMBER 466 & 464 & 463 — CONTAINER ______ ______ mg

FRONT HALF SUBTOTAL ______ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ______ ______

ETHER-CHLOROFORM EXTRACTION ______ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ______ ______

BACK HALF SUBTOTAL ______

TOTAL WEIGHT ______

MOISTURE

IMPINGERS

		W/L Weight	W/L
FINAL VOLUME	______ ml	465.1	456.2
INITIAL VOLUME	200 ml	287.8	
NET VOLUME	______ ml		

SILICA GEL

		W/L	W/L
FINAL WEIGHT	______ g	249.5	247.0 g
INITIAL WEIGHT	~~209.1~~ g	224.6 g	~~247.0~~ g
NET WEIGHT	______ g	______ g	______ g

TOTAL MOISTURE 202.2

EPA (Dur) 231
4/72

FIELD DATA

Plant: Pine Hall
Date: 10/30/92
Sampling Location: F1 / Port [illegible] A
Sample Type:
Run Number: 3
Operator: Ricks / Shea
Ambient Temperature:
Barometric Pressure: 29.57
Static Pressure (Ps): -10.6
Filter Number(s):

Probe Length & Type:
Nozzle ID: .25
Assumed Moisture %: 5.2
Sample Box Number:
Meter Box Number: 102257
Meter Delta H@: 1.839
C Factor:
Probe Heater Setting:
Heater Box Setting:
Reference Delta p:

Schematic of Traverse Point Layout
Read and Record Data Every ____ Minutes

TRAVERSE POINT NUMBER	SAMPLE TIME min / CLOCK TIME	GAS METER READING (Vm) cu ft	VELOCITY (delta p) in H2O	ORIFICE PRESSURE DIFFERENTIAL (delta H) in H2O		STACK TEMP (Ts) deg F	DRY GAS METER TEMPERATURE (Tm) deg F		PUMP VACUUM in Hg	SAMPLE BOX TEMPERATURE deg F	IMPINGER TEMPERATURE deg F
				DESIRED	ACTUAL		INLET	OUTLET			
1	0	416.810	1.1	4.40	4.4	67	80	77	11	—	80
2	5	422.21	.68	2.75	2.75	69	94	79	7	—	80
3	10	426.58	.48	1.89	1.9	89	102	80	5	—	80
4	15	430.27	.50	1.70	1.7	175	100	82	4.5	—	70
5	20	433.91	.49	1.62	1.6	193	100	83	4	—	80
6	25	437.05	.47	1.56	1.55	193	101	84	4	—	80
7	30	440.01	.41	1.37	1.4	192	104	86	3.5	—	80
8	35	443.77	.41	1.37	1.4	192	105	87	3.5	—	80
9	40	446.99	.44	1.47	1.5	192	106	89	4	—	80
10	45	450.25	.47	1.58	1.6	192	108	90	4	—	80
11	50	453.66	.51	1.72	1.7	192	110	92	4	—	80
12	55	457.28	.48	1.62	1.6	199	104	92	4	—	80
	60	460.655									

FIELD DATA

Plant Pine Hall
Date 10/30/92
Sampling Location F1 / Port B
Sample Type
Run Number 3
Operator Ricks / Shea
Ambient Temperature
Barometric Pressure 29.57
Static Pressure (Ps) -10.6
Filter Number(s)

Probe Length & Type
Nozzle ID .25
Assumed Moisture % 5.2
Sample Box Number 102257
Meter Box Number
Meter Delta H@ 1.889
C Factor
Probe Heater Setting
Heater Box Setting
Reference Delta p

Schematic of Traverse Point Layout
Read and Record Data Every ____ Minutes

TRAVERSE POINT NUMBER	SAMPLE TIME min / CLOCK TIME	GAS METER READING (Vm) cu ft	VELOCITY (delta p) in H2O	ORIFICE PRESSURE DIFFERENTIAL (delta H) in H2O		STACK TEMP (Ts) deg F	DRY GAS METER TEMPERATURE (Tm) deg F		PUMP VACUUM in Hg	SAMPLE BOX TEMPERATURE deg F	IMPINGER TEMPERATURE deg F
				DESIRED	ACTUAL		INLET	OUTLET			
1	0	460.655	.76	3.06	3.05	75	94	87	8		80
2	5	465.21	.40	1.63	1.60	74	102	88	4		80
3	10	468.99	.35	1.42	1.40	80	108	90	4		80
4	15	472.28	.32	1.26	1.25	92	103	90	4		80
5	20	475.36	.38	1.39	1.40	133	100	89	4		80
6	25	478.63	.39	1.31	1.30	190	104	90	4		80
7	30	481.77	.47	1.58	1.60	191	107	90	5		80
8	35	485.22	.48	1.62	1.60	191	109	92	5		80
9	40	488.62	.47	1.59	1.60	191	114	93	5		80
10	45	492.09	.49	1.67	1.70	188	116	94	5		80
11	50	495.63	.46	1.58	1.60	189	119	96	5		80
12	55	499.11	.42	1.44	1.45	187	118	97	5		80
	60	502.472									

ANALYTICAL DATA

PLANT Pine Hall Brick

DATE 10/30/92

SAMPLING LOCATION Sawdust Dryer/Cyclone Exhaust Outlet, F1

SAMPLE TYPE M13

RUN NUMBER 3

SAMPLE BOX NUMBER

CLEAN-UP MAN G Mc

COMMENTS: SILICA GEL WAS DISCHARGED

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER ____ ____ mg

FILTER NUMBER 461 — CONTAINER ____ ____ mg

FRONT HALF SUBTOTAL ____ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ____ ____ mg

ETHER-CHLOROFORM EXTRACTION ____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ____ ____ mg

BACK HALF SUBTOTAL ____ mg

TOTAL WEIGHT ____ mg

MOISTURE

Weight

IMPINGERS
- FINAL VOLUME ____ ml 466.1
- INITIAL VOLUME 200 ml 292.2 g
- NET VOLUME ____ ml

SILICA GEL
- FINAL WEIGHT 253.6 g ____ g ____ g
- INITIAL WEIGHT 215.0 g ____ g ____ g
- NET WEIGHT ____ g ____ g ____ g

TOTAL MOISTURE 212.5 g

EPA (Dur) 231
4/72

SAMPLING SUMMARY SHEET

PLANT Pine Hall Brick   LOCATION Madison, N. C.

SAMPLED SOURCE Dryer Outlet

Run	Date	N_p	(3) Y_m	(4) ΔH	(5) P Bar.	(6) V_m	(7) T_m	(8) V_m Std.	(9) %	(10) P_{st}	17 P_s	(18) T_s	(19) VP	(20) V_w	21 $V_{w_{gas}}$	22 %M	23 M_d
1F1	29 Oct 92	24	1.0796	3.35	29.58	107.458	101	108.845	/	-10.6	28.80	147	/	147.3	6.93	5.99	.940
1F2	29-30 Oct	25						81.606		-10.6			/	202.2		10.5	.895
1F3	30 Oct 92	24	1.078	1.78	29.57	85.582	96	86.969	/	-10.6	28.79	155	/	212.5	10.00	10.31	.897

Run	(24) CO_2	(25) O_2	26 N_2	(27) CO	(28) ——	29 MW_d	30 MW	(31) C_p	(32) $\sqrt{\Delta P_s(T_s + 460)}$	(33) T_t	(34) D_n	35 V_s	(36) D_s	(37) Area	38 ACFM	(39) DSCFM	40 %I
1F1	2.2	19.1	78.70	/	/	29.12	28.45	0.84	28.0496	120	0.25	70.37	42	9.62	40621	31976	80.11
1F2	2.2	19.1	78.70	/	/	29.12	27.96	0.84					42	9.62		19122	100.5
1F3	2.2	19.1	78.70	/	/	29.12	27.97	0.84	17.1885	120	0.25	43.50	42	9.62	25110	18604	110.01

$$V_m\ \text{Std.} = Y_m \frac{17.64 \times V_m \left(P\ \text{Bar.} + \frac{\Delta H}{13.6}\right)}{(T_m + 460)}$$

$$\%M = \frac{100 \times V_{w_{gas}}}{V_m\ \text{Std.} + V_{w_{gas}}}$$

$$V_{w_{gas}} = 0.0471\ V_w$$

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

$$MW_d = \%CO_2 \times .44 + (\%O_2 \times .32) + (\%CO + \%N_2) \times .28 + \left(\%\text{Other} \times \frac{\text{Mol. wt.}}{100}\right)$$

$$MW = MW_d \times M_d + 18(1 - M_d)$$

$$P_s = P\ \text{Bar.} \pm \frac{P_{st}}{13.6}$$

$$V_s = 85.49 \times C_p \sqrt{\Delta P_s (T_s + 460)} \left[\frac{1}{P_s \times MW}\right]^{1/2}$$

$$\%I = \frac{0.09450 \times (T_s + 460) \times V_m\ \text{Std.}}{V_s \times T_t \times P_s \times M_d \times A_n}$$

N_p = Total No. of Sampling points

Y_m = Meter Box Correction Factor

ΔH = Average Orifice Pressure Drop, inches H_2O

P Bar. = Barometric Pressure, Inches Hg, Absolute

V_m = Volume of Dry Gas at Meter Conditions, DCF

T_m = Average Meter Temperature, °F.

V_m Std. = Volume of Dry Gas at STP, DSCF[a]

% = Per Cent other gas removed before Dry Gas Meter

P_{st} = Static Pressure of Stack Gas, inches H_2O

P_s = Stack Gas Pressure, inches Hg.

T_s = Average Stack Temperature, °F

VP = Vapor Pressure of H_2O At Stack Temperature

V_w = Total H_2O Collected in Impingers and Silica Gel

$V_{w_{gas}}$ = Volume of water vapor collected at STP, SCF[b]

%M = Per Cent Moisture by volume

M_d = Mole Fraction of Dry Gas

$\%CO_2$ = Volume % Dry

$\%O_2$ = Volume % Dry

$\%N_2$ = Volume % Dry

%CO = Volume % Dry

MW_d = Molecular Weight of Stack Gas Dry Basis

MW = Molecular Weight of Stack Gas, Wet Basis

C_p = Pitot Tube Coefficient

$\sqrt{\Delta P (T_s + 460)}$ is determined by averaging the square root of the product of the velocity head (P) and the absolute stack temperature from each sampling point.

T_t = Net time of test in minutes

D_n = Sampling Nozzle Diameter, inches

A_n = Area of Nozzle opening, ft^2.

V_s = Stack Gas Velocity at Stack Conditions, Feet per second.

D_s = Diameter of Stack, inches

Area = Area of duct in ft^2

ACFM = Actual Cubic Feet per minute

DSCFM = Dry Standard Cubic Feet per minute

%I = Per Cent Isokinetic

[a] Dry Standard Cubic Feet @ 68°F, 29.92 in. Hg.

[b] Standard Conditions @ 68°F, 29.92 in. Hg.

PLANT Pine Hall Brick LOCATION Madison, N.C.

SAMPLED SOURCE Dryer Outlet

Run	Date	N_p	(3) Y_m	(4) ΔH	(5) P Bar.	(6) V_m	(7) T_m	(8) V_m Std.	(9) %	(10) P_{st}	17 P_s	(18) T_s	(19) VP	(20) V_w	21 $V_{w_{gas}}$	22 %M	23 M_d
F2 1st Part	29 OCT 92	18	1.0796	1.64	29.58	59.333	98	60.167		-10.6	28.80	125		148.9	7.01	10.4	.896
F2 2nd Part	30 OCT 92	7	1.0349	1.53	29.57	21.080	73	21.439		-10.6	28.79	185		53.3	2.51	10.5	.895
Combined								81.606									

Run	(24) CO_2	(25) O_2	26 N_2	(27) CO	(28) ___	29 MW_d	30 MW	(31) C_p	(32) $\sqrt{\Delta P_s (T_s + 460)}$	(33) T_t	(34) D_n	35 V_s	(36) D_s	(37) Area	38 ACFM	(39) DSCFM	40 %I
1F2 1st Part	2.2	19.1	78.7			29.12	27.96	.84	17.1970	86.92	.25	43.5	42	9.62	25124	19550	99.99
1F2 2nd Part	2.2	19.1	78.7			29.12	27.95	.84	17.4688	33.08	.25	44.2	42	9.62	25527	18002	101.7
																19122	100.5

$$V_m \text{ Std.} = Y_m \frac{17.64 \times V_m \left(P \text{ Bar.} + \frac{\Delta H}{13.6}\right)}{(T_m + 460)}$$

$$\%M = \frac{100 \times V_{w_{gas}}}{V_m \text{ Std.} + V_{w_{gas}}}$$

$$V_{w_{gas}} = 0.0471\ V_w$$

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

$$MW_d = \%CO_2 \times .44 + (\%O_2 \times .32) + (\%CO + \%N_2) \times .28 + \left(\%Other \times \frac{Mol.\ wt.}{100}\right)$$

$$MW = MW_d \times M_d + 18(1 - M_d)$$

$$P_s = P \text{ Bar.} \pm \frac{P_{st}}{13.6}$$

$$V_s = 85.49 \times C_p \sqrt{\Delta P_s (T_s + 460)} \left[\frac{1}{P_s \times MW}\right]^{1/2}$$

$$\%I = \frac{0.09450 \times (T_s + 460) \times V_m \text{ Std.}}{V_s \times T_t \times P_s \times M_d \times A_n}$$

N_p = Total No. of Sampling points

Y_m = Meter Box Correction Factor

ΔH = Average Orifice Pressure Drop, inches H_2O

P Bar. = Barometric Pressure, inches Hg, Absolute

V_m = Volume of Dry Gas at Meter Conditions, DCF

T_m = Average Meter Temperature, °F.

V_m Std. = Volume of Dry Gas at STP, DSCF[a]

X = Per Cent other gas removed before Dry Gas Meter

P_{st} = Static Pressure of Stack Gas, inches H_2O

P_s = Stack Gas Pressure, inches Hg.

T_s = Average Stack Temperature, °F

VP = Vapor Pressure of H_2O At Stack Temperature

V_w = Total H_2O Collected in Impingers and Silica Gel

$V_{w_{gas}}$ = Volume of water vapor collected at STP, SCF[b]

%M = Per Cent Moisture by volume

M_d = Mole Fraction of Dry Gas

$\%CO_2$ = Volume % Dry

$\%O_2$ = Volume % Dry

$\%N_2$ = Volume % Dry

%CO = Volume % Dry

MW_d = Molecular Weight of Stack Gas Dry Basis

MW = Molecular Weight of Stack Gas, Wet Basis

C_p = Pitot Tube Coefficient

$\sqrt{\Delta P (T_s + 460)}$ Is determined by averaging the square root of the product of the velocity head (P_s) and the absolute stack temperature from each sampling point.

T_t = Net time of test in minutes

D_n = Sampling Nozzle Diameter, inches

A_n = Area of Nozzle opening, ft^2.

V_s = Stack Gas Velocity at Stack Conditions, Feet per second.

D_s = Diameter of Stack, inches

Area = Area of duct in ft^2

ACFM = Actual Cubic Feet per minute

DSCFM = Dry Standard Cubic Feet per minute

%I = Per Cent Isokinetic

[a] Dry Standard Cubic Feet @ 68°F, 29.92 in. Hg.

[b] Standard Conditions @ 68°F, 29.92 in. Hg.

DRY MOLECULAR WEIGHT DETERMINATION

PLANT Pine Hill Brick
DATE 10-28-92
SAMPLING TIME (24-hr CLOCK)
SAMPLING LOCATION Dryer Cyclone Outlet F-1
SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS)
ANALYTICAL METHOD
AMBIENT TEMPERATURE
OPERATOR

COMMENTS:

Fyrite - CO_2 Firite - O_2

GAS \ RUN	1 ACTUAL READING	1 NET	2 ACTUAL READING	2 NET	3 ACTUAL READING	3 NET	AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb/lb-mole
CO_2	2.1		2.2		2.2		2.2	44/100	
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	21.2	19.1	21.2	19.0	21.4	19.2	19.1	32/100	
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)	21.2	0	21.2	0	21.4	0	0	28/100	
N_2 (NET IS 100 MINUS ACTUAL CO READING)								28/100	
								TOTAL	29.12

TRAVERSE POINT LOCATION FOR CIRCULAR DUCTS

PLANT Pine Hall Brick
DATE 28 Oct 72
SAMPLING LOCATION Outlet
INSIDE OF FAR WALL TO OUTSIDE OF NIPPLE, (DISTANCE A) 45
INSIDE OF NEAR WALL TO OUTSIDE OF NIPPLE, (DISTANCE B) 3"
STACK I.D., (DISTANCE A - DISTANCE B) 42"
NEAREST UPSTREAM DISTURBANCE ?
NEAREST DOWNSTREAM DISTURBANCE ?
CALCULATOR Brown & Clay

SCHEMATIC OF SAMPLING LOCATION

TRAVERSE POINT NUMBER	Nipple ~~FRACTION OF STACK~~ I.D.	STACK I.D.	PRODUCT OF COLUMNS 2 AND 3 (TO NEAREST 1/8 INCH)	DISTANCE B	TRAVERSE POINT LOCATION FROM OUTSIDE OF NIPPLE (SUM OF COLUMNS 4 & 5)
1	3"	42"			4.0
2	|	|			[illegible]
3	|	|			8.0
4	|	|			10.4
5	|	|			13.5
6	|	|			17.7
7	|	|			20.1
8	|	|			34.5
9	|	|			37.6
10	|	|			40.0
11	|	|			43.2
12	|	|			44.0

EPA (Dur) 232
4/72

PRELIMINARY VELOCITY TRAVERSE

PLANT Pine Hall Brick

DATE 28 Oct 92

LOCATION E-1 Dryer Outlet 2,4 ⁰⁄₄

STACK I.D. 42.0 ROH

BAROMETRIC PRESSURE, in. Hg 29.53 Estimated

STACK GAUGE PRESSURE, in. H_2O −10.6

OPERATORS Brown & Clay

SCHEMATIC OF TRAVERSE POINT LAYOUT

Port A

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
1	1.4	81
2	1.1	100
3	1.0	115
4	0.65	138
5	0.55	125
6	0.47	128
7	0.57	136
8	0.56	141
9	0.59	144
10	0.62	147
11	0.62	149
12	0.59	152
AVERAGE		

0.10 90c

Port B

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
1	10.90	75
2	1.40	115
3	0.78	132
4	0.42	150
5	0.30	152
6	0.27	155
7	0.54	154
8	0.65	154
9	0.70	154
10	0.65	153
11	0.62	153
12	0.51	152
AVERAGE		

EPA (Dur) 233
4/72

6?-5

METHOD 1-4 DATA SHEET

Date 10/21/92

Run Number ______

Start Time ______

End Time ______

Box Number ______

Delta H_g ______

Gamma ______

CONTRACT NUMBER ______

JOB NAME Pine Hall Brick

SAMPLING LOCATION Outlet A (F1)

BOX OPERATOR ______

STACK SIZE 42"

%O2 ______

%CO2 ______

%CO ______

BAROMETRIC PRESSURE ______ in.Hg

AVERAGE DELTA H ______ in.W.C.

STATIC PRESSURE >-10 in.W.C.

INITIAL METER VOLUME ______ dcf

FINAL METER VOLUME ______ dcf

METER TEMPERATURE ______ °F

IMPINGER VOLUMES / WEIGHTS

	Initial	Final
#1	ml	ml
#2	ml	ml
#3	ml	ml
SG	gm	gm

TRAVERSE DATA

Port	dP	Stack Temp. Deg. F
A1	0.94	90
2	0.90	96
3	0.75	104
4	0.46	117
5	0.46	123
6	0.25	138
7	0.24	148
8	0.47	140
9	0.41	152
10	0.60	153
11	0.52	153
12	0.35	153

Port	dP	Stack Temp. Deg. F
B1	1.2	81
2	0.72	90
3	0.76	96
4	0.49	114
5	0.48	124
6	0.49	143
7	0.53	144
8	0.55	147
9	0.45	149
10	~~0.40~~ 0.50	149
11	0.36	150
12	0.31	153

Port	dP	Stack Temp. Deg. F

CYCLONIC FLOW DATA SHEET

Date 10/27/92

Run Number ________

Start Time ________

End Time ________

Box Number ________

CONTRACT NUMBER ________

JOB NAME Pine Hall Brick

SAMPLING LOCATION Outlet A

BOX OPERATOR ________

STACK SIZE 42"

POINT	ANGLE
A 1	25°
2	16°
3	7°
4	2°
5	8°
6	20°
7	13°
8	14°
9	4°
10	7°
11	10°
12	9°

POINT	ANGLE
B 1	30°
2	32°
3	4°
4	16°
5	14°
6	12°
7	9°
8	15°
9	12°
10	2°
11	6°
12	10°

POINT	ANGLE

AVERAGE ANGLE ________

PRELIMINARY VELOCITY TRAVERSE

PLANT Pine Hall Brick

DATE 20 OCT 92

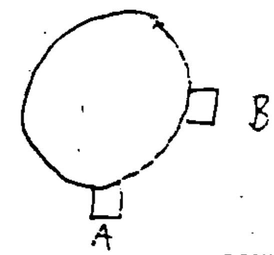
LOCATION Unsampled outlet During Run #1 F-2

STACK I.D. 43"

BAROMETRIC PRESSURE, in. Hg 29.58

STACK GAUGE PRESSURE, in. H_2O -9.5" H_2O

OPERATORS F Clay



SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
1 A	0.32	163
2	0.25	
3	0.29	
4	0.28	
5	[illegible]	
6	0.24	
7	0.37	
8	0.38	
9	0.46	
10	0.49	
11	0.50	
12	0.46	
AVERAGE		

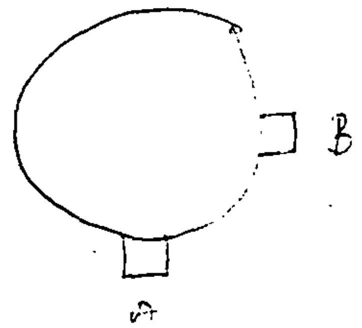
TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
1 B	0.33	163
2	0.35	
3	0.30	
4	0.32	
5	0.30	
6	0.32	
7	0.33	
8	0.36	
9	0.46	
10	0.43	
11	0.41	
12	0.35	
AVERAGE		

EPA (Dur) 233
4/72

TRAVERSE POINT LOCATION FOR CIRCULAR DUCTS

PLANT Pine Hall Brick
DATE 29 OCT 93
SAMPLING LOCATION Unsampled Outlet duct Run #2
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A)
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B)
STACK I.D., (DISTANCE A - DISTANCE B) 42"
NEAREST UPSTREAM DISTURBANCE
~~NEAREST DOWNSTREAM DISTURBANCE~~ Static = -.94" H_2O
CALCULATOR F. Clay

F-2



SCHEMATIC OF SAMPLING LOCATION

TRAVERSE POINT NUMBER	Velocity Head ~~FRACTION OF STACK I.D.~~	STACK TEMP ~~STACK I.D.~~	Velocity Head ~~PRODUCT OF COLUMNS 2 AND 3 (TO NEAREST 1/8 INCH)~~	Stack Temp ~~DISTANCE B~~	Point # ~~TRAVERSE POINT LOCATION FROM OUTSIDE OF NIPPLE (SUM OF COLUMNS 4 & 5)~~
1	0.23	170	0.27	170	1
2	0.27	165	0.28	16[illegible]	2
3	0.27	|	0.29	[illegible]	3
4	0.25	|	0.30	[illegible]	4
5	0.25	|	0.31	[illegible]	5
6	0.20	|	0.29	[illegible]	6
7	0.35	|	0.31	[illegible]	7
8	0.42	|	0.37	[illegible]	8
9	0.47	|	0.39	[illegible]	9
10	0.49	|	1.05	[illegible]	10
11	0.41	|	0.40	[illegible]	11
12	0.38	165	0.32	160	12

EPA (Dur) 232
4/72

T_s = 165

PRELIMINARY VELOCITY TRAVERSE

PLANT Pine Hall Brick

DATE 30 Oct 92

LOCATION Left Outlet Duct (Not Sampled)

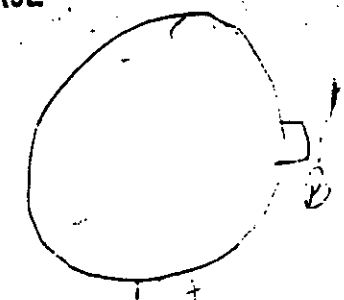
STACK I.D. 42"

BAROMETRIC PRESSURE, in. Hg 29.57

STACK GAUGE PRESSURE, in. H_2O −9.3

OPERATORS F. Clay

F.2



SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
1	0.50	175
2	0.30	
3	0.25	
4	0.27	
5	0.26	
6	0.28	
7	0.37	
8	0.41	
9	0.43	
10	0.53	
11	0.43	
12	0.35	175
AVERAGE		

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
1	0.28	170
2	[illegible]	
3	0.28	
4	0.33	
5	0.29	
6	0.31	
7	0.37	
8	0.30	
9	0.43	
10	0.45	
11	0.42	
12	0.35	170
AVERAGE		

EPA (Dur) 233

F.5 RAW FIELD SAMPLING DATA FOR HYDROGEN FLUORIDE TESTING

F.5.1 M26 RAW FIELD SAMPLING DATA - SAWDUST DRYER INLET

METHOD 25 SAMPLING DATA SHEET

Project: Pine Hall Brick

Location: Sawdust Dryer Inlet

Date: 11-2-92

RUN NUMBER: IN-M25-R1

ORSAT DATA

%O2 ______

%CO2 ______

BP 28.48

MB # 17

GAMMA 1.0047

Travis Parker

SAMPLE TIME	CLOCK TIME	METER VOLUME LITERS	METER TEMP. DEG. F	PROBE/FILTER TEMP DEG. F	SYSTEM VACUUM IN. Hg
0	13:11	2158.38	68	250/250	4
5		2163.5	64	250/250	4
10		2168.5	66	250/250	4
15		2173.4	69	250/250	4
20		2178.4	69	250/250	4
25		2183.4	70	250/250	4
30		2188.3	73	250/250	4
35		2193.3	74	250/250	4
40		2198.4	75	250/250	4
45		2203.4	75	250/250	4
50		2208.4	76	250/250	4
55		2213.4	78	250/250	4
60	14:11 / 14:28	2218.4	80	250/250	4
65		2223.4	78	250/250	4
70		2228.4	79	250/250	4
75		2233.5	80	250/250	4
80		2238.5	81	250/250	4
85		2243.5	82	250/250	4
90		2248.5	83	250/250	4
95		2253.5	84	250/250	4
100		2258.5	84	250/250	4
105		2263.5	85	250/250	4
110		2268.4	86	250/250	4
115		2273.4	87	250/250	4
120	15:28	2278.44	88	250/250	4
/					

Recovery Date

INITIAL IMPINGER VOLUME 0+15+15+15 ml

FINAL IMPINGER VOLUME 30.5+16.5+4+3 ml

SAMPLE BOTTLE I.D.'s

Impingers 300

Impingers 301

Silica Gel 302

METHOD 25 SAMPLING DATA SHEET

Project: Pine Hall Brick

Location: Sawdust Dryer Inlet

Date: 11/2/92

RUN NUMBER: IN-M25 R2

ORSAT DATA

%O₂ ____

%CO₂ ____

BP. 29.90

MB # 17

Gamma 1.0047

Lewis Parker

SAMPLE TIME	CLOCK TIME	METER VOLUME LITERS	METER TEMP. DEG. F	PROBE/FILTER TEMP DEG. F	SYSTEM VACUUM IN. Hg
0	17:33	2289.67	66	250/250	5
5		2294.7	68	250/250	5
10		2299.7	70	250/250	5
15		2304.7	72	250/250	5
20		2309.6	72	250/250	5
25		2314.4	73	250/250	5
30		2319.4	75	250/250	5
35		2324.4	76	250/250	5
40		2329.4	79	250/250	5
45		2334.7	81	250/250	5
50		2339.7	81	250/250	5
55		2344.7	81	250/250	5
60	18:33/18:42	2349.7	81	250/250	5
65		2354.7	81	250/250	6
70		2359.7	41	250/250	5
75		2364.6	42	250/250	5
80		2364.6	43	250/250	5
85		2374.6	44	250/250	5
90		2379.6	44	250/250	5
95		2344.6	44	250/250	5
100		2389.6	46	250/250	5
105		2394.5	48	250/250	5
110		2399.5	48	250/250	6
115		2404.6	49	250/250	5
120	19:42	2409.69			

Recovery Data

INITIAL IMPINGER VOLUME 0+15+15+15 ml

FINAL IMPINGER VOLUME 17+15+16+15.5 ml

SAMPLE BOTTLE I.D.'s

Impingers 304

Impingers 305

Silica Gel 302

METHOD 25 SAMPLING DATA SHEET

Project: Pine Hall Brick

Location: Sawdust Dryer Inlet

Date: 11/3/92

RUN NUMBER: IN-M26-R3

ORSAT DATA

$\%O_2$ ______

$\%CO_2$ ______

BP. 29.72

MB # 17
γ = 1.0047

T. Parker

SAMPLE TIME	CLOCK TIME	METER VOLUME LITERS	METER TEMP. DEG. F	PROBE/FILTER TEMP DEG. F	SYSTEM VACUUM IN. Hg
0	9:15	2411.15	64	250/250	3
5		2416.1	66	250/250	3
10		2421.1	67	250/250	3
15		2426.1	68	250/250	3
20		2431.2	70	250/250	3
25		2436.2	72	250/250	3
30		2441.2	75	250/250	3
35		2446.2	77	250/250	3
40		2451.2	79	250/250	3
45		2456.2	80	250/250	3
50		2461.3	82	250/250	3
55		2466.3	84	250/250	3
60	10:16/10:32	2471.21	86	250/250	3
65		2476.2	81	250/250	3
70		2481.2	43	250/250	3
75		2491.2	44	250/250	3
80		2491.2	45	250/250	3
85		2496.2	46	250/250	3
90		2501.3	47	250/250	3
95		2506.3	84	250/250	3
100		2511.2	45	250/250	3
105		2516.2	49	250/250	3
110		2521.2	45	250/250	3
115		2526.2	49	250/250	3
120	11:32	~~[illegible]~~ 2531.19			

Recovery Date

INITIAL IMPINGER VOLUME 0+15+15+15 ml

FINAL IMPINGER VOLUME 3+15+15+15.5 ml

SAMPLE BOTTLE I.D.'s

Impingers 308

Impingers 309

Silica Gel 310

F.5.2 M26 RAW FIELD SAMPLING DATA - SAWDUST DRYER OUTLET A

METHOD 25 SAMPLING DATA SHEET

Project Pine Hall Brick

Location Sawdust Dryer Outlet A

Date 11-2-92

RUN NUMBER OA - M26-R1

ORSAT DATA

%O_2

%CO_2

1:11

71-E11

Gamma 1.0007

$\overline{P}$ = 29.46

Operator Kevin Cook

SAMPLE TIME	CLOCK TIME	METER VOLUME LITERS	METER TEMP. DEG. F	PROBE/FILTER TEMP DEG. F	SYSTEM VACUUM IN. Hg
0	13:11	0220.05	64/63	169	0
5	13:16	0229.16	64/64	203	3
10	13:22	0231.15	64/64	207	3
15	13:26	0242.2	64/64	237/209	3
20	13:31	0252.15	64/64	239/202	3
25	13:36	0262.3	64/64	233/209	3
30	13:42	0271.4	64/64	227/215	3
35	13:47	0281.15	64/64	232/207	3
40	13:52	0291.8	64	238/205	3
45	13:57	0302.9	64	237/209	3
50	14:02	0310.2	64	235/208	2.5
55	14:09	0321.65	64	225/211	2.5
60	14:12	0331.75	64	227/211	2.5
65	14:28	[illegible]	65	310/172	2.5
70	14:32	0352.55	65	90/245	2.5
75	14:37	0362.85	65	143/220	2.5
80	14:42	0372.05	65	215/195	2.5
85	14:47	0383.3	65	184/199	2.5
90	14:52	0393.55	65	180/199	2.5
95	14:57	0404.2	65	192/199	2.5
100	15:03	0413.75	65	193/201	2.5
105	15:13	0423.6	65	188/199	2.5
110	15:18	0432.4	65	190/198	2.5
115	15:23	0444.2	65	185/261	2.5
120		0453.85	65	188/200	2.5

Recovery Date

INITIAL IMPINGER VOLUME 0+15+15+15 ml

FINAL IMPINGER VOLUME 23+15+17+12.5 ml

Leak Check Passed

SAMPLE BOTTLE I.D.'s

Impingers 312

Impingers 313

Silica Gel 314

METHOD 25 SAMPLING DATA SHEET

Project: Fire Hill Brick

Location: Outlet A

Date: 11/2/92

RUN NUMBER: OA-M25-R2

ORSAT DATA

$\%O_2$ ______

$\%CO_2$ ______

Box # 71-VII
gamma = 1.0007
Operator = Kevin G.
$\bar{P}$ = 29.57

SAMPLE TIME	CLOCK TIME	METER VOLUME LITERS	METER TEMP DEG. F	PROBE/FILTER TEMP DEG. F	SYSTEM VACUUM IN. HG
0	17:33	0457.06	65	214/208	
5	17:38	0469.35	65	214/172	7.5
10	17:43	0480.35	65	219/232	7.5
15	17:48	0491.1	65	[illegible]/213	7.0
20	17:53	0501.9	65	225/[illegible]	6.5
25	17:58	0513.85	65	219/219	6.5
30	18:03	0525.2	65	211/213	6.5
35	18:08	0535.9	65	226/210	6.5
40	18:13	0547.45	65	227/220	6.5
45	18:18	0559.25	65	216/210	6.5
50	18:23	0569.85	65	212/214	6.5
55	18:28	0581.70	65	223/216	6.5
60	18:33	0599.2	65	210/216	6.5
65	18:47	0607.45	65	21?/217	6.5
70	18:52	0617.5	65	209/194	6.5
75	18:57	0627.25	65	201/213	6.5
80	19:02	0639.05	65	207/204	6.5
85	19:07	0649.2	66	209/212	6.5
90	19:12	0660.4	66	211/205	6.5
95	19:17	0670.15	66	200/208	6.5
100	19:22	0680.95	66	202/208	5.0
105	19:27	0690.05	66	201/201	5.0
110	19:32	0700.35	66	212/206	5.0
115	19:37	0708.5	66	207/209	5.0
120	19:42	0714.76	66	210/202	5.0

Leak Check
[illegible]

Recovery Data

INITIAL IMPINGER VOLUME 0+15+15+15 ml

FINAL IMPINGER VOLUME 30+9+15+14.5 ml

SAMPLE BOTTLE ID'S

Impinger: 316

Impinger: 317

Silica Gel: 318

METHOD 26 SAMPLING DATA SHEET

Project: Pine Hall Brick RUN NUMBER: OA-M26-R3

Location: Outlet A

Date: 11/3/92

ORSAT DATA

%O_2 ________

%CO_2 ________

Box # 71-VII
Operator - Kevin Caroll
$\overline{P}$ = 29.72

SAMPLE TIME	CLOCK TIME	METER VOLUME LITERS	METER TEMP. DEG. F	PROBE/FILTER TEMP DEG. F	SYSTEM VACUUM IN. Hg
0	9:15	0716.46	65	237/165	7.5
5	9:20	0730.55	65	224/213	4
10	9:25	0740.45	65	233/222	4
15	9:30	0751.40	65	232/222	4
20	9:35	0764.5	65	225/222	4
25	9:40	0775.75	65	224/225	1
30	9:45	0785.6	66	227/214	1
35	9:50	0795.85	66	232/216	1
40	9:55	0806.5	67	226/219	1
45	10:00	0816.75	68	235/221	1
50	10:05	0828.74	68	231/222	1
55	10:10	0839.8	68	223/222	1
60	10:15	0849.4	68	234/222	1
65	10:37	0871.2	70	275/262	6
70	10:42	0883.25	70	273/274	1
75	10:47	0893.15	69	273/268	1
80	10:52	0903.6	69	273/265	1
85	10:57	0915.4	70	274/267	1
90	11:02	0926.05	70	273/268	1
95	11:07	0936.75	70	273/265	1
100	11:12	0950.75	70	273/265	1
105	11:17	0961.2	70	272/268	1
110	11:22	0973.15	70	273/265	1
115	11:27	0982.4	70	273/262	1
120	11:32	1092.4	70	273/268	1

Leak Check ok 7.5

Recovery Date

INITIAL IMPINGER VOLUME 0+15+15+15 ml

FINAL IMPINGER VOLUME 29.5+4+9+3 ml

SAMPLE BOTTLE I.D.'s

Impingers 320

Impingers 321

Silica Gel 322

F.5.3 M26 RAW FIELD SAMPLING DATA - SAWDUST DRYER OUTLET B

METHOD 25 SAMPLING DATA SHEET

Project: Pine Hall Brick

Location: Sawdust Dryer Outlet B

Date: 11/2/92

RUN NUMBER: OB-M25-R1

ORSAT DATA

%O_2 ________

%CO_2 ________

SAMPLE TIME	CLOCK TIME	METER VOLUME LITERS	METER TEMP. DEG. F	PROBE/FILTER TEMP DEG. F	SYSTEM VACUUM IN. Hg
0	13:11	0455.56	72	140	1.5
5	13:16	0463.2	72	154	1.5
10	13:21	0478.4	72	156	1.5
15	13:26	0486.1	72	154	1.5
20	13:31	0500.05	73	155	1.5
25	13:36	0512.1	73	156	1.5
30	13:41	0523.8	73	157	1.5
35	13:46	0535.4	73	159	1.5
40	13:51	0546.75	73	162	1.5
45	13:56	0558.3	73	164	1.5
50	14:01	0570.2	73	158	1.5
55	14:06	0580.1	73	158	1.5
* 60	14:06/14:28	*0591.35	73	158	1.5
65	14:33	0604.4	73	152	1.5
70	14:38	0615.9	73	153	1.5
75	14:43	0627.0	73	153	1.5
80	14:48	0638.2	73	153	1.5
85	14:53	0648.4	73	158	1.5
90	14:58	0658.8	73	158	1.5
95	15:03	0668.8	73	159	1.5
100	15:08	0677.5	74	168	1.8
105	15:13	0685.2	74	164	1.8
110	15:18	0692.1	74	159	2.8
115	15:23	0696.3	74	160	1.6
120	15:28	0702.15	74	156	1.6

Recovery Date

INITIAL IMPINGER VOLUME 0+15+15+15 ml

FINAL IMPINGER VOLUME 2+23+17.5+3 ml

SAMPLE BOTTLE I.D.'s

Impingers 324

Impingers 325

Silica Gel 326

Bp 29.48 | γ 1.0009

Operator D.S. | ΔH₀ N/A

Box I.D. 71-V12

F-114

METHOD 26 SAMPLING DATA SHEET

Project PINE hall BRICK

Location SAWDUST DRYER OUTLET B

Date 11/2/92

RUN NUMBER OB M26 R2

ORSAT DATA

$\%O_2$ ______

$\%CO_2$ ______

SAMPLE TIME	CLOCK TIME	METER VOLUME LITERS	METER TEMP. DEG. F	PROBE/FILTER TEMP DEG. F	SYSTEM VACUUM IN. Hg
0	17:33	0703.23	73	158	2.0
5	17:38	0716.2	72	152	2.0
10	17:43	0727.1	72	148	2.2
15	17:48	0737.5	72	149	2.1
20	17:53	0748.3	72	149	2.1
25	17:58	0758.6	73	161	2.1
30	18:03	0768.9	73	162	2.1
35	18:08	0779.5	74	162	2.1
40	18:13	0780.2	74	160	2.1
45	18:18	0899.5	74	160	2.1
50	18:23	0809.4	75	161	2.1
55	18:28	0820.1	75	161	2.1
*60	18:33/18:42	0830.05	76	158	2.1
65	18:47	0841.2	76	158	2.1
70	18:52	0851.1	77	152	2.2
75	18:57	0862.3	77	157	2.2
80	19:02	0872.5	78	154	2.2
85	19:07	0883.1	78	160	2.2
90	19:12	0895.2	78	161	2.2
95	19:17	0905.1	78	162	2.2
100	19:22	0915.9	79	163	2.3
105	19:27	0926.3	79	161	2.3
110	19:32	0936.9	79	160	2.3
115	19:37	0947.8	79	159	2.4
120	19:42	0956.9	79	158	2.4

Recovery Date

INITIAL IMPINGER VOLUME 0+15+15+15ml

FINAL IMPINGER VOLUME 20+15+14.5+14.5ml

SAMPLE BOTTLE I.D.'s

Impingers 328

Impingers 329

Silica Gel 330

Bp 29.57 ~~29.48~~

Operator D.S.

Box ID 71-U12

Y 1.009

ΔH@ N/A

Figure 6.0-7 Method 26 Data Sheet

METHOD 25 SAMPLING DATA SHEET

Project: Pine Hall Brick

Location: Sawdust Dryer outlet B

Date: 11/3/87

RUN NUMBER: OB M26 R3

ORSAT DATA

$\%O_2$ ______

$\%CO_2$ ______

SAMPLE TIME	CLOCK TIME	METER VOLUME LITERS	METER TEMP DEG. F	PROBE/FILTER TEMP DEG. F	SYSTEM VACUUM IN. Hg
0	0915	0955.12	80	159	2.8
5	0920	0965.9	81	163	2.1
10	0925	0978.1	81	166	2.0
15	0930	0988.8	81	193	2.0
20	0935	0999.3	81	207	2.0
25	0940	1009.8	81	211	3.0
30	0945	1019.9	82	228	4.0
35	0950	1030.1	82	232	4.0
40	0955	1040.1	82	232	4.0
45	1000	1048.4	82	233	4.0
50	1005	1056.6	83	232	7.''
55	1010	1065.3	83	225	9.''
60	1015/1032	1073.26	85	200	2.1
65	10:35	1084.3	87	210	2.1
70	10:40	1096.2	87	212	2.1
75	10:45	1009.8	88	217	2.0
80	10:50	1018.9	89	218	2.0
85	1055	1029.6	89	230	2.0
90	1100	1039.2	90	235	2.0
95	1105	1049.3	91	235	2.0
100	1110	1058.2	90	235	2.0
105	1115	1068.7	90	235	2.0
110	1120	1078.6	90	234	2.0
115	1125	1089.9	90	235	2.0
120	1130	1198.63	91	230	2.0

*

Recovery Date

INITIAL IMPINGER VOLUME 0+15+15+15 ml

FINAL IMPINGER VOLUME 22+22.5+16+2.5 ml

SAMPLE BOTTLE I.D.'s

Impingers 332

Impingers 333

Silica Gel 334

Box ID	71-U12
Δh 1.0009	OPERATOR D. Stabelt
γ N/A	
Bp. 29.72	

F.6 RAW FIELD SAMPLING DATA FOR VOLATILE ORGANICS TESTING

F.6.1 M0030 RAW FIELD SAMPLING DATA - SAWDUST DRYER INLET

VOST RUNSHEET

RUN NUMBER IN - M0030 - R1

Date 11-6-92

Test Location Sawdust Dryer Inlet

Meter Box I.D. 17

Meter Box Calibration Factor 1.0047

BP. 29.76

INITIAL LEAK CHECK

Vacuum 10

Leak Rate mm Hg/minute 0

Travis Parker

SAMPLE COLLECTION

	CARTRIDGE SET 1		CARTRIDGE SET 2		CARTRIDGE SET 3	
Tenax I.D.	102		138		141	
Charcoal I.D.	100		136		139	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	11:37/11:47	12:00	12:15	12:35	12:47	13:07
Meter Volume	2532.71	2552.78	2553.44	2573.49	2574.81	2594.83
Meter Temperature	44	53	54	55	55	61
Meter Pressure	2.5	2.5	2.5	2.5	2.5	2.5
System Vacuum	3	3	4	4	4	4
Condenser 1 Temp.	45	51	51	53	52	54
Condenser 2 Temp.	49	52	51	54	52	53
Probe Temperature	250	250	250	250	250	250
Leak Rate	0	0	0	0	0	0

	CARTRIDGE SET 4		CARTRIDGE SET 5		CARTRIDGE SET 6	
Tenax I.D.	192		195		198	
Charcoal I.D.	190		193		196	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	13:49	14:05	14:18	14:38	14:45	15:05
Meter Volume	2595.17	2615.25	2615.88	2636.03	2636.58	2656.64
Meter Temperature	55	59	58	61	60	63
Meter Pressure	2.5	2.5	2.5	2.5	2.5	2.5
System Vacuum	5	3	5	5	5	5
Condenser 1 Temp.	53	56	53	55	53	56
Condenser 2 Temp.	53	57	52	56	54	57
Probe Temperature	250	250	250	250	250	250
Leak Rate	0	0	0	0	0	0

ETS102490

RUN NUMBER IV-M0030-R2

Date 11-6-92

Test Location Sawdust Dryer Inlet

Meter Box I.D. 17

Meter Box Calibration Factor 1.0047

INITIAL LEAK CHECK

Vacuum 10

Leak Rate mm Hg/minute 0

SAMPLE COLLECTION

	CARTRIDGE SET 1		CARTRIDGE SET 2		CARTRIDGE SET 3	
Tenax I.D.	105		156		159	
Charcoal I.D.	103		154		157	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	17:42	18:02	18:11	18:31	18:39	18:55
Meter Volume	2650.03	2670.11	2670.65	2690.77	2711.31	2731.48
Meter Temperature	46	54	52	55	53	56
Meter Pressure	2.5	2.5	2.5	2.5	2.5	2.5
System Vacuum	4	4	4	4	4	4
Condenser 1 Temp.	45	45	46	48	45	47
Condenser 2 Temp.	45	50	47	50	45	48
Probe Temperature	250	250	250	250	250	250
Leak Rate	0	0	0	0	0	0

	CARTRIDGE SET 4		CARTRIDGE SET 5		CARTRIDGE SET 6	
Tenax I.D.	219		222		225	
Charcoal I.D.	217		220		223	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	19:32	19:52	19:59	20:19	20:27	20:47
Meter Volume	2731.86	2750.13	2750.41	2772.98	2773.19	2793.31
Meter Temperature	49	54	52	55	54	57
Meter Pressure	2.5	2.5	2.5	2.5	2.5	2.5
System Vacuum	5	5	5	5	5	5
Condenser 1 Temp.	47	50	49	52	50	53
Condenser 2 Temp.	47	51	50	54	51	54
Probe Temperature	250	250	250	250	250	250
Leak Rate			0	0	0	0

ETS102490

RUN NUMBER INFM -R3

Date 11/7/92

Test Location Sawdust Dryer Inlet

Meter Box I.D. 17

Meter Box Calibration Factor 1.0047

BP 29.92

T. PARKER

INITIAL LEAK CHECK

Vacuum 10

Leak Rate mm Hg/minute 0

SAMPLE COLLECTION

	CARTRIDGE SET 1		CARTRIDGE SET 2		CARTRIDGE SET 3	
Tenax I.D.	108		174		177	
Charcoal I.D.	106		172		175	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	9:02	9:22	9:30	9:50	9:57	10:17
Meter Volume	2773.23	2793.41	2793.89	2813.94	2814.22	2834.46
Meter Temperature	43	47	46	52	52	54
Meter Pressure	2.5	2.5	2.5	2.5	2.5	2.5
System Vacuum	4	4	4	4	4	4
Condenser 1 Temp.	43	45	44	47	45	47
Condenser 2 Temp	43	47	45	47	46	48
Probe Temperature	250	250	250	250	250	250
Leak Rate	0	0	0	0	0	0

	CARTRIDGE SET 4		CARTRIDGE SET 5		CARTRIDGE SET 6	
Tenax I.D.	246		249		252	
Charcoal I.D.	244		247		250	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	11:14	11:34	11:40	12:00	12:27	12:47
Meter Volume	2834.76	2854.49	2855.04	2875.41	2875.62	2895.77
Meter Temperature	52	56	55	58	56	55
Meter Pressure	2.5	2.5	2.5	2.5	2.5	2.5
System Vacuum	4	4	4	4	5	5
Condenser 1 Temp.	48	51	50	52	51	54
Condenser 2 Temp.	48	52	50	53	51	55
Probe Temperature	250	250	250	250	250	250
Leak Rate	0	0	0	0	0	0

ET3102490

F.6.2 M0030 RAW FIELD SAMPLING DATA - SAWDUST DRYER OUTLET A

RUN NUMBER DA-M003C-R1

Date 11-1-92

Test Location Sawdust Dryer Outlet A

Meter Box I.D. 71-V12

Meter Box Calibration Factor 1.0009

INITIAL LEAK CHECK

Vacuum 12.5

Leak Rate mm Hg/minute 0.00

SAMPLE COLLECTION

	CARTRIDGE SET 1		CARTRIDGE SET 2		CARTRIDGE SET 3	
Tenax I.D.	111		144		147	
Charcoal I.D.	109		142		145	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	11:41	12:01	12:13	12:33	12:53	13:13
Meter Volume	1211.065	1231.623	1235.490	1255.192	1262.578	1282.095
Meter Temperature	52°F	55°F	55°F	59°F	58°F	59°F
Meter Pressure	1.0	1.0	1.0	1.0	1.0	1.0
System Vacuum	2.5	2.5	4.0	4.0	3.5	3.5
Condenser 1 Temp.	52°F	42°F	39°F	43°F	45°F	48°F
Condenser 2 Temp.	50°F	41°F	40°F	42°F	45°F	48°F
Probe Temperature	250°F	250°F	250°F	250°F	250°F	250°F
Leak Rate	12.5"/0.00	3.0"/0.00	13.0"/0.00	5.0"/0.00	12.0"/0.00	5.0"/0.00

	CARTRIDGE SET 4		CARTRIDGE SET 5		CARTRIDGE SET 6	
Tenax I.D.	201		204		207	
Charcoal I.D.	199		202		205	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	13:57	14:17	14:47	15:07	16:18	16:38
Meter Volume	1283.00	1302.445	1305.915	1325.980	1326.317	1345.555
Meter Temperature	55°F	57°F	55°F	57°F	51°F	53°F
Meter Pressure	1.0	1.0	1.0	1.0	1.0	1.0
System Vacuum	3.0	3.0	4.5	4.5	6.0	6.0
Condenser 1 Temp.	48°F	51°F	60°F	51°F	51°F	54°F
Condenser 2 Temp.	50°F	55°F	63°F	55°F	52°F	53°F
Probe Temperature	250°F	250°F	250°F	250°F	250°F	250°F
Leak Rate	12.0"vac/0.00	12.0"vac/0.00	10.0"vac/0.00	6.0"vac/0.00	12.0"vac/0.00	10.0"vac/0.00

ET3102490

RUN NUMBER 0A - M0030 - R2

Date 11-6-92

Test Location Sawdust Dryer Outlet A

Meter Box I.D. 71-V12

Meter Box Calibration Factor 1.0009

INITIAL LEAK CHECK

Vacuum 15.0

Leak Rate mm Hg/minute 0.00

SAMPLE COLLECTION

	CARTRIDGE SET 1		CARTRIDGE SET 2		CARTRIDGE SET 3	
Tenax I.D.	114		162		165	
Charcoal I.D.	112		160		163	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	17:34	17:54	18:13	18:33	18:53	19:~~26~~ 32 pm
Meter Volume	1346.920	1366.027	1366.325	1385.456	1386.253	1407.161
Meter Temperature	51°F	53°F	51°F	53°F	52°F	50°F
Meter Pressure	1.0	1.0	1.0	1.0	1.0	1.0
System Vacuum	4.0	4.0	4.5	4.5	3.5	4.0
Condenser 1 Temp.	50°F	53°F	50°F	51°F	51°F	49°F
Condenser 2 Temp	52°F	51°F	52°F	53°F	52°F	52°F
Probe Temperature	250°F	250°F	250°F	250°F	250°F	250°F
Leak Rate	15.0 vac/0.00	12.0 vac/0.00	13.5 vac/0.00	15.0 vac/0.00	19.0 vac/0.00	18.0 vac/0.00

19:02 stop
19:26 start

21:02 stop
21:05 start

	CARTRIDGE SET 4		CARTRIDGE SET 5		CARTRIDGE SET 6	
Tenax I.D.	228		231		234	
Charcoal I.D.	226		229		232	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	20:10	20:30	20:46	21:09	21:22	21:42
Meter Volume	1412.750	1432.730	1433.390	1452.685	1453.620	1473.337
Meter Temperature	50°F	50°F	51°F	51°F	50°F	52°F
Meter Pressure	1.0	1.0	1.0	1.0	1.0	1.0
System Vacuum	3.0	3.0	3.0	4.0	4.0	4.0
Condenser 1 Temp.	52°F	51°F	49°F	50°F	49°F	51°F
Condenser 2 Temp.	53°F	52°F	52°F	51°F	52°F	52°F
Probe Temperature	250°F	250°F	250°F	250°F	250°F	250°F
Leak Rate	11.5 vac/0.00	8.0 vac/0.00	12.0 vac/0.00	11.0 vac/0.01	15.0 vac/0.00	11.0 vac/0.00

ETS102490

RUN NUMBER DA - VOST - R3

Date 7 November 92

Test Location Sawdust Dryer Outlet A

Meter Box I.D. 77-V12

Meter Box Calibration Factor 1.0009

INITIAL LEAK CHECK

Vacuum 10.0

Leak Rate mm Hg/minute 0.00

SAMPLE COLLECTION

	CARTRIDGE SET 1		CARTRIDGE SET 2		CARTRIDGE SET 3	
Tenax I.D.	117		180		183	
Charcoal I.D.	115		178		181	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	9:02	9:22	9:30	9:50	10:03	10:23
Meter Volume	1493.907	1513.240	1514.140	1533.300	1534.015	1553.415
Meter Temperature	47°F	50°F	51°F	54°F	54°F	57°F
Meter Pressure	1.0	1.0	1.0	1.0	1.0	1.0
System Vacuum	4.0	4.0	3.0	3.0	3.0	4.5
Condenser 1 Temp.	46°F	48°F	48°F	48°F	47°F	47°F
Condenser 2 Temp.	46°F	49°F	49°F	49°F	49°F	49°F
Probe Temperature	250°F	250°F	250°F	250°F	250°F	250°F
Leak Rate	10.0vac/0.00	6.0vac/0.00	11.0vac/0.0	4.0vac/0.0	19.0vac/0.00	21.0vac/0.00

	CARTRIDGE SET 4		CARTRIDGE SET 5		CARTRIDGE SET 6	
Tenax I.D.	255		258		261	
Charcoal I.D.	253		256		259	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	11:21	11:41	11:50	12:10	12:27	12:47
Meter Volume	1554.230	1573.550	1574.025	1593.957	1594.790	1615.038
Meter Temperature	53°F	55°F	55°F	57°F	57°F	59°F
Meter Pressure	1.0	1.0	1.0	1.0	1.0	1.0
System Vacuum	4.0	4.0	3.5	3.5	3.5	3.5
Condenser 1 Temp.	49°F	52°F	54°F	54°F	54°F	55°F
Condenser 2 Temp.	50°F	54°F	54°F	55°F	56°F	56°F
Probe Temperature	250°F	250°F	250°F	250°F	250°F	250°F
Leak Rate	20.5vac/0.00	10.5vac/0.00	20.0vac/0.00	11.5vac/0.00	20.0vac/0.00	20.0vac/0.00

ET5102490

F.6.3 M0030 RAW FIELD SAMPLING DATA - SAWDUST DRYER OUTLET B

RUN NUMBER OB-MC030-R1

Date 11-6-91

Test Location Sawdust Dryer Outlet B

Meter Box I.D. 71-VII

Meter Box Calibration Factor 1.0007

INITIAL LEAK CHECK

Vacuum 12.5

Leak Rate mm Hg/minute 0.00

SAMPLE COLLECTION

	CARTRIDGE SET 1		CARTRIDGE SET 2		CARTRIDGE SET 3	
Tenax I.D.	120		150		153	
Charcoal I.D.	118		148		151	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	11:47	12:06	12:28	12:48	13:49	14:09
Meter Volume	1028.390	1048.520	1048.900	1068.428	1069.070	1088.595
Meter Temperature	52°F	55°F	58°F	60°F	55°F	55°F
Meter Pressure	1.0	1.0	1.0	1.0	1.0	1.0
System Vacuum	2.5	2.5	4.0	4.0	5.0	5.0
Condenser 1 Temp.	52°F	43°F	42°F	46°F	52°F	53°F
Condenser 2 Temp.	50°F	40°F	41°F	46°F	51°F	53°F
Probe Temperature	250°F	250°F	250°F	250°F	250°F	250°F
Leak Rate	12.5"/0.00	20.0"/0.00	12.0"/0.00	5.0"/0.00	12.0"/0.00	16.0"/0.00

	CARTRIDGE SET 4		CARTRIDGE SET 5		CARTRIDGE SET 6	
Tenax I.D.	210		213		216	
Charcoal I.D.	208		211		214	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	14:30	14:50	15:00	15:20	16:17	16:37
Meter Volume	1089.190	1109.957	1110.423	1130.400	1131.030	1150.455
Meter Temperature	55°F	55°F	56°F	58°F	51°F	53°F
Meter Pressure	1.0	1.0	1.0	1.0	1.0	1.0
System Vacuum	4.0	4.0	3.7	3.7	5.0	6.0
Condenser 1 Temp.	53°F	53°F	53°F	52°F	52°F	53°F
Condenser 2 Temp.	52°F	55°F	54°F	54°F	53°F	53°F
Probe Temperature	250°F	250°F	250°F	250°F	250°F	250°F
Leak Rate	17.0"/0.00	15.0"/0.00	15.0"/0.00	13.5"/0.00	12.0"/0.00	12.0"/0.00

ETS102490

RUN NUMBER OC - M0030 - R2

Date 11-6-02

Test Location Sawdust Dryer Outlet B

Meter Box I.D. 71-VII

Meter Box Calibration Factor 1.0000

INITIAL LEAK CHECK

Vacuum 16.0

Leak Rate mm Hg/minute 0.00

SAMPLE COLLECTION

	CARTRIDGE SET 1		CARTRIDGE SET 2		CARTRIDGE SET 3	
Tenax I.D.	123		168		171	
Charcoal I.D.	121		166		169	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	17:32	17:52	18:08	18:28	18:53	19:37
Meter Volume	1152.545	1172.150	1172.916	1193.193	1193.735	1213.548
Meter Temperature	52°F	51°F	51°F	52°F	51°F	48°F
Meter Pressure	1.0	1.0	1.0	1.0	1.0	1.0
System Vacuum	3.5	3.5	3.9	4.0	5.0	5.0
Condenser 1 Temp.	51°F	51°F	52°F	52°F	51°F	44°F
Condenser 2 Temp	52°F	52°F	51°F	51°F	51°F	50°F
Probe Temperature	250°F	250°F	250°F	250°F	250°F	250°F
Leak Rate	16.0 vac/0.00	10.0 vac/0.00	18.0 vac/0.00	12.5 vac/0.00	18.0 vac/0.00	17.5 vac/0.00

	CARTRIDGE SET 4		CARTRIDGE SET 5		CARTRIDGE SET 6	
Tenax I.D.	237		240		243	
Charcoal I.D.	235		238		241	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	20:08	20:28	20:43	21:03	21:26	21:46
Meter Volume	1213.875	1234.620	1241.190	1261.210	1261.560	1280.690
Meter Temperature	47°F	47°F	49°F	50°F	48°F	49°F
Meter Pressure	1.0	1.0	1.0	1.0	1.0	1.0
System Vacuum	3.0	3.0	4.0	4.0	5.0	5.0
Condenser 1 Temp.	41°F	41°F	40°F	40°F	40°F	42°F
Condenser 2 Temp.	50°F	50°F	49°F	49°F	49°F	47°F
Probe Temperature	250°F	250°F	250°F	250°F	250°F	250°F
Leak Rate	12.0 vac/0.00	10.0 vac/0.00	12.0 vac/0.00	15.0 vac/0.00	11.5 vac/0.00	12.0 vac/0.00

ET5102490

RUN NUMBER 06 - VOST - R3

Date 7 November

Test Location Sawdust Dryer Outlet B

Meter Box I.D. 71 - V11

Meter Box Calibration Factor 1.0007

INITIAL LEAK CHECK

Vacuum 12.0

Leak Rate mm Hg/minute 0.00

SAMPLE COLLECTION

	CARTRIDGE SET 1		CARTRIDGE SET 2		CARTRIDGE SET 3	
Tenax I.D.	126		186		189	
Charcoal I.D.	124		184		187	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	9:05	9.25	9.44	10:04	10:11	10:31
Meter Volume	1282.902	1302.729	1302.985	1323.154	1323.775	1343.695
Meter Temperature	44°F	48°F	49°F	53°F	53°F	55°F
Meter Pressure	1.0	1.0	1.0	1.0	1.0	1.0
System Vacuum	3.7	3.7	5.0	5.0	4.0	4.0
Condenser 1 Temp.	50°F	47°F	46°F	46°F	45°F	46°F
Condenser 2 Temp.	51°F	52°F	51°F	50°F	49°F	55°F
Probe Temperature	250°F	250°F	250°F	250°F	250°F	250°F
Leak Rate	12.0 vac/0.00	7.0 vac/0.00	10.5 vac/0.00	7.5 vac/0.00	21.0 vac/0.00	10.0 vac/0.00

	CARTRIDGE SET 4		CARTRIDGE SET 5		CARTRIDGE SET 6	
Tenax I.D.	264		267		270	
Charcoal I.D.	262		265		268	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	11:14	11:34	11:43	12:03	12:09	12:45
Meter Volume	1344.479	1364.317	1365.081	1385.395	1386.410	1406.280
Meter Temperature	54°F	55°F	55°F	56°F	55°F	57°F
Meter Pressure	1.0	1.0	1.0	1.0	1.0	1.0
System Vacuum	4.0	4.5	3.0	3.5	3.5	3.5
Condenser 1 Temp.	48°F	48°F	46°F	49°F	49°F	46°F
Condenser 2 Temp.	54°F	55°F	53°F	55°F	54°F	52°F
Probe Temperature	250°F	250°F	250°F	250°F	250°F	250°F
Leak Rate	20.0 vac/0.00	9.0 vac/0.00	16.5 vac/0.00	10.0 vac/0.00	18.0 vac/0.00	3.5 vac/0.00

12:26*
12:42*

ET3102490

F.6.4 M0030 RAW FIELD SAMPLING DATA - AUDIT SAMPLE CYLINDER 539

RUN NUMBER Cylinder 539

Date 11/12/92

Test Location ETS

Meter Box I.D. 71-VII

Meter Box Calibration Factor 1.0007

B.P. 29.74

INITIAL LEAK CHECK

Vacuum 15

Leak Rate mm Hg/minute 0

SAMPLE COLLECTION

	CARTRIDGE SET 1		CARTRIDGE SET 2		CARTRIDGE SET 3	
Tenax I.D.	539 A		539 B		539 C	
Charcoal I.D.	539 A		539 B		539 C	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	15:24	15:34	15:50	16:00	16:10	16:20
Meter Volume	1451.1	1461.48	1461.48	1474.35	1474.35	1484.78
Meter Temperature	81	81	82	82	83	83
Meter Pressure	1.2	1.2	1.2	1.2	1.5	2.4
System Vacuum	2	2	3	3	2.5	2
Condenser 1 Temp.						
Condenser 2 Temp						
Probe Temperature						
Leak Rate						

	CARTRIDGE SET 4		CARTRIDGE SET 5		CARTRIDGE SET 6	
Tenax I.D.						
Charcoal I.D.						
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time						
Meter Volume						
Meter Temperature						
Meter Pressure						
System Vacuum						
Condenser 1 Temp.						
Condenser 2 Temp.						
Probe Temperature						
Leak Rate						

ETS102480

F.6.5 M0030 RAW FIELD SAMPLING DATA - AUDIT SAMPLE CYLINDER 540

RUN NUMBER Cylinder 540

Date 11/12/92

Test Location ETS

Meter Box I.D. 71-VII

Meter Box Calibration Factor 1.0007

B.P. 28.74

INITIAL LEAK CHECK

Vacuum 15

Leak Rate mm Hg/minute 0

SAMPLE COLLECTION

	CARTRIDGE SET 1		CARTRIDGE SET 2		CARTRIDGE SET 3	
Tenax I.D.	540 A		540 B		540 C	
Charcoal I.D.	540 A		540 B		540 C	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time	13:31	13:46	14:04	14:14	14:36	14:46
Meter Volume	1412.75	1424.39	1426.2	1437.37	1438.8	1450.4
Meter Temperature	73	73	73	80	82	82
Meter Pressure	1.5	1.5	1.5	1.5	1.5	1.5
System Vacuum	3	3	2	2	2.5	2.5
Condenser 1 Temp.						
Condenser 2 Temp.						
Probe Temperature						
Leak Rate						

	CARTRIDGE SET 4		CARTRIDGE SET 5		CARTRIDGE SET 6	
Tenax I.D.						
Charcoal I.D.						
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
Time						
Meter Volume						
Meter Temperature						
Meter Pressure						
System Vacuum						
Condenser 1 Temp.						
Condenser 2 Temp.						
Probe Temperature						
Leak Rate						

ETS102480

F.7 RAW FIELD SAMPLING DATA FOR SEMIVOLATILE ORGANICS TESTING

F.7.1 M0010 RAW FIELD SAMPLING DATA - SAWDUST DRYER INLET

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Pine Hill Brick TEST LOCATION SAWDUST [illegible] INLET DATE NOV-6-92

START TIME 1137 POLLUTANT ______ RUN I.D. IN -M a10-R 1

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A 1	0	1137		485	.34	.65	427.342	65	65	280	61	5.0
2	7.5	1143 } 1147 }	POWER LOSS	493	.37	.70	431.5	60	59	252	55	5.0
3	15			487	.52	1.00	435.2	63	59	267	54	8.0
4	22.5			463	.51	1.00	439.6	67	60	264	54	8.0
5	30			455	.45	.90	444.1	67	61	262	54	7.0
6	37.5		-.18	468	.54	1.06	448.4	67	60	266	55	8.0
7	45			494	.68	1.29	452.9	67	60	268	54	9.0
8	52.5			528	.77	1.41	457.5	70	61	267	54	10.0
9	60			532	.78	1.43	462.8	71	62	267	55	10.0
10	67.5			542	.70	1.27	467.9	70	62	263	56	9.0
11	75			546	.65	1.17	472.7	70	63	266	56	9.0
12	82.5			547	.60	1.08	477.6	70	63	266	56	9.0
B	90	13:11					481.852					
1	90	1349		487	.52	1.00	481.852	59	59	271	61	9.0
2	97.5			489	.50	.96	486.4	60	59	268	51	8.0
3	105			484	.50	.96	490.6	64	59	268	51	8.0
4	112.5			481	.46	.89	495.0	65	59	263	50	8.0
5	120			467	.47	.92	499.1	66	59	268	49	9.0
6	127.5			474	.40	.78	503.2	66	59	266	52	11.0
7	135		-.16	508	.45	.85	507.1	66	60	266	53	11.0
8	142.5			471	.39	.76	511.1	66	60	263	53	9.0
9	150			522	.41	.76	514.9	65	59	265	53	8.0
10	157.5			533	.54	.99	518.8	66	60	265	54	8.0
11	165			547	.48	.86	523.1	66	60	266	54	7.0
12	172.5			552	.60	1.08	527.1	69	61	267	56	8.0
							531.653					

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	900	Quartz filter
F2A	901	FH Acetone/MeCl2
F3	902	FH Toluene
F4A	903	Impl
F4B	904	Impl. Tol. Rinse
F5A	905	Silica Gel
F5B	906	Silica Gel
F6	907	XAD Trap

LEAK CHECK

Vacuum	15"	12"			
Rate	.010	.011			

IMPINGER VOLUMES

	Initial	Final
#1	0	101
#2	100	101
#3	100	91
#4	0	0
#5	SG	
#6		

NOZZLE SIZE	.25
METER BOX I.D.	#5
GAMMA	1.0069
DELTA H@	1.6944
BAR. PRESS.	29.76
FILTER I.D.	
OPERATOR	RICHARDSON - PARKER

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Pine Hall Brick TEST LOCATION Sawdust Oven Inlet DATE Nov. 6-92

START TIME 1742 POLLUTANT ______ RUN I.D. IN -MOD-R-2

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A1	0	1742		474	.38	.74	533.541	50	50	271	63	4.0
2	7.5			479	.40	.77	537.3	54	51	274	50	4.0
3	15.0			438	.40	.81	541.0	58	51	274	46	4.0
4	22.5		-.19	490	.42	.80	544.8	59	52	274	45	5.0
5	30.0			486	.44	.84	548.7	60	52	274	44	5.0
6	37.5			479	.45	.87	552.7	61	53	274	44	5.5
7	45.0			494	.48	.91	556.7	61	53	274	43	6.0
8	52.5			488	.53	1.01	560.9	61	53	273	43	7.0
9	60.0			521	.61	1.13	565.4	62	54	273	44	~~6.5~~ 7.0
10	67.5			528	.68	1.25	570.0	62	54	273	44	7.0
11	75.0			520	.72	1.33	574.8	61	53	272	47	8.0
12	82.5			510	.81	1.52	579.7	61	53	272	45	10.0
B	90						584.653					
1	90	1932		485	.36	.69	584.653	48	48	277	58	5.0
2	97.5			485	.38	.73	588.4	52	49	275	46	5.0
3	105.		-.17	478	.45	.87	592.1	54	49	275	46	5.5
4	112.5			471	.54	1.05	596.0	55	49	272	46	6.5
5	120.0			460	.61	1.20	600.5	57	49	272	47	5.5
6	127.5			466	.57	1.12	605.3	58	50	272	47	6.5
7	135.0			490	.60	1.15	609.9	59	50	272	48	6.5
8	142.5			495	.68	1.29	614.5	60	51	274	49	7.0
9	150.0			522	.72	1.33	619.2	60	51	271	49	7.5
10	157.5			536	.82	1.49	624.2	61	51	272	50	8.0
11	165.0			549	.61	1.10	629.3	61	52	273	51	8.0
12	172.5			532	.54	.99	634.3	61	52	273	52	6.0
							638.699					

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	909	Quartz filter
F2A	910	FH Acetone/CH_2Cl_2
F3	911	FH Toluene
F4A	912	Imp.
F4B	913	Imp. Tol. Rinse
F5A	914	Silica Gel
F5B	915	Silica Gel
F6	916	XAD Trap

LEAK CHECK

Vacuum	13"	12"			
Rate	.015	.012			

IMPINGER VOLUMES

	Initial	Final
#1	0	75
#2	100	98
#3	100	100
#4	0	1
#5		
#6		

NOZZLE SIZE	.25
METER BOX I.D.	#5
GAMMA	1.0069
DELTA H@	1.6944
BAR. PRESS.	29.76
FILTER I.D.	
OPERATOR	Richardson

PARKER

CARROLL

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Pine Hall Brick TEST LOCATION SAWDUST DRYER INLET DATE Nov. 7-92

START TIME 9:02 POLLUTANT RUN I.D. IN -M0010-R-3

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A1	0	9:02		488	.37	.71	650.246	48	45	271	53	5.0
2	7.5			488	.35	.67	653.9	48	45	267	45	5.5
3	15.0			487	.34	.65	657.3	53	46	268	43	5.5
4	22.5		.19	487	.40	.77	659.7	55	48	268	44	6.0 ewR
5	30.0			473	.54	1.05	663.5	57	49	267	44	~~6.5~~ 9.0
6	37.5			471	.58	1.13	669.5	61	52	265	45	8.0
7	45.0			488	.64	1.23	674.0	63	53	265	45	9.0
8	52.5			478	.55	1.06	678.7	64	54	265	44	8.5
9	60.0			522	.68	1.26	683.3	65	56	266	47	8.5
10	67.5			537	.72	1.31	688.0	66	57	265	46	10.0
11	75.0			537	.75	1.36	693.0	66	57	265	46	10.0
12	82.5			548	.55	.99	697.9	67	58	266	47	8.0
B	90						702.324					
1	90	11:14		484	.50	.96	702.324	59	58	268	47	8.0
2	97.5	12:26 STOP 12:55 START		483	.51	.98	706.4	60	58	267	42	8.0
3	~~8~~105			485	.54	1.04	710.8	64	58	266	43	8.5
4	112.5		.21	484	.58	1.11	715.2	66	59	267	44	9.0
5	120			480	.59	1.14	719.8	66	59	265	46	9.0
6	127.5			466	.63	1.23	724.4	66	59	266	46	9.0
7	135.0			486	.71	1.36	729.2	67	59	266	46	10.0
8	142.5			474	.74	1.44	733.7	69	60	265	47	10.0
9	150.0			513	.78	1.45	739.1	69	61	265	48	10.0
10	157.5			527	.80	1.47	744.2	70	61	265	48	10.0
11	165.0			538	.62	1.13	749.3	58	58	266	58	10.0
12	172.5	13:12		541	.65	1.18	753.9	60	57	264	49	
							759.512					

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	918	Quartz Filter
F2A	919	FH Acetone/MeCl2
F3	920	FH Toluene
F4A	921	Impl
F4B	922	Impl Tol. Rinse
F5A	923	Silica Gel
F5B	924	Silica Gel
F6	925	XAD Trap

LEAK CHECK

Vacuum	11"				
Rate	.010				

IMPINGER VOLUMES

	Initial	Final
#1	0	100
#2	100	103
#3	100	104
#4	0	2
#5	5G	
#6		

NOZZLE SIZE	.25
METER BOX I.D.	#5
GAMMA	1.0069
DELTA H@	1.6944
BAR. PRESS.	29.92
FILTER I.D.	
OPERATOR	RICHARDSON - PARKER CARROLL

1226 STOP FOR ELECTRICAL PROBLEMS ON OUTLET!

F.7.2 M0010 RAW FIELD SAMPLING DATA - SAWDUST DRYER OUTLET A

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

FACILITY Pine Hall Brick TEST LOCATION Outlet A DATE 11-6-92

START TIME ________ POLLUTANT Semi-volatile organics RUN I.D. OA -Mowo -R 1

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A 1	0	11.43 / 11.47	Power Lose	185	.55	1.55	120.668	68	63	251	48	8.5
2	7.5			180	.53	1.50	125.8	58	54	241	39	9.0
3	15			181	.52	1.48	130.5	63	56	243	41	9.0
4	22.5			179	.56	1.60	135.9	63	56	241	41	9.0
5	30			178	.54	1.51	141.1	65	57	243	42	9.0
6	37.5			178	.50	1.40	146.4	66	58	240	41	9.0
7	45			181	.45	1.28	151.2	65	58	242	41	9.0
8	52.5		-10.5	191	.43	1.20	156.4	65	58	244	41	9.0
9	60			193	.47	1.35	161.3	67	59	245	41	9.0
10	67.5			195	.50	1.40	166.0	67	60	243	42	9.0
11	75			198	.52	1.48	171.0	70	62	245	42	9.0
12	82.5			196	.52	1.48	176.1	68	60	243	43	9.0
	90	13:11					181.276					
B 1	90	13:49		185	.44	1.25	181.675	56	55	238	48	9.0
2	97.5			181	.44	1.25	186.6	63	56	241	41	9.0
3	105			179	.46	1.30	191.0	65	57	247	42	9.0
4	112.5			180	.46	1.30	196.4	64	56	252	43	9.0
5	120			183	.46	1.30	201.1	64	56	253	43	9.0
6	127.5		-10.5	178	.43	1.20	206.1	65	57	256	44	9.0
7	135			180	.42	1.18	211.2	66	58	255	43	9.0
8	142.5			190	.51	1.40	215.6	65	57	258	43	9.0
9	150			190	.52	1.40	220.8	66	58	258	46	9.0
10	157.5			192	.54	1.55	225.9	65	58	254	46	10.0
11	165			191	.56	1.60	231.2	65	58	258	47	10.0
12	172.5			192	.57	1.62	236.6	66	57	255	47	10.0

241.340

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
927	F1	Quartz filter
928	F2A	FH Acetone/MeCl
929	F3	FH Toluene
930	F4A	Imp-1
931	F4B	Imp. 1 Tol-Rinse
932	F5A	Silica Gel
933	F5B	Silica Gel
934	F6	XAD Trap

LEAK CHECK

Vacuum	17				
Rate	.001				

ORSAT BAG # 92-655-2103

IMPINGER VOLUMES

	Initial	Final
#1	0	252
#2	100	100
#3	100	97
#4	0	0
#5	56	
#6		

NOZZLE SIZE	.25
METER BOX I.D.	6
GAMMA	0.9925
DELTA H@	1.7326
BAR. PRESS.	29.76
FILTER I.D.	
OPERATOR	DM

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Pine Hall Brk TEST LOCATION Outlet 4 DATE 11-6-92

START TIME ______ POLLUTANT Semi Vol. Org. RUN I.D. CA-MSVO-R2

	Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
	A1	0	12.32		179	.49	1.40	248.020	50	49	278	44	8.0
	2	7.5			177	.47	1.35	253.1	56	50	260	51	8.5
	3	15			178	.46	1.30	257.8	60	52	255	54	8.5
	4	22.5			182	.48	1.38	262.6	60	52	251	56	9.0
	5	30			183	.46	1.30	267.5	62	53	248	49	9.0
	6	37.5			183	.43	1.25	272.6	63	54	241	43	9.0
	7	45			184	.50	1.40	277.2	63	55	239	42	9.0
	8	52.5			191	.50	1.40	281.7	63	55	245	43	9.0
	9	60			192	.52	1.48	287.1	64	55	245	42	9.0
	10	67.5		70.5	186	.55	1.55	292.2	64	55	246	42	9.0
	11	75			189	.56	1.60	297.3	64	55	254	43	9.0
	12	82.5			186	.54	1.55	302.7	64	55	255	42	9.0
		90						307.080					
	B1	90	1432		180	.52	1.48	308.687	55	53	258	43	10.0
	2	97.5			191	.52	1.48	313.8	60	53	254	42	10.0
	3	~~103.5~~ 105.5		-10.5	186	.54	1.55	318.1	63	54	248	46	10.0
112.5	4	~~110~~			188	.58	1.61	324.9	63	54	257	48	10.0
120	5	~~117.5~~			190	.52	1.48	330.2	63	54	254	50	10.0
127.5	6	~~125~~			185	.49	1.40	335.6	63	55	250	52	10.0
135	7	~~132.5~~			187	.44	1.25	340.3	65	56	251	53	10.0
142.5	8	~~140~~			190	.43	1.25	345.8	64	55	252	54	10.5
150	9	~~147.5~~			191	.45	1.30	350.6	63	55	254	54	10.5
157.5	10	~~155~~			183	.47	1.35	355.5	60	53	248	53	10.5
165	11	~~162.5~~			184	.48	1.38	361.0	60	53	250	54	10.5
	12	172.5			186	.49	1.40	366.2	60	53	251	53	10.5

370.180

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	936	Quartz filter
F2A	937	FH Acetone/MeCl2
F3	938	FH Toluene
F4A	939	Imp-1
F4B	940	Imp1 Tol-Rinse
F5A	941	Silica Gel
F5B	942	Silica Gel
F6	943	XAD Trap

LEAK CHECK

Vacuum	15				
Rate	.000				

BAG # 2105

IMPINGER VOLUMES

	Initial	Final
#1	0	252
#2	100	98
#3	100	97
#4	0	1
#5		
#6		

NOZZLE SIZE	.25
METER BOX I.D.	6
GAMMA	0.9915
DELTA H@	1.7326
BAR. PRESS.	29.74
FILTER I.D.	~~29.76~~
OPERATOR	DM

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Pine Hall Brick TEST LOCATION Outlet A DATE 11-7-92

START TIME ________ POLLUTANT SemiVol Org. RUN I.D. OA-MSVO-R3

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A 1	0	9:02		175	.48	1.35	386.995	54	51	264	47	8.5
2	7.5			177	.47	1.30	391.6	54	51	267	48	9.5
3	15			180	.45	1.30	396.3	63	54	266	49	9.5
4	22.5			186	.55	1.55	400.7	61	53	258	47	10.0
5	30			187	.51	1.50	406.0	62	54	263	61	12.0
6	37.5		-10.5	185	.51	1.50	411.1	63	54	263	63	12.0
7	45			188	.50	1.48	416.2	61	53	252	64	12.0
8	52.5			187	.45	1.30	421.4	62	54	258	55	12.5
9	60			185	.46	1.30	426.5	63	53	257	54	13.0
10	67.5			187	.48	1.35	431.6	64	56	258	49	13.0
11	75			191	.52	1.52	436.6	71	60	259	47	13.0
12	82.5			191	.52	1.52	441.6	63	55	252	47	13.5
	90						446.885					
B 1	90	11:14		180	.45	1.30	448.478	53	51	243	46	12.5
2	97.5			182	.46	1.30	453.3	59	53	245	47	12.5
3	105			183	.45	1.30	458.2	63	55	244	46	12.5
4	112.5			187	.48	1.35	463.1	63	56	251	46	13
5	120			190	.49	1.40	467.0	63	56	258	46	13
6	127.5			190	.46	1.30	472.8	63	56	256	56	13
7	135		-10.5	188	.53	1.58	477.7	64	56	251	56	13
8	142.5			187	.57	1.65	482.8	61	55	247	54	14
9	150			189	.60	1.70	488.4	63	57	249	53	15
10	157.5	12:26	POWER	190	.60	1.70	494.0	63	57	252	53	15
11	165	12:55	FAILURE	189	.55	1.55	499.7	61	55	258	55	15
12	172.5			191	.57	1.65	505.1	61	54	250	54	15
							510.487					

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	945	Quartz filter
F2A	946	FH Acetone/MeCl2
F3	947	FH Toluene
F4A	948	Imp-1
F4B	949	Imp-1 Tol Rinse
F5A	950	Silica Gel
F5B	951	Silica Gel
F6	952	XAD Trap

LEAK CHECK

Vacuum	15				
Rate	.005				

SWITCH BACK H
2112

IMPINGER VOLUMES

	Initial	Final
#1	0	221
#2	100	159
#3	100	34
#4	0	1
#5	SG	
#6		

NOZZLE SIZE	.25
METER BOX I.D.	6
GAMMA	.9915
DELTA H@	1.7320
BAR. PRESS.	29.92
FILTER I.D.	
OPERATOR	DM

F.7.3 M0010 RAW FIELD SAMPLING DATA - SAWDUST DRYER OUTLET B

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

FACILITY Pine Hall Brick TEST LOCATION Outlet B DATE 11-06-92

START TIME 11:37 POLLUTANT Semi-volatile organics RUN I.D. 0B-M0010-R1

11:43 + 0
11:47 Power loss

	Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
	1	0	11:43		177	.37	1.04	360.718	59	58	252	52	7.3
	2	7.5	11:47		177	.34	.96	365.0	59	57	235	56	6.8
	3	15			179	.34	.96	369.1	62	58	236	58	6.8
	4	22.5			180	.35	.98	373.3	64	59	238	60	6.8
	5	30			181	.35	.98	377.4	67	60	240	58	7.0
	6	375			183	.37	1.03	381.4	68	61	240	56	10.0
	7	45			184	.39	1.09	385.8	69	61	238	56	10.0
	8	52.5		-9.6	184	.46	[illegible]	390.4	71	62	250	57	10.5
	9	60			183	.54	1.54	395.3	73	62	244	57	11.3
	10	67.5			184	.62	1.73	400.5	72	64	246	57	11.8
	11	75			184	.62	1.73	406.2	72	64	243	54	11.8
	12	82.5			183	.67	1.87	411.8	71	65	247	54	12.0
		90	13:11					417.551					
13	1	90	13:49		178	.30	.84	419.407	63	61	243	56	9.0
	2	97.5			178	.30	.84	423.4	64	63	240	54	9.0
	3	105			179	.31	.87	427.3	68	63	241	53	9.0
16	4	112.5		-9.6	181	.30	.84	431.2	70	63	242	52	9.0
	5	120			182	.32	.89	435.3	71	63	242	51	8.7
	6	127.5			184	.34	.95	439.3	71	64	242	49	9.0
19	7	135			185	.39	1.08	443.4	72	64	241	46	10.0
	8	142.5			184	.46	1.28	447.8	73	65	240	46	10.5
	9	150			185	.51	1.42	452.6	73	65	240	43	11.2
	10	157.5			185	.57	1.59	457.6	73	65	239	39	11.8
22	11	165			183	.55	1.54	463.0	72	65	239	36	11.5
	12	172.5			182	.55	1.54	468.0	73	66	240	40	11.5

LEAK CHECK 473.187

Vacuum	18"				
Rate	.012				

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	954	Quartz filter
F2A	955	FH Acetone/MeCl2
F3	956	FH Toluene
F4A	957	Imp.
F4B	958	Imp./Tol. Rinse
F5A	959	Silica Gel
F5B	960	Silica Gel
F6	961	XAD Trap

IMPINGER VOLUMES

	Initial	Final
#1	0	129
#2	100	98
#3	100	95
#4	0	1
#5	SG	
#6		

NOZZLE SIZE	0.250
METER BOX I.D.	#7
GAMMA	1.0082
DELTA H@	1.7651
BAR. PRESS.	29.76
FILTER I.D.	
OPERATOR	C. Ferguson

Bay 92-655-2100

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

FACILITY Pine Hall Brick TEST LOCATION Outlet B DATE 11-06-92

START TIME 17:32 POLLUTANT Semi vost organics RUN I.D. OR-M0010-R2

	Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A	1	0	17:32		178	.35	.98	483.949	56	54	242	45	5.0
	2	7.5			178	.33	.93	488.1	58	55	244	50	4.8
	3	15			180	.36	1.01	492.2	62	56	245	54	5.2
	4	22.5		-9.6	181	.36	1.01	496.6	65	57	245	59	5.8
	5	30			181	.34	.95	500.7	66	58	243	58	6
	6	37.5			183	.36	1.00	504.8	66	58	244	53	7
	7	45			185	.47	1.31	509.3	68	60	244	49	8
	8	52.5			184	.53	1.48	514.1	69	60	244	48	10
	9	60			184	.54	1.51	519.3	68	60	246	50	10.2
	10	67.5			183	.55	1.54	525.5	68	61	243	52	10.5
	11	75			182	.58	1.62	530.2	71	62	245	54	10.7
	12	82.5			182	.57	1.59	535.6	71	62	244	56	10.5
		90	19:02					540.964					
B	1	90	19:32		177	.32	.90	541.999	59	58	242	42	2.0
14	2	97.5			178	.29	.81	546.0	60	59	243	43	6.0
	3	105			181	.31	.87	549.8	62	59	244	50	7.0
	4	112.5			183	.37	1.03	553.9	64	58	244	53	7.5
17	5	120		-9.6	184	.30	.83	558.3	66	59	244	57	6.2
	6	127.5			184	.35	.97	562.2	66	59	244	56	7.0
	7	135			185	.44	1.22	566.3	67	59	245	58	8.5
20	8	142.5			185	.53	1.48	571.1	68	60	246	59	10.0
	9	150			184	.60	1.68	576.2	69	61	245	62	10.2
	10	157.5			184	.64	1.79	581.6	70	61	244	62	10.8
23	11	165			185	.65	1.81	587.1	70	61	246	64	11.0
	12	172.5			184	.64	1.79	592.6	69	61	242	63	10.8

CHAIN OF CUSTODY INFORMATION

	Container Number	Sample I.D.	Description
F1	~~963~~	963	Quartz Filter
F2A	~~96~~	964	FH Acetone/MeCl2
	F3	965	FH Toluene
	F4A	966	Imp.
	F4B	967	Imp. Tol. Rinse
	F5A	968	Silica Gel
	F5B	969	Silica Gel
	F6	970	XAD Trap

LEAK CHECK 598.282

Vacuum	15"			
Rate	.006			

IMPINGER VOLUMES

	Initial	Final
#1	0	183
#2	100	99
#3	100	94
#4	0	2
#5		
#6		

NOZZLE SIZE	0.250
METER BOX I.D.	#7
GAMMA	1.0082
DELTA H@	1.7651
BAR. PRESS.	29.76
FILTER I.D.	
OPERATOR	C. Ferguson

Bus 2102

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

FACILITY Pine Hall Brick TEST LOCATION Outlet B DATE 11-07-92

START TIME 9:02 POLLUTANT Semi-vol. Organics RUN I.D. OB -Mocro-R3

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
B 1	0	9:02		176	.27	.76	602.471	51	49	242	46	8
2	7.5			177	.28	.79	606.1	53	51	245	45	8
3	15			180	.30	.84	610.1	58	52	241	44	8.2
4	22.5			181	.30	.84	613.7	61	54	239	43	8.2
5	30			183	.30	.84	617.5	63	54	239	42	8.2
6	37.5		-9.7	184	.31	.86	621.5	64	56	240	42	8.5
7	45			186	.40	1.11	625.4	66	57	237	42	10.0
8	52.5			185	.47	1.31	629.9	67	58	238	41	10.8
9	60			186	.47	1.31	634.7	67	58	238	37	10.5
10	67.5			185	.48	1.34	639.7	66	60	238	37	21.3
11	75			184	.51	1.43	644.5	66	59	239	35	21.5
12	82.5			184	.53	1.48	649.5	65	60	239	36	21.8
	90	10:32					654.481					
A 1	90	11:14		178	.37	1.04	656.397	60	58	240	54	9.0
2	97.5			180	.27	.75	660.7	63	59	237	52	8.0
3	105			179	.28	.78	664.4	66	60	251	50	8.2
4	112.5			180	.27	.75	668.2	69	61	251	50	8.0
5	120			182	.35	.98	671.9	69	61	252	48	9.3
6	127.5			183	.33	.92	676.3	69	61	247	45	8.8
7	135		-9.8	184	.37	1.03	680.4	69	62	251	40	9.3
8	142.5			185	.43	1.20	684.8	70	62	254	40	10.0
9	150			185	.45	1.25	689.6	69	62	252	38	10.2
10	157.5			183	.47	1.31	694.4	69	62	255	38	10.5
11	165	12:26 12:55		183	.50	1.40	699.5	53	49	255	42	11.0
12	172.5			182	.58	1.62	704.5	52	50	255	35	11.8
							711.498					

Changed filter and trap

12:26 ... Electrical power problem ... 12:55 restart

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	972/1008	Quartz filter
F2A	973	FH Acetone/MeCl
F3	974	FH Toluene
F4A	975/1011	Imp. 1
F4B	976	Imp. Tol. Rinse
F5A	977	Silica Gel
F5B	978	Silica Gel
F6	979/1015	XAD Trap

LEAK CHECK

Vacuum		22"	13"		
Rate	~~.22~~	.003	.002		

IMPINGER VOLUMES

	Initial	Final
#1	0	146
#2	100	100
#3	100	106
#4	0	3
#5	SG	
#6		

NOZZLE SIZE	0.250
METER BOX I.D.	A7
GAMMA	1.0082
DELTA H@	1.7651
BAR. PRESS.	29.92
FILTER I.D.	
OPERATOR	C. Ferguson

Bag # 92-655 2101

F.8 RAW FIELD SAMPLING DATA FOR TOTAL HYDROCARBONS TESTING

F.8.1 M25A RAW FIELD SAMPLING DATA - SAWDUST DRYER INLET

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 1

Starting
11-06-92

Time	Inlet THC ppmwv
11:45	4.97
11:46	3.96
11:47	3.53
11:48	3.73
11:49	4.00
11:50	4.18
11:51	4.23
11:52	4.22
11:53	4.18
11:54	4.24
11:55	4.25
11:56	4.30
11:57	4.35
11:58	4.39
11:59	4.39
12:00	4.35
12:01	4.46
12:02	4.43
12:03	4.61
12:04	4.63
12:05	4.83
12:06	5.00
12:07	4.70
12:08	4.67
12:09	4.57
12:10	4.57
12:11	4.55
12:12	4.52
12:13	4.52
12:14	4.51
12:15	4.38
12:16	4.36
12:17	4.45
12:18	4.47
12:19	4.45
12:20	4.39
12:21	4.35
12:22	4.38
12:23	4.36

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 1
(continued)

Starting
11-06-92

Time	Inlet THC ppmwv
12:24	4.25
12:25	4.29
12:26	4.33
12:27	4.29
12:28	4.26
12:29	4.28
12:30	4.25
12:31	4.32
12:32	4.29
12:33	4.40
12:34	4.38
12:35	4.34
12:36	4.31
12:37	4.21
12:38	4.23
12:39	4.28
12:40	4.33
12:41	4.42
12:42	4.42
12:43	4.39
12:44	4.32
12:45	4.29
12:46	4.41
12:47	4.34
12:48	4.31
12:49	4.30
12:50	4.28
12:51	4.23
12:52	4.22
12:53	4.23
12:54	4.24
12:55	4.20
12:56	4.18
12:57	4.08
12:58	4.08
12:59	4.04
13:00	4.04
13:01	4.12
13:02	4.07

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 1
(continued)

Starting
11-06-92

Time	Inlet THC ppmwv
13:03	4.08
13:04	4.18
13:05	4.20
13:06	4.20
13:07	4.18
13:08	4.22
13:09	4.27
13:10	4.25
13:11	4.25
13:12	4.26P
13:13	4.24P
13:14	4.27P
13:15	4.29P
13:16	4.26P
13:17	4.29P
13:18	4.20P
13:19	4.23P
13:20	4.24P
13:21	4.19P
13:22	4.27P
13:23	4.29P
13:24	4.31P
13:25	4.29P
13:26	4.23P
13:27	4.25P
13:28	4.28P
13:29	4.22P
13:30	4.24P
13:31	4.23P
13:32	4.17P
13:33	4.23P
13:34	4.18P
13:35	4.19P
13:36	4.11P
13:37	4.14P
13:38	4.10P
13:39	4.12P
13:40	4.13P
13:41	4.15P

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 1
(continued)

Starting
11-06-92

Time	Inlet THC ppmwv
13:42	4.09P
13:43	4.15P
13:44	4.12P
13:45	4.11P
13:46	4.12P
13:47	4.09P
13:48	4.12P
13:49	4.14P
13:50	4.16
13:51	4.15
13:52	4.09
13:53	4.09
13:54	4.03
13:55	4.03
13:56	4.01
13:57	4.00
13:58	3.97
13:59	3.99
14:00	3.96
14:01	3.92
14:02	4.00
14:03	3.92
14:04	3.89
14:05	3.92
14:06	3.92
14:07	3.92
14:08	3.92
14:09	3.85
14:10	3.86
14:11	3.85
14:12	3.86
14:13	3.87
14:14	3.89
14:15	3.82
14:16	3.87
14:17	3.88
14:18	3.87
14:19	3.96
14:20	3.88

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 1
(continued)

Starting
11-06-92

Time	Inlet THC ppmwv
14:21	3.85
14:22	3.88
14:23	3.87
14:24	3.81
14:25	3.85
14:26	3.84
14:27	3.82
14:28	3.84
14:29	3.81
14:30	3.76
14:31	3.76
14:32	3.80
14:33	3.71
14:34	3.74
14:35	3.66
14:36	3.67
14:37	3.64
14:38	3.61
14:39	3.52
14:40	3.52
14:41	3.58
14:42	3.60
14:43	3.63
14:44	3.61
14:45	3.50
14:46	3.37
14:47	3.39
14:48	3.36
14:49	3.42
14:50	3.44
14:51	3.44
14:52	3.46
14:53	3.44
14:54	3.44
14:55	3.48
14:56	3.41
14:57	3.49
14:58	3.46
14:59	3.40

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 1
(continued)

Starting
11-06-92

Time	Inlet THC ppmwv
15:00	3.30
15:01	3.33
15:02	3.40
15:03	3.33
15:04	3.37
15:05	3.33
15:06	3.35
15:07	3.41
15:08	3.43
15:09	3.33
15:10	3.37
15:11	3.38
15:12	3.34
15:13	3.38
15:14	3.37
15:15	3.36
15:16	3.40
15:17	3.44
15:18	3.45
15:19	3.46
215 MinAvg	3.99

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
M	CEMS down for maintenance	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	
*	Data was not used in calculated parameter averages.		

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 2

Starting
11-06-92

Time	Inlet THC ppmwv
18:15	8.96
18:16	8.07
18:17	7.50
18:18	7.57
18:19	7.49
18:20	7.71
18:21	7.88
18:22	7.76
18:23	7.89
18:24	8.06
18:25	8.17
18:26	8.17
18:27	8.15
18:28	8.19
18:29	8.40
18:30	8.55
18:31	8.49
18:32	8.44
18:33	8.49
18:34	8.51
18:35	8.64
18:36	8.51
18:37	7.17
18:38	6.77
18:39	6.90
18:40	9.68
18:41	8.99
18:42	8.62
18:43	8.29
18:44	8.51
18:45	7.85
18:46	7.62
18:47	7.42
18:48	7.18
18:49	7.68
18:50	7.63
18:51	7.96
18:52	8.19
18:53	8.00

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 2
(continued)

Starting
11-06-92

Time	Inlet THC ppmwv
18:54	7.88
18:55	7.85
18:56	7.74
18:57	7.77
18:58	7.74
18:59	7.76
19:00	7.72
19:01	7.45
19:02	7.48
19:03	7.33
19:04	7.37
19:05	7.27
19:06	7.18
19:07	7.41
19:08	7.47
19:09	7.34
19:10	7.21
19:11	7.16
19:12	7.03
19:13	6.76P
19:14	6.79P
19:15	6.71P
19:16	6.87P
19:17	6.76P
19:18	6.70P
19:19	6.75P
19:20	6.91P
19:21	6.66P
19:22	6.71P
19:23	6.76P
19:24	6.79P
19:25	6.87P
19:26	7.07P
19:27	7.41P
19:28	7.41P
19:29	7.23P
19:30	7.11P
19:31	6.91P
19:32	6.77P

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 2
(continued)

Starting
11-06-92

Time	Inlet THC ppmwv
19:33	6.66
19:34	7.13
19:35	6.68
19:36	7.04
19:37	7.18
19:38	7.12
19:39	7.19
19:40	7.63
19:41	7.58
19:42	7.38
19:43	7.38
19:44	7.78
19:45	7.86
19:46	7.09
19:47	5.79
19:48	5.09
19:49	5.19
19:50	6.97
19:51	6.17
19:52	6.22
19:53	6.49
19:54	5.87
19:55	5.58
19:56	5.58
19:57	5.59
19:58	5.63
19:59	5.79
20:00	5.60
20:01	5.66
20:02	5.04
20:03	5.05
20:04	5.18
20:05	5.69
20:06	5.59
20:07	5.43
20:08	5.35
20:09	5.22
20:10	5.34
20:11	5.27

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 2
(continued)

Starting
11-06-92

Time	Inlet THC ppmwv
20:12	4.95
20:13	5.08
20:14	5.16
20:15	5.54
20:16	5.06
20:17	4.95
20:18	5.14
20:19	5.32
20:20	5.35
20:21	5.14
20:22	5.11
20:23	5.26
20:24	5.28
20:25	5.39
20:26	5.43
20:27	5.19
20:28	5.27
20:29	5.01
20:30	4.97
20:31	5.18
20:32	5.40
20:33	5.42
20:34	5.71
20:35	5.82
20:36	6.06
20:37	6.16
20:38	6.11
20:39	6.32
20:40	6.39
20:41	6.40
20:42	6.35
20:43	6.18
20:44	6.11
20:45	6.24
20:46	6.15
20:47	6.11
20:48	6.42
20:49	6.73
20:50	6.93

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 2
(continued)

Starting
11-06-92

Time	Inlet THC ppmwv
20:51	7.03
20:52	6.97
20:53	7.09
20:54	7.15
20:55	6.51
20:56	6.00
20:57	6.15
20:58	8.65
20:59	8.65
21:00	8.27
21:01	8.39
21:02	8.43
168 MinAvg	6.81

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
M	CEMS down for maintenance	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 3

Starting
11-07-92

Time	Inlet THC ppmwv
09:03	4.21
09:04	4.31
09:05	4.29
09:06	4.32
09:07	4.44
09:08	4.52
09:09	4.54
09:10	4.59
09:11	4.74
09:12	4.71
09:13	4.78
09:14	5.06
09:15	4.92
09:16	4.84
09:17	4.80
09:18	4.67
09:19	4.40
09:20	4.19
09:21	4.12
09:22	4.12
09:23	4.31
09:24	4.30
09:25	4.19
09:26	4.17
09:27	4.24
09:28	4.23
09:29	4.35
09:30	4.41
09:31	4.39
09:32	4.53
09:33	4.45
09:34	4.59
09:35	4.51
09:36	4.61
09:37	4.73
09:38	4.81
09:39	4.84
09:40	5.12
09:41	5.14

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Inlet THC ppmwv
09:42	5.03
09:43	4.95
09:44	5.14
09:45	5.15
09:46	5.06
09:47	5.06
09:48	5.14
09:49	5.20
09:50	5.18
09:51	5.07
09:52	5.03
09:53	5.05
09:54	4.28
09:55	3.52
09:56	3.38
09:57	3.53
09:58	3.71
09:59	5.48
10:00	6.37
10:01	5.40
10:02	5.24
10:03	4.98
10:04	4.90
10:05	4.78
10:06	4.52
10:07	4.49
10:08	4.46
10:09	4.29
10:10	4.51
10:11	4.70
10:12	4.72
10:13	4.84
10:14	4.96
10:15	5.25
10:16	5.30
10:17	5.41
10:18	5.51
10:19	5.04
10:20	5.53

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Inlet THC ppmwv
10:21	5.47
10:22	5.55
10:23	5.45
10:24	5.32
10:25	5.22
10:26	5.33
10:27	5.37
10:28	5.41
10:29	5.43
10:30	5.47
10:31	5.55
10:32	5.60
10:33	5.61P
10:34	5.62P
10:35	5.68P
10:36	5.77P
10:37	5.58P
10:38	5.66P
10:39	5.51P
10:40	5.63P
10:41	5.51P
10:42	5.51P
10:43	5.53P
10:44	5.38P
10:45	5.40P
10:46	5.48P
10:47	5.45P
10:48	6.96P
10:49	6.02P
10:50	5.94P
10:51	5.57P
10:52	5.46P
10:53	5.34P
10:54	5.62P
10:55	5.66P
10:56	5.59P
10:57	5.90P
10:58	5.97P
10:59	5.24P

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Inlet THC ppmwv
11:00	4.40P
11:01	4.25P
11:02	5.96P
11:03	6.68P
11:04	6.41P
11:05	6.16P
11:06	5.99P
11:07	5.76P
11:08	5.60P
11:09	5.46P
11:10	5.45P
11:11	5.54P
11:12	5.57P
11:13	5.41P
11:14	5.49P
11:15	5.55
11:16	5.63
11:17	5.57
11:18	5.59
11:19	5.58
11:20	5.64
11:21	5.71
11:22	5.65
11:23	5.70
11:24	5.78
11:25	5.66
11:26	5.75
11:27	5.49
11:28	5.45
11:29	5.46
11:30	5.76
11:31	5.76
11:32	5.74
11:33	5.78
11:34	5.48
11:35	5.45
11:36	5.50
11:37	5.47
11:38	5.54

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Inlet THC ppmwv
11:39	5.71
11:40	5.60
11:41	5.68
11:42	5.57
11:43	5.59
11:44	5.58
11:45	5.72
11:46	5.78
11:47	5.78
11:48	5.71
11:49	5.81
11:50	5.78
11:51	5.77
11:52	5.80
11:53	5.82
11:54	5.91
11:55	6.06
11:56	6.03
11:57	6.30
11:58	6.20
11:59	5.84
12:00	5.97
12:01	6.43
12:02	6.82
12:03	6.72
12:04	6.59
12:05	6.64
12:06	5.61
12:07	4.86
12:08	4.91
12:09	6.61
12:10	6.76
12:11	6.71
12:12	6.66
12:13	6.80
12:14	6.83
12:15	6.76
12:16	6.76
12:17	6.66

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Inlet THC ppmwv
12:18	6.39
12:19	6.27
12:20	6.32
12:21	6.33
12:22	6.31
12:23	6.34
12:24	6.32
12:25	6.40
12:26	6.39
12:27	6.41
12:28	6.56
12:29	6.41
12:30	6.45
12:31	6.41
12:32	6.54
12:33	6.41
12:34	6.39
12:35	6.22
12:36	6.19
12:37	6.16
12:38	6.39
12:39	6.23
12:40	6.30
12:41	6.27
12:42	6.62
12:43	6.40
12:44	6.68
12:45	6.93
12:46	7.02
12:47	7.07
12:48	7.19
12:49	7.14
12:50	7.11
12:51	7.24
12:52	7.42
12:53	7.44
12:54	7.34
12:55	7.83
12:56	7.58

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Inlet THC ppmwv
12:57	7.75
12:58	7.69
12:59	7.28
13:00	7.31
13:01	7.24
13:02	7.09
13:03	6.97
13:04	6.77
13:05	6.56
13:06	6.47
13:07	6.55
13:08	6.57
13:09	5.73
13:10	4.94
13:11	4.84
13:12	7.07
250 MinAvg	5.62

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
M	CEMS down for maintenance	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

F.8.2 M25A RAW FIELD SAMPLING DATA - SAWDUST DRYER OUTLET A

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 1

Starting
11-06-92

Time	Outlet A THC ppmwv
11:38	2.54
11:39	2.55
11:40	2.55
11:41	2.54
11:42	2.56
11:43	2.59
11:44	2.62
11:45	2.72
11:46	2.93
11:47	3.00
11:48	3.07
11:49	3.15
11:50	3.18
11:51	3.22
11:52	3.25
11:53	3.31
11:54	3.33
11:55	3.46
11:56	3.39
11:57	3.41
11:58	3.42
11:59	3.39
12:00	3.38
12:01	3.38
12:02	3.39
12:03	3.40
12:04	3.50
12:05	3.50
12:06	3.36
12:07	3.34
12:08	3.38
12:09	3.38
12:10	3.38
12:11	3.39
12:12	3.33
12:13	3.26
12:14	3.13
12:15	3.14
12:16	3.14

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 1
(continued)

Starting
11-06-92

Time	Outlet A THC ppmwv
12:17	3.10
12:18	3.11
12:19	3.11
12:20	3.24
12:21	3.16
12:22	3.26
12:23	3.31
12:24	3.36
12:25	3.36
12:26	3.36
12:27	3.43
12:28	3.51
12:29	3.49
12:30	3.49
12:31	3.47
12:32	3.50
12:33	3.55
12:34	3.60
12:35	3.59
12:36	3.53
12:37	3.46
12:38	3.45
12:39	3.46
12:40	3.52
12:41	3.51
12:42	3.54
12:43	3.55
12:44	3.61
12:45	3.66
12:46	3.63
12:47	3.55
12:48	3.51
12:49	3.44
12:50	3.41
12:51	3.41
12:52	3.48
12:53	3.56
12:54	3.62
12:55	3.64

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 1
(continued)

Starting
11-06-92

Time	Outlet A THC ppmwv
12:56	3.67
12:57	3.65
12:58	3.65
12:59	3.62
13:00	3.60
13:01	3.64
13:02	3.61
13:03	3.61
13:04	3.60
13:05	3.65
13:06	3.67
13:07	3.62
13:08	3.63
13:09	3.64
13:10	3.61
13:11	3.62
13:12	3.59P
13:13	3.90P
13:14	3.91P
13:15	4.05P
13:16	3.59P
13:17	3.48P
13:18	3.52P
13:19	3.54P
13:20	3.58P
13:21	3.65P
13:22	3.82P
13:23	3.92P
13:24	3.77P
13:25	3.69P
13:26	3.67P
13:27	3.51P
13:28	3.52P
13:29	3.74P
13:30	3.57P
13:31	3.51P
13:32	3.52P
13:33	3.54P
13:34	3.59P

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 1
(continued)

Starting
11-06-92

Time	Outlet A THC ppmwv
13:35	3.62P
13:36	3.61P
13:37	3.62P
13:38	3.59P
13:39	3.60P
13:40	3.60P
13:41	3.57P
13:42	3.61P
13:43	3.82P
13:44	3.73P
13:45	3.66P
13:46	3.67P
13:47	3.62P
13:48	3.63P
13:49	3.62P
13:50	3.60
13:51	3.55
13:52	3.54
13:53	3.58
13:54	3.56
13:55	3.55
13:56	3.53
13:57	3.54
13:58	3.55
13:59	3.50
14:00	3.49
14:01	3.49
14:02	3.51
14:03	3.47
14:04	3.44
14:05	3.42
14:06	3.44
14:07	3.42
14:08	3.43
14:09	3.43
14:10	3.47
14:11	3.48
14:12	3.47
14:13	3.46

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 1
(continued)

Starting
11-06-92

Time	Outlet A THC ppmwv
14:14	3.62
14:15	3.46
14:16	3.47
14:17	3.67
14:18	3.63
14:19	3.57
14:20	3.40
14:21	3.47
14:22	3.41
14:23	3.46
14:24	3.46
14:25	3.47
14:26	3.51
14:27	3.52
14:28	3.50
14:29	3.53
14:30	3.56
14:31	3.60
14:32	3.65
14:33	3.69
14:34	3.69
14:35	3.66
14:36	3.64
14:37	3.63
14:38	3.65
14:39	3.71
14:40	3.82
14:41	3.93
14:42	3.89
14:43	3.74
14:44	3.64
14:45	3.62
14:46	3.61
14:47	3.60
14:48	3.61
14:49	3.65
14:50	3.66
14:51	3.69
14:52	3.65

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 1
(continued)

Starting
11-06-92

Time	Outlet A THC ppmwv
14:53	3.64
14:54	3.62
14:55	3.65
14:56	3.64
14:57	3.58
14:58	3.53
14:59	3.46
15:00	3.46
15:01	3.51
15:02	3.54
15:03	3.55
15:04	3.57
15:05	3.59
15:06	3.63
15:07	3.63
15:08	3.65
15:09	3.68
15:10	3.66
15:11	3.66
15:12	3.64
15:13	3.66
15:14	3.68
15:15	3.70
15:16	3.73
15:17	3.72
15:18	3.73
15:19	5.09
222 MinAvg	3.48

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
M	CEMS down for maintenance	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 2

Starting
11-06-92

Time	Outlet A THC ppmwv
17:38	17.61
17:39	18.27
17:40	18.56
17:41	18.81
17:42	19.13
17:43	19.14
17:44	19.10
17:45	19.10
17:46	19.07
17:47	19.10
17:48	19.14
17:49	19.22
17:50	19.27
17:51	19.15
17:52	19.18
17:53	19.23
17:54	19.33
17:55	19.38
17:56	19.45
17:57	19.55
17:58	19.46
17:59	19.29
18:00	19.26
18:01	19.29
18:02	19.41
18:03	19.54
18:04	19.30
18:05	19.24
18:06	19.06
18:07	19.14
18:08	19.26
18:09	19.21
18:10	19.18
18:11	19.47
18:12	19.36
18:13	19.37
18:14	19.41
18:15	19.50
18:16	19.84

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 2
(continued)

Starting
11-06-92

Time	Outlet A THC ppmwv
18:17	19.97
18:18	18.48
18:19	18.14
18:20	18.09
18:21	18.24
18:22	18.29
18:23	18.21
18:24	18.04
18:25	17.86
18:26	18.19
18:27	18.04
18:28	17.77
18:29	18.31
18:30	18.67
18:31	18.25
18:32	18.27
18:33	18.26
18:34	18.49
18:35	18.53
18:36	18.39
18:37	18.45
18:38	16.91
18:39	16.59
18:40	16.80
18:41	18.62
18:42	18.32
18:43	18.15
18:44	18.24
18:45	17.97
18:46	16.84
18:47	16.95
18:48	16.31
18:49	16.32
18:50	17.40
18:51	17.44
18:52	17.58
18:53	17.79
18:54	17.70
18:55	17.65

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 2
(continued)

Starting
11-06-92

Time	Outlet A THC ppmwv
18:56	17.68
18:57	17.69
18:58	17.47
18:59	17.42
19:00	17.41
19:01	17.32
19:02	17.02
19:03	17.04P
19:04	17.07P
19:05	17.44P
19:06	16.72P
19:07	16.91P
19:08	16.89P
19:09	17.02P
19:10	16.94P
19:11	17.03P
19:12	17.24P
19:13	16.98P
19:14	16.34P
19:15	16.33P
19:16	16.53P
19:17	16.45P
19:18	16.47P
19:19	16.28P
19:20	16.09P
19:21	16.23P
19:22	16.11P
19:23	16.13P
19:24	15.81P
19:25	16.32P
19:26	16.57P
19:27	16.56P
19:28	16.75P
19:29	16.63P
19:30	16.63P
19:31	16.46P
19:32	16.26P
19:33	16.18
19:34	16.21

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 2
(continued)

Starting
11-06-92

Time	Outlet A THC ppmwv
19:35	16.04
19:36	16.01
19:37	16.15
19:38	16.89
19:39	18.37
19:40	18.21
19:41	18.41
19:42	18.49
19:43	18.45
19:44	18.66
19:45	19.28
19:46	18.95
19:47	18.41
19:48	16.41
19:49	16.06
19:50	16.39
19:51	17.92
19:52	17.97
19:53	18.57
19:54	17.99
19:55	17.79
19:56	17.77
19:57	17.11
19:58	16.78
19:59	17.05
20:00	17.22
20:01	17.57
20:02	17.52
20:03	16.38
20:04	15.98
20:05	15.82
20:06	17.22
20:07	17.49
20:08	17.60
20:09	17.44
20:10	17.38
20:11	17.22
20:12	17.32
20:13	17.03

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 2
(continued)

Starting
11-06-92

Time	Outlet A THC ppmwv
20:14	17.56
20:15	17.69
20:16	17.40
20:17	17.69
20:18	18.11
20:19	18.00
20:20	18.03
20:21	18.15
20:22	18.28
20:23	19.15
20:24	19.22
20:25	19.20
20:26	19.00
20:27	19.05
20:28	18.98
20:29	19.15
20:30	19.07
20:31	19.15
20:32	19.12
20:33	19.20
20:34	19.26
20:35	19.31
20:36	19.63
20:37	19.65
20:38	19.66
20:39	19.61
20:40	19.62
20:41	19.42
20:42	19.05
20:43	18.91
20:44	18.81
20:45	18.88
20:46	19.05
20:47	18.17
20:48	18.00
20:49	18.17
20:50	18.34
20:51	18.82
20:52	18.20

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 2
(continued)

Starting
11-06-92

Time	Outlet A THC ppmwv
20:53	18.15
20:54	18.02
20:55	18.02
20:56	16.75
20:57	15.69
20:58	15.75
20:59	17.81
21:00	18.06
21:01	17.85
21:02	18.08
205 MinAvg	18.21

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
M	CEMS down for maintenance	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 3

Starting
11-07-92

Time	Outlet A THC ppmwv
09:03	20.72
09:04	20.66
09:05	20.83
09:06	20.89
09:07	21.11
09:08	21.11
09:09	21.03
09:10	21.33
09:11	21.43
09:12	21.33
09:13	21.37
09:14	21.49
09:15	21.58
09:16	21.66
09:17	21.86
09:18	21.93
09:19	22.00
09:20	21.41
09:21	20.75
09:22	20.35
09:23	20.59
09:24	21.13
09:25	21.33
09:26	21.57
09:27	21.52
09:28	21.94
09:29	22.17
09:30	22.44
09:31	22.63
09:32	22.40
09:33	22.69
09:34	22.56
09:35	23.23
09:36	22.87
09:37	22.88
09:38	23.23
09:39	23.48
09:40	23.19
09:41	23.29

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Outlet A THC ppmwv
09:42	23.61
09:43	23.47
09:44	23.55
09:45	23.62
09:46	23.78
09:47	23.35
09:48	23.81
09:49	23.63
09:50	23.50
09:51	23.87
09:52	24.14
09:53	23.71
09:54	23.81
09:55	22.61
09:56	21.18
09:57	21.30
09:58	21.17
09:59	21.79
10:00	23.32
10:01	23.35
10:02	23.00
10:03	23.67
10:04	23.75
10:05	22.84
10:06	22.54
10:07	22.29
10:08	22.32
10:09	22.14
10:10	22.17
10:11	22.34
10:12	22.72
10:13	22.75
10:14	22.91
10:15	23.22
10:16	23.49
10:17	23.26
10:18	23.47
10:19	23.31
10:20	22.47

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Outlet A THC ppmwv
10:21	22.91
10:22	22.62
10:23	22.66
10:24	22.37
10:25	22.79
10:26	21.96
10:27	22.00
10:28	22.66
10:29	21.99
10:30	21.90
10:31	21.78
10:32	21.82
10:33	21.96P
10:34	22.27P
10:35	22.47P
10:36	21.94P
10:37	21.50P
10:38	21.27P
10:39	21.36P
10:40	21.58P
10:41	21.56P
10:42	22.29P
10:43	21.63P
10:44	21.46P
10:45	21.40P
10:46	21.35P
10:47	21.05P
10:48	21.17P
10:49	21.11P
10:50	21.27P
10:51	21.10P
10:52	20.05P
10:53	19.78P
10:54	20.22P
10:55	20.79P
10:56	21.23P
10:57	21.35P
10:58	21.16P
10:59	21.61P

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Outlet A THC ppmwv
11:00	20.51P
11:01	19.52P
11:02	19.49P
11:03	21.24P
11:04	22.13P
11:05	21.92P
11:06	22.14P
11:07	22.14P
11:08	22.22P
11:09	21.77P
11:10	21.49P
11:11	21.41P
11:12	21.70P
11:13	22.00P
11:14	22.01P
11:15	21.97
11:16	22.22
11:17	22.22
11:18	22.10
11:19	22.00
11:20	21.70
11:21	21.78
11:22	21.66
11:23	21.70
11:24	21.76
11:25	21.52
11:26	21.43
11:27	21.26
11:28	21.06
11:29	21.15
11:30	20.91
11:31	20.93
11:32	21.12
11:33	21.00
11:34	20.91
11:35	20.80
11:36	20.87
11:37	20.67
11:38	21.11

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Outlet A THC ppmwv
11:39	20.64
11:40	20.47
11:41	20.38
11:42	20.29
11:43	20.39
11:44	20.28
11:45	20.11
11:46	20.03
11:47	19.89
11:48	19.92
11:49	19.82
11:50	19.66
11:51	19.58
11:52	19.69
11:53	19.62
11:54	19.47
11:55	19.31
11:56	19.30
11:57	19.25
11:58	19.17
11:59	19.08
12:00	18.06
12:01	17.66
12:02	17.77
12:03	18.46
12:04	18.58
12:05	18.48
12:06	18.53
12:07	17.70
12:08	16.45
12:09	16.28
12:10	17.65
12:11	17.94
12:12	17.83
12:13	17.81
12:14	17.83
12:15	17.77
12:16	17.60
12:17	17.55

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Outlet A THC ppmwv
12:18	17.43
12:19	17.37
12:20	17.46
12:21	17.44
12:22	17.45
12:23	17.36
12:24	17.24
12:25	17.33
12:26	17.38
12:27	17.40
12:28	17.63
12:29	17.64
12:30	17.62
12:31	17.72
12:32	17.97
12:33	18.12
12:34	18.01
12:35	18.31
12:36	18.55
12:37	18.78
12:38	18.84
12:39	18.89
12:40	20.29
12:41	20.16
12:42	20.38
12:43	20.58
12:44	20.79
12:45	20.98
12:46	21.45
12:47	22.02
12:48	22.45
12:49	22.77
12:50	22.00
12:51	21.73
12:52	21.80
12:53	21.72
12:54	22.16
12:55	21.94
12:56	22.03

Pine Hall Brick
Cyclone Outlet A
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Outlet A THC ppmwv
12:57	21.90
12:58	21.73
12:59	21.78
13:00	21.95
13:01	21.72
13:02	21.51
13:03	21.38
13:04	21.96
13:05	22.34
13:06	22.47
13:07	22.58
13:08	23.02
13:09	22.42
13:10	21.73
13:11	20.91
13:12	20.93
250 MinAvg	21.02

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
M	CEMS down for maintenance	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

F.8.3 M25A RAW FIELD SAMPLING DATA - SAWDUST DRYER OUTLET B

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 1

Starting
11-06-92

Time	Outlet B THC ppmwv
11:38	10.33
11:39	10.40
11:40	10.40
11:41	10.37
11:42	10.46
11:43	10.43
11:44	10.56
11:45	10.48
11:46	10.44
11:47	10.37
11:48	11.28
11:49	11.39
11:50	10.77
11:51	10.68
11:52	10.53
11:53	10.32
11:54	10.18
11:55	10.23
11:56	10.23
11:57	10.33
11:58	10.45
11:59	10.48
12:00	10.57
12:01	10.86
12:02	10.90
12:03	11.66
12:04	16.77
12:05	17.07
12:06	13.18
12:07	11.03
12:08	10.75
12:09	10.04
12:10	9.64
12:11	9.52
12:12	9.40
12:13	9.31
12:14	9.31
12:15	9.89
12:16	10.37

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 1
(continued)

Starting
11-06-92

Time	Outlet B THC ppmwv
12:17	10.13
12:18	9.99
12:19	10.01
12:20	10.02
12:21	9.95
12:22	9.89
12:23	9.69
12:24	9.54
12:25	9.52
12:26	9.60
12:27	9.74
12:28	9.74
12:29	9.74
12:30	9.79
12:31	9.86
12:32	9.89
12:33	9.98
12:34	10.01
12:35	9.98
12:36	9.99
12:37	10.05
12:38	10.04
12:39	10.19
12:40	10.30
12:41	13.41
12:42	13.61
12:43	11.26
12:44	10.83
12:45	10.60
12:46	10.58
12:47	10.42
12:48	10.41
12:49	10.29
12:50	10.28
12:51	10.36
12:52	10.54
12:53	10.58
12:54	10.54
12:55	10.65

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 1
(continued)

Starting
11-06-92

Time	Outlet B THC ppmwv
12:56	10.68
12:57	10.71
12:58	10.71
12:59	10.84
13:00	10.77
13:01	10.76
13:02	10.78
13:03	10.97
13:04	10.94
13:05	10.91
13:06	11.03
13:07	10.96
13:08	10.84
13:09	10.72
13:10	10.81
13:11	10.85
13:12	10.89P
13:13	11.00P
13:14	10.60P
13:15	10.07P
13:16	9.93P
13:17	9.80P
13:18	10.30P
13:19	10.87P
13:20	10.69P
13:21	10.68P
13:22	10.77P
13:23	10.65P
13:24	10.16P
13:25	9.93P
13:26	9.92P
13:27	10.08P
13:28	10.46P
13:29	10.57P
13:30	10.62P
13:31	10.75P
13:32	10.79P
13:33	10.76P
13:34	10.83P

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 1
(continued)

Starting
11-06-92

Time	Outlet B THC ppmwv
13:35	10.81P
13:36	10.79P
13:37	10.81P
13:38	10.83P
13:39	10.79P
13:40	10.80P
13:41	10.77P
13:42	10.87P
13:43	11.01P
13:44	10.89P
13:45	10.71P
13:46	10.91P
13:47	10.92P
13:48	10.95P
13:49	10.92P
13:50	10.98
13:51	11.04
13:52	11.22
13:53	11.29
13:54	11.53
13:55	11.47
13:56	11.51
13:57	11.58
13:58	11.74
13:59	11.71
14:00	11.73
14:01	11.94
14:02	12.10
14:03	11.97
14:04	12.05
14:05	12.22
14:06	12.31
14:07	12.38
14:08	12.59
14:09	12.80
14:10	12.81
14:11	13.07
14:12	13.11
14:13	13.15

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 1
(continued)

Starting
11-06-92

Time	Outlet B THC ppmwv
14:14	13.23
14:15	13.24
14:16	13.31
14:17	13.37
14:18	13.41
14:19	13.10
14:20	13.08
14:21	13.24
14:22	14.26
14:23	14.39
14:24	14.71
14:25	14.68
14:26	14.57
14:27	14.50
14:28	14.27
14:29	14.02
14:30	13.92
14:31	13.82
14:32	13.70
14:33	13.64
14:34	13.54
14:35	13.48
14:36	13.40
14:37	13.42
14:38	13.60
14:39	13.90
14:40	14.08
14:41	14.16
14:42	13.94
14:43	13.46
14:44	13.28
14:45	13.44
14:46	13.85
14:47	13.93
14:48	13.88
14:49	14.07
14:50	14.12
14:51	14.16
14:52	14.00

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 1
(continued)

Starting
11-06-92

Time	Outlet B THC ppmwv
14:53	13.92
14:54	14.03
14:55	14.12
14:56	14.12
14:57	14.07
14:58	13.98
14:59	14.03
15:00	14.16
15:01	14.16
15:02	14.31
15:03	14.64
15:04	14.84
15:05	14.86
15:06	14.52
15:07	14.30
15:08	14.37
15:09	14.46
15:10	14.34
15:11	14.30
15:12	14.14
15:13	14.09
15:14	14.20
15:15	14.29
15:16	14.31
15:17	14.40
15:18	14.48
15:19	15.32
222 MinAvg	12.01

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
M	CEMS down for maintenance	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 2

Starting
11-06-92

Time	Outlet B THC ppmwv
17:53	6.56
17:54	6.17
17:55	5.93
17:56	6.12
17:57	6.21
17:58	6.22
17:59	6.19
18:00	6.38
18:01	6.42
18:02	6.52
18:03	6.79
18:04	6.49
18:05	6.39
18:06	6.41
18:07	6.46
18:08	6.56
18:09	6.48
18:10	6.47
18:11	6.86
18:12	7.07
18:13	8.63
18:14	12.98
18:15	9.11
18:16	8.64
18:17	9.73
18:18	10.19
18:19	8.43
18:20	8.43
18:21	8.41
18:22	11.86
18:23	11.36
18:24	8.85
18:25	8.88
18:26	11.71
18:27	10.51
18:28	9.48
18:29	9.35
18:30	9.28
18:31	9.30

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 2
(continued)

Starting
11-06-92

Time	Outlet B THC ppmwv
18:32	9.35
18:33	8.87
18:34	8.25
18:35	8.09
18:36	8.35
18:37	8.57
18:38	8.42
18:39	7.93
18:40	7.99
18:41	8.29
18:42	8.90
18:43	9.17
18:44	9.13
18:45	9.18
18:46	8.90
18:47	8.40
18:48	8.11
18:49	7.21
18:50	7.24
18:51	7.51
18:52	7.50
18:53	7.77
18:54	7.62
18:55	7.60
18:56	7.64
18:57	7.70
18:58	7.68
18:59	7.57
19:00	7.36
19:01	7.49
19:02	7.41
19:03	7.41P
19:04	7.23P
19:05	7.14P
19:06	7.25P
19:07	7.31P
19:08	7.08P
19:09	7.08P
19:10	7.11P

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 2
(continued)

Starting
11-06-92

Time	Outlet B THC ppmwv
19:11	7.06P
19:12	7.05P
19:13	6.93P
19:14	6.93P
19:15	7.01P
19:16	7.01P
19:17	6.88P
19:18	6.84P
19:19	6.83P
19:20	6.81P
19:21	6.91P
19:22	6.91P
19:23	6.91P
19:24	6.96P
19:25	6.91P
19:26	6.81P
19:27	6.85P
19:28	7.01P
19:29	7.05P
19:30	7.14P
19:31	7.04P
19:32	6.93P
19:33	6.86
19:34	7.10
19:35	6.78
19:36	6.83
19:37	6.84
19:38	6.99
19:39	7.07
19:40	7.14
19:41	7.40
19:42	7.48
19:43	7.47
19:44	7.59
19:45	7.74
19:46	7.93
19:47	7.72
19:48	6.90
19:49	6.09

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 2
(continued)

Starting
11-06-92

Time	Outlet B THC ppmwv
19:50	5.87
19:51	6.84
19:52	6.73
19:53	6.56
19:54	6.68
19:55	6.42
19:56	6.25
19:57	6.18
19:58	6.17
19:59	6.13
20:00	6.28
20:01	6.44
20:02	6.62
20:03	6.47
20:04	5.96
20:05	5.94
20:06	6.29
20:07	6.86
20:08	6.89
20:09	6.80
20:10	6.69
20:11	6.72
20:12	6.72
20:13	6.72
20:14	6.70
20:15	7.05
20:16	6.69
20:17	6.67
20:18	6.73
20:19	6.76
20:20	6.81
20:21	6.89
20:22	6.99
20:23	7.03
20:24	7.09
20:25	7.20
20:26	7.41
20:27	7.48
20:28	7.50

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 2
(continued)

Starting
11-06-92

Time	Outlet B THC ppmwv
20:29	7.58
20:30	7.57
20:31	7.58
20:32	7.58
20:33	7.69
20:34	7.87
20:35	7.97
20:36	8.09
20:37	8.28
20:38	8.43
20:39	8.32
20:40	8.47
20:41	8.50
20:42	8.56
20:43	8.44
20:44	8.19
20:45	8.04
20:46	7.92
20:47	7.80
20:48	7.75
20:49	7.91
20:50	8.12
20:51	8.25
20:52	8.30
20:53	8.21
20:54	8.19
20:55	8.05
20:56	7.96
20:57	7.10
20:58	6.90
20:59	7.79
21:00	8.78
21:01	8.63
21:02	8.71
190 MinAvg	7.63

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
M	CEMS down for maintenance	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 3

Starting
11-07-92

Time	Outlet B THC ppmwv
09:03	10.80
09:04	9.01
09:05	9.91
09:06	11.24
09:07	11.46
09:08	9.61
09:09	9.32
09:10	11.30
09:11	12.41
09:12	11.75
09:13	12.11
09:14	11.76
09:15	10.94
09:16	10.54
09:17	10.28
09:18	11.76
09:19	11.55
09:20	10.20
09:21	9.85
09:22	9.83
09:23	9.73
09:24	10.02
09:25	9.81
09:26	9.91
09:27	10.25
09:28	10.50
09:29	10.67
09:30	10.71
09:31	11.11
09:32	11.19
09:33	11.32
09:34	11.46
09:35	11.49
09:36	11.79
09:37	12.00
09:38	12.14
09:39	12.07
09:40	12.30
09:41	12.28

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Outlet B THC ppmwv
09:42	12.40
09:43	12.50
09:44	12.72
09:45	12.74
09:46	13.13
09:47	12.97
09:48	13.13
09:49	13.27
09:50	13.20
09:51	13.05
09:52	13.30
09:53	14.06
09:54	14.10
09:55	14.07
09:56	13.64
09:57	13.52
09:58	13.23
09:59	12.82
10:00	12.99
10:01	14.27
10:02	14.02
10:03	14.01
10:04	14.12
10:05	14.08
10:06	14.22
10:07	14.34
10:08	14.20
10:09	14.42
10:10	14.54
10:11	14.56
10:12	14.73
10:13	14.47
10:14	14.51
10:15	14.54
10:16	14.46
10:17	14.18
10:18	14.36
10:19	14.63
10:20	14.53

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Outlet B THC ppmwv
10:21	14.52
10:22	14.20
10:23	14.27
10:24	14.30
10:25	13.82
10:26	13.79
10:27	14.11
10:28	14.28
10:29	14.06
10:30	13.75
10:31	14.05
10:32	14.87
10:33	15.15P
10:34	14.06P
10:35	13.34P
10:36	12.96P
10:37	13.32P
10:38	14.84P
10:39	14.05P
10:40	13.87P
10:41	13.71P
10:42	13.40P
10:43	12.69P
10:44	12.10P
10:45	11.95P
10:46	11.98P
10:47	13.09P
10:48	13.89P
10:49	12.57P
10:50	12.49P
10:51	12.70P
10:52	13.47P
10:53	11.96P
10:54	11.84P
10:55	11.51P
10:56	11.56P
10:57	11.89P
10:58	12.13P
10:59	12.16P

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Outlet B THC ppmwv
11:00	12.27P
11:01	11.12P
11:02	10.73P
11:03	11.26P
11:04	12.63P
11:05	12.57P
11:06	12.38P
11:07	12.00P
11:08	11.76P
11:09	11.99P
11:10	12.44P
11:11	12.88P
11:12	13.46P
11:13	12.98P
11:14	12.68P
11:15	12.76
11:16	13.16
11:17	13.52
11:18	13.34
11:19	13.31
11:20	13.12
11:21	12.96
11:22	15.30
11:23	13.86
11:24	12.81
11:25	12.73
11:26	12.58
11:27	14.82
11:28	13.74
11:29	12.84
11:30	12.89
11:31	14.14
11:32	14.57
11:33	13.71
11:34	13.61
11:35	13.62
11:36	13.92
11:37	17.61
11:38	17.26

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Outlet B THC ppmwv
11:39	15.28
11:40	14.28
11:41	13.82
11:42	13.24
11:43	13.29
11:44	14.77
11:45	15.43
11:46	14.21
11:47	13.79
11:48	13.55
11:49	13.60
11:50	14.27
11:51	15.55
11:52	13.85
11:53	12.70
11:54	14.17
11:55	15.51
11:56	14.35
11:57	13.52
11:58	13.91
11:59	15.58
12:00	14.79
12:01	13.83
12:02	13.61
12:03	13.57
12:04	13.23
12:05	13.01
12:06	13.71
12:07	15.21
12:08	13.37
12:09	12.94
12:10	13.38
12:11	13.89
12:12	13.52
12:13	13.45
12:14	13.50
12:15	13.76
12:16	16.29
12:17	14.61

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Outlet B THC ppmwv
12:18	14.32
12:19	13.87
12:20	13.54
12:21	14.02
12:22	14.11
12:23	14.54
12:24	14.44
12:25	14.22
12:26	14.23
12:27	14.41
12:28	14.24
12:29	13.79
12:30	13.60
12:31	13.37
12:32	13.98
12:33	13.99
12:34	14.25
12:35	14.18
12:36	14.03
12:37	13.73
12:38	13.34
12:39	13.16
12:40	12.86
12:41	12.61
12:42	12.76
12:43	15.07
12:44	14.27
12:45	13.10
12:46	12.80
12:47	13.38
12:48	14.73
12:49	13.35
12:50	12.89
12:51	12.39
12:52	14.30
12:53	13.22
12:54	12.66
12:55	13.62
12:56	13.87

Pine Hall Brick
Cyclone Outlet B
Raw THC Data
Run 3
(continued)

Starting
11-07-92

Time	Outlet B THC ppmwv
12:57	13.42
12:58	13.61
12:59	13.14
13:00	12.65
13:01	13.39
13:02	13.85
13:03	12.70
13:04	14.15
13:05	13.88
13:06	13.77
13:07	13.77
13:08	14.83
13:09	14.21
13:10	13.61
13:11	12.82
13:12	12.55
250 MinAvg	13.30

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
M	CEMS down for maintenance	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

F.9 RAW FIELD SAMPLING DATA FOR PARTICLE SIZING

F.9.1 ANDERSEN IMPACTOR RAW FIELD SAMPLING DATA
SAWDUST DRYER INLET

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Pine Hall Brick TEST LOCATION Sawdust Dryer Inlet DATE Nov-2-92

START TIME 1311 POLLUTANT Particulate string RUN I.D. IN -M Imp-R1

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A1	0	1311		265	.30	.03	873.022	65	64	243	48	1
2	5			475	.40	.03	873.5	65	64	250	49	1
3	10		1.35	510	.46	.03	874.0	65	64	252	48	1
4	15			508	.48	.03	874.5	65	65	255	47	1
5	20			497	.45	.03	875.1	66	65	248	49	1
6	25			481	.51	.03	875.6	66	65	246	50	1
7	30			484	.87	.03	876.1	66	65	243	52	1
8	35			534	.55	.03	876.6	67	65	246	52	1
9	40		1.3	484	.46	.03	877.1	67	66	246	52	1
10	45			563	.33	.03	877.6	67	66	243	54	1
11	50			581	.29	.03	878.1	67	66	245	55	1
12	55			505	.26	.03	878.6	67	66	247	54	1
	60	1411					879.077					
B1	60	1428		299	.49	.03	879.077	67	66	246	58	1
2	65			492	.46	.03	879.5	67	67	247	51	1
3	70			490	.55	.03	880.0	68	67	246	51	1
4	75			565	.69	.03	880.5	69	68	248	53	1
5	80			516	.73	.03	881.0	69	67	246	54	1
6	85			521	.78	.03	881.5	69	68	249	56	1
7	90			510	.84	.03	882.0	69	68	248	56	1
8	95			508	.74	.03	882.5	70	68	247	57	1
9	100			493	.68	.03	883.0	70	69	246	57	1
10	105			473	.63	.03	883.5	70	69	248	58	1
11	110			535	.49	.03	884.0	70	69	248	55	1
12	115			544	.45	.03	884.5	70	69	247	57	1
							885.111					

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	400	PE, hexs
F2	401	Probe/wash
F3	402	Imp. Contents
F4	403	Silica Gel

LEAK CHECK

Vacuum	~~.0015~~ 15"		15"	
Rate	.003		.003	

IMPINGER VOLUMES

	Initial	Final
#1	100	110
#2	100	100
#3	0	0
#4	50	201.93
#5		
#6		

NOZZLE SIZE	.128
METER BOX I.D.	#5
GAMMA	1.0069
DELTA H@	1.6944
BAR. PRESS.	29.48
FILTER I.D.	463
OPERATOR	Richardson

m

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

FACILITY Pike Hall Brick TEST LOCATION Sawdust Dryer Inlet DATE 10-2-92

START TIME 1733 POLLUTANT Particle Sizing RUN I.D. IPI-MAN-D-R 2

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A1	0	1733		453	.50	.02	886.309	65	64	242	60	1
2	5			450	.48	.02	886.8	65	64	246	52	1
3	10			559	.59	.02	887.3	65	64	248	48	1
4	15		1.30	570	.60	.02	887.8	67	65	245	47	1
5	20			513	.74	.02	888.2	67	65	247	47	1
6	25			520	.85	.02	888.8	67	65	245	49	1
7	30			495	.84	.02	889.2	67	66	245	45	1
8	35			506	.80	.02	889.7	68	66	244	45	1
9	40			506	.72	.02	890.2	68	66	248	46	1
10	45			519	.65	.02	890.7	68	66	247	46	1
11	50			557	.48	.02	891.2	68	66	246	48	1
12	55			553	.51	.02	891.7	68	66	247	48	1
D	60	1833					892.548					
1	60	1842		486	.25	.05	892.548	68	67	247	52	1
2	65			484	.36	.05	893.4	68	67	244	50	1
3	70		1.40	492	.44	.05	894.3	69	67	246	51	1
4	75			493	.44	.05	895.1	70	68	244	53	1
5	80			497	.42	.05	896.0	69	67	246	54	1
6	85			494	.42	.05	896.8	71	69	244	55	1
7	90			493	.74	.05	897.7	72	69	245	55	1
8	95			476	.84	.05	898.5	72	70	246	54	1
9	100			557	.44	.05	899.4	73	70	244	52	1
10	105			570	.35	.05	900.3	73	71	248	53	1
11	110			595	.31	.05	901.2	73	71	245	53	1
12	115			610	.27	.05	902.2	73	71	246	55	1

LEAK CHECK 903.131

Vacuum	15"				
Rate	.004				

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	405	QF, HKG
F2	406	Probewash
F3	407	Imp. Contents
F4	408	Silica Gel

IMPINGER VOLUMES

	Initial	Final
#1	100	116
#2	100	96
#3	0	0
#4	50	
#5		
#6		

NOZZLE SIZE	.122
METER BOX I.D.	#5
GAMMA	1.0069
DELTA H@	1.6944
BAR. PRESS.	29.48 57
FILTER I.D.	445
OPERATOR	Richardson

DD.R

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Pine Hall Brick TEST LOCATION Sawdust Dryer Inlet DATE Nov. 3-92

START TIME 9:15 POLLUTANT Particle Sizing RUN I.D. INV -MAND-R3

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A1	0	9:15		202	.028	.03	907.111	56	54	245	61	1
2	5			245	.030	.04	907.7	61	59	246	46	1
3	10			466	.034	.035	908.5	63	60	245	44	1
4	15			487	.040	.040	909.2	65	62	245	43	1
5	20		-.18	481	.040	.040	909.9	66	63	250	45	1
6	25			468	.50	.030	910.5	67	64	251	47	1
7	30			500	.56	.030	911.2	69	65	252	47	1
8	35			514	.46	.030	911.9	70	67	258	48	1
9	40			528	.42	.030	912.6	72	68	257	49	1
10	45			516	.30	.030	913.2	73	70	244	50	1
11	50			562	.28	.030	913.9	74	71	250	51	1
12	55			564	.26	.030	914.6	74	71	252	54	1
B	60	10:15					915.322					
1	60	10:32		447	.30	.040	915.322	75	74	247	54	1
2	65			445	.38	.040	916.0	75	74	245	51	1
3	70			533	.55	.035	916.8	76	75	245	52	1
4	75			530	.64	.030	917.5	77	76	251	54	1
5	80			524	.70	.020	918.3	77	75	250	54	1
6	85		-.12	500	.74	.020	918.9	78	77	251	56	1
7	90			483	.78	.020	919.6	79	78	249	50	1
8	95			460	.74	.020	920.3	80	79	248	47	1
9	100			398	.69	.020	921.0	80	79	247	46	1
10	105			497	.53	.020	921.7	80	79	245	47	1
11	110			518	.47	.020	922.4	80	79	247	49	1
12	115	11:32		535	.42	.020	923.0	81	80	247	51	1
							923.741					

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	410	9 Filters
F2	411	Probe Wash
F3	412	Imp Contents
F4	413	Silica Gel

LEAK CHECK

Vacuum	15"	5"			
Rate	.003	.001			

IMPINGER VOLUMES

	Initial	Final
#1	100	123
#2	100	100
#3	0	0
#4	56	
#5		
#6		

NOZZLE SIZE	.122
METER BOX I.D.	#5
GAMMA	1.0069
DELTA H@	1.6944
BAR. PRESS.	29.72
FILTER I.D.	Andy 466
OPERATOR	Richardson

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Pine Hall Brick TEST LOCATION Sawdust Dryer Inlet DATE Nov. 5-92

START TIME 1644 POLLUTANT Particle Sizing RUN I.D. IN -MIMP-R4

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A 1	0	1644		477	.30	0.08	389.678	70	70		49	1
2	2.5			408	.34	.08	390.1	69	69		52	1
3	5		.17	421	.44	.08	390.7	69	69		48	1
4	7.5			420	.59	.08	391.1	71	71		47	1
5	10.0			442	.64	.08	391.6	70	70		47	1
6	12.5			465	.73	.08	392.0	69	69		47	1
7	15.0			469	.78	.08	392.5	70	68		48	1
8	17.5			477	.80	.08	393.0	70	69		53	1
9	20.0			494	.76	.08	393.4	70	68		55	1
10	22.5			497	.60	.08	393.9	70	68		55	1
11	25.0		.18	498	.54	.08	394.4	70	68		56	1
12	27.5			504	.47	.08	394.9	71	69		56	1
	30						395.365					
B 1	30	1725		497	.47	.08	395.805	68	67		59	1
2	32.5			455	.49	.08	395.8	68	67		61	1
3	35.0			468	.47	.08	396.3	68	68		61	1
4	37.5		.16	400	.51	.08	396.8	68	67		53	1
5	40.0			485	.53	.08	397.3	68	68		53	1
6	42.5			487	.68	.08	397.8	69	68		54	1
7	45.0			485	.79	.08	398.2	69	68		51	1
8	47.5			472	.84	.08	398.7	69	68		52	1
9	50.0			473	.90	.08	399.1	70	68		53	1
10	52.5		.17	476	1.30	.08	399.6	70	68		53	1
11	55.0			482	1.35	.08	400.1	70	68		54	1
12	57.5	1755		489	1.40	.08	400.6	69	68		54	1
							401.050					

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	445	9 Filters
F2	446	Probe Wash
F3	447	Imp. Contents
F4	448	Silica Gel

LEAK CHECK

Vacuum	10"	8"			
Rate	.008	.011			

IMPINGER VOLUMES

	Initial	Final
#1	100	102
#2	100	100
#3	0	0
#4	SG	
#5		
#6		

NOZZLE SIZE	.125
METER BOX I.D.	#5
GAMMA	1.0069
DELTA H@	1.6944
BAR. PRESS.	29.37
FILTER I.D.	482
OPERATOR	Richardson - Parker

31.5/5
20/.35
50/.05
4.0/2

.16 fpr

F.9.2 ANDERSEN IMPACTOR RAW FIELD SAMPLING DATA
SAWDUST DRYER OUTLET A

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

FACILITY Brick (Pine Hall) TEST LOCATION Outlet A DATE 11-2-92

START TIME ________ POLLUTANT Anderson IMP. RUN I.D. OA -M/mp-R1

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A Φ	0	13.11		126	.55	.05	265.286	64	63	N/A	58	½ .5
2	5			162	.52	.05	266.0	63	64	N/A	57	.5
3	10		-10.5	159	.47	.05	266.7	63	62	N/A	58	.5
4	15			172	.50	.05	267.3	63	63	N/A	57	1.0
5	20			193	.46	.05	267.9	64	63	N/A	58	1.0
6	25			195	.41	.05	268.4	63	63	N/A	58	3.0
7	30			197	.36	.05	269.0	63	63	N/A	59	6.0
8	35			198	.41	.05	269.7	64	64	N/A	59	8.0
9	40			197	.41	.05	270.2	62	62	N/A	59	8.5
10	45			197	.41	.05	271.2	63	63	N/A	58	8.0
11	50			199	.40	.05	271.8	63	63	N/A	58	9.0
12	55			198	.39	.05	272.7	64	63	N/A	59	8.5
~~[illegible]~~	60						272.436					
B 1	60	1428		93	.57	.05	273.75	64	63	N/A	57	6.0
2	65			135	.50	.05	274.0	63	63	N/A	57	10.0
3	70			155	.42	.05	274.7	64	63	N/A	57	10.0
4	75			184	.46	.05	275.5	63	63	N/A	58	10.0
5	80			200	.45	.05	276.2	63	63	N/A	59	9.5
6	85			204	.50	.05	276.9	64	63	N/A	59	8.0
7	90			197	.47	.05	277.5	65	65	N/A	59	7.5
8	95			197	.42	.05	278.2	65	64	N/A	60	7
9	100			193	.44	.05	278.8	64	64	N/A	58	7
10	105			192	.39	.05	279.5	64	65	N/A	58	7
11	110		-10.5	192	.40	.05	280.2	63	64	N/A	59	6.5
12	115			192	.37	.05	280.9	64	65	N/A	59	6

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	415	9 Filters
F2	416	Probe Wash
F3	417	Imp. Contents
F4	418	Silica Gel

LEAK CHECK 281.723

Vacuum	10				
Rate	.003				

IMPINGER VOLUMES

	Initial	Final
#1	100 mL	131
#2	100 mL	82
#3	0	0
#4	200 g.	204.10
#5		
#6		

NOZZLE SIZE	.125
METER BOX I.D.	8
GAMMA	1.044
DELTA H@	1.8838
BAR. PRESS.	29.48
FILTER I.D.	450 — Imp. #
OPERATOR	DM

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Brick (Pine Hall) TEST LOCATION Outlet A DATE 11-2-92

START TIME ______ POLLUTANT Ano. Imp. RUN I.D. OA -M/mp-R 2

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A 1	0	1733		100	.40	.05	283.058	63	63	N/A	57	.5
2	5			145	.45	.05	283.9	66	65	N/A	57	.5
3	10			182	.41	.05	284.4	66	65	N/A	59	2
4	15			183	.43	.05	285.2	66	65	N/A	59	2
5	20			187	.41	.05	285.6	66	65	N/A	59	10
6	25			197	.41	.05	286.3	67	66	N/A	57	10
7	30			191	.46	.05	287.1	66	65	N/A	58	10
8	35			203	.41	.05	287.9	66	65	N/A	58	10
9	40		-10	204	.37	.05	288.7	67	65	N/A	59	9.5
10	45			205	.29	.05	289.4	67	65	N/A	58	9.5
11	50			205	.35	.05	290.2	67	66	N/A	59	9
12	55			204	.34	.05	290.1	67	65	N/A	58	9
	60	1733					290.7	292.0				
B 1	60	1842		128	.48	.05	~~292.4~~	66	65	N/A	54	6
2	65			151	.52	.05	292.5	66	65	N/A	56	6
3	70			175	.53	.05	293.1	67	65	N/A	58	5
4	75			182	.53	.05	293.7	66	66	N/A	58	6
5	80			191	.48	.05	294.3	68	66	N/A	59	6
6	85			190	.45	.05	295.0	68	66	N/A	58	6
7	90			187	.38	.05	295.7	68	67	N/A	58	6
8	95			192	.38	.05	296.4	69	67	N/A	59	6
9	100		-10.3	190	.40	.05	297.2	69	67	N/A	58	5
10	105			192	.38	.05	297.9	68	67	N/A	57	5
11	110			193	.44	.05	298.7	69	67	N/A	58	5
12	115			193	.44	.05	299.4	68	67	N/A	59	5

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	420	9 Filters
F2	421	Probe Wash
F3	422	Imp. Contents
F4	423	Silica Gel

LEAK CHECK 300 cc

Vacuum	12				
Rate	.002				

IMPINGER VOLUMES

	Initial	Final
#1	100 ml	122
#2	100 ml	100
#3	0	0
#4	200 G	
#5		
#6		

NOZZLE SIZE	.125
METER BOX I.D.	8
GAMMA	1.0144
DELTA H@	1.8838
BAR. PRESS.	~~29.48~~ 29.57
FILTER I.D.	imp # 464
OPERATOR	PM

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

FACILITY Pine Hall Brick TEST LOCATION OUTLET A DATE 11-3-92

START TIME ______ POLLUTANT And. Imp. RUN I.D. OA -M/MP-R 3

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A1	0	9:15		85	.67	.05	300.579	73	71	N/A	57	1
2	5			139	.51	.05	301.3	75	72	N/A	57	1
3	10		-10.5	165	.47	.05	302.0	75	72	N/A	57	1.5
4	15			180	.50	.05	302.7	75	72	N/A	58	1.5
5	20			186	.45	.05	303.4	76	73	N/A	58	7.5
6	25			189	.42	.05	304.2	76	73	N/A	58	5
7	30			195	.36	.05	304.9	76	74	N/A	58	10
8	35			198	.40	.05	305.7	76	73	N/A	59	9
9	40			198	.40	.05	306.4	75	73	N/A	58	9
10	45			200	.43	.05	307.2	76	74	N/A	59	8
11	50			199	.43	.05	308.0	77	76	N/A	59	6
12	55			203	.42	.05	308.7	79	77	N/A	60	5
	60						309.583					
B1	60	10:32		87	.50	.05	309.583	79	79	N/A	57	5
2	65			119	.47	.05	310.3	81	80	N/A	57	4
3	70			157	.40	.05	311.0	82	81	N/A	57	5
4	75			163	.40	.05	311.7	81	81	N/A	58	5
5	80			190	.43	.05	312.4	81	81	N/A	58	5
6	85			197	.42	.05	313.0	81	81	N/A	59	5
7	90			198	.45	.05	313.8	81	81	N/A	59	4
8	95			190	.46	.05	314.5	81	81	N/A	60	4
9	100			190	.55	.05	315.2	81	81	N/A	60	3.5
10	105		-10.5	191	.39	.05	316.0	81	80	N/A	60	4
11	110			190	.32	.05	316.8	80	80	N/A	60	4
12	115			190	.36	.05	317.6	80	80	N/A	60	3
							318.339					

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	425	9 Filters
F2	426	Probe wash
F3	427	Imp. Contents
F4	428	Silica Gel

LEAK CHECK

Vacuum	12				
Rate	.003				

IMPINGER VOLUMES

	Initial	Final
#1	100 ml	132
#2	100 ml	98
#3	0	0
#4	200 gm	
#5		
#6		

NOZZLE SIZE	.125
METER BOX I.D.	8
GAMMA	1.0144
DELTA H@	1.8838
BAR. PRESS.	~~29.99~~ 29.72
FILTER I.D.	480 (in A)
OPERATOR	DM

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Pine Hall Brick TEST LOCATION Outlet A DATE 11-5-92

START TIME ______ POLLUTANT Amb Imp RUN I.D. 07 -MImp-R 4

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A1	0	16:44		183	.50	.16	103.116	70	70		58	4
2	2.5			183	.49	.16	103.6	70	70		57	4
3	5			184	.49	.16	104.3	70	70		56	4
4	7.5			184	.51	.16	104.9	70	70		56	4
5	10			184	.47	.16	105.5	70	70		56	4
6	12.5		-10.5	186	.46	.16	106.0	70	70		56	4
7	15			180	.48	.16	106.6	71	70		56	5
8	17.5			188	.48	.16	107.2	70	70		56	5
9	20			187	.47	.16	107.8	71	71		56	5
10	22.5			187	.48	.16	108.4	71	71		55	6
11	25			187	.47	.16	108.9	71	70		56	6
12	27.5			186	.41	.16	109.7	70	70		55	6
	30						110.335					
B1	30	17:25		183	.48	.16	110.335	68	69		56	5
2	32.5			183	.53	.16	110.8	68	69		55	5
3	35			185	.56	.16	111.3	69	69		56	6
4	37.5		-10.5	184	.58	.16	111.9	69	69		56	6
5	40			184	.55	.16	112.6	69	69		55	6
6	42.5			185	.49	.16	113.2	70	69		54	6
7	45			182	.44	.16	113.8	69	69		55	6
8	47.5			184	.44	.16	114.4	69	69		54	6
9	50			184	.43	.16	115.1	70	70		55	6.5
10	52.5			187	.46	.16	115.7	69	69		57	6.5
11	55			187	.51	.16	116.4	70	69		57	6.5
12	57.5			188	.48	.16	116.9	70	70		56	6.5
							117.684					

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	450	9 Filters
F2	451	Probe Wash
F3	452	Imp-Contents
F4	453	Silica Gel

LEAK CHECK

Vacuum	10				
Rate	.005				

IMPINGER VOLUMES

	Initial	Final
#1	100	117
#2	100	98
#3	0	1
#4	SG	
#5		
#6		

NOZZLE SIZE	~~.125~~ .150 TU
METER BOX I.D.	6
GAMMA	0.9915
DELTA H@	1.7326
BAR. PRESS.	29.37
FILTER I.D.	481
OPERATOR	DM

F.9.3 ANDERSEN IMPACTOR RAW FIELD SAMPLING DATA SAWDUST DRYER OUTLET B

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Pine Hall Brick TEST LOCATION Outlet B DATE 11-2-92

START TIME 12:11 POLLUTANT Particle Sizing RUN I.D. OD -MIMP-R1

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac
B1	0	12:11		73	.31	0.05	881.925	67	66	NA	59	2
2	5		-8.7	76	.25	0.05	882.6	64	64		58	3
3	10			97	.27	0.05	883.3	64	63		58	3
4	15			115	.27	0.05	884.0	66	64		57	3
5	20			141	.31	0.05	884.6	65	64		55	4
6	25			161	.33	0.05	885.4	68	64		55	3.5
7	30			179	.43	0.05	886.1	67	64		56	3.5
8	35			182	.50	0.05	886.8	68	64		56	3.5
9	40			181	.52	0.05	887.5	67	64		56	3.5
10	45			181	.52	0.05	888.2	68	65		57	3.5
11	50			184	.38	0.05	888.9	69	65		57	3.5
12	55			183	.50	0.05	889.5	69	65		57	4.5
	60	14:11					890.497					
A1	60	14:28		79	.08	0.05	890.497	66	64	NA	59	3.8
2	65			85	.20	0.05	891.1	67	66		58	3.8
3	70			115	.28	0.05	891.8	68	65		58	4.2
4	75		-8.5	164	.25	0.05	892.5	69	66		56	4.5
5	80			161	.30	0.05	893.2	69	66		56	5.3
6	85			162	.25	0.05	894.0	70	68		57	5.3
7	90			178	.34	0.05	894.6	70	67		57	6.5
8	95			179	.35	0.05	895.3	70	69		57	7.0
9	100			180	.41	0.05	895.9	71	69		58	7.2
10	105			180	.46	0.05	896.6	72	68		58	9.5
11	110			177	.43	0.05	897.3	72	68		58	9.5
12	115			178	.36	0.05	898.0	72	68		59	9.8

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	430	9 Filters
F2	431	Probe Wash
F3	432	Imp. Contents
F4	433	Silica Gel

LEAK CHECK 898.766

Vacuum	11				
Rate	.006				

IMPINGER VOLUMES

	Initial	Final
#1	100	122
#2	100	100
#3	0	0
#4	50	204.23
#5		
#6		

NOZZLE SIZE	.125
METER BOX I.D.	#7
GAMMA	1.0082
DELTA H@	1.7651
BAR. PRESS.	29.48
FILTER I.D.	462
OPERATOR	C. Ferguson

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Pine Hall Brick TEST LOCATION Outlet B DATE 11-03-92

START TIME 17:33 POLLUTANT Particle Sizing RUN I.D. OB -MImp-R2

	Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
A	1	0	17:33		75	.35	0.05	899.144	65	64	NA	63	1.5
	2	5			98	.35	0.05	899.8	65	64		61	1.5
	3	10		-8.6	107	.30	0.05	900.4	66	63		60	1.5
	4	15			124	.35	0.05	900.9	66	64		58	2
	5	20			110	.25	0.05	901.5	66	63		58	2
	6	25			165	.32	0.05	902.2	67	63		57	2
	7	30			174	.37	0.05	902.8	67	64		57	4
	8	35			184	.43	0.05	903.3	66	64		58	6
	9	40			186	.46	0.05	903.8	67	65		58	10
	10	45			187	.45	0.05	904.5	67	65		60	10
	11	50			186	.43	0.05	905.3	68	66		60	11
	12	55			184	.40	0.05	906.0	[illegible]	[illegible]		61	10
		60	18:33					906.654					
B	1	60	18:42		76	.34	0.05	906.654	68	66	NA	64	8
	2	65			105	.39	0.05	907.4	68	67		62	8
	3	70		-8.5	109	.29	0.05	908.0	69	67		61	9
	4	75			138	.31	0.05	908.5	70	66		61	9.5
	5	80			143	.30	0.05	909.1	71	68		60	9.8
	6	85			169	.32	0.05	909.8	71	67		60	10
	7	90			174	.41	0.05	910.3	73	68		59	10
	8	95			177	.49	0.05	911.0	72	69		59	10
	9	100			175	.53	0.05	911.6	72	69		59	10
	10	105			176	.55	0.05	912.3	73	70		60	9.8
	11	110			177	.56	0.05	913.2	74	70		60	9.8
	12	115			180	.50	0.05	914.2	75	70		60	9.8

CHAIN OF CUSTODY INFORMATION 120 1942

Container Number	Sample I.D.	Description
F1	435	9 Filters
F2	436	Probe Wash
F3	437	Imp. Contents
F4	435	Silica Gel

LEAK CHECK 915.253

Vacuum	15"				
Rate	.012				

IMPINGER VOLUMES

	Initial	Final
#1	100	139
#2	100	100
#3	0	0
#4	SG	
#5		
#6		

NOZZLE SIZE	.125
METER BOX I.D.	#7
GAMMA	1.0082
DELTA H@	1.7651
BAR. PRESS.	29.37
FILTER I.D.	452
OPERATOR	C. Ferguson

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

PAGE 1

FACILITY Pine Hall Brick TEST LOCATION Outlet B DATE 11-03-92

START TIME 09:15 POLLUTANT Particle sizing RUN I.D. OB -MImp-R 3

B

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu.ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
1	0	09:15		68	.35	0.05	916.757	64	63	NA	63	2.3
2	5			77	.38	0.05	917.4	66	64		60	2.8
3	10			94	.24	0.05	918.0	67	64		59	2.8
4	15			128	.30	0.05	918.8	70	66		58	3.5
5	20		-8.9	156	.33	0.05	919.3	70	66		57	11.0
6	25			161	.33	0.05	920.2	71	67		57	3.5
7	30			182	.45	0.05	920.9	72	68		57	2.5
8	35			185	.53	0.05	921.7	73	68		58	2.8
9	40			188	.57	0.05	922.3	74	69		58	2.5
10	45			190	.59	0.05	923.0	74	70		58	2.8
11	50			190	.52	0.05	923.7	76	72		59	3.0
12	55			193	.45	0.05	924.5	73	77		59	3
	60	10:15					925.257					
1	60	10:32		93	.26	0.05	925.257	78	76	NA	64	3
2	65			100	.30	0.05	925.9	78	77		63	3
3	70			108	.29	0.05	926.6	80	78		60	3.8
4	75			138	.29	0.05	927.4	80	78		59	4
5	80		-9.0	157	.30	0.05	827.9	81	79		58	6
6	85			174	.30	0.05	928.6	83	81		57	8
7	90			186	.37	0.05	929.5	83	81		57	6.2
8	95			175	.44	0.05	930.4	85	82		58	3
9	100			180	.48	0.05	931.0	85	83		58	7
10	105			180	.48	0.05	931.6	86	83		58	7
11	110			180	.48	0.05	932.3	87	83		59	7.3
12	115			180	.42	0.05	932.9	86	83		59	3

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	440	9 Filters
F2	441	Probe Wash
F3	442	Imp. Contents
F4	443	Silica Gel

LEAK CHECK 933.4

Vacuum	11.5"				
Rate	.009				

IMPINGER VOLUMES

	Initial	Final
#1	100	129
#2	100	96
#3	0	0
#4	SG	SG
#5		
#6		

NOZZLE SIZE	.125
METER BOX I.D.	#7
GAMMA	1.0082
DELTA H@	1.7651
BAR. PRESS.	29.72
FILTER I.D.	AW0470
OPERATOR	C. Ferguson

FIELD DATA SHEET FOR ISOKINETIC SAMPLING

FACILITY Pine Hall Brick TEST LOCATION Outlet B DATE 11-05-92

START TIME 16:44 POLLUTANT RUN I.D. OB -MInr-R4

Point	Sample Time	Clock Time	Static	Stack Temp.	Stack dP	Meter dH	Meter Volume cu ft.	Meter Temp. Inlet	Meter Temp. Outlet	Filter Temp.	Imp. Temp.	Meter Vac.
B #1	0	16:44		177	.28	.16	344.039	76	76	nA	58	2.8
2	2.5			178	.27	.16	344.6	73	72		58	3
3	5			178	.27	.16	345.1	73	72		55	6
4	7.5			179	.27	.16	345.7	73	72		54	6
5	10			180	.30	.16	346.3	73	72		54	8
6	12.5			181	.32	.16	346.9	74	72		53	6
7	15			183	.40	.16	347.6	74	72		53	3.8
8	17.5			184	.46	.16	348.2	75	73		54	3.5
9	20		-9.7	184	.50	.16	348.7	75	73		55	4
10	22.5			183	.53	.16	349.2	75	72		55	4
11	25			184	.55	.16	349.8	75	73		55	4.2
12	27.5			183	.51	.16	350.5	75	73		55	4.5
	30	17:14					351.014					
A #1	30	17:25		176	.31	.16	351.014	78	76	NA	59	4.0
2	32.5			177	.30	.16	351.5	73	72		58	4.3
3	35		-9.7	178	.34	.16	352.2	73	72		57	6.0
4	37.5			180	.32	.16	352.8	74	72		57	6.0
5	40			181	.33	.16	353.5	74	72		57	6.5
6	42.5			182	.33	.16	354.2	74	72		56	6.5
7	45			185	.38	.16	354.9	75	72		57	5.0
8	47.5			184	.40	.16	355.5	75	72		58	4.5
9	50			183	.48	.16	356.1	75	72		58	4.3
10	52.5			183	.52	.16	356.7	75	72		59	3.8
11	55			181	.49	.16	357.3	76	73		60	3.8
12	57.5			179	.47	.16	357.9	76	73		60	3.8
	60	17:55					358.011					

CHAIN OF CUSTODY INFORMATION

Container Number	Sample I.D.	Description
F1	455	9Filters
F2	456	ProbeWash
F3	457	Imp Contents
F4	458	SilicaGel

LEAK CHECK

Vacuum	13"				
Rate	.008				

IMPINGER VOLUMES

	Initial	Final
#1	100	118
#2	100	101
#3	0	1
#4	SG	
#5		
#6		

NOZZLE SIZE	~~.125~~ .150 TU
METER BOX I.D.	#7
GAMMA	1.0082
DELTA H@	1.7651
BAR. PRESS.	29.37
FILTER I.D.	483
OPERATOR	C. Ferguson

G

G.0 ANALYTICAL DATA APPENDICES

G.1 GRAVIMETRICS LABORATORY DATA

G.1.1 TSP GRAVIMETRICS LABORATORY DATA

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method Multiple Metals

Print Date 12/15/92   Time 15:04:02
Page 1

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00500	F1	Q02/07/92-0037	IN -MM -R1	Quartz Filter			NKL	11/11/92	
00501	F2		IN -MM -R1	FH Acetone Rinse			NKL	11/11/92	
00502	F3		IN -MM -R1	FH Nitric Rinse			NKL	11/11/92	
00503	F4A		IN -MM -R1	Imp. 1 + Rinses			NKL	11/11/92	
00504	F4B		IN -MM -R1	Imp. 2+3+Rinses			NKL	11/11/92	
00505	F5A		IN -MM -R1	Imp. 4 + Rinses			NKL	11/11/92	
00506	F5B		IN -MM -R1	IMP 5,6 + RINSE			NKL	11/11/92	
00507	F5C		IN -MM -R1	Water+HCl Rinse 5+6			NKL	11/11/92	
00508	F6		IN -MM -R1	Imp. 7 Silica Gel			NKL	11/11/92	
00509	F7		IN -MM -R1	Tedlar Bag			NKL	11/11/92	
00510	F1	Q08/28/92-0013	IN -MM -R2	Quartz Filter			NKL	11/11/92	
00511	F2		IN -MM -R2	FH Acetone Rinse			NKL	11/11/92	
00512	F3		IN -MM -R2	FH Nitric Rinse			NKL	11/11/92	
00513	F4A		IN -MM -R2	Imp. 1 + Rinses			NKL	11/11/92	
00514	F4B		IN -MM -R2	Imp. 2+3+Rinses			NKL	11/11/92	
00515	F5A		IN -MM -R2	Imp. 4 + Rinses			NKL	11/11/92	
00516	F5B		IN -MM -R2	IMP 5,6 + RINSE			NKL	11/11/92	
00517	F5C		IN -MM -R2	Water+HCl Rinse 5+6			NKL	11/11/92	
00518	F6		IN -MM -R2	Imp. 7 Silica Gel			NKL	11/11/92	
00519	F7		IN -MM -R2	Tedlar Bag			NKL	11/11/92	
00520	F1	Q02/07/92-0033	IN -MM -R3	Quartz Filter			NKL	11/11/92	
00521	F2		IN -MM -R3	FH Acetone Rinse			NKL	11/11/92	
00522	F3		IN -MM -R3	FH Nitric Rinse			NKL	11/11/92	
00523	F4A		IN -MM -R3	Imp. 1 + Rinses			NKL	11/11/92	
00524	F4B		IN -MM -R3	Imp. 2+3+Rinses			NKL	11/11/92	
00525	F5A		IN -MM -R3	Imp. 4 + Rinses			NKL	11/11/92	
00526	F5B		IN -MM -R3	IMP 5,6 + RINSE			NKL	11/11/92	

ETS, INC.

FIELD SAMPLE LOG

Contract No. 92-655
Job I.D.
Test Method Multiple Metals

Print Date 12/15/92
Page 2

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00527	F5C		IN -MM -R3	Water+HCl Rinse 5+6			NKL	11/11/92	
00528	F6		IN -MM -R3	Imp. 7 Silica Gel			NKL	11/11/92	
00529	F7		IN -MM -R3	Tedlar Bag			NKL	11/11/92	
00530	F1	Q02/07/92-0036	OA -MM -R1	Quartz Filter			NKL	11/11/92	
00531	F2		OA -MM -R1	FH Acetone Rinse			NKL	11/11/92	
00532	F3		OA -MM -R1	FH Nitric Rinse			NKL	11/11/92	
00533	F4A		OA -MM -R1	Imp. 1 + Rinses			NKL	11/11/92	
00534	F4B		OA -MM -R1	Imp. 2+3+Rinses			NKL	11/11/92	
00535	F5A		OA -MM -R1	Imp. 4 + Rinses			NKL	11/11/92	
00536	F5B		OA -MM -R1	IMP 5,6 + RINSE			NKL	11/11/92	
00537	F5C		OA -MM -R1	Water+HCl Rinse 5+6			NKL	11/11/92	
00538	F6		OA -MM -R1	Imp. 7 Silica Gel			NKL	11/11/92	
00539	F7		OA -MM -R1	Tedlar Bag			NKL	11/11/92	
00540	F1	Q02/07/92-0038	OA -MM -R2	Quartz Filter			NKL	11/11/92	
00541	F2		OA -MM -R2	FH Acetone Rinse			NKL	11/11/92	
00542	F3		OA -MM -R2	FH Nitric Rinse			NKL	11/11/92	
00543	F4A		OA -MM -R2	Imp. 1 + Rinses			NKL	11/11/92	
00544	F4B		OA -MM -R2	Imp. 2+3+Rinses			NKL	11/11/92	
00545	F5A		OA -MM -R2	Imp. 4 + Rinses			NKL	11/11/92	
00546	F5B		OA -MM -R2	IMP 5,6 + RINSE			NKL	11/11/92	
00547	F5C		OA -MM -R2	Water+HCl Rinse 5+6			NKL	11/11/92	
00548	F6		OA -MM -R2	Imp. 7 Silica Gel			NKL	11/11/92	
00549	F7		OA -MM -R2	Tedlar Bag			NKL	11/11/92	
00550	F1	Q02/07/92-0039	OA -MM -R3	Quartz Filter			NKL	11/11/92	
00551	F2		OA -MM -R3	FH Acetone Rinse			NKL	11/11/92	
00552	F3		OA -MM -R3	FH Nitric Rinse			NKL	11/11/92	
00553	F4A		OA -MM -R3	Imp. 1 + Rinses			NKL	11/11/92	

ETS, INC.

FIELD SAMPLE LOG

Contract No. 92-655
Job I.D.
Test Method Multiple Metals

Print Date 12/15/92
Page 3

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00554	F4B		OA -MM -R3	Imp. 2+3+Rinses			NKL	11/11/92	
00555	F5A		OA -MM -R3	Imp. 4 + Rinses			NKL	11/11/92	
00556	F5B		OA -MM -R3	IMP 5,6 + RINSE			NKL	11/11/92	
00557	F5C		OA -MM -R3	Water+HCl Rinse 5+6			NKL	11/11/92	
00558	F6		OA -MM -R3	Imp. 7 Silica Gel			NKL	11/11/92	
00559	F7		OA -MM -R3	Tedlar Bag			NKL	11/11/92	
00560	F1	Q02/07/92-0035	OB -MM -R1	Quartz Filter			NKL	11/11/92	
00561	F2		OB -MM -R1	FH Acetone Rinse			NKL	11/11/92	
00562	F3		OB -MM -R1	FH Nitric Rinse			NKL	11/11/92	
00563	F4A		OB -MM -R1	Imp. 1 + Rinses			NKL	11/11/92	
00564	F4B		OB -MM -R1	Imp. 2+3+Rinses			NKL	11/11/92	
00565	F5A		OB -MM -R1	Imp. 4 + Rinses			NKL	11/11/92	
00566	F5B		OB -MM -R1	IMP 5,6 + RINSE			NKL	11/11/92	
00567	F5C		OB -MM -R1	Water+HCl Rinse 5+6			NKL	11/11/92	
00568	F6		OB -MM -R1	Imp. 7 Silica Gel			NKL	11/11/92	
00569	F7		OB -MM -R1	Tedlar Bag			NKL	11/11/92	
00570	F1	Q08/28/92-0012	OB -MM -R2	Quartz Filter			NKL	11/11/92	
00571	F2		OB -MM -R2	FH Acetone Rinse			NKL	11/11/92	
00572	F3		OB -MM -R2	FH Nitric Rinse			NKL	11/11/92	
00573	F4A		OB -MM -R2	Imp. 1 + Rinses			NKL	11/11/92	
00574	F4B		OB -MM -R2	Imp. 2+3+Rinses			NKL	11/11/92	
00575	F5A		OB -MM -R2	Imp. 4 + Rinses			NKL	11/11/92	
00576	F5B		OB -MM -R2	IMP 5,6 + RINSE			NKL	11/11/92	
00577	F5C		OB -MM -R2	Water+HCl Rinse 5+6			NKL	11/11/92	
00578	F6		OB -MM -R2	Imp. 7 Silica Gel			NKL	11/11/92	
00579	F7		OB -MM -R2	Tedlar Bag			NKL	11/11/92	
00580	F1	Q08/28/92-0014	OB -MM -R3	Quartz Filter			NKL	11/11/92	

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method Multiple Metals

Print Date 12/15/92

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00581	F2		OB -MM -R3	FH Acetone Rinse			NKL	11/11/92	
00582	F3		OB -MM -R3	FH Nitric Rinse			NKL	11/11/92	
00583	F4A		OB -MM -R3	Imp. 1 + Rinses			NKL	11/11/92	
00584	F4B		OB -MM -R3	Imp. 2+3+Rinses			NKL	11/11/92	
00585	F5A		OB -MM -R3	Imp. 4 + Rinses			NKL	11/11/92	
00586	F5B		OB -MM -R3	IMP 5,6 + RINSE			NKL	11/11/92	
00587	F5C		OB -MM -R3	Water+HCl Rinse 5+6			NKL	11/11/92	
00588	F6		OB -MM -R3	Imp. 7 Silica Gel			NKL	11/11/92	
00589	F7		OB -MM -R3	Tedlar Bag			NKL	11/11/92	
00590	F1	Q08/28/92-0015	IN -MM -RO	Quartz Filter			NKL	11/11/92	
00591	F2		IN -MM -RO	FH Acetone Rinse			NKL	11/11/92	
00592	F3		IN -MM -RO	FH Nitric Rinse			NKL	11/11/92	
00593	F4A		IN -MM -RO	Imp. 1 + Rinses			NKL	11/11/92	
00594	F4B		IN -MM -RO	Imp. 2+3+Rinses			NKL	11/11/92	
00595	F5A		IN -MM -RO	Imp. 4 + Rinses			NKL	11/11/92	
00596	F5B		IN -MM -RO	IMP 5,6 + RINSE			NKL	11/11/92	
00597	F5C		IN -MM -RO	Water+HCl Rinse 5+6			NKL	11/11/92	
00598	F6		IN -MM -RO	Imp. 7 Silica Gel			NKL	11/11/92	
00599	F7		IN -MM -RO	Tedlar Bag			NKL	11/11/92	
00600	F1	Q08/28/92-0016	OA -MM -RO	Quartz Filter			NKL	11/11/92	
00601	F2		OA -MM -RO	FH Acetone Rinse			NKL	11/11/92	
00602	F3		OA -MM -RO	FH Nitric Rinse			NKL	11/11/92	
00603	F4A		OA -MM -RO	Imp. 1 + Rinses			NKL	11/11/92	
00604	F4B		OA -MM -RO	Imp. 2+3+Rinses			NKL	11/11/92	
00605	F5A		OA -MM -RO	Imp. 4 + Rinses			NKL	11/11/92	
00606	F5B		OA -MM -RO	IMP 5,6 + RINSE			NKL	11/11/92	
00607	F5C		OA -MM -RO	Water+HCl Rinse 5+6			NKL	11/11/92	

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method Multiple Metals

Print Date 12/15/92

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00608	F6		OA -MM -RO	Imp. 7 Silica Gel			NKL	11/11/92	
00609	F7		OA -MM -RO	Tedlar Bag			NKL	11/11/92	
00610	F1	Q08/28/92-0017	OB -MM -RO	Quartz Filter			NKL	11/11/92	
00611	F2		OB -MM -RO	FH Acetone Rinse			NKL	11/11/92	
00612	F3		OB -MM -RO	FH Nitric Rinse			NKL	11/11/92	
00613	F4A		OB -MM -RO	Imp. 1 + Rinses			NKL	11/11/92	
00614	F4B		OB -MM -RO	Imp. 2+3+Rinses			NKL	11/11/92	
00615	F5A		OB -MM -RO	Imp. 4 + Rinses			NKL	11/11/92	
00616	F5B		OB -MM -RO	IMP 5,6 + RINSE			NKL	11/11/92	
00617	F5C		OB -MM -RO	Water+HCl Rinse 5+6			NKL	11/11/92	
00618	F6		OB -MM -RO	Imp. 7 Silica Gel			NKL	11/11/92	
00619	F7		OB -MM -RO	Tedlar Bag			NKL	11/11/92	

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Tare Filter Weights
Filter Description: Quartz

Report Prepared on: 11/24/92 Page 1

Filter Number	Date	Time	Weight (g)	Analyst	Constant Weight (g)
Q08/28/92-0012					0.43372
	09/03/92	13:04	0.43413	PJB	
	09/03/92	13:09	0.43372	PJB	
Q08/28/92-0013					0.43570
	09/03/92	13:05	0.43602	PJB	
	09/03/92	13:09	0.43548	PJB	
	09/03/92	13:12	0.43570	PJB	
Q08/28/92-0014					0.43935
	09/03/92	13:05	0.43989	PJB	
	09/03/92	13:09	0.43900	PJB	
	09/03/92	13:12	0.43935	PJB	
Q08/28/92-0015					0.43989
	09/03/92	13:05	0.44066	PJB	
	09/03/92	13:10	0.43985	PJB	
	09/03/92	13:12	0.43989	PJB	
Q08/28/92-0016					0.43643
	09/03/92	13:05	0.43689	PJB	
	09/03/92	13:10	0.43643	PJB	
Q08/28/92-0017					0.43860
	09/03/92	13:06	0.43900	PJB	
	09/03/92	13:10	0.43860	PJB	

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Tare Filter Weights
Filter Description: Quartz
Report Prepared on: 11/24/92 Page 1

Filter Number	Date	Time	Weight (g)	Analyst	Constant Weight (g)
Q02/07/92-0033					0.43921
	02/07/92	11:39	0.43942	NKL	
	02/25/92	12:03	0.43921	NKL	
Q02/07/92-0034					0.43266
	02/07/92	11:39	0.43304	NKL	
	02/25/92	12:03	0.43266	NKL	
Q02/07/92-0035					0.43462
	02/07/92	11:39	0.43432	NKL	
	02/25/92	12:04	0.43462	NKL	
Q02/07/92-0036					0.43460
	02/07/92	11:39	0.43490	NKL	
	02/25/92	12:04	0.43460	NKL	
Q02/07/92-0037					0.43639
	02/07/92	11:40	0.43662	NKL	
	02/25/92	12:04	0.43639	NKL	
Q02/07/92-0038					0.43896
	02/07/92	11:40	0.43931	NKL	
	02/25/92	12:04	0.43875	NKL	
	02/26/92	09:02	0.43896	NKL	
Q02/07/92-0039					0.43924
	02/07/92	11:40	0.43937	NKL	
	02/25/92	12:06	0.43924	NKL	

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Tare Beaker Weights

Report Prepared on: 12/21/92 Page 1

Beaker Number	Date	Time	Weight (g)	Analyst	Constant Weight (g)
06/15/92-009	06/16/92	14:43	65.14252	TLP	65.14282
	06/18/92	15:11	65.14282	TLP	
06/15/92-010	06/16/92	14:56	65.15497	TLP	65.15493
	06/18/92	15:01	65.15493	TLP	
06/15/92-011	06/16/92	14:58	65.40482	TLP	65.40479
	06/18/92	14:58	65.40479	TLP	
06/15/92-012	06/16/92	15:00	67.25936	TLP	67.25950
	06/18/92	15:03	67.25950	TLP	

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Tare Beaker Weights

Report Prepared on: 12/21/92 Page 1

Beaker Number	Date	Time	Weight (g)	Analyst	Constant Weight (g)
07/24/92-001	08/07/92	14:46	83.01619	PJB	82.34268
	08/12/92	08:24	82.34294	TLP	
	08/18/92	12:12	82.34219	TLP	
	08/19/92	14:43	82.34268	TLP	
07/24/92-002	08/07/92	14:47	67.94460	PJB	67.94487
	08/12/92	08:25	67.94487	TLP	
07/24/92-003	08/07/92	14:22	64.15295	TLP	64.15320
	08/12/92	08:23	64.15320	TLP	
07/24/92-004	08/07/92	14:23	65.18440	TLP	65.18466
	08/12/92	08:26	65.18466	TLP	
07/24/92-005	08/07/92	14:25	66.96539	TLP	66.96571
	08/12/92	08:30	66.96571	TLP	
07/24/92-006	08/07/92	14:20	67.34879	TLP	67.34878
	08/12/92	08:32	67.34878	TLP	
07/24/92-007	08/07/92	14:53	64.43353	PJB	64.43384
	08/12/92	08:29	64.43384	TLP	
07/24/92-008	08/07/92	14:53	64.50714	PJB	64.50708
	08/12/92	08:31	64.50708	TLP	
07/24/92-009	08/07/92	14:54	64.87084	PJB	64.87111
	08/12/92	08:37	64.87111	TLP	
07/24/92-010	08/07/92	14:54	65.32452	PJB	65.32467
	08/12/92	08:27	65.32467	TLP	
07/24/92-011	08/07/92	14:54	65.35817	PJB	65.35857
	08/12/92	08:34	65.35857	TLP	
07/24/92-012	08/07/92	14:55	64.84203	PJB	64.84253
	08/12/92	08:35	64.84253	TLP	

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Tare Beaker Weights

Report Prepared on: 12/21/92 Page 1

Beaker Number	Date	Time	Weight (g)	Analyst	Constant Weight (g)
08/24/92-021	08/26/92	12:06	64.96118	PJB	64.96153
	18/26/92	18:07	64.96153	PJB	
08/24/92-022	08/26/92	12:07	64.79507	PJB	64.79537
	08/26/92	18:08	64.79537	PJB	
08/24/92-023	08/26/92	12:07	65.31370	PJB	65.31400
	08/26/92	18:09	65.31400	PJB	
08/24/92-024	08/26/92	12:08	66.91614	PJB	66.91616
	08/26/92	18:09	66.91616	PJB	
08/24/92-025	08/26/92	12:08	64.65648	PJB	64.65686
	08/26/92	18:09	64.65686	PJB	
08/24/92-026	08/26/92	12:09	64.91918	PJB	64.91961
	08/26/92	18:10	64.91961	PJB	
08/24/92-027	08/26/92	12:09	65.40067	PJB	65.40117
	08/26/92	18:11	65.40117	PJB	
08/24/92-028	08/26/92	12:10	66.10978	PJB	66.11002
	08/26/92	18:12	66.11002	PJB	

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Final Beaker Weights

Job Number: 92-655
Report Prepared on: 12/21/92 Page 1

Beaker # / Filter # / Sample # / Run I.D. / Total Vol.,ml / Aliquot Vol.	Constant Tare Weight (g) / Beaker / Filter	Final Weight Data: Date	Time	Weight (g)	Analyst	Constant Final Weight (g)
06/15/92-009 Q02/07/92-0037 92-655-00500 IN -MM -R1	65.14282 0.43639	11/16/92 11/18/92 11/19/92	17:58 09:07 11:11	65.65990 65.66200 65.66170	PJB PJB PJB	65.66170
06/15/92-010 92-655-00501 IN -MM -R1 105.00000	65.15493 0.00000	11/16/92 11/17/92 11/18/92	18:11 11:34 09:08	65.16810 65.16900 65.16920	PJB PJB PJB	65.16920
07/24/92-003 Q08/28/92-0013 92-655-00510 IN -MM -R2	64.15320 0.43570	11/16/92 11/18/92 11/19/92 11/19/92 11/20/92 11/21/92 11/23/92 11/24/92	17:54 09:26 11:25 17:26 09:30 13:42 08:31 07:32	64.66730 64.66930 64.67280 64.67130 64.66990 64.66820 64.67290 64.66870	PJB PJB PJB PJB PJB PJB pjb pjb	64.66870
07/24/92-004 92-655-00511 IN -MM -R2 100.00000	65.18466 0.00000	11/16/92 11/18/92 11/19/92	17:55 09:28 11:27	65.21410 65.21550 65.21510	PJB PJB PJB	65.21510
07/24/92-009 Q02/07/92-0033 92-655-00520 IN -MM -R3	64.87111 0.43921	11/16/92 11/17/92 11/18/92 11/19/92	17:59 11:42 09:31 11:10	65.36240 65.36130 65.36400 65.36410	PJB PJB PJB PJB	65.36410

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Final Beaker Weights

Job Number: 92-655
Report Prepared on: 12/21/92 Page 2

Beaker # / Filter # / Sample # / Run I.D. / Total Vol.,ml / Aliquot Vol.	Constant Tare Weight (g) Beaker / Filter	Final Weight Data Date	Time	Weight (g)	Analyst	Constant Final Weight (g)
07/24/92-010	65.32467	11/16/92	18:07	65.36440	PJB	65.36610
	0.00000	11/17/92	11:41	65.36520	PJB	
92-655-00521		11/18/92	09:32	65.36590	PJB	
IN -MM -R3		11/19/92	11:22	65.36610	PJB	
98.00000						
06/15/92-011	65.40479	11/16/92	18:12	65.90320	PJB	65.90460
Q02/07/92-0036	0.43460	11/17/92	11:06	65.90470	PJB	
92-655-00530		11/18/92	09:05	65.90380	PJB	
OA -MM -R1		11/19/92	11:20	65.90490	PJB	
		11/19/92	17:29	65.90460	PJB	
06/15/92-012	67.25950	11/16/92	18:14	67.27080	PJB	67.27180
	0.00000	11/17/92	11:01	67.27190	PJB	
92-655-00531		11/18/92	09:09	67.27180	PJB	
OA -MM -R1						
118.00000						
07/24/92-005	66.96571	11/16/92	17:53	67.45740	PJB	67.45920
Q02/07/92-0038	0.43896	11/18/92	09:29	67.45930	PJB	
92-655-00540		11/19/92	11:26	67.45920	PJB	
OA -MM -R2						
07/24/92-006	67.34878	11/16/92	17:56	67.37000	PJB	67.37150
	0.00000	11/18/92	09:21	67.37150	PJB	
92-655-00541		11/19/92	11:24	67.37150	PJB	
OA -MM -R2						
107.00000						

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Final Beaker Weights

Job Number: 92-655
Report Prepared on: 12/21/92 Page 3

Beaker # Filter # Sample # Run I.D. Total Vol.,ml Aliquot Vol.	Constant Tare Weight (g) Beaker Filter	Final Weight Data Date	Time	Weight (g)	Analyst	Constant Final Weight (g)
07/24/92-011 Q02/07/92-0039 92-655-00550 OA -MM -R3	65.35857 0.43924	11/16/92 11/17/92 11/18/92	17:59 11:17 09:33	65.87380 65.87580 65.87550	PJB PJB PJB	65.87550
07/24/92-012 92-655-00551 OA -MM -R3 105.00000	64.84253 0.00000	11/16/92 11/18/92 11/19/92	18:08 09:34 11:16	64.87220 64.87360 64.87330	PJB PJB PJB	64.87330
07/24/92-001 Q02/07/92-0035 92-655-00560 OB -MM -R1	82.34268 0.43462	11/16/92 11/18/92 11/19/92	17:53 09:24 11:22	83.43070 83.43400 83.43440	PJB PJB PJB	83.43440
07/24/92-002 92-655-00561 OB -MM -R1 110.00000	67.94487 0.00000	11/16/92 11/18/92 11/19/92	17:50 09:25 11:25	67.95370 67.95550 67.95510	PJB PJB PJB	67.95510
07/24/92-007 Q08/28/92-0012 92-655-00570 OB -MM -R2	64.43384 0.43372	11/16/92 11/18/92 11/19/92 11/19/92 11/20/92 11/21/92 11/23/92 11/24/92	17:57 09:20 11:17 17:20 10:00 14:44 08:20 07:32	65.53580 65.53850 65.54040 65.54300 65.54100 65.53960 65.54240 65.54070	pjb pjb pjb pjb pjb pjb pjb pjb	65.54070

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Final Beaker Weights

Job Number: 92-655
Report Prepared on: 12/21/92

Beaker # / Filter # / Sample # / Run I.D. / Total Vol.,ml / Aliquot Vol.	Constant Tare Weight (g) / Beaker / Filter	Final Weight Data: Date	Time	Weight (g)	Analyst	Constant Final Weight (g)
07/24/92-008	64.50708	11/16/92	18:07	64.52010	PJB	64.52160
	0.00000	11/17/92	11:04	64.52150	PJB	
92-655-00571		11/18/92	09:22	64.52160	PJB	
OB -MM -R2						
115.00000						
08/24/92-021	64.96153	11/16/92	18:11	66.10330	PJB	66.10600
Q08/28/92-0014	0.43935	11/17/92	11:36	66.10610	PJB	
92-655-00580		11/18/92	09:35	66.10600	PJB	
OB -MM -R3						
08/24/92-022	64.79537	11/16/92	18:13	64.80240	PJB	64.80410
	0.00000	11/17/92	10:59	64.80400	PJB	
92-655-00581		11/18/92	09:36	64.80410	PJB	
OB -MM -R3						
117.00000						
08/24/92-023	65.31400	11/16/92	18:12	65.75430	PJB	65.75570
Q08/28/92-0015	0.43989	11/17/92	11:05	65.75560	PJB	
92-655-00590		11/18/92	10:00	65.75570	PJB	
IN -MM -RO						
08/24/92-024	66.91616	11/16/92	18:15	66.91690	PJB	66.91770
	0.00000	11/17/92	11:01	66.91800	PJB	
92-655-00591		11/18/92	10:02	66.91730	PJB	
IN -MM -RO		11/19/92	11:15	66.91770	PJB	
100.00000						

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Final Beaker Weights

Job Number: 92-655
Report Prepared on: 11/24/92 Page 5

Beaker # Filter # Sample # Run I.D. Total Vol.,ml Aliquot Vol.	Constant Tare Weight (g) Beaker Filter	Final Weight Data Date	Time	Weight (g)	Analyst	Constant Final Weight (g)
08/24/92-025	64.65686	11/16/92	18:10	65.09350	PJB	65.09550
Q08/28/92-0016	0.43643	11/17/92	11:35	65.09560	PJB	
92-655-00600		11/18/92	10:02	65.09550	PJB	
0A -MM -R0						
08/24/92-026	64.91961	11/16/92	18:16	64.91950	PJB	64.92060
	0.00000	11/17/92	11:02	64.92160	PJB	
92-655-00601		11/18/92	09:32	64.92060	PJB	
0A -MM -R0		11/19/92	11:17	64.92060	PJB	
100.00000						
08/24/92-027	65.40117	11/16/92	18:12	65.84010	PJB	65.84110
Q08/28/92-0017	0.43860	11/17/92	11:03	65.84130	PJB	
92-655-00610		11/18/92	09:33	65.84110	PJB	
0B -MM -R0						
08/24/92-028	66.11002	11/16/92	18:16	66.11020	PJB	66.11120
	0.00000	11/17/92	10:59	66.11120	PJB	
92-655-00611		11/18/92	09:34	66.11070	PJB	
0B -MM -R0		11/19/92	11:25	66.11130	PJB	
		11/19/92	17:25	66.11120	PJB	
105.00000						

G.1.2 M201A/M202 LABORATORY DATA

E T S ,   I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method 201A/202

Print Date 12/15/92   Time 14:23:40
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Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
01100	F1	91-0952	IN -1A2-R1	FIBERGLASS FILTER			NKL	11/11/92	
01101	F2		IN -1A2-R1	>PM10 ACETONE RINSE			NKL	11/11/92	
01102	F3		IN -1A2-R1	<=PM10 ACETONE RINSE			NKL	11/11/92	
01103	F4		IN -1A2-R1	IMPINGER CONTENTS			NKL	11/11/92	
01104	F5		IN -1A2-R1	IMP CONT EXTRA STORE			NKL	11/11/92	
01105	F6		IN -1A2-R1	BACK HALF ACETONE			NKL	11/11/92	
01106	F7		IN -1A2-R1	BACK HALF MeCL2			NKL	11/11/92	
01107	F8		IN -1A2-R1	SILICA GEL			NKL	11/11/92	
01108	F1	91-0956	IN -1A2-R2	FIBERGLASS FILTER			NKL	11/11/92	
01109	F2		IN -1A2-R2	>PM10 ACETONE RINSE			NKL	11/11/92	
01110	F3		IN -1A2-R2	<=PM10 ACETONE RINSE			NKL	11/11/92	
01111	F4		IN -1A2-R2	IMPINGER CONTENTS			NKL	11/11/92	
01112	F5		IN -1A2-R2	IMP CONT EXTRA STORE			NKL	11/11/92	
01113	F6		IN -1A2-R2	BACK HALF ACETONE			NKL	11/11/92	
01114	F7		IN -1A2-R2	BACK HALF MeCL2			NKL	11/11/92	
01115	F8		IN -1A2-R2	SILICA GEL			NKL	11/11/92	
01116	F1	91-0960	IN -1A2-R3	FIBERGLASS FILTER			NKL	11/11/92	
01117	F2		IN -1A2-R3	>PM10 ACETONE RINSE			NKL	11/11/92	
01118	F3		IN -1A2-R3	<=PM10 ACETONE RINSE			NKL	11/11/92	
01119	F4		IN -1A2-R3	IMPINGER CONTENTS			NKL	11/11/92	
01120	F5		IN -1A2-R3	IMP CONT EXTRA STORE			NKL	11/11/92	
01121	F6		IN -1A2-R3	BACK HALF ACETONE			NKL	11/11/92	
01122	F7		IN -1A2-R3	BACK HALF MeCL2			NKL	11/11/92	
01123	F8		IN -1A2-R3	SILICA GEL			NKL	11/11/92	
01124	F1	91-0954	OA -1A2-R1	FIBERGLASS FILTER			NKL	11/11/92	
01125	F2		OA -1A2-R1	>PM10 ACETONE RINSE			NKL	11/11/92	
01126	F3		OA -1A2-R1	<=PM10 ACETONE RINSE			NKL	11/11/92	

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method 201A/202

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
01127	F4		OA -1A2-R1	IMPINGER CONTENTS			NKL	11/11/92	
01128	F5		OA -1A2-R1	IMP CONT EXTRA STORE			NKL	11/11/92	
01129	F6		OA -1A2-R1	BACK HALF ACETONE			NKL	11/11/92	
01130	F7		OA -1A2-R1	BACK HALF MeCL2			NKL	11/11/92	
01131	F8		OA -1A2-R1	SILICA GEL			NKL	11/11/92	
01132	F1	91-0955	OA -1A2-R2	FIBERGLASS FILTER			NKL	11/11/92	
01133	F2		OA -1A2-R2	>PM10 ACETONE RINSE			NKL	11/11/92	
01134	F3		OA -1A2-R2	<=PM10 ACETONE RINSE			NKL	11/11/92	
01135	F4		OA -1A2-R2	IMPINGER CONTENTS			NKL	11/11/92	
01136	F5		OA -1A2-R2	IMP CONT EXTRA STORE			NKL	11/11/92	
01137	F6		OA -1A2-R2	BACK HALF ACETONE			NKL	11/11/92	
01138	F7		OA -1A2-R2	BACK HALF MeCL2			NKL	11/11/92	
01139	F8		OA -1A2-R2	SILICA GEL			NKL	11/11/92	
01140	F1	91-0959	OA -1A2-R3	FIBERGLASS FILTER			NKL	11/11/92	
01141	F2		OA -1A2-R3	>PM10 ACETONE RINSE			NKL	11/11/92	
01142	F3		OA -1A2-R3	<=PM10 ACETONE RINSE			NKL	11/11/92	
01143	F4		OA -1A2-R3	IMPINGER CONTENTS			NKL	11/11/92	
01144	F5		OA -1A2-R3	IMP CONT EXTRA STORE			NKL	11/11/92	
01145	F6		OA -1A2-R3	BACK HALF ACETONE			NKL	11/11/92	
01146	F7		OA -1A2-R3	BACK HALF MeCL2			NKL	11/11/92	
01147	F8		OA -1A2-R3	SILICA GEL			NKL	11/11/92	
01148	F1	91-0953	OB -1A2-R1	FIBERGLASS FILTER			NKL	11/11/92	
01149	F2		OB -1A2-R1	>PM10 ACETONE RINSE			NKL	11/11/92	
01150	F3		OB -1A2-R1	<=PM10 ACETONE RINSE			NKL	11/11/92	
01151	F4		OB -1A2-R1	IMPINGER CONTENTS			NKL	11/11/92	
01152	F5		OB -1A2-R1	IMP CONT EXTRA STORE			NKL	11/11/92	
01153	F6		OB -1A2-R1	BACK HALF ACETONE			NKL	11/11/92	

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method 201A/202

Print Date 12/15/92
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Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
01154	F7		OB -1A2-R1	BACK HALF MeCL2			NKL	11/11/92	
01155	F8		OB -1A2-R1	SILICA GEL			NKL	11/11/92	
01156	F1	91-0957	OB -1A2-R2	FIBERGLASS FILTER			NKL	11/11/92	
01157	F2		OB -1A2-R2	>PM10 ACETONE RINSE			NKL	11/11/92	
01158	F3		OB -1A2-R2	<=PM10 ACETONE RINSE			NKL	11/11/92	
01159	F4		OB -1A2-R2	IMPINGER CONTENTS			NKL	11/11/92	
01160	F5		OB -1A2-R2	IMP CONT EXTRA STORE			NKL	11/11/92	
01161	F6		OB -1A2-R2	BACK HALF ACETONE			NKL	11/11/92	
01162	F7		OB -1A2-R2	BACK HALF MeCL2			NKL	11/11/92	
01163	F8		OB -1A2-R2	SILICA GEL			NKL	11/11/92	
01164	F1	91-0958	OB -1A2-R3	FIBERGLASS FILTER			NKL	11/11/92	
01165	F2		OB -1A2-R3	>PM10 ACETONE RINSE			NKL	11/11/92	
01166	F3		OB -1A2-R3	<=PM10 ACETONE RINSE			NKL	11/11/92	
01167	F4		OB -1A2-R3	IMPINGER CONTENTS			NKL	11/11/92	
01168	F5		OB -1A2-R3	IMP CONT EXTRA STORE			NKL	11/11/92	
01169	F6		OB -1A2-R3	BACK HALF ACETONE			NKL	11/11/92	
01170	F7		OB -1A2-R3	BACK HALF MeCL2			NKL	11/11/92	
01171	F8		OB -1A2-R3	SILICA GEL			NKL	11/11/92	
01172	F1	91-0962	IN -1A2-RO	FIBERGLASS FILTER			NKL	11/11/92	
01173	F2		IN -1A2-RO	>PM10 ACETONE RINSE			NKL	11/11/92	
01174	F3		IN -1A2-RO	<=PM10 ACETONE RINSE			NKL	11/11/92	
01175	F4		IN -1A2-RO	IMPINGER CONTENTS			NKL	11/11/92	
01176	F5		IN -1A2-RO	IMP CONT EXTRA STORE			NKL	11/11/92	
01177	F6		IN -1A2-RO	BACK HALF ACETONE			NKL	11/11/92	
01178	F7		IN -1A2-RO	BACK HALF MeCL2			NKL	11/11/92	
01179	F8		IN -1A2-RO	SILICA GEL			NKL	11/11/92	
01180	F1	91-0961	OA -1A2-RO	FIBERGLASS FILTER			NKL	11/11/92	

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method 201A/202

Print Date 12/15/92

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
01181	F2		OA -1A2-R0	>PM10 ACETONE RINSE			NKL	11/11/92	
01182	F3		OA -1A2-R0	<=PM10 ACETONE RINSE			NKL	11/11/92	
01183	F4		OA -1A2-R0	IMPINGER CONTENTS			NKL	11/11/92	
01184	F5		OA -1A2-R0	IMP CONT EXTRA STORE			NKL	11/11/92	
01185	F6		OA -1A2-R0	BACK HALF ACETONE			NKL	11/11/92	
01186	F7		OA -1A2-R0	BACK HALF MeCL2			NKL	11/11/92	
01187	F8		OA -1A2-R0	SILICA GEL			NKL	11/11/92	
01188	F1	91-0963	OB -1A2-R0	FIBERGLASS FILTER			NKL	11/11/92	
01189	F2		OB -1A2-R0	>PM10 ACETONE RINSE			NKL	11/11/92	
01190	F3		OB -1A2-R0	<=PM10 ACETONE RINSE			NKL	11/11/92	
01191	F4		OB -1A2-R0	IMPINGER CONTENTS			NKL	11/11/92	
01192	F5		OB -1A2-R0	IMP CONT EXTRA STORE			NKL	11/11/92	
01193	F6		OB -1A2-R0	BACK HALF ACETONE			NKL	11/11/92	
01194	F7		OB -1A2-R0	BACK HALF MeCL2			NKL	11/11/92	
01195	F8		OB -1A2-R0	SILICA GEL			NKL	11/11/92	

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Tare Beaker Weights

Report Prepared on: 11/24/92

Beaker Number	Date	Time	Weight (g)	Analyst	Constant Weight (g)
08/20/92-010	08/21/92	11:52	64.48256	PJB	64.48251
	08/24/92	08:35	64.48251	TLP	
08/20/92-011	08/21/92	11:52	67.06278	PJB	67.06294
	08/24/92	08:29	67.06294	TLP	
08/20/92-012	08/21/92	11:53	64.25678	PJB	64.25675
	08/24/92	08:23	64.25675	TLP	
08/20/92-013	08/21/92	11:53	64.86000	PJB	64.85998
	08/24/92	08:33	64.85998	TLP	
08/20/92-014	08/21/92	11:54	65.17681	PJB	65.17671
	08/24/92	08:31	65.17671	TLP	
08/20/92-015	08/21/92	11:54	67.31787	PJB	67.31777
	08/24/92	08:27	67.31777	TLP	
08/20/92-016	08/21/92	11:55	64.42132	PJB	64.42145
	08/24/92	08:19	64.42145	TLP	
08/20/92-017	08/21/92	11:55	65.04910	PJB	65.04909
	08/24/92	08:17	65.04909	TLP	
08/20/92-018	08/21/92	11:56	65.14288	PJB	65.14296
	08/24/92	08:21	65.14296	TLP	
08/20/92-019	08/21/92	08:25	63.92737	PJB	63.92726
	08/24/92	08:26	63.92726	PJB	
08/20/92-020	08/21/92	11:56	68.15714	PJB	68.15705
	08/24/92	08:15	68.15705	TLP	
08/20/92-021	08/21/92	11:57	66.85039	PJB	66.85029
	08/24/92	08:12	66.85029	TLP	

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Tare Beaker Weights

Report Prepared on: 11/24/92

Beaker Number	Date	Time	Weight (g)	Analyst	Constant Weight (g)
08/21/92-001	08/21/92	11:59	67.79881	PJB	67.79897
	08/24/92	09:34	67.79897	TLP	
08/21/92-002	08/21/92	11:59	66.32866	PJB	66.32873
	08/24/92	09:36	66.32873	TLP	
08/21/92-003	08/21/92	12:00	64.68681	PJB	64.68669
	08/24/92	09:13	64.68669	TLP	
08/21/92-004	08/21/92	12:00	66.24572	PJB	66.24556
	08/24/92	09:30	66.24556	TLP	
08/21/92-005	08/21/92	12:01	65.56521	PJB	65.56491
	08/24/92	09:13	65.56491	TLP	
08/21/92-006	08/21/92	12:01	67.31548	PJB	67.31516
	08/24/92	09:11	67.31516	TLP	
08/21/92-007	08/21/92	12:01	67.43748	PJB	67.43735
	08/24/92	09:15	67.43735	TLP	
08/21/92-008	08/21/92	12:02	64.85883	PJB	64.85896
	08/24/92	09:32	64.85896	TLP	
08/21/92-009	08/21/92	12:02	67.56890	PJB	67.56865
	08/24/92	09:09	67.56865	TLP	
08/21/92-010	08/21/92	12:02	65.50904	PJB	65.50907
	08/24/92	09:07	65.50907	TLP	
08/21/92-011	08/21/92	12:03	65.04743	PJB	65.04761
	08/24/92	09:05	65.04761	TLP	
08/21/92-012	08/21/92	12:03	64.80013	PJB	64.80047
	08/24/92	09:03	64.80047	TLP	

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Tare Filter Weights
Filter Description: Fiberglass

Report Prepared on: 11/24/92 Page 1

Filter Number	Date	Time	Weight (g)	Analyst	Constant Weight (g)
91-0952					0.41115
	02/07/92	08:50	0.41108	NKL	
	02/18/92	15:12	0.41115	nkl	
91-0953					0.41265
	02/07/92	08:51	0.41249	NKL	
	02/18/92	15:13	0.41265	nkl	
91-0954					0.41335
	02/07/92	08:51	0.41325	NKL	
	02/18/92	15:14	0.41335	nkl	
91-0955					0.41444
	02/07/92	08:52	0.41432	NKL	
	02/18/92	15:15	0.41444	nkl	
91-0956					0.41402
	02/07/92	08:52	0.41389	NKL	
	02/18/92	15:16	0.41402	nkl	
91-0957					0.41846
	02/07/92	08:53	0.41841	NKL	
	02/18/92	15:17	0.41846	nkl	
91-0958					0.42684
	02/07/92	08:54	0.42668	NKL	
	02/18/92	15:20	0.42684	nkl	
91-0959					0.42719
	02/07/92	08:55	0.42685	NKL	
	02/18/92	15:01	0.42719	nkl	
91-0960					0.42605
	02/07/92	08:55	0.42570	NKL	
	02/18/92	15:02	0.42605	nkl	
91-0961					0.42121
	02/07/92	08:56	0.42095	NKL	
	02/18/92	15:03	0.42121	nkl	

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Tare Beaker Weights

Report Prepared on: 11/24/92

Beaker Number	Date	Time	Weight (g)	Analyst	Constant Weight (g)
07/20/92-019	07/20/92	15:15	[illegible].14690	PJB	65.14728
	07/22/92	11:05	65.14798	TLP	
	07/23/92	08:38	65.14692	TLP	
	07/24/92	08:30	65.14728	TLP	
07/20/92-020	07/20/92	15:15	64.66809	PJB	64.66857
	07/22/92	11:03	64.66935	TLP	
	07/23/92	08:36	64.66839	TLP	
	07/24/92	08:37	64.66857	TLP	
07/20/92-021	07/20/92	15:16	64.61926	PJB	64.61920
	07/22/92	11:02	64.61993	TLP	
	07/23/92	08:42	64.61894	TLP	
	07/24/92	08:32	64.61920	TLP	

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Final Beaker Weights

Job Number: 92-655
Report Prepared on: 11/30/92 Page 1

Beaker # / Filter # / Sample # / Run I.D. / Total Vol.,ml / Aliquot Vol.	Constant Tare Weight (g) / Beaker / Filter	Final Weight Data: Date	Time	Weight (g)	Analyst	Constant Final Weight (g)
08/20/92-016 91-0952 92-655-01100 IN -1A2-R1	64.42145 0.41115	11/18/92 11/19/92 11/20/92	09:57 14:15 11:35	64.88320 64.88750 64.88740	PJB PJB PJB	64.88740
08/20/92-017 92-655-01102 IN -1A2-R1 95.00000	65.04909 0.00000	11/18/92 11/19/92 11/20/92	09:58 14:16 11:36	65.05340 65.05690 65.05680	PJB PJB PJB	65.05680
08/21/92-001 91-0956 92-655-01108 IN -1A2-R2	67.79897 0.41402	11/18/92 11/19/92 11/20/92	10:04 14:21 11:42	68.25270 68.25650 68.25640	PJB PJB PJB	68.25640
08/21/92-002 92-655-01110 IN -1A2-R2 100.00000	66.32873 0.00000	11/18/92 11/19/92 11/20/92	10:05 14:22 11:46	66.33510 66.33810 66.33810	PJB PJB PJB	66.33810
08/21/92-007 91-0960 92-655-01116 IN -1A2-R3	67.43735 0.42605	11/18/92 11/19/92 11/20/92	10:11 14:30 11:51	67.91280 67.91580 67.91590	PJB PJB PJB	67.91590

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Final Beaker Weights

Job Number: 92-655
Report Prepared on: 11/30/92

Beaker # Filter # Sample # Run I.D. Total Vol.,ml Aliquot Vol.	Constant Tare Weight (g) Beaker Filter	Final Weight Data Date	 Time	 Weight (g)	 Analyst	Constant Final Weight (g)
08/21/92-008	64.85896	11/18/92	10:12	64.86160	PJB	64.86500
	0.00000	11/19/92	14:32	64.86510	PJB	
92-655-01118		11/20/92	11:53	64.86500	PJB	
IN -1A2-R3						
120.00000						
08/20/92-018	65.14296	11/18/92	09:59	65.58850	PJB	65.59140
91-0954	0.41335	11/19/92	14:17	65.59130	PJB	
92-655-01124		11/20/92	11:37	65.59140	PJB	
OA -1A2-R1						
08/20/92-019	63.92726	11/18/92	10:00	63.93690	PJB	63.93990
	0.00000	11/19/92	14:18	63.93990	PJB	
92-655-01125		11/20/92	11:40	63.93990	PJB	
OA -1A2-R1						
115.00000						
115.00000						
08/21/92-003	64.68669	11/18/92	10:06	65.12920	PJB	65.13260
91-0955	0.41444	11/19/92	14:23	65.13250	PJB	
92-655-01132		11/20/92	11:47	65.13260	PJB	
OA -1A2-R2						
08/21/92-004	66.24556	11/18/92	10:08	66.25340	PJB	66.25640
	0.00000	11/19/92	14:25	66.25630	PJB	
92-655-01134		11/20/92	11:48	66.25640	PJB	
OA -1A2-R2						
125.00000						

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Final Beaker Weights

Job Number: 92-655
Report Prepared on: 11/30/92 Page 3

Beaker # / Filter # / Sample # / Run I.D. / Total Vol.,ml / Aliquot Vol.	Constant Tare Weight (g) / Beaker / Filter	Final Weight Data: Date	Time	Weight (g)	Analyst	Constant Final Weight (g)
08/21/92-009	67.56865	11/18/92	10:13	68.04250	PJB	68.04500
91-0959	0.42719	11/19/92	14:33	68.04510	PJB	
92-655-01140		11/20/92	11:53	68.04500	PJB	
OA -1A2-R3						
08/21/92-010	65.50907	11/18/92	10:15	65.52030	PJB	65.52260
	0.00000	11/19/92	14:34	65.52260	PJB	
92-655-01142		11/20/92	11:54	65.52260	PJB	
OA -1A2-R3						
120.00000						
08/20/92-020	68.15705	11/18/92	10:02	68.59380	PJB	68.59800
91-0953	0.41265	11/19/92	14:19	68.59790	PJB	
92-655-01148		11/20/92	11:42	68.59800	PJB	
OB -1A2-R1						
08/20/92-021	66.85029	11/18/92	10:03	66.86640	PJB	66.87050
	0.00000	11/19/92	14:20	66.87050	PJB	
92-655-01150		11/20/92	11:45	66.87050	PJB	
OB -1A2-R1						
125.00000						
08/21/92-005	65.56491	11/18/92	10:09	66.01610	PJB	66.01940
91-0957	0.41846	11/19/92	14:26	66.01940	PJB	
92-655-01156		11/20/92	11:49	66.01940	PJB	
OB -1A2-R2						

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Final Beaker Weights

Job Number: 92-655
Report Prepared on: 11/30/92 Page 4

Beaker # Filter # Sample # Run I.D. Total Vol.,ml Aliquot Vol.	Constant Tare Weight (g) Beaker Filter	Final Weight Data Date	Time	Weight (g)	Analyst	Constant Final Weight (g)
08/21/92-006 92-655-01158 OB -1A2-R2 108.00000	67.31516 0.00000	11/18/92 11/19/92 11/20/92	10:10 14:28 11:50	67.32460 67.32800 67.32790	PJB PJB PJB	67.32790
08/21/92-011 91-0958 92-655-01164 OB -1A2-R3	65.04761 0.42684	11/18/92 11/19/92 11/20/92	10:16 14:35 11:56	65.50820 65.51080 65.51090	PJB PJB PJB	65.51090
08/21/92-012 92-655-01166 OB -1A2-R3 125.00000	64.80047 0.00000	11/18/92 11/19/92 11/20/92	10:17 14:37 11:40	64.80910 64.81180 64.81190	PJB PJB PJB	64.81190
08/20/92-010 91-0962 92-655-01172 IN -1A2-R0	64.48251 0.42070	11/18/92 11/19/92 11/20/92	09:47 14:08 11:28	64.90070 64.90560 64.90580	PJB PJB PJB	64.90580
08/20/92-011 92-655-01174 IN -1A2-R0 120.00000	67.06294 0.00000	11/18/92 11/19/92 11/20/92	09:48 14:08 11:30	67.06140 67.06490 67.06490	PJB PJB PJB	67.06490

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Final Beaker Weights

Job Number: 92-655
Report Prepared on: 11/30/92 Page 5

Beaker # / Filter # / Sample # / Run I.D. / Total Vol.,ml / Aliquot Vol.	Constant Tare Weight (g) / Beaker / Filter	Final Weight Data: Date	Time	Weight (g)	Analyst	Constant Final Weight (g)
08/20/92-012	64.25675	11/18/92	09:50	64.67660	PJB	64.68020
91-0961	0.42121	11/19/92	14:09	64.68020	PJB	
92-655-01180		11/20/92	11:31	64.68020	PJB	
OA -1A2-RO						
08/20/92-013	64.85998	11/18/92	09:52	64.86070	PJB	64.86180
	0.00000	11/19/92	14:10	64.86180	PJB	
92-655-01182		11/20/92	11:32	64.86180	PJB	
OA -1A2-RO						
115.00000						
08/20/92-014	65.17671	11/18/92	09:54	65.59400	PJB	65.59810
91-0963	0.41911	11/19/92	14:12	65.59790	PJB	
92-655-01188		11/20/92	11:34	65.59810	PJB	
OB -1A2-RO						
08/20/92-015	67.31777	11/18/92	09:55	67.31600	PJB	67.31960
	0.00000	11/19/92	14:14	67.31960	PJB	
92-655-01190		11/20/92	11:34	67.31960	PJB	
OB -1A2-RO						
115.00000						

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ETS Analytical Services, Inc.

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A subsidiary of ETS International, Inc.

ETS, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012
ATTN: Dr. Ted Handel

Re: Laboratory Analysis
ETSAS Client No. 6593
Project 92-655

REPORT DATE/NUMBER: January 12, 1993 / 192

SAMPLES COLLECTED BY: ETS, INC.

DATE RECEIVED AT LAB: 11/11/92

ANALYSIS FOR: Condensible Particulate Material, Sulfate, & Chloride

METHOD OF ANALYSIS: USEPA Method 202

SAMPLE ANALYSIS DATA

Lab ID: 132687 Client ID: 92-655-01103 Matrix: AQUEOUS
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT
Chloride ——— 14.9 mg/l
>Analysis Date: 6-JAN-1993 by: TLH
>Method: Ion Chromatography
Condensible Particulate Material 116.6 mg
>Analysis Date: 12/31/92 by: CAS
>Method: USEPA Method 202
>Comments: Volume Used 420.2
Sulfate ——— 126 mg/l
>Analysis Date: 5-JAN-1993 by: TLH
>Method: Ion Chromatography

Lab ID: 132688 Client ID: 92-655-01111 Matrix: AQUEOUS
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT
Chloride ——— 26.7 mg/l
>Analysis Date: 6-JAN-1993 by: TLH
>Method: Ion Chromatography
Condensible Particulate Material 102.0 mg
>Analysis Date: 12/31/92 by: CAS
>Method: USEPA Method 202
>Comments: Volume Used 389.3

REPORT CONTINUED ON NEXT PAGE

ETS, Inc.
Report of 01/12/93
Page No. 2

SAMPLE ANALYSIS DATA

Lab ID: 132688 (continued)
Sulfate — 142 mg/l
└>Analysis Date: 5-JAN-1993 by: TLH
└>Method: Ion Chromatography

Lab ID: 132689 Client ID: 92-655-01119 Matrix: AQUEOUS
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT
Chloride — 12.0 mg/l
└>Analysis Date: 6-JAN-1993 by: TLH
└>Method: Ion Chromatography
Condensible Particulate Material 68.6 mg
└>Analysis Date: 12/31/92 by: CAS
└>Method: USEPA Method 202
└>Comments: Volume Used 361.5
Sulfate — 160 mg/l
└>Analysis Date: 5-JAN-1993 by: TLH
└>Method: Ion Chromatography

Lab ID: 132690 Client ID: 92-655-01127 Matrix: AQUEOUS
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT
Chloride — < 1.0 mg/l
└>Analysis Date: 6-JAN-1993 by: TLH
└>Method: Ion Chromatography
Condensible Particulate Material 9.6 mg
└>Analysis Date: 12/31/92 by: CAS
└>Method: USEPA Method 202
└>Comments: Volume Used 498.8
Sulfate — 45.0 mg/l
└>Analysis Date: 5-JAN-1993 by: TLH
└>Method: Ion Chromatography

Lab ID: 132691 Client ID: 92-655-01135 Matrix: AQUEOUS
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT
Chloride — < 1.0 mg/l
└>Analysis Date: 6-JAN-1993 by: TLH
└>Method: Ion Chromatography
Condensible Particulate Material 11.9 mg
└>Analysis Date: 12/31/92 by: CAS
└>Method: USEPA Method 202
└>Comments: Volume Used 469.2
Sulfate — 74.0 mg/l
└>Analysis Date: 5-JAN-1993 by: TLH
└>Method: Ion Chromatography

REPORT CONTINUED ON NEXT PAGE

ETS, Inc.
Report of 01/12/93
Page No. 3

SAMPLE ANALYSIS DATA

Lab ID: 132692 Client ID: 92-655-01143 Matrix: AQUEOUS
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT

Chloride —— < 1.0 mg/l
└>Analysis Date: 6-JAN-1993 by: TLH
└>Method: Ion Chromatography
Condensible Particulate Material 10.8 mg
└>Analysis Date: 12/31/92 by: CAS
└>Method: USEPA Method 202
└>Comments: Volume Used 433.4
Sulfate —— 61.0 mg/l
└>Analysis Date: 5-JAN-1993 by: TLH
└>Method: Ion Chromatography

Lab ID: 132693 Client ID: 92-655-01151 Matrix: AQUEOUS
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT

Chloride —— < 1.0 mg/l
└>Analysis Date: 6-JAN-1993 by: TLH
└>Method: Ion Chromatography
Condensible Particulate Material 11.3 mg
└>Analysis Date: 12/31/92 by: CAS
└>Method: USEPA Method 202
└>Comments: Volume Used 470.6
Sulfate —— 40.0 mg/l
└>Analysis Date: 5-JAN-1993 by: TLH
└>Method: Ion Chromatography

Lab ID: 132694 Client ID: 92-655-01159 Matrix: AQUEOUS
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT

Chloride —— < 1.0 mg/l
└>Analysis Date: 6-JAN-1993 by: TLH
└>Method: Ion Chromatography
Condensible Particulate Material 7.4 mg
└>Analysis Date: 12/31/92 by: CAS
└>Method: USEPA Method 202
└>Comments: Volume Used 504.3
Sulfate —— 45.0 mg/l
└>Analysis Date: 5-JAN-1993 by: TLH
└>Method: Ion Chromatography

Lab ID: 132695 Client ID: 92-655-01167 Matrix: AQUEOUS
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT

Chloride —— < 1.0 mg/l
└>Analysis Date: 6-JAN-1993 by: TLH
└>Method: Ion Chromatography

REPORT CONTINUED ON NEXT PAGE

```
──────────────────── SAMPLE ANALYSIS DATA ────────────────────
Lab ID: 132695 (continued)
          Condensible Particulate Material   10.0 mg
           └>Analysis Date: 12/31/92      by: CAS
           └>Method: USEPA Method 202
           └>Comments: Volume Used 408.2
          Sulfate ──────────────────────── 63.0 mg/l
           └>Analysis Date: 5-JAN-1993    by: TLH
           └>Method: Ion Chromatography

Lab ID: 132696     Client ID: 92-655-01175        Matrix: AQUEOUS
Other ID: 92-655-T/6-6.1        Description: EPA BRICK PLANT
          Chloride ─────────────────────── < 1.0 mg/l
           └>Analysis Date: 6-JAN-1993    by: TLH
           └>Method: Ion Chromatography
          Condensible Particulate Material   3.1 mg
           └>Analysis Date: 12/31/92      by: CAS
           └>Method: USEPA Method 202
           └>Comments: Volume Used 297.6
          Sulfate ──────────────────────── 0.7 mg/l
           └>Analysis Date: 5-JAN-1993    by: TLH
           └>Method: Ion Chromatography

Lab ID: 132697     Client ID: 92-655-01183        Matrix: AQUEOUS
Other ID: 92-655-T/6-6.1        Description: EPA BRICK PLANT
          Chloride ─────────────────────── 2.9 mg/l
           └>Analysis Date: 7-JAN-1993    by: TLH
           └>Method: Ion Chromatography
          Condensible Particulate Material   3.3 mg
           └>Analysis Date: 12/31/92      by: CAS
           └>Method: USEPA Method 202
           └>Comments: Volume Used 296.5
          Sulfate ──────────────────────── 0.7 mg/l
           └>Analysis Date: 5-JAN-1993    by: TLH
           └>Method: Ion Chromatography

Lab ID: 132698     Client ID: 92-655-01191        Matrix: AQUEOUS
Other ID: 92-655-T/6-6.1        Description: EPA BRICK PLANT
          Chloride ─────────────────────── 2.4 mg/l
           └>Analysis Date: 6-JAN-1993    by: TLH
           └>Method: Ion Chromatography
          Condensible Particulate Material   1.5 mg
           └>Analysis Date: 12/31/92      by: CAS
           └>Method: USEPA Method 202
           └>Comments: Volume Used 292.7
```

──────────────── REPORT CONTINUED ON NEXT PAGE ────────────────

SAMPLE ANALYSIS DATA

Lab ID: 132698 (continued)
Sulfate —— 0.7 mg/l
↳>Analysis Date: 5-JAN-1993 by: TLH
↳>Method: Ion Chromatography

Lab ID: 132701 Client ID: 92-655-01122 Matrix: MeCL2
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT
Condensible Particulate Material 55.2 mg
↳>Analysis Date: 12/31/92 by: CAS
↳>Method: USEPA Method 202

Lab ID: 132702 Client ID: 92-655-01130 Matrix: MeCL2
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT
Condensible Particulate Material 36.6 mg
↳>Analysis Date: 12/31/92 by: CAS
↳>Method: USEPA Method 202

Lab ID: 132703 Client ID: 92-655-01138 Matrix: MeCL2
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT
Condensible Particulate Material 29.2 mg
↳>Analysis Date: 12/31/92 by: CAS
↳>Method: USEPA Method 202

Lab ID: 132704 Client ID: 92-655-01146 Matrix: MeCL2
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT
Condensible Particulate Material 62.9 mg
↳>Analysis Date: 12/31/92 by: CAS
↳>Method: USEPA Method 202

Lab ID: 132705 Client ID: 92-655-01154 Matrix: MeCL2
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT
Condensible Particulate Material 14.7 mg
↳>Analysis Date: 12/31/92 by: CAS
↳>Method: USEPA Method 202

Lab ID: 132706 Client ID: 92-655-01162 Matrix: MeCL2
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT
Condensible Particulate Material 26.2 mg
↳>Analysis Date: 12/31/92 by: CAS
↳>Method: USEPA Method 202

Lab ID: 132707 Client ID: 92-655-01170 Matrix: MeCL2
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT
Condensible Particulate Material 21.1 mg
↳>Analysis Date: 12/31/92 by: CAS
↳>Method: USEPA Method 202

REPORT CONTINUED ON NEXT PAGE

SAMPLE ANALYSIS DATA

Lab ID: 132708 Client ID: 92-655-01178 Matrix: MeCL2
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT
Condensible Particulate Material 25.9 mg
↳>Analysis Date: 12/31/92 by: CAS
↳>Method: USEPA Method 202

Lab ID: 132709 Client ID: 92-655-01186 Matrix: MeCL2
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT
Condensible Particulate Material 16.3 mg
↳>Analysis Date: 12/31/92 by: CAS
↳>Method: USEPA Method 202

Lab ID: 132710 Client ID: 92-655-01194 Matrix: MeCL2
Other ID: 92-655-T/6-6.1 Description: EPA BRICK PLANT
Condensible Particulate Material 87.3 mg
↳>Analysis Date: 12/31/92 by: CAS
↳>Method: USEPA Method 202

NOTE: The volume used for the Sulfate analyses was 20 mls.
ETSAS Sample Nos. 132687 to 132697 were aqueous fractions. ETSAS samples Nos. 132701 to 132712 were the methylene chloride fractions.

If we may be of further assistance, please contact us at any time.

Sincerely,
ETS ANALYTICAL SERVICES, INC.

Chris A Southworth

Chris Southworth, Project Manager

Condensible Particulate
Emissions
EPA Method 202

Date 12/31/92 Analyst CAS Project No. 92-655

ETSAS ID	ETS INC. RUN #	Volume (mls)	Tare wt. (g)	Final wt. (g)	Mass (mg)
132693	OB-PM10-R1	470.6	95.7061	95.7174	11.3
132694	OB-PM10-R2	504.3	105.8148	105.8222	7.4
132695	OB-PM10-R3	408.2	110.8525	110.8625	10.0
132696	IN-PM10-R0	297.6	104.8795	104.8826	3.1
132697	OA-PM10-R0	296.5	105.6789	105.6822	3.3
132698	OB-PM10-R0	292.7	103.2372	103.2387	1.5
132687	IN-PM10-R1	420.2	111.7665	111.8831	116.6
132688	IN-PM10-R2	389.3	107.3371	107.4391	102.0
132689	IN-PM10-R3	361.5	98.8628	98.9314	68.6
132690	OA-PM10-R1	498.8	106.4244	106.4340	9.6
132691	OA-PM10-R2	469.2	101.4668	101.4787	11.9
132692	OA-PM10-R3	433.4	118.9508	118.9616	10.8
132705	OB-PM10-R1		71.5181	71.5328	14.7
132706	OB-PM10-R2		75.4196	75.4458	26.2
132707	OB-PM10-R3		75.2918	75.3129	21.1
132708	IN-PM10-R0		64.9359	64.9618	25.9
132709	OA-~~B~~ CAS PM10-R0		66.2509	66.2672	16.3
132710	OB-PM10-R0		66.1945	66.2818	87.3
132711	IN-PM10-R1		74.5107	74.5449	34.2
132712	IN-PM10-R2		65.7736	65.8041	30.5
132701	IN-PM10-R3		65.8996	65.89548	55.2
132702	OA-PM10-R1		71.9695	72.0061	36.6
132703	OA-PM10-R2		65.6243	~~65~~ CAS 65.6535	29.2
132704	OA-PM10-R3		74.9624	75.0253	62.9

Condensible Particulate
Emissions
EPA Method 202

Date 12/31/92 Analyst CAS Project No. 92-655

ETSAS ID	ETS INC. RUN #	Volume (mls)	Tare wt. (g)	Final wt. (g)	Mass (mg)
PBIK (inorganic)		200	102.7645	102.7648	0.3
PBIK ($MeCl_2$)			72.8821	72.8821	0.0

DATA REVIEW PERFORMED
BY [illegible] DATE 1-8-93

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F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method 201A/202

Print Date 11/11/92   Time 15:16:51
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Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
~~01100~~	~~F1~~	~~91-0952~~	~~IN -1A2-R1~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01101~~	~~F2~~		~~IN -1A2-R1~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01102~~	~~F3~~		~~IN -1A2-R1~~	~~<-PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01103	F4		IN -1A2-R1	IMPINGER CONTENTS			NKL	11/11/92	
~~01104~~	~~F5~~		~~IN -1A2-R1~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01105~~	~~F6~~		~~IN -1A2-R1~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01106	F7		IN -1A2-R1	BACK HALF MeCL2			NKL	11/11/92	
~~01107~~	~~F8~~		~~IN -1A2-R1~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01108~~	~~F1~~	~~91-0956~~	~~IN -1A2-R2~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01109~~	~~F2~~		~~IN -1A2-R2~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01110~~	~~F3~~		~~IN -1A2-R2~~	~~<-PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01111	F4		IN -1A2-R2	IMPINGER CONTENTS			NKL	11/11/92	
~~01112~~	~~F5~~		~~IN -1A2-R2~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01113~~	~~F6~~		~~IN -1A2-R2~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01114	F7		IN -1A2-R2	BACK HALF MeCL2			NKL	11/11/92	
~~01115~~	~~F8~~		~~IN -1A2-R2~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01116~~	~~F1~~	~~91-0960~~	~~IN -1A2-R3~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01117~~	~~F2~~		~~IN -1A2-R3~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01118~~	~~F3~~		~~IN -1A2-R3~~	~~<-PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01119	F4		IN -1A2-R3	IMPINGER CONTENTS			NKL	11/11/92	
~~01120~~	~~F5~~		~~IN -1A2-R3~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01121~~	~~F6~~		~~IN -1A2-R3~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01122	F7		IN -1A2-R3	BACK HALF MeCL2			NKL	11/11/92	
~~01123~~	~~F8~~		~~IN -1A2-R3~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01124~~	~~F1~~	~~91-0954~~	~~OA -1A2-R1~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01125~~	~~F2~~		~~OA -1A2-R1~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01126~~	~~F3~~		~~OA -1A2-R1~~	~~<-PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	

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Contract No. 92-655
Job I.D.
Test Method 201A/202

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Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
01127	F4		OA -1A2-R1	IMPINGER CONTENTS			NKL	11/11/92	
~~01128~~	~~F5~~		~~OA -1A2-R1~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01129~~	~~F6~~		~~OA -1A2-R1~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01130	F7		OA -1A2-R1	BACK HALF MeCL2			NKL	11/11/92	
~~01131~~	~~F8~~		~~OA -1A2-R1~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01132~~	~~F1~~	~~91-0955~~	~~OA -1A2-R2~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01133~~	~~F2~~		~~OA -1A2-R2~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01134~~	~~F3~~		~~OA -1A2-R2~~	~~<-PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01135	F4		OA -1A2-R2	IMPINGER CONTENTS			NKL	11/11/92	
~~01136~~	~~F5~~		~~OA -1A2-R2~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01137~~	~~F6~~		~~OA -1A2-R2~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01138	F7		OA -1A2-R2	BACK HALF MeCL2			NKL	11/11/92	
~~01139~~	~~F8~~		~~OA -1A2-R2~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01140~~	~~F1~~	~~91-0959~~	~~OA -1A2-R3~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01141~~	~~F2~~		~~OA -1A2-R3~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01142~~	~~F3~~		~~OA -1A2-R3~~	~~<-PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01143	F4		OA -1A2-R3	IMPINGER CONTENTS			NKL	11/11/92	
~~01144~~	~~F5~~		~~OA -1A2-R3~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01145~~	~~F6~~		~~OA -1A2-R3~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01146	F7		OA -1A2-R3	BACK HALF MeCL2			NKL	11/11/92	
~~01147~~	~~F8~~		~~OA -1A2-R3~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01148~~	~~F1~~	~~91-0953~~	~~OB -1A2-R1~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01149~~	~~F2~~		~~OB -1A2-R1~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01150~~	~~F3~~		~~OB -1A2-R1~~	~~<-PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01151	F4		OB -1A2-R1	IMPINGER CONTENTS			NKL	11/11/92	
~~01152~~	~~F5~~		~~OB -1A2-R1~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01153~~	~~F6~~		~~OB -1A2-R1~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	

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Contract No. 92-655
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Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
01154	F7		OB -1A2-R1	BACK HALF MeCL2			NKL	11/11/92	
~~01155~~	~~F8~~		~~OB -1A2-R1~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01156~~	~~F1~~	~~91-0957~~	~~OB -1A2-R2~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01157~~	~~F2~~		~~OB -1A2-R2~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01158~~	~~F3~~		~~OB -1A2-R2~~	~~<=PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01159	F4		OB -1A2-R2	IMPINGER CONTENTS			NKL	11/11/92	
~~01160~~	~~F5~~		~~OB -1A2-R2~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01161~~	~~F6~~		~~OB -1A2-R2~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01162	F7		OB -1A2-R2	BACK HALF MeCL2			NKL	11/11/92	
~~01163~~	~~F8~~		~~OB -1A2-R2~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01164~~	~~F1~~	~~91-0958~~	~~OB -1A2-R3~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01165~~	~~F2~~		~~OB -1A2-R3~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01166~~	~~F3~~		~~OB -1A2-R3~~	~~<=PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01167	F4		OB -1A2-R3	IMPINGER CONTENTS			NKL	11/11/92	
~~01168~~	~~F5~~		~~OB -1A2-R3~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01169~~	~~F6~~		~~OB -1A2-R3~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01170	F7		OB -1A2-R3	BACK HALF MeCL2			NKL	11/11/92	
~~01171~~	~~F8~~		~~OB -1A2-R3~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01172~~	~~F1~~	~~91-0962~~	~~IN -1A2-RO~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	
~~01173~~	~~F2~~		~~IN -1A2-RO~~	~~>PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
~~01174~~	~~F3~~		~~IN -1A2-RO~~	~~<=PM10 ACETONE RINSE~~			~~NKL~~	~~11/11/92~~	
01175	F4		IN -1A2-RO	IMPINGER CONTENTS			NKL	11/11/92	
~~01176~~	~~F5~~		~~IN -1A2-RO~~	~~IMP CONT EXTRA STORE~~			~~NKL~~	~~11/11/92~~	
~~01177~~	~~F6~~		~~IN -1A2-RO~~	~~BACK HALF ACETONE~~			~~NKL~~	~~11/11/92~~	
01178	F7		IN -1A2-RO	BACK HALF MeCL2			NKL	11/11/92	
~~01179~~	~~F8~~		~~IN -1A2-RO~~	~~SILICA GEL~~			~~NKL~~	~~11/11/92~~	
~~01180~~	~~F1~~	~~91-0961~~	~~OA -1A2-RO~~	~~FIBERGLASS FILTER~~			~~NKL~~	~~11/11/92~~	

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F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method 201A/202

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Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
01181	F2		OA -1A2-RO	>PM10 ACETONE RINSE			NKL	11/11/92	
01182	F3		OA -1A2-RO	<=PM10 ACETONE RINSE			NKL	11/11/92	
01183	F4		OA -1A2-RO	IMPINGER CONTENTS			NKL	11/11/92	
01184	F5		OA -1A2-RO	IMP CONT EXTRA STORE			NKL	11/11/92	
01185	F6		OA -1A2-RO	BACK HALF ACETONE			NKL	11/11/92	
01186	F7		OA -1A2-RO	BACK HALF MeCL2			NKL	11/11/92	
01187	F8		OA -1A2-RO	SILICA GEL			NKL	11/11/92	
01188	F1	91-0963	CB -1A2-RO	FIBERGLASS FILTER			NKL	11/11/92	
01189	F2		OB -1A2-RO	>PM10 ACETONE RINSE			NKL	11/11/92	
01190	F3		OB -1A2-RO	<=PM10 ACETONE RINSE			NKL	11/11/92	
01191	F4		OB -1A2-RO	IMPINGER CONTENTS			NKL	11/11/92	
01192	F5		OB -1A2-RO	IMP CONT EXTRA STORE			NKL	11/11/92	
01193	F6		OB -1A2-RO	BACK HALF ACETONE			NKL	11/11/92	
01194	F7		OB -1A2-RO	BACK HALF MeCL2			NKL	11/11/92	
01195	F8		OB -1A2-RO	SILICA GEL			NKL	11/11/92	

G.1.3 M201 GRAVIMETRICS LABORATORY DATA

Pine Hall Brick M-201

FILTER RUN	NO.	TARE	11-16-92 09:00	11-16-92 16:15	11-17-92 08:00
1-D2	402	0.2418	0.2441	0.2442	0.2442
1-D1	403	0.2441	0.2458	0.2456	0.2458
BLANK	404	0.2370	0.2366	0.2368	0.2367
2-D2	405	0.2400	0.2408	0.2410	0.2409
2-D1	406	0.2409	0.2417	0.2420	0.2418
3-D2	407	0.2418	0.2426	0.2430	0.2430
3-D1	408	0.2395	0.2408	0.2409	0.2408

FILTER CATCH (FROM HIGHEST TOTAL WEIGHT) PM_{10}

RUN

BLANK – 0.2368 – 0.2370 = 0.0

1-D1 0.2458 − 0.2441 = .0017

2-D1 0.2420 − 0.2409 = .0011

3-D1 0.2409 − 0.2395 = .0014

RUN

1-D2 0.2442 − 0.2418 = .0024

2-D2 0.2410 − 0.2400 = .0010

3-D2 0.2430 − 0.2418 = .0012

TOTAL PM_{10} CATCH (FILTER + RECOVERY)

1-D1 .0017 + .0020 = .0037
[illegible]
460

2-D1 .0011 + .0014 = .0025
228
253

3-D1 .0014 + .0010 = .0024
390
[illegible]

1-D2 .0024 + .0030 = .0054
409
463

2-D2 .0010 + .0013 = .0023
152
175

3-D2 .0012 + .0009 = .0021
238
254

Pine Hall Birch M-201

BEAKER NO. RUN		TARE	11-16-92 09:25	11-16-92 16:30	11-17-92 07:15	HIGH WT. CORRECTED BLANK (.0006)	BLANK VOL. ML	WT. g
BLANK	1	107.2636	107.2640	107.2642	107.2640		50	
"	2	102.8768	102.8770	102.8772	102.8774		50	
"	3	97.3071	97.3073	97.3076	97.3076		50	
1-D1-PM90	4	99.5546	99.5976	99.5975	99.5978	99.5969	75	.000
1-D1-PM10	5	102.7274	102.7300	102.7300	102.7299	102.7294	50	.000
1-D2-PM90	6	110.3230	110.3649	110.3650	110.3651	110.3639	100	.001
1-D2-PM10	7	95.0918	95.0952	95.0954	95.0953	96.0998	50	.000
2-D1-PM90	8	112.0724	112.0964	112.0963	112.0963	112.0952	100	.0012
2-D1-PM10	9	92.7023	92.7043	92.7045	92.7046	92.7037	75	.000
2-D2-PM90	10	88.7839	88.8001	88.8001	88.8003	88.7991	100	.0012
2-D2-PM10	11	86.9687	86.9708	86.9707	86.9709	86.9700	75	.000
3-D1-PM90	12	110.0059	110.0458	110.0461	110.0460	110.0449	100	.0012
3-D1-PM10	13	114.9236	114.9252	114.9254	114.9255	114.9246	75	.000
3-D2-PM90	14	108.1764	108.2009	108.2008	108.2009	108.1997	100	.0012
3-D2-PM10	15	108.0607	108.0622	108.0624	108.0625	108.0616	75	.000

RECOVERY CATCH (FROM HIGHEST TOTAL WEIGHT) (BLANK CORRECTED)

RUN RUN RUN RUN

BLANK 1 .2642-.2636=.0006 BLANK 2 .8774-.8768=.0006 BLANK 3 .3076-.3071=.000

HIGH BLANK WT = 0.000012 g/ML

1D1PM90	1D1PM10	1D2PM90	1D2PM10
99.5969	102.7294	110.3639	95.0948
-99.5546	-102.7274	-110.3230	-95.0918
.0423	.0020	.0409	.0030

2D1PM90	2D1PM10	2D2PM90	2D2PM10
112.0952	92.7037	88.7991	86.9700
-112.0724	-92.7023	-88.7839	-86.9687
.0228	.0014	.0152	.0013

3D1PM90	3D1PM10	3D2PM90	3D2PM10
110.0449	114.9246	108.1997	108.0616
-110.0059	-114.9236	-108.1764	-108.0607
.0390	.0010	.0233	.0009

Pine Hall Brick - M-201

BEAKER NO.

	08:00 11-9-92	16:00 11-9-92	SAMPLE NO.	VOL ML
1 -	107.2632	107.2636	ACETONE BLANK	50
2 -	102.8764	102.8768	"	50
3 -	97.3073	97.3071	"	50
4 -	99.5542	99.5546	1-D1-PM_{90}	75
5 -	102.7271	102.7274	1-D1-PM_{10}	50
6 -	110.3227	110.3230	1-D2-PM_{90}	100
7 -	95.0915	95.0918	1-D2-PM_{10}	50
8 -	112.0726 ~~95.2252~~	112.0724	2-D1-PM_{90}	100
9 -	92.7024	92.7023	2-D1-PM_{10}	75
10 -	88.7840	88.7839	2-D2-PM_{90}	100
11 -	86.9690	86.9687	2-D2-PM_{10}	75
12 -	110.0060	110.0059	3-D1-PM_{90}	100
13 -	114.9231	114.9236	3-D1-PM_{10}	75
14 -	108.1763	108.1764	3-D2-PM_{90}	100
15 -	108.0609	108.0607	3-D2-PM_{10}	75
16 -	94.6229	94.6230		
17 -	94.6362	94.6360		
18 -	88.2912	88.2913		
19 -	108.4221	108.4225		
20 -	88.4602	88.4607		
21 -	108.8704	108.8708		
22 -	107.5294	107.5295		
23 -	109.8816	109.8814		
24 -	106.3939	106.3944		

Pine Hall Brick - M-201

FILTER NO.	9-8-92	9-10-92	9-11-92 8:00 AM	9-11-92 3:00 PM
402	0.2449	.2431	.2421	.2418
403	0.2478	.2450	.2441	.2441
404	0.2377	.2378	.2371	.2370
405	0.2408	.2410	.2402	.2400
406	0.2411	.2419	.2411	.2409
407	0.2420	.2424	.2419	.2418
408	0.2401	.2406	.2398	.2395
409	0.2402	.2407	.2396	.2392
410	0.2415	.2423	.2411	.2408
411	0.2408	.2419	.2407	.2403
412	0.2403	.2407	.2397	.2392
413	0.2375	.2382	.2368	.2364
414	0.2402	.2407	.2402	.2397
415	0.2410	.2421	.2408	.2404
416	0.2405	.2414	.2402	.2402
417	0.2415	.2421	.2408	.2405
418	0.2401	.2407	.2394	.2391
419	0.2397	.2404	.2387	.2382
420	0.2433	.2452	.2423	.2421
421	0.2372	.2422	.2370	.2366
422	0.2371	.2375	.2363	.2360
423	0.2375	.2372	.2373	.2368
424	0.2386	.2386	.2387	.2383
425	0.2375	.2380	.2375	.2373
426	0.2390	.2389	.2387	.2387
TORN ~~427~~	0.2350			
~~428~~	~~0.2369~~			
429	0.2382			
~~430~~	0.2403			
431	0.2381			
432	0.2380			
~~433~~	~~0.2400~~			
434	0.2384			
435	0.2404			

G.1.4 ANDERSEN IMPACTOR LABORATORY DATA

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method AND. IMPACTOR

Print Date 12/15/92   Time 14:32:36
Page 1

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00400	F1	AND 463	IN -IMP-R1	SET OF 9 FILTERS			NKL	11/05/92	
00401	F2		IN -IMP-R1	ACETONE PROBE WASH			NKL	11/05/92	
00402	F3		IN -IMP-R1	200ML WATER			NKL	11/05/92	
00403	F4		IN -IMP-R1	200GM SILICA GEL			NKL	11/05/92	
00405	F1	AND 445	IN -IMP-R2	SET OF 9 FILTERS			NKL	11/05/92	
00406	F2		IN -IMP-R2	ACETONE PROBE WASH			NKL	11/05/92	
00407	F3		IN -IMP-R2	200ML WATER			NKL	11/05/92	
00408	F4		IN -IMP-R2	200GM SILICA GEL			NKL	11/05/92	
00410	F1	AND 466	IN -IMP-R3	SET OF 9 FILTERS			NKL	11/05/92	
00411	F2		IN -IMP-R3	ACETONE PROBE WASH			NKL	11/05/92	
00412	F3		IN -IMP-R3	200ML WATER			NKL	11/05/92	
00413	F4		IN -IMP-R3	200GM SILICA GEL			NKL	11/05/92	
00415	F1	AND 450	OA -IMP-R1	SET OF 9 FILTERS			NKL	11/05/92	
00416	F2		OA -IMP-R1	ACETONE PROBE WASH			NKL	11/05/92	
00417	F3		OA -IMP-R1	200ML WATER			NKL	11/05/92	
00418	F4		OA -IMP-R1	200GM SILICA GEL			NKL	11/05/92	
00420	F1	AND 464	OA -IMP-R2	SET OF 9 FILTERS			NKL	11/05/92	
00421	F2		OA -IMP-R2	ACETONE PROBE WASH			NKL	11/05/92	
00422	F3		OA -IMP-R2	200ML WATER			NKL	11/05/92	
00423	F4		OA -IMP-R2	200GM SILICA GEL			NKL	11/05/92	
00425	F1	AND 460	OA -IMP-R3	SET OF 9 FILTERS			NKL	11/05/92	
00426	F2		OA -IMP-R3	ACETONE PROBE WASH			NKL	11/05/92	
00427	F3		OA -IMP-R3	200ML WATER			NKL	11/05/92	
00428	F4		OA -IMP-R3	200GM SILICA GEL			NKL	11/05/92	
00430	F1	AND 462	OB -IMP-R1	SET OF 9 FILTERS			NKL	11/05/92	
00431	F2		OB -IMP-R1	ACETONE PROBE WASH			NKL	11/05/92	
00432	F3		OB -IMP-R1	200ML WATER			NKL	11/05/92	

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method AND. IMPACTOR

Print Date 12/15/92
Page 2

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00433	F4		OB -IMP-R1	200GM SILICA GEL			NKL	11/05/92	
00435	F1	AND 452	OB -IMP-R2	SET OF 9 FILTERS			NKL	11/05/92	
00436	F2		OB -IMP-R2	ACETONE PROBE WASH			NKL	11/05/92	
00437	F3		OB -IMP-R2	200ML WATER			NKL	11/05/92	
00438	F4		OB -IMP-R2	200GM SILICA GEL			NKL	11/05/92	
00440	F1	AND 470	OB -IMP-R3	SET OF 9 FILTERS			NKL	11/05/92	
00441	F2		OB -IMP-R3	ACETONE PROBE WASH			NKL	11/05/92	
00442	F3		OB -IMP-R3	200ML WATER			NKL	11/05/92	
00443	F4		OB -IMP-R3	200GM SILICA GEL			NKL	11/05/92	
00445	F1	AND 482	IN -IMP-R4	SET OF 9 FILTERS			nkl	11/11/92	
00446	F2		IN -IMP-R4	ACETONE PROBE WASH			nkl	11/11/92	
00447	F3		IN -IMP-R4	200ML WATER			nkl	11/11/92	
00448	F4		IN -IMP-R4	200GM SILICA GEL			nkl	11/11/92	
00450	F1	AND 481	OA -IMP-R4	SET OF 9 FILTERS			nkl	11/11/92	
00451	F2		OA -IMP-R4	ACETONE PROBE WASH			nkl	11/11/92	
00452	F3		OA -IMP-R4	200ML WATER			nkl	11/11/92	
00453	F4		OA -IMP-R4	200GM SILICA GEL			nkl	11/11/92	
00455	F1	AND 483	OB -IMP-R4	SET OF 9 FILTERS			nkl	11/11/92	
00456	F2		OB -IMP-R4	ACETONE PROBE WASH			nkl	11/11/92	
00457	F3		OB -IMP-R4	200ML WATER			nkl	11/11/92	
00458	F4		OB -IMP-R4	200GM SILICA GEL			nkl	11/11/92	
00459	F5		OB -IMP-R4	TEDLAR BAG			nkl	11/11/92	
00461	F2		-IMP-R0	ACETONE PROBE WASH			NKL	11/05/92	ACETONE BLANK

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Final Beaker Weights

Job Number: 92-655
Report Prepared on: 11/24/92

Beaker # / Filter # / Sample # / Run I.D. / Total Vol.,ml / Aliquot Vol.	Constant Tare Weight (g) Beaker / Filter	Final Weight Data Date	Time	Weight (g)	Analyst	Constant Final Weight (g)
08/20/92-003	65.26492	11/11/92	20:41	65.26980	PJB	65.26940
	0.00000	11/18/92	10:15	65.26910	PJB	
92-655-00406		11/19/92	11:42	65.26940	PJB	
IN -IMP-R2						
80.00000						
80.00000						
08/20/92-004	64.20708	11/11/92	20:43	64.21130	PJB	64.21090
	0.00000	11/18/92	10:16	64.21050	PJB	
92-655-00411		11/19/92	11:44	64.21090	PJB	
IN -IMP-R3						
60.00000						
60.00000						
08/20/92-005	64.79116	11/11/92	20:49	64.80020	PJB	64.80050
	0.00000	11/18/92	10:17	64.80050	PJB	
92-655-00421						
OA -IMP-R2						
80.00000						
80.00000						
08/20/92-006	64.76338	11/11/92	20:48	64.77310	PJB	64.77290
	0.00000	11/18/92	10:18	64.77290	PJB	
92-655-00426						
OA -IMP-R3						
80.00000						
80.00000						
08/20/92-007	65.95359	11/11/92	20:50	65.96630	PJB	65.96550
	0.00000	11/18/92	10:19	65.96550	PJB	
92-655-00436		11/19/92	11:43	65.96550	PJB	
OB -IMP-R2						
150.00000						
150.00000						

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Final Beaker Weights

Job Number: 92-655
Report Prepared on: 11/24/92 Page 2

Beaker # / Filter # / Sample # / Run I.D. / Total Vol.,ml / Aliquot Vol.	Constant Tare Weight (g) / Beaker / Filter	Final Weight Data: Date	Time	Weight (g)	Analyst	Constant Final Weight (g)
08/20/92-008	64.92131	11/11/92	20:53	64.95860	PJB	64.95770
	0.00000	11/18/92	10:20	64.95760	PJB	
92-655-00441		11/19/92	11:45	64.95770	PJB	
OB -IMP-R3						
80.00000						
80.00000						
07/20/92-019	65.14728	11/21/92	14:05	65.15080	PJB	65.15090
	0.00000	11/23/92	10:00	65.15090	PJB	
92-655-00446						
IN -IMP-R4						
77.00000						
77.00000						
07/20/92-020	64.66857	11/21/92	14:06	64.67340	PJB	64.67350
	0.00000	11/23/92	09:59	64.67350	PJB	
92-655-00451						
OA -IMP-R4						
75.00000						
75.00000						
07/20/92-021	64.61920	11/21/92	14:07	64.63120	PJB	64.63130
	0.00000	11/23/92	10:01	64.63130	PJB	
92-655-00456						
OB -IMP-R4						
108.00000						
108.00000						

FILTER WEIGHTS

HUD 445 IN-IMP-R2

FILTER NUMBER	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	NET WEIGHT
HUD 445 1	10/25 / 13:11 1.0857	11/1 / 0940 1.08585	/	/	/	
2	10/25 / 13:11 1.0895	/ 0941 1.08935	/	/	/	
3	10/25 / 13:10 1.5381	/ 0942 1.53800	/	/	/	
4	10/25 / 13:10 1.0553	/ 0943 1.05554	/	/	/	
5	10/25 / 13:09 1.1507	/ 0945 1.15068	/	/	/	
[illegible]	10/25 / 13:09 1.4945	/ [illegible] 1.494[illegible]9	/	/	/	
[illegible]	10/25 / [illegible] 1.25[illegible]	/ 09[illegible]7 1.2[illegible]	/	/	/	
[illegible]	10/25 / 13:08 1.2931	/ [illegible] 1.29315	/	/	/	
[illegible]	10/25 / 13:09 1.2286	11/1 / [illegible] 1.228[illegible]7	/	/	/	

Anderson

~~TARE~~ Final FILTER WEIGHTS

Filter Description: 92-655-6 IN-IMP-R2

#445

FILTER NUMBER	DATE / TIME	WEIGHT (GM)	ANALYST	DATE / TIME	WEIGHT (GM)	ANALYST	DATE / TIME	WEIGHT (GM)	ANALYST	DATE / TIME	WEIGHT (GM)	ANALYST	DATE / TIME	WEIGHT (GM)	ANALYST	CONSTANT WEIGHT
1	11/11 / 19:50	1.0894	AX	11/18 / 1259	1.0893	B	/			/			/			1.0893
2	11/11 /	1.0920		11/18 / 1300	1.0920		/			/			/			1.0920
3	11/11 /	1.5410		11/18 / 1301	1.5411		/			/			/			1.5411
4	11/11 /	1.0573		11/18 / 1302	1.0576		/			/			/			1.0576
5	11/11 /	1.1519		11/18 / 1304	1.1518		/			/			/			1.1518
6	11/11 /	1.4960		11/18 / 1305	1.4960		/			/			/			1.4960
7	11/11 /	1.2560		11/18 / 1307	1.2860		/			/			/			1.2860
8	11/11 /	1.2947		11/18 / 1308	1.2948		/			/			/			1.2948
BC	/ [illegible]	1.2383		11/18 / 1310	1.2396		/			/			/			1.2396

FILTER WEIGHTS IW-~~A~~MP-R3

HUD 466

FILTER NUMBER	DATE / TIME — WEIGHT (GM) — ANALYST	DATE / TIME — WEIGHT (GM) — ANALYST	DATE / TIME — WEIGHT (GM) — ANALYST	DATE / TIME — WEIGHT (GM) — ANALYST	DATE / TIME — WEIGHT (GM) — ANALYST	NET WEIGHT
HUD	10/30 / 0928 253149	10/31 / 1036 253162				
	/ 0927 266714	/ 1039 266708				
	/ 0926 272119	/ 1040 272122				
	/ 0924 268878	/ 1041 268869				
	/ 0922 281321	/ 1042 281324				
	/ 0921 236718	/ 1045 236724				
	/ 0920 276064	/ 1046 276063				
	/ 0918 258683	/ 1047 258681				
	10/30 / 0917 148891	10/31 / 1048 148[illegible]86				

IN-IMP-R3

Final ~~TARE~~ FILTER WEIGHTS

Ambient Filter Description: 92-655-6

#466

FILTER NUMBER	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	CONSTANT WEIGHT
1	11/11 / 2014 2.5331 [illegible]	11/18 / 1324 2.5335 PB				2.5333
2	11/11 / 2.6654	11/18 / 1325 2.6657				2.6657
3	11/11 / 2.7215	11/18 / 1326 2.7218				2.7218
4	11/11 / 2.6838	11/18 / 1327 2.6890				2.6890
5	11/11 / 2.8143	11/18 / 1328 2.8145				2.8145
6	11/11 / 2.3676	11/18 / 1329 2.3677				2.3677
7	11/11 / 2.7593	11/18 / 1330 2.7594				2.7594
8	11/11 / 2.5872	11/18 / 1331 2.5873				2.5873
Bc	11/11 / 2019 1.4953	11/18 / 1333 1.4958				1.4955

TARE FILTER WEIGHTS

JN-IMP-R4

Filter Description: AND 482

FILTER NUMBER	DATE / TIME, WEIGHT (GM), ANALYST	DATE / TIME, WEIGHT (GM), ANALYST	DATE / TIME, WEIGHT (GM), ANALYST	DATE / TIME, WEIGHT (GM), ANALYST	DATE / TIME, WEIGHT (GM), ANALYST	CONSTANT WEIGHT
1	6/17 / 0956 1 9 1 3 9 0	6/18 / 1542 1 9 1 4 0 4	/	/	/	1 9 1 4 0 4
2	6/17 / 0954 2 1 3 8 2 4	6/18 / 1543 2 1 3 8 3 0	/	/	/	2 1 3 8 3 0
3	6/17 / 0952 2 0 1 8 7 4	6/18 / 1544 2 0 1 8 8 3	/	/	/	2 0 1 8 8 3
4	6/17 / 0950 2 0 2 2 7 7	6/18 / 1545 2 0 2 2 7 9	/	/	/	2 0 2 2 7 9
5	6/17 / 0948 1 9 0 2 5 1	6/18 / 1546 1 9 0 2 5 5	/	/	/	1 9 0 2 5 5
6	6/17 / 0946 2 1 0 3 1 9	6/18 / 1547 2 1 0 3 1 7	/	/	/	2 1 0 3 1 7
7	6/17 / 0944 1 8 0 2 7 2	6/18 / 1549 1 8 0 2 7 6	/	/	/	1 8 0 2 7 6
8	6/17 / 0942 2 4 5 1 5 4	6/18 / 1550 2 4 5 1 4 4	/	/	/	2 4 5 1 4 4
10	6/17 / 0940 2 1 2 8 8 7	6/18 / 1551 2 1 2 8 5 5	/	/	/	2 1 2 8 5 5

Final FN-IMP-R4

~~TARE~~ FILTER WEIGHTS

Andersen

Filter Description: 92-655-6 (EPA/Pine Hall Brick)

#482

FILTER NUMBER	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	CONSTANT WEIGHT
1	11/21 / 1331 19158	11/23 / 1130 19157	/	/	/	19157
2	11/21 / 1330 21391	11/23 / 1135 21390	/	/	/	21390
3	11/21 / 1329 20196	11/23 / 1136 20196	/	/	/	20196
4	11/21 / 1328 20232	11/23 / 1136 20233	/	/	/	20233
5	11/21 / 1327 19025	11/23 / 1137 19026	/	/	/	19026
6	11/21 / 1325 21035	11/23 / 1142 21035	/	/	/	21035
7	11/21 / 1324 18025	11/23 / 1142 18026	/	/	/	18026
8	11/21 / 1323 24528	11/23 / 1143 24527	/	/	/	24527
B.U.	11/21 / 1321 21347	11/23 / 1144 21350	/	/	/	21350

FILTER WEIGHTS

MUD 464

OA-IMP-R2

FILTER NUMBER	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	NET WEIGHT
MUD	1030 / 1041 2 53392	10/31 / 0938 2 53388	/	/	/	
	/ 1040 3 03007	10/31 / 0940 3 03000	/	/	/	
	/ 1038 2 66209	/ 0941 2 66208	/	/	/	
	/ 1037 2 54020	/ 0942 2 54019	/	/	/	
	/ 1036 2 31466	/ 0943 2 31465	/	/	/	
	/ 1035 2 21477	/ 0944 2 21475	/	/	/	
	/ 1033 2 55740	/ 0946 2 55738	/	/	/	
	/ 1032 2 73362	/ 0947 2 73358	/	/	/	
	10/30 / 1030 1 53574	10/31 / 0948 1 53569	/	/	/	

Anderson

~~TARE~~ Final FILTER WEIGHTS

DA-IMP-R2

Filter Description: 92-655-6

#464

FILTER NUMBER	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	CONSTANT WEIGHT
1	11/11 / 2005 2.5420 435	11/18 / 1314 2.5419 [illegible]				2.5419
2	11/1[illegible] / 3.0325	11/18 / 1315 3.0308	11/19 / 1137 3.0308			3.0308
3	11/1[illegible] / 2.6764	11/18 / 1316 2.6636	11/19 / 1138 2.6633			2.6633
4	11/11 / 2.5411	11/18 / 1317 2.5411				2.5411
5	11/11 / 2.3211 [illegible]	11/18 / 1318 2.3211				2.3211
6	11/11 / 2.2275	11/18 / 1319 2.2279				2.2279
7	11/11 / 3.3823	11/18 / 1321 3.2968	11/19 / 1139 3.2733	11/21 / 1410 3.2459	11/23 / 1130 3.2234	
8	11/1[illegible] / 3.4225	11/18 / 1322 3.3027	11/19 / 1140 3.2793	11/21 / 1411 3.2252	11/23 / 1129 3.1814	
BC	11/1[illegible] / 20[illegible] 1.6577	11/18 / 1323 1.5750	11/19 / 1136 1.5745			1.5745

TARE FILTER WEIGHTS

OA-IMP-R3

Filter Description: AND 48C

FILTER NUMBER	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	CONSTANT WEIGHT
1	6/17 /0855 1 39005	6/18 /1522 1 38995	/	/	/	1 38995
2	6/17 /0856 1 81122	6/18 /1523 1 81118	/	/	/	1 81118
3	6/17 /0854 1 55107	6/18 /1524 1 55090	/	/	/	1 55090
4	6/17 /0852 1 80955	6/18 /1526 1 80966	/	/	/	1 80966
5	6/17 /0850 1 98926	6/18 /1527 1 98934	/	/	/	1 98934
6	6/17 /0848 1 98851	6/18 /15[illegible] 1 98861	/	/	/	1 98861
7	6/17 /0846 2 11345	6/18 /1529 2 11862	/	/	/	2 11862
8	6/17 /0844 2 38223	6/18 /1530 2 38234	/	/	/	2 38234
BU	6/17 /0842 2 02114	6/18 /1531 2 02133	/	/	/	2 02133

OA-IMP-R3

~~TARE~~ Final FILTER WEIGHTS

Anderson #480

Filter Description: 92-655-6 (EPA) (Pine Hall Brick plant)

FILTER NUMBER	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	CONSTANT WEIGHT
1	11/11 / 2031 1.3572	11/13 / 1259 1.3993	/	/	/	1.3993
2	11/11 / 1.3106	11/13 / 1258 1.8105	/	/	/	1.8105
3	11/11 / 1.5523	11/13 / 1257 1.5523	/	/	/	1.5523
4	11/11 / 1.3154	11/18 / 1256 1.8152	/	/	/	1.8152
5	11/11 / 2.3437	11/18 / 1255 2.1070	11/19 / 1131 2.0732	11/21 / 1420 2.0298	11/23 / 1116 2.0293	
6	11/11 / 2.5436	11/13 / 1254 2.3524	11/19 / 1130 2.3257	11/21 / 1421 2.2378	/ 2.1602	
7	11/11 / 2.9344	11/13 / 1253 2.7705	11/19 / 1128 2.7433	11/21 / 1423 1.5640	11/23 / 1117 2.6296	
8	11/11 / 2.7833	11/18 / 1252 2.8293	11/19 / 1127 2.7948	11/21 / 1424 2.73[illegible]	11/23 / 1122 2.6717	
BC	11/11 / 2043 2.9537	11/13 / 1251 2.9130	11/19 / 1126 2.7967	11/21 / 1425 2.7088	11/23 / 1123 2.7196	

TARE FILTER WEIGHTS

OA-Imp-R4

Filter Description: AND 481

FILTER NUMBER	DATE / TIME	WEIGHT (GM)	ANALYST	DATE / TIME	WEIGHT (GM)	ANALYST	DATE / TIME	WEIGHT (GM)	ANALYST	DATE / TIME	WEIGHT (GM)	ANALYST	DATE / TIME	WEIGHT (GM)	ANALYST	CONSTANT WEIGHT
1	6/17 / 0914	2.36316		6/18 / 1533	2.36316		/			/			/			2.36316
2	6/17 / 0912	2.21690		6/18 / 1534	2.21689		/			/			/			2.21689
3	6/17 / 0910	2.30457		6/18 / 1535	2.30453		/			/			/			2.30453
[illegible]	6/17 / 0909	2.17787		6/18 / 1536	2.19783		/			/			/			2.19783
[illegible]	6/17 / 0907	2.36857		6/18 / 1537	2.36856		/			/			/			2.36856
[illegible]	6/17 / 0906	2.22845		6/18 / 1538	2.22839		/			/			/			2.22839
[illegible]	6/17 / 0904	2.24059		6/18 / 1539	2.24059		/			/			/			2.24059
[illegible]	6/17 / 0902	2.11362		6/18 / 1540	2.11361		/			/			/			2.11361
[illegible]	6/17 / 0900	2.93129		6/18 / 1541	2.93141		/			/			/			2.93141

FINAL ~~TARE~~ FILTER WEIGHTS OA-IMP-R4

Andersen

\# 481

Filter Description: 92-655-6 (EPA/Pine Hall Brick)

FILTER NUMBER	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	CONSTANT WEIGHT
1	11/21/1303 2 3654 [illegible]	11/23/1035 2 3652	/	/	/	2 3652
2	11/21/1304 2 3183	11/23/1034 2 2179	/	/	/	2 2179
3	11/21/1305 2 3065	11/23/1033 2 3062	/	/	/	2 3062
4	11/21/1306 2 1998	11/23/1032 2 1997	/	/	/	2 1997
5	11/21/1308 2 3698	11/23/1032 2 3695	/	/	/	2 3695
6	11/21/1350 2 2301	11/23/1031 2 2298	/	/	/	2 2298
7	11/21/1351 2 2427	11/23/1030 2 2427	/	/	/	2 2427
8	11/21/1352 2 7675	11/23/1030 2 7297	/	/	/	
ill.	11/21/1353 4 07E1 [illegible]	11/23/1029 4 0519	/	/	/	

OB-IMP-R2

FILTER WEIGHTS

HIVD 452

FILTER NUMBER	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	NET WEIGHT
HIVD 1	10/31 / 0647 2 9 6 8 5 0	11/5 / 0742 2 9 6 8 6 5	/	/	/	
2	/ 0648 2 5 0 5 5 9	/ 0740 2 5 0 5 6 2	/	/	/	
3	/ 0651 2 9 4 1 9 1	/ 0740 2 9 4 1 9 2	/	/	/	
4	/ 0652 2 3 5 6 3 6	/ 0738 2 3 5 6 4 4	/	/	/	
5	/ 0653 2 6 5 6 7 7	/ 0737 2 6 5 6 8 9	/	/	/	
	/ 0655 2 2 9 2 4 3	/ 0736 2 2 9 2 6 7	/	/	/	
	/ 0656 1 3 5 8 5 2	/ 0735 1 3 5 8 6 1	/	/	/	
	/ 0657 1 7 1 6 6 9	/ 0734 1 7 1 0 6 3	/	/	/	
11	10/31 / 0659 1 8 0 9 1 6	11/5 / 0732 1 8 0 9 1 5	/	/	/	

OB-IMP-R2

Final FILTER WEIGHTS

Filter Description: 42-655-6

452 And

FILTER NUMBER	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	CONSTANT WEIGHT
1	11/11 / 1722 3 0 1 66	11/18 / 1110 3 0 1 6 1				3 0 1 6 1
2	2 5 3 6 3	11/18 / 11:11 2 5 3 6 1				2 5 3 6 1
3	2 9 7 0 7	11/18 / 11:12 2 9 7 0 5				2 9 7 0 5
4	2 3 6 8 2	11/18 / 11:13 2 3 6 8 0				2 3 6 8 0
5	2 6 6 0 8	11/18 / 11:14 2 6 6 0 7				2 6 6 0 7
6	2 2 9 4 7	11/18 / 11:15 2 2 9 4 6				2 2 9 4 6
7	1 3 5 9 9	11/18 / 11:16 1 3 6 0 0				1 3 6 0 0
8	1 7 1 3 8	11/18 / 11:17 1 7 1 3 8				1 7 1 3 8
BV	11/11 / 0719 1 8 3 6 1	11/18 / 11:18 1 8 3 6 5				1 8 3 6 5

OB-IMP-R3

FILTER WEIGHTS

HUD 470

FILTER NUMBER	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	NET WEIGHT
HUD 470	10/[illegible] / 1801 1 7 0 0 7	10/29 / 1107 1 7 0 0 4	10/30 / 1310 1 7 0 0 6 7	/	/	
2	/ 1800 2 5 5 1 3	/ 1108 2 5 5 1 0	/ 1309 2 5 5 1 3 5	/	/	
3	/ 1759 2 0 6 6 0	/ 1109 2 0 6 6 0	/ 1308 2 0 6 6 1 5	/	/	
4	/ 1758 2 9 1 3 0	/ 1110 2 9 1 2 8	/ 1307 2 9 1 2 8 6	/	/	
5	/ 1758 2 2 7 0 0	/ 1111 2 2 6 9 5	/ 1305 2 2 7 0 0 0	/	/	
6	/ 1757 2 5 2 [illegible] [illegible]	/ 1112 2 5 2 7 5	/ 1303 2 5 2 8 0 1	/	/	
7	/ 1755 2 0 [illegible] [illegible] [illegible]	/ 1114 2 0 8 7 6	/ 1258 2 0 8 7 9 3	/	/	
8	/ 1755 2 4 9 2 3	/ 1115 2 4 9 1 8	/ 1257 2 4 9 2 2 8	/	/	
BU	10/28 / 1750 1 5 [illegible] 7 5	10/29 / 1116 1 5 8 7 1	10/30 / 1254 1 5 8 7 5 9	/	/	

OBIMP-X3

Anderson

#470

Final ~~TARE~~ FILTER WEIGHTS

Filter Description: 92-655-6 (EPA/Back print)

FILTER NUMBER	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	CONSTANT WEIGHT
1	11/11 / 2026 1.17679 [illegible]	11/18 / 1240 1.17673	11/19 / 1131 1.17674	11/21 / 1413 1.17670	/	1.17670
2	11/11 / 2.15674	11/18 / 1241 2.15679	/	/	/	2.15679
3	11/11 / 2.10721	11/18 / 1242 2.10725	/	/	/	2.10725
4	11/11 / 2.19133	11/18 / 1244 2.19138	/	/	/	2.19138
5	11/11 / 2.12705	11/18 / 1245 2.18123	11/19 / 1132 2.12704	11/21 / 1415 2.12705	/	2.12795
6	11/11 / 2.15316	11/18 / 1246 2.15314	/	/	/	2.15314
7	11/11 / 2.10889	11/18 / 1247 2.10891	/	/	/	20891
8	11/11 / 3.10945	11/18 / 124[illegible] 2.19594	11/19 / 1133 2.19383	11/21 / 1416 2.18[illegible]76	11/23 / 1647 2.18494	
8C	11/11 / 2029 2.14799	11/13 / 1[illegible] 2.12695	11/19 / 1134 2.12316	11/21 / 1418 2.11045	11/23 / 1646 1.19910	

OD-IMP-AY

TARE FILTER WEIGHTS

Filter Description: AND 483

FILTER NUMBER	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	CONSTANT WEIGHT
1	6/17 / 1008 227153	6/18 / 1554 227152	/	/	/	227152
2	6/17 / 1007 200962	6/18 / 1556 200963	/	/	/	200963
3	6/17 / 1006 267639	6/18 / 1558 267636	/	/	/	267636
4	6/17 / 1005 269715	6/18 / 1600 269720	/	/	/	269720
5	6/17 / 1004 260847	6/18 / 1602 260850	/	/	/	260850
6	6/17 / 1002 267744	6/18 / 1604 267751	/	/	/	267751
7	6/17 / 1000 247671	6/18 / 1606 247678	/	/	/	247678
8	6/17 / 0959 183899	6/18 / 1608 183904	/	/	/	183904
9	6/17 / 0958 196346	6/18 / 1610 196359	/	/	/	196359

Final

~~TARE~~ FILTER WEIGHTS

OB-IMP-R4

Andersen

Filter Description: 92-655-6 (EPA/Pine Hall Brick)

#483

FILTER NUMBER	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	DATE / TIME WEIGHT (GM) ANALYST	CONSTANT WEIGHT
1	11/21 / 1331 2 2999	11/23 / 1106 2 3002	/	/	/	2 3002
2	11/21 / 1332 2 0206	11/23 / 1105 2 0209	/	/	/	2 0209
3	11/21 / 1334 2 6816	11/23 / 1104 2 6814	/	/	/	2 6814
4	11/21 / 1335 2 6977	11/23 / 1104 2 6978	/	/	/	2 6978
5	11/21 / 1336 2 6082	11/23 / 1101 2 6083	/	/	/	2 6083
6	11/21 / 1337 2 6795	11/23 / 1101 2 6801	/	/	/	2 6801
7	11/21 / 1339 2 4781	11/23 / 1100 2 4785	/	/	/	2 4785
8	11/21 / 1340 1 5430	11/23 / 1059 1 8431	/	/	/	1 8431
*B.U.	11/21 / 1341 2 4754	11/23 / 1058 2 3191	/	/	/	

G.1.5 SILICA GEL LABORATORY DATA

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Silica Gel Weights

Report Prepared on: 11/24/92

Sample Number	Tare Weight (g)	Final Weight (g)	Description
92-655-00302	40.0000	42.0000	LIGHT BLUE/GREEN
92-655-00306	40.0000	41.3000	BLUE/LIGHT PURPLE
92-655-00310	40.0000	40.4600	DARK BLUE
92-655-00314	40.0000	41.2200	LIGHTER BLUE
92-655-00318	40.0000	42.9800	PINKISH PURPLE
92-655-00322	40.0000	41.3400	LIGHT PURPLE
92-655-00326	40.0000	41.1700	LIGHT PURPLE/ORANGE
92-655-00330	40.0000	41.7200	LIGHT PURPLE
92-655-00334	40.0000	42.1100	LIGHT PURPLE/PINK
92-655-00338	40.0000	40.2200	DARK BLUE
92-655-00342	40.0000	40.2100	DARK BLUE
92-655-00346	40.0000	40.1800	DARK BLUE

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Silica Gel Weights

Report Prepared on: 11/23/92

Sample Number	Tare Weight (g)	Final Weight (g)	Description
92-655-00403	200.0000	201.9300	BRIGHT BLUE **VOID**
92-655-00408	200.0000	202.4800	BLUE
92-655-00413	200.0000	203.0400	TEAL/AMBER
92-655-00418	200.0000	204.1000	LIGHT BLUE **VOID**
92-655-00423	200.0000	202.3000	DIRTY BLUE
92-655-00428	200.0000	203.7600	DARK BLUE
92-655-00433	200.0000	204.2300	LIGHT BLUE **VOID**
92-655-00438	200.0000	206.4500	LIGHT BLUE
92-655-00443	200.0000	204.8400	DARK/TEAL BLUE
92-655-00448	200.0000	202.0100	DARK BLUE
92-655-00453	200.0000	204.1700	DARK/TEAL BLUE
92-655-00458	200.0000	204.3500	DARK/TEAL BLUE

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Silica Gel Weights

Report Prepared on: 11/23/92 Page 1

Sample Number	Tare Weight (g)	Final Weight (g)	Description
92-655-00508	200.0000	215.5300	PINK/ORANGE
92-655-00518	200.0000	220.6600	LIGHT PINK/ORANGE
92-655-00528	200.0000	211.0300	LIGHT PINK/PURPLE
92-655-00538	200.0000	225.4600	LIGHT PINK
92-655-00548	200.0000	216.1900	LIGHT PURPLE/PINK
92-655-00558	200.0000	218.8800	LIGHT PURPLE/PINK
92-655-00568	200.0000	214.7800	VERY LIGHT PURPLE/ PINK
92-655-00578	200.0000	215.4100	LIGHT PURPLE/PINK
92-655-00588	200.0000	214.6500	LAVENDER
92-655-00598	200.0000	200.0000	DARK BLUE
92-655-00608	200.0000	200.0000	DARK BLUE
92-655-00618	200.0000	200.0000	DARK BLUE

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Silica Gel Weights

Report Prepared on: 11/23/92

Sample Number	Tare Weight (g)	Final Weight (g)	Description
92-655-00905	200.0000	226.8900	LIGHT PINK/PURPLE
92-655-00906	200.0000	213.2400	LIGHT PINK/PURPLE
92-655-00914	200.0000	225.3800	LIGHT PINK/ORANGE
92-655-00915	200.0000	207.0800	LIGHT PINK/ORANGE
92-655-00923	200.0000	231.0200	LIGHT PINK
92-655-00924	200.0000	205.1600	LIGHT PINK
92-655-00932	200.0000	217.6900	LIGHT PINK
92-655-00933	200.0000	207.7600	LIGHT PINK
92-655-00941	200.0000	242.4100	LIGHT PINK/ORANGE
92-655-00942	200.0000	212.9700	LIGHT PINK/ORANGE
92-655-00950	200.0000	239.6200	LIGHT PINK/ORANGE
92-655-00951	200.0000	221.1200	LIGHT PINK/ORANGE
92-655-00959	200.0000	226.6900	LIGHT PINK
92-655-00960	200.0000	214.2500	LIGHT PINK
92-655-00968	200.0000	236.3100	LIGHT PINK

Silica Gel Weights

Report Prepared on: 11/23/92

Sample Number	Tare Weight (g)	Final Weight (g)	Description
92-655-00969	200.0000	221.5400	LIGHT PINK
92-655-00977	200.0000	226.2100	LIGHT PINK/ORANGE
92-655-00978	200.0000	222.8400	LIGHT PINK/ORANGE
92-655-00986	200.0000	200.0000	DARK BLUE
92-655-00987	200.0000	200.0000	DARK BLUE
92-655-00995	200.0000	200.0000	DARK BLUE
92-655-00996	200.0000	200.0000	DARK BLUE
92-655-01004	200.0000	200.0000	DARK BLUE
92-655-01005	200.0000	200.0000	DARK BLUE

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Silica Gel Weights

Report Prepared on: 11/23/92

Sample Number	Tare Weight (g)	Final Weight (g)	Description
92-655-01107	200.0000	215.3900	LIGHT PINK
92-655-01115	200.0000	211.6100	PINK
92-655-01123	200.0000	207.6700	PINK/LIGHT ORANGE
92-655-01131	200.0000	208.3800	LIGHT PINK/PURPLE
92-655-01139	200.0000	212.0600	LIGHT BLUE/PURPLE
92-655-01147	200.0000	213.0400	PINK/LIGHT ORANGE
92-655-01155	200.0000	211.0600	LIGHT PINK/ORANGE
92-655-01156	0.0000	0.0000	
92-655-01163	200.0000	218.0000	LIGHT PURPLE/PINK
92-655-01171	200.0000	215.9100	PINK/SOME ORANGE
92-655-01179	200.0000	202.0000	BLUE
92-655-01187	200.0000	200.0000	BLUE

ETS, Inc.
GRAVIMETRIC LABORATORY DATA
Silica Gel Weights

Report Prepared on: 11/23/92

Sample Number	Tare Weight (g)	Final Weight (g)	Description
92-655-01195	200.0000	201.0000	BLUE

G.2 MULTIPLE METALS LABORATORY DATA

ETS Analytical Services, Inc.

Proudly serving industry and government since 1973.

A USEPA Contract Laboratory

A subsidiary of ETS International, Inc.

ETS, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012
ATTN: Dr. Ted Handel

Re: Laboratory Analysis
ETS Project #92-655-6

REPORT DATE/NUMBER: January 25, 1993

SAMPLES COLLECTED BY: Client

ANALYSIS FOR: Metals by Inductively Coupled Plasma Emission (ICP), Graphite Furnace Atomic Absorption (GFAAS), and Cold Vapor AAS

METHOD OF ANALYSIS: Methodology for the Determination of Trace Metal Emissions in Exhaust Gasses From Stationary Combustion Processes, USEPA

INSTRUMENTAL: Bacharach CVAAS, 2000 ICP, PE Z5100 GFAAS

SAMPLE PREPARATION INFORMATION

LAB ID	RUN #	FRACTION	INIT VOL (ml)	DIG VOL ICP/AAS	FIN VOL ICP/AAS	DIG VOL CVAAS
133268	IN-MM-R1	1A & 1B	105	105	300	10.0
133269	IN-MM-R1	2A & 2B	438	338	150	10.0
133270	IN-MM-R1	3A	55			10.0
133271	IN-MM-R1	3B	188			10.0
133272	IN-MM-R1	3C	226	500	500	10.0
133273	OA-MM-R1	1A & 1B	112	112	300	10.0
133274	OA-MM-R1	2A & 2B	504	404	150	10.0
133275	OA-MM-R1	3A	55			10.0
133276	OA-MM-R1	3B	206			10.0
133277	OA-MM-R1	3C	204	500	500	10.0
133278	OB-MM-R1	1A & 1B	99	99	300	10.0
133279	OB-MM-R1	2A & 2B	488	388	150	10.0
133280	OB-MM-R1	3A	110			10.0
133281	OB-MM-R1	3B	207			10.0
133282	OB-MM-R1	3C	312	500	500	10.0
133283	IN-MM-R2	1A & 1B	106	106	300	10.0
133284	IN-MM-R2	2A & 2B	609	509	150	10.0

REPORT CONTINUED ON NEXT PAGE

SAMPLE PREPARATION INFORMATION

LAB ID	RUN #	FRACTION	INIT VOL (ml)	DIG VOL ICP/AAS	FIN VOL ICP/AAS	DIG VOL CVAAS
133285	IN-MM-R2	3A	38			5.0
133286	IN-MM-R2	3B	195			10.0
133287	IN-MM-R2	3C	262	500	500	10.0
133288	OA-MM-R2	1A & 1B	106	106	300	10.0
133289	OA-MM-R2	2A & 2B	460	360	150	10.0
133290	OA-MM-R2	3A	53			10.0
133291	OA-MM-R2	3B	222			10.0
133292	OA-MM-R2	3C	233	500	500	10.0
133293	OB-MM-R2	1A & 1B	112	112	300	10.0
133294	OB-MM-R2	2A & 2B	490	390	150	10.0
133295	OB-MM-R2	3A	49			10.0
133296	OB-MM-R2	3B	205			10.0
133297	OB-MM-R2	3C	268	500	500	10.0
133298	IN-MM-R3	1A & 1B	114	114	300	10.0
133299	IN-MM-R3	2A & 2B	374	274	150	10.0
133300	IN-MM-R3	3A	47			10.0
133301	IN-MM-R3	3B	218			10.0
133302	IN-MM-R3	3C	90	500	500	10.0
133303	OA-MM-R3	1A & 1B	104	104	300	10.0
133304	OA-MM-R3	2A & 2B	515	415	150	10.0
133305	OA-MM-R3	3A	28			10.0
133306	OA-MM-R3	3B	305			10.0
133307	OA-MM-R3	3C	175	500	500	10.0
133308	OB-MM-R3	1A & 1B	104	104	300	10.0
133309	OB-MM-R3	2A & 2B	478	378	150	10.0
133310	OB-MM-R3	3A	72			10.0
133311	OB-MM-R3	3B	310			10.0
133312	OB-MM-R3	3C	233	500	500	10.0
133313	IN-MM-R0	1A & 1B	108	108	300	10.0
133314	IN-MM-R0	2A & 2B	356	256	150	10.0
133315	IN-MM-R0	3A	45			10.0
133316	IN-MM-R0	3B	208			10.0
133317	IN-MM-R0	3C	300	500	500	10.0
133318	OA-MM-R0	1A & 1B	108	108	300	10.0
133319	OA-MM-R0	2A & 2B	295	195	150	10.0
133320	OA-MM-R0	3A	51			10.0
133321	OA-MM-R0	3B	210			10.0
133322	OA-MM-R0	3C	303	500	500	10.0
133323	OB-MM-R0	1A & 1B	106	106	300	10.0
133324	OB-MM-R0	2A & 2B	430	330	150	10.0
133325	OB-MM-R0	3A	225			10.0
133326	OB-MM-R0	3B	370			10.0
133327	OB-MM-R0	3C	290	500	500	10.0

REPORT CONTINUED ON NEXT PAGE

SAMPLE ANALYSIS DATA

Lab ID: 133268 Description: Fraction 1A & 1B Train ID: IN-MM-R1

Antimony	< 1.50 µg, Total
Arsenic	13.30 µg, Total
Beryllium	0.18 µg, Total
Cadmium	1.92 µg, Total
Chromium	9.21 µg, Total
Lead	111.00 µg, Total
Manganese	372.00 µg, Total
Mercury	< 0.60 µg, Total
Nickel	7.98 µg, Total
Phosphorus	382.00 µg, Total
Selenium	39.10 µg, Total

Lab ID: 133269 Description: Fraction 2A & 2B Train ID: IN-MM-R1

Antimony	< 0.97 µg, Total
Arsenic	5.62 µg, Total
Beryllium	< 0.02 µg, Total
Cadmium	0.23 µg, Total
Chromium	2.08 µg, Total
Lead	1.60 µg, Total
Manganese	2.72 µg, Total
Mercury	1.01 µg, Total
Nickel	1.14 µg, Total
Phosphorus	< 97.20 µg, Total
Selenium	< 0.78 µg, Total

Lab ID: 133270 Description: Fraction 3A Train ID: IN-MM-R1

Mercury	< 0.11 µg, Total

Lab ID: 133271 Description: Fraction 3B Train ID: IN-MM-R1

Mercury	2.27 µg, Total

Lab ID: 133272 Description: Fraction 3C Train ID: IN-MM-R1

Mercury	< 1.00 µg, Total

Lab ID: 133273 Description: Fraction 1A & 1B Train ID: OA-MM-R1

Antimony	< 1.50 µg, Total
Arsenic	3.20 µg, Total
Beryllium	0.08 µg, Total
Cadmium	2.58 µg, Total
Chromium	6.87 µg, Total
Lead	82.20 µg, Total
Manganese	87.80 µg, Total
Mercury	< 0.60 µg, Total
Nickel	9.15 µg, Total
Phosphorus	<150.00 µg, Total

REPORT CONTINUED ON NEXT PAGE

SAMPLE ANALYSIS DATA

Lab ID: 133273 (continued)

Selenium		15.90 μg, Total

Lab ID: 133274 Description: Fraction 2A & 2B Train ID: OA-MM-R1

Antimony	<	0.94 μg, Total
Arsenic		3.62 μg, Total
Beryllium	<	0.02 μg, Total
Cadmium		0.23 μg, Total
Chromium		2.53 μg, Total
Lead		1.14 μg, Total
Manganese		4.68 μg, Total
Mercury		1.21 μg, Total
Nickel		3.65 μg, Total
Phosphorus	<	93.60 μg, Total
Selenium	<	0.37 μg, Total

Lab ID: 133275 Description: Fraction 3A Train ID: OA-MM-R1

Mercury	<	0.11 μg, Total

Lab ID: 133276 Description: Fraction 3B Train ID: OA-MM-R1

Mercury		3.44 μg, Total

Lab ID: 133277 Description: Fraction 3C Train ID: OA-MM-R1

Mercury	<	1.00 μg, Total

Lab ID: 133278 Description: Fraction 1A & 1B Train ID: OB-MM-R1

Antimony	<	1.50 μg, Total
Arsenic	<	0.60 μg, Total
Beryllium		0.08 μg, Total
Cadmium		9.09 μg, Total
Chromium		8.25 μg, Total
Lead		70.80 μg, Total
Manganese		108.00 μg, Total
Mercury	<	0.60 μg, Total
Nickel		6.57 μg, Total
Phosphorus		311.00 μg, Total
Selenium		5.95 μg, Total

Lab ID: 133279 Description: Fraction 2A & 2B Train ID: OB-MM-R1

Antimony	<	0.94 μg, Total
Arsenic		3.16 μg, Total
Beryllium	<	0.02 μg, Total
Cadmium		0.26 μg, Total
Chromium	<	1.89 μg, Total
Lead		2.94 μg, Total

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SAMPLE ANALYSIS DATA

Lab ID: 133279 (continued)

Manganese		16.40 µg, Total
Mercury	<	0.98 µg, Total
Nickel		3.74 µg, Total
Phosphorus	<	94.30 µg, Total
Selenium	<	0.38 µg, Total

Lab ID: 133280 Description: Fraction 3A Train ID: OB-MM-R1

Mercury	<	0.22 µg, Total

Lab ID: 133281 Description: Fraction 3B Train ID: OB-MM-R1

Mercury		5.57 µg, Total

Lab ID: 133282 Description: Fraction 3C Train ID: OB-MM-R1

Mercury	<	1.00 µg, Total

Lab ID: 133283 Description: Fraction 1A & 1B Train ID: IN-MM-R2

Antimony	<	1.50 µg, Total
Arsenic		10.50 µg, Total
Beryllium		0.18 µg, Total
Cadmium		5.49 µg, Total
Chromium		17.90 µg, Total
Lead		56.20 µg, Total
Manganese		312.00 µg, Total
Mercury	<	0.60 µg, Total
Nickel		11.90 µg, Total
Phosphorus		600.00 µg, Total
Selenium		7.18 µg, Total

Lab ID: 133284 Description: Fraction 2A & 2B Train ID: IN-MM-R2

Antimony	<	0.90 µg, Total
Arsenic		7.12 µg, Total
Beryllium	<	0.02 µg, Total
Cadmium		0.20 µg, Total
Chromium	<	1.79 µg, Total
Lead		0.42 µg, Total
Manganese		23.20 µg, Total
Mercury	<	1.22 µg, Total
Nickel		1.99 µg, Total
Phosphorus	<	89.70 µg, Total
Selenium		0.59 µg, Total

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SAMPLE ANALYSIS DATA

Lab ID: 133285	Description: Fraction 3A		Train ID: IN-MM-R2
Mercury			0.17 µg, Total
Lab ID: 133286	Description: Fraction 3B		Train ID: IN-MM-R2
Mercury			1.58 µg, Total
Lab ID: 133287	Description: Fraction 3C		Train ID: IN-MM-R2
Mercury		<	1.00 µg, Total
Lab ID: 133288	Description: Fraction 1A & 1B		Train ID: OA-MM-R2
Antimony		<	1.50 µg, Total
Arsenic			4.04 µg, Total
Beryllium		<	0.03 µg, Total
Cadmium			4.98 µg, Total
Chromium			23.60 µg, Total
Lead			27.50 µg, Total
Manganese			124.00 µg, Total
Mercury		<	0.60 µg, Total
Nickel			15.20 µg, Total
Phosphorus			164.00 µg, Total
Selenium			15.70 µg, Total
Lab ID: 133289	Description: Fraction 2A & 2B		Train ID: OA-MM-R2
Antimony		<	0.96 µg, Total
Arsenic			4.01 µg, Total
Beryllium		<	0.02 µg, Total
Cadmium			0.32 µg, Total
Chromium		<	1.92 µg, Total
Lead			4.44 µg, Total
Manganese			9.14 µg, Total
Mercury		<	0.92 µg, Total
Nickel			2.32 µg, Total
Phosphorus		<	95.80 µg, Total
Selenium		<	0.38 µg, Total
Lab ID: 133290	Description: Fraction 3A		Train ID: OA-MM-R2
Mercury			0.14 µg, Total
Lab ID: 133291	Description: Fraction 3B		Train ID: OA-MM-R2
Mercury			2.86 µg, Total
Lab ID: 133292	Description: Fraction 3C		Train ID: OA-MM-R2
Mercury		<	1.00 µg, Total

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SAMPLE ANALYSIS DATA

Lab ID: 133293	Description: Fraction 1A & 1B	Train ID: OB-MM-R2
Antimony		< 1.50 µg, Total
Arsenic		2.87 µg, Total
Beryllium		< 0.03 µg, Total
Cadmium		9.45 µg, Total
Chromium		23.20 µg, Total
Lead		24.00 µg, Total
Manganese		127.00 µg, Total
Mercury		< 0.60 µg, Total
Nickel		14.40 µg, Total
Phosphorus		<150.00 µg, Total
Selenium		15.90 µg, Total
Lab ID: 133294	Description: Fraction 2A & 2B	Train ID: OB-MM-R2
Antimony		< 0.94 µg, Total
Arsenic		3.44 µg, Total
Beryllium		< 0.02 µg, Total
Cadmium		0.14 µg, Total
Chromium		< 1.88 µg, Total
Lead		0.52 µg, Total
Manganese		21.30 µg, Total
Mercury		< 0.98 µg, Total
Nickel		1.41 µg, Total
Phosphorus		< 94.20 µg, Total
Selenium		< 0.38 µg, Total
Lab ID: 133295	Description: Fraction 3A	Train ID: OB-MM-R2
Mercury		< 0.10 µg, Total
Lab ID: 133296	Description: Fraction 3B	Train ID: OB-MM-R2
Mercury		1.35 µg, Total
Lab ID: 133297	Description: Fraction 3C	Train ID: OB-MM-R2
Mercury		< 1.00 µg, Total
Lab ID: 133298	Description: Fraction 1A & 1B	Train ID: IN-MM-R3
Antimony		3.84 µg, Total
Arsenic		8.28 µg, Total
Beryllium		0.36 µg, Total
Cadmium		9.00 µg, Total
Chromium		23.20 µg, Total
Lead		157.00 µg, Total
Manganese		288.00 µg, Total
Mercury		< 0.60 µg, Total
Nickel		12.80 µg, Total
Phosphorus		421.00 µg, Total

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SAMPLE ANALYSIS DATA

Lab ID: 133298 (continued)

Selenium		10.00 µg, Total

Lab ID: 133299 Description: Fraction 2A & 2B Train ID: IN-MM-R3

Antimony	<	1.02 µg, Total
Arsenic		6.42 µg, Total
Beryllium	<	0.02 µg, Total
Cadmium		0.38 µg, Total
Chromium	<	2.05 µg, Total
Lead	<	0.20 µg, Total
Manganese		12200.00 µg, Total
Mercury		4.23 µg, Total
Nickel		4.50 µg, Total
Phosphorus	<	102.00 µg, Total
Selenium	<	0.41 µg, Total

Lab ID: 133300 Description: Fraction 3A Train ID: IN-MM-R3

Mercury		0.56 µg, Total

Lab ID: 133301 Description: Fraction 3B Train ID: IN-MM-R3

Mercury	<	0.44 µg, Total

Lab ID: 133302 Description: Fraction 3C Train ID: IN-MM-R3

Mercury	<	1.00 µg, Total

Lab ID: 133303 Description: Fraction 1A & 1B Train ID: OA-MM-R3

Antimony	<	1.50 µg, Total
Arsenic		4.58 µg, Total
Beryllium		0.31 µg, Total
Cadmium		1.88 µg, Total
Chromium		5.34 µg, Total
Lead		2.75 µg, Total
Manganese		107.00 µg, Total
Mercury	<	0.60 µg, Total
Nickel		4.36 µg, Total
Phosphorus	<	150.00 µg, Total
Selenium		14.60 µg, Total

Lab ID: 133304 Description: Fraction 2A & 2B Train ID: OA-MM-R3

Antimony	<	0.93 µg, Total
Arsenic		4.55 µg, Total
Beryllium	<	0.02 µg, Total
Cadmium		0.15 µg, Total
Chromium	<	1.86 µg, Total
Lead		1.16 µg, Total

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SAMPLE ANALYSIS DATA

Lab ID: 133304 (continued)

Manganese	120.00 µg, Total
Mercury	< 1.03 µg, Total
Nickel	1.66 µg, Total
Phosphorus	< 93.10 µg, Total
Selenium	0.46 µg, Total

Lab ID: 133305 Description: Fraction 3A Train ID: OA-MM-R3

Mercury	< 0.06 µg, Total

Lab ID: 133306 Description: Fraction 3B Train ID: OA-MM-R3

Mercury	2.14 µg, Total

Lab ID: 133307 Description: Fraction 3C Train ID: OA-MM-R3

Mercury	< 1.00 µg, Total

Lab ID: 133308 Description: Fraction 1A & 1B Train ID: OB-MM-R3

Antimony	< 1.50 µg, Total
Arsenic	< 0.60 µg, Total
Beryllium	< 0.03 µg, Total
Cadmium	8.85 µg, Total
Chromium	13.40 µg, Total
Lead	1.36 µg, Total
Manganese	115.00 µg, Total
Mercury	< 0.60 µg, Total
Nickel	8.63 µg, Total
Phosphorus	<150.00 µg, Total
Selenium	12.90 µg, Total

Lab ID: 133309 Description: Fraction 2A & 2B Train ID: OB-MM-R3

Antimony	1.08 µg, Total
Arsenic	3.36 µg, Total
Beryllium	< 0.02 µg, Total
Cadmium	0.20 µg, Total
Chromium	< 1.90 µg, Total
Lead	< 0.19 µg, Total
Manganese	2.33 µg, Total
Mercury	< 0.96 µg, Total
Nickel	3.85 µg, Total
Phosphorus	< 94.80 µg, Total
Selenium	< 0.38 µg, Total

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SAMPLE ANALYSIS DATA

Lab ID: 133310	Description: Fraction 3A		Train ID: OB-MM-R3
Mercury		<	0.14 µg, Total
Lab ID: 133311	Description: Fraction 3B		Train ID: OB-MM-R3
Mercury			2.05 µg, Total
Lab ID: 133312	Description: Fraction 3C		Train ID: OB-MM-R3
Mercury		<	1.00 µg, Total
Lab ID: 133313	Description: Fraction 1A & 1B		Train ID: IN-MM-RO
Antimony		<	1.50 µg, Total
Arsenic		<	0.60 µg, Total
Beryllium		<	0.03 µg, Total
Cadmium		<	0.03 µg, Total
Chromium		<	3.00 µg, Total
Lead		<	0.30 µg, Total
Manganese			0.81 µg, Total
Mercury		<	0.60 µg, Total
Nickel			1.06 µg, Total
Phosphorus		<	150.00 µg, Total
Selenium		<	0.60 µg, Total
Lab ID: 133314	Description: Fraction 2A & 2B		Train ID: IN-MM-RO
Antimony		<	1.04 µg, Total
Arsenic		<	0.42 µg, Total
Beryllium		<	0.02 µg, Total
Cadmium			0.04 µg, Total
Chromium		<	2.09 µg, Total
Lead		<	0.21 µg, Total
Manganese			3.61 µg, Total
Mercury		<	0.71 µg, Total
Nickel			2.92 µg, Total
Phosphorus		<	104.00 µg, Total
Selenium			1.28 µg, Total
Lab ID: 133315	Description: Fraction 3A		Train ID: IN-MM-RO
Mercury		<	0.09 µg, Total
Lab ID: 133316	Description: Fraction 3B		Train ID: IN-MM-RO
Mercury		<	0.42 µg, Total
Lab ID: 133317	Description: Fraction 3C		Train ID: IN-MM-RO
Mercury		<	1.00 µg, Total

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SAMPLE ANALYSIS DATA

Lab ID	Description	Analyte	Result	Train ID
133318	Fraction 1A & 1B			OA-MM-RO
		Antimony	2.43 µg, Total	
		Arsenic	< 0.60 µg, Total	
		Beryllium	< 0.03 µg, Total	
		Cadmium	< 0.03 µg, Total	
		Chromium	< 3.00 µg, Total	
		Lead	< 0.30 µg, Total	
		Manganese	1.02 µg, Total	
		Mercury	< 0.60 µg, Total	
		Nickel	1.36 µg, Total	
		Phosphorus	<150.00 µg, Total	
		Selenium	< 0.60 µg, Total	
133319	Fraction 2A & 2B			OA-MM-RO
		Antimony	< 1.13 µg, Total	
		Arsenic	< 0.45 µg, Total	
		Beryllium	< 0.02 µg, Total	
		Cadmium	< 0.02 µg, Total	
		Chromium	< 2.27 µg, Total	
		Lead	< 0.23 µg, Total	
		Manganese	0.57 µg, Total	
		Mercury	< 0.59 µg, Total	
		Nickel	0.47 µg, Total	
		Phosphorus	<113.00 µg, Total	
		Selenium	< 0.45 µg, Total	
133320	Fraction 3A			OA-MM-RO
		Mercury	< 0.10 µg, Total	
133321	Fraction 3B			OA-MM-RO
		Mercury	< 0.42 µg, Total	
133322	Fraction 3C			OA-MM-RO
		Mercury	< 1.00 µg, Total	
133323	Fraction 1A & 1B			OB-MM-RO
		Antimony	< 1.50 µg, Total	
		Arsenic	< 0.60 µg, Total	
		Beryllium	< 0.03 µg, Total	
		Cadmium	< 0.03 µg, Total	
		Chromium	< 3.00 µg, Total	
		Lead	< 0.30 µg, Total	
		Manganese	0.66 µg, Total	
		Mercury	< 0.60 µg, Total	
		Nickel	2.43 µg, Total	
		Phosphorus	<150.00 µg, Total	

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SAMPLE ANALYSIS DATA

Lab ID: 133323 (continued)

Selenium	<	0.60 µg, Total

Lab ID: 133324 Description: Fraction 2A & 2B Train ID: OB-MM-RO

Antimony	<	0.98 µg, Total
Arsenic	<	0.39 µg, Total
Beryllium	<	0.02 µg, Total
Cadmium		0.03 µg, Total
Chromium	<	1.95 µg, Total
Lead		0.96 µg, Total
Manganese		9.28 µg, Total
Mercury	<	0.86 µg, Total
Nickel		0.89 µg, Total
Phosphorus	<	97.70 µg, Total
Selenium		0.54 µg, Total

Lab ID: 133325 Description: Fraction 3A Train ID: OB-MM-RO

Mercury	<	0.45 µg, Total

Lab ID: 133326 Description: Fraction 3B Train ID: OB-MM-RO

Mercury		0.81 µg, Total

Lab ID: 133327 Description: Fraction 3C Train ID: OB-MM-RO

Mercury	<	1.00 µg, Total

If we may be of further assistance, please contact us at any time.

Sincerely,
ETS ANALYTICAL SERVICES

Susanne H. Deegan

Susanne H. Deegan

QUALITY ASSURANCE SUMMARY

CALIBRATION

ANALYTE	UNITS	TRUE	FOUND	% REC	QAO
Antimony (Sb)	UG/L	1024.0	924.00	90	85% to 115% REC
Antimony (Sb)	UG/L	1024.0	1116.0	109	85% to 115% REC
Arsenic (As)	UG/L	50.40	50.80	101	85% to 115% REC
Arsenic (As)	UG/L	50.40	51.30	102	85% to 115% REC
Arsenic (As)	UG/L	50.40	50.30	100	85% to 115% REC
Beryllium(Be)	UG/L	478.00	510.00	107	85% to 115% REC
Beryllium(Be)	UG/L	505.00	550.00	109	85% to 115% REC
Beryllium(Be)	UG/L	505.00	500.00	99	85% to 115% REC
Cadmium (Cd)	UG/L	493.00	495.00	100	85% to 115% REC
Cadmium (Cd)	UG/L	100.90	106.40	105	85% to 115% REC
Cadmium (Cd)	UG/L	100.90	108.80	108	85% to 115% REC
Chromium (Cr)	UG/L	480.00	473.10	99	85% to 115% REC
Lead (Pb)	UG/L	4739.0	4808.0	101	85% to 115% REC
Lead (Pb)	UG/L	98.40	102.50	104	85% to 115% REC
Manganese(Mn)	UG/L	474.00	493.90	104	85% to 115% REC
Manganese(Mn)	UG/L	474.00	462.60	98	85% to 115% REC
Mercury (Hg)	UG/L	5.00	5.50	110	85% to 115% REC
Mercury (Hg)	UG/L	5.00	5.70	114	85% to 115% REC
Nickel (Ni)	UG/L	488.00	486.10	100	85% to 115% REC
Nickel (Ni)	UG/L	488.00	516.60	106	85% to 115% REC
Nickel (Ni)	UG/L	488.00	521.20	107	85% to 115% REC
Nickel (Ni)	UG/L	488.00	523.00	107	85% to 115% REC
Phosphorus (P)	UG/L	5000.0	4928.2	99	85% to 115% REC
Phosphorus (P)	UG/L	5000.0	4943.8	99	85% to 115% REC
Selenium(Se)	UG/L	50.30	52.50	104	85% to 115% REC
Selenium(Se)	UG/L	50.30	53.30	106	85% to 115% REC
Selenium(Se)	UG/L	50.30	53.00	105	85% to 115% REC

DUPLICATES

LAB ID	ANALYTE	SAMPLE	DUPLICATE	UNITS	RPD	QAO
133268	Antimony	<1.50	<1.50	μg, Total	NC	<26 RPD or 2X IDL
133268	Arsenic	13.28	12.86	μg, Total	3.2	<26 RPD or 2X IDL
133268	Beryllium	0.18	0.18	μg, Total	0.0	<26 RPD or 2X IDL
133268	Cadmium	1.92	2.04	μg, Total	47.3	<26 RPD or 2X IDL

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QUALITY ASSURANCE SUMMARY
Continued

DUPLICATES

LAB ID	ANALYTE	SAMPLE	DUPLICATE	UNITS	RPD	QAO
133268	Chromium	9.21	8.97	µg, Total	2.6	<26 RPD or 2X IDL
133268	Lead	110.94	94.56	µg, Total	15.9	<26 RPD or 2X IDL
133268	Manganese	372.48	370.80	µg, Total	0.5	<26 RPD or 2X IDL
133268	Mercury	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133268	Nickel	7.98	7.11	µg, Total	11.5	<26 RPD or 2X IDL
133268	Phosphorus	382.29	422.67	µg, Total	10.0	<26 RPD or 2X IDL
133268	Selenium	39.10	35.88	µg, Total	8.6	<26 RPD or 2X IDL
133269	Antimony	<0.97	<0.97	µg, Total	NC	<26 RPD or 2X IDL
133269	Arsenic	5.62	5.71	µg, Total	1.6	<26 RPD or 2X IDL
133269	Beryllium	<0.02	<0.02	µg, Total	NC	<26 RPD or 2X IDL
133269	Cadmium	0.23	0.24	µg, Total	5.0	<26 RPD or 2X IDL
133269	Chromium	2.08	2.16	µg, Total	3.7	<26 RPD or 2X IDL
133269	Lead	1.60	1.53	µg, Total	4.6	<26 RPD or 2X IDL
133269	Manganese	2.72	2.60	µg, Total	4.4	<26 RPD or 2X IDL
133269	Mercury	1.01	<0.88	µg, Total	NC	<26 RPD or 2X IDL
133269	Nickel	1.14	1.10	µg, Total	3.3	<26 RPD or 2X IDL
133269	Phosphorus	<97.19	<97.19	µg, Total	NC	<26 RPD or 2X IDL
133269	Selenium	<0.78	<0.78	µg, Total	NC	<26 RPD or 2X IDL
133270	Mercury	<0.11	<0.11	µg, Total	NC	<26 RPD or 2X IDL
133271	Mercury	2.27	2.29	µg, Total	0.8	<26 RPD or 2X IDL
133272	Mercury	<1.00	<1.00	µg, Total	NC	<26 RPD or 2X IDL
133273	Antimony	<1.50	1.59	µg, Total	NC	<26 RPD or 2X IDL
133273	Arsenic	3.20	2.71	µg, Total	16.6	<26 RPD or 2X IDL
133273	Beryllium	0.08	0.09	µg, Total	14.8	<26 RPD or 2X IDL
133273	Mercury	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133273	Selenium	15.86	15.17	µg, Total	4.4	<26 RPD or 2X IDL
133274	Antimony	<0.94	1.50	µg, Total	NC	<26 RPD or 2X IDL
133274	Arsenic	3.62	3.66	µg, Total	1.2	<26 RPD or 2X IDL
133274	Beryllium	<0.02	<0.02	µg, Total	NC	<26 RPD or 2X IDL
133274	Cadmium	0.23	0.23	µg, Total	2.4	<26 RPD or 2X IDL
133274	Lead	1.14	1.23	µg, Total	7.4	<26 RPD or 2X IDL
133274	Mercury	1.21	1.76	µg, Total	37.3	<26 RPD or 2X IDL
133274	Selenium	<0.37	<0.37	µg, Total	NC	<26 RPD or 2X IDL
133275	Mercury	<0.11	<0.11	µg, Total	NC	<26 RPD or 2X IDL
133276	Mercury	3.44	3.15	µg, Total	8.7	<26 RPD or 2X IDL
133277	Mercury	<1.00	<1.00	µg, Total	NC	<26 RPD or 2X IDL
133278	Antimony	<1.50	<1.50	µg, Total	NC	<26 RPD or 2X IDL
133278	Arsenic	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133278	Beryllium	0.08	0.10	µg, Total	20.0	<26 RPD or 2X IDL

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QUALITY ASSURANCE SUMMARY
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DUPLICATES

LAB ID	ANALYTE	SAMPLE	DUPLICATE	UNITS	RPD	QAO
133278	Mercury	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133278	Selenium	5.95	5.89	µg, Total	1.0	<26 RPD or 2X IDL
133279	Antimony	<0.94	<0.94	µg, Total	NC	<26 RPD or 2X IDL
133279	Arsenic	3.16	2.85	µg, Total	10.3	<26 RPD or 2X IDL
133279	Beryllium	<0.02	<0.02	µg, Total	NC	<26 RPD or 2X IDL
133279	Cadmium	0.26	0.27	µg, Total	2.1	<26 RPD or 2X IDL
133279	Lead	2.94	2.76	µg, Total	6.4	<26 RPD or 2X IDL
133279	Mercury	<0.98	<0.98	µg, Total	NC	<26 RPD or 2X IDL
133279	Selenium	<0.38	<0.38	µg, Total	NC	<26 RPD or 2X IDL
133280	Mercury	<0.22	<0.22	µg, Total	NC	<26 RPD or 2X IDL
133281	Mercury	5.57	5.84	µg, Total	4.7	<26 RPD or 2X IDL
133282	Mercury	<1.00	<1.00	µg, Total	NC	<26 RPD or 2X IDL
133283	Antimony	<1.50	<1.50	µg, Total	NC	<26 RPD or 2X IDL
133283	Arsenic	10.51	10.65	µg, Total	1.3	<26 RPD or 2X IDL
133283	Beryllium	0.18	0.19	µg, Total	3.3	<26 RPD or 2X IDL
133283	Mercury	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133283	Selenium	7.18	7.31	µg, Total	1.8	<26 RPD or 2X IDL
133284	Antimony	<0.90	<0.90	µg, Total	NC	<26 RPD or 2X IDL
133284	Arsenic	7.12	6.83	µg, Total	4.2	<26 RPD or 2X IDL
133284	Beryllium	<0.02	<0.02	µg, Total	NC	<26 RPD or 2X IDL
133284	Cadmium	0.20	0.18	µg, Total	11.4	<26 RPD or 2X IDL
133284	Lead	0.42	0.40	µg, Total	4.8	<26 RPD or 2X IDL
133284	Mercury	<1.22	<1.22	µg, Total	NC	<26 RPD or 2X IDL
133284	Nickel	1.99	1.86	µg, Total	7.0	<26 RPD or 2X IDL
133284	Selenium	0.59	0.48	µg, Total	21.2	<26 RPD or 2X IDL
133285	Mercury	0.17	0.16	µg, Total	9.1	<26 RPD or 2X IDL
133286	Mercury	1.58	1.68	µg, Total	1.4	<26 RPD or 2X IDL
133287	Mercury	<1.00	<1.00	µg, Total	NC	<26 RPD or 2X IDL
133288	Antimony	<1.50	<1.50	µg, Total	NC	<26 RPD or 2X IDL
133288	Arsenic	4.04	3.83	µg, Total	5.4	<26 RPD or 2X IDL
133288	Beryllium	<0.03	0.04	µg, Total	NC	<26 RPD or 2X IDL
133288	Mercury	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133288	Selenium	15.71	14.73	µg, Total	6.4	<26 RPD or 2X IDL
133289	Antimony	<0.96	<0.96	µg, Total	NC	<26 RPD or 2X IDL
133289	Arsenic	4.01	3.80	µg, Total	5.5	<26 RPD or 2X IDL
133289	Beryllium	<0.02	<0.02	µg, Total	NC	<26 RPD or 2X IDL
133289	Cadmium	0.32	0.32	µg, Total	0.6	<26 RPD or 2X IDL
133289	Lead	4.44	4.38	µg, Total	1.4	<26 RPD or 2X IDL
133289	Mercury	<0.92	<0.92	µg, Total	NC	<26 RPD or 2X IDL

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QUALITY ASSURANCE SUMMARY
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DUPLICATES

LAB ID	ANALYTE	SAMPLE	DUPLICATE	UNITS	RPD	QAO
133289	Nickel	2.32	2.06	µg, Total	11.8	<26 RPD or 2X IDL
133289	Selenium	<0.38	<0.38	µg, Total	NC	<26 RPD or 2X IDL
133290	Mercury	0.14	0.16	µg, Total	17.5	<26 RPD or 2X IDL
133291	Mercury	2.86	2.86	µg, Total	0.0	<26 RPD or 2X IDL
133292	Mercury	<1.00	<1.00	µg, Total	NC	<26 RPD or 2X IDL
133293	Antimony	<1.50	<1.50	µg, Total	NC	<26 RPD or 2X IDL
133293	Arsenic	2.87	2.57	µg, Total	11.1	<26 RPD or 2X IDL
133293	Beryllium	<0.03	<0.03	µg, Total	NC	<26 RPD or 2X IDL
133293	Mercury	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133293	Selenium	15.93	14.77	µg, Total	7.5	<26 RPD or 2X IDL
133294	Antimony	<0.94	<0.94	µg, Total	NC	<26 RPD or 2X IDL
133294	Arsenic	3.44	3.61	µg, Total	4.8	<26 RPD or 2X IDL
133294	Beryllium	<0.02	<0.02	µg, Total	NC	<26 RPD or 2X IDL
133294	Cadmium	0.14	0.14	µg, Total	0.0	<26 RPD or 2X IDL
133294	Lead	0.52	0.57	µg, Total	9.7	<26 RPD or 2X IDL
133294	Mercury	<0.98	<0.98	µg, Total	NC	<26 RPD or 2X IDL
133294	Nickel	1.41	1.35	µg, Total	4.9	<26 RPD or 2X IDL
133294	Selenium	<0.38	<0.38	µg, Total	NC	<26 RPD or 2X IDL
133295	Mercury	<0.10	<0.10	µg, Total	NC	<26 RPD or 2X IDL
133296	Mercury	1.35	1.00	µg, Total	29.6	<26 RPD or 2X IDL
133297	Mercury	<1.00	<1.00	µg, Total	NC	<26 RPD or 2X IDL
133298	Antimony	3.84	4.50	µg, Total	15.8	<26 RPD or 2X IDL
133298	Arsenic	8.28	7.88	µg, Total	5.0	<26 RPD or 2X IDL
133298	Beryllium	0.36	0.40	µg, Total	10.3	<26 RPD or 2X IDL
133298	Mercury	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133298	Selenium	9.67	8.69	µg, Total	10.8	<26 RPD or 2X IDL
133299	Antimony	<1.02	<1.02	µg, Total	NC	<26 RPD or 2X IDL
133299	Arsenic	6.42	6.43	µg, Total	0.1	<26 RPD or 2X IDL
133299	Beryllium	<0.02	<0.02	µg, Total	NC	<26 RPD or 2X IDL
133299	Cadmium	0.38	0.42	µg, Total	11.3	<26 RPD or 2X IDL
133299	Lead	<0.20	<0.20	µg, Total	NC	<26 RPD or 2X IDL
133299	Mercury	4.23	4.11	µg, Total	2.7	<26 RPD or 2X IDL
133299	Selenium	<0.41	<0.41	µg, Total	NC	<26 RPD or 2X IDL
133300	Mercury	0.56	0.57	µg, Total	0.8	<26 RPD or 2X IDL
133301	Mercury	<0.44	<0.44	µg, Total	NC	<26 RPD or 2X IDL
133302	Mercury	<1.00	<1.00	µg, Total	NC	<26 RPD or 2X IDL
133303	Antimony	<1.50	<1.50	µg, Total	NC	<26 RPD or 2X IDL
133303	Arsenic	4.58	4.15	µg, Total	10.0	<26 RPD or 2X IDL
133303	Beryllium	0.31	0.33	µg, Total	8.5	<26 RPD or 2X IDL

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QUALITY ASSURANCE SUMMARY
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DUPLICATES

LAB ID	ANALYTE	SAMPLE	DUPLICATE	UNITS	RPD	QAO
133303	Cadmium	1.88	1.89	µg, Total	0.3	<26 RPD or 2X IDL
133303	Lead	2.75	2.65	µg, Total	4.0	<26 RPD or 2X IDL
133303	Mercury	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133303	Nickel	4.36	4.58	µg, Total	4.8	<26 RPD or 2X IDL
133303	Selenium	14.62	14.92	µg, Total	2.0	<26 RPD or 2X IDL
133304	Antimony	<0.93	<0.93	µg, Total	NC	<26 RPD or 2X IDL
133304	Arsenic	4.55	4.51	µg, Total	1.0	<26 RPD or 2X IDL
133304	Beryllium	<0.02	<0.02	µg, Total	NC	<26 RPD or 2X IDL
133304	Cadmium	0.15	0.14	µg, Total	1.1	<26 RPD or 2X IDL
133304	Lead	1.16	1.05	µg, Total	10.1	<26 RPD or 2X IDL
133304	Mercury	<1.03	<1.03	µg, Total	NC	<26 RPD or 2X IDL
133304	Nickel	1.66	1.70	µg, Total	2.0	<26 RPD or 2X IDL
133304	Selenium	0.46	0.53	µg, Total	15.4	<26 RPD or 2X IDL
133305	Mercury	<0.06	<0.06	µg, Total	NC	<26 RPD or 2X IDL
133306	Mercury	2.14	1.34	µg, Total	45.6	<26 RPD or 2X IDL
133307	Mercury	<1.00	<1.00	µg, Total	NC	<26 RPD or 2X IDL
133308	Antimony	<1.50	<1.50	µg, Total	NC	<26 RPD or 2X IDL
133308	Arsenic	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133308	Beryllium	<0.03	<0.03	µg, Total	NC	<26 RPD or 2X IDL
133308	Lead	1.36	1.57	µg, Total	14.8	<26 RPD or 2X IDL
133308	Mercury	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133308	Nickel	8.63	8.36	µg, Total	3.2	<26 RPD or 2X IDL
133308	Selenium	12.87	10.83	µg, Total	17.3	<26 RPD or 2X IDL
133309	Antimony	1.08	<0.95	µg, Total	NC	<26 RPD or 2X IDL
133309	Arsenic	3.36	3.26	µg, Total	2.8	<26 RPD or 2X IDL
133309	Beryllium	<0.02	<0.02	µg, Total	NC	<26 RPD or 2X IDL
133309	Cadmium	0.20	0.18	µg, Total	11.2	<26 RPD or 2X IDL
133309	Lead	<0.19	<0.19	µg, Total	NC	<26 RPD or 2X IDL
133309	Mercury	<0.96	<0.96	µg, Total	NC	<26 RPD or 2X IDL
133309	Selenium	<0.38	<0.38	µg, Total	NC	<26 RPD or 2X IDL
133310	Mercury	<0.14	<0.14	µg, Total	NC	<26 RPD or 2X IDL
133311	Mercury	2.05	2.08	µg, Total	1.5	<26 RPD or 2X IDL
133312	Mercury	<1.00	<1.00	µg, Total	NC	<26 RPD or 2X IDL
133313	Antimony	<1.50	<1.50	µg, Total	NC	<26 RPD or 2X IDL
133313	Arsenic	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133313	Beryllium	<0.03	<0.03	µg, Total	NC	<26 RPD or 2X IDL
133313	Cadmium	<0.03	<0.03	µg, Total	NC	<26 RPD or 2X IDL
133313	Lead	<0.30	<0.30	µg, Total	NC	<26 RPD or 2X IDL
133313	Mercury	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL

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QUALITY ASSURANCE SUMMARY
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DUPLICATES

LAB ID	ANALYTE	SAMPLE	DUPLICATE	UNITS	RPD	QAO
133313	Nickel	1.06	0.85	µg, Total	22.6	<26 RPD or 2X IDL
133313	Selenium	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133314	Antimony	<1.04	<1.04	µg, Total	NC	<26 RPD or 2X IDL
133314	Arsenic	<0.42	<0.42	µg, Total	NC	<26 RPD or 2X IDL
133314	Beryllium	<0.02	<0.02	µg, Total	NC	<26 RPD or 2X IDL
133314	Cadmium	0.04	0.04	µg, Total	5.7	<26 RPD or 2X IDL
133314	Lead	<0.21	<0.21	µg, Total	NC	<26 RPD or 2X IDL
133314	Mercury	<0.71	<0.71	µg, Total	NC	<26 RPD or 2X IDL
133314	Nickel	2.92	2.84	µg, Total	2.6	<26 RPD or 2X IDL
133314	Selenium	1.28	1.34	µg, Total	4.9	<26 RPD or 2X IDL
133315	Mercury	<0.09	<0.09	µg, Total	NC	<26 RPD or 2X IDL
133316	Mercury	<0.42	<0.42	µg, Total	NC	<26 RPD or 2X IDL
133317	Mercury	<1.00	<1.00	µg, Total	NC	<26 RPD or 2X IDL
133318	Antimony	2.43	<1.50	µg, Total	NC	<26 RPD or 2X IDL
133318	Arsenic	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133318	Beryllium	<0.03	<0.03	µg, Total	NC	<26 RPD or 2X IDL
133318	Cadmium	<0.03	<0.03	µg, Total	NC	<26 RPD or 2X IDL
133318	Lead	<0.30	<0.30	µg, Total	NC	<26 RPD or 2X IDL
133318	Mercury	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133318	Nickel	1.36	1.64	µg, Total	18.8	<26 RPD or 2X IDL
133318	Selenium	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133319	Antimony	<1.13	1.23	µg, Total	NC	<26 RPD or 2X IDL
133319	Arsenic	<0.45	<0.45	µg, Total	NC	<26 RPD or 2X IDL
133319	Beryllium	<0.02	<0.02	µg, Total	NC	<26 RPD or 2X IDL
133319	Cadmium	<0.02	<0.02	µg, Total	NC	<26 RPD or 2X IDL
133319	Lead	<0.23	<0.23	µg, Total	NC	<26 RPD or 2X IDL
133319	Mercury	<0.59	<0.59	µg, Total	NC	<26 RPD or 2X IDL
133319	Nickel	0.47	0.69	µg, Total	36.7	<26 RPD or 2X IDL
133319	Selenium	<0.45	<0.45	µg, Total	NC	<26 RPD or 2X IDL
133320	Mercury	<0.10	<0.10	µg, Total	NC	<26 RPD or 2X IDL
133321	Mercury	<0.42	<0.42	µg, Total	NC	<26 RPD or 2X IDL
133322	Mercury	<1.00	<1.00	µg, Total	NC	<26 RPD or 2X IDL
133323	Antimony	<1.50	<1.50	µg, Total	NC	<26 RPD or 2X IDL
133323	Arsenic	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133323	Beryllium	<0.03	<0.03	µg, Total	NC	<26 RPD or 2X IDL
133323	Cadmium	<0.03	<0.03	µg, Total	NC	<26 RPD or 2X IDL
133323	Lead	<0.30	<0.30	µg, Total	NC	<26 RPD or 2X IDL
133323	Mercury	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133323	Nickel	2.43	2.72	µg, Total	11.0	<26 RPD or 2X IDL

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QUALITY ASSURANCE SUMMARY
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DUPLICATES

LAB ID	ANALYTE	SAMPLE	DUPLICATE	UNITS	RPD	QAO
133323	Selenium	<0.60	<0.60	µg, Total	NC	<26 RPD or 2X IDL
133324	Antimony	<0.98	<0.98	µg, Total	NC	<26 RPD or 2X IDL
133324	Arsenic	<0.39	<0.39	µg, Total	NC	<26 RPD or 2X IDL
133324	Beryllium	<0.02	<0.02	µg, Total	NC	<26 RPD or 2X IDL
133324	Cadmium	0.03	0.03	µg, Total	0.0	<26 RPD or 2X IDL
133324	Lead	0.96	0.93	µg, Total	2.9	<26 RPD or 2X IDL
133324	Mercury	<0.86	<0.86	µg, Total	NC	<26 RPD or 2X IDL
133324	Nickel	0.89	0.92	µg, Total	4.1	<26 RPD or 2X IDL
133324	Selenium	0.54	0.63	µg, Total	15.7	<26 RPD or 2X IDL
133325	Mercury	<0.45	<0.45	µg, Total	NC	<26 RPD or 2X IDL
133326	Mercury	0.81	0.81	µg, Total	0.0	<26 RPD or 2X IDL
133327	Mercury	<1.00	<1.00	µg, Total	NC	<26 RPD or 2X IDL

SPIKES

LAB ID	ANALYTE	SA RESULT	SPK RESULT	SPK ADD	% REC	QAO
133268	Antimony	<5.00	21.50	20	108	75%-125%
133268	Arsenic	44.28	49.44	20	26	75%-125%
133268	Beryllium	0.60	1.37	1	77	75%-125%
133268	Cadmium	6.40	52.20	50	92	75%-125%
133268	Chromium	30.70	189.70	200	80	75%-125%
133268	Lead	369.80	747.30	500	76	75%-125%
133268	Manganese	1241.60	1629.70	500	78	75%-125%
133268	Mercury	<2.00	9.00	10	90	75%-125%
133268	Nickel	26.60	505.60	500	96	75%-125%
133268	Phosphorus	1274.30	11610.20	10000	103	75%-125%
133268	Selenium	130.32	145.34	50	30	75%-125%
133269	Antimony	<5.00	17.00	20	85	75%-125%
133269	Arsenic	28.93	47.90	20	95	75%-125%
133269	Beryllium	<0.10	0.84	1	84	75%-125%
133269	Cadmium	1.17	4.83	5	73	75%-125%
133269	Chromium	10.70	126.30	200	58	75%-125%
133269	Lead	8.22	28.56	20	102	75%-125%
133269	Manganese	14.00	501.80	500	98	75%-125%
133269	Mercury	2.30	8.30	10	60	75%-125%

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QUALITY ASSURANCE SUMMARY
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SPIKES

LAB ID	ANALYTE	SA RESULT	SPK RESULT	SPK ADD	% REC	QAO
133269	Nickel	5.85	13.74	10	79	75%-125%
133269	Phosphorus	<500.00	9769.50	10000	98	75%-125%
133269	Selenium	<4.00	10.61	10	106	75%-125%
133270	Mercury	<2.00	10.60	10	106	75%-125%
133271	Mercury	12.10	21.50	10	94	75%-125%
133272	Mercury	<2.00	12.00	10	120	75%-125%

QAO: Quality Assurance Objective; REC: Recovery; RPD: Relative Percent Difference
NC: Not Calculatable; IDL: Instrument Detection Limit

DETECTION LIMITS SUMMARY

LAB ID	ANALYTE	DET LIMIT	UNITS	INSTRUMENT DL	UNITS
133268	Antimony	1.50	µg, Total	5.00	µg/L
133268	Arsenic	0.60	µg, Total	2.00	µg/L
133268	Beryllium	0.03	µg, Total	0.10	µg/L
133268	Cadmium	0.03	µg, Total	0.10	µg/L
133268	Chromium	3.00	µg, Total	10.00	µg/L
133268	Lead	0.30	µg, Total	1.00	µg/L
133268	Manganese	0.30	µg, Total	1.00	µg/L
133268	Mercury	0.60	µg, Total	2.00	µg/L
133268	Nickel	0.60	µg, Total	2.00	µg/L
133268	Phosphorus	150.00	µg, Total	500.00	µg/L
133268	Selenium	0.60	µg, Total	2.00	µg/L
133269	Antimony	0.97	µg, Total	5.00	µg/L
133269	Arsenic	0.39	µg, Total	2.00	µg/L
133269	Beryllium	0.02	µg, Total	0.10	µg/L
133269	Cadmium	0.02	µg, Total	0.10	µg/L
133269	Chromium	1.94	µg, Total	10.00	µg/L
133269	Lead	0.19	µg, Total	1.00	µg/L
133269	Manganese	0.19	µg, Total	1.00	µg/L
133269	Mercury	0.88	µg, Total	2.00	µg/L
133269	Nickel	0.39	µg, Total	2.00	µg/L
133269	Phosphorus	97.19	µg, Total	500.00	µg/L
133269	Selenium	0.39	µg, Total	2.00	µg/L
133270	Mercury	0.11	µg, Total	2.00	µg/L
133271	Mercury	0.38	µg, Total	2.00	µg/L
133272	Mercury	1.00	µg, Total	2.00	µg/L
133273	Antimony	1.50	µg, Total	5.00	µg/L
133273	Arsenic	0.60	µg, Total	2.00	µg/L
133273	Beryllium	0.03	µg, Total	0.10	µg/L
133273	Cadmium	0.03	µg, Total	0.10	µg/L
133273	Chromium	3.00	µg, Total	10.00	µg/L
133273	Lead	0.30	µg, Total	1.00	µg/L
133273	Manganese	0.30	µg, Total	1.00	µg/L
133273	Mercury	0.60	µg, Total	2.00	µg/L
133273	Nickel	0.60	µg, Total	2.00	µg/L
133273	Phosphorus	150.00	µg, Total	500.00	µg/L
133273	Selenium	0.60	µg, Total	2.00	µg/L
133274	Antimony	0.94	µg, Total	5.00	µg/L
133274	Arsenic	0.37	µg, Total	2.00	µg/L

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DETECTION LIMITS SUMMARY
Continued

LAB ID	ANALYTE	DET LIMIT	UNITS	INSTRUMENT DL	UNITS
133274	Beryllium	0.02	µg, Total	0.10	µg/L
133274	Cadmium	0.02	µg, Total	0.10	µg/L
133274	Chromium	1.87	µg, Total	10.00	µg/L
133274	Lead	0.19	µg, Total	1.00	µg/L
133274	Manganese	0.19	µg, Total	1.00	µg/L
133274	Mercury	1.01	µg, Total	2.00	µg/L
133274	Nickel	0.37	µg, Total	2.00	µg/L
133274	Phosphorus	93.56	µg, Total	500.00	µg/L
133274	Selenium	0.37	µg, Total	2.00	µg/L
133275	Mercury	0.11	µg, Total	2.00	µg/L
133276	Mercury	0.41	µg, Total	2.00	µg/L
133277	Mercury	1.00	µg, Total	2.00	µg/L
133278	Antimony	1.50	µg, Total	5.00	µg/L
133278	Arsenic	0.60	µg, Total	2.00	µg/L
133278	Beryllium	0.03	µg, Total	0.10	µg/L
133278	Cadmium	0.03	µg, Total	0.10	µg/L
133278	Chromium	3.00	µg, Total	10.00	µg/L
133278	Lead	0.30	µg, Total	1.00	µg/L
133278	Manganese	0.30	µg, Total	1.00	µg/L
133278	Mercury	0.60	µg, Total	2.00	µg/L
133278	Nickel	0.60	µg, Total	2.00	µg/L
133278	Phosphorus	150.00	µg, Total	500.00	µg/L
133278	Selenium	0.60	µg, Total	2.00	µg/L
133279	Antimony	0.94	µg, Total	5.00	µg/L
133279	Arsenic	0.38	µg, Total	2.00	µg/L
133279	Beryllium	0.02	µg, Total	0.10	µg/L
133279	Cadmium	0.02	µg, Total	0.10	µg/L
133279	Chromium	1.89	µg, Total	10.00	µg/L
133279	Lead	0.19	µg, Total	1.00	µg/L
133279	Manganese	0.19	µg, Total	1.00	µg/L
133279	Mercury	0.98	µg, Total	2.00	µg/L
133279	Nickel	0.38	µg, Total	2.00	µg/L
133279	Phosphorus	94.33	µg, Total	500.00	µg/L
133279	Selenium	0.38	µg, Total	2.00	µg/L
133280	Mercury	0.22	µg, Total	2.00	µg/L
133281	Mercury	0.41	µg, Total	2.00	µg/L
133282	Mercury	1.00	µg, Total	2.00	µg/L
133283	Antimony	1.50	µg, Total	5.00	µg/L

DL Report Continued on Next Page

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DETECTION LIMITS SUMMARY
Continued

LAB ID	ANALYTE	DET LIMIT	UNITS	INSTRUMENT DL	UNITS
133283	Arsenic	0.60	µg, Total	2.00	µg/L
133283	Beryllium	0.03	µg, Total	0.10	µg/L
133283	Cadmium	0.03	µg, Total	0.10	µg/L
133283	Chromium	3.00	µg, Total	10.00	µg/L
133283	Lead	0.30	µg, Total	1.00	µg/L
133283	Manganese	0.30	µg, Total	1.00	µg/L
133283	Mercury	0.60	µg, Total	2.00	µg/L
133283	Nickel	0.60	µg, Total	2.00	µg/L
133283	Phosphorus	150.00	µg, Total	500.00	µg/L
133283	Selenium	0.60	µg, Total	2.00	µg/L
133284	Antimony	0.90	µg, Total	5.00	µg/L
133284	Arsenic	0.36	µg, Total	2.00	µg/L
133284	Beryllium	0.02	µg, Total	0.10	µg/L
133284	Cadmium	0.02	µg, Total	0.10	µg/L
133284	Chromium	1.79	µg, Total	10.00	µg/L
133284	Lead	0.18	µg, Total	1.00	µg/L
133284	Manganese	0.18	µg, Total	1.00	µg/L
133284	Mercury	1.22	µg, Total	2.00	µg/L
133284	Nickel	0.36	µg, Total	2.00	µg/L
133284	Phosphorus	89.73	µg, Total	500.00	µg/L
133284	Selenium	0.36	µg, Total	2.00	µg/L
133285	Mercury	0.15	µg, Total	4.00	µg/L
133286	Mercury	0.39	µg, Total	2.00	µg/L
133287	Mercury	1.00	µg, Total	2.00	µg/L
133288	Antimony	1.50	µg, Total	5.00	µg/L
133288	Arsenic	0.60	µg, Total	2.00	µg/L
133288	Beryllium	0.03	µg, Total	0.10	µg/L
133288	Cadmium	0.03	µg, Total	0.10	µg/L
133288	Chromium	3.00	µg, Total	10.00	µg/L
133288	Lead	0.30	µg, Total	1.00	µg/L
133288	Manganese	0.30	µg, Total	1.00	µg/L
133288	Mercury	0.60	µg, Total	2.00	µg/L
133288	Nickel	0.60	µg, Total	2.00	µg/L
133288	Phosphorus	150.00	µg, Total	500.00	µg/L
133288	Selenium	0.60	µg, Total	2.00	µg/L
133289	Antimony	0.96	µg, Total	5.00	µg/L
133289	Arsenic	0.38	µg, Total	2.00	µg/L
133289	Beryllium	0.02	µg, Total	0.10	µg/L

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DETECTION LIMITS SUMMARY
Continued

LAB ID	ANALYTE	DET LIMIT	UNITS	INSTRUMENT DL	UNITS
133289	Cadmium	0.02	µg, Total	0.10	µg/L
133289	Chromium	1.92	µg, Total	10.00	µg/L
133289	Lead	0.19	µg, Total	1.00	µg/L
133289	Manganese	0.19	µg, Total	1.00	µg/L
133289	Mercury	0.92	µg, Total	2.00	µg/L
133289	Nickel	0.38	µg, Total	2.00	µg/L
133289	Phosphorus	95.83	µg, Total	500.00	µg/L
133289	Selenium	0.38	µg, Total	2.00	µg/L
133290	Mercury	0.11	µg, Total	2.00	µg/L
133291	Mercury	0.44	µg, Total	2.00	µg/L
133292	Mercury	1.00	µg, Total	2.00	µg/L
133293	Antimony	1.50	µg, Total	5.00	µg/L
133293	Arsenic	0.60	µg, Total	2.00	µg/L
133293	Beryllium	0.03	µg, Total	0.10	µg/L
133293	Cadmium	0.03	µg, Total	0.10	µg/L
133293	Chromium	3.00	µg, Total	10.00	µg/L
133293	Lead	0.30	µg, Total	1.00	µg/L
133293	Manganese	0.30	µg, Total	1.00	µg/L
133293	Mercury	0.60	µg, Total	2.00	µg/L
133293	Nickel	0.60	µg, Total	2.00	µg/L
133293	Phosphorus	150.00	µg, Total	500.00	µg/L
133293	Selenium	0.60	µg, Total	2.00	µg/L
133294	Antimony	0.94	µg, Total	5.00	µg/L
133294	Arsenic	0.38	µg, Total	2.00	µg/L
133294	Beryllium	0.02	µg, Total	0.10	µg/L
133294	Cadmium	0.02	µg, Total	0.10	µg/L
133294	Chromium	1.88	µg, Total	10.00	µg/L
133294	Lead	0.19	µg, Total	1.00	µg/L
133294	Manganese	0.19	µg, Total	1.00	µg/L
133294	Mercury	0.98	µg, Total	2.00	µg/L
133294	Nickel	0.38	µg, Total	2.00	µg/L
133294	Phosphorus	94.23	µg, Total	500.00	µg/L
133294	Selenium	0.38	µg, Total	2.00	µg/L
133295	Mercury	0.10	µg, Total	2.00	µg/L
133296	Mercury	0.41	µg, Total	2.00	µg/L
133297	Mercury	1.00	µg, Total	2.00	µg/L
133298	Antimony	1.50	µg, Total	5.00	µg/L
133298	Arsenic	0.60	µg, Total	2.00	µg/L

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DETECTION LIMITS SUMMARY
Continued

LAB ID	ANALYTE	DET LIMIT	UNITS	INSTRUMENT DL	UNITS
133298	Beryllium	0.03	µg, Total	0.10	µg/L
133298	Cadmium	0.03	µg, Total	0.10	µg/L
133298	Chromium	3.00	µg, Total	10.00	µg/L
133298	Lead	0.30	µg, Total	1.00	µg/L
133298	Manganese	0.30	µg, Total	1.00	µg/L
133298	Mercury	0.60	µg, Total	2.00	µg/L
133298	Nickel	0.60	µg, Total	2.00	µg/L
133298	Phosphorus	150.00	µg, Total	500.00	µg/L
133298	Selenium	0.60	µg, Total	2.00	µg/L
133299	Antimony	1.02	µg, Total	5.00	µg/L
133299	Arsenic	0.41	µg, Total	2.00	µg/L
133299	Beryllium	0.02	µg, Total	0.10	µg/L
133299	Cadmium	0.02	µg, Total	0.10	µg/L
133299	Chromium	2.05	µg, Total	10.00	µg/L
133299	Lead	0.20	µg, Total	1.00	µg/L
133299	Manganese	0.20	µg, Total	1.00	µg/L
133299	Mercury	0.75	µg, Total	2.00	µg/L
133299	Nickel	0.41	µg, Total	2.00	µg/L
133299	Phosphorus	102.37	µg, Total	500.00	µg/L
133299	Selenium	0.41	µg, Total	2.00	µg/L
133300	Mercury	0.09	µg, Total	2.00	µg/L
133301	Mercury	0.44	µg, Total	2.00	µg/L
133302	Mercury	1.00	µg, Total	2.00	µg/L
133303	Antimony	1.50	µg, Total	5.00	µg/L
133303	Arsenic	0.60	µg, Total	2.00	µg/L
133303	Beryllium	0.03	µg, Total	0.10	µg/L
133303	Cadmium	0.03	µg, Total	0.10	µg/L
133303	Chromium	3.00	µg, Total	10.00	µg/L
133303	Lead	0.30	µg, Total	1.00	µg/L
133303	Manganese	0.30	µg, Total	1.00	µg/L
133303	Mercury	0.60	µg, Total	2.00	µg/L
133303	Nickel	0.60	µg, Total	2.00	µg/L
133303	Phosphorus	150.00	µg, Total	500.00	µg/L
133303	Selenium	0.60	µg, Total	2.00	µg/L
133304	Antimony	0.93	µg, Total	5.00	µg/L
133304	Arsenic	0.37	µg, Total	2.00	µg/L
133304	Beryllium	0.02	µg, Total	0.10	µg/L
133304	Cadmium	0.02	µg, Total	0.10	µg/L

DL Report Continued on Next Page

DETECTION LIMITS SUMMARY
Continued

LAB ID	ANALYTE	DET LIMIT	UNITS	INSTRUMENT DL	UNITS
133304	Chromium	1.86	µg, Total	10.00	µg/L
133304	Lead	0.19	µg, Total	1.00	µg/L
133304	Manganese	0.19	µg, Total	1.00	µg/L
133304	Mercury	1.03	µg, Total	2.00	µg/L
133304	Nickel	0.37	µg, Total	2.00	µg/L
133304	Phosphorus	93.07	µg, Total	500.00	µg/L
133304	Selenium	0.37	µg, Total	2.00	µg/L
133305	Mercury	0.06	µg, Total	2.00	µg/L
133306	Mercury	0.61	µg, Total	2.00	µg/L
133307	Mercury	1.00	µg, Total	2.00	µg/L
133308	Antimony	1.50	µg, Total	5.00	µg/L
133308	Arsenic	0.60	µg, Total	2.00	µg/L
133308	Beryllium	0.03	µg, Total	0.10	µg/L
133308	Cadmium	0.03	µg, Total	0.10	µg/L
133308	Chromium	3.00	µg, Total	10.00	µg/L
133308	Lead	0.30	µg, Total	1.00	µg/L
133308	Manganese	0.30	µg, Total	1.00	µg/L
133308	Mercury	0.60	µg, Total	2.00	µg/L
133308	Nickel	0.60	µg, Total	2.00	µg/L
133308	Phosphorus	150.00	µg, Total	500.00	µg/L
133308	Selenium	0.60	µg, Total	2.00	µg/L
133309	Antimony	0.95	µg, Total	5.00	µg/L
133309	Arsenic	0.38	µg, Total	2.00	µg/L
133309	Beryllium	0.02	µg, Total	0.10	µg/L
133309	Cadmium	0.02	µg, Total	0.10	µg/L
133309	Chromium	1.90	µg, Total	10.00	µg/L
133309	Lead	0.19	µg, Total	1.00	µg/L
133309	Manganese	0.19	µg, Total	1.00	µg/L
133309	Mercury	0.96	µg, Total	2.00	µg/L
133309	Nickel	0.38	µg, Total	2.00	µg/L
133309	Phosphorus	94.84	µg, Total	500.00	µg/L
133309	Selenium	0.38	µg, Total	2.00	µg/L
133310	Mercury	0.14	µg, Total	2.00	µg/L
133311	Mercury	0.62	µg, Total	2.00	µg/L
133312	Mercury	1.00	µg, Total	2.00	µg/L
133313	Antimony	1.50	µg, Total	5.00	µg/L
133313	Arsenic	0.60	µg, Total	2.00	µg/L
133313	Beryllium	0.03	µg, Total	0.10	µg/L

DL Report Continued on Next Page

DETECTION LIMITS SUMMARY
Continued

LAB ID	ANALYTE	DET LIMIT	UNITS	INSTRUMENT DL	UNITS
133313	Cadmium	0.03	µg, Total	0.10	µg/L
133313	Chromium	3.00	µg, Total	10.00	µg/L
133313	Lead	0.30	µg, Total	1.00	µg/L
133313	Manganese	0.30	µg, Total	1.00	µg/L
133313	Mercury	0.60	µg, Total	2.00	µg/L
133313	Nickel	0.60	µg, Total	2.00	µg/L
133313	Phosphorus	150.00	µg, Total	500.00	µg/L
133313	Selenium	0.60	µg, Total	2.00	µg/L
133314	Antimony	1.04	µg, Total	5.00	µg/L
133314	Arsenic	0.42	µg, Total	2.00	µg/L
133314	Beryllium	0.02	µg, Total	0.10	µg/L
133314	Cadmium	0.02	µg, Total	0.10	µg/L
133314	Chromium	2.09	µg, Total	10.00	µg/L
133314	Lead	0.21	µg, Total	1.00	µg/L
133314	Manganese	0.21	µg, Total	1.00	µg/L
133314	Mercury	0.71	µg, Total	2.00	µg/L
133314	Nickel	0.42	µg, Total	2.00	µg/L
133314	Phosphorus	104.30	µg, Total	500.00	µg/L
133314	Selenium	0.42	µg, Total	2.00	µg/L
133315	Mercury	0.09	µg, Total	2.00	µg/L
133316	Mercury	0.42	µg, Total	2.00	µg/L
133317	Mercury	1.00	µg, Total	2.00	µg/L
133318	Antimony	1.50	µg, Total	5.00	µg/L
133318	Arsenic	0.60	µg, Total	2.00	µg/L
133318	Beryllium	0.03	µg, Total	0.10	µg/L
133318	Cadmium	0.03	µg, Total	0.10	µg/L
133318	Chromium	3.00	µg, Total	10.00	µg/L
133318	Lead	0.30	µg, Total	1.00	µg/L
133318	Manganese	0.30	µg, Total	1.00	µg/L
133318	Mercury	0.60	µg, Total	2.00	µg/L
133318	Nickel	0.60	µg, Total	2.00	µg/L
133318	Phosphorus	150.00	µg, Total	500.00	µg/L
133318	Selenium	0.60	µg, Total	2.00	µg/L
133319	Antimony	1.13	µg, Total	5.00	µg/L
133319	Arsenic	0.45	µg, Total	2.00	µg/L
133319	Beryllium	0.02	µg, Total	0.10	µg/L
133319	Cadmium	0.02	µg, Total	0.10	µg/L
133319	Chromium	2.27	µg, Total	10.00	µg/L

DL Report Continued on Next Page

DETECTION LIMITS SUMMARY
Continued

LAB ID	ANALYTE	DET LIMIT	UNITS	INSTRUMENT DL	UNITS
133319	Lead	0.23	µg, Total	1.00	µg/L
133319	Manganese	0.23	µg, Total	1.00	µg/L
133319	Mercury	0.59	µg, Total	2.00	µg/L
133319	Nickel	0.45	µg, Total	2.00	µg/L
133319	Phosphorus	113.46	µg, Total	500.00	µg/L
133319	Selenium	0.45	µg, Total	2.00	µg/L
133320	Mercury	0.10	µg, Total	2.00	µg/L
133321	Mercury	0.42	µg, Total	2.00	µg/L
133322	Mercury	1.00	µg, Total	2.00	µg/L
133323	Antimony	1.50	µg, Total	5.00	µg/L
133323	Arsenic	0.60	µg, Total	2.00	µg/L
133323	Beryllium	0.03	µg, Total	0.10	µg/L
133323	Cadmium	0.03	µg, Total	0.10	µg/L
133323	Chromium	3.00	µg, Total	10.00	µg/L
133323	Lead	0.30	µg, Total	1.00	µg/L
133323	Manganese	0.30	µg, Total	1.00	µg/L
133323	Mercury	0.60	µg, Total	2.00	µg/L
133323	Nickel	0.60	µg, Total	2.00	µg/L
133323	Phosphorus	150.00	µg, Total	500.00	µg/L
133323	Selenium	0.60	µg, Total	2.00	µg/L
133324	Antimony	0.98	µg, Total	5.00	µg/L
133324	Arsenic	0.39	µg, Total	2.00	µg/L
133324	Beryllium	0.02	µg, Total	0.10	µg/L
133324	Cadmium	0.02	µg, Total	0.10	µg/L
133324	Chromium	1.95	µg, Total	10.00	µg/L
133324	Lead	0.20	µg, Total	1.00	µg/L
133324	Manganese	0.20	µg, Total	1.00	µg/L
133324	Mercury	0.86	µg, Total	2.00	µg/L
133324	Nickel	0.39	µg, Total	2.00	µg/L
133324	Phosphorus	97.73	µg, Total	500.00	µg/L
133324	Selenium	0.39	µg, Total	2.00	µg/L
133325	Mercury	0.45	µg, Total	2.00	µg/L
133326	Mercury	0.74	µg, Total	2.00	µg/L
133327	Mercury	1.00	µg, Total	2.00	µg/L

G.3 TOTAL FLUORIDES LABORATORY DATA

ETS Analytical Services, Inc.
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RECEIVED NOV 23 1992

ETS, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012
ATTN: Dr. Mike Visneski

Re: Laboratory Analysis
ETSAS Client No. 6593
Contract No. 92-655

REPORT DATE/NUMBER: November 20, 1992 / 179

SAMPLES COLLECTED BY: CLIENT

DATE RECEIVED AT LAB: 11/03/92

ANALYSIS FOR: Flouride

METHOD OF ANALYSIS: USEPA Method 13B with Belleck Distillation

SAMPLE ANALYSIS DATA

Lab ID: 132041 Client ID: 1-M13-F1 Matrix: AQUEOUS
Other ID: 92-655 (6-6.2) Description: EPA BRICK PLANT
Flouride — 8.4 mg/l
└>Analysis Date: 11/16/92 by: LEA Run ID: 132041
└>Method: Potentiometric; Det Limit= 0.10 mg/l

Lab ID: 132042 Client ID: 2-M13-LOCF1 Matrix: AQUEOUS
Other ID: 92-655 (6-6.2) Description: EPA BRICK PLANT
Flouride — 8.0 mg/l
└>Analysis Date: 11/16/92 by: LEA Run ID: 132041
└>Method: Potentiometric; Det Limit= 0.10 mg/l

Lab ID: 132043 Client ID: 3-M13-LOCF1 Matrix: AQUEOUS
Other ID: 92-655 (6-6.2) Description: EPA BRICK PLANT
Flouride — 3.5 mg/l
└>Analysis Date: 11/16/92 by: LEA Run ID: 132041
└>Method: Potentiometric; Det Limit= 0.10 mg/l

Lab ID: 132044 Client ID: 3A-M13-LOCF1 Matrix: AQUEOUS
Other ID: 92-655 (6-6.2) Description: EPA BRICK PLANT
Flouride — 10.1 mg/l
└>Analysis Date: 11/16/92 by: LEA Run ID: 132041
└>Method: Potentiometric; Det Limit= 0.10 mg/l

REPORT CONTINUED ON NEXT PAGE

1401 Municipal Road, NW - Roanoke, Virginia 24012-1309 - Telephone: 703-265-0004 - FAX: 703-563-4866

SAMPLE ANALYSIS DATA

```
Lab ID: 132045     Client ID: 1-M13-E             Matrix: AQUEOUS
Other ID: 92-655 (6-6.2)        Description: EPA BRICK PLANT
            Flouride ------------------------- 1.8 mg/1
             └>Analysis Date: 11/16/92      by: LEA   Run ID: 132041
             └>Method: Potentiometric; Det Limit= 0.10 mg/1

Lab ID: 132046     Client ID: 2-M13-LOCE          Matrix: AQUEOUS
Other ID: 92-655 (6-6.2)        Description: EPA BRICK PLANT
            Flouride ------------------------- 3.4 mg/1
             └>Analysis Date: 11/16/92      by: LEA   Run ID: 132041
             └>Method: Potentiometric; Det Limit= 0.10 mg/1

Lab ID: 132047     Client ID: 3-M13-LOCE          Matrix: AQUEOUS
Other ID: 92-655 (6-6.2)        Description: EPA BRICK PLANT
            Flouride ------------------------- 3.8 mg/1
             └>Analysis Date: 11/16/92      by: LEA   Run ID: 132041
             └>Method: Potentiometric; Det Limit= 0.10 mg/1

Lab ID: 132048     Client ID: 2A-M13-LOCE         Matrix: AQUEOUS
Other ID: 92-655 (6-6.2)        Description: EPA BRICK PLANT
            Flouride ------------------------- 3.1 mg/1
             └>Analysis Date: 11/16/92      by: LEA   Run ID: 132041
             └>Method: Potentiometric; Det Limit= 0.10 mg/1

Lab ID: 132049     Client ID: 3A-M13-LOCE         Matrix: AQUEOUS
Other ID: 92-655 (6-6.2)        Description: EPA BRICK PLANT
            Flouride ------------------------- 70.0 mg/1
             └>Analysis Date: 11/16/92      by: LEA   Run ID: 132041
             └>Method: Potentiometric; Det Limit= 0.10 mg/1

Lab ID: 132050     Client ID: M13-BLANK           Matrix: AQUEOUS
Other ID: 92-655 (6-6.2)        Description: EPA BRICK PLANT
            Flouride ------------------------- 2.7 mg/1
             └>Analysis Date: 11/16/92      by: LEA   Run ID: 132041
             └>Method: Potentiometric; Det Limit= 0.10 mg/1

Lab ID: 132373     Client ID: M-13BLANK           Matrix: FILTER
Other ID: 92-655 (6-6.2)        Description: EPA BRICK PLANT
            Flouride ------------------------- 30.0 mg/1
             └>Analysis Date: 11/16/92      by: LEA   Run ID: 132041
             └>Method: Potentiometric; Det Limit= 0.10 mg/1

Lab ID: 132378     Client ID: M-13 RBLANK         Matrix: AQUEOUS
Other ID: 92-655 (6-6.2)        Description: EPA BRICK PLANT
            Flouride ------------------------- 15.5 mg/1
             └>Analysis Date: 11/16/92      by: LEA   Run ID: 132041
             └>Method: Potentiometric; Det Limit= 0.10 mg/1
```

REPORT CONTINUED ON NEXT PAGE

NOTE: Sample volumes are attached.

Quality Assurance performed on the above data is presented on the following page(s).

If we may be of further assistance, please contact us at any time.

Sincerely,
ETS ANALYTICAL SERVICES, INC.

Chris A Southworth

Chris Southworth, Project Manager

ETS, Inc.
Report of 11/20/92
Page No. 4

QUALITY ASSURANCE SUMMARY

CALIBRATION VERIFICATION

ANALYTE	UNITS	TRUE	FOUND	% REC	QAO	RUN ID
Flouride	mg/l	8.78	9.00	102.5	85-115 %	132041
Flouride	mg/l	0.88	0.76	86.4	85-115 %	132041
Flouride	mg/l	0.80	0.82	102.5	85-115 %	132041
Flouride	mg/l	0.80	0.90	112.5	85-115 %	132041
Flouride	mg/l	0.80	0.82	102.5	85-115 %	132041
Flouride	mg/l	0.80	0.74	92.5	85-115 %	132041

BLANKS

ANALYTE	UNITS	FOUND	TYPE	QAO	RUN ID
Flouride	mg/l	<0.10	ICB	<0.10 mg/l	132041
Flouride	mg/l	<0.10	PBLK	<0.10 mg/l	132041
Flouride	mg/l	<0.10	CCB-1	<0.10 mg/l	132041
Flouride	mg/l	<0.10	CCB-2	<0.10 mg/l	132041
Flouride	mg/l	<0.10	CCB-3	<0.10 mg/l	132041
Flouride	mg/l	<0.10	CCB-4	<0.10 mg/l	132041

DUPLICATES

LAB ID	ANALYTE	SAMPLE	DUP	UNITS	RPD	QAO	RUN ID
132045	Flouride	1.8	1.8	mg/l	0	+/-20%	132041
132047	Flouride	3.8	4.0	mg/l	5	+/-20%	132041

SPIKES

LAB ID	ANALYTE	SAMPLE	SPK	ADDED	% REC	QAO	RUN ID
132043	Flouride	3.2	4.0	1.0	85	85-115 %	132041
132046	Flouride	3.1	4.0	1.0	94	85-115 %	132041

QAO: Quality Assurance Objective; REC: Recovery; RPD: Relative Percent Difference
NC: Not Calculatable; DUP: Duplicate Analysis Result; SPK: Spiked Analysis Result.
For Duplicates <5X the Detection Limit (DL), ± DL shall apply for the QAO.

ETS Inc.
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November 20, 1992
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Sample volume information for Project 92-655

	mls
1-M13-F2	0.0
2-M13-LOCF2	0.0
1-M13-F1	883.9
2-M13-LOCF1	657.1
3-M13-LOCF1	981.5
3A-M13-LOCF1	328.8
1-M13-E	1043.1
2-M13-LOCE'	782.3
3-M13-LOCE	953.8
2A-M13-LOCE	546.8
3A-M13-LOCE	305.5
M13-BLANK	697.6
M13 BLANK (AQUEOUS)	483.7
M-13BLANK (FILTER)	0.4527 grams

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A subsidiary of ETS International, Inc.

RECEIVED JAN 8 1993

ETS, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012
ATTN: Dr. Ted Handel

Re: Laboratory Analysis
ETSAS Client No. 6593
Project 92-655

REPORT DATE/NUMBER: January 8, 1993 / 188

SAMPLES COLLECTED BY: CLIENT

DATE RECEIVED AT LAB: 11/10/92

ANALYSIS FOR: Fluoride

METHOD OF ANALYSIS: USEPA Method 13B, Belleck Distillation

SAMPLE ANALYSIS DATA

Lab ID: 132373 Client ID: M-13BLANK Matrix: FILTER
Other ID: 92-655 (6-6.2) Description: EPA BRICK PLANT
Flouride —— 30.0 mg/l
└>Analysis Date: 11/16/92 by: LEA
└>Method: Potentiometric; Det Limit= 0.10 mg/l
└>Comments: Reanalysis 0.11 mg/l.

If we may be of further assistance, please contact us at any time.

Sincerely,
ETS ANALYTICAL SERVICES, INC.

Chris A Southworth

Chris Southworth, Project Manager

1401 Municipal Road, NW - Roanoke, Virginia 24012-1309 - Telephone: 703-265-0004 - FAX: 703-563-4866

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RECEIVED JAN 8 1993

ETS, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012
ATTN: Dr. Ted Handel

Re: Laboratory Analysis
ETSAS Client No. 6593
Project 92-655

REPORT DATE/NUMBER: January 8, 1993 / 189

SAMPLES COLLECTED BY: CLIENT

DATE RECEIVED AT LAB: 12/07/92

ANALYSIS FOR: Flouride

METHOD OF ANALYSIS: USEPA Method 13B, Belleck Distillation

SAMPLE ANALYSIS DATA

Lab ID: 133561 Client ID: Matrix: FILTER
Other ID: 92-655 Description: BLANK
Fluoride —— < 0.10 mg/l
└>Analysis Date: 12/24/92 by: CAS
└>Method: Potentiometric; Det Limit= 0.10 mg/l

If we may be of further assistance, please contact us at any time.

Sincerely,
ETS ANALYTICAL SERVICES, INC.

Chris A Southworth

Chris Southworth, Project Manager

1401 Municipal Road, NW - Roanoke, Virginia 24012-1309 - Telephone: 703-265-0004 - FAX: 703-563-4866

G.4 HYDROGEN FLUORIDE LABORATORY DATA

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method 26

Print Date 12/15/92   Time 14:26:57
Page 1

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00300	F2		IN -M26-R1	Imps. 1-3 / Rinses			NKL	11/05/92	
00301	F3		IN -M26-R1	Imp. 4+5 NaOH			NKL	11/05/92	
00302	F5		IN -M26-R1	Imp. 6 Silica Gel			NKL	11/05/92	
00304	F2		IN -M26-R2	Imps. 1-3 / Rinses			NKL	11/05/92	
00305	F3		IN -M26-R2	Imp. 4+5 NaOH			NKL	11/05/92	
00306	F5		IN -M26-R2	Imp. 6 Silica Gel			NKL	11/05/92	
00308	F2		IN -M26-R3	Imps. 1-3 / Rinses			NKL	11/05/92	
00309	F3		IN -M26-R3	Imp. 4+5 NaOH			NKL	11/05/92	
00310	F5		IN -M26-R3	Imp. 6 Silica Gel			NKL	11/05/92	
00312	F2		OA -M26-R1	Imps. 1-3 / Rinses			NKL	11/05/92	
00313	F3		OA -M26-R1	Imp. 4+5 NaOH			NKL	11/05/92	
00314	F5		OA -M26-R1	Imp. 6 Silica Gel			NKL	11/05/92	
00316	F2		OA -M26-R2	Imps. 1-3 / Rinses			NKL	11/05/92	
00317	F3		OA -M26-R2	Imp. 4+5 NaOH			NKL	11/05/92	
00318	F5		OA -M26-R2	Imp. 6 Silica Gel			NKL	11/05/92	
00320	F2		OA -M26-R3	Imps. 1-3 / Rinses			NKL	11/05/92	
00321	F3		OA -M26-R3	Imp. 4+5 NaOH			NKL	11/05/92	
00322	F5		OA -M26-R3	Imp. 6 Silica Gel			NKL	11/05/92	
00324	F2		OB -M26-R1	Imps. 1-3 / Rinses			NKL	11/05/92	
00325	F3		OB -M26-R1	Imp. 4+5 NaOH			NKL	11/05/92	
00326	F5		OB -M26-R1	Imp. 6 Silica Gel			NKL	11/05/92	
00328	F2		OB -M26-R2	Imps. 1-3 / Rinses			NKL	11/05/92	
00329	F3		OB -M26-R2	Imp. 4+5 NaOH			NKL	11/05/92	
00330	F5		OB -M26-R2	Imp. 6 Silica Gel			NKL	11/05/92	
00332	F2		OB -M26-R3	Imps. 1-3 / Rinses			NKL	11/05/92	
00333	F3		OB -M26-R3	Imp. 4+5 NaOH			NKL	11/05/92	
00334	F5		OB -M26-R3	Imp. 6 Silica Gel			NKL	11/05/92	

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method 26

Print Date 12/15/92
Page 2

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
00336	F2		IN -M26-RO	Imps. 1-3 / Rinses			NKL	11/05/92	
00337	F3		IN -M26-RO	Imp. 4+5 NaOH			NKL	11/05/92	
00338	F5		IN -M26-RO	Imp. 6 Silica Gel			NKL	11/05/92	
00340	F2		OA -M26-RO	Imps. 1-3 / Rinses			NKL	11/05/92	
00341	F3		OA -M26-RO	Imp. 4+5 NaOH			NKL	11/05/92	
00342	F5		OA -M26-RO	Imp. 6 Silica Gel			NKL	11/05/92	
00344	F2		OB -M26-RO	Imps. 1-3 / Rinses			NKL	11/05/92	
00345	F3		OB -M26-RO	Imp. 4+5 NaOH			NKL	11/05/92	
00346	F5		OB -M26-RO	Imp. 6 Silica Gel			NKL	11/05/92	

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RECEIVED DEC 7 1992

ETS, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012
ATTN: Dr. Mike Visneski

Re: Laboratory Analysis
ETSAS Client No. 6593
EPA Brick Plant

REPORT DATE/NUMBER: December 7, 1992 / 181

SAMPLES COLLECTED BY: CLIENT

DATE RECEIVED AT LAB: 11/06/92

ANALYSIS FOR: Fluoride

METHOD OF ANALYSIS: USEPA Method 26

SAMPLE ANALYSIS DATA

Lab ID: 132283 Client ID: 92-655-300 Matrix: Liquid
Other ID: Description: EPA BRICK PLANT
Flouride ———— 252 mg/l
└>Analysis Date: 30-NOV-1992 by: RPL Run ID: 10007225
└>Method: Ion Chromatography; Det Limit= 0.10 mg/l
└>Comments: Rep1 = 251.00 mg/l; Rep2 = 252.00 mg/l; RPD = 0.4

Lab ID: 132284 Client ID: 92-655-304 Matrix: Liquid
Other ID: Description: EPA BRICK PLANT
Flouride ———— 300 mg/l
└>Analysis Date: 30-NOV-1992 by: RPL Run ID: 10007225
└>Method: Ion Chromatography; Det Limit= 0.10 mg/l
└>Comments: Rep1 = 293.00 mg/l; Rep2 = 307.00 mg/l; RPD = 4.7

Lab ID: 132285 Client ID: 92-655-308 Matrix: Liquid
Other ID: Description: EPA BRICK PLANT
Flouride ———— 127 mg/l
└>Analysis Date: 30-NOV-1992 by: RPL Run ID: 10007225
└>Method: Ion Chromatography; Det Limit= 0.10 mg/l
└>Comments: Rep1 = 125.00 mg/l; Rep2 = 129.00 mg/l; RPD = 3.1

Lab ID: 132286 Client ID: 92-655-312 Matrix: Liquid
Other ID: Description: EPA BRICK PLANT

REPORT CONTINUED ON NEXT PAGE

1401 Municipal Road, NW - Roanoke, Virginia 24012-1309 - Telephone: 703-265-0004 - FAX: 703-563-4866

SAMPLE ANALYSIS DATA

Lab ID: 132286 (continued)
Flouride —— 105 mg/l
└>Analysis Date: 17-NOV-1992 by: RPL Run ID: 10006991
└>Method: Ion Chromatography; Det Limit= 0.10 mg/l
└>Comments: Repl = 106.00 mg/l; Rep2 = 104.00 mg/l; RPD = 1.9

Lab ID: 132287 Client ID: 92-655-316 Matrix: Liquid
Other ID: Description: EPA BRICK PLANT
Flouride —— 300 mg/l
└>Analysis Date: 30-NOV-1992 by: RPL Run ID: 10007225
└>Method: Ion Chromatography; Det Limit= 0.10 mg/l
└>Comments: Repl = 297.00 mg/l; Rep2 = 304.00 mg/l; RPD = 2.3

Lab ID: 132288 Client ID: 92-655-320 Matrix: Liquid
Other ID: Description: EPA BRICK PLANT
Flouride —— 45.8 mg/l
└>Analysis Date: 30-NOV-1992 by: RPL Run ID: 10007225
└>Method: Ion Chromatography; Det Limit= 0.10 mg/l
└>Comments: Repl = 45.50 mg/l; Rep2 = 46.00 mg/l; RPD = 1.1

Lab ID: 132289 Client ID: 92-655-324 Matrix: Liquid
Other ID: Description: EPA BRICK PLANT
Flouride —— 1.4 mg/l
└>Analysis Date: 26-NOV-1992 by: RPL Run ID: 10007141
└>Method: Ion Chromatography; Det Limit= 0.10 mg/l
└>Comments: Repl = 1.40 mg/l; Rep2 = 1.30 mg/l; RPD = 7.4

Lab ID: 132290 Client ID: 92-655-328 Matrix: Liquid
Other ID: Description: EPA BRICK PLANT
Flouride —— 238 mg/l
└>Analysis Date: 30-NOV-1992 by: RPL Run ID: 10007225
└>Method: Ion Chromatography; Det Limit= 0.10 mg/l
└>Comments: Repl = 237.00 mg/l; Rep2 = 240.00 mg/l; RPD = 1.3

Lab ID: 132291 Client ID: 92-655-332 Matrix: Liquid
Other ID: Description: EPA BRICK PLANT
Flouride —— 200 mg/l
└>Analysis Date: 1-DEC-1992 by: RPL Run ID: 10007225
└>Method: Ion Chromatography; Det Limit= 0.10 mg/l
└>Comments: Repl = 195.00 mg/l; Rep2 = 204.00 mg/l; RPD = 4.5

Lab ID: 132292 Client ID: 92-655-336 Matrix: Liquid
Other ID: Description: EPA BRICK PLANT
Flouride —— 1.6 mg/l
└>Analysis Date: 1-DEC-1992 by: RPL Run ID: 10007225
└>Method: Ion Chromatography; Det Limit= 0.10 mg/l
└>Comments: Repl = 1.50 mg/l; Rep2 = 1.60 mg/l; RPD = 6.5

REPORT CONTINUED ON NEXT PAGE

SAMPLE ANALYSIS DATA

Lab ID: 132293 Client ID: 92-655-340 Matrix: Liquid
Other ID: Description: EPA BRICK PLANT
Flouride —————————— < 0.1 mg/l
└>Analysis Date: 20-NOV-1992 by: RPL Run ID: 10006991
└>Method: Ion Chromatography; Det Limit= 0.10 mg/l
└>Comments: Repl = <0.10 mg/l; Rep2 = <0.10 mg/l; RPD = 0.0

Lab ID: 132294 Client ID: 92-655-344 Matrix: Liquid
Other ID: Description: EPA BRICK PLANT
Flouride —————————— < 1.0 mg/l
└>Analysis Date: 17-NOV-1992 by: RPL Run ID: 10006991
└>Method: Ion Chromatography; Det Limit= 1.00 mg/l
└>Comments: Repl = <1.00 mg/l; Rep2 = <1.00 mg/l; RPD = 0.0

NOTE: Answers reported are the mean of two replicates. This work was perfomed under ETS Contract # 92-655-6.

Quality Assurance performed on the above data is presented on the following page(s).

If we may be of further assistance, please contact us at any time.

Sincerely,
ETS ANALYTICAL SERVICES, INC.

David F. Tompkins, President

ETS, Inc.
Report of 12/07/92
Page No. 4

QUALITY ASSURANCE SUMMARY

CALIBRATION VERIFICATION

ANALYTE	UNITS	TRUE	FOUND	% REC	QAO	RUN ID
Flouride	mg/l	4.16	3.71	89.2	75-125%	10006991
Flouride	mg/l	2.15	2.12	98.6	75-125%	10006991
Flouride	mg/l	2.15	2.37	110.2	75-125%	10006991
Flouride	mg/l	4.92	5.40	109.8	75-125%	10006991
Flouride	mg/l	4.16	5.33	128.1	75-125%	10007141
Flouride	mg/l	2.15	2.04	94.9	75-125%	10007141
Flouride	mg/l	2.15	2.28	106.0	75-125%	10007141
Flouride	mg/l	4.16	4.79	115.1	75-125%	10007225
Flouride	mg/l	1.02	1.03	101.0	75-125%	10007225
Flouride	mg/l	1.02	1.02	100.0	75-125%	10007225

BLANKS

ANALYTE	UNITS	FOUND	TYPE	QAO	RUN ID
Flouride	mg/l	<0.10	ICB1	<0.1 ug/ml	10006991
Flouride	mg/l	<0.10	CCB1	<0.1 ug/ml	10006991
Flouride	mg/l	<0.10	CCB2	<0.1 ug/ml	10006991
Flouride	mg/l	<0.10	CCB2	<0.1 ug/ml	10006991
Flouride	mg/l	<0.10	ICB1	<0.1 ug/ml	10007141
Flouride	mg/l	<0.10	CCB1	<0.1 ug/ml	10007141
Flouride	mg/l	<0.10	CCB2	<0.1 ug/ml	10007141
Flouride	mg/l	<0.10	ICB1	<0.1 ug/ml	10007225
Flouride	mg/l	<0.10	CCB1	<0.1 ug/ml	10007225
Flouride	mg/l	<0.10	CCB2	<0.1 ug/ml	10007225

SPIKES

LAB ID	ANALYTE	SAMPLE	SPK	ADDED	% REC	QAO	RUN ID
132293	Flouride	<0.10	2.07	1.8	115.0	75-125%	10006991
132289	Flouride	1.4	18.5	19.4	88.1	75-125%	10007141
132294	Flouride	<0.10	2.00	1.9	103.1	75-125%	10007225

QAO: Quality Assurance Objective; REC: Recovery; RPD: Relative Percent Difference
NC: Not Calculatable; DUP: Duplicate Analysis Result; SPK: Spiked Analysis Result.
For Duplicates <5X the Detection Limit (DL), ± DL shall apply for the QAO.

ETSAS SAMPLE NO.		VOL. (ML)
132283	-	40
132284	-	40
132285	-	33
132286	-	40
132287	-	40
132288	-	40
132289	-	40
132290	-	40
132291	-	40
132292	-	31
132293	-	33
132294	-	31

G.5 VOLATILE ORGANICS LABORATORY DATA

CASE NARRATIVE

TRIANGLE LABORATORIES OF RTP, INC.
801 Capitola Drive
Durham, N.C. 27713
Phone: (919) 544-5729
Fax: (919) 544-5491

DATE: November 29,1992

CLIENT P.O. NO: 3975

TLI NO: 22355

OBJECTIVE: Analysis of fifty-two VOST tubes and three field blanks for Method 8240 Table 2, Clean Air Act, and Pulp and Paper volatile compounds and Tentatively Identified Compounds (TICs).

METHOD:

All VOST tubes were analyzed in tandem according to the guidelines of Methods 8240 and 5040. The internal standards bromochloromethane, 1,4-difluorobenzene, and chlorobenzene-d5were added in the amount of 0.25 ug immediately prior to analysis by GC/MS. The surrogate standards toluene-d8, 1,2-dichloroethane-d4, and benzene-d6 were added in the amount of 0.25 ug immediately prior to analysis by GC/MS.

The GC/MS analysis conditions are listed below:

VOLATILES:

Purge and trap:	Tekmar LSC-2000
Purge:	11 min.
Desorb Temperature:	180 C
Desorb Time:	4 min.
Program:	-30 C hold .5 min, ramp to 45 C at 10 C/min, ramp to 90 C at 6 C/min, hold 4.0 min, ramp to 200 C at 15.0 C/min, hold 4 min.
MS:	
Instruments:	VG TRIO-1 Lab Base data system
Scan:	35-300 amu at 1s/scan
Source temperature:	180 C
Interface:	Jet Separator, 160 C

REPORT:

Enclosed with the case narrative are copies of the client chains-of-custody, sample log-in sheets, instrument tracking forms, and log book pages. All initial and continuing calibration data is located in the back of the data package behind the sample data.

EPORT cont.

The data are reported as quantitation reports, total ion chromatograms, interim reports, and spectra of detected compounds. The quantitation report header lists the sample and calibration injection files. The client sample name and number, TLI sample number, TLI project number, date of report, and analysis date are also listed in the quantitation report header. The raw areas and scan numbers found on the quantitation report are from the interim report. The response factors used are the average response factors from the initial calibration. The ISID is the internal standard identifier. Those compounds matched to 1,4-difluorobenzene, for example, are flagged with the ISID number 15. The amounts for the target compounds are reported in ug for the VOST tubes. Sample calculations are shown below. If the target compound is detected, a code of 'D' is reported. If the target compound is detected but below the quantitation limit or over the calibration range, a code of 'E' or estimated is reported. If the target compound is not detected, a code of 'ND' or not detected is reported. Amounts reported for target compounds that are not detected are calculated using an area of 20 counts. Compounds flagged with the code 'I' are internal standards.

In addition to the quantitation report, a tentatively identified compound (TIC) report is also present. The TIC report header has the same information as the quantitation report header. The TIC report includes the name, scan number, area, scan # of internal standard, amount of internal standard, and the amount in micrograms (ug). Below this information the internal standards are listed with their scan number and area. The concentrations of the TICs should be considered estimates because they are calculated using the total ion current areas of the internal standard. These TICs were searched against the NBS library. The three best matches were found and from this information a tentative identification was assigned. All of the spectral searches are included in the data package behind the spectra of target analytes.

RESULTS:

Please note that the field blank samples were not listed on the client chain of custody but are included on the TLI chain of custody.

The acquisitions for samples OB-M0030-R1B T/TC and IN-M0030-R1D T/TC were lost due to computer failure. Please note that there was also an acquisition error for the original VOSTBLK for 11/11/92 and the field blank OA-M0030-R0 T/TC was inadvertently analyzed before the VOSTBLK for 11/11/92 could be reanalyzed.

SULTS cont.

All field samples were observed to contain condensation within the Tenax and Tenax-charcoal tubes prior to analysis. Many of the samples showed yellow discoloration of the Tenax and/or gray discoloration of the glass wool plugs. These problems with the samples, along with saturation of target analytes or TICs, may have inhibited target analyte recoveries.

Seven volatile laboratory blanks were analyzed along with the samples. Although the blanks were found to contain a number of analytes at low levels, no compounds were detected in any blank at levels above the quantitation limit. Compounds found in the field samples at levels less than five times the amount found in the associated blank should not be considered native to the samples.

The majority of the samples had one or more compounds at levels over the calibration range. All compounds whose quantitations are above calibration range are flagged with an 'E' and the quantitations should be considered estimates. In addition, a-pinene was saturated in all samples from OA and OB groups except samples OA-M0030-RA1 T/TC, OA-M0030-R3E T/TC, OB-M0030-R2D T/TC, and OB-M0030-R2F T/TC. There were also several TICs reported for the IN-M0030-R3 samples which were saturated. All saturated coumpounds should be considered underestimated and may interfere with the detection or quantitation of target analytes.

The 1,2-dichloroethane-d4 surrogate standard percent recovery was slightly above the quality control limit for sample IN-M0030-R3C T/TC and the toluene-d8 percent recovery was low for sample IN-M0030-R3F T/TC. All other surrogate standard percent recoveries were within quality control limits for all samples and blanks.

The neck of sample IN-M0030-R3F T/TC tube broke after the internal standards were spiked. Although the sample was repacked, bromochloromethane and 1,4-difluorobenzene internal standard areas are low. The quantitations of the target analytes in this sample differ slightly from other samples due to these low internal standards. All other internal standards were within quality control criteria for all samples and blanks.

The four ketones reported for the samples are 2-butanone, 4-methyl-2-pentanone, acetone, and 2-hexanone. While these compounds are Method 8240, Table 2 analytes, they are not addressed be Method 5040, and often experience erratic recovery from VOST. All ketone results for VOST matrices should therefore be considered semi-quantitative.

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ256
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R1A T/TC
TLI ID: 61-37-73/74

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2899		518	1		I		
Chloromethane	37580	1.067	126	1	3.036	E	0.05	___
Bromomethane	1380	1.090	185	1	0.109	D	0.05	___
Vinyl chloride	1149	1.732	142	1	0.057	D	0.05	___
Chloroethane	0	1.185	0	1	0.001	ND	0.05	___
Methylene chloride	2715	2.249	353	1	0.104	D	0.05	___
Acetone	8477	0.602	312	1	1.214	E	0.05	___
Carbon disulfide	4348	5.737	303	1	0.065	D	0.05	___
1,1-Dichloroethene	0	1.456	0	1	0.001	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.001	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	1120	0.764	385	1	0.126	D	0.05	___
Iodomethane	24048	3.628	303	1	0.571	D	0.05	___
n-Hexane	1888	5.495	417	1	0.030	E	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	770	1.616	175	1	0.041	E	0.05	___
Vinyl Bromide	0	1.191	0	1	0.001	ND	0.05	___
Trichlorofluoromethane	837	2.339	230	1	0.031	E	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	15823		843	15		I		
2-Butanone	475	0.023	503	15	0.327	D	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.001	ND	0.05	___
Benzene	305957	1.576	589	15	3.067	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.001	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.001	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.004	ND	0.05	___
Chlorobenzene-d5	18747		1080	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ256
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R1A T/TC
TLI ID: 61-37-73/74

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
√ 2-Hexanone	0	0.129	0	29	0.002	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	___
√ Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
√ Toluene	84706	0.896	853	29	1.261	E	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
√ Ethylbenzene	4755	0.512	1114	29	0.124	D	0.05	___
√ Styrene	0	0.809	0	29	0.001	ND	0.05	___
√ m-/p-Xylene	7337	0.567	1137	29	0.173	D	0.10	___
√ o-Xylene	2598	0.538	1209	29	0.064	D	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.001	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	3806	1.398	1550	29	0.036	E	0.05	___
A-Pinene	0	1.398	0	29	0.001	ND	0.05	___
B-Pinene	0	1.468	0	29	0.001	ND	0.05	___
P-Cymene	7674	1.818	1679	29	0.056	D	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	190	2.001	598	1	0.008	D	3.2
Benzene-d6	16607	1.555	582	15	0.169	D	67.6
Toluene-d8	20457	1.184	843	29	0.230	D	92.0

Reveiwed by ___ᏊᏭ___ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ257
Response File : ICALFN12
Date Analyzed : 11/18/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R18 T/TC
TLI ID: 61-37-75/76

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2826		518	1		I		
Chloromethane	36453	1.067	126	1	3.022	E	0.05	
Bromomethane	1488	1.090	185	1	0.121	D	0.05	
Vinyl chloride	1210	1.732	142	1	0.062	D	0.05	
Chloroethane	0	1.185	0	1	0.001	ND	0.05	
Methylene chloride	348	2.249	353	1	0.014	E	0.05	
Acetone	6655	0.602	318	1	0.978	D	0.05	
Carbon disulfide	3649	5.737	303	1	0.056	D	0.05	
1,1-Dichloroethene	0	1.456	0	1	0.001	ND	0.05	
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	1.710	0	1	0.001	ND	0.05	
Chloroform	0	5.048	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	
Acrylonitrile	905	0.764	386	1	0.105	D	0.05	
Iodomethane	24498	3.628	303	1	0.597	D	0.05	
n-Hexane	1477	5.495	417	1	0.024	E	0.05	
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	
1,3-butadiene	0	1.816	0	1	0.001	ND	0.05	
Vinyl Bromide	0	1.191	0	1	0.001	ND	0.05	
Trichlorofluoromethane	353	2.339	230	1	0.013	E	0.05	
Isooctane	0	20.258	0	1	0.001	ND	0.05	
Allyl chloride	0	1.490	0	1	0.001	ND	0.05	
1,4-Difluorobenzene	14897		643	15		I		
2-Butanone	0	0.023	0	15	0.015	ND	0.05	
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.243	0	15	0.001	ND	0.05	
Benzene	176232	1.576	588	15	1.876	E	0.05	
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	
Bromoform	0	0.250	0	15	0.001	ND	0.05	
Dibromomethane	0	0.229	0	15	0.001	ND	0.05	
1,4-Dichloro-2-butene	0	0.083	0	15	0.004	ND	0.05	
Chlorobenzene-d5	18129		1080	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ257
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R18 T/TC
TLI ID: 61-37-75/76

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
✓2-Hexanone	0	0.129	0	29	0.002	ND	0.05	____
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	____
✓Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	____
✓Toluene	19689	0.896	852	29	0.303	D	0.05	____
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	____
✓Ethylbenzene	1958	0.512	1113	29	0.053	D	0.05	____
✓Styrene	0	0.809	0	29	0.001	ND	0.05	____
✓m-/p-Xylene	6873	0.567	1137	29	0.167	D	0.10	____
✓o-Xylene	1826	0.538	1209	29	0.047	E	0.05	____
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0.214	0	29	0.001	ND	0.05	____
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	2287	1.398	1551	29	0.023	E	0.05	____
A-Pinene	607	1.398	1278	29	0.006	E	0.05	____
B-Pinene	0	1.468	0	29	0.001	ND	0.05	____
P-Cymene	3608	1.818	1678	29	0.027	E	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	5984	2.001	583	1	0.265	D	106.0
Benzene-d6	19824	1.555	582	15	0.214	D	85.6
Toluene-d8	19469	1.184	842	29	0.227	D	90.8

Reveiwed by ____________ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ258
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R1C T/TC
TLI ID: 61-37-77/78

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2817		517	1		I		
Chloromethane	19756	1.067	127	1	1.643	E	0.05	
Bromomethane	937	1.090	185	1	0.076	D	0.05	
Vinyl chloride	482	1.732	142	1	0.025	E	0.05	
Chloroethane	0	1.185	0	1	0.001	ND	0.05	
Methylene chloride	848	2.249	352	1	0.033	E	0.05	
Acetone	2350	0.602	319	1	0.346	D	0.05	
Carbon disulfide	2199	5.737	302	1	0.034	E	0.05	
1,1-Dichloroethene	0	1.456	0	1	0.001	ND	0.05	
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	1.710	0	1	0.001	ND	0.05	
Chloroform	0	5.048	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	
Acrylonitrile	365	0.764	386	1	0.043	E	0.05	
Iodomethane	16340	3.628	302	1	0.400	D	0.05	
n-Hexane	1099	5.495	416	1	0.018	E	0.05	
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	
1,3-butadiene	0	1.616	0	1	0.001	ND	0.05	
Vinyl Bromide	0	1.191	0	1	0.001	ND	0.05	
Trichlorofluoromethane	1166	2.339	229	1	0.044	E	0.05	
Isooctane	0	20.258	0	1	0.001	ND	0.05	
Allyl chloride	0	1.490	0	1	0.001	ND	0.05	
1,4-Difluorobenzene	14697		642	15		I		
2-Butanone	0	0.023	0	15	0.015	ND	0.05	
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.243	0	15	0.001	ND	0.05	
Benzene	115215	1.578	586	15	1.244	E	0.05	
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	
Bromoform	0	0.250	0	15	0.001	ND	0.05	
Dibromomethane	0	0.229	0	15	0.001	ND	0.05	
1,4-Dichloro-2-butene	0	0.083	0	15	0.004	ND	0.05	
Chlorobenzene-d5	17024		1079	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ258
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R1C T/TC
TLI ID: 61-37-77/78

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.002	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	5659	0.896	851	29	0.093	D	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	330	0.512	1113	29	0.009	E	0.05	___
Styrene	0	0.809	0	29	0.001	ND	0.05	___
m-/p-Xylene	1033	0.567	1136	29	0.027	E	0.10	___
o-Xylene	299	0.538	1209	29	0.008	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.001	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	1037	1.398	1548	29	0.011	E	0.05	___
A-Pinene	0	1.398	0	29	0.001	ND	0.05	___
B-Pinene	0	1.468	0	29	0.001	ND	0.05	___
P-Cymene	2610	1.818	1677	29	0.021	E	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	5984	2.001	582	1	0.265	D	106.0
Benzene-d6	21416	1.555	582	15	0.234	D	93.6
Toluene-d8	19264	1.184	841	29	0.239	D	95.6

Reveiwed by ______ Date 11/28/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ260
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R1E T/TC
TLI ID: 61-37-81/82

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2963		518	1		I		
Chloromethane	45946	1.067	126	1	3.633	E	0.05	___
Bromomethane	1464	1.090	185	1	0.113	D	0.05	___
Vinyl chloride	1151	1.732	142	1	0.056	D	0.05	___
Chloroethane	0	1.185	0	1	0.001	ND	0.05	___
Methylene chloride	326	2.249	353	1	0.012	E	0.05	___
Acetone	5667	0.602	319	1	0.794	D	0.05	___
Carbon disulfide	3701	5.737	303	1	0.054	D	0.05	___
1,1-Dichloroethene	0	1.456	0	1	0.001	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.001	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	822	0.764	386	1	0.091	D	0.05	___
Iodomethane	23259	3.628	303	1	0.541	D	0.05	___
n-Hexane	1623	5.495	417	1	0.025	E	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.001	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.001	ND	0.05	___
Trichlorofluoromethane	393	2.339	230	1	0.014	E	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	15761		642	15		I		
2-Butanone	0	0.023	0	15	0.014	ND	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.001	ND	0.05	___
Benzene	193978	1.576	588	15	1.952	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.001	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.001	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.004	ND	0.05	___
Chlorobenzene-d5	18376		1080	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ260
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R1E T/TC
TLI ID: 61-37-81/82

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.002	ND	0.05	
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	
Toluene	22071	0.896	851	29	0.335	D	0.05	
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	
Ethylbenzene	1377	0.512	1113	29	0.037	E	0.05	
Styrene	0	0.809	0	29	0.001	ND	0.05	
m-/p-Xylene	2460	0.567	1136	29	0.059	E	0.10	
o-Xylene	870	0.538	1209	29	0.022	E	0.05	
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	
1,2,3-Trichloropropane	0	0.214	0	29	0.001	ND	0.05	
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	
Cumene (isopropylbenzene)	1548	1.398	1550	29	0.015	E	0.05	
A-Pinene	779	1.398	1278	29	0.008	E	0.05	
B-Pinene	0	1.468	0	29	0.001	ND	0.05	
P-Cymene	4473	1.818	1678	29	0.033	E	0.05	

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	5952	2.001	583	1	0.251	D	100.4
Benzene-d6	20458	1.555	582	15	0.209	D	83.6
Toluene-d8	20012	1.184	842	29	0.230	D	92.0

Reveiwed by ______ Date 11/27/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ261
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R1F T/TC
TLI ID: 61-37-83/84

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2978		517	1		I		
Chloromethane	48823	1.067	127	1	3.841	E	0.05	___
Bromomethane	1948	1.090	185	1	0.150	D	0.05	___
Vinyl chloride	1759	1.732	142	1	0.085	D	0.05	___
Chloroethane	0	1.185	0	1	0.001	ND	0.05	___
Methylene chloride	325	2.249	353	1	0.012	E	0.05	___
Acetone	4767	0.602	311	1	0.665	D	0.05	___
Carbon disulfide	4126	5.737	303	1	0.060	D	0.05	___
1,1-Dichloroethene	0	1.456	0	1	0.001	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.001	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	762	0.764	384	1	0.084	D	0.05	___
Iodomethane	25226	3.628	303	1	0.584	D	0.05	___
n-Hexane	1725	5.495	417	1	0.026	E	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.001	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.001	ND	0.05	___
Trichlorofluoromethane	458	2.339	230	1	0.016	E	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	15911		642	15		I		
2-Butanone	0	0.023	0	15	0.014	ND	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.001	ND	0.05	___
Benzene	160132	1.576	587	15	1.596	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.001	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.001	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.004	ND	0.05	___
Chlorobenzene-d5	17783		1080	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ261
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R1F T/TC
TLI ID: 61-37-83/84

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.002	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	6013	0.896	851	29	0.094	D	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	50	0.512	1114	29	0.001	E	0.05	___
Styrene	0	0.809	0	29	0.001	ND	0.05	___
m-/p-Xylene	156	0.567	1137	29	0.004	E	0.10	___
o-Xylene	0	0.538	0	29	0.001	ND	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.001	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	___
A-Pinene	0	1.398	0	29	0.001	ND	0.05	___
B-Pinene	0	1.468	0	29	0.001	ND	0.05	___
P-Cymene	1276	1.818	1678	29	0.010	E	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	6800	2.001	583	1	0.285	D	114.0
Benzene-d6	21626	1.555	582	15	0.219	D	87.6
Toluene-d8	19946	1.184	842	29	0.237	D	94.8

Reveiwed by ________ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ262
Response File : ICALFN12
Date Analyzed : 11/18/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R2A T/TC
TLI ID: 61-37-85/86

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2942		517	1		I		
Chloromethane	51802	1.067	126	1	4.125	E	0.05	___
Bromomethane	1810	1.090	185	1	0.141	D	0.05	___
Vinyl chloride	1890	1.732	142	1	0.093	D	0.05	___
Chloroethane	0	1.185	0	1	0.001	ND	0.05	___
Methylene chloride	610	2.249	353	1	0.023	E	0.05	___
Acetone	7126	0.602	319	1	1.006	E	0.05	___
Carbon disulfide	5406	5.737	303	1	0.080	D	0.05	___
1,1-Dichloroethene	0	1.456	0	1	0.001	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.001	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	1124	0.764	386	1	0.125	D	0.05	___
Iodomethane	35564	3.628	303	1	0.833	D	0.05	___
n-Hexane	1922	5.495	416	1	0.030	E	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.001	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.001	ND	0.05	___
Trichlorofluoromethane	408	2.339	229	1	0.015	E	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	15366		642	15		I		
2-Butanone	0	0.023	0	15	0.014	ND	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.001	ND	0.05	___
Benzene	215234	1.576	588	15	2.222	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.001	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.001	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.004	ND	0.05	___
Chlorobenzene-d5	19007		1080	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard   Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ262
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R2A T/TC
TLI ID: 61-37-85/86

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.002	ND	0.05	
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	
Toluene	20888	0.896	851	29	0.308	D	0.05	
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	
Ethylbenzene	1443	0.512	1113	29	0.037	E	0.05	
Styrene	0	0.809	0	29	0.001	ND	0.05	
m-/p-Xylene	2358	0.567	1136	29	0.055	E	0.10	
o-Xylene	830	0.538	1209	29	0.020	E	0.05	
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	
1,2,3-Trichloropropane	0	0.214	0	29	0.001	ND	0.05	
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	
Cumene (isopropylbenzene)	1526	1.398	1549	29	0.014	E	0.05	
A-Pinene	0	1.398	0	29	0.001	ND	0.05	
B-Pinene	0	1.468	0	29	0.001	ND	0.05	
P-Cymene	4625	1.818	1678	29	0.033	E	0.05	

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	6194	2.001	583	1	0.263	D	105.2
Benzene-d6	19666	1.555	582	15	0.206	D	82.4
Toluene-d8	20237	1.184	842	29	0.225	D	90.0

Reveiwed by ______ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ263
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R2B T/TC
TLI ID: 61-37-87/88

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2809		517	1		I		
Chloromethane	55584	1.087	126	1	4.638	E	0.05	___
Bromomethane	1832	1.090	185	1	0.150	D	0.05	___
Vinyl chloride	1465	1.732	142	1	0.075	D	0.05	___
Chloroethane	0	1.185	0	1	0.002	ND	0.05	___
Methylene chloride	389	2.249	352	1	0.015	E	0.05	___
Acetone	5268	0.602	320	1	0.779	D	0.05	___
Carbon disulfide	4770	5.737	303	1	0.074	D	0.05	___
1,1-Dichloroethene	0	1.456	0	1	0.001	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.001	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	275	3.983	806	1	0.006	E	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	986	0.764	386	1	0.115	D	0.05	___
Iodomethane	34592	3.628	303	1	0.848	D	0.05	___
n-Hexane	1883	5.495	416	1	0.031	E	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.001	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.001	ND	0.05	___
Trichlorofluoromethane	418	2.339	229	1	0.016	E	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	15303		642	15		I		
2-Butanone	0	0.023	0	15	0.014	ND	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.001	ND	0.05	___
Benzene	193123	1.576	587	15	2.002	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.001	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.001	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.004	ND	0.05	___
Chlorobenzene-d5	18342		1079	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ263
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R2B T/TC
TLI ID: 61-37-87/88

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.002	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	18410	0.898	851	29	0.280	D	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	1262	0.512	1112	29	0.034	E	0.05	___
Styrene	0	0.809	0	29	0.001	ND	0.05	___
m-/p-Xylene	2118	0.567	1136	29	0.051	E	0.10	___
o-Xylene	727	0.538	1208	29	0.018	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.001	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	1272	1.398	1548	29	0.012	E	0.05	___
A-Pinene	0	1.398	0	29	0.001	ND	0.05	___
B-Pinene	0	1.468	0	29	0.001	ND	0.05	___
P-Cymene	3631	1.818	1677	29	0.027	E	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	8240	2.001	583	1	0.278	D	111.2
Benzene-d6	20204	1.555	582	15	0.212	D	84.8
Toluene-d8	19377	1.184	841	29	0.223	D	89.2

Reveiwed by ___GS___ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ264
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R2C T/TC
TLI ID: 61-37-89/90

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2820		517	1		I		
Chloromethane	53913	1.067	126	1	4.479	E	0.05	___
Bromomethane	2002	1.090	185	1	0.163	D	0.05	___
Vinyl chloride	1860	1.732	142	1	0.095	D	0.05	___
Chloroethane	0	1.185	0	1	0.001	ND	0.05	___
Methylene chloride	380	2.249	353	1	0.015	E	0.05	___
Acetone	4114	0.602	319	1	0.608	D	0.05	___
Carbon disulfide	5321	5.737	302	1	0.082	D	0.05	___
1,1-Dichloroethene	0	1.456	0	1	0.001	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.001	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	236	3.983	806	1	0.005	E	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	766	0.764	385	1	0.089	D	0.05	___
Iodomethane	35365	3.628	303	1	0.864	D	0.05	___
n-Hexane	1761	5.495	416	1	0.028	E	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.001	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.001	ND	0.05	___
Trichlorofluoromethane	460	2.339	229	1	0.017	E	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	14743		641	15		I		
2-Butanone	0	0.023	0	15	0.015	ND	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.001	ND	0.05	___
Benzene	226649	1.576	587	15	2.439	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.001	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.001	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.004	ND	0.05	___
Chlorobenzene-d5	18217		1079	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ264
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R2C T/TC
TLI ID: 61-37-89/90

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.002	ND	0.05	
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	
Toluene	17529	0.896	850	29	0.268	D	0.05	
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	
Ethylbenzene	875	0.512	1112	29	0.023	E	0.05	
Styrene	0	0.809	0	29	0.001	ND	0.05	
m-/p-Xylene	2028	0.567	1135	29	0.049	E	0.10	
o-Xylene	638	0.538	1208	29	0.016	E	0.05	
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	
1,2,3-Trichloropropane	0	0.214	0	29	0.001	ND	0.05	
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	
Cumene (isopropylbenzene)	1530	1.398	1546	29	0.015	E	0.05	
A-Pinene	0	1.398	0	29	0.001	ND	0.05	
B-Pinene	0	1.468	0	29	0.001	ND	0.05	
P-Cymene	4395	1.818	1675	29	0.033	E	0.05	

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	5875	2.001	583	1	0.260	D	104.0
Benzene-d6	18822	1.555	581	15	0.205	D	82.0
Toluene-d8	19141	1.184	841	29	0.222	D	88.8

Reveiwed by ____ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ265
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R2D T/TC
TLI ID: 61-37-91/92

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2887		516	1		I		
Chloromethane	49098	1.067	126	1	3.983	E	0.05	
Bromomethane	1838	1.090	184	1	0.146	D	0.05	
Vinyl chloride	1165	1.732	142	1	0.058	D	0.05	
Chloroethane	0	1.185	0	1	0.001	ND	0.05	
Methylene chloride	266	2.249	353	1	0.010	E	0.05	
Acetone	4464	0.802	319	1	0.842	D	0.05	
Carbon disulfide	4186	5.737	302	1	0.063	D	0.05	
1,1-Dichloroethene	0	1.456	0	1	0.001	ND	0.05	
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	1.710	0	1	0.001	ND	0.05	
Chloroform	0	5.048	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	
Dimethyl disulfide	123	3.983	806	1	0.003	E	0.05	
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	
Acrylonitrile	589	0.764	385	1	0.067	D	0.05	
Iodomethane	30988	3.628	302	1	0.739	D	0.05	
n-Hexane	1777	5.495	415	1	0.028	E	0.05	
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	
1,3-butadiene	0	1.616	0	1	0.001	ND	0.05	
Vinyl Bromide	0	1.191	0	1	0.001	ND	0.05	
Trichlorofluoromethane	411	2.339	229	1	0.015	E	0.05	
Isooctane	0	20.258	0	1	0.001	ND	0.05	
Allyl chloride	0	1.490	0	1	0.001	ND	0.05	
1,4-Difluorobenzene	15775		641	15		I		
2-Butanone	0	0.023	0	15	0.014	ND	0.05	
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.243	0	15	0.001	ND	0.05	
Benzene	242868	1.576	586	15	2.442	E	0.05	
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	
Bromoform	0	0.250	0	15	0.001	ND	0.05	
Dibromomethane	0	0.229	0	15	0.001	ND	0.05	
1,4-Dichloro-2-butene	0	0.083	0	15	0.004	ND	0.05	
Chlorobenzene-d5	18648		1079	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ265
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R2D T/TC
TLI ID: 61-37-91/92

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.002	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	17351	0.896	850	29	0.280	D	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	843	0.512	1112	29	0.022	E	0.05	___
Styrene	547	0.809	1212	29	0.009	E	0.05	___
m-/p-Xylene	1651	0.567	1135	29	0.039	E	0.10	___
o-Xylene	489	0.538	1208	29	0.012	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.001	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	1358	1.398	1547	29	0.013	E	0.05	___
A-Pinene	445	1.398	1276	29	0.004	E	0.05	___
B-Pinene	0	1.468	0	29	0.001	ND	0.05	___
P-Cymene	5534	1.818	1675	29	0.041	E	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	5797	2.001	582	1	0.251	D	100.4
Benzene-d6	19324	1.555	581	15	0.197	D	78.8
Toluene-d8	20599	1.184	840	29	0.233	D	93.2

Reveiwed by ______ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ266
Response File : ICALFN12
Date Analyzed : 11/18/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R2E T/TC
TLI ID: 61-37-93/94

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISIO	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2329		516	1		I		
Chloromethane	13247	1.067	126	1	1.332	E	0.05	
Bromomethane	1391	1.090	184	1	0.137	D	0.05	
Vinyl chloride	631	1.732	142	1	0.039	E	0.05	
Chloroethane	0	1.185	0	1	0.002	ND	0.05	
Methylene chloride	203	2.249	351	1	0.010	E	0.05	
Acetone	546	0.602	319	1	0.097	D	0.05	
Carbon disulfide	1833	5.737	301	1	0.034	E	0.05	
1,1-Dichloroethene	0	1.456	0	1	0.001	ND	0.05	
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	1.710	0	1	0.001	ND	0.05	
Chloroform	0	5.048	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	
Dimethyl disulfide	137	3.983	806	1	0.004	E	0.05	
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	
Acrylonitrile	106	0.764	384	1	0.015	E	0.05	
Iodomethane	13260	3.628	300	1	0.392	D	0.05	
n-Hexane	614	5.495	416	1	0.012	E	0.05	
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	
1,3-butadiene	0	1.616	0	1	0.001	ND	0.05	
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	
Trichlorofluoromethane	210	2.339	228	1	0.010	E	0.05	
Isooctane	0	20.258	0	1	0.001	ND	0.05	
Allyl chloride	0	1.490	0	1	0.001	ND	0.05	
1,4-Difluorobenzene	14424		641	15		I		
2-Butanone	0	0.023	0	15	0.015	ND	0.05	
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.243	0	15	0.001	ND	0.05	
Benzene	91377	1.576	585	15	1.005	E	0.05	
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	
Bromoform	0	0.250	0	15	0.001	ND	0.05	
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	
1,4-Dichloro-2-butene	0	0.083	0	15	0.004	ND	0.05	
Chlorobenzene-d5	13514		1079	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ266
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R2E T/TC
TLI ID: 61-37-93/94

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	____
4-Methyl-2-pentanone	0	0.241	0	29	0.002	ND	0.05	____
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	____
Toluene	3602	0.896	850	29	0.074	D	0.05	____
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	____
Ethylbenzene	133	0.512	1112	29	0.005	E	0.05	____
Styrene	0	0.809	0	29	0.001	ND	0.05	____
m-/p-Xylene	370	0.567	1135	29	0.012	E	0.10	____
o-Xylene	102	0.538	1208	29	0.004	E	0.05	____
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	____
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	167	1.398	1547	29	0.002	E	0.05	____
A-Pinene	0	1.398	0	29	0.001	ND	0.05	____
B-Pinene	0	1.468	0	29	0.001	ND	0.05	____
P-Cymene	1074	1.818	1675	29	0.011	E	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	5338	2.001	582	1	0.286	D	114.4
Benzene-d6	22352	1.555	581	15	0.249	D	99.6
Toluene-d8	17454	1.184	841	29	0.273	D	109.2

Reveiwed by ______ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ267
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R2F T/TC
TLI ID: 61-37-95/96

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1513		516	1		I		
Chloromethane •	9018	1.067	125	1	1.398	E	0.05	___
Bromomethane	984	1.090	183	1	0.146	D	0.05	___
Vinyl chloride	421	1.732	140	1	0.040	E	0.05	___
Chloroethane	0	1.185	0	1	0.003	ND	0.05	___
Methylene chloride	119	2.249	350	1	0.009	E	0.05	___
Acetone	667	0.602	320	1	0.183	D	0.05	___
Carbon disulfide	2123	5.737	300	1	0.061	D	0.05	___
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.002	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	0	0.764	0	1	0.004	ND	0.05	___
Iodomethane	14303	3.628	298	1	0.851	D	0.05	___
n-Hexane	941	5.495	415	1	0.028	E	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.003	ND	0.05	___
Trichlorofluoromethane	270	2.339	226	1	0.019	E	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	12940		641	15		I		
2-Butanone	0	0.023	0	15	0.017	ND	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	___
Benzene	96572	1.576	585	15	1.184	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.005	ND	0.05	___
Chlorobenzene-d5	10818		1078	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ267
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R2F T/TC
TLI ID: 61-37-95/96

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.004	ND	0.05	
4-Methyl-2-pentanone	0	0.241	0	29	0.002	ND	0.05	
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.002	ND	0.05	
Toluene	3471	0.896	850	29	0.090	D	0.05	
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	
Ethylbenzene	133	0.512	1112	29	0.006	E	0.05	
Styrene	0	0.809	0	29	0.001	ND	0.05	
m-/p-Xylene	342	0.567	1135	29	0.014	E	0.10	
o-Xylene	0	0.538	0	29	0.001	ND	0.05	
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	
A-Pinene	0	1.398	0	29	0.001	ND	0.05	
B-Pinene	0	1.468	0	29	0.001	ND	0.05	
P-Cymene	0	1.818	0	29	0.001	ND	0.05	

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3089	2.001	581	1	0.255	D	102.0
Benzene-d6	17009	1.555	580	15	0.211	D	84.4
Toluene-d8	14815	1.184	840	29	0.289	D	115.6

Reveiwed by ______ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

T.iangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ268
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R3A T/TC
TLI ID: 61-37-97/98

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2602		517	1		I		
✓Chloromethane	10277	1.067	123	1	0.925	D	0.05	___
✓Bromomethane	1402	1.090	184	1	0.124	D	0.05	___
Vinyl chloride	1096	1.732	141	1	0.081	D	0.05	___
Chloroethane	0	1.185	0	1	0.002	ND	0.05	___
✓Methylene chloride	420	2.249	352	1	0.018	E	0.05	___
✓Acetone	4084	0.602	325	1	0.652	D	0.05	___
✓Carbon disulfide	3706	5.737	301	1	0.062	D	0.05	___
1,1-Dichloroethene	0	1.458	0	1	0.001	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.001	ND	0.05	___
✓Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
✓Acrylonitrile	670	0.764	386	1	0.084	D	0.05	___
✓Iodomethane	33017	3.628	302	1	0.874	D	0.05	___
n-Hexane	1775	5.495	415	1	0.031	E	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.001	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	___
✓Trichlorofluoromethane	363	2.339	229	1	0.015	E	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	12683		640	15		I		
✓2-Butanone	0	0.023	0	15	0.017	ND	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
✓Carbon tetrachloride	0	0.802	0	15	0.001	ND	0.05	___
✓Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	___
✓Benzene	104345	1.576	585	15	1.305	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.005	ND	0.05	___
Chlorobenzene-d5	15886		1080	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ268
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-MD030-R3A T/TC
TLI ID: 61-37-97/98

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.002	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	12062	0.896	850	29	0.212	D	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	494	0.512	1112	29	0.015	E	0.05	___
Styrene	0	0.809	0	29	0.001	ND	0.05	___
m-/p-Xylene	3077	0.567	1136	29	0.085	E	0.10	___
o-Xylene	491	0.538	1208	29	0.014	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.001	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	1328	1.398	1550	29	0.015	E	0.05	___
A-Pinene	0	1.398	0	29	0.001	ND	0.05	___
B-Pinene	0	1.468	0	29	0.001	ND	0.05	___
P-Cymene	23206	1.818	1677	29	0.201	D	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4834	2.001	581	1	0.232	D	92.8
Benzene-d6	12261	1.555	580	15	0.155	D	62.0
Toluene-d8	14637	1.184	840	29	0.195	D	78.0

Reveiwed by ____ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ269
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R3B T/TC
TLI ID: 61-37-99/100

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2587		518	1		I		
Chloromethane	4234	1.067	122	1	0.383	D	0.05	
Bromomethane	918	1.090	185	1	0.081	D	0.05	
Vinyl chloride	497	1.732	142	1	0.028	E	0.05	
Chloroethane	0	1.185	0	1	0.002	ND	0.05	
Methylene chloride	554	2.249	351	1	0.024	E	0.05	
Acetone	2365	0.602	331	1	0.380	D	0.05	
Carbon disulfide	1592	5.737	302	1	0.027	E	0.05	
1,1-Dichloroethene	0	1.456	0	1	0.001	ND	0.05	
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	1.710	0	1	0.001	ND	0.05	
Chloroform	0	5.048	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	
Acrylonitrile	0	0.764	0	1	0.003	ND	0.05	
Iodomethane	20818	3.628	303	1	0.554	D	0.05	
n-Hexane	1207	5.495	415	1	0.021	E	0.05	
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	
1,3-butadiene	0	1.616	0	1	0.001	ND	0.05	
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	
Trichlorofluoromethane	357	2.339	230	1	0.015	E	0.05	
Isooctane	0	20.258	0	1	0.001	ND	0.05	
Allyl chloride	0	1.490	0	1	0.001	ND	0.05	
1,4-Difluorobenzene	13793		640	15		I		
2-Butanone	0	0.023	0	15	0.016	ND	0.05	
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.243	0	15	0.001	ND	0.05	
Benzene	60361	1.576	585	15	0.894	D	0.05	
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	
Bromoform	0	0.250	0	15	0.001	ND	0.05	
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	
1,4-Dichloro-2-butene	0	0.083	0	15	0.004	ND	0.05	
Chlorobenzene-d5	18548		1080	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ269
Response File : ICALFN12
Date Analyzed : 11/16/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R3B T/TC
TLI ID: 61-37-99/100

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
✓2-Hexanone	0	0.129	0	29	0.002	ND	0.05	___
✓4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	___
✓Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
✓1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
✓Toluene	17350	0.896	850	29	0.261	D	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
✓Ethylbenzene	408	0.512	1113	29	0.011	E	0.05	___
✓Styrene	0	0.809	0	29	0.001	ND	0.05	___
✓m-/p-Xylene	6247	0.567	1136	29	0.149	D	0.10	___
✓o-Xylene	409	0.538	1208	29	0.010	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.001	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	___
A-Pinene	0	1.398	0	29	0.001	ND	0.05	___
B-Pinene	0	1.468	0	29	0.001	ND	0.05	___
P-Cymene	50487	1.818	1677	29	0.374	D	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3140	2.001	581	1	0.152	D	60.8
Benzene-d6	9764	1.555	580	15	0.114	D	45.6
Toluene-d8	13490	1.184	840	29	0.154	D	61.6

Reveiwed by ___G___ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ300
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R3C T/TC
TLI ID: 61-37-101/102

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2287		520	1		I		
Chloromethane	7219	2.587	118	1	0.305	D	0.05	___
Bromomethane	1565	1.815	180	1	0.094	D	0.05	___
Vinyl chloride	0	3.654	0	1	0.001	ND	0.05	___
Chloroethane	0	2.175	0	1	0.001	ND	0.05	___
Methylene chloride	402	2.767	352	1	0.016	E	0.05	___
Acetone	17511	0.514	324	1	3.724	E	0.05	___
Carbon disulfide	2923	7.778	302	1	0.041	E	0.05	___
1,1-Dichloroethene	0	2.235	0	1	0.001	ND	0.05	___
1,1-Dichloroethane	0	7.837	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	2.509	0	1	0.001	ND	0.05	___
Chloroform	0	5.292	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	3.497	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	6.529	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	2.783	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	4.801	0	1	0.001	ND	0.05	___
Acrylonitrile	0	0.992	0	1	0.002	ND	0.05	___
Iodomethane	20344	3.978	300	1	0.559	D	0.05	___
n-Hexane	4262	9.832	417	1	0.047	E	0.05	___
Tert-Butyl methyl ether	0	6.319	0	1	0.001	ND	0.05	___
1,3-butadiene	0	3.341	0	1	0.001	ND	0.05	___
Vinyl Bromide	0	1.515	0	1	0.001	ND	0.05	___
Trichlorofluoromethane	240	2.805	227	1	0.009	E	0.05	___
Isooctane	0	33.130	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.823	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	11380		644	15		I		
2-Butanone	0	0.038	0	15	0.012	ND	0.05	___
1,1,1-Trichloroethane	0	0.791	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.574	0	15	0.001	ND	0.05	___
Vinyl acetate	0	1.279	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.830	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	1.092	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.808	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.602	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.469	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.405	0	15	0.001	ND	0.05	___
Benzene	142295	1.941	589	15	1.810	E	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.488	0	15	0.001	ND	0.05	___
Dibromomethane	0	0.384	0	15	0.001	ND	0.05	___
1,4-Dichloro-2-butene	0	0.149	0	15	0.003	ND	0.05	___
Chlorobenzene-d5	11988		1084	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ300
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R3C T/TC
TLI ID: 81-37-101/102

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.315	0	29	0.001	ND	0.05	
4-Methyl-2-pentanone	0	0.459	0	29	0.001	ND	0.05	
Tetrachloroethene	0	0.811	0	29	0.001	ND	0.05	
1,1,2,2-Tetrachloroethane	0	0.462	0	29	0.001	ND	0.05	
Toluene	49440	1.387	854	29	0.743	D	0.05	
Chlorobenzene	0	1.078	0	29	0.001	ND	0.05	
Ethylbenzene	652	0.872	1117	29	0.020	E	0.05	
Styrene	0	1.215	0	29	0.001	ND	0.05	
m-/p-Xylene	9252	0.778	1140	29	0.248	D	0.10	
o-Xylene	826	0.756	1212	29	0.023	E	0.05	
Ethyl methacrylate	0	0.735	0	29	0.001	ND	0.05	
1,2,3-Trichloropropane	0	0.317	0	29	0.001	ND	0.05	
1,3 Dichlorobenzene	0	1.464	0	29	0.001	ND	0.05	
1,4 Dichlorobenzene	0	1.181	0	29	0.001	ND	0.05	
1,2 Dichlorobenzene	0	0.935	0	29	0.001	ND	0.05	
Cumene (isopropylbenzene)	2149	2.058	1557	29	0.022	E	0.05	
A-Pinene	1063	2.140	1282	29	0.010	E	0.05	
B-Pinene	0	2.322	0	29	0.001	ND	0.05	
P-Cymene	112574	2.518	1687	29	0.932	D	0.05	

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	7691	2.080	585	1	0.404	D	161.6
Benzene-d6	17858	1.668	583	15	0.235	D	94.0
Toluene-d8	16603	1.372	844	29	0.252	D	100.8

Reveiwed by ______ Date 11/27/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ301
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R3D T/TC
TLI ID: 61-37-103/104

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1871		519	1		I		
✓Chloromethane	6103	2.587	117	1	0.315	D	0.05	___
✓Bromomethane	979	1.815	181	1	0.072	D	0.05	___
Vinyl chloride	1273	3.654	138	1	0.047	E	0.05	___
Chloroethane	0	2.175	0	1	0.001	ND	0.05	___
✓Methylene chloride	1283	2.767	352	1	0.062	D	0.05	___
✓Acetone	20850	0.514	330	1	5.418	E	0.05	___
✓Carbon disulfide	2384	7.778	302	1	0.041	E	0.05	___
1,1-Dichloroethene	0	2.235	0	1	0.001	ND	0.05	___
1,1-Dichloroethane	0	7.837	0	1	0.001	ND	0.05	___
✓trans-1,2-Dichloroethene	0	2.509	0	1	0.001	ND	0.05	___
✓Chloroform	0	5.292	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	3.497	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	6.529	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	2.783	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	4.801	0	1	0.001	ND	0.05	___
✓Acrylonitrile	1304	0.992	389	1	0.176	D	0.05	___
✓Iodomethane	17803	3.978	301	1	0.598	D	0.05	___
n-Hexane	3786	9.832	417	1	0.051	D	0.05	___
Tert-Butyl methyl ether	0	6.319	0	1	0.001	ND	0.05	___
1,3-butadiene	0	3.341	0	1	0.001	ND	0.05	___
✓Vinyl Bromide	0	1.515	0	1	0.002	ND	0.05	___
✓Trichlorofluoromethane	1113	2.805	227	1	0.053	D	0.05	___
Isooctane	0	33.130	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.823	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	9756		843	15		I		
✓2-Butanone	0	0.038	0	15	0.013	ND	0.05	___
✓1,1,1-Trichloroethane	0	0.791	0	15	0.001	ND	0.05	___
✓Carbon tetrachloride	0	0.574	0	15	0.001	ND	0.05	___
✓Vinyl acetate	0	1.279	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.830	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	1.092	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.808	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.602	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.469	0	15	0.001	ND	0.05	___
✓1,1,2-Trichloroethane	0	0.405	0	15	0.001	ND	0.05	___
✓Benzene	102861	1.941	588	15	1.358	E	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.488	0	15	0.001	ND	0.05	___
Dibromomethane	0	0.364	0	15	0.001	ND	0.05	___
1,4-Dichloro-2-butene	0	0.149	0	15	0.003	ND	0.05	___
Chlorobenzene-d5	10813		1084	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ301
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R3D T/TC
TLI ID: 61-37-103/104

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.315	0	29	0.001	ND	0.05	___
4-Methyl-2-pentanone	0	0.459	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.811	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.462	0	29	0.001	ND	0.05	___
Toluene	41150	1.387	853	29	0.686	D	0.05	___
Chlorobenzene	0	1.078	0	29	0.001	ND	0.05	___
Ethylbenzene	610	0.672	1117	29	0.021	E	0.05	___
Styrene	0	1.215	0	29	0.001	ND	0.05	___
m-/p-Xylene	6862	0.778	1140	29	0.204	D	0.10	___
o-Xylene	645	0.756	1212	29	0.020	E	0.05	___
Ethyl methacrylate	0	0.735	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.317	0	29	0.001	ND	0.05	___
1,3 Dichlorobenzene	0	1.464	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	1.181	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.935	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	1699	2.058	1555	29	0.019	E	0.05	___
A-Pinene	1264	2.140	1281	29	0.014	E	0.05	___
B-Pinene	0	2.322	0	29	0.001	ND	0.05	___
P-Cymene	46438	2.518	1684	29	0.426	D	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	5347	2.080	584	1	0.343	D	137.2
Benzene-d6	12374	1.668	582	15	0.190	D	76.0
Toluene-d8	12352	1.372	843	29	0.208	D	83.2

Reveiwed by ___ Date 11/27/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ302
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R3E T/TC
TLI ID: 61-37-105/106

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2286		520	1		I		
Chloromethane	4804	2.587	118	1	0.203	D	0.05	
Bromomethane	1200	1.815	181	1	0.072	D	0.05	
Vinyl chloride	0	3.654	0	1	0.001	ND	0.05	
Chloroethane	0	2.175	0	1	0.001	ND	0.05	
Methylene chloride	143	2.787	352	1	0.006	E	0.05	
Acetone	7604	0.514	319	1	1.618	E	0.05	
Carbon disulfide	1928	7.778	302	1	0.027	E	0.05	
1,1-Dichloroethene	0	2.235	0	1	0.001	ND	0.05	
1,1-Dichloroethane	0	7.837	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	2.509	0	1	0.001	ND	0.05	
Chloroform	0	5.292	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	3.497	0	1	0.001	ND	0.05	
Dimethyl disulfide	0	6.529	0	1	0.001	ND	0.05	
cis-1,2-Dichloroethene	0	2.783	0	1	0.001	ND	0.05	
Dimethyl sulfide	0	4.801	0	1	0.001	ND	0.05	
Acrylonitrile	809	0.992	386	1	0.089	D	0.05	
Iodomethane	19356	3.978	301	1	0.532	D	0.05	
n-Hexane	1873	9.832	417	1	0.021	E	0.05	
Tert-Butyl methyl ether	0	6.319	0	1	0.001	ND	0.05	
1,3-butadiene	0	3.341	0	1	0.001	ND	0.05	
Vinyl Bromide	0	1.515	0	1	0.001	ND	0.05	
Trichlorofluoromethane	127	2.805	227	1	0.005	E	0.05	
Isooctane	0	33.130	0	1	0.001	ND	0.05	
Allyl chloride	0	1.823	0	1	0.001	ND	0.05	
1,4-Difluorobenzene	9289		643	15		I		
2-Butanone	0	0.038	0	15	0.014	ND	0.05	
1,1,1-Trichloroethane	0	0.791	0	15	0.001	ND	0.05	
Carbon tetrachloride	0	0.574	0	15	0.001	ND	0.05	
Vinyl acetate	0	1.279	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.830	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	1.092	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.808	0	15	0.001	ND	0.02	
Trichloroethene	0	0.602	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.469	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.405	0	15	0.001	ND	0.05	
Benzene	67778	1.941	588	15	0.940	D	0.05	
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	
Bromoform	0	0.488	0	15	0.001	ND	0.05	
Dibromomethane	0	0.364	0	15	0.001	ND	0.05	
1,4-Dichloro-2-butene	0	0.149	0	15	0.004	ND	0.05	
Chlorobenzene-d5	13853		1083	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ302
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R3E T/TC
TLI ID: 61-37-105/106

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.315	0	29	0.001	ND	0.05	____
4-Methyl-2-pentanone	0	0.459	0	29	0.001	ND	0.05	____
Tetrachloroethene	0	0.811	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.462	0	29	0.001	ND	0.05	____
Toluene	17010	1.387	853	29	0.221	D	0.05	____
Chlorobenzene	0	1.078	0	29	0.001	ND	0.05	____
Ethylbenzene	441	0.672	1116	29	0.012	E	0.05	____
Styrene	0	1.215	0	29	0.001	ND	0.05	____
m-/p-Xylene	3707	0.778	1139	29	0.086	E	0.10	____
o-Xylene	409	0.756	1211	29	0.010	E	0.05	____
Ethyl methacrylate	0	0.735	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0.317	0	29	0.001	ND	0.05	____
1,3 Dichlorobenzene	0	1.464	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	1.181	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.935	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	1184	2.058	1554	29	0.010	E	0.05	____
A-Pinene	0	2.140	0	29	0.001	ND	0.05	____
B-Pinene	0	2.322	0	29	0.001	ND	0.05	____
P-Cymene	47776	2.518	1682	29	0.342	D	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	5242	2.080	585	1	0.276	D	110.4
Benzene-d6	10324	1.668	582	15	0.167	D	66.8
Toluene-d8	11215	1.372	843	29	0.148	D	59.2

Reveiwed by ____ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ303
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R3F T/TC
TLI ID: 61-37-107/108

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	807		520	1		I		
Chloromethane	4757	2.587	118	1	0.569	D	0.05	___
Bromomethane	585	1.815	182	1	0.102	D	0.05	___
Vinyl chloride	0	3.654	0	1	0.002	ND	0.05	___
Chloroethane	0	2.175	0	1	0.003	ND	0.05	___
Methylene chloride	259	2.767	352	1	0.029	E	0.05	___
Acetone	5447	0.514	318	1	3.281	E	0.05	___
Carbon disulfide	1365	7.778	302	1	0.054	D	0.05	___
1,1-Dichloroethene	0	2.235	0	1	0.003	ND	0.05	___
1,1-Dichloroethane	0	7.837	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	2.509	0	1	0.002	ND	0.05	___
Chloroform	0	5.292	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	3.497	0	1	0.002	ND	0.05	___
Dimethyl disulfide	0	6.529	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	2.783	0	1	0.002	ND	0.05	___
Dimethyl sulfide	0	4.801	0	1	0.001	ND	0.05	___
Acrylonitrile	0	0.992	0	1	0.006	ND	0.05	___
Iodomethane	18139	3.978	300	1	1.412	E	0.05	___
n-Hexane	3294	9.832	417	1	0.104	D	0.05	___
Tert-Butyl methyl ether	0	6.319	0	1	0.001	ND	0.05	___
1,3-butadiene	0	3.341	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.515	0	1	0.004	ND	0.05	___
Trichlorofluoromethane	129	2.805	228	1	0.014	E	0.05	___
Isooctane	0	33.130	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.823	0	1	0.003	ND	0.05	___
1,4-Difluorobenzene	4809		637	15		I		
2-Butanone	0	0.038	0	15	0.027	ND	0.05	___
1,1,1-Trichloroethane	0	0.791	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.574	0	15	0.002	ND	0.05	___
Vinyl acetate	0	1.279	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.830	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	1.092	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.808	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.602	0	15	0.002	ND	0.05	___
Dibromochloromethane	0	0.469	0	15	0.002	ND	0.05	___
1,1,2-Trichloroethane	0	0.405	0	15	0.003	ND	0.05	___
Benzene	71874	1.941	585	15	1.925	E	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.488	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.364	0	15	0.003	ND	0.05	___
1,4-Dichloro-2-butene	0	0.149	0	15	0.007	ND	0.05	___
Chlorobenzene-d5	9508		1077	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ303
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R3F T/TC
TLI ID: 61-37-107/108

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.315	0	29	0.002	ND	0.05	
4-Methyl-2-pentanone	0	0.459	0	29	0.001	ND	0.05	
Tetrachloroethene	0	0.811	0	29	0.001	ND	0.05	
1,1,2,2-Tetrachloroethane	0	0.462	0	29	0.001	ND	0.05	
Toluene	19561	1.387	844	29	0.371	D	0.05	
Chlorobenzene	0	1.078	0	29	0.001	ND	0.05	
Ethylbenzene	959	0.872	1110	29	0.038	E	0.05	
Styrene	0	1.215	0	29	0.001	ND	0.05	
m-/p-Xylene	6010	0.778	1134	29	0.203	D	0.10	
o-Xylene	794	0.756	1206	29	0.028	E	0.05	
Ethyl methacrylate	0	0.735	0	29	0.001	ND	0.05	
1,2,3-Trichloropropane	0	0.317	0	29	0.002	ND	0.05	
1,3 Dichlorobenzene	0	1.464	0	29	0.001	ND	0.05	
1,4 Dichlorobenzene	0	1.181	0	29	0.001	ND	0.05	
1,2 Dichlorobenzene	0	0.935	0	29	0.001	ND	0.05	
Cumene (isopropylbenzene)	0	2.058	0	29	0.001	ND	0.05	
A-Pinene	666	2.140	1275	29	0.008	E	0.05	
B-Pinene	0	2.322	0	29	0.001	ND	0.05	
P-Cymene	51750	2.518	1678	29	0.540	D	0.05	

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	1907	2.080	582	1	0.284	D	113.6
Benzene-d6	5183	1.668	580	15	0.162	D	64.8
Toluene-d8	4219	1.372	834	29	0.081	D	32.4

Reveiwed by ____ Date 11/27/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ195
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-R0 T/TC
TLI ID: 61-37-113/114

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2721		518	1		I		
Chloromethane	0	1.046	0	1	0.002	ND	0.05	___
Bromomethane	0	0.918	0	1	0.002	ND	0.05	___
Vinyl chloride	0	1.463	0	1	0.001	ND	0.05	___
Chloroethane	0	0.959	0	1	0.002	ND	0.05	___
Methylene chloride	290	1.638	352	1	0.016	E	0.05	___
Acetone	0	0.620	0	1	0.003	ND	0.05	___
Carbon disulfide	0	6.453	0	1	0.001	ND	0.05	___
1,1-Dichloroethene	0	1.385	0	1	0.001	ND	0.05	___
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.547	0	1	0.001	ND	0.05	___
Chloroform	0	4.162	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.828	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.702	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	___
Acrylonitrile	0	0.723	0	1	0.003	ND	0.05	___
Iodomethane	0	3.823	0	1	0.001	ND	0.05	___
n-Hexane	0	4.592	0	1	0.001	ND	0.05	___
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.311	0	1	0.001	ND	0.05	___
Vinyl Bromide	0	1.311	0	1	0.001	ND	0.05	___
Trichlorofluoromethane	0	2.287	0	1	0.001	ND	0.05	___
Isooctane	0	15.697	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.462	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	14924		643	15		I		
2-Butanone	0	0.058	0	15	0.008	ND	0.05	___
1,1,1-Trichloroethane	0	0.684	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.635	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.687	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.677	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.293	0	15	0.001	ND	0.05	___
Benzene	2374	1.968	590	15	0.020	E	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.206	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.244	0	15	0.001	ND	0.05	___
1,4-Dichloro-2-butene	0	0.090	0	15	0.004	ND	0.05	___
Chlorobenzene-d5	16990		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard   Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ195
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: IN-M0030-RO T/TC
TLI ID: 61-37-113/114

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.001	ND	0.05	____
4-Methyl-2-pentanone	0	0.244	0	29	0.001	ND	0.05	____
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.001	ND	0.05	____
Toluene	0	0.821	0	29	0.001	ND	0.05	____
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	____
Ethylbenzene	0	0.570	0	29	0.001	ND	0.05	____
Styrene	0	0.937	0	29	0.001	ND	0.05	____
m-/p-Xylene	0	0.661	0	29	0.001	ND	0.10	____
o-Xylene	0	0.611	0	29	0.001	ND	0.05	____
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0.211	0	29	0.001	ND	0.05	____
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	0	1.440	0	29	0.001	ND	0.05	____
A-Pinene	0	1.425	0	29	0.001	ND	0.05	____
B-Pinene	0	1.406	0	29	0.001	ND	0.05	____
P-Cymene	0	1.682	0	29	0.001	ND	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4938	1.786	583	1	0.254	D	101.6
Benzene-d6	23108	1.631	583	15	0.237	D	94.8
Toluene-d8	19159	1.272	843	29	0.222	D	88.8

Reveiwed by ______ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ184
Response File : ICALFN05
Date Analyzed : 11/10/92
Date Reported : 11/30/92
Project Number: 22355

Sample ID: OA-M0030-R1A T/TC
TLI ID: 61-37-1/2

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	3183		517	1		I		
Chloromethane	22105	1.046	123	1	1.660	E	0.05	
Bromomethane	1184	0.918	182	1	0.101	D	0.05	
Vinyl chloride	691	1.463	139	1	0.037	E	0.05	
Chloroethane	0	0.959	0	1	0.002	ND	0.05	
Methylene chloride	2870	1.638	352	1	0.138	D	0.05	
Acetone	43276	0.620	322	1	5.482	E	0.05	
Carbon disulfide	2127	6.453	302	1	0.026	E	0.05	
1,1-Dichloroethene	0	1.385	0	1	0.001	ND	0.05	
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	1.547	0	1	0.001	ND	0.05	
Chloroform	0	4.162	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	
Dimethyl disulfide	0	3.828	0	1	0.001	ND	0.05	
cis-1,2-Dichloroethene	0	1.702	0	1	0.001	ND	0.05	
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	
Acrylonitrile	0	0.723	0	1	0.002	ND	0.05	
Iodomethane	18283	3.623	301	1	0.396	D	0.05	
n-Hexane	3834	4.592	415	1	0.066	D	0.05	
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	
1,3-butadiene	0	1.311	0	1	0.001	ND	0.05	
Vinyl Bromide	0	1.311	0	1	0.001	ND	0.05	
Trichlorofluoromethane	1718	2.287	228	1	0.059	D	0.05	
Isooctane	0	15.697	0	1	0.001	ND	0.05	
Allyl chloride	0	1.482	0	1	0.001	ND	0.05	
1,4-Difluorobenzene	16351		642	15		I		
2-Butanone	4582	0.058	505	15	1.208	E	0.05	
1,1,1-Trichloroethane	0	0.684	0	15	0.001	ND	0.05	
Carbon tetrachloride	0	0.635	0	15	0.001	ND	0.05	
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.687	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.677	0	15	0.001	ND	0.02	
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.293	0	15	0.001	ND	0.05	
Benzene	170661	1.968	586	15	1.326	E	0.05	
cis-1,3-Dichloropropene	0	0.938	0	15	0.001	ND	0.08	
Bromoform	0	0.206	0	15	0.001	ND	0.05	
Dibromomethane	0	0.244	0	15	0.001	ND	0.05	
1,4-Dichloro-2-butene	0	0.090	0	15	0.003	ND	0.05	
Chlorobenzene-d5	19157		1080	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ184
Response File : ICALFN05
Date Analyzed : 11/10/92
Date Reported : 11/30/92
Project Number: 22355

Sample ID: OA-M0030-R1A T/TC
TLI ID: 61-37-1/2

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.001	ND	0.05	___
4-Methyl-2-pentanone	0	0.244	0	29	0.001	D	0.05	___
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.001	ND	0.05	___
Toluene	105122	0.821	852	29	1.671	E	0.05	___
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	___
Ethylbenzene	1283	0.570	1114	29	0.029	E	0.05	___
Styrene	0	0.937	0	29	0.001	ND	0.05	___
m-/p-Xylene	25945	0.661	1137	29	0.512	D	0.10	___
o-Xylene	2453	0.611	1210	29	0.052	D	0.05	___
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.211	0	29	0.001	ND	0.05	___
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	5526	1.440	1552	29	0.050	D	0.05	___
A-Pinene	433814	1.425	1287	29	3.973	E	0.05	___
B-Pinene	34448	1.406	1434	29	0.320	D	0.05	___
P-Cymene	288363	1.682	1687	29	2.237	E	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	5401	1.786	582	1	0.237	D	94.8
Benzene-d6	18225	1.631	581	15	0.171	D	68.4
Toluene-d8	21490	1.272	842	29	0.220	D	88.0

Reveiwed by SA Date 11/30/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ185
Response File : ICALFN05
Date Analyzed : 11/10/92
Date Reported : 11/30/92
Project Number: 22355

Sample ID: OA-M0030-R1B T/TC
TLI ID: 61-37-3/4

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2739		517	1		I		
Chloromethane	23578	1.046	121	1	2.057	E	0.05	___
Bromomethane	787	0.918	182	1	0.078	D	0.05	___
Vinyl chloride	533	1.463	139	1	0.033	E	0.05	___
Chloroethane	0	0.959	0	1	0.002	ND	0.05	___
Methylene chloride	1585	1.638	352	1	0.088	D	0.05	___
Acetone	7048	0.620	316	1	1.037	E	0.05	___
Carbon disulfide	2092	6.453	302	1	0.030	E	0.05	___
1,1-Dichloroethene	0	1.385	0	1	0.001	ND	0.05	___
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.547	0	1	0.001	ND	0.05	___
Chloroform	0	4.162	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.828	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.702	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	___
Acrylonitrile	291	0.723	385	1	0.037	E	0.05	___
Iodomethane	16950	3.623	301	1	0.427	D	0.05	___
n-Hexane	1140	4.592	416	1	0.023	E	0.05	___
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.311	0	1	0.001	ND	0.05	___
Vinyl Bromide	0	1.311	0	1	0.001	ND	0.05	___
Trichlorofluoromethane	906	2.287	228	1	0.036	E	0.05	___
Isooctane	0	15.697	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.462	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	14839		642	15		I		
2-Butanone	302	0.058	504	15	0.088	D	0.05	___
1,1,1-Trichloroethane	0	0.684	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.635	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.687	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.677	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.293	0	15	0.001	ND	0.05	___
Benzene	100604	1.968	586	15	0.861	D	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.206	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.244	0	15	0.001	ND	0.05	___
1,4-Dichloro-2-butene	0	0.090	0	15	0.004	ND	0.05	___
Chlorobenzene-d5	16099		1080	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ185
Response File : ICALFN05
Date Analyzed : 11/10/92
Date Reported : 11/30/92
Project Number: 22355

Sample ID: OA-M0030-R1B T/TC
TLI ID: 61-37-3/4

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.002	ND	0.05	___
4-Methyl-2-pentanone	0	0.244	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.001	ND	0.05	___
Toluene	28891	0.821	851	29	0.546	D	0.05	___
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	___
Ethylbenzene	999	0.570	1113	29	0.027	E	0.05	___
Styrene	0	0.937	0	29	0.001	ND	0.05	___
m-/p-Xylene	4887	0.661	1136	29	0.115	D	0.10	___
o-Xylene	956	0.611	1209	29	0.024	E	0.05	___
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.211	0	29	0.001	ND	0.05	___
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.440	0	29	0.001	ND	0.05	___
A-Pinene	764123	1.425	1297	29	8.327	E	0.05	___
B-Pinene	373280	1.406	1442	29	4.123	E	0.05	___
P-Cymene	76388	1.682	1680	29	0.705	D	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4637	1.786	582	1	0.237	D	94.8
Benzene-d6	17989	1.631	582	15	0.186	D	74.4
Toluene-d8	17718	1.272	842	29	0.216	D	86.4

Reveiwed by ____ Date 11/30/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ186
Response File : ICALFN05
Date Analyzed : 11/10/92
Date Reported : 11/30/92
Project Number: 22355

Sample ID: OA-M0030-R1C T/TC
TLI ID: 61-37-5/6

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2569		518	1		I		
Chloromethane	24879	1.046	122	1	2.315	E	0.05	
Bromomethane	843	0.918	183	1	0.089	D	0.05	
Vinyl chloride	530	1.463	139	1	0.035	E	0.05	
Chloroethane	0	0.959	0	1	0.002	ND	0.05	
Methylene chloride	775	1.638	352	1	0.046	E	0.05	
Acetone	6941	0.620	316	1	1.090	E	0.05	
Carbon disulfide	2018	6.453	303	1	0.030	E	0.05	
1,1-Dichloroethene	0	1.385	0	1	0.001	ND	0.05	
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	1.547	0	1	0.001	ND	0.05	
Chloroform	0	4.162	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	
Dimethyl disulfide	0	3.828	0	1	0.001	ND	0.05	
cis-1,2-Dichloroethene	0	1.702	0	1	0.001	ND	0.05	
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	
Acrylonitrile	339	0.723	386	1	0.046	E	0.05	
Iodomethane	17997	3.623	302	1	0.483	D	0.05	
n-Hexane	1220	4.592	417	1	0.026	E	0.05	
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	
1,3-butadiene	0	1.311	0	1	0.001	ND	0.05	
Vinyl Bromide	0	1.311	0	1	0.001	ND	0.05	
Trichlorofluoromethane	2379	2.287	228	1	0.101	D	0.05	
Isooctane	0	15.697	0	1	0.001	ND	0.05	
Allyl chloride	0	1.462	0	1	0.001	ND	0.05	
1,4-Difluorobenzene	14307		643	15		I		
2-Butanone	208	0.058	504	15	0.063	D	0.05	
1,1,1-Trichloroethane	1147	0.684	544	15	0.029	E	0.05	
Carbon tetrachloride	0	0.635	0	15	0.001	ND	0.05	
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.687	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.677	0	15	0.001	ND	0.02	
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.293	0	15	0.001	ND	0.05	
Benzene	109329	1.968	587	15	0.971	D	0.05	
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	
Bromoform	0	0.206	0	15	0.002	ND	0.05	
Dibromomethane	0	0.244	0	15	0.001	ND	0.05	
1,4-Dichloro-2-butene	0	0.090	0	15	0.004	ND	0.05	
Chlorobenzene-d5	15970		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ186
Response File : ICALFN05
Date Analyzed : 11/10/92
Date Reported : 11/30/92
Project Number: 22355

Sample ID: OA-M0030-R1C T/TC
TLI ID: 61-37-5/6

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.002	ND	0.05	___
4-Methyl-2-pentanone	0	0.244	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.001	ND	0.05	___
Toluene	49479	0.821	853	29	0.943	D	0.05	___
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	___
Ethylbenzene	574	0.570	1115	29	0.016	E	0.05	___
Styrene	0	0.937	0	29	0.001	ND	0.05	___
m-/p-Xylene	2302	0.661	1138	29	0.055	E	0.10	___
o-Xylene	499	0.611	1211	29	0.013	E	0.05	___
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.211	0	29	0.001	ND	0.05	___
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.440	0	29	0.001	ND	0.05	___
A-Pinene	855741	1.425	1296	29	9.400	E	0.05	___
B-Pinene	316968	1.406	1446	29	3.529	E	0.05	___
P-Cymene	86321	1.682	1684	29	0.803	D	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4445	1.786	584	1	0.242	D	96.8
Benzene-d6	17538	1.631	582	15	0.188	D	75.2
Toluene-d8	16506	1.272	843	29	0.203	D	81.2

Reveiwed by ______ Date 11/30/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ196
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R1D T/TC
TLI ID: 61-37-7/8

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2407		518	1		I		
Chloromethane	27178	1.046	123	1	2.698	E	0.05	
Bromomethane	1142	0.918	184	1	0.129	D	0.05	
Vinyl chloride	540	1.463	140	1	0.038	E	0.05	
Chloroethane	0	0.959	0	1	0.002	ND	0.05	
Methylene chloride	767	1.638	353	1	0.049	E	0.05	
Acetone	5162	0.620	329	1	0.865	D	0.05	
Carbon disulfide	2099	6.453	303	1	0.034	E	0.05	
1,1-Dichloroethene	0	1.385	0	1	0.001	ND	0.05	
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	1.547	0	1	0.001	ND	0.05	
Chloroform	0	4.162	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	
Dimethyl disulfide	0	3.828	0	1	0.001	ND	0.05	
cis-1,2-Dichloroethene	0	1.702	0	1	0.001	ND	0.05	
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	
Acrylonitrile	0	0.723	0	1	0.003	ND	0.05	
Iodomethane	16592	3.623	302	1	0.475	D	0.05	
n-Hexane	1287	4.592	417	1	0.029	E	0.05	
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	
1,3-butadiene	0	1.311	0	1	0.002	ND	0.05	
Vinyl Bromide	0	1.311	0	1	0.002	ND	0.05	
Trichlorofluoromethane	969	2.287	229	1	0.044	E	0.05	
Isooctane	0	15.697	0	1	0.001	ND	0.05	
Allyl chloride	0	1.462	0	1	0.001	ND	0.05	
1,4-Difluorobenzene	13555		643	15		I		
2-Butanone	388	0.058	511	15	0.124	D	0.05	
1,1,1-Trichloroethane	0	0.684	0	15	0.001	ND	0.05	
Carbon tetrachloride	0	0.635	0	15	0.001	ND	0.05	
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.687	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.677	0	15	0.001	ND	0.02	
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.293	0	15	0.001	ND	0.05	
Benzene	106991	1.968	588	15	1.003	E	0.05	
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	
Bromoform	0	0.206	0	15	0.002	ND	0.05	
Dibromomethane	0	0.244	0	15	0.002	ND	0.05	
1,4-Dichloro-2-butene	0	0.090	0	15	0.004	ND	0.05	
Chlorobenzene-d5	16587		1082	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ196
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R1D T/TC
TLI ID: 61-37-7/8

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.002	ND	0.05	___
4-Methyl-2-pentanone	0	0.244	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.001	ND	0.05	___
Toluene	66447	0.821	854	29	1.220	E	0.05	___
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	___
Ethylbenzene	665	0.570	1115	29	0.018	E	0.05	___
Styrene	0	0.937	0	29	0.001	ND	0.05	___
m-/p-Xylene	2382	0.661	1139	29	0.054	E	0.10	___
o-Xylene	543	0.611	1212	29	0.013	E	0.05	___
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.211	0	29	0.001	ND	0.05	___
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.440	0	29	0.001	ND	0.05	___
A-Pinene	953195	1.425	1303	29	10.082	E	0.05	___
B-Pinene	410220	1.406	1450	29	4.397	E	0.05	___
P-Cymene	63227	1.682	1685	29	0.567	D	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4531	1.786	584	1	0.263	D	105.2
Benzene-d6	18934	1.631	583	15	0.214	D	85.6
Toluene-d8	17362	1.272	844	29	0.206	D	82.4

Reveiwed by ________ Date 11/29/92
ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ197
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R1E T/TC
TLI ID: 61-37-9/10

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1903		518	1		I		
Chloromethane	25878	1.046	123	1	3.249	E	0.05	
Bromomethane	722	0.918	184	1	0.103	D	0.05	
Vinyl chloride	460	1.463	140	1	0.041	E	0.05	
Chloroethane	0	0.959	0	1	0.003	ND	0.05	
Methylene chloride	885	1.638	352	1	0.071	D	0.05	
Acetone	5784	0.620	325	1	1.225	E	0.05	
Carbon disulfide	1934	6.453	303	1	0.039	E	0.05	
1,1-Dichloroethene	0	1.385	0	1	0.002	ND	0.05	
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	1.547	0	1	0.002	ND	0.05	
Chloroform	0	4.162	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	
Dimethyl disulfide	0	3.828	0	1	0.001	ND	0.05	
cis-1,2-Dichloroethene	0	1.702	0	1	0.002	ND	0.05	
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	
Acrylonitrile	263	0.723	387	1	0.048	E	0.05	
Iodomethane	14793	3.623	302	1	0.536	D	0.05	
n-Hexane	1231	4.592	417	1	0.035	E	0.05	
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	
1,3-butadiene	0	1.311	0	1	0.002	ND	0.05	
Vinyl Bromide	0	1.311	0	1	0.002	ND	0.05	
Trichlorofluoromethane	749	2.287	228	1	0.043	E	0.05	
Isooctane	0	15.697	0	1	0.001	ND	0.05	
Allyl chloride	0	1.462	0	1	0.002	ND	0.05	
1,4-Difluorobenzene	11410		643	15		I		
2-Butanone	435	0.058	508	15	0.165	D	0.05	
1,1,1-Trichloroethane	0	0.684	0	15	0.001	ND	0.05	
Carbon tetrachloride	0	0.635	0	15	0.001	ND	0.05	
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.687	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.677	0	15	0.001	ND	0.02	
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.293	0	15	0.001	ND	0.05	
Benzene	123721	1.968	588	15	1.377	E	0.05	
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	
Bromoform	0	0.208	0	15	0.002	ND	0.05	
Dibromomethane	0	0.244	0	15	0.002	ND	0.05	
1,4-Dichloro-2-butene	0	0.090	0	15	0.005	ND	0.05	
Chlorobenzene-d5	13681		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ197
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 0A-M0030-R1E T/TC
TLI ID: 61-37-9/10

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.002	ND	0.05	___
4-Methyl-2-pentanone	0	0.244	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.002	ND	0.05	___
Toluene	58632	0.821	854	29	1.305	E	0.05	___
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	___
Ethylbenzene	984	0.570	1115	29	0.032	E	0.05	___
Styrene	0	0.937	0	29	0.001	ND	0.05	___
m-/p-Xylene	2582	0.661	1138	29	0.071	E	0.10	___
o-Xylene	690	0.611	1211	29	0.021	E	0.05	___
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.211	0	29	0.002	ND	0.05	___
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.440	0	29	0.001	ND	0.05	___
A-Pinene	514186	1.425	1292	29	6.593	E	0.05	___
B-Pinene	153673	1.406	1441	29	1.997	E	0.05	___
P-Cymene	285319	1.682	1690	29	3.100	E	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3851	1.786	584	1	0.283	D	113.2
Benzene-d6	15404	1.631	583	15	0.207	D	82.8
Toluene-d8	13847	1.272	843	29	0.199	D	79.6

Reveiwed by ____SD____ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triar le Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ198
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R1F T/TC
TLI ID: 61-37-11/12

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1981		518	1		I		
Chloromethane	27225	1.046	123	1	3.284	E	0.05	___
Bromomethane	692	0.918	183	1	0.095	D	0.05	___
Vinyl chloride	486	1.463	140	1	0.042	E	0.05	___
Chloroethane	0	0.959	0	1	0.003	ND	0.05	___
Methylene chloride	1076	1.638	352	1	0.083	D	0.05	___
Acetone	6615	0.620	327	1	1.346	E	0.05	___
Carbon disulfide	1865	6.453	303	1	0.036	E	0.05	___
1,1-Dichloroethene	0	1.385	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.547	0	1	0.002	ND	0.05	___
Chloroform	0	4.162	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.828	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.702	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	___
Acrylonitrile	0	0.723	0	1	0.003	ND	0.05	___
Iodomethane	14282	3.623	302	1	0.497	D	0.05	___
n-Hexane	918	4.592	417	1	0.025	E	0.05	___
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.311	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.311	0	1	0.002	ND	0.05	___
Trichlorofluoromethane	852	2.287	229	1	0.047	E	0.05	___
Isooctane	0	15.697	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.462	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	10616		643	15		I		
2-Butanone	674	0.058	508	15	0.274	D	0.05	___
1,1,1-Trichloroethane	0	0.684	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.635	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.687	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.677	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.293	0	15	0.002	ND	0.05	___
Benzene	127000	1.968	587	15	1.520	E	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.206	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.244	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.090	0	15	0.005	ND	0.05	___
Chlorobenzene-d5	12876		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ198
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R1F T/TC
TLI ID: 61-37-11/12

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.002	ND	0.05	
4-Methyl-2-pentanone	0	0.244	0	29	0.002	ND	0.05	
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.002	ND	0.05	
Toluene	61787	0.821	853	29	1.461	E	0.05	
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	
Ethylbenzene	783	0.570	1114	29	0.027	E	0.05	
Styrene	0	0.937	0	29	0.001	ND	0.05	
m-/p-Xylene	1973	0.661	1138	29	0.058	E	0.10	
o-Xylene	524	0.611	1211	29	0.017	E	0.05	
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	
1,2,3-Trichloropropane	0	0.211	0	29	0.002	ND	0.05	
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	
Cumene (isopropylbenzene)	0	1.440	0	29	0.001	ND	0.05	
A-Pinene	597509	1.425	1293	29	8.141	E	0.05	
B-Pinene	135789	1.406	1440	29	1.875	E	0.05	
P-Cymene	185938	1.682	1688	29	2.146	E	0.05	

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3674	1.786	584	1	0.260	D	104.0
Benzene-d6	14258	1.831	582	15	0.206	D	82.4
Toluene-d8	12785	1.272	843	29	0.195	D	78.0

Reveiwed by ________ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ199
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R2A T/TC
TLI ID: 61-37-13/14

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1905		518	1		I		
Chloromethane	29377	1.046	123	1	3.685	E	0.05	___
Bromomethane	782	0.918	184	1	0.112	D	0.05	___
Vinyl chloride	629	1.463	141	1	0.056	D	0.05	___
Chloroethane	0	0.959	0	1	0.003	ND	0.05	___
Methylene chloride	877	1.638	353	1	0.070	D	0.05	___
Acetone	8709	0.620	329	1	1.843	E	0.05	___
Carbon disulfide	2011	6.453	303	1	0.041	E	0.05	___
1,1-Dichloroethene	0	1.385	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.547	0	1	0.002	ND	0.05	___
Chloroform	0	4.162	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.828	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.702	0	1	0.002	ND	0.05	___
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	___
Acrylonitrile	301	0.723	388	1	0.055	D	0.05	___
Iodomethane	15569	3.623	303	1	0.564	D	0.05	___
n-Hexane	1237	4.592	417	1	0.035	E	0.05	___
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.311	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.311	0	1	0.002	ND	0.05	___
Trichlorofluoromethane	0	2.287	0	1	0.001	ND	0.05	___
Isooctane	0	15.697	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.462	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	10278		643	15		I		
2-Butanone	590	0.058	508	15	0.248	D	0.05	___
1,1,1-Trichloroethane	0	0.684	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.635	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.687	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.677	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.293	0	15	0.002	ND	0.05	___
Benzene	105044	1.968	587	15	1.298	E	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.206	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.244	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.090	0	15	0.005	ND	0.05	___
Chlorobenzene-d5	12434		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ199
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R2A T/TC
TLI ID: 61-37-13/14

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.002	ND	0.05	____
4-Methyl-2-pentanone	0	0.244	0	29	0.002	ND	0.05	____
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.002	ND	0.05	____
Toluene	46035	0.821	853	29	1.127	E	0.05	____
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	____
Ethylbenzene	964	0.570	1114	29	0.034	E	0.05	____
Styrene	0	0.937	0	29	0.001	ND	0.05	____
m-/p-Xylene	2047	0.661	1138	29	0.062	E	0.10	____
o-Xylene	528	0.611	1211	29	0.017	E	0.05	____
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0.211	0	29	0.002	ND	0.05	____
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	0	1.440	0	29	0.001	ND	0.05	____
A-Pinene	572987	1.425	1292	29	8.084	E	0.05	____
B-Pinene	161893	1.406	1441	29	2.315	E	0.05	____
P-Cymene	195334	1.682	1689	29	2.335	E	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3719	1.786	584	1	0.273	D	109.2
Benzene-d6	14687	1.631	582	15	0.219	D	87.6
Toluene-d8	12756	1.272	843	29	0.202	D	80.8

Reveiwed by ______ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ200
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 0A-M0030-R2B T/TC
TLI ID: 61-37-15/16

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1866		518	1		I		
Chloromethane	31905	1.046	123	1	4.087	E	0.05	____
Bromomethane	795	0.918	183	1	0.116	D	0.05	____
Vinyl chloride	680	1.463	140	1	0.062	D	0.05	____
Chloroethane	0	0.959	0	1	0.003	ND	0.05	____
Methylene chloride	1157	1.638	353	1	0.095	D	0.05	____
Acetone	4473	0.620	327	1	0.967	D	0.05	____
Carbon disulfide	2301	6.453	303	1	0.048	E	0.05	____
1,1-Dichloroethene	0	1.385	0	1	0.002	ND	0.05	____
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	____
trans-1,2-Dichloroethene	0	1.547	0	1	0.002	ND	0.05	____
Chloroform	0	4.162	0	1	0.001	ND	0.05	____
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	____
Dimethyl disulfide	506	3.828	809	1	0.018	E	0.05	____
cis-1,2-Dichloroethene	0	1.702	0	1	0.002	ND	0.05	____
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	____
Acrylonitrile	138	0.723	392	1	0.026	E	0.05	____
Iodomethane	16092	3.623	303	1	0.595	D	0.05	____
n-Hexane	1083	4.592	417	1	0.032	E	0.05	____
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	____
1,3-butadiene	0	1.311	0	1	0.002	ND	0.05	____
Vinyl Bromide	0	1.311	0	1	0.002	ND	0.05	____
Trichlorofluoromethane	614	2.287	229	1	0.036	E	0.05	____
Isooctane	0	15.697	0	1	0.001	ND	0.05	____
Allyl chloride	0	1.462	0	1	0.002	ND	0.05	____
1,4-Difluorobenzene	10171		643	15		I		
2-Butanone	0	0.058	0	15	0.008	ND	0.05	____
1,1,1-Trichloroethane	0	0.684	0	15	0.001	ND	0.05	____
Carbon tetrachloride	0	0.835	0	15	0.001	ND	0.05	____
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	____
Bromodichloromethane	0	0.687	0	15	0.001	ND	0.05	____
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	____
trans-1,3-Dichloropropene	0	0.677	0	15	0.001	ND	0.02	____
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	____
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	____
1,1,2-Trichloroethane	0	0.293	0	15	0.002	ND	0.05	____
Benzene	102372	1.968	587	15	1.279	E	0.05	____
cis-1,3-Dichloropropene	0	0.938	0	15	0.001	ND	0.08	____
Bromoform	0	0.206	0	15	0.002	ND	0.05	____
Dibromomethane	0	0.244	0	15	0.002	ND	0.05	____
1,4-Dichloro-2-butene	0	0.090	0	15	0.005	ND	0.05	____
Chlorobenzene-d5	13025		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ200
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R2B T/TC
TLI ID: 61-37-15/16

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.002	ND	0.05	___
4-Methyl-2-pentanone	0	0.244	0	29	0.002	ND	0.05	___
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.002	ND	0.05	___
Toluene	68015	0.821	853	29	1.590	E	0.05	___
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	___
Ethylbenzene	531	0.570	1114	29	0.018	E	0.05	___
Styrene	0	0.937	0	29	0.001	ND	0.05	___
m-/p-Xylene	1736	0.661	1138	29	0.050	E	0.10	___
o-Xylene	534	0.611	1210	29	0.017	E	0.05	___
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.211	0	29	0.002	ND	0.05	___
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.440	0	29	0.001	ND	0.05	___
A-Pinene	704535	1.425	1298	29	9.490	E	0.05	___
B-Pinene	136618	1.406	1439	29	1.865	E	0.05	___
P-Cymene	152949	1.682	1686	29	1.745	E	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3844	1.786	583	1	0.273	D	109.2
Benzene-d6	14490	1.631	582	15	0.218	D	87.2
Toluene-d8	12822	1.272	843	29	0.193	D	77.2

Reveiwed by ___ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ201
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R2C T/TC
TLI ID: 61-37-17/18

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1942		518	1		I		
Chloromethane	29949	1.046	123	1	3.685	E	0.05	___
Bromomethane	699	0.918	184	1	0.098	D	0.05	___
Vinyl chloride	500	1.463	140	1	0.044	E	0.05	___
Chloroethane	0	0.959	0	1	0.003	ND	0.05	___
Methylene chloride	711	1.638	352	1	0.058	D	0.05	___
Acetone	11219	0.620	324	1	2.329	E	0.05	___
Carbon disulfide	2225	6.453	303	1	0.044	E	0.05	___
1,1-Dichloroethene	0	1.385	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.547	0	1	0.002	ND	0.05	___
Chloroform	0	4.162	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	___
Dimethyl disulfide	729	3.828	809	1	0.025	E	0.05	___
cis-1,2-Dichloroethene	0	1.702	0	1	0.002	ND	0.05	___
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	___
Acrylonitrile	299	0.723	387	1	0.053	D	0.05	___
Iodomethane	17084	3.623	302	1	0.607	D	0.05	___
n-Hexane	1476	4.592	417	1	0.041	E	0.05	___
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.311	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.311	0	1	0.002	ND	0.05	___
Trichlorofluoromethane	560	2.287	229	1	0.032	E	0.05	___
Isooctane	2100	15.697	604	1	0.017	E	0.05	___
Allyl chloride	0	1.462	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	11421		643	15		I		
2-Butanone	496	0.058	506	15	0.187	D	0.05	___
1,1,1-Trichloroethane	0	0.684	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.635	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.887	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.677	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.293	0	15	0.001	ND	0.05	___
Benzene	128861	1.968	587	15	1.433	E	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.208	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.244	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.090	0	15	0.005	ND	0.05	___
Chlorobenzene-d5	13512		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ201
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R2C T/TC
TLI ID: 61-37-17/18

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.002	ND	0.05	____
4-Methyl-2-pentanone	0	0.244	0	29	0.002	ND	0.05	____
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.002	ND	0.05	____
Toluene	49527	0.821	853	29	1.116	E	0.05	____
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	____
Ethylbenzene	684	0.570	1114	29	0.022	E	0.05	____
Styrene	0	0.937	0	29	0.001	ND	0.05	____
m-/p-Xylene	2196	0.661	1138	29	0.061	E	0.10	____
o-Xylene	525	0.611	1210	29	0.016	E	0.05	____
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0.211	0	29	0.002	ND	0.05	____
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	0	1.440	0	29	0.001	ND	0.05	____
A-Pinene	573514	1.425	1291	29	7.446	E	0.05	____
B-Pinene	180422	1.406	1440	29	2.374	E	0.05	____
P-Cymene	222981	1.682	1687	29	2.453	E	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3928	1.786	584	1	0.283	D	113.2
Benzene-d6	15904	1.631	582	15	0.213	D	85.2
Toluene-d8	14200	1.272	843	29	0.207	D	82.8

Reveiwed by GD Date 11,29,92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ202
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R2D T/TC
TLI ID: 61-37-19/20

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2005		518	1		I		
Chloromethane	25391	1.046	123	1	3.025	E	0.05	___
Bromomethane	723	0.918	184	1	0.098	D	0.05	___
Vinyl chloride	570	1.463	140	1	0.049	E	0.05	___
Chloroethane	0	0.959	0	1	0.003	ND	0.05	___
Methylene chloride	757	1.638	352	1	0.058	D	0.05	___
Acetone	7372	0.620	327	1	1.482	E	0.05	___
Carbon disulfide	2104	6.453	302	1	0.041	E	0.05	___
1,1-Dichloroethene	0	1.385	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.547	0	1	0.002	ND	0.05	___
Chloroform	0	4.162	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	___
Dimethyl disulfide	734	3.828	808	1	0.024	E	0.05	___
cis-1,2-Dichloroethene	0	1.702	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	___
Acrylonitrile	265	0.723	387	1	0.046	E	0.05	___
Iodomethane	16552	3.623	302	1	0.569	D	0.05	___
n-Hexane	1171	4.592	417	1	0.032	E	0.05	___
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.311	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.311	0	1	0.002	ND	0.05	___
Trichlorofluoromethane	666	2.287	228	1	0.036	E	0.05	___
Isooctane	0	15.697	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.462	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	11120		642	15		I		
2-Butanone	1428	0.058	506	15	0.554	D	0.05	___
1,1,1-Trichloroethane	0	0.684	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.635	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.687	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.677	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.293	0	15	0.002	ND	0.05	___
Benzene	102985	1.968	587	15	1.176	E	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.208	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.244	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.090	0	15	0.005	ND	0.05	___
Chlorobenzene-d5	13368		1080	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ202
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R2D T/TC
TLI ID: 61-37-19/20

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.002	ND	0.05	
4-Methyl-2-pentanone	0	0.244	0	29	0.002	ND	0.05	
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.002	ND	0.05	
Toluene	50037	0.821	853	29	1.140	E	0.05	
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	
Ethylbenzene	534	0.570	1113	29	0.018	E	0.05	
Styrene	0	0.937	0	29	0.001	ND	0.05	
m-/p-Xylene	1482	0.661	1137	29	0.042	E	0.10	
o-Xylene	410	0.611	1210	29	0.013	E	0.05	
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	
1,2,3-Trichloropropane	0	0.211	0	29	0.002	ND	0.05	
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	
Cumene (isopropylbenzene)	0	1.440	0	29	0.001	ND	0.05	
A-Pinene	659498	1.425	1295	29	8.656	E	0.05	
B-Pinene	199494	1.406	1441	29	2.654	E	0.05	
P-Cymene	151033	1.682	1684	29	1.679	E	0.05	

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4024	1.786	583	1	0.281	D	112.4
Benzene-d6	17045	1.631	582	15	0.235	D	94.0
Toluene-d8	14005	1.272	842	29	0.206	D	82.4

Reveiwed by ______ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ203
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R2E T/TC
TLI ID: 61-37-21/22

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2118		518	1		I		
Chloromethane	24606	1.046	124	1	2.775	E	0.05	___
Bromomethane	739	0.918	184	1	0.095	D	0.05	___
Vinyl chloride	533	1.463	141	1	0.043	E	0.05	___
Chloroethane	0	0.959	0	1	0.002	ND	0.05	___
Methylene chloride	3460	1.638	353	1	0.249	D	0.05	___
Acetone	8823	0.620	316	1	1.679	E	0.05	___
Carbon disulfide	2058	6.453	303	1	0.038	E	0.05	___
1,1-Dichloroethene	0	1.385	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.547	0	1	0.002	ND	0.05	___
Chloroform	0	4.162	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	___
Dimethyl disulfide	517	3.828	809	1	0.016	E	0.05	___
cis-1,2-Dichloroethene	0	1.702	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	___
Acrylonitrile	254	0.723	386	1	0.042	E	0.05	___
Iodomethane	15867	3.623	303	1	0.517	D	0.05	___
n-Hexane	1015	4.592	417	1	0.026	E	0.05	___
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.311	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.311	0	1	0.002	ND	0.05	___
Trichlorofluoromethane	546	2.287	229	1	0.028	E	0.05	___
Isooctane	0	15.897	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.462	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	11246		842	15		I		
2-Butanone	287	0.058	504	15	0.103	D	0.05	___
1,1,1-Trichloroethane	0	0.684	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.635	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.687	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.877	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.293	0	15	0.002	ND	0.05	___
Benzene	134914	1.968	587	15	1.524	E	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.206	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.244	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.090	0	15	0.005	ND	0.05	___
Chlorobenzene-d5	13120		1080	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ203
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R2E T/TC
TLI ID: 61-37-21/22

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.002	ND	0.05	
4-Methyl-2-pentanone	0	0.244	0	29	0.002	ND	0.05	
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.002	ND	0.05	
Toluene	53246	0.821	853	29	1.236	E	0.05	
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	
Ethylbenzene	605	0.570	1114	29	0.020	E	0.05	
Styrene	0	0.937	0	29	0.001	ND	0.05	
m-/p-Xylene	1731	0.661	1137	29	0.050	E	0.10	
o-Xylene	452	0.611	1210	29	0.014	E	0.05	
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	
1,2,3-Trichloropropane	0	0.211	0	29	0.002	ND	0.05	
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	
Cumene (isopropylbenzene)	0	1.440	0	29	0.001	ND	0.05	
A-Pinene	501632	1.425	1289	29	6.708	E	0.05	
B-Pinene	140516	1.406	1438	29	1.904	E	0.05	
P-Cymene	221057	1.682	1688	29	2.504	E	0.05	

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3945	1.786	583	1	0.261	D	104.4
Benzene-d6	15713	1.631	582	15	0.214	D	85.6
Toluene-d8	14177	1.272	842	29	0.212	D	84.8

Reveiwed by CS Date 11/27/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ204
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R2F T/TC
TLI ID: 61-37-23/24

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2002		518	1		I		
Chloromethane	27986	1.046	123	1	3.341	E	0.05	___
Bromomethane	764	0.918	183	1	0.104	D	0.05	___
Vinyl chloride	542	1.463	140	1	0.046	E	0.05	___
Chloroethane	0	0.959	0	1	0.003	ND	0.05	___
Methylene chloride	35662	1.638	353	1	2.719	E	0.05	___
Acetone	15425	0.620	315	1	3.107	E	0.05	___
Carbon disulfide	1906	6.453	303	1	0.037	E	0.05	___
1,1-Dichloroethene	0	1.385	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.547	0	1	0.002	ND	0.05	___
Chloroform	0	4.162	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	___
Dimethyl disulfide	406	3.828	809	1	0.013	E	0.05	___
cis-1,2-Dichloroethene	0	1.702	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	___
Acrylonitrile	302	0.723	385	1	0.052	D	0.05	___
Iodomethane	15408	3.623	302	1	0.531	D	0.05	___
n-Hexane	1251	4.592	417	1	0.034	E	0.05	___
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.311	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.311	0	1	0.002	ND	0.05	___
Trichlorofluoromethane	681	2.287	229	1	0.037	E	0.05	___
Isooctane	0	15.697	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.462	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	10937		643	15		I		
2-Butanone	316	0.058	504	15	0.125	D	0.05	___
1,1,1-Trichloroethane	0	0.684	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.635	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.687	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.677	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.293	0	15	0.002	ND	0.05	___
Benzene	96939	1.968	587	15	1.126	E	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.206	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.244	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.090	0	15	0.005	ND	0.05	___
Chlorobenzene-d5	13268		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : ⁝⁝204
Response File : IC⁝.⁝NO5
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R2F T/TC
TLI ID: 61-37-23/24

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.002	ND	0.05	____
4-Methyl-2-pentanone	0	0.244	0	29	0.002	ND	0.05	____
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.002	ND	0.05	____
Toluene	50986	0.821	853	29	1.170	E	0.05	____
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	____
Ethylbenzene	366	0.570	1114	29	0.012	E	0.05	____
Styrene	0	0.937	C	29	0.001	ND	0.05	____
m-/p-Xylene	1623	0.661	1138	29	0.046	E	0.10	____
o-Xylene	351	0.611	1211	29	0.011	E	0.05	____
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0.211	0	29	0.002	ND	0.05	____
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	0	1.440	0	29	0.001	ND	0.05	____
A-Pinene	576971	1.425	1292	29	7.629	E	0.05	____
B-Pinene	138540	1.406	1439	29	1.857	E	0.05	____
P-Cymene	182120	1.682	1688	29	2.040	E	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4031	1.786	583	1	0.282	D	112.8
Benzene-d6	17028	1.631	582	15	0.239	D	95.6
Toluene-d8	14479	1.272	843	29	0.214	D	85.6

Reveiwed by ____ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ205
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R3A T/TC
TLI ID: 61-37-25/26

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2025		518	1		I		
Chloromethane	29650	1.046	124	1	3.498	E	0.05	___
Bromomethane	954	0.918	183	1	0.128	D	0.05	___
Vinyl chloride	637	1.463	140	1	0.054	D	0.05	___
Chloroethane	0	0.959	0	1	0.003	ND	0.05	___
Methylene chloride	1649	1.638	354	1	0.124	D	0.05	___
Acetone	13545	0.620	310	1	2.696	E	0.05	___
Carbon disulfide	2182	6.453	304	1	0.042	E	0.05	___
1,1-Dichloroethene	0	1.385	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.547	0	1	0.002	ND	0.05	___
Chloroform	0	4.162	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	___
Dimethyl disulfide	439	3.828	809	1	0.014	E	0.05	___
cis-1,2-Dichloroethene	0	1.702	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	___
Acrylonitrile	346	0.723	384	1	0.059	D	0.05	___
Iodomethane	18336	3.623	303	1	0.625	D	0.05	___
n-Hexane	2136	4.592	416	1	0.057	D	0.05	___
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.311	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.311	0	1	0.002	ND	0.05	___
Trichlorofluoromethane	851	2.287	230	1	0.046	E	0.05	___
Isooctane	2327	15.697	603	1	0.018	E	0.05	___
Allyl chloride	0	1.462	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	10970		642	15		I		
2-Butanone	451	0.058	503	15	0.177	D	0.05	___
1,1,1-Trichloroethane	0	0.684	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.635	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.687	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.677	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.293	0	15	0.002	ND	0.05	___
Benzene	89515	1.968	587	15	1.037	E	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.208	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.244	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.090	0	15	0.005	ND	0.05	___
Chlorobenzene-d5	12798		1080	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ205
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R3A T/TC
TLI ID: 61-37-25/26

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.002	ND	0.05	____
4-Methyl-2-pentanone	0	0.244	0	29	0.002	ND	0.05	____
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.002	ND	0.05	____
Toluene	44702	0.821	853	29	1.064	E	0.05	____
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	____
Ethylbenzene	434	0.570	1114	29	0.015	E	0.05	____
Styrene	0	0.937	0	29	0.001	ND	0.05	____
m-/p-Xylene	2553	0.661	1137	29	0.075	E	0.10	____
o-Xylene	495	0.611	1210	29	0.016	E	0.05	____
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0.211	0	29	0.002	ND	0.05	____
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	0	1.440	0	29	0.001	ND	0.05	____
A-Pinene	490211	1.425	1290	29	6.720	E	0.05	____
B-Pinene	124008	1.406	1437	29	1.723	E	0.05	____
P-Cymene	208920	1.682	1687	29	2.426	E	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4353	1.786	583	1	0.301	D	120.4
Benzene-d6	17110	1.631	582	15	0.239	D	95.6
Toluene-d8	14074	1.272	842	29	0.216	D	86.4

Reveiwed by ____<>____ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ206
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R3B T/TC
TLI ID: 61-37-27/28

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2013		519	1		I		
Chloromethane	30396	1.046	124	1	3.609	E	0.05	
Bromomethane	1105	0.918	184	1	0.150	D	0.05	
Vinyl chloride	903	1.463	141	1	0.077	D	0.05	
Chloroethane	0	0.959	0	1	0.003	ND	0.05	
Methylene chloride	4988	1.638	355	1	0.378	D	0.05	
Acetone	10868	0.620	312	1	2.177	E	0.05	
Carbon disulfide	2247	6.453	305	1	0.043	E	0.05	
1,1-Dichloroethene	0	1.385	0	1	0.002	ND	0.05	
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	1.547	0	1	0.002	ND	0.05	
Chloroform	0	4.162	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	
Dimethyl disulfide	534	3.828	809	1	0.017	E	0.05	
cis-1,2-Dichloroethene	0	1.702	0	1	0.001	ND	0.05	
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	
Acrylonitrile	407	0.723	385	1	0.070	D	0.05	
Iodomethane	18369	3.623	304	1	0.630	D	0.05	
n-Hexane	1445	4.592	417	1	0.039	E	0.05	
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	
1,3-butadiene	0	1.311	0	1	0.002	ND	0.05	
Vinyl Bromide	0	1.311	0	1	0.002	ND	0.05	
Trichlorofluoromethane	1149	2.287	232	1	0.062	D	0.05	
Isooctane	0	15.697	0	1	0.001	ND	0.05	
Allyl chloride	0	1.462	0	1	0.002	ND	0.05	
1,4-Difluorobenzene	11255		643	15		I		
2-Butanone	393	0.058	503	15	0.151	D	0.05	
1,1,1-Trichloroethane	0	0.684	0	15	0.001	ND	0.05	
Carbon tetrachloride	0	0.635	0	15	0.001	ND	0.05	
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.687	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.677	0	15	0.001	ND	0.02	
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.293	0	15	0.002	ND	0.05	
Benzene	80198	1.968	588	15	0.905	D	0.05	
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	
Bromoform	0	0.208	0	15	0.002	ND	0.05	
Dibromomethane	0	0.244	0	15	0.002	ND	0.05	
1,4-Dichloro-2-butene	0	0.090	0	15	0.005	ND	0.05	
Chlorobenzene-d5	12626		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ206
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R3B T/TC
TLI ID: 61-37-27/28

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.002	ND	0.05	
4-Methyl-2-pentanone	0	0.244	0	29	0.002	ND	0.05	
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.002	ND	0.05	
Toluene	53178	0.821	853	29	1.282	E	0.05	
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	
Ethylbenzene	2217	0.570	1138	29	0.077	D	0.05	
Styrene	0	0.937	0	29	0.001	ND	0.05	
m-/p-Xylene	1528	0.661	1138	29	0.046	E	0.10	
o-Xylene	332	0.611	1211	29	0.011	E	0.05	
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	
1,2,3-Trichloropropane	0	0.211	0	29	0.002	ND	0.05	
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	
Cumene (isopropylbenzene)	0	1.440	0	29	0.001	ND	0.05	
A-Pinene	495678	1.425	1290	29	6.887	E	0.05	
B-Pinene	124410	1.406	1439	29	1.752	E	0.05	
P-Cymene	290965	1.682	1688	29	3.425	E	0.05	

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4219	1.786	584	1	0.293	D	117.2
Benzene-d6	17989	1.631	582	15	0.245	D	98.0
Toluene-d8	14411	1.272	843	29	0.224	D	89.6

Reveiwed by ____ Date 11/27/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ217
Response File : ICALFN12
Date Analyzed : 11/12/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R3C T/TC
TLI ID: 61-37-29/30

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2460		520	1		I		
Chloromethane	34892	1.067	126	1	3.323	E	0.05	___
Bromomethane	1933	1.090	186	1	0.180	D	0.05	___
Vinyl chloride	835	1.732	142	1	0.049	E	0.05	___
Chloroethane	0	1.185	0	1	0.002	ND	0.05	___
Methylene chloride	1886	2.249	354	1	0.085	D	0.05	___
Acetone	18984	0.602	315	1	3.204	E	0.05	___
Carbon disulfide	2484	5.737	304	1	0.044	E	0.05	___
1,1-Dichloroethene	0	1.456	0	1	0.001	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.001	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	519	0.764	387	1	0.069	D	0.05	___
Iodomethane	20340	3.828	304	1	0.570	D	0.05	___
n-Hexane	1372	5.495	418	1	0.025	E	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.001	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	___
Trichlorofluoromethane	896	2.339	230	1	0.039	E	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	13943		644	15		I		
2-Butanone	571	0.023	505	15	0.445	D	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.001	ND	0.05	___
Benzene	112523	1.576	589	15	1.280	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.001	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.004	ND	0.05	___
Chlorobenzene-d5	17065		1083	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ217
Response File : ICALFN12
Date Analyzed : 11/12/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R3C T/TC
TLI ID: 81-37-29/30

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.002	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	86445	0.896	856	29	1.413	E	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	891	0.512	1117	29	0.020	E	0.05	___
Styrene	0	0.809	0	29	0.001	ND	0.05	___
m-/p-Xylene	2146	0.567	1140	29	0.055	E	0.10	___
o-Xylene	622	0.538	1213	29	0.017	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.001	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	___
A-Pinene	818033	1.398	1301	29	8.572	E	0.05	___
B-Pinene	138504	1.468	1443	29	1.382	E	0.05	___
P-Cymene	129068	1.818	1690	29	1.040	E	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	5265	2.001	585	1	0.267	D	106.8
Benzene-d6	21215	1.555	584	15	0.245	D	98.0
Toluene-d8	19513	1.184	845	29	0.241	D	96.4

Reveiwed by ____ Date 11/27/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ218
Response File : ICALFN12
Date Analyzed : 11/12/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R3D T/TC
TLI ID: 61-37-31/32

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2118		519	1		I		
Chloromethane	32018	1.067	125	1	3.541	E	0.05	___
Bromomethane	1155	1.090	185	1	0.125	D	0.05	___
Vinyl chloride	653	1.732	142	1	0.045	E	0.05	___
Chloroethane	0	1.185	0	1	0.002	ND	0.05	___
Methylene chloride	1335	2.249	354	1	0.070	D	0.05	___
Acetone	21322	0.602	316	1	4.179	E	0.05	___
Carbon disulfide	1982	5.737	304	1	0.040	E	0.05	___
1,1-Dichloroethene	0	1.458	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.001	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	472	0.764	386	1	0.073	D	0.05	___
Iodomethane	16485	3.628	303	1	0.536	D	0.05	___
n-Hexane	2838	5.495	418	1	0.061	D	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.001	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	___
Trichlorofluoromethane	727	2.339	229	1	0.037	E	0.05	___
Isooctane	5572	20.258	605	1	0.032	E	0.05	___
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	12060		644	15		I		
2-Butanone	613	0.023	505	15	0.553	D	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	___
Benzene	85983	1.576	589	15	1.131	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.005	ND	0.05	___
Chlorobenzene-d5	14841		1083	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ218
Response File : ICALFN12
Date Analyzed : 11/12/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R3D T/TC
TLI ID: 61-37-31/32

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	74028	0.896	855	29	1.392	E	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	979	0.512	1117	29	0.032	E	0.05	___
Styrene	0	0.809	0	29	0.001	ND	0.05	___
m-/p-Xylene	4902	0.567	1140	29	0.146	D	0.10	___
o-Xylene	1345	0.538	1213	29	0.042	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	6005	1.398	1558	29	0.072	D	0.05	___
A-Pinene	653670	1.398	1297	29	7.876	E	0.05	___
B-Pinene	98289	1.468	1441	29	1.128	E	0.05	___
P-Cymene	179596	1.818	1691	29	1.664	E	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4895	2.001	584	1	0.289	D	115.6
Benzene-d6	19566	1.555	584	15	0.261	D	104.4
Toluene-d8	16439	1.184	845	29	0.234	D	93.6

Reveiwed by ______ Date 11/29/92
ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ219
Response File : ICALFN12
Date Analyzed : 11/12/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R3E T/TC
TLI ID: 61-37-33/34

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1740		519	1		I		
Chloromethane	28548	1.067	125	1	3.843	E	0.05	___
Bromomethane	1069	1.090	185	1	0.141	D	0.05	___
Vinyl chloride	624	1.732	142	1	0.052	D	0.05	___
Chloroethane	0	1.185	0	1	0.002	ND	0.05	___
Methylene chloride	1186	2.249	354	1	0.076	D	0.05	___
Acetone	12856	0.602	322	1	3.068	E	0.05	___
Carbon disulfide	2143	5.737	304	1	0.054	D	0.05	___
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	297	0.764	388	1	0.056	D	0.05	___
Iodomethane	17289	3.628	303	1	0.685	D	0.05	___
n-Hexane	1223	5.495	418	1	0.032	E	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	___
Trichlorofluoromethane	915	2.339	230	1	0.058	D	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	10684		644	15		I		
2-Butanone	2090	0.023	506	15	2.127	E	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	___
Benzene	100835	1.576	589	15	1.497	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.006	ND	0.05	___
Chlorobenzene-d5	14038		1082	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ219
Response File : ICALFN12
Date Analyzed : 11/12/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R3E T/TC
TLI ID: 61-37-33/34

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	52762	0.896	854	29	1.049	E	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	674	0.512	1116	29	0.023	E	0.05	___
Styrene	0	0.809	0	29	0.001	ND	0.05	___
m-/p-Xylene	2427	0.567	1139	29	0.076	E	0.10	___
o-Xylene	994	0.538	1212	29	0.033	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	3989	1.398	1557	29	0.051	D	0.05	___
A-Pinene	330000	1.398	1288	29	4.204	E	0.05	___
B-Pinene	101277	1.468	1440	29	1.229	E	0.05	___
P-Cymene	384645	1.818	1695	29	3.768	E	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4382	2.001	585	1	0.315	D	126.0
Benzene-d6	16529	1.555	583	15	0.249	D	99.6
Toluene-d8	15631	1.184	844	29	0.235	D	94.0

Reveiwed by ______ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ220
Response File : ICALFN12
Date Analyzed : 11/12/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R3F T/TC
TLI ID: 61-37-35/36

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1743		519	1		I		
Chloromethane	22475	1.067	125	1	3.020	E	0.05	
Bromomethane	910	1.090	185	1	0.120	D	0.05	
Vinyl chloride	398	1.732	142	1	0.033	E	0.05	
Chloroethane	0	1.185	0	1	0.002	ND	0.05	
Methylene chloride	857	2.249	353	1	0.055	D	0.05	
Acetone	18319	0.602	323	1	4.363	E	0.05	
Carbon disulfide	1906	5.737	304	1	0.048	E	0.05	
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	
Chloroform	0	5.048	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	
Acrylonitrile	341	0.764	387	1	0.064	D	0.05	
Iodomethane	17052	3.628	303	1	0.674	D	0.05	
n-Hexane	1331	5.495	418	1	0.035	E	0.05	
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	
Trichlorofluoromethane	662	2.339	230	1	0.041	E	0.05	
Isooctane	0	20.258	0	1	0.001	ND	0.05	
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	
1,4-Difluorobenzene	9281		644	15		I		
2-Butanone	4552	0.023	507	15	5.332	E	0.05	
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	
Benzene	92285	1.576	588	15	1.577	E	0.05	
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	
Bromoform	0	0.250	0	15	0.002	ND	0.05	
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	
1,4-Dichloro-2-butene	0	0.083	0	15	0.006	ND	0.05	
Chlorobenzene-d5	12798		1082	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ220
Response File : ICALFN12
Date Analyzed : 11/12/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OA-M0030-R3F T/TC
TLI ID: 61-37-35/36

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	____
4-Methyl-2-pentanone	0	0.241	0	29	0.002	ND	0.05	____
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	____
Toluene	30236	0.896	854	29	0.659	D	0.05	____
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	____
Ethylbenzene	773	0.512	1116	29	0.030	E	0.05	____
Styrene	515	0.809	1217	29	0.012	E	0.05	____
m-/p-Xylene	1808	0.567	1139	29	0.062	E	0.10	____
o-Xylene	478	0.538	1213	29	0.017	E	0.05	____
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	____
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	____
A-Pinene	833549	1.398	1303	29	11.647	E	0.05	____
B-Pinene	392251	1.468	1452	29	5.219	E	0.05	____
P-Cymene	64365	1.818	1687	29	0.692	D	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3998	2.001	584	1	0.286	D	114.4
Benzene-d6	14441	1.555	583	15	0.250	D	100.0
Toluene-d8	13861	1.184	844	29	0.229	D	91.6

Reveiwed by ____ Date 11/27/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ192
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/30/92
Project Number: 22355

Sample ID: OA-M0030-R0 T/TC
TLI ID: 61-37-109/110

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	3092		519	1		I		
Chloromethane	0	1.048	0	1	0.002	ND	0.05	___
Bromomethane	0	0.918	0	1	0.002	ND	0.05	___
Vinyl chloride	0	1.463	0	1	0.001	ND	0.05	___
Chloroethane	0	0.959	0	1	0.002	ND	0.05	___
Methylene chloride	356	1.638	354	1	0.018	E	0.05	___
Acetone	0	0.620	0	1	0.003	ND	0.05	___
Carbon disulfide	0	6.453	0	1	0.001	ND	0.05	___
1,1-Dichloroethene	0	1.385	0	1	0.001	ND	0.05	___
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.547	0	1	0.001	ND	0.05	___
Chloroform	0	4.162	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.828	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.702	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	___
Acrylonitrile	0	0.723	0	1	0.002	ND	0.05	___
Iodomethane	0	3.623	0	1	0.001	ND	0.05	___
n-Hexane	0	4.592	0	1	0.001	ND	0.05	___
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.311	0	1	0.001	ND	0.05	___
Vinyl Bromide	0	1.311	0	1	0.001	ND	0.05	___
Trichlorofluoromethane	0	2.287	0	1	0.001	ND	0.05	___
Isooctane	0	15.697	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.462	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	15142		644	15		I		
2-Butanone	0	0.058	0	15	0.006	ND	0.05	___
1,1,1-Trichloroethane	0	0.684	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.635	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.687	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.677	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.293	0	15	0.001	ND	0.05	___
Benzene	0	1.988	0	15	0.001	ND	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.206	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.244	0	15	0.001	ND	0.05	___
1,4-Dichloro-2-butene	0	0.090	0	15	0.004	ND	0.05	___
Chlorobenzene-d5	18247		1082	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ192
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/30/92
Project Number: 22355

Sample ID: OA-M0030-RO T/TC
TLI ID: 61-37-109/110

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.001	ND	0.05	____
4-Methyl-2-pentanone	0	0.244	0	29	0.001	ND	0.05	____
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.001	ND	0.05	____
Toluene	303	0.821	854	29	0.005	E	0.05	____
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	____
Ethylbenzene	0	0.570	0	29	0.001	ND	0.05	____
Styrene	0	0.937	0	29	0.001	ND	0.05	____
m-/p-Xylene	0	0.661	0	29	0.001	ND	0.10	____
o-Xylene	0	0.611	0	29	0.001	ND	0.05	____
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0.211	0	29	0.001	ND	0.05	____
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	128	1.440	1552	29	0.001	E	0.05	____
A-Pinene	0	1.425	0	29	0.001	ND	0.05	____
B-Pinene	0	1.406	0	29	0.001	ND	0.05	____
P-Cymene	798	1.682	1679	29	0.007	E	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	5883	1.786	584	1	0.266	D	106.4
Benzene-d6	23532	1.631	584	15	0.238	D	95.2
Toluene-d8	19278	1.272	844	29	0.208	D	83.2

Reveiwed by ______ Date 11/30/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

TRIANGLE LABORATORIES OF RTP, INC.
801 Capitola Drive
Durham, NC 27713
Telephone: (919) 544-5729

FILE NAME: FJ195
DATE: 11/30/92
TLI PROJ #: 22355

SAMPLE ID: IN-M0030-R0 T/TC
TLI ID: 61-37-113/114
ANALYSIS DATE: 11/11/92

TENTATIVELY IDENTIFIED COMPOUND REPORT

NAME	Scan	Area	Scan # IS	Amt IS	Amt, ug
1 SILOXANE/SILANE	959	4070	518	.25	.048

INTERNAL STANDARD	IS SCAN	IS AREA	IS ID
Bromochloromethane	518	21195	1

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ225
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R1A T/TC
TLI ID: 61-37-37/38

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1891		519	1		I		
Chloromethane	28939	1.067	125	1	3.584	E	0.05	___
Bromomethane	1012	1.090	185	1	0.123	D	0.05	___
Vinyl chloride	528	1.732	142	1	0.045	E	0.05	___
Chloroethane	528	1.185	202	1	0.059	D	0.05	___
Methylene chloride	2374	2.249	353	1	0.139	D	0.05	___
Acetone	11411	0.802	315	1	2.505	E	0.05	___
Carbon disulfide	2526	5.737	303	1	0.058	D	0.05	___
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	346	0.764	386	1	0.060	D	0.05	___
Iodomethane	18032	3.628	303	1	0.657	D	0.05	___
n-Hexane	11770	5.495	418	1	0.283	D	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	___
Trichlorofluoromethane	729	2.339	230	1	0.041	E	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	13016		644	15		I		
2-Butanone	408	0.023	504	15	0.341	D	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	___
Benzene	222643	1.576	589	15	2.713	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.005	ND	0.05	___
Chlorobenzene-d5	14398		1082	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ225
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R1A T/TC
TLI ID: 61-37-37/38

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	56980	0.898	854	29	1.104	E	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	2244	0.512	1115	29	0.076	D	0.05	___
Styrene	0	0.809	0	29	0.001	ND	0.05	___
m-/p-Xylene	3962	0.567	1138	29	0.121	D	0.10	___
o-Xylene	1341	0.538	1212	29	0.043	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	___
A-Pinene	743088	1.398	1295	29	9.229	E	0.05	___
B-Pinene	148704	1.468	1441	29	1.759	E	0.05	___
P-Cymene	41796	1.818	1684	29	0.399	D	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3768	2.001	585	1	0.249	D	99.6
Benzene-d6	14859	1.555	583	15	0.184	D	73.6
Toluene-d8	16354	1.184	843	29	0.240	D	96.0

Reveiwed by ____<u>CS</u>____ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ230
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R1C T/TC
TLI ID: 61-37-41/42

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2495		518	1		I		
Chloromethane	41687	1.067	125	1	3.914	E	0.05	
Bromomethane	1597	1.090	184	1	0.147	D	0.05	
Vinyl chloride	804	1.732	141	1	0.047	E	0.05	
Chloroethane	61	1.185	200	1	0.005	E	0.05	
Methylene chloride	2025	2.249	352	1	0.090	D	0.05	
Acetone	17198	0.602	313	1	2.862	E	0.05	
Carbon disulfide	2887	5.737	303	1	0.050	D	0.05	
1,1-Dichloroethene	0	1.456	0	1	0.001	ND	0.05	
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	1.710	0	1	0.001	ND	0.05	
Chloroform	0	5.048	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	
Acrylonitrile	601	0.764	385	1	0.079	D	0.05	
Iodomethane	23280	3.628	303	1	0.643	D	0.05	
n-Hexane	2367	5.495	416	1	0.043	E	0.05	
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	
1,3-butadiene	0	1.616	0	1	0.001	ND	0.05	
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	
Trichlorofluoromethane	913	2.339	229	1	0.039	E	0.05	
Isooctane	0	20.258	0	1	0.001	ND	0.05	
Allyl chloride	0	1.490	0	1	0.001	ND	0.05	
1,4-Difluorobenzene	15747		643	15		I		
2-Butanone	485	0.023	504	15	0.335	D	0.05	
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.243	0	15	0.001	ND	0.05	
Benzene	144878	1.576	587	15	1.459	E	0.05	
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	
Bromoform	0	0.250	0	15	0.001	ND	0.05	
Dibromomethane	0	0.229	0	15	0.001	ND	0.05	
1,4-Dichloro-2-butene	0	0.083	0	15	0.004	ND	0.05	
Chlorobenzene-d5	19698		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.	Sample File : FJ230	Sample ID: 08-M0030-R1C T/TC
801 Capitola Dr.	Response File : ICALFN12	TLI ID: 61-37-41/42
Durham, NC 27713	Date Analyzed : 11/13/92	
(919) 544-5729	Date Reported : 11/29/92	
	Project Number: 22355	

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.002	ND	0.05	____
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	____
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	____
Toluene	67904	0.898	853	29	0.962	D	0.05	____
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	____
Ethylbenzene	827	0.512	1114	29	0.016	E	0.05	____
Styrene	773	0.809	1215	29	0.012	E	0.05	____
m-/p-Xylene	2120	0.567	1138	29	0.047	E	0.10	____
o-Xylene	558	0.538	1211	29	0.013	E	0.05	____
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0.214	0	29	0.001	ND	0.05	____
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	____
A-Pinene	1034840	1.398	1303	29	9.395	E	0.05	____
B-Pinene	476626	1.468	1449	29	4.121	E	0.05	____
P-Cymene	54117	1.818	1683	29	0.378	D	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	6033	2.001	583	1	0.302	D	120.8
Benzene-d6	22521	1.555	582	15	0.230	D	92.0
Toluene-d8	21927	1.184	842	29	0.235	D	94.0

Reveiwed by ______ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ231
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R10 T/TC
TLI ID: 61-37-43/44

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1857		518	1		I		
Chloromethane	35464	1.067	125	1	4.474	E	0.05	
Bromomethane	1163	1.090	185	1	0.144	D	0.05	
Vinyl chloride	757	1.732	141	1	0.059	D	0.05	
Chloroethane	0	1.185	0	1	0.002	ND	0.05	
Methylene chloride	354	2.249	353	1	0.021	E	0.05	
Acetone	18076	0.602	323	1	4.042	E	0.05	
Carbon disulfide	2679	5.737	303	1	0.063	D	0.05	
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	
Chloroform	0	5.048	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	
Acrylonitrile	471	0.764	387	1	0.083	D	0.05	
Iodomethane	18785	3.628	304	1	0.697	D	0.05	
n-Hexane	1423	5.495	416	1	0.035	E	0.05	
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	
Trichlorofluoromethane	500	2.339	230	1	0.029	E	0.05	
Isooctane	0	20.258	0	1	0.001	ND	0.05	
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	
1,4-Difluorobenzene	12371		643	15		I		
2-Butanone	591	0.023	506	15	0.520	D	0.05	
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	
Benzene	134770	1.576	587	15	1.728	E	0.05	
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	
Bromoform	0	0.250	0	15	0.002	ND	0.05	
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	
1,4-Dichloro-2-butene	0	0.083	0	15	0.005	ND	0.05	
Chlorobenzene-d5	15361		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ231
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R1D T/TC
TLI ID: 61-37-43/44

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	67618	0.896	853	29	1.228	E	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	1072	0.512	1115	29	0.034	E	0.05	___
Styrene	3003	0.809	1216	29	0.060	D	0.05	___
m-/p-Xylene	2562	0.567	1138	29	0.074	E	0.10	___
o-Xylene	732	0.538	1212	29	0.022	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	___
A-Pinene	1009492	1.398	1304	29	11.751	E	0.05	___
B-Pinene	373414	1.468	1449	29	4.140	E	0.05	___
P-Cymene	49427	1.818	1682	29	0.442	D	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4710	2.001	583	1	0.317	D	126.8
Benzene-d6	17533	1.555	582	15	0.228	D	91.2
Toluene-d8	17240	1.184	843	29	0.237	D	94.8

Reveiwed by <> Date 11/29/92
ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ232
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R1E T/TC
TLI ID: 61-37-45/46

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	52830	0.896	853	29	1.065	E	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	989	0.512	1114	29	0.035	E	0.05	___
Styrene	2451	0.809	1215	29	0.055	D	0.05	___
m-/p-Xylene	1893	0.567	1138	29	0.060	E	0.10	___
o-Xylene	555	0.538	1211	29	0.019	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	577	1.398	1496	29	0.007	E	0.05	___
A-Pinene	986923	1.398	1303	29	12.754	E	0.05	___
B-Pinene	411158	1.468	1450	29	5.060	E	0.05	___
P-Cymene	42467	1.818	1682	29	0.422	D	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4107	2.001	583	1	0.305	D	122.0
Benzene-d6	14760	1.555	582	15	0.218	D	87.2
Toluene-d8	15401	1.184	843	29	0.235	D	94.0

Reveiwed by ____~___ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ232
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R1E T/TC
TLI ID: 61-37-45/46

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1684		518	1		I		
Chloromethane	33329	1.067	125	1	4.635	E	0.05	___
Bromomethane	1156	1.090	184	1	0.157	D	0.05	___
Vinyl chloride	635	1.732	141	1	0.054	D	0.05	___
Chloroethane	0	1.185	0	1	0.003	ND	0.05	___
Methylene chloride	483	2.249	353	1	0.032	E	0.05	___
Acetone	13031	0.602	321	1	3.212	E	0.05	___
Carbon disulfide	2392	5.737	303	1	0.062	D	0.05	___
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.002	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	354	0.764	386	1	0.069	D	0.05	___
Iodomethane	19971	3.628	303	1	0.817	D	0.05	___
n-Hexane	1409	5.495	417	1	0.038	E	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	___
Trichlorofluoromethane	548	2.339	229	1	0.035	E	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	10903		643	15		I		
2-Butanone	507	0.023	505	15	0.506	D	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	___
Benzene	135029	1.576	587	15	1.985	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.006	ND	0.05	___
Chlorobenzene-d5	13838		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ233
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 0B-M0030-R1F T/TC
TLI ID: 61-37-47/48

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1714		518	1		I		
Chloromethane	30450	1.067	125	1	4.161	E	0.05	____
Bromomethane	870	1.090	185	1	0.130	D	0.05	____
Vinyl chloride	625	1.732	142	1	0.053	D	0.05	____
Chloroethane	0	1.185	0	1	0.002	ND	0.05	____
Methylene chloride	791	2.249	352	1	0.051	D	0.05	____
Acetone	11988	0.602	318	1	2.903	E	0.05	____
Carbon disulfide	2279	5.737	303	1	0.058	D	0.05	____
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	____
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	____
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	____
Chloroform	0	5.048	0	1	0.001	ND	0.05	____
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	____
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	____
cis-1,2-Dichloroethene	0	1.932	0	1	0.002	ND	0.05	____
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	____
Acrylonitrile	342	0.764	386	1	0.065	D	0.05	____
Iodomethane	17971	3.628	303	1	0.722	D	0.05	____
n-Hexane	1261	5.495	417	1	0.033	E	0.05	____
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	____
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	____
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	____
Trichlorofluoromethane	408	2.339	229	1	0.025	E	0.05	____
Isooctane	0	20.258	0	1	0.001	ND	0.05	____
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	____
1,4-Difluorobenzene	10683		642	15		I		
2-Butanone	607	0.023	504	15	0.618	D	0.05	____
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	____
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	____
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	____
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	____
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	____
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	____
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	____
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	____
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	____
Benzene	134976	1.576	587	15	2.004	E	0.05	____
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	____
Bromoform	0	0.250	0	15	0.002	ND	0.05	____
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	____
1,4-Dichloro-2-butene	0	0.083	0	15	0.006	ND	0.05	____
Chlorobenzene-d5	13467		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ233
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R1F T/TC
TLI ID: 61-37-47/48

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.002	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	83643	0.896	853	29	1.319	E	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	872	0.512	1115	29	0.032	E	0.05	___
Styrene	467	0.809	1216	29	0.011	E	0.05	___
m-/p-Xylene	1966	0.567	1138	29	0.064	E	0.10	___
o-Xylene	543	0.538	1211	29	0.019	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	___
A-Pinene	866316	1.398	1301	29	11.503	E	0.05	___
B-Pinene	287537	1.468	1446	29	3.836	E	0.05	___
P-Cymene	92811	1.818	1684	29	0.948	D	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3798	2.001	583	1	0.277	D	110.8
Benzene-d6	13567	1.555	582	15	0.204	D	81.6
Toluene-d8	14496	1.184	843	29	0.227	D	90.8

Reveiwed by ______ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ234
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 0B-M0030-R2A T/TC
TLI ID: 61-37-49/50

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1645		518	1		I		
Chloromethane	36046	1.067	125	1	5.131	E	0.05	___
Bromomethane	1081	1.090	185	1	0.151	D	0.05	___
Vinyl chloride	872	1.732	142	1	0.076	D	0.05	___
Chloroethane	0	1.185	0	1	0.003	ND	0.05	___
Methylene chloride	524	2.249	353	1	0.035	E	0.05	___
Acetone	18526	0.602	319	1	4.675	E	0.05	___
Carbon disulfide	2488	5.737	303	1	0.066	D	0.05	___
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.002	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	483	0.764	386	1	0.096	D	0.05	___
Iodomethane	20352	3.628	303	1	0.852	D	0.05	___
n-Hexane	1387	5.495	417	1	0.038	E	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.003	ND	0.05	___
Trichlorofluoromethane	366	2.339	230	1	0.024	E	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	10388		642	15		I		
2-Butanone	887	0.023	505	15	0.928	D	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	___
Benzene	114764	1.576	587	15	1.752	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.006	ND	0.05	___
Chlorobenzene-d5	12437		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ234
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R2A T/TC
TLI ID: 61-37-49/50

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.002	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	50196	0.896	853	29	1.128	E	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	1053	0.512	1114	29	0.041	E	0.05	___
Styrene	5032	0.809	1215	29	0.125	D	0.05	___
m-/p-Xylene	1637	0.567	1138	29	0.058	E	0.10	___
o-Xylene	449	0.538	1210	29	0.017	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	___
A-Pinene	986060	1.398	1303	29	14.177	E	0.05	___
B-Pinene	391108	1.468	1450	29	5.355	E	0.05	___
P-Cymene	31774	1.818	1681	29	0.351	D	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3910	2.001	583	1	0.297	D	118.8
Benzene-d6	14019	1.555	582	15	0.217	D	86.8
Toluene-d8	14155	1.184	843	29	0.240	D	96.0

Reveiwed by ______ Date 11/27/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ235
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 0B-M0030-R2B T/TC
TLI ID: 61-37-51/52

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1570		518	1		I		
Chloromethane	34678	1.067	125	1	5.174	E	0.05	____
Bromomethane	1062	1.090	185	1	0.155	D	0.05	____
Vinyl chloride	938	1.732	142	1	0.086	D	0.05	____
Chloroethane	0	1.185	0	1	0.003	ND	0.05	____
Methylene chloride	529	2.249	353	1	0.037	E	0.05	____
Acetone	19625	0.602	318	1	5.190	E	0.05	____
Carbon disulfide	2372	5.737	303	1	0.066	D	0.05	____
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	____
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	____
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	____
Chloroform	0	5.048	0	1	0.001	ND	0.05	____
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	____
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	____
cis-1,2-Dichloroethene	0	1.932	0	1	0.002	ND	0.05	____
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	____
Acrylonitrile	539	0.764	386	1	0.113	D	0.05	____
Iodomethane	21257	3.628	304	1	0.933	D	0.05	____
n-Hexane	1355	5.495	417	1	0.039	E	0.05	____
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	____
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	____
Vinyl Bromide	0	1.191	0	1	0.003	ND	0.05	____
Trichlorofluoromethane	441	2.339	230	1	0.030	E	0.05	____
Isooctane	0	20.258	0	1	0.001	ND	0.05	____
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	____
1,4-Difluorobenzene	10166		643	15		I		
2-Butanone	879	0.023	505	15	0.940	D	0.05	____
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	____
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	____
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	____
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	____
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	____
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	____
Trichloroethene	0	0.460	0	15	0.001	ND	0.05	____
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	____
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	____
Benzene	110003	1.576	587	15	1.716	E	0.05	____
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	____
Bromoform	0	0.250	0	15	0.002	ND	0.05	____
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	____
1,4-Dichloro-2-butene	0	0.083	0	15	0.006	ND	0.05	____
Chlorobenzene-d5	12442		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ235
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R2B T/TC
TLI ID: 61-37-51/52

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	____
4-Methyl-2-pentanone	0	0.241	0	29	0.002	ND	0.05	____
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	____
Toluene	44139	0.896	853	29	0.990	D	0.05	____
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	____
Ethylbenzene	624	0.512	1114	29	0.024	E	0.05	____
Styrene	1684	0.809	1215	29	0.042	E	0.05	____
m-/p-Xylene	1263	0.567	1138	29	0.045	E	0.10	____
o-Xylene	362	0.538	1211	29	0.014	E	0.05	____
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	____
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	____
A-Pinene	1042004	1.398	1304	29	14.976	E	0.05	____
B-Pinene	413195	1.468	1452	29	5.655	E	0.05	____
P-Cymene	18623	1.818	1681	29	0.206	D	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3654	2.001	583	1	0.291	D	116.4
Benzene-d6	13367	1.555	582	15	0.211	D	84.4
Toluene-d8	13363	1.184	843	29	0.227	D	90.8

Reveiwed by ____ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ236
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R2C T/TC
TLI ID: 61-37-53/54

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1575		518	1		I		
Chloromethane	25462	1.067	125	1	3.786	E	0.05	___
Bromomethane	873	1.090	185	1	0.127	D	0.05	___
Vinyl chloride	701	1.732	142	1	0.064	D	0.05	___
Chloroethane	0	1.185	0	1	0.003	ND	0.05	___
Methylene chloride	215	2.249	354	1	0.015	E	0.05	___
Acetone	17355	0.602	320	1	4.574	E	0.05	___
Carbon disulfide	2239	5.737	303	1	0.062	D	0.05	___
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	531	3.983	809	1	0.021	E	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.002	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	398	0.764	386	1	0.082	D	0.05	___
Iodomethane	19745	3.628	304	1	0.864	D	0.05	___
n-Hexane	1168	5.495	417	1	0.034	E	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.003	ND	0.05	___
Trichlorofluoromethane	0	2.339	0	1	0.001	ND	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	9487		643	15		I		
2-Butanone	590	0.023	505	15	0.676	D	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	___
Benzene	110701	1.576	588	15	1.851	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.006	ND	0.05	___
Chlorobenzene-d5	12584		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ236
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R2C T/TC
TLI ID: 61-37-53/54

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.002	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	54448	0.896	853	29	1.207	E	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	581	0.512	1114	29	0.023	E	0.05	___
Styrene	0	0.809	0	29	0.001	ND	0.05	___
m-/p-Xylene	1799	0.567	1138	29	0.063	E	0.10	___
o-Xylene	518	0.538	1211	29	0.019	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	___
A-Pinene	593662	1.398	1294	29	8.436	E	0.05	___
B-Pinene	162118	1.468	1441	29	2.194	E	0.05	___
P-Cymene	299867	1.818	1689	29	3.277	E	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3582	2.001	583	1	0.284	D	113.6
Benzene-d6	12551	1.555	582	15	0.213	D	85.2
Toluene-d8	12649	1.184	843	29	0.212	D	84.8

Reveiwed by ______________ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ237
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R2D T/TC
TLI ID: 61-37-55/56

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1886		517	1		I		
Chloromethane	722	1.067	125	1	0.090	D	0.05	____
Bromomethane	0	1.090	0	1	0.002	ND	0.05	____
Vinyl chloride	0	1.732	0	1	0.002	ND	0.05	____
Chloroethane	0	1.185	0	1	0.002	ND	0.05	____
Methylene chloride	549	2.249	351	1	0.032	E	0.05	____
Acetone	942	0.602	319	1	0.208	D	0.05	____
Carbon disulfide	109	5.737	302	1	0.003	E	0.05	____
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	____
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	____
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	____
Chloroform	0	5.048	0	1	0.001	ND	0.05	____
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	____
Dimethyl disulfide	141	3.983	807	1	0.005	E	0.05	____
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	____
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	____
Acrylonitrile	0	0.764	0	1	0.003	ND	0.05	____
Iodomethane	136	3.628	302	1	0.005	E	0.05	____
n-Hexane	448	5.495	418	1	0.011	E	0.05	____
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	____
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	____
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	____
Trichlorofluoromethane	589	2.339	229	1	0.033	E	0.05	____
Isooctane	0	20.258	0	1	0.001	ND	0.05	____
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	____
1,4-Difluorobenzene	9920		642	15		I		
2-Butanone	0	0.023	0	15	0.022	ND	0.05	____
1,1,1-Trichloroethane	481	0.630	543	15	0.019	E	0.05	____
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	____
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	____
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	____
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	____
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	____
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	____
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	____
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	____
Benzene	3010	1.576	586	15	0.048	E	0.05	____
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	____
Bromoform	0	0.250	0	15	0.002	ND	0.05	____
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	____
1,4-Dichloro-2-butene	0	0.083	0	15	0.006	ND	0.05	____
Chlorobenzene-d5	11728		1080	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ237
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R2D T/TC
TLI ID: 61-37-55/56

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	
4-Methyl-2-pentanone	0	0.241	0	29	0.002	ND	0.05	
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.002	ND	0.05	
Toluene	2295	0.896	851	29	0.055	D	0.05	
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	
Ethylbenzene	101	0.512	1112	29	0.004	E	0.05	
Styrene	0	0.809	0	29	0.001	ND	0.05	
m-/p-Xylene	426	0.567	1136	29	0.016	E	0.10	
o-Xylene	115	0.538	1209	29	0.005	E	0.05	
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	
A-Pinene	26961	1.398	1278	29	0.411	D	0.05	
B-Pinene	11384	1.468	1432	29	0.165	D	0.05	
P-Cymene	55556	1.818	1678	29	0.651	D	0.05	

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4435	2.001	582	1	0.294	D	117.6
Benzene-d6	18708	1.555	582	15	0.303	D	121.2
Toluene-d8	14419	1.184	841	29	0.260	D	104.0

Reveiwed by ____ Date 11/27/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ238
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R2E T/TC
TLI ID: 61-37-57/58

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1833		517	1		I		
Chloromethane	15109	1.067	125	1	1.931	E	0.05	____
Bromomethane	1086	1.090	185	1	0.136	D	0.05	____
Vinyl chloride	440	1.732	142	1	0.035	E	0.05	____
Chloroethane	0	1.185	0	1	0.002	ND	0.05	____
Methylene chloride	1497	2.249	353	1	0.091	D	0.05	____
Acetone	6398	0.602	319	1	1.450	E	0.05	____
Carbon disulfide	2630	5.737	303	1	0.063	D	0.05	____
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	____
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	____
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	____
Chloroform	0	5.048	0	1	0.001	ND	0.05	____
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	____
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	____
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	____
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	____
Acrylonitrile	300	0.764	386	1	0.054	D	0.05	____
Iodomethane	20713	3.628	303	1	0.779	D	0.05	____
n-Hexane	1498	5.495	416	1	0.037	E	0.05	____
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	____
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	____
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	____
Trichlorofluoromethane	451	2.339	229	1	0.026	E	0.05	____
Isooctane	0	20.258	0	1	0.001	ND	0.05	____
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	____
1,4-Difluorobenzene	10838		642	15		I		
2-Butanone	294	0.023	505	15	0.295	D	0.05	____
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	____
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	____
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	____
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	____
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	____
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	____
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	____
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	____
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	____
Benzene	179763	1.576	587	15	2.631	E	0.05	____
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	____
Bromoform	0	0.250	0	15	0.002	ND	0.05	____
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	____
1,4-Dichloro-2-butene	0	0.083	0	15	0.006	ND	0.05	____
Chlorobenzene-d5	13538		1080	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ238
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R2E T/TC
TLI ID: 61-37-57/58

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.002	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	49597	0.896	852	29	1.022	E	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	752	0.512	1113	29	0.027	E	0.05	___
Styrene	1299	0.809	1214	29	0.030	E	0.05	___
m-/p-Xylene	1529	0.567	1137	29	0.050	E	0.10	___
o-Xylene	641	0.538	1210	29	0.022	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	___
A-Pinene	1010743	1.398	1302	29	13.351	E	0.05	___
B-Pinene	470392	1.468	1450	29	5.917	E	0.05	___
P-Cymene	42162	1.818	1679	29	0.428	D	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3975	2.001	583	1	0.271	D	108.4
Benzene-d6	14544	1.555	582	15	0.216	D	86.4
Toluene-d8	16531	1.184	842	29	0.258	D	103.2

Reveiwed by ______ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ239
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R2F T/TC
TLI ID: 61-37-59/60

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1765		517	1		I		
Chloromethane	26851	1.067	125	1	3.564	E	0.05	
Bromomethane	1138	1.090	184	1	0.148	D	0.05	
Vinyl chloride	625	1.732	141	1	0.051	D	0.05	
Chloroethane	0	1.185	0	1	0.002	ND	0.05	
Methylene chloride	7058	2.249	352	1	0.445	D	0.05	
Acetone	9367	0.602	317	1	2.204	E	0.05	
Carbon disulfide	2243	5.737	302	1	0.055	D	0.05	
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	
Chloroform	0	5.048	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	
Acrylonitrile	252	0.764	385	1	0.047	E	0.05	
Iodomethane	19172	3.628	303	1	0.748	D	0.05	
n-Hexane	1225	5.495	416	1	0.032	E	0.05	
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	
Trichlorofluoromethane	0	2.339	0	1	0.001	ND	0.05	
Isooctane	0	20.258	0	1	0.001	ND	0.05	
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	
1,4-Difluorobenzene	10061		641	15		I		
2-Butanone	214	0.023	504	15	0.232	D	0.05	
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	
Benzene	103247	1.576	586	15	1.628	E	0.05	
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	
Bromoform	0	0.250	0	15	0.002	ND	0.05	
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	
1,4-Dichloro-2-butene	0	0.083	0	15	0.006	ND	0.05	
Chlorobenzene-d5	11497		1079	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ239
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R2F T/TC
TLI ID: 61-37-59/60

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.002	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.002	ND	0.05	___
Toluene	51053	0.896	851	29	1.239	E	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	322	0.512	1113	29	0.014	E	0.05	___
Styrene	0	0.809	0	29	0.001	ND	0.05	___
m-/p-Xylene	1361	0.567	1136	29	0.052	E	0.10	___
o-Xylene	327	0.538	1209	29	0.013	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	___
A-Pinene	330163	1.398	1285	29	5.135	E	0.05	___
B-Pinene	71678	1.468	1434	29	1.062	E	0.05	___
P-Cymene	242807	1.818	1685	29	2.904	E	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3788	2.001	582	1	0.268	D	107.2
Benzene-d6	14591	1.555	581	15	0.233	D	93.2
Toluene-d8	14047	1.184	841	29	0.258	D	103.2

Reveiwed by ___<u>__</u>___ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ240
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OB-M0030-R3A T/TC
TLI ID: 61-37-61/62

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1743		517	1		I		
Chloromethane	34796	1.067	125	1	4.676	E	0.05	___
Bromomethane	1331	1.090	184	1	0.175	D	0.05	___
Vinyl chloride	872	1.732	141	1	0.072	D	0.05	___
Chloroethane	0	1.185	0	1	0.002	ND	0.05	___
Methylene chloride	784	2.249	352	1	0.050	D	0.05	___
Acetone	11267	0.602	315	1	2.684	E	0.05	___
Carbon disulfide	2686	5.737	302	1	0.067	D	0.05	___
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	393	0.764	385	1	0.074	D	0.05	___
Iodomethane	22136	3.628	302	1	0.875	D	0.05	___
n-Hexane	1701	5.495	416	1	0.044	E	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	___
Trichlorofluoromethane	619	2.339	229	1	0.038	E	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	10774		641	15		I		
2-Butanone	459	0.023	502	15	0.464	D	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	___
Benzene	107123	1.576	586	15	1.577	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.006	ND	0.05	___
Chlorobenzene-d5	12605		1078	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard   Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ240
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R3A T/TC
TLI ID: 61-37-61/62

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	____
4-Methyl-2-pentanone	0	0.241	0	29	0.002	ND	0.05	____
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	____
Toluene	48328	0.898	851	29	1.070	E	0.05	____
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	____
Ethylbenzene	361	0.512	1112	29	0.014	E	0.05	____
Styrene	0	0.809	0	29	0.001	ND	0.05	____
m-/p-Xylene	1302	0.567	1136	29	0.048	E	0.10	____
o-Xylene	332	0.538	1208	29	0.012	E	0.05	____
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	____
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	____
A-Pinene	788646	1.398	1296	29	11.189	E	0.05	____
B-Pinene	253507	1.468	1441	29	3.425	E	0.05	____
P-Cymene	87004	1.818	1682	29	0.949	D	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4333	2.001	582	1	0.310	D	124.0
Benzene-d6	15841	1.555	581	15	0.236	D	94.4
Toluene-d8	15202	1.184	841	29	0.255	D	102.0

Reveiwed by ___ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ241
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R3B T/TC
TLI ID: 61-37-63/64

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1719		517	1		I		
Chloromethane	34665	1.067	125	1	4.724	E	0.05	
Bromomethane	1412	1.090	185	1	0.188	D	0.05	
Vinyl chloride	931	1.732	142	1	0.078	D	0.05	
Chloroethane	0	1.185	0	1	0.002	ND	0.05	
Methylene chloride	350	2.249	351	1	0.023	E	0.05	
Acetone	19058	0.602	309	1	4.603	E	0.05	
Carbon disulfide	2524	5.737	302	1	0.064	D	0.05	
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	
Chloroform	0	5.048	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	
cis-1,2-Dichloroethene	0	1.932	0	1	0.002	ND	0.05	
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	
Acrylonitrile	468	0.764	383	1	0.089	D	0.05	
Iodomethane	20505	3.628	302	1	0.822	D	0.05	
n-Hexane	1378	5.495	415	1	0.036	E	0.05	
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	
Trichlorofluoromethane	471	2.339	229	1	0.029	E	0.05	
Isooctane	0	20.258	0	1	0.001	ND	0.05	
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	
1,4-Difluorobenzene	10907		641	15		I		
2-Butanone	448	0.023	501	15	0.447	D	0.05	
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	
Benzene	101166	1.576	585	15	1.471	E	0.05	
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	
Bromoform	0	0.250	0	15	0.002	ND	0.05	
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	
1,4-Dichloro-2-butene	0	0.083	0	15	0.006	ND	0.05	
Chlorobenzene-d5	12925		1079	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ241
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R38 T/TC
TLI ID: 81-37-63/64

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.002	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	81159	0.898	851	29	1.320	E	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	381	0.512	1112	29	0.014	E	0.05	___
Styrene	0	0.809	0	29	0.001	ND	0.05	___
m-/p-Xylene	1868	0.567	1136	29	0.064	E	0.10	___
o-Xylene	417	0.538	1209	29	0.015	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	___
A-Pinene	555739	1.398	1290	29	7.689	E	0.05	___
B-Pinene	86353	1.468	1435	29	1.138	E	0.05	___
P-Cymene	183100	1.818	1686	29	1.948	E	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4435	2.001	581	1	0.322	D	128.8
Benzene-d6	18228	1.555	580	15	0.239	D	95.8
Toluene-d8	15146	1.184	841	29	0.247	D	98.8

Reveiwed by ______ G ______ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ242
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R3C T/TC
TLI ID: 61-37-65/66

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1727		517	1		I		
Chloromethane	39281	1.067	125	1	5.327	E	0.05	
Bromomethane	1291	1.090	184	1	0.171	D	0.05	
Vinyl chloride	1037	1.732	142	1	0.087	D	0.05	
Chloroethane	0	1.185	0	1	0.002	ND	0.05	
Methylene chloride	286	2.249	352	1	0.018	E	0.05	
Acetone	16914	0.602	313	1	4.066	E	0.05	
Carbon disulfide	2518	5.737	302	1	0.064	D	0.05	
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	
Chloroform	0	5.048	0	1	0.001	ND	0.05	
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	
Acrylonitrile	466	0.764	384	1	0.088	D	0.05	
Iodomethane	20825	3.628	303	1	0.831	D	0.05	
n-Hexane	1565	5.495	415	1	0.041	E	0.05	
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	
Trichlorofluoromethane	492	2.339	230	1	0.030	E	0.05	
Isooctane	0	20.258	0	1	0.001	ND	0.05	
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	
1,4-Difluorobenzene	11157		641	15		I		
2-Butanone	522	0.023	502	15	0.509	D	0.05	
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	
Benzene	107028	1.576	586	15	1.522	E	0.05	
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	
Bromoform	0	0.250	0	15	0.002	ND	0.05	
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	
1,4-Dichloro-2-butene	0	0.083	0	15	0.005	ND	0.05	
Chlorobenzene-d5	13342		1080	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ242
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R3C T/TC
TLI ID: 61-37-65/66

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.002	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	71437	0.896	852	29	1.494	E	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	525	0.512	1113	29	0.019	E	0.05	___
Styrene	0	0.809	0	29	0.001	ND	0.05	___
m-/p-Xylene	2298	0.567	1137	29	0.076	E	0.10	___
o-Xylene	509	0.538	1209	29	0.018	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	___
A-Pinene	659834	1.398	1294	29	8.844	E	0.05	___
B-Pinene	173319	1.468	1439	29	2.212	E	0.05	___
P-Cymene	172529	1.818	1685	29	1.778	E	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4197	2.001	582	1	0.304	D	121.6
Benzene-d6	16090	1.555	580	15	0.232	D	92.8
Toluene-d8	15274	1.184	841	29	0.242	D	96.8

Reveiwed by ______ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ243
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OB-M0030-R3D T/TC
TLI ID: 61-37-67/68

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1841		517	1		I		
Chloromethane	33318	1.067	124	1	4.240	E	0.05	____
Bromomethane	1219	1.090	184	1	0.152	D	0.05	____
Vinyl chloride	847	1.732	141	1	0.066	D	0.05	____
Chloroethane	0	1.185	0	1	0.002	ND	0.05	____
Methylene chloride	203	2.249	353	1	0.012	E	0.05	____
Acetone	11752	0.602	310	1	2.651	E	0.05	____
Carbon disulfide	2437	5.737	304	1	0.058	D	0.05	____
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	____
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	____
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	____
Chloroform	0	5.048	0	1	0.001	ND	0.05	____
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	____
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	____
cis-1,2-Dichloroethene	0	1.932	0	1	0.001	ND	0.05	____
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	____
Acrylonitrile	373	0.764	383	1	0.066	D	0.05	____
Iodomethane	20078	3.628	303	1	0.751	D	0.05	____
n-Hexane	1558	5.495	415	1	0.038	E	0.05	____
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	____
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	____
Vinyl Bromide	0	1.191	0	1	0.002	ND	0.05	____
Trichlorofluoromethane	421	2.339	231	1	0.024	E	0.05	____
Isooctane	0	20.258	0	1	0.001	ND	0.05	____
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	____
1,4-Difluorobenzene	11084		641	15		I		
2-Butanone	400	0.023	501	15	0.393	D	0.05	____
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	____
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	____
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	____
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	____
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	____
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	____
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	____
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	____
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	____
Benzene	110231	1.576	585	15	1.578	E	0.05	____
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	____
Bromoform	0	0.250	0	15	0.002	ND	0.05	____
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	____
1,4-Dichloro-2-butene	0	0.083	0	15	0.005	ND	0.05	____
Chlorobenzene-d5	12964		1079	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ243
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R3D T/TC
TLI ID: 61-37-67/68

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.002	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	58347	0.896	851	29	1.256	E	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	522	0.512	1112	29	0.020	E	0.05	___
Styrene	605	0.809	1213	29	0.014	E	0.05	___
m-/p-Xylene	1733	0.567	1136	29	0.059	E	0.10	___
o-Xylene	402	0.538	1209	29	0.014	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	___
A-Pinene	1049120	1.398	1300	29	14.471	E	0.05	___
B-Pinene	330587	1.468	1447	29	4.343	E	0.05	___
P-Cymene	22382	1.818	1678	29	0.237	D	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	4151	2.001	581	1	0.282	D	112.8
Benzene-d6	15665	1.555	580	15	0.227	D	90.8
Toluene-d8	14448	1.184	841	29	0.235	D	94.0

Reviewed by ___ Date 11 29 92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ244
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OB-M0030-R3E T/TC
TLI ID: 61-37-69/70

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1588		517	1		I		
Chloromethane	31900	1.067	125	1	4.705	E	0.05	___
Bromomethane	1141	1.090	184	1	0.165	D	0.05	___
Vinyl chloride	845	1.732	141	1	0.077	D	0.05	___
Chloroethane	0	1.185	0	1	0.003	ND	0.05	___
Methylene chloride	242	2.249	352	1	0.017	E	0.05	___
Acetone	14456	0.602	322	1	3.779	E	0.05	___
Carbon disulfide	2369	5.737	302	1	0.065	D	0.05	___
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.002	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	375	0.764	386	1	0.077	D	0.05	___
Iodomethane	21103	3.628	302	1	0.915	D	0.05	___
n-Hexane	1129	5.495	415	1	0.032	E	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.003	ND	0.05	___
Trichlorofluoromethane	440	2.339	229	1	0.030	E	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	10085		641	15		I		
2-Butanone	945	0.023	505	15	1.019	E	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.607	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	___
Benzene	100818	1.576	585	15	1.586	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.006	ND	0.05	___
Chlorobenzene-d5	12875		1079	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ244
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OB-M0030-R3E T/TC
TLI ID: 61-37-69/70

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	____
4-Methyl-2-pentanone	0	0.241	0	29	0.002	ND	0.05	____
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	____
Toluene	44234	0.898	851	29	0.959	D	0.05	____
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	____
Ethylbenzene	488	0.512	1112	29	0.019	E	0.05	____
Styrene	1539	0.809	1213	29	0.037	E	0.05	____
m-/p-Xylene	1230	0.567	1136	29	0.042	E	0.10	____
o-Xylene	368	0.538	1208	29	0.013	E	0.05	____
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	____
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	____
A-Pinene	961679	1.398	1299	29	13.357	E	0.05	____
B-Pinene	364332	1.488	1446	29	4.819	E	0.05	____
P-Cymene	44676	1.818	1679	29	0.477	D	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3883	2.001	581	1	0.305	D	122.0
Benzene-d6	14428	1.555	580	15	0.230	D	92.0
Toluene-d8	14207	1.184	841	29	0.233	D	93.2

Reveiwed by ______CJ______ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ245
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OB-M0030-R3F T/TC
TLI ID: 61-37-71/72

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	1649		516	1		I		
Chloromethane	31374	1.067	126	1	4.457	E	0.05	___
Bromomethane	935	1.090	185	1	0.130	D	0.05	___
Vinyl chloride	686	1.732	142	1	0.060	D	0.05	___
Chloroethane	0	1.185	0	1	0.003	ND	0.05	___
Methylene chloride	321	2.249	352	1	0.022	E	0.05	___
Acetone	11005	0.602	321	1	2.771	E	0.05	___
Carbon disulfide	2262	5.737	302	1	0.060	D	0.05	___
1,1-Dichloroethene	0	1.456	0	1	0.002	ND	0.05	___
1,1-Dichloroethane	0	4.981	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.710	0	1	0.002	ND	0.05	___
Chloroform	0	5.048	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.602	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.983	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.932	0	1	0.002	ND	0.05	___
Dimethyl sulfide	0	2.719	0	1	0.001	ND	0.05	___
Acrylonitrile	258	0.764	387	1	0.051	D	0.05	___
Iodomethane	20106	3.628	302	1	0.840	D	0.05	___
n-Hexane	1220	5.495	415	1	0.034	E	0.05	___
Tert-Butyl methyl ether	0	4.951	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.616	0	1	0.002	ND	0.05	___
Vinyl Bromide	0	1.191	0	1	0.003	ND	0.05	___
Trichlorofluoromethane	482	2.339	229	1	0.031	E	0.05	___
Isooctane	0	20.258	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.490	0	1	0.002	ND	0.05	___
1,4-Difluorobenzene	8957		641	15		I		
2-Butanone	2363	0.023	505	15	2.580	E	0.05	___
1,1,1-Trichloroethane	0	0.630	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.602	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.630	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.693	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.807	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.598	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.480	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.383	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.243	0	15	0.002	ND	0.05	___
Benzene	115441	1.576	585	15	1.839	E	0.05	___
cis-1,3-Dichloropropene	0	0.701	0	15	0.001	ND	0.08	___
Bromoform	0	0.250	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.229	0	15	0.002	ND	0.05	___
1,4-Dichloro-2-butene	0	0.083	0	15	0.006	ND	0.05	___
Chlorobenzene-d5	12061		1079	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ245
Response File : ICALFN12
Date Analyzed : 11/13/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 0B-M0030-R3F T/TC
TLI ID: 61-37-71/72

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.129	0	29	0.003	ND	0.05	___
4-Methyl-2-pentanone	0	0.241	0	29	0.002	ND	0.05	___
Tetrachloroethene	0	0.533	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.280	0	29	0.001	ND	0.05	___
Toluene	46503	0.896	851	29	1.076	E	0.05	___
Chlorobenzene	0	0.882	0	29	0.001	ND	0.05	___
Ethylbenzene	968	0.512	1113	29	0.039	E	0.05	___
Styrene	0	0.809	0	29	0.001	ND	0.05	___
m-/p-Xylene	1638	0.567	1136	29	0.060	E	0.10	___
o-Xylene	608	0.538	1209	29	0.023	E	0.05	___
Ethyl methacrylate	0	0.428	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.214	0	29	0.002	ND	0.05	___
1,3 Dichlorobenzene	0	0.989	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.777	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.602	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.398	0	29	0.001	ND	0.05	___
A-Pinene	909795	1.398	1298	29	13.489	E	0.05	___
B-Pinene	364074	1.468	1446	29	5.141	E	0.05	___
P-Cymene	84738	1.818	1681	29	0.986	D	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	3841	2.001	582	1	0.278	D	110.4
Benzene-d6	13410	1.555	580	15	0.217	D	86.8
Toluene-d8	13628	1.184	841	29	0.239	D	95.6

Reveiwed by ________ Date 11/27/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

540A

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ294
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/30/92
Project Number: 22402

Sample ID: 274/276 T/TC
TLI ID: 61-78-1/2

Quantitation Results Method 8240

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	3965		518	1		I		
Chloromethane	0	2.587	0	1	0.001	ND	0.05	___
Bromomethane	0	1.815	0	1	0.001	ND	0.05	___
Vinyl chloride	0	3.654	0	1	0.001	ND	0.05	___
Chloroethane	0	2.175	0	1	0.001	ND	0.05	___
Methylene chloride	37557	2.767	352	1	0.856	D	0.05	___
Acetone	11922	0.514	322	1	1.462	E	0.05	___
Carbon disulfide	0	7.778	0	1	0.001	ND	0.05	___
1,1-Dichloroethene	9275	2.235	289	1	0.262	D	0.05	___
1,1-Dichloroethane	0	7.837	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	2.509	0	1	0.001	ND	0.05	___
Chloroform	289	5.292	533	1	0.003	E	0.05	___
1,2-Dichloroethane	0	3.497	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	6.529	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	2.783	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	4.801	0	1	0.001	ND	0.05	___
Acrylonitrile	0	0.992	0	1	0.001	ND	0.05	___
Iodomethane	0	3.978	0	1	0.001	ND	0.05	___
n-Hexane	11195	9.832	418	1	0.072	D	0.05	___
Tert-Butyl methyl ether	0	6.319	0	1	0.001	ND	0.05	___
1,3-butadiene	0	3.341	0	1	0.001	ND	0.05	___
Vinyl Bromide	0	1.515	0	1	0.001	ND	0.05	___
Trichlorofluoromethane	400	2.805	227	1	0.009	E	0.05	___
Isooctane	8130	33.130	604	1	0.015	E	0.05	___
Allyl chloride	0	1.823	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	20389		644	15		I		
2-Butanone	0	0.038	0	15	0.006	ND	0.05	___
1,1,1-Trichloroethane	3696	0.791	546	15	0.057	D	0.05	___
Carbon tetrachloride	0	0.574	0	15	0.001	ND	0.05	___
Vinyl acetate	0	1.279	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.830	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	1.092	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.808	0	15	0.001	ND	0.02	___
Trichloroethene	265	0.602	671	15	0.005	E	0.05	___
Dibromochloromethane	0	0.469	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.405	0	15	0.001	ND	0.05	___
Benzene	3637	1.941	588	15	0.023	E	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.488	0	15	0.001	ND	0.05	___
Dibromomethane	0	0.364	0	15	0.001	ND	0.05	___
1,4-Dichloro-2-butene	0	0.149	0	15	0.002	ND	0.05	___
Chlorobenzene-d5	23066		1082	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ294
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/30/92
Project Number: 22402

Sample ID: 274/276 T/TC
TLI ID: 61-78-1/2

Quantitation Results Method 8240

[illegible]	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.315	0	29	0.001	ND	0.05	
4-Methyl-2-pentanone	0	0.459	0	29	0.001	ND	0.05	
Tetrachloroethene	0	0.811	0	29	0.001	ND	0.05	
1,1,2,2-Tetrachloroethane	0	0.462	0	29	0.001	ND	0.05	
Toluene	58997	1.387	854	29	0.461	D	0.05	
[illegible]	26388	1.078	1087	29	0.265	D	0.05	
Ethylbenzene	0	0.672	0	29	0.001	ND	0.05	
Styrene	0	1.215	0	29	0.001	ND	0.05	
m-/p-Xylene	2364	0.778	1139	29	0.033	E	0.10	
[illegible]	0	0.756	0	29	0.001	ND	0.05	
[illegible]	0	0.735	0	29	0.001	ND	0.05	
1,2,3-Trichloropropane	0	0.317	0	29	0.001	ND	0.05	
1,3 Dichlorobenzene	0	1.464	0	29	0.001	ND	0.05	
1,4 Dichlorobenzene	0	1.181	0	29	0.001	ND	0.05	
1,2 Dichlorobenzene	0	0.935	0	29	0.001	ND	0.05	
Cumene (isopropylbenzene)	7225	2.058	1554	29	0.038	E	0.05	
A-Pinene	4814	2.140	1280	29	0.024	E	0.05	
B-Pinene	0	2.322	0	29	0.001	ND	0.05	
P-Cymene	0	2.518	0	29	0.001	ND	0.05	

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	8790	2.080	584	1	0.266	D	106.4
Benzene-d6	40022	1.668	583	15	0.294	D	117.6
Toluene-d8	34301	1.372	844	29	0.271	D	108.4

Reveiwed by SA Date 11/30/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

540B

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ295
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/30/92
Project Number: 22402

Sample ID: 277/279 T/TC
TLI ID: 61-78-3/4

Quantitation Results Method 8240

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	3773		519	1		I		
Chloromethane	0	2.587	0	1	0.001	ND	0.05	___
Bromomethane	0	1.815	0	1	0.001	ND	0.05	___
Vinyl chloride	0	3.654	0	1	0.001	ND	0.05	___
Chloroethane	0	2.175	0	1	0.001	ND	0.05	___
Methylene chloride	5395	2.767	352	1	0.129	D	0.05	___
Acetone	2052	0.514	333	1	0.265	D	0.05	___
Carbon disulfide	0	7.778	0	1	0.001	ND	0.05	___
1,1-Dichloroethene	9269	2.235	290	1	0.275	D	0.05	___
1,1-Dichloroethane	0	7.837	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	2.509	0	1	0.001	ND	0.05	___
Chloroform	154	5.292	534	1	0.002	E	0.05	___
1,2-Dichloroethane	0	3.497	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	6.529	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	2.783	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	4.801	0	1	0.001	ND	0.05	___
Acrylonitrile	0	0.992	0	1	0.001	ND	0.05	___
Iodomethane	0	3.978	0	1	0.001	ND	0.05	___
n-Hexane	1595	9.832	418	1	0.011	E	0.05	___
Tert-Butyl methyl ether	0	6.319	0	1	0.001	ND	0.05	___
1,3-butadiene	0	3.341	0	1	0.001	ND	0.05	___
Vinyl Bromide	0	1.515	0	1	0.001	ND	0.05	___
Trichlorofluoromethane	1241	2.805	299	1	0.029	E	0.05	___
Isooctane	393	33.130	604	1	0.001	E	0.05	___
Allyl chloride	0	1.823	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	19145		644	15		I		
2-Butanone	0	0.038	0	15	0.007	ND	0.05	___
1,1,1-Trichloroethane	390	0.791	546	15	0.006	E	0.05	___
Carbon tetrachloride	0	0.574	0	15	0.001	ND	0.05	___
Vinyl acetate	0	1.279	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.830	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	1.092	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.808	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.602	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.469	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.405	0	15	0.001	ND	0.05	___
Benzene	1531	1.941	590	15	0.010	E	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.488	0	15	0.001	ND	0.05	___
Dibromomethane	0	0.364	0	15	0.001	ND	0.05	___
1,4-Dichloro-2-butene	0	0.149	0	15	0.002	ND	0.05	___
Chlorobenzene-d5	20982		1082	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ295
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/30/92
Project Number: 22402

Sample ID: 277/279 T/TC
TLI ID: 61-78-3/4

Quantitation Results Method 8240

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.315	0	29	0.001	ND	0.05	____
4-Methyl-2-pentanone	0	0.459	0	29	0.001	ND	0.05	____
Tetrachloroethene	0	0.811	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.462	0	29	0.001	ND	0.05	____
Toluene	35631	1.387	854	29	0.306	D	0.05	____
Chlorobenzene	27600	1.078	1087	29	0.305	D	0.05	____
Ethylbenzene	0	0.672	0	29	0.001	ND	0.05	____
Styrene	0	1.215	0	29	0.001	ND	0.05	____
m-/p-Xylene	0	0.778	0	29	0.001	ND	0.10	____
[illegible]	0	0.756	0	29	0.001	ND	0.05	____
Ethyl methacrylate	0	0.735	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0.317	0	29	0.001	ND	0.05	____
1,3 Dichlorobenzene	0	1.464	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	1.181	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.935	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	659	2.058	1554	29	0.004	E	0.05	____
A-Pinene	0	2.140	0	29	0.001	ND	0.05	____
B-Pinene	0	2.322	0	29	0.001	ND	0.05	____
P-Cymene	0	2.518	0	29	0.001	ND	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	8792	2.080	584	1	0.280	D	112.0
Benzene-d6	39042	1.668	584	15	0.306	D	122.4
Toluene-d8	33684	1.372	844	29	0.293	D	117.2

Reveiwed by SA Date 11/30/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

540C

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ296
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/30/92
Project Number: 22402

Sample ID: 280/282 T/TC
TLI ID: 61-78-5/6

Quantitation Results Method 8240

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	3679		519	1		I		
Chloromethane	0	2.587	0	1	0.001	ND	0.05	____
Bromomethane	0	1.815	0	1	0.001	ND	0.05	____
Vinyl chloride	0	3.654	0	1	0.001	ND	0.05	____
Chloroethane	0	2.175	0	1	0.001	ND	0.05	____
Methylene chloride	6474	2.767	352	1	0.159	D	0.05	____
Acetone	1315	0.514	317	1	0.174	D	0.05	____
Carbon disulfide	0	7.778	0	1	0.001	ND	0.05	____
1,1-Dichloroethene	8266	2.235	290	1	0.251	D	0.05	____
1,1-Dichloroethane	0	7.837	0	1	0.001	ND	0.05	____
trans-1,2-Dichloroethene	0	2.509	0	1	0.001	ND	0.05	____
Chloroform	3528	5.292	533	1	0.045	E	0.05	____
1,2-Dichloroethane	0	3.497	0	1	0.001	ND	0.05	____
Dimethyl disulfide	0	6.529	0	1	0.001	ND	0.05	____
cis-1,2-Dichloroethene	0	2.783	0	1	0.001	ND	0.05	____
Dimethyl sulfide	0	4.801	0	1	0.001	ND	0.05	____
Acrylonitrile	0	0.992	0	1	0.001	ND	0.05	____
Iodomethane	0	3.978	0	1	0.001	ND	0.05	____
n-Hexane	2831	9.832	418	1	0.020	E	0.05	____
Tert-Butyl methyl ether	0	6.319	0	1	0.001	ND	0.05	____
1,3-butadiene	0	3.341	0	1	0.001	ND	0.05	____
Vinyl Bromide	0	1.515	0	1	0.001	ND	0.05	____
Trichlorofluoromethane	279	2.805	227	1	0.007	E	0.05	____
Isooctane	483	33.130	604	1	0.001	E	0.05	____
Allyl chloride	0	1.823	0	1	0.001	ND	0.05	____
1,4-Difluorobenzene	19230		644	15		I		
2-Butanone	0	0.038	0	15	0.007	ND	0.05	____
1,1,1-Trichloroethane	923	0.791	545	15	0.015	E	0.05	____
Carbon tetrachloride	0	0.574	0	15	0.001	ND	0.05	____
Vinyl acetate	0	1.279	0	15	0.001	ND	0.05	____
Bromodichloromethane	217	0.830	742	15	0.003	E	0.05	____
1,2-Dichloropropane	0	1.092	0	15	0.001	ND	0.05	____
trans-1,3-Dichloropropene	0	0.808	0	15	0.001	ND	0.02	____
Trichloroethene	0	0.602	0	15	0.001	ND	0.05	____
Dibromochloromethane	0	0.469	0	15	0.001	ND	0.05	____
1,1,2-Trichloroethane	0	0.405	0	15	0.001	ND	0.05	____
Benzene	0	1.941	0	15	0.001	ND	0.05	____
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	____
Bromoform	0	0.488	0	15	0.001	ND	0.05	____
Dibromomethane	0	0.364	0	15	0.001	ND	0.05	____
1,4-Dichloro-2-butene	0	0.149	0	15	0.002	ND	0.05	____
Chlorobenzene-d5	20957		1082	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ296
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/30/92
Project Number: 22402

Sample ID: 280/282 T/TC
TLI ID: 61-78-5/6

Quantitation Results Method 8240

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.315	0	29	0.001	ND	0.05	____
4-Methyl-2-pentanone	0	0.459	0	29	0.001	ND	0.05	____
Tetrachloroethene	0	0.811	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.462	0	29	0.001	ND	0.05	____
[illegible]	37347	1.387	853	29	0.321	D	0.05	____
Chlorobenzene	26382	1.078	1087	29	0.292	D	0.05	____
Ethylbenzene	0	0.672	0	29	0.001	ND	0.05	____
Styrene	0	1.215	0	29	0.001	ND	0.05	____
m/p-Xylene	0	0.778	0	29	0.001	ND	0.10	____
[illegible]	0	0.756	0	29	0.001	ND	0.05	____
Ethyl methacrylate	0	0.735	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0,317	0	29	0.001	ND	0.05	____
1,3 Dichlorobenzene	0	1.464	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	1.181	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.935	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	447	2.058	1553	29	0.003	E	0.05	____
A-Pinene	0	2.140	0	29	0.001	ND	0.05	____
B-Pinene	0	2.322	0	29	0.001	ND	0.05	____
P-Cymene	0	2.518	0	29	0.001	ND	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	9079	2.080	584	1	0.297	D	118.8
Benzene-d6	39770	1.668	584	15	0.310	D	124.0
Toluene-d8	33807	1.372	844	29	0.294	D	117.6

Reveiwed by SA Date 11/30/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ194
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: 08-M0030-R0 T/TC
TLI ID: 61-37-111/112

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	2702		518	1		I		
Chloromethane	0	1.046	0	1	0.002	ND	0.05	___
Bromomethane	0	0.918	0	1	0.002	ND	0.05	___
Vinyl chloride	0	1.463	0	1	0.001	ND	0.05	___
Chloroethane	0	0.959	0	1	0.002	ND	0.05	___
Methylene chloride	225	1.638	353	1	0.013	E	0.05	___
Acetone	0	0.620	0	1	0.003	ND	0.05	___
Carbon disulfide	0	6.453	0	1	0.001	ND	0.05	___
1,1-Dichloroethene	0	1.385	0	1	0.001	ND	0.05	___
1,1-Dichloroethane	0	3.930	0	1	0.001	ND	0.05	___
trans-1,2-Dichloroethene	0	1.547	0	1	0.001	ND	0.05	___
Chloroform	0	4.162	0	1	0.001	ND	0.05	___
1,2-Dichloroethane	0	2.046	0	1	0.001	ND	0.05	___
Dimethyl disulfide	0	3.828	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	1.702	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	2.355	0	1	0.001	ND	0.05	___
Acrylonitrile	0	0.723	0	1	0.003	ND	0.05	___
Iodomethane	0	3.623	0	1	0.001	ND	0.05	___
n-Hexane	0	4.592	0	1	0.001	ND	0.05	___
Tert-Butyl methyl ether	0	5.070	0	1	0.001	ND	0.05	___
1,3-butadiene	0	1.311	0	1	0.001	ND	0.05	___
Vinyl Bromide	0	1.311	0	1	0.001	ND	0.05	___
Trichlorofluoromethane	0	2.287	0	1	0.001	ND	0.05	___
Isooctane	0	15.697	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.462	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	14979		643	15		I		
2-Butanone	0	0.058	0	15	0.006	ND	0.05	___
1,1,1-Trichloroethane	0	0.684	0	15	0.001	ND	0.05	___
Carbon tetrachloride	0	0.635	0	15	0.001	ND	0.05	___
Vinyl acetate	0	0.680	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.687	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	0.634	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.677	0	15	0.001	ND	0.02	___
Trichloroethene	0	0.587	0	15	0.001	ND	0.05	___
Dibromochloromethane	0	0.437	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.293	0	15	0.001	ND	0.05	___
Benzene	0	1.968	0	15	0.001	ND	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.206	0	15	0.002	ND	0.05	___
Dibromomethane	0	0.244	0	15	0.001	ND	0.05	___
1,4-Dichloro-2-butene	0	0.090	0	15	0.004	ND	0.05	___
Chlorobenzene-d5	16926		1081	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ194
Response File : ICALFN05
Date Analyzed : 11/11/92
Date Reported : 11/29/92
Project Number: 22355

Sample ID: OB-M0030-R0 T/TC
TLI ID: 61-37-111/112

Quantitation Results Method 8240CAA

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.198	0	29	0.001	ND	0.05	___
4-Methyl-2-pentanone	0	0.244	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.479	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.211	0	29	0.001	ND	0.05	___
Toluene	0	0.821	0	29	0.001	ND	0.05	___
Chlorobenzene	0	0.950	0	29	0.001	ND	0.05	___
Ethylbenzene	0	0.570	0	29	0.001	ND	0.05	___
Styrene	0	0.937	0	29	0.001	ND	0.05	___
m-/p-Xylene	0	0.661	0	29	0.001	ND	0.10	___
o-Xylene	0	0.611	0	29	0.001	ND	0.05	___
Ethyl methacrylate	0	0.467	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.211	0	29	0.001	ND	0.05	___
1,3 Dichlorobenzene	0	0.904	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	0.704	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.562	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	1.440	0	29	0.001	ND	0.05	___
A-Pinene	0	1.425	0	29	0.001	ND	0.05	___
B-Pinene	0	1.406	0	29	0.001	ND	0.05	___
P-Cymene	0	1.682	0	29	0.001	ND	0.05	___

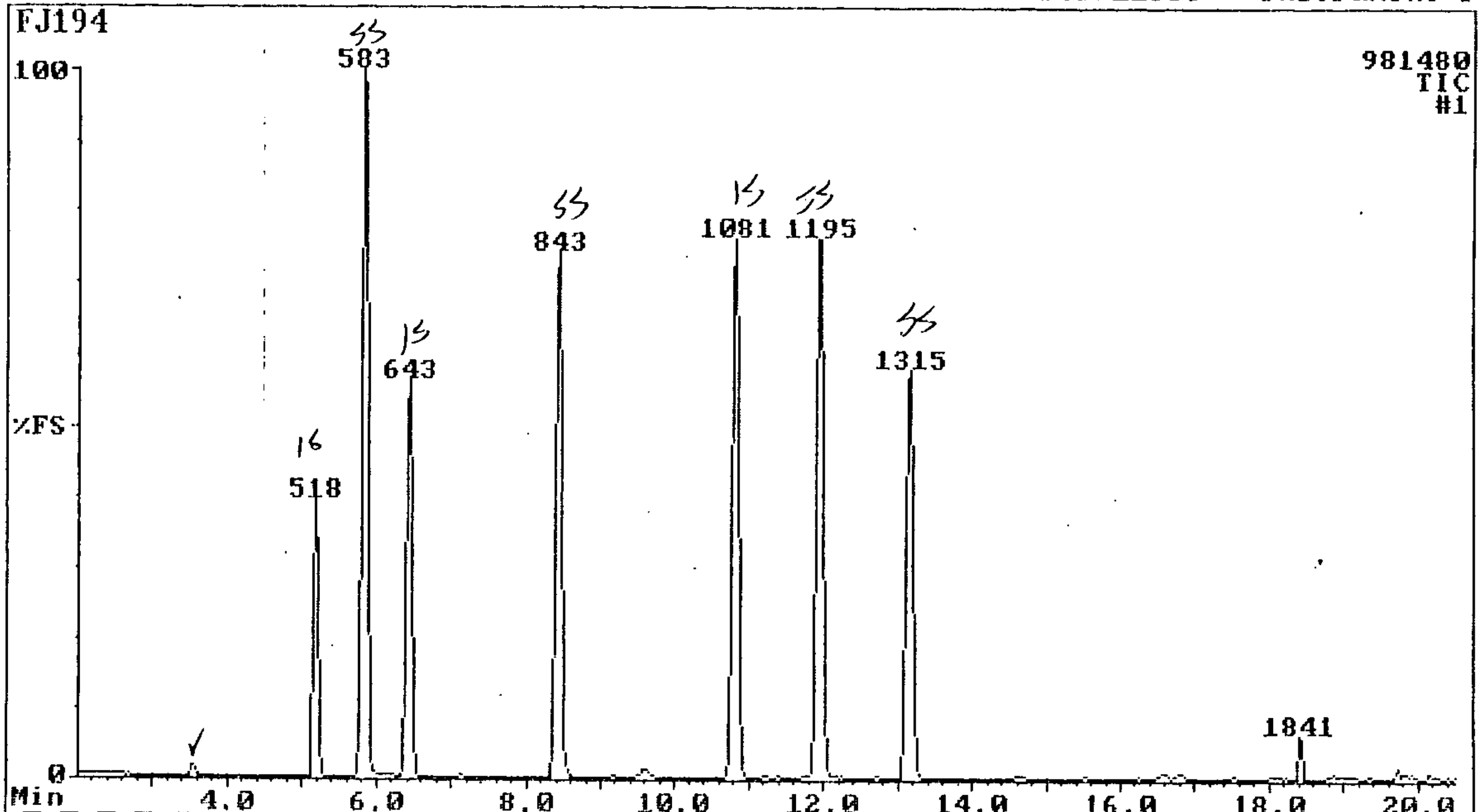
Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	5006	1.786	583	1	0.259	D	103.6
Benzene-d6	23096	1.631	583	15	0.236	D	94.4
Toluene-d8	18991	1.272	843	29	0.221	D	88.4

Reveiwed by ____________ Date 11/29/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

11-Nov-92 15:54 Triangle Laboratories of RTP, Inc. (919) 544-5729
Sample: OB-M0030-R0 TENAX TENAX/CHARC. 61-37-111/112 TLI#22355 Instrument F



11/25/92

QUAN DB : FJ194   LAB-BASE QUAN   11-Nov-92   16:33

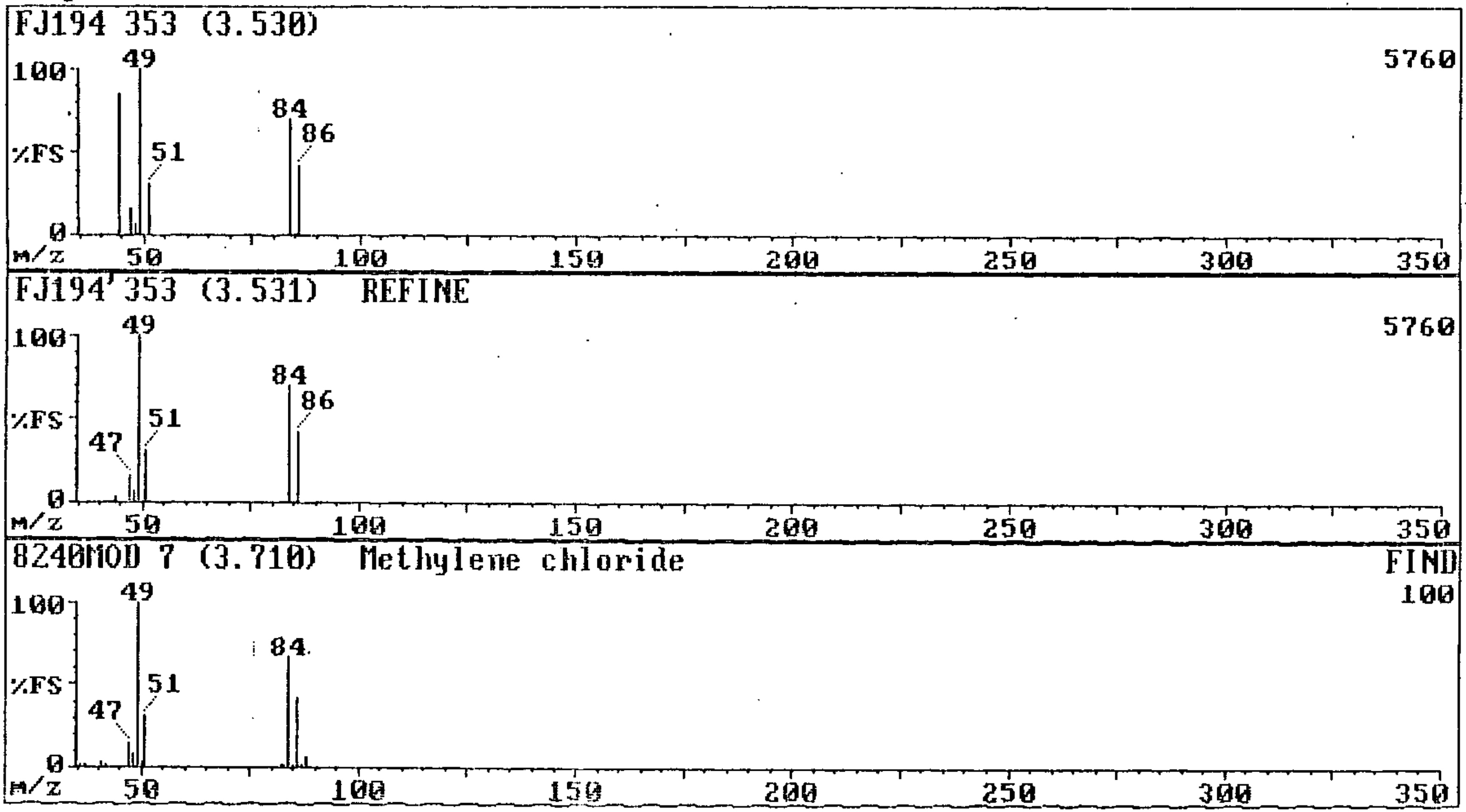
No.	MAT	FOR	REV	Delta	Area	F.Flags	Scan	QM	Name
1	94	97	100	-20	270210	bb	518	128	Bromochloromethane
2	66	28	79	0	500640	bb	583	65	1,2-Dichloroethane-d4
3	0	0	0	0	0		0	50	Chloromethane
4	0	0	0	0	0		0	94	Bromomethane
5	0	0	0	0	0		0	62	Vinyl chloride
6	0	0	0	0	0		0	64	Chloroethane
7	95	69	91	-4	22568	bb	353	84	Methylene chloride
8	0	0	0	0	0		0	43	Acetone
9	31	27	27	-7	~~844~~	~~bb~~	~~303~~	76	Carbon disulfide
10	0	0	0	0	0		0	96	1,1-Dichloroethene
11	0	0	0	0	0		0	63	1,1-Dichloroethane
12	0	0	0	0	0		0	96	trans-1,2-Dichloroethene
13	0	0	0	0	0		0	83	Chloroform
14	0	0	0	0	0		0	62	1,2-Dichloroethane
15	100	95	97	3	1497900	bb	643	114	1,4-Difluorobenzene
16	0	0	0	0	0		0	72	2-Butanone
17	0	0	0	0	0		0	97	1,1,1-Trichloroethane
18	0	0	0	0	0		0	117	Carbon tetrachloride
19	0	0	0	0	0		0	43	Vinyl acetate
20	0	0	0	0	0		0	83	Bromodichloromethane
21	0	0	0	0	0		0	63	1,2-Dichloropropane
22	0	0	0	0	0		0	75	trans-1,3-Dichloropropene
23	0	0	0	0	0		0	130	Trichloroethene
24	0	0	0	0	0		0	129	Dibromochloromethane
25	0	0	0	0	0		0	97	1,1,2-Trichloroethane
26	0	0	0	0	0		0	78	Benzene
27	0	0	0	0	0		0	75	cis-1,3-Dichloropropene
28	0	0	0	0	0		0	173	Bromoform
29	100	96	96	10	1692600	bb	1081	117	Chlorobenzene-d5
30	100	89	92	3	900740	bb	1315	95	4-Bromofluorobenzene
31	100	94	99	-4	1899100	bb	843	98	Toluene-d8
32	0	0	0	0	0		0	43	2-Hexanone
33	0	0	0	0	0		0	43	4-Methyl-2-pentanone
34	0	0	0	0	0		0	164	Tetrachloroethene
35	0	0	0	0	0		0	83	1,1,2,2-Tetrachloroethane
36	0	0	0	0	0		0	92	Toluene
37	0	0	0	0	0		0	112	Chlorobenzene
38	0	0	0	0	0		0	106	Ethylbenzene
39	0	0	0	0	0		0	104	Styrene
40	0	0	0	0	0		0	106	m-/p-Xylene
41	0	0	0	0	0		0	106	o-Xylene
42	0	0	0	0	0		0	53	Acrylonitrile
43	0	0	0	0	0		0	142	Iodomethane
44	0	0	0	0	0		0	93	Dibromomethane
45	0	0	0	0	0		0	75	1,4-Dichloro-2-butene
46	0	0	0	0	0		0	69	Ethyl methacrylate
47	0	0	0	0	0		0	75	1,2,3-Trichloropropane
48	0	0	0	0	0		0	101	Trichlorofluoromethane
49	0	0	0	0	0		0	146	1,3 Dichlorobenzene
50	0	0	0	0	0		0	146	1,4 Dichlorobenzene

Data Review:
Date: 11/25/92

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
51	0	0	0	0	0		0	146	1,2 Dichlorobenzene
52	0	0	0	0	0		0	96	cis-1,2-Dichloroethene
53	100	82	83	-1	2309700	bb	583	84	Benzene-d6
54	0	0	0	0	0		0	57	n-Hexane
55	0	0	0	0	0		0	73	Tert-Butyl methyl ether
56	0	0	0	0	0		0	39	1,3-butadiene
57	0	0	0	0	0		0	106	Vinyl Bromide
58	26	5	74	40	~~181390~~	bb	~~643~~	57	Isooctane
59	0	0	0	0	0		0	76	Allyl chloride
60	0	0	0	0	0		0	105	Cumene (isopropylbenzene)
61	0	0	0	0	0		0	62	Dimethyl sulfide
62	0	0	0	0	0		0	94	Dimethyl disulfide
63	0	0	0	0	0		0	93	A-Pinene
64	0	0	0	0	0		0	93	B-Pinene
65	0	0	0	0	0		0	119	P-Cymene
66	100	96	98	3	2058600	bb	1194	98	o-Xylene-d10

Data Review: [illegible]
Date: 11/25/92

11-Nov-92 15:54 Triangle Laboratories of RTP, Inc. (919) 544-5729
Sample: OB-M0030-R0 TENAX TENAX/CHARC. 61-37-111/112 TLI#22355 Instrument F



Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ297
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/30/92
Project Number: 22402

Sample ID: 283/285 T/TC
TLI ID: 61-78-7/8

Quantitation Results Method 8240

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	3695	.	518	1		I		
Chloromethane	3892	2.587	118	1	0.102	D	0.05	____
Bromomethane	1300	1.815	180	1	0.048	E	0.05	____
Vinyl chloride	0	3.654	0	1	0.001	ND	0.05	____
Chloroethane	0	2.175	0	1	0.001	ND	0.05	____
Methylene chloride	3759	2.767	352	1	0.092	D	0.05	____
Acetone	0	0.514	0	1	0.003	ND	0.05	____
Carbon disulfide	0	7.778	0	1	0.001	ND	0.05	____
1,1-Dichloroethene	0	2.235	0	1	0.001	ND	0.05	____
1,1-Dichloroethane	0	7.837	0	1	0.001	ND	0.05	____
trans-1,2-Dichloroethene	0	2.509	0	1	0.001	ND	0.05	____
Chloroform	0	5.292	0	1	0.001	ND	0.05	____
1,2-Dichloroethane	11762	3.497	593	1	0.228	D	0.05	____
Dimethyl disulfide	0	6.529	0	1	0.001	ND	0.05	____
cis-1,2-Dichloroethene	0	2.783	0	1	0.001	ND	0.05	____
Dimethyl sulfide	0	4.801	0	1	0.001	ND	0.05	____
Acrylonitrile	0	0.992	0	1	0.001	ND	0.05	____
Iodomethane	0	3.978	0	1	0.001	ND	0.05	____
n-Hexane	1154	9.832	418	1	0.008	E	0.05	____
Tert-Butyl methyl ether	0	6.319	0	1	0.001	ND	0.05	____
1,3-butadiene	0	3.341	0	1	0.001	ND	0.05	____
Vinyl Bromide	0	1.515	0	1	0.001	ND	0.05	____
Trichlorofluoromethane	8872	2.805	227	1	0.214	D	0.05	____
Isooctane	472	33.130	605	1	0.001	E	0.05	____
Allyl chloride	0	1.823	0	1	0.001	ND	0.05	____
1,4-Difluorobenzene	18119		644	15		I		
2-Butanone	116	0.038	504	15	0.042	E	0.05	____
1,1,1-Trichloroethane	16919	0.791	546	15	0.295	D	0.05	____
Carbon tetrachloride	0	0.574	0	15	0.001	ND	0.05	____
Vinyl acetate	0	1.279	0	15	0.001	ND	0.05	____
Bromodichloromethane	0	0.830	0	15	0.001	ND	0.05	____
1,2-Dichloropropane	0	1.092	0	15	0.001	ND	0.05	____
trans-1,3-Dichloropropene	0	0.808	0	15	0.001	ND	0.02	____
Trichloroethene	12138	0.602	671	15	0.278	D	0.05	____
Dibromochloromethane	0	0.469	0	15	0.001	ND	0.05	____
1,1,2-Trichloroethane	0	0.405	0	15	0.001	ND	0.05	____
Benzene	0	1.941	0	15	0.001	ND	0.05	____
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	____
Bromoform	0	0.488	0	15	0.001	ND	0.05	____
Dibromomethane	0	0.364	0	15	0.001	ND	0.05	____
1,4-Dichloro-2-butene	0	0.149	0	15	0.002	ND	0.05	____
Chlorobenzene-d5	21015		1082	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ297
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/30/92
Project Number: 22402

Sample ID: 283/285 T/TC
TLI ID: 61-78-7/8

Quantitation Results Method 8240

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.315	0	29	0.001	ND	0.05	____
4-Methyl-2-pentanone	0	0.459	0	29	0.001	ND	0.05	____
Tetrachloroethene	0	0.811	0	29	0.001	ND	0.05	____
1,1,2,2-Tetrachloroethane	0	0.462	0	29	0.001	ND	0.05	____
Toluene	4809	1.387	853	29	0.041	E	0.05	____
Chlorobenzene	0	1.078	0	29	0.001	ND	0.05	____
Ethylbenzene	0	0.672	0	29	0.001	ND	0.05	____
Styrene	0	1.215	0	29	0.001	ND	0.05	____
m-/p-Xylene	872	0.778	1139	29	0.013	E	0.10	____
o-Xylene	0	0.756	0	29	0.001	ND	0.05	____
Methyl methacrylate	0	0.735	0	29	0.001	ND	0.05	____
1,2,3-Trichloropropane	0	0.317	0	29	0.001	ND	0.05	____
1,3 Dichlorobenzene	0	1.464	0	29	0.001	ND	0.05	____
1,4 Dichlorobenzene	0	1.181	0	29	0.001	ND	0.05	____
1,2 Dichlorobenzene	0	0.935	0	29	0.001	ND	0.05	____
Cumene (isopropylbenzene)	1054	2.058	1553	29	0.006	E	0.05	____
A-Pinene	0	2.140	0	29	0.001	ND	0.05	____
B-Pinene	0	2.322	0	29	0.001	ND	0.05	____
P-Cymene	0	2.518	0	29	0.001	ND	0.05	____

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	9676	2.080	584	1	0.315	D	126.0
Benzene-d6	36864	1.668	584	15	0.305	D	122.0
Toluene-d8	31696	1.372	844	29	0.275	D	110.0

Reveiwed by SA Date 11/30/92
ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ298
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/30/92
Project Number: 22402

Sample ID: 286/288 T/TC
TLI ID: 61-78-9/10

Quantitation Results Method 8240

..te	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	3650		518	1		I		
Chloromethane	4700	2.587	118	1	0.124	D	0.05	___
Bromomethane	2155	1.815	178	1	0.081	D	0.05	___
Vinyl chloride	0	3.654	0	1	0.001	ND	0.05	___
Chloroethane	0	2.175	0	1	0.001	ND	0.05	___
..thylene chloride	786	2.767	352	1	0.019	E	0.05	___
...tone	0	0.514	0	1	0.003	ND	0.05	___
Carbon disulfide	0	7.778	0	1	0.001	ND	0.05	___
1,1-Dichloroethene	0	2.235	0	1	0.001	ND	0.05	___
1,1-Dichloroethane	0	7.837	0	1	0.001	ND	0.05	___
.... 1,2-Dichloroethene	0	2.509	0	1	0.001	ND	0.05	___
.hloroform	3462	5.292	533	1	0.045	E	0.05	___
1,2-Dichloroethane	15672	3.497	593	1	0.307	D	0.05	___
Dimethyl disulfide	0	6.529	0	1	0.001	ND	0.05	___
cis-1,2-Dichloroethene	0	2.783	0	1	0.001	ND	0.05	___
Dimethyl sulfide	0	4.801	0	1	0.001	ND	0.05	___
Acrylonitrile	0	0.992	0	1	0.001	ND	0.05	___
Iodomethane	0	3.978	0	1	0.001	ND	0.05	___
n-Hexane	1007	9.832	418	1	0.007	E	0.05	___
Tert-Butyl methyl ether	0	6.319	0	1	0.001	ND	0.05	___
1,3-butadiene	0	3.341	0	1	0.001	ND	0.05	___
Vinyl Bromide	0	1.515	0	1	0.001	ND	0.05	___
Trichlorofluoromethane	10150	2.805	227	1	0.248	D	0.05	___
Isooctane	0	33.130	0	1	0.001	ND	0.05	___
Allyl chloride	0	1.823	0	1	0.001	ND	0.05	___
1,4-Difluorobenzene	18649		643	15		I		
2-Butanone	187	0.038	504	15	0.066	D	0.05	___
1,1,1-Trichloroethane	20897	0.791	545	15	0.354	D	0.05	___
Carbon tetrachloride	0	0.574	0	15	0.001	ND	0.05	___
Vinyl acetate	0	1.279	0	15	0.001	ND	0.05	___
Bromodichloromethane	0	0.830	0	15	0.001	ND	0.05	___
1,2-Dichloropropane	0	1.092	0	15	0.001	ND	0.05	___
trans-1,3-Dichloropropene	0	0.808	0	15	0.001	ND	0.02	___
Trichloroethene	15176	0.602	671	15	0.338	D	0.05	___
Dibromochloromethane	0	0.469	0	15	0.001	ND	0.05	___
1,1,2-Trichloroethane	0	0.405	0	15	0.001	ND	0.05	___
Benzene	0	1.941	0	15	0.001	ND	0.05	___
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	___
Bromoform	0	0.488	0	15	0.001	ND	0.05	___
Dibromomethane	0	0.364	0	15	0.001	ND	0.05	___
1,4-Dichloro-2-butene	0	0.149	0	15	0.002	ND	0.05	___
Chlorobenzene-d5	22120		1082	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ298
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/30/92
Project Number: 22402

Sample ID: 286/288 T/TC
TLI ID: 61-78-9/10

Quantitation Results Method 8240

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.315	0	29	0.001	ND	0.05	___
4-Methyl-2-pentanone	0	0.459	0	29	0.001	ND	0.05	___
Tetrachloroethene	0	0.811	0	29	0.001	ND	0.05	___
1,1,2,2-Tetrachloroethane	0	0.462	0	29	0.001	ND	0.05	___
Toluene	860	1.387	853	29	0.007	E	0.05	___
Chlorobenzene	0	1.078	0	29	0.001	ND	0.05	___
Ethylbenzene	0	0.672	0	29	0.001	ND	0.05	___
Styrene	0	1.215	0	29	0.001	ND	0.05	___
m-/p-Xylene	0	0.778	0	29	0.001	ND	0.10	___
o-Xylene	0	0.756	0	29	0.001	ND	0.05	___
Ethyl methacrylate	0	0.735	0	29	0.001	ND	0.05	___
1,2,3-Trichloropropane	0	0.317	0	29	0.001	ND	0.05	___
1,3 Dichlorobenzene	0	1.464	0	29	0.001	ND	0.05	___
1,4 Dichlorobenzene	0	1.181	0	29	0.001	ND	0.05	___
1,2 Dichlorobenzene	0	0.935	0	29	0.001	ND	0.05	___
Cumene (isopropylbenzene)	0	2.058	0	29	0.001	ND	0.05	___
A-Pinene	0	2.140	0	29	0.001	ND	0.05	___
B-Pinene	0	2.322	0	29	0.001	ND	0.05	___
P-Cymene	0	2.518	0	29	0.001	ND	0.05	___

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	10083	2.080	584	1	0.332	D	132.8
Benzene-d6	38859	1.668	584	15	0.312	D	124.8
Toluene-d8	33444	1.372	843	29	0.275	D	110.0

Reveived by SA Date 11/30/92
ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

539C

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ299
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/30/92
Project Number: 22402

Sample ID: 289/291 T/TC
TLI ID: 61-78-11/12

Quantitation Results Method 8240

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Bromochloromethane	3546		516	1		I		
Chloromethane	3693	2.587	118	1	0.101	D	0.05	
Bromomethane	1446	1.815	181	1	0.056	D	0.05	
Vinyl chloride	0	3.654	0	1	0.001	ND	0.05	
Chloroethane	0	2.175	0	1	0.001	ND	0.05	
Methylene chloride	348	2.767	352	1	0.009	E	0.05	
Acetone	190	0.514	320	1	0.026	E	0.05	
Carbon disulfide	0	7.778	0	1	0.001	ND	0.05	
1,1-Dichloroethene	0	2.235	0	1	0.001	ND	0.05	
1,1-Dichloroethane	0	7.837	0	1	0.001	ND	0.05	
trans-1,2-Dichloroethene	0	2.509	0	1	0.001	ND	0.05	
Chloroform	0	5.292	0	1	0.001	ND	0.05	
1,2-Dichloroethane	8600	3.497	589	1	0.173	D	0.05	
Dimethyl disulfide	0	6.529	0	1	0.001	ND	0.05	
cis-1,2-Dichloroethene	0	2.783	0	1	0.001	ND	0.05	
Dimethyl sulfide	0	4.801	0	1	0.001	ND	0.05	
Acrylonitrile	0	0.992	0	1	0.001	ND	0.05	
Iodomethane	0	3.978	0	1	0.001	ND	0.05	
n-Hexane	0	9.832	0	1	0.001	ND	0.05	
Tert-Butyl methyl ether	0	6.319	0	1	0.001	ND	0.05	
1,3-butadiene	0	3.341	0	1	0.001	ND	0.05	
Vinyl Bromide	0	1.515	0	1	0.001	ND	0.05	
Trichlorofluoromethane	11963	2.805	227	1	0.301	D	0.05	
Isooctane	0	33.130	0	1	0.001	ND	0.05	
Allyl chloride	0	1.823	0	1	0.001	ND	0.05	
1,4-Difluorobenzene	15986		639	15		I		
2-Butanone	132	0.038	506	15	0.055	D	0.05	
1,1,1-Trichloroethane	12553	0.791	543	15	0.248	D	0.05	
Carbon tetrachloride	0	0.574	0	15	0.001	ND	0.05	
Vinyl acetate	0	1.279	0	15	0.001	ND	0.05	
Bromodichloromethane	0	0.830	0	15	0.001	ND	0.05	
1,2-Dichloropropane	0	1.092	0	15	0.001	ND	0.05	
trans-1,3-Dichloropropene	0	0.808	0	15	0.001	ND	0.02	
Trichloroethene	11461	0.602	665	15	0.298	D	0.05	
Dibromochloromethane	0	0.469	0	15	0.001	ND	0.05	
1,1,2-Trichloroethane	0	0.405	0	15	0.001	ND	0.05	
Benzene	0	1.941	0	15	0.001	ND	0.05	
cis-1,3-Dichloropropene	0	0.936	0	15	0.001	ND	0.08	
Bromoform	0	0.488	0	15	0.001	ND	0.05	
Dibromomethane	0	0.364	0	15	0.001	ND	0.05	
1,4-Dichloro-2-butene	0	0.149	0	15	0.002	ND	0.05	
Chlorobenzene-d5	22563		1079	29		I		

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : FJ299
Response File : ICALFN18
Date Analyzed : 11/18/92
Date Reported : 11/30/92
Project Number: 22402

Sample ID: 289/291 T/TC
TLI ID: 61-78-11/12

Quantitation Results Method 8240

Analyte	Area	RF	SCAN	ISID	Amt. (ug)	Code	Quan Limit	FLAG
2-Hexanone	0	0.315	0	29	0.001	ND	0.05	
4-Methyl-2-pentanone	0	0.459	0	29	0.001	ND	0.05	
Tetrachloroethene	0	0.811	0	29	0.001	ND	0.05	
1,1,2,2-Tetrachloroethane	0	0.462	0	29	0.001	ND	0.05	
Toluene	528	1.387	848	29	0.004	E	0.05	
Chlorobenzene	0	1.078	0	29	0.001	ND	0.05	
Ethylbenzene	0	0.672	0	29	0.001	ND	0.05	
Styrene	0	1.215	0	29	0.001	ND	0.05	
m-/p-Xylene	0	0.778	0	29	0.001	ND	0.10	
o-Xylene	0	0.756	0	29	0.001	ND	0.05	
Ethyl methacrylate	0	0.735	0	29	0.001	ND	0.05	
1,2,3-Trichloropropane	0	0.317	0	29	0.001	ND	0.05	
1,3 Dichlorobenzene	0	1.464	0	29	0.001	ND	0.05	
1,4 Dichlorobenzene	0	1.181	0	29	0.001	ND	0.05	
1,2 Dichlorobenzene	0	0.935	0	29	0.001	ND	0.05	
Cumene (isopropylbenzene)	0	2.058	0	29	0.001	ND	0.05	
A-Pinene	0	2.140	0	29	0.001	ND	0.05	
B-Pinene	0	2.322	0	29	0.001	ND	0.05	
P-Cymene	0	2.518	0	29	0.001	ND	0.05	

Surrogate Summary	Area	RF	Scan	ISID	Amount (ug)	Code	%REC
1,2-Dichloroethane-d4	7483	2.080	581	1	0.254	D	101.6
Benzene-d6	31071	1.668	580	15	0.291	D	116.4
Toluene-d8	28340	1.372	838	29	0.229	D	91.6

Reveiwed by SA Date 1/30/92

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrev v2.5

G.6 SEMIVOLATILE ORGANICS LABORATORY DATA

CASE NARRATIVE

Triangle Laboratories of RTP, Inc
801 Capitola Dr.
Durham, N.C. 27713
PHONE: (919) 544-5729
FAX: (919) 544-5491

DATE: January 6, 1993

CLIENT P.O. NO: 3975

TLI NO: 22367

OBJECTIVE: Analysis of twelve MM5 train samples for 8270 Table 2 compounds.

METHOD:

The MM5 train sample extraction and GC/MS analysis are based on the guidelines of Method 8270. The XAD portion of the MM5 trains were prespiked with 100 micrograms (ug) of terphenyl-d14 before sampling. The XAD and filter portion of the samples were spiked with 100 ug of surrogate standards phenol-d5, 1,4- dibromobenzene-d4, 1,3,5-trichlorobenzene-d_3, 2,4,6-tribromophenol, and pyrene-d10 before being Soxhlet extracted for 16 hours with methylene chloride. The impinger rinses were spiked with 100 ug of surrogate standards 2-fluorobiphenyl, nitrobenzene-d5, and anthracene-d10 before being extracted with methylene chloride using a separatory funnel. All extracts with the exception of OB-M23-R1 and OB-M23-R2 were combined and concentrated prior to analysis.

The internal standards 1,4-dichlorobenzene-d4, naphthalene-d8, acenaphthene-d10, phenanthrene-d10, chrysene-d12, and perylene-d12 were added to the extracts such that the final internal standard concentration was 40 ug/mL immediately prior to analysis by GC/MS.

The GC/MS analysis conditions are listed below:

GC CONDITIONS:

Column:	J&W DB5-625, 30m x .32mm x 1u film
Program:	35C, ramp 12C/min to 285C, hold for 2min, ramp at 8.5C/min to 315C, hold for 13min.
Carrier Gas:	Helium

MS CONDITIONS:

Instrument:	HP MSD, Chemsystem and Target data systems
Scan:	35-550 amu at 1.67s/scan
Interface:	Capillary, 250C

REPORT:

Enclosed with the case narrative are the client request for analysis sheet and chain of custody, TLI chain of custody sheets, wet laboratory extraction information sheets, analyst worksheets, run logs and tracking forms. All initial and continuing calibration data is located behind the samples in the back of the data package.

The data are reported as quantitation reports, chromatograms, interim reports, and spectra of detected compounds. The quantitation report headers list the sample and calibration file names. The client sample name, TLI identification number, dilution factor, TLI project number, date of report, and analysis date are also listed in the quantitation report header. The raw responses and retention time values found on the quantitation report are from the interim report located behind the quantitation report. The response factor (RF) is from the continuing calibration. The ISID is the internal standard identifier. Those compounds matched to acenaphthene-d10 for example, are flagged with ISID number 3. On the interim report a ($) is indicative of a surrogate standard and a (*) represents an internal standard. The quantitations for the target compounds and surrogate standards are reported in units of micrograms (ug). Some example calculations are listed below in the Sample Calculations section of the narrative. If the target compound is detected, a code of "D" is reported. If the target compound is detected but the amount is below the quantitation limit or over the calibration range, a code of "E" or estimated is reported. If the target compound is not detected, a code of "ND" is reported. Internal standards are flagged with an 'I' and will have an 'H' or an 'L' if they are above or below quality control criteria.Amounts reported for target compounds that are not detected are calculated using an area of 100 counts on the report.

Immediately following the sample report are two pages which comprise the total ion chromatograms. Labeled internal and surrogate standards present in the sample have their identifications and retention time printed above their peak on the chromatograms. The interim report from the instrument is followed by the target spectra of the detected compounds. Four spectral plots are included for each compound: a raw spectrum of the peak, a background subtracted version of the same spectrum, a library spectrum of the compound, and a plot showing the percent difference between the library spectrum and the background subtracted spectrum. Extracted ion current profiles are plotted on the right-hand side of the page showing the quantitation mass and one or two other prominent ions known to be present in the target compound as they appear in the sample peak.

RESULTS:

Some of the samples listed for analysis on the client chain of custody were not received. These samples include the following; 92-655-00984, 92-655-00993, 92-655-01002, and all of impinger 1.

The internal standard areas were normal and fairly consistent for the field samples and Laboratory Method Blank, SBLK 111692, with the exception of the following samples: OA-M23-R2, IN-M23-R1, and IN-M23-R3. In sample OA-M23-R2, phenanthrene-d_{10}, chrysene-d_{12} and perylene-d_{12} were high. Perylene-d_{12}, was low in samples IN-M23-R1 and IN-M23-R3. The target analytes quantitated against these internal standards maybe artificially deflated in the case of a high internal standard area, or inflated in the case of a low internal standard area.

Due to a labeling error in the Organic Wet Laboratory a mix-up of the impinger portions of samples, OB-M23-R1 and OB-M23-R2 may have occurred. These two samples have been labeled as OB-M23-R1 H2O and OB-M23-R2 H2O and were analyzed separately. These two analyses are included at no cost. The results of these two samples are very similar; and it is doubtful that this mishap in any way affects the quality of the data.

The samples could not be concentrated down below 4-mL's in the wet laboratory. In many of the samples, the XAD's, filter's, and glass wool portions were discolored. Some of the samples were further diluted in GC/MS laboratory in order to achieve valid internal standard areas.

Please note that the naming scheme employed by the wet laboratory, i.e OB-0010-R1 is indicative of the sampling procedure used, 0010.

Sample OB-M23-R3 was received with two XAD traps. An additional extraction was performed on the extra XAD trap, the surrogate standards were split 50:50 between the two extractions. The extracts were then combined. An additional charge of $125, for the extra extraction was incurred.

The surrogate standard recoveries were good for the majority of the field samples and SBLK 111692. Sample IN-M23-R1 had no recovery of 2,4,6-tribromophenol, and a very poor recovery for anthracene-d_{10}. Sample IN-M23-R2 experienced poor recovery for

RESULTS cont.

2,4,6-tribromophenol, anthracene-d_{10}, and pyrene-d_{10}. Sample IN-M23-R3 had no recovery for 2,4,6-tribromophenol, anthracene-d_{10}, and pyrene-d_{10}. These poor recoveries may be a result of the 1:8 dilution imposed upon the samples.

The target analyte diethylphthalate was detected within the calibration range in sample OA-M23-R0. Sample OA-M23-R1 contained bis-(2-chloroethyl)ether and naphthalene at detectable levels. Phenol and benzoic acid were detected within the calibration range in sample OA-M23-R3. Sample OB-M23-R0, contained naphthalene at a level within the calibration range. OB-M23-R1, was found to contain a level of benzoic acid well within the calibration range. Benzoic acid, naphthalene, and bis(2-ethylhexyl)phthalate were detected in sample OB-M23-R2. Sample OB-M23-R3 was found to contain benzoic acid and naphthalene within the calibration range. Naphthalene and di-n-butylphthalate were found at a detectable level in sample IN-M23-R0. Naphthalene was detected in sample IN-M23-R1. The two target analytes phenol and naphthalene were detected in sample IN-M23-R2. Two of the target analytes on the Table 2 list are also common XAD contaminants; benzoic acid and naphthalene.

There were target analytes that were found at estimated levels in all samples with the exception of OB-M23-R1 H2O.

The laboratory method blank, SBLK 111692, contained naphthalene, bis(2-ethylhexyl)phthalate, and di-n-butylphthalate at levels below the quantitation limit. Phthalates are common laboratory contaminants. Although estimated, these target analytes should not be considered as native to the samples unless found at a level five times that in the associated method blank.

All semivolatile sampling to extraction and extraction to analysis holding times were met.

Please note that the Clean Air Act portion of this project has already been shipped to you.

SAMPLE CALCULATIONS:

Response Factor, RF:

$$RF = \frac{(\text{Area X} \bullet \text{Amount Int Std})}{(\text{Area Int Std} \bullet \text{Amount X})}$$

Amount in samples:

$$\text{Amount, ug} = \frac{(\text{Area X} \bullet \text{Amt Int Std} * \text{DF})}{(\text{Area Int Std} * \text{RF X})}$$

where:

X = Analyte
Int Std = internal standard
Amt Int Std = amount of internal standard = 40 ug
RF X = response factor of X from continuing calibration
DF = dilution factor

For Triangle Laboratories, Inc.,

Report Generation

Amy Wall
Amy Wall
Report Preparation Chemist

Quality Control

Selena Armistead
Selena Armistead
Report Preparation Chemist

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : JA796
Response File : JA795
Date Analyzed : 11/21/92
Date Reported : 01/04/93
Project Number: 22367

Sample ID: SBLK 111692
TLI ID: N/A
Dilution Factor: 1.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
1,4 Dichlorobenzene-d4	3879		8.43	1		I		
1,3-Dichlorobenzene	0	1.629	0.00	1	0.63	ND	10.0	___
1,4-Dichlorobenzene	0	1.624	0.00	1	0.63	ND	10.0	___
1,2-Dichlorobenzene	0	1.575	0.00	1	0.65	ND	10.0	___
2-Methylphenol	0	1.289	0.00	1	0.80	ND	10.0	___
2,2'-oxybis(1-Chloropropane)	0	2.135	0.00	1	0.48	ND	10.0	___
Benzyl alcohol	0	0.877	0.00	1	1.18	ND	10.0	___
4-Methylphenol	0	1.461	0.00	1	0.71	ND	10.0	___
N-Nitroso-di-n-propylamine	0	1.190	0.00	1	0.87	ND	10.0	___
Hexachloroethane	0	0.844	0.00	1	1.22	ND	10.0	___
Phenol	0	1.681	0.00	1	0.61	ND	10.0	___
bis(2-Chloroethyl)ether	0	1.426	0.00	1	0.72	ND	10.0	___
2-Chlorophenol	0	1.422	0.00	1	0.73	ND	10.0	___
Naphthalene-d8	13509		11.45	2		I		
Naphthalene	31872	1.049	11.52	2	89.96	D	10.0	___
4-Chloroaniline	0	0.513	0.00	2	0.58	ND	10.0	___
Hexachlorobutadiene	0	0.240	0.00	2	1.23	ND	10.0	___
4-Chloro-3-methylphenol	0	0.408	0.00	2	0.73	ND	10.0	___
2-Methylnaphthalene	0	0.834	0.00	2	0.36	ND	10.0	___
Nitrobenzene	0	0.511	0.00	2	0.58	ND	10.0	___
Isophorone	0	0.963	0.00	2	0.31	ND	10.0	___
2-Nitrophenol	0	0.228	0.00	2	1.30	ND	10.0	___
2,4-Dimethylphenol	0	0.305	0.00	2	0.97	ND	10.0	___
bis(2-Chloroethoxy)methane	0	0.599	0.00	2	0.49	ND	10.0	___
Benzoic acid	0	0.177	0.00	2	1.67	ND	10.0	___
2,4-Dichlorophenol	0	0.376	0.00	2	0.79	ND	10.0	___
1,2,4-Trichlorobenzene	0	0.419	0.00	2	0.71	ND	10.0	___
Acenaphthene-d10	8931		15.81	3		I		
Hexachlorocyclopentadiene	0	0.222	0.00	3	2.02	ND	10.0	___
2,4,6-Trichlorophenol	0	0.481	0.00	3	0.93	ND	10.0	___
2,4,5-Trichlorophenol	0	0.481	0.00	3	0.93	ND	10.0	___
2-Chloronaphthalene	0	1.271	0.00	3	0.35	ND	10.0	___
2-Nitroaniline	0	0.540	0.00	3	0.83	ND	10.0	___
Dimethylphthalate	0	1.501	0.00	3	0.30	ND	10.0	___
2,6-Dinitrotoluene	0	0.360	0.00	3	1.24	ND	10.0	___
2,4-Dinitrotoluene	0	0.520	0.00	3	0.86	ND	10.0	___
Acenaphthylene	0	1.954	0.00	3	0.23	ND	10.0	___
3-Nitroaniline	0	0.503	0.00	3	0.89	ND	10.0	___
Acenaphthene	0	1.127	0.00	3	0.40	ND	10.0	___
2,4-Dinitrophenol	0	0.089	0.00	3	5.03	ND	10.0	___
4-Nitrophenol	0	0.160	0.00	3	2.80	ND	10.0	___
Dibenzofuran	0	1.774	0.00	3	0.25	ND	10.0	___

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard   Orgrep v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : JA796
Response File : JA795
Date Analyzed : 11/21/92
Date Reported : 01/04/93
Project Number: 22367

Sample ID: SBLK 111692
TLI ID: N/A
Dilution Factor: 1.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Diethylphthalate	0	1.576	0.00	3	0.28	ND	10.0	___
4-Chlorophenyl-phenylether	0	0.639	0.00	3	0.70	ND	10.0	___
Fluorene	0	1.422	0.00	3	0.31	ND	10.0	___
4-Nitroaniline	0	0.342	0.00	3	1.31	ND	10.0	___
Phenanthrene-d10	14654		19.45	4		I		
Hexachlorobenzene	0	0.232	0.00	4	1.18	ND	10.0	___
Pentachlorophenol	0	0.097	0.00	4	2.81	ND	10.0	___
Phenanthrene	0	1.080	0.00	4	0.25	ND	10.0	___
Anthracene	0	1.092	0.00	4	0.25	ND	10.0	___
Di-n-butylphthalate	1408	1.444	21.34	4	2.66	E	10.0	___
Fluoranthene	0	0.947	0.00	4	0.29	ND	10.0	___
4,6-Dinitro-2-methylphenol	0	0.097	0.00	4	2.81	ND	10.0	___
N-Nitrosodiphenylamine	0	0.511	0.00	4	0.53	ND	10.0	___
4-Bromophenyl-phenylether	0	0.203	0.00	4	1.34	ND	10.0	___
Chrysene-d12	4538		26.07	5		I		
Chrysene	0	1.168	0.00	5	0.75	ND	10.0	___
Benzo(a)anthracene	0	1.275	0.00	5	0.69	ND	10.0	___
Pyrene	0	1.807	0.00	5	0.49	ND	10.0	___
Butylbenzylphthalate	0	1.037	0.00	5	0.85	ND	10.0	___
3,3'-Dichlorobenzidine	0	0.341	0.00	5	2.58	ND	10.0	___
bis(2-Ethylhexyl)phthalate	146	1.390	26.64	5	0.93	E	10.0	___
Perylene-d12	2459		30.17	6		I		
Di-n-octylphthalate	0	3.407	0.00	6	0.48	ND	10.0	___
Benzo(b)fluoranthene	0	1.412	0.00	6	1.15	ND	10.0	___
Benzo(k)fluoranthene	0	1.412	0.00	6	1.15	ND	10.0	___
Benzo(a)pyrene	0	1.405	0.00	6	1.16	ND	10.0	___
Indeno(1,2,3-cd)pyrene	0	1.019	0.00	6	1.60	ND	10.0	___
Dibenzo(a,h)anthracene	0	1.019	0.00	6	1.60	ND	10.0	___
Benzo(g,h,i)perylene	0	1.062	0.00	6	1.53	ND	10.0	___

Surrogate Summary	Area	RF	RT	ISID	Amount (ug)	Code	%REC
Phenol-d5	7079	2.040	8.01	1	35.78	D	35.8
1,4-Dibromobenzene-d4	5204	1.431	11.56	1	37.50	D	37.5
Nitrobenzene-d5	8167	0.611	9.82	2	39.58	D	39.6
1,3,5-Trichlorobenzene-d3	5768	0.510	10.63	2	33.49	D	33.5
2-Fluorobiphenyl	14855	1.632	14.26	3	40.77	D	40.8
2,4,6-Tribromophenol	2881	0.260	17.80	3	49.64	D	49.6
Anthracene-d10	20346	0.983	19.58	4	56.50	D	56.5
Pyrene-d10	16457	1.731	22.97	5	83.80	D	83.8
Terphenyl-d14	11444	1.262	23.61	5	79.93	D	79.9

Reveiwed by AW Date 01/04/93

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard Orgrep v2.5

Triangle Laboratories of RTP Inc
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : JA600
Response File : JA795
Date Analyzed : 11/21/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID. IN-M23-RC

TLI ID: 61-50-10(A,B,E)
Dilution Factor: 1.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
1,4 Dichlorobenzene-d4	3573		8.43	1		I		
1,3-Dichlorobenzene	0	1.629	0.00	1	0.69	ND	10.0	___
1,4-Dichlorobenzene	0	1.624	0.00	1	0.69	ND	10.0	___
1,2-Dichlorobenzene	0	1.575	0.00	1	0.71	ND	10.0	___
2-Methylphenol	0	1.289	0.00	1	0.87	ND	10.0	___
2,2'-oxybis(1-Chloropropane)	0	1.586	0.00	1	0.71	ND	10.0	___
Benzyl alcohol	0	0.877	0.00	1	1.28	ND	10.0	___
4-Methylphenol	0	1.461	0.00	1	0.77	ND	10.0	___
N-Nitroso-di-n-propylamine	0	1.190	0.00	1	0.94	ND	10.0	___
Hexachloroethane	0	0.844	0.00	1	1.33	ND	10.0	___
Phenol	142	1.681	8.02	1	0.95	E	10.0	___
bis(2-Chloroethyl)ether	0	1.426	0.00	1	0.78	ND	10.0	___
2-Chlorophenol	0	1.422	0.00	1	0.79	ND	10.0	___
Naphthalene-d8	12363		11.44	2		I		
Naphthalene	4397	1.049	11.48	2	13.56	D	10.0	___
4-Chloroaniline	0	0.513	0.00	2	0.63	ND	10.0	___
Hexachlorobutadiene	0	0.240	0.00	2	1.35	ND	10.0	___
4-Chloro-3-methylphenol	0	0.408	0.00	2	0.79	ND	10.0	___
2-Methylnaphthalene	0	0.834	0.00	2	0.39	ND	10.0	___
Nitrobenzene	0	0.511	0.00	2	0.63	ND	10.0	___
Isophorone	0	0.963	0.00	2	0.34	ND	10.0	___
2-Nitrophenol	0	0.228	0.00	2	1.42	ND	10.0	___
2,4-Dimethylphenol	0	0.305	0.00	2	1.06	ND	10.0	___
bis(2-Chloroethoxy)methane	0	0.599	0.00	2	0.54	ND	10.0	___
Benzoic acid	0	0.177	0.00	2	1.83	ND	10.0	___
2,4-Dichlorophenol	0	0.376	0.00	2	0.86	ND	10.0	___
1,2,4-Trichlorobenzene	0	0.419	0.00	2	0.77	ND	10.0	___
Acenaphthene-d10	7639		15.81	3		I		
Hexachlorocyclopentadiene	0	0.222	0.00	3	2.36	ND	10.0	___
2,4,6-Trichlorophenol	0	0.425	0.00	3	1.23	ND	10.0	___
2,4,5-Trichlorophenol	0	0.481	0.00	3	1.09	ND	10.0	___
2-Chloronaphthalene	0	1.271	0.00	3	0.41	ND	10.0	___
2-Nitroaniline	0	0.540	0.00	3	0.97	ND	10.0	___
Dimethylphthalate	0	1.501	0.00	3	0.35	ND	10.0	___
2,6-Dinitrotoluene	0	0.360	0.00	3	1.45	ND	10.0	___
2,4-Dinitrotoluene	0	0.520	0.00	3	1.01	ND	10.0	___
Acenaphthylene	0	1.954	0.00	3	0.27	ND	10.0	___
3-Nitroaniline	0	0.503	0.00	3	1.04	ND	10.0	___
Acenaphthene	0	1.127	0.00	3	0.46	ND	10.0	___
2,4-Dinitrophenol	0	0.089	0.00	3	5.88	ND	10.0	___
4-Nitrophenol	0	0.160	0.00	3	3.27	ND	10.0	___
Dibenzofuran	0	1.774	0.00	3	0.30	ND	10.0	___

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard Orgrep v2.5

..angle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : JA800
Response File : JA795
Date Analyzed : 11/21/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: IN-M23-RO

TLI ID: 61-50-10(A,B,E)
Dilution Factor: 1.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Diethylphthalate	2056	1.576	17.22	3	6.83	E	10.0	___
4-Chlorophenyl-phenylether	0	0.639	0.00	3	0.82	ND	10.0	___
Fluorene	0	1.422	0.00	3	0.37	ND	10.0	___
4-Nitroaniline	0	0.342	0.00	3	1.53	ND	10.0	___
Phenanthrene-d10	13560		19.44	4		I		
Hexachlorobenzene	0	0.232	0.00	4	1.27	ND	10.0	___
Pentachlorophenol	0	0.097	0.00	4	3.04	ND	10.0	___
Phenanthrene	0	1.080	0.00	4	0.27	ND	10.0	___
Anthracene	0	1.092	0.00	4	0.27	ND	10.0	___
Di-n-butylphthalate	5341	1.444	21.34	4	10.91	D	10.0	___
Fluoranthene	0	0.947	0.00	4	0.31	ND	10.0	___
4,6-Dinitro-2-methylphenol	0	0.097	0.00	4	3.04	ND	10.0	___
N-Nitrosodiphenylamine	0	0.511	0.00	4	0.58	ND	10.0	___
4-Bromophenyl-phenylether	0	0.203	0.00	4	1.45	ND	10.0	___
Chrysene-d12	6986		26.08	5		I		
Chrysene	0	1.168	0.00	5	0.49	ND	10.0	___
Benzo(a)anthracene	0	1.275	0.00	5	0.45	ND	10.0	___
Pyrene	0	1.807	0.00	5	0.32	ND	10.0	___
Butylbenzylphthalate	0	1.037	0.00	5	0.55	ND	10.0	___
3,3'-Dichlorobenzidine	0	0.341	0.00	5	1.68	ND	10.0	___
bis(2-Ethylhexyl)phthalate	246	1.390	26.64	5	1.01	E	10.0	___
Perylene-d12	5053		30.19	6		I		
Di-n-octylphthalate	0	3.407	0.00	6	0.23	ND	10.0	___
Benzo(b)fluoranthene	0	1.615	0.00	6	0.49	ND	10.0	___
Benzo(k)fluoranthene	0	1.412	0.00	6	0.56	ND	10.0	___
Benzo(a)pyrene	0	1.405	0.00	6	0.56	ND	10.0	___
Indeno(1,2,3-cd)pyrene	0	1.019	0.00	6	0.78	ND	10.0	___
Dibenzo(a,h)anthracene	0	1.019	0.00	6	0.78	ND	10.0	___
Benzo(g,h,i)perylene	0	1.062	0.00	6	0.75	ND	10.0	___

JJD 1/6/93

Surrogate Summary	Area	RF	RT	ISID	Amount (ug)	Code	%REC
Phenol-d5	5334	2.040	8.00	1	29.27	D	29.3
1,4-Dibromobenzene-d4	4199	1.431	11.54	1	32.85	D	32.9
2,4,6-Tribromophenol	2316	0.260	17.81	3	46.65	D	46.7
Pyrene-d10	16790	1.731	22.97	5	55.53	D	55.5
Terphenyl-d14	12424	1.262	23.61	5	56.36	D	56.4

Reveiwed by JJD Date 1/6/93

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

Triangle Laboratories of RTP, Inc
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : JA811
Response File : JA806
Date Analyzed : 11/22/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: IN-M23-R1

TLI ID: 61-50-1(A,B,D,F)
Dilution Factor: 8.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
1,4 Dichlorobenzene-d4	5018		8.48	1		I		
1,3-Dichlorobenzene	0	1.598	0.00	1	3.99	ND	80.0	____
1,4-Dichlorobenzene	0	1.573	0.00	1	4.05	ND	80.0	____
1,2-Dichlorobenzene	0	1.466	0.00	1	4.35	ND	80.0	____
2-Methylphenol	0	1.263	0.00	1	5.05	ND	80.0	____
2,2'-oxybis(1-Chloropropane)	0	1.517	0.00	1	4.20	ND	80.0	____
Benzyl alcohol	0	0.646	0.00	1	9.87	ND	80.0	____
4-Methylphenol	0	1.344	0.00	1	4.74	ND	80.0	____
N-Nitroso-di-n-propylamine	0	1.125	0.00	1	5.67	ND	80.0	____
Hexachloroethane	0	0.823	0.00	1	7.75	ND	80.0	____
Phenol	0	1.587	0.00	1	4.02	ND	80.0	____
bis(2-Chloroethyl)ether	0	1.325	0.00	1	4.81	ND	80.0	____
2-Chlorophenol	0	1.309	0.00	1	4.87	ND	80.0	____
Naphthalene-d8	16076		11.48	2		I		
Naphthalene	26460	1.041	11.54	2	505.96	D	80.0	____
4-Chloroaniline	0	0.489	0.00	2	4.07	ND	80.0	____
Hexachlorobutadiene	0	0.230	0.00	2	8.65	ND	80.0	____
4-Chloro-3-methylphenol	0	0.385	0.00	2	5.17	ND	80.0	____
2-Methylnaphthalene	114	0.813	13.23	2	2.81	E	80.0	____
Nitrobenzene	0	0.485	0.00	2	4.10	ND	80.0	____
Isophorone	2185	0.911	10.53	2	47.75	E	80.0	____
2-Nitrophenol	549	0.203	10.65	2	53.92	E	80.0	____
2,4-Dimethylphenol	0	0.310	0.00	2	6.42	ND	80.0	____
bis(2-Chloroethoxy)methane	0	0.562	0.00	2	3.54	ND	80.0	____
Benzoic acid	0	0.160	0.00	2	12.44	ND	80.0	____
2,4-Dichlorophenol	0	0.360	0.00	2	5.53	ND	80.0	____
1,2,4-Trichlorobenzene	0	0.401	0.00	2	4.96	ND	80.0	____
Acenaphthene-d10	4227		15.83	3		I		
Hexachlorocyclopentadiene	0	0.221	0.00	3	34.25	ND	80.0	____
2,4,6-Trichlorophenol	0	0.426	0.00	3	17.77	ND	80.0	____
2,4,5-Trichlorophenol	0	0.486	0.00	3	15.58	ND	80.0	____
2-Chloronaphthalene	0	1.300	0.00	3	5.82	ND	80.0	____
2-Nitroaniline	0	0.517	0.00	3	14.64	ND	80.0	____
Dimethylphthalate	0	1.462	0.00	3	5.18	ND	80.0	____
2,6-Dinitrotoluene	0	0.348	0.00	3	21.75	ND	80.0	____
2,4-Dinitrotoluene	0	0.507	0.00	3	14.93	ND	80.0	____
Acenaphthylene	0	1.931	0.00	3	3.92	ND	80.0	____
3-Nitroaniline	0	0.491	0.00	3	15.42	ND	80.0	____
Acenaphthene	0	1.146	0.00	3	6.61	ND	80.0	____
2,4-Dinitrophenol	0	0.098	0.00	3	77.24	ND	80.0	____
4-Nitrophenol	0	0.154	0.00	3	49.15	ND	80.0	____
Dibenzofuran	402	1.773	16.31	3	17.17	E	80.0	____

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

[Tri]angle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : JA811
Response File : JA806
Date Analyzed : 11/22/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: IN-M23-R1

TLI ID: 61-50-1(A,B,D,F)
Dilution Factor: 8.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Diethylphthalate	1006	1.537	17.25	3	49.59	E	80.0	
4-Chlorophenyl-phenylether	0	0.616	0.00	3	12.29	ND	80.0	
Fluorene	0	1.295	0.00	3	5.85	ND	80.0	
4-Nitroaniline	0	0.344	0.00	3	22.01	ND	80.0	
Phenanthrene-d10	10191		19.47	4		I		
Hexachlorobenzene	0	0.236	0.00	4	13.30	ND	80.0	
Pentachlorophenol	0	0.096	0.00	4	32.71	ND	80.0	
Phenanthrene	289	1.136	19.51	4	8.01	E	80.0	
Anthracene	0	1.112	0.00	4	2.82	ND	80.0	
Di-n-butylphthalate	0	1.512	0.00	4	2.08	ND	80.0	
Fluoranthene	0	0.964	0.00	4	3.26	ND	80.0	
4,6-Dinitro-2-methylphenol	0	0.097	0.00	4	32.37	ND	80.0	
N-Nitrosodiphenylamine	0	0.539	0.00	4	5.83	ND	80.0	
4-Bromophenyl-phenylether	0	0.195	0.00	4	16.10	ND	80.0	
Chrysene-d12	3210		26.10	5		I		
Chrysene	0	1.177	0.00	5	8.47	ND	80.0	
Benzo(a)anthracene	0	1.302	0.00	5	7.66	ND	80.0	
Pyrene	0	1.906	0.00	5	5.23	ND	80.0	
Butylbenzylphthalate	0	1.054	0.00	5	9.46	ND	80.0	
3,3'-Dichlorobenzidine	0	0.335	0.00	5	29.76	ND	80.0	
bis(2-Ethylhexyl)phthalate	273	1.418	26.67	5	19.21	E	80.0	
Perylene-d12	1150		30.23	6		I		L
Di-n-octylphthalate	0	3.296	0.00	6	8.44	ND	80.0	
Benzo(b)fluoranthene	0	1.528	0.00	6	18.20	ND	80.0	
Benzo(k)fluoranthene	0	1.437	0.00	6	19.35	ND	80.0	
Benzo(a)pyrene	0	1.395	0.00	6	19.94	ND	80.0	
Indeno(1,2,3-cd)pyrene	0	1.022	0.00	6	27.21	ND	80.0	
Dibenzo(a,h)anthracene	0	0.998	0.00	6	27.87	ND	80.0	
Benzo(g,h,i)perylene	0	1.027	0.00	6	27.08	ND	80.0	

JNO 1/6/93

Surrogate Summary	Area	RF	RT	ISID	Amount (ug)	Code	%REC
Phenol-d5	351	1.912	8.11	1	11.74	D	11.7
1,4-Dibromobenzene-d4	1815	1.286	11.58	1	90.02	D	90.0
Nitrobenzene-d5	3125	0.593	9.83	2	104.91	D	104.9
1,3,5-Trichlorobenzene-d3	2018	1.000	10.64	2	40.18	D	40.2
2-Fluorobiphenyl	5059	1.585	14.27	3	241.62	D	241.6
2,4,6-Tribromophenol	0	0.231	0.00	3	NA	ND	NA
Anthracene-d10	158	0.989	19.59	4	5.03	D	5.0
Pyrene-d10	963	1.816	22.99	5	52.90	D	52.9
Terphenyl-d14	1609	1.292	23.61	5	124.18	D	124.2

Reveiwed by ____JNO____ Date 1/10/93

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

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Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : 28329
Response File : 28319
Date Analyzed : 12/17/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID- IN-M23-R2

TLI ID: 61-50-2(A,B,D,F)
Dilution Factor: 8.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
1,4-Dichlorobenzene-d4	2456		10.63	1		I		
2-Chlorophenol	0	1.294	0.00	1	10.07	ND	80.0	___
1,3-Dichlorobenzene	0	1.464	0.00	1	8.90	ND	80.0	___
1,4-Dichlorobenzene	0	1.562	0.00	1	8.34	ND	80.0	___
1,2-Dichlorobenzene	0	1.490	0.00	1	8.74	ND	80.0	___
Benzyl alcohol	0	0.743	0.00	1	17.54	ND	80.0	___
2,2'-oxybis(1-Chloropropane)	0	1.246	0.00	1	10.46	ND	80.0	___
2-Methylphenol	0	1.022	0.00	1	12.75	ND	80.0	___
N-Nitroso-di-n-propylamine	0	0.966	0.00	1	13.49	ND	80.0	___
Hexachloroethane	0	0.737	0.00	1	17.68	ND	80.0	___
Phenol	1052	1.475	9.86	1	92.93	D	80.0	___
bis(2-Chloroethyl)ether	0	1.311	0.00	1	9.94	ND	80.0	___
Naphthalene-d8	8765		13.28	2		I		
bis(2-Chloroethoxy)methane	0	0.456	0.00	2	8.01	ND	80.0	___
Benzoic acid	14322	0.255	12.75	2	2050.40	E	80.0	___
2,4-Dichlorophenol	0	0.320	0.00	2	11.41	ND	80.0	___
1,2,4-Trichlorobenzene	0	0.372	0.00	2	9.81	ND	80.0	___
Naphthalene	6945	1.048	13.33	2	241.93	D	80.0	___
4-Chloroaniline	0	0.406	0.00	2	8.99	ND	80.0	___
Hexachlorobutadiene	0	0.268	0.00	2	13.62	ND	80.0	___
4-Chloro-3-methylphenol	0	0.306	0.00	2	11.85	ND	80.0	___
2-Methylnaphthalene	0	0.811	0.00	2	4.50	ND	80.0	___
Nitrobenzene	0	0.449	0.00	2	8.13	ND	80.0	___
Isophorone	640	0.812	12.28	2	28.78	E	80.0	___
2-Nitrophenol	0	0.237	0.00	2	15.40	ND	80.0	___
2,4-Dimethylphenol	0	0.333	0.00	2	10.96	ND	80.0	___
Acenaphthene-d10	4895		17.09	3		I		
4-Nitrophenol	0	0.274	0.00	3	23.86	ND	80.0	___
Dibenzofuran	137	1.772	17.52	3	5.07	E	80.0	___
Diethylphthalate	0	1.817	0.00	3	3.60	ND	80.0	___
4-Chlorophenyl-phenylether	0	0.781	0.00	3	8.37	ND	80.0	___
Fluorene	0	1.520	0.00	3	4.30	ND	80.0	___
4-Nitroaniline	0	0.515	0.00	3	12.69	ND	80.0	___
Hexachlorocyclopentadiene	0	0.330	0.00	3	19.81	ND	80.0	___
2,4,6-Trichlorophenol	0	0.418	0.00	3	15.64	ND	80.0	___
2,4,5-Trichlorophenol	0	0.466	0.00	3	14.03	ND	80.0	___
2-Chloronaphthalene	0	1.158	0.00	3	5.64	ND	80.0	___
2-Nitroaniline	0	0.434	0.00	3	15.06	ND	80.0	___
Dimethylphthalate	0	1.417	0.00	3	4.61	ND	80.0	___
2,6-Dinitrotoluene	0	0.366	0.00	3	17.86	ND	80.0	___
2,4-Dinitrotoluene	0	0.583	0.00	3	11.21	ND	80.0	___
Acenaphthylene	0	1.890	0.00	3	3.46	ND	80.0	___

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

Laboratories of RTP, Inc.
Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : Z6329
Response File : Z8319
Date Analyzed : 12/17/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: IN-M23-R2

TLI ID: 61-50-2(A,B,D,F)
Dilution Factor: 8.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
3-Nitroaniline	0	0.423	0.00	3	15.45	ND	80.0	
Acenaphthene	0	1.266	0.00	3	5.16	ND	80.0	
2,4-Dinitrophenol	0	0.263	0.00	3	24.85	ND	80.0	
Phenanthrene-d10	13280		20.34	4		I		
Anthracene	0	1.059	0.00	4	2.28	ND	80.0	
Di-n-butylphthalate	702	1.903	21.54	4	8.90	E	80.0	
Fluoranthene	0	1.420	0.00	4	1.70	ND	80.0	
4,6-Dinitro-2-methylphenol	0	0.143	0.00	4	16.85	ND	80.0	
N-Nitrosodiphenylamine	0	0.388	0.00	4	6.21	ND	80.0	
4-Bromophenyl-phenylether	0	0.217	0.00	4	11.10	ND	80.0	
Hexachlorobenzene	0	0.319	0.00	4	7.55	ND	80.0	
Pentachlorophenol	0	0.214	0.00	4	11.26	ND	80.0	
Phenanthrene	177	1.013	20.39	4	4.23	E	80.0	
Chrysene-d12	18374		26.67	5		I		
Benzo(a)anthracene	0	1.149	0.00	5	1.52	ND	80.0	
Pyrene	0	1.325	0.00	5	1.31	ND	80.0	
Butylbenzylphthalate	0	0.629	0.00	5	2.77	ND	80.0	
3,3'-Dichlorobenzidine	0	0.311	0.00	5	5.60	ND	80.0	
bis(2-Ethylhexyl)phthalate	655	0.834	26.59	5	13.68	E	80.0	
Chrysene	0	1.043	0.00	5	1.67	ND	80.0	
Perylene-d12	9947		31.06	6		I		
Di-n-octylphthalate	0	1.772	0.00	6	1.82	ND	80.0	
Benzo(b)fluoranthene	0	1.433	0.00	6	2.24	ND	80.0	
Benzo(k)fluoranthene	0	1.362	0.00	6	2.36	ND	80.0	
Benzo(a)pyrene	0	1.312	0.00	6	2.45	ND	80.0	
Indeno(1,2,3-cd)pyrene	0	1.611	0.00	6	2.00	ND	80.0	
Dibenzo(a,h)anthracene	0	1.406	0.00	6	2.29	ND	80.0	
Benzo(g,h,i)perylene	0	1.473	0.00	6	2.18	ND	80.0	

Surrogate Summary	Area	RF	RT	ISID	Amount (ug)	Code	%REC
Phenol-d5	402	1.387	9.83	1	37.84	D	37.8
1,4-Dibromobenzene-d4	732	1.457	13.39	1	65.46	D	65.5
Nitrobenzene-d5	708	0.479	11.75	2	54.02	D	54.0
1,3,5-Trichlorobenzene-d3	589	0.426	12.46	2	50.50	D	50.5
2-Fluorobiphenyl	1307	1.305	15.59	3	65.47	D	65.5
2,4,6-Tribromophenol	13	0.553	18.94	3	1.61	D	1.6
Anthracene-d10	405	0.837	20.46	4	11.67	D	11.7
Pyrene-d10	1059	1.065	23.46	5	17.33	D	17.3
Terphenyl-d14	3052	0.993	23.76	5	53.54	D	53.5

Reveived by AW Date 1/6/93

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : 28330
Response File : 26318
Date Analyzed : 012/17/9
Date Reported : 01/06/93
Project Number: 22367

Sample ID: IN-M23-R3

TLI ID: 61-50-3(A,B,D,F)
Dilution Factor: 8.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
1,4-Dichlorobenzene-d4	2437		10.63	1		I		
2-Chlorophenol	0	1.294	0.00	1	10.14	ND	80.0	___
1,3-Dichlorobenzene	0	1.464	0.00	1	8.97	ND	80.0	___
1,4-Dichlorobenzene	0	1.562	0.00	1	8.40	ND	80.0	___
1,2-Dichlorobenzene	0	1.490	0.00	1	8.81	ND	80.0	___
Benzyl alcohol	0	0.743	0.00	1	17.67	ND	80.0	___
2,2'-oxybis(1-Chloropropane)	0	1.246	0.00	1	10.54	ND	80.0	___
2-Methylphenol	0	1.022	0.00	1	12.85	ND	80.0	___
N-Nitroso-di-n-propylamine	0	0.966	0.00	1	13.59	ND	80.0	___
Hexachloroethane	0	0.737	0.00	1	17.81	ND	80.0	___
Phenol	144	1.475	9.89	1	12.82	E	80.0	___
bis(2-Chloroethyl)ether	0	1.311	0.00	1	10.01	ND	80.0	___
Naphthalene-d8	8828		13.28	2		I		
bis(2-Chloroethoxy)methane	0	0.456	0.00	2	7.95	ND	80.0	___
Benzoic acid	0	0.255	0.00	2	14.21	ND	80.0	___
2,4-Dichlorophenol	0	0.320	0.00	2	11.33	ND	80.0	___
1,2,4-Trichlorobenzene	0	0.372	0.00	2	9.74	ND	80.0	___
Naphthalene	1001	1.048	13.33	2	34.65	E	80.0	___
4-Chloroaniline	0	0.406	0.00	2	8.93	ND	80.0	___
Hexachlorobutadiene	0	0.268	0.00	2	13.53	ND	80.0	___
4-Chloro-3-methylphenol	0	0.308	0.00	2	11.77	ND	80.0	___
2-Methylnaphthalene	0	0.811	0.00	2	4.47	ND	80.0	___
Nitrobenzene	0	0.449	0.00	2	8.07	ND	80.0	___
Isophorone	974	0.812	12.28	2	43.50	E	80.0	___
2-Nitrophenol	0	0.237	0.00	2	15.29	ND	80.0	___
2,4-Dimethylphenol	0	0.333	0.00	2	10.89	ND	80.0	___
Acenaphthene-d10	5133		17.08	3		I		
4-Nitrophenol	0	0.274	0.00	3	22.75	ND	80.0	___
Dibenzofuran	0	1.772	0.00	3	3.52	ND	80.0	___
Diethylphthalate	216	1.817	17.97	3	7.44	E	80.0	___
4-Chlorophenyl-phenylether	0	0.781	0.00	3	7.98	ND	80.0	___
Fluorene	0	1.520	0.00	3	4.10	ND	80.0	___
4-Nitroaniline	0	0.515	0.00	3	12.10	ND	80.0	___
Hexachlorocyclopentadiene	0	0.330	0.00	3	18.89	ND	80.0	___
2,4,6-Trichlorophenol	0	0.418	0.00	3	14.91	ND	80.0	___
2,4,5-Trichlorophenol	0	0.466	0.00	3	13.38	ND	80.0	___
2-Chloronaphthalene	0	1.158	0.00	3	5.38	ND	80.0	___
2-Nitroaniline	0	0.434	0.00	3	14.36	ND	80.0	___
Dimethylphthalate	340	1.417	16.45	3	14.99	E	80.0	___
2,6-Dinitrotoluene	0	0.366	0.00	3	17.03	ND	80.0	___
2,4-Dinitrotoluene	0	0.583	0.00	3	10.69	ND	80.0	___
Acenaphthylene	0	1.890	0.00	3	3.30	ND	80.0	___

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard   Orgrep v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : 26330
Response File : 28319
Date Analyzed : 012/17/9
Date Reported : 01/06/93
Project Number: 22367

Sample ID: IN-M23-R3

TLI ID: 61-50-3(A,B,D,F)
Dilution Factor: 8.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
3-Nitroaniline	0	0.423	0.00	3	14.74	ND	80.0	___
Acenaphthene	0	1.266	0.00	3	4.92	ND	80.0	___
2,4-Dinitrophenol	0	0.263	0.00	3	23.70	ND	80.0	___
Phenanthrene-d10	14214		20.34	4		I		
Anthracene	0	1.059	0.00	4	2.13	ND	80.0	___
Di-n-butylphthalate	0	1.903	0.00	4	1.18	ND	80.0	___
Fluoranthene	0	1.420	0.00	4	1.59	ND	80.0	___
4,6-Dinitro-2-methylphenol	0	0.143	0.00	4	15.74	ND	80.0	___
N-Nitrosodiphenylamine	0	0.388	0.00	4	5.80	ND	80.0	___
4-Bromophenyl-phenylether	0	0.217	0.00	4	10.37	ND	80.0	___
Hexachlorobenzene	0	0.319	0.00	4	7.06	ND	80.0	___
Pentachlorophenol	0	0.214	0.00	4	10.52	ND	80.0	___
Phenanthrene	106	1.013	20.39	4	2.37	E	80.0	___
Chrysene-d12	18995		26.66	5		I		
Benzo(a)anthracene	0	1.149	0.00	5	1.47	ND	80.0	___
Pyrene	0	1.325	0.00	5	1.27	ND	80.0	___
Butylbenzylphthalate	0	0.629	0.00	5	2.68	ND	80.0	___
3,3'-Dichlorobenzidine	0	0.311	0.00	5	5.42	ND	80.0	___
bis(2-Ethylhexyl)phthalate	454	0.834	26.58	5	9.18	E	80.0	___
Chrysene	0	1.043	0.00	5	1.62	ND	80.0	___
Perylene-d12	5005		31.06	6		I		L
Di-n-octylphthalate	0	1.772	0.00	6	3.61	ND	80.0	___
Benzo(b)fluoranthene	0	1.433	0.00	6	4.46	ND	80.0	___
Benzo(k)fluoranthene	0	1.362	0.00	6	4.69	ND	80.0	___
Benzo(a)pyrene	0	1.312	0.00	6	4.87	ND	80.0	___
Indeno(1,2,3-cd)pyrene	0	1.611	0.00	6	3.97	ND	80.0	___
Dibenzo(a,h)anthracene	0	1.406	0.00	6	4.55	ND	80.0	___
Benzo(g,h,i)perylene	0	1.473	0.00	6	4.34	ND	80.0	___

Surrogate Summary	Area	RF	RT	ISID	Amount (ug)	Code	%REC
Phenol-d5	131	1.387	10.01	1	12.43	D	12.4
1,4-Dibromobenzene-d4	658	1.457	13.39	1	59.36	D	59.4
Nitrobenzene-d5	641	0.479	11.74	2	48.57	D	48.6
1,3,5-Trichlorobenzene-d3	544	0.426	12.46	2	46.31	D	46.3
2-Fluorobiphenyl	1178	1.305	15.59	3	56.31	D	56.3
2,4,6-Tribromophenol	0	0.553	0.00	3	NA	ND	NA
Anthracene-d10	0	0.837	0.00	4	NA	ND	NA
Pyrene-d10	0	1.065	0.00	5	NA	ND	NA
Terphenyl-d14	3102	0.993	23.79	5	52.64	D	52.6

Reveiwed by [signature] Date 1/6/93

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

Triangle Laboratories of RTP, Inc.	Sample File : JA801	Sample ID: OA-M23-RO
801 Capitola Dr.	Response File : JA795	
Durham, NC 27713	Date Analyzed : 11/21/92	TLI ID: 61-50-11(A,B,E)
(919) 544-5729	Date Reported : 01/06/93	Dilution Factor: 1.00
	Project Number: 22367	

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
1,4 Dichlorobenzene-d4	3368		8.44	1		I		
1,3-Dichlorobenzene	0	1.629	0.00	1	0.73	ND	10.0	___
1,4-Dichlorobenzene	0	1.624	0.00	1	0.73	ND	10.0	___
1,2-Dichlorobenzene	0	1.575	0.00	1	0.75	ND	10.0	___
2-Methylphenol	0	1.289	0.00	1	0.92	ND	10.0	___
2,2'-oxybis(1-Chloropropane)	0	1.586	0.00	1	0.75	ND	10.0	___
Benzyl alcohol	0	0.877	0.00	1	1.35	ND	10.0	___
4-Methylphenol	0	1.461	0.00	1	0.81	ND	10.0	___
N-Nitroso-di-n-propylamine	0	1.190	0.00	1	1.00	ND	10.0	___
Hexachloroethane	0	0.844	0.00	1	1.41	ND	10.0	___
Phenol	0	1.681	0.00	1	0.71	ND	10.0	___
bis(2-Chloroethyl)ether	0	1.426	0.00	1	0.83	ND	10.0	___
2-Chlorophenol	0	1.422	0.00	1	0.84	ND	10.0	___
Naphthalene-d8	12566		11.45	2		I		
Naphthalene	811	1.049	11.49	2	2.46	E	10.0	___
4-Chloroaniline	0	0.513	0.00	2	0.62	ND	10.0	___
Hexachlorobutadiene	0	0.240	0.00	2	1.33	ND	10.0	___
4-Chloro-3-methylphenol	0	0.408	0.00	2	0.78	ND	10.0	___
2-Methylnaphthalene	0	0.834	0.00	2	0.38	ND	10.0	___
Nitrobenzene	0	0.511	0.00	2	0.62	ND	10.0	___
Isophorone	0	0.963	0.00	2	0.33	ND	10.0	___
2-Nitrophenol	0	0.228	0.00	2	1.40	ND	10.0	___
2,4-Dimethylphenol	0	0.305	0.00	2	1.04	ND	10.0	___
bis(2-Chloroethoxy)methane	0	0.599	0.00	2	0.53	ND	10.0	___
Benzoic acid	281	0.177	11.24	2	5.06	E	10.0	___
2,4-Dichlorophenol	0	0.376	0.00	2	0.85	ND	10.0	___
1,2,4-Trichlorobenzene	0	0.419	0.00	2	0.76	ND	10.0	___
Acenaphthene-d10	7553		15.81	3		I		
Hexachlorocyclopentadiene	0	0.222	0.00	3	2.39	ND	10.0	___
2,4,6-Trichlorophenol	0	0.425	0.00	3	1.25	ND	10.0	___
2,4,5-Trichlorophenol	0	0.481	0.00	3	1.10	ND	10.0	___
2-Chloronaphthalene	0	1.271	0.00	3	0.42	ND	10.0	___
2-Nitroaniline	0	0.540	0.00	3	0.98	ND	10.0	___
Dimethylphthalate	0	1.501	0.00	3	0.35	ND	10.0	___
2,6-Dinitrotoluene	0	0.360	0.00	3	1.47	ND	10.0	___
2,4-Dinitrotoluene	0	0.520	0.00	3	1.02	ND	10.0	___
Acenaphthylene	0	1.954	0.00	3	0.27	ND	10.0	___
3-Nitroaniline	0	0.503	0.00	3	1.05	ND	10.0	___
Acenaphthene	0	1.127	0.00	3	0.47	ND	10.0	___
2,4-Dinitrophenol	0	0.089	0.00	3	5.95	ND	10.0	___
4-Nitrophenol	0	0.160	0.00	3	3.31	ND	10.0	___
Dibenzofuran	0	1.774	0.00	3	0.30	ND	10.0	___

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard   Orgrep v2.5

...le Laboratories of RTP Inc.
...01 Capitola Dr.
Durham, NC 27713
(919) 544-5728

Sample File : JAB01
Response File : JA795
Date Analyzed : 11/21/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: OA-M23-R0

TLI ID: 61-50-11(A,B,E)
Dilution Factor: 1.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Diethylphthalate	4934	1.576	17.22	3	16.58	D	10.0	___
4-Chlorophenyl-phenylether	0	0.639	0.00	3	0.83	ND	10.0	___
Fluorene	0	1.422	0.00	3	0.37	ND	10.0	___
4-Nitroaniline	0	0.342	0.00	3	1.55	ND	10.0	___
Phenanthrene-d10	13700		19.45	4		I		
Hexachlorobenzene	0	0.232	0.00	4	1.26	ND	10.0	___
Pentachlorophenol	0	0.097	0.00	4	3.01	ND	10.0	___
Phenanthrene	0	1.080	0.00	4	0.27	ND	10.0	___
Anthracene	0	1.092	0.00	4	0.27	ND	10.0	___
Di-n-butylphthalate	3609	1.444	21.33	4	7.30	E	10.0	___
Fluoranthene	0	0.947	0.00	4	0.31	ND	10.0	___
4,6-Dinitro-2-methylphenol	0	0.097	0.00	4	3.01	ND	10.0	___
N-Nitrosodiphenylamine	0	0.511	0.00	4	0.57	ND	10.0	___
4-Bromophenyl-phenylether	0	0.203	0.00	4	1.44	ND	10.0	___
Chrysene-d12	5092		26.07	5		I		
Chrysene	0	1.168	0.00	5	0.67	ND	10.0	___
Benzo(a)anthracene	0	1.275	0.00	5	0.62	ND	10.0	___
Pyrene	0	1.807	0.00	5	0.43	ND	10.0	___
Butylbenzylphthalate	0	1.037	0.00	5	0.76	ND	10.0	___
3,3'-Dichlorobenzidine	0	0.341	0.00	5	2.30	ND	10.0	___
bis(2-Ethylhexyl)phthalate	0	1.390	0.00	5	0.57	ND	10.0	___
Perylene-d12	2821		30.17	6		I		
Di-n-octylphthalate	0	3.407	0.00	6	0.42	ND	10.0	___
Benzo(b)fluoranthene	0	1.615	0.00	6	0.88	ND	10.0	___
Benzo(k)fluoranthene	0	1.412	0.00	6	1.00	ND	10.0	___
Benzo(a)pyrene	0	1.405	0.00	6	1.01	ND	10.0	___
Indeno(1,2,3-cd)pyrene	0	1.019	0.00	6	1.39	ND	10.0	___
Dibenzo(a,h)anthracene	0	1.019	0.00	6	1.39	ND	10.0	___
Benzo(g,h,i)perylene	0	1.062	0.00	6	1.34	ND	10.0	___

JW 1/6/93

Surrogate Summary	Area	RF	RT	ISID	Amount (ug)	Code	%REC
Phenol-d5	6113	2.040	8.01	1	35.59	D	35.6
1,4-Dibromobenzene-d4	4427	1.431	11.54	1	36.75	D	36.8
2,4,6-Tribromophenol	1580	0.260	17.81	3	32.19	D	32.2
Pyrene-d10	17032	1.731	22.97	5	77.28	D	77.3
Terphenyl-d14	12092	1.262	23.61	5	75.26	D	75.3

Reveiwed by JW Date 1/6/93

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : 28166
Response File : 28158
Date Analyzed : 12/04/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID OA-M23-R1

TLI ID: 61-50-4(A,B,D,F)
Dilution Factor: 4.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
1,4-Dichlorobenzene-d4	1958		11.14	1		I		
1,3-Dichlorobenzene	0	1.447	0.00	1	5.65	ND	40.0	___
1,4-Dichlorobenzene	0	1.547	0.00	1	5.28	ND	40.0	___
1,2-Dichlorobenzene	0	1.492	0.00	1	5.48	ND	40.0	___
Benzyl alcohol	0	0.690	0.00	1	11.84	ND	40.0	___
2,2'-oxybis(1-Chloropropane)	0	1.068	0.00	1	7.65	ND	40.0	___
2-Methylphenol	0	0.954	0.00	1	8.56	ND	40.0	___
N-Nitroso-di-n-propylamine	0	0.752	0.00	1	10.86	ND	40.0	___
Hexachloroethane	0	0.656	0.00	1	12.45	ND	40.0	___
Phenol	0	1.366	0.00	1	5.98	ND	40.0	___
bis(2-Chloroethyl)ether	6249	1.136	10.57	1	449.45	D	40.0	___
2-Chlorophenol	0	1.206	0.00	1	6.77	ND	40.0	___
Naphthalene-d8	8987		13.82	2		I		
bis(2-Chloroethoxy)methane	0	0.389	0.00	2	4.58	ND	40.0	___
Benzoic acid	9482	0.158	13.23	2	1068.35	E	40.0	___
2,4-Dichlorophenol	0	0.317	0.00	2	5.62	ND	40.0	___
1,2,4-Trichlorobenzene	0	0.381	0.00	2	4.67	ND	40.0	___
Naphthalene	2945	0.987	13.87	2	53.12	D	40.0	___
4-Chloroaniline	0	0.408	0.00	2	4.36	ND	40.0	___
Hexachlorobutadiene	0	0.243	0.00	2	7.33	ND	40.0	___
4-Chloro-3-methylphenol	0	0.281	0.00	2	6.34	ND	40.0	___
2-Methylnaphthalene	195	0.806	15.36	2	4.31	E	40.0	___
Nitrobenzene	0	0.356	0.00	2	5.00	ND	40.0	___
Isophorone	0	0.659	0.00	2	2.70	ND	40.0	___
2-Nitrophenol	0	0.228	0.00	2	7.81	ND	40.0	___
2,4-Dimethylphenol	0	0.310	0.00	2	5.74	ND	40.0	___
Acenaphthene-d10	6943		17.66	3		I		
4-Nitrophenol	0	0.168	0.00	3	13.72	ND	40.0	___
Dibenzofuran	0	1.663	0.00	3	1.39	ND	40.0	___
Diethylphthalate	621	1.370	18.52	3	10.45	E	40.0	___
4-Chlorophenyl-phenylether	0	0.737	0.00	3	3.13	ND	40.0	___
Fluorene	0	1.450	0.00	3	1.59	ND	40.0	___
4-Nitroaniline	0	0.423	0.00	3	5.45	ND	40.0	___
Hexachlorocyclopentadiene	0	0.349	0.00	3	6.60	ND	40.0	___
2,4,6-Trichlorophenol	0	0.401	0.00	3	5.75	ND	40.0	___
2,4,5-Trichlorophenol	0	0.447	0.00	3	5.16	ND	40.0	___
2-Chloronaphthalene	0	1.125	0.00	3	2.05	ND	40.0	___
2-Nitroaniline	0	0.321	0.00	3	7.18	ND	40.0	___
Dimethylphthalate	0	1.269	0.00	3	1.82	ND	40.0	___
2,6-Dinitrotoluene	0	0.316	0.00	3	7.29	ND	40.0	___
2,4-Dinitrotoluene	0	0.419	0.00	3	5.50	ND	40.0	___
Acenaphthylene	0	1.812	0.00	3	1.27	ND	40.0	___

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

Laboratories of RTP, Inc.
Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : ZB166
Response File : ZB158
Date Analyzed : 12/04/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: OA-M23-R1
TLI ID: 61-50-4(A,B,D,F)
Dilution Factor: 4.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
3-Nitroaniline	0	0.304	0.00	3	7.58	ND	40.0	___
Acenaphthene	0	1.155	0.00	3	2.00	ND	40.0	___
2,4-Dinitrophenol	0	0.184	0.00	3	12.52	ND	40.0	___
Phenanthrene-d10	21166		20.95	4		I		
Anthracene	0	1.103	0.00	4	0.69	ND	40.0	___
Di-n-butylphthalate	3900	1.577	22.10	4	18.70	E	40.0	___
Fluoranthene	0	1.355	0.00	4	0.56	ND	40.0	___
4,6-Dinitro-2-methylphenol	0	0.123	0.00	4	6.15	ND	40.0	___
N-Nitrosodiphenylamine	0	0.382	0.00	4	1.98	ND	40.0	___
4-Bromophenyl-phenylether	0	0.193	0.00	4	3.92	ND	40.0	___
Hexachlorobenzene	0	0.220	0.00	4	3.44	ND	40.0	___
Pentachlorophenol	0	0.131	0.00	4	5.77	ND	40.0	___
Phenanthrene	510	1.045	21.00	4	3.69	E	40.0	___
Chrysene-d12	17938		27.56	5		I		
Benzo(a)anthracene	0	1.212	0.00	5	0.74	ND	40.0	___
Pyrene	0	1.760	0.00	5	0.51	ND	40.0	___
Butylbenzylphthalate	0	0.670	0.00	5	1.33	ND	40.0	___
3,3'-Dichlorobenzidine	0	0.409	0.00	5	2.18	ND	40.0	___
bis(2-Ethylhexyl)phthalate	3900	1.963	22.10	5	17.72	E	40.0	___
Chrysene	0	1.122	0.00	5	0.79	ND	40.0	___
Perylene-d12	15628		32.26	6		I		
Di-n-octylphthalate	0	2.315	0.00	6	0.44	ND	40.0	___
Benzo(b)fluoranthene	0	1.512	0.00	6	0.68	ND	40.0	___
Benzo(k)fluoranthene	0	1.508	0.00	6	0.68	ND	40.0	___
Benzo(a)pyrene	0	1.418	0.00	6	0.72	ND	40.0	___
Indeno(1,2,3-cd)pyrene	0	1.434	0.00	6	0.71	ND	40.0	___
Dibenzo(a,h)anthracene	0	1.195	0.00	6	0.86	ND	40.0	___
Benzo(g,h,i)perylene	0	1.309	0.00	6	0.78	ND	40.0	___

Surrogate Summary	Area	RF	RT	ISID	Amount (ug)	Code	%REC
Phenol-d5	426	1.435	10.41	1	24.31	D	24.3
1,4-Dibromobenzene-d4	1325	1.384	13.93	1	78.27	D	78.3
Nitrobenzene-d5	1266	0.411	12.26	2	54.87	D	54.9
1,3,5-Trichlorobenzene-d3	1236	0.538	12.99	2	40.90	D	40.9
2-Fluorobiphenyl	3248	1.441	16.13	3	51.95	D	52.0
2,4,6-Tribromophenol	449	0.314	19.42	3	32.97	D	33.0
Anthracene-d10	7340	0.973	21.07	4	57.03	D	57.0
Pyrene-d10	7701	1.600	24.11	5	42.94	D	42.9
Terphenyl-d14	5717	1.215	24.42	5	41.98	D	42.0

Reveiwed by AU Date 1/6/93

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : 28343
Response File : 28336
Date Analyzed : 12/18/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: OA-M23-R2
TLI ID: 61-50-5(A,B,D,F)
Dilution Factor: 8.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
1,4-Dichlorobenzene-d4	2090		10.36	1		I		
2-Chlorophenol	0	1.311	0.00	1	11.67	ND	80.0	___
1,3-Dichlorobenzene	0	1.527	0.00	1	10.02	ND	80.0	___
1,4-Dichlorobenzene	0	1.592	0.00	1	9.61	ND	80.0	___
1,2-Dichlorobenzene	0	1.507	0.00	1	10.16	ND	80.0	___
Benzyl alcohol	0	0.728	0.00	1	21.02	ND	80.0	___
2,2'-oxybis(1-Chloropropane)	0	1.426	0.00	1	10.73	ND	80.0	___
2-Methylphenol	0	1.074	0.00	1	14.25	ND	80.0	___
N-Nitroso-di-n-propylamine	0	1.061	0.00	1	14.43	ND	80.0	___
Hexachloroethane	0	0.833	0.00	1	18.37	ND	80.0	___
Phenol	683	1.503	9.60	1	69.55	E	80.0	___
bis(2-Chloroethyl)ether	0	1.351	0.00	1	11.33	ND	80.0	___
Naphthalene-d8	8301		12.99	2		I		
bis(2-Chloroethoxy)methane	0	0.468	0.00	2	8.24	ND	80.0	___
Benzoic acid	7847	0.220	12.50	2	1375.01	E	80.0	___
2,4-Dichlorophenol	0	0.297	0.00	2	12.98	ND	80.0	___
1,2,4-Trichlorobenzene	0	0.381	0.00	2	10.12	ND	80.0	___
Naphthalene	2157	1.071	13.04	2	77.65	E	80.0	___
4-Chloroaniline	0	0.379	0.00	2	10.17	ND	80.0	___
Hexachlorobutadiene	0	0.296	0.00	2	13.02	ND	80.0	___
4-Chloro-3-methylphenol	0	0.285	0.00	2	13.53	ND	80.0	___
2-Methylnaphthalene	0	0.777	0.00	2	4.96	ND	80.0	___
Nitrobenzene	0	0.477	0.00	2	8.08	ND	80.0	___
Isophorone	0	0.838	0.00	2	4.60	ND	80.0	___
2-Nitrophenol	0	0.234	0.00	2	16.47	ND	80.0	___
2,4-Dimethylphenol	0	0.328	0.00	2	11.75	ND	80.0	___
Acenaphthene-d10	5939		16.78	3		I		
4-Nitrophenol	0	0.328	0.00	3	16.43	ND	80.0	___
Dibenzofuran	0	1.774	0.00	3	3.04	ND	80.0	___
Diethylphthalate	745	1.945	17.69	3	20.64	E	80.0	___
4-Chlorophenyl-phenylether	0	0.814	0.00	3	6.62	ND	80.0	___
Fluorene	0	1.559	0.00	3	3.46	ND	80.0	___
4-Nitroaniline	0	0.574	0.00	3	9.39	ND	80.0	___
Hexachlorocyclopentadiene	0	0.384	0.00	3	14.03	ND	80.0	___
2,4,6-Trichlorophenol	0	0.399	0.00	3	13.50	ND	80.0	___
2,4,5-Trichlorophenol	0	0.427	0.00	3	12.62	ND	80.0	___
2-Chloronaphthalene	0	1.202	0.00	3	4.48	ND	80.0	___
2-Nitroaniline	0	0.489	0.00	3	11.02	ND	80.0	___
Dimethylphthalate	0	1.478	0.00	3	3.65	ND	80.0	___
2,6-Dinitrotoluene	0	0.365	0.00	3	14.76	ND	80.0	___
2,4-Dinitrotoluene	0	0.619	0.00	3	8.70	ND	80.0	___
Acenaphthylene	0	1.925	0.00	3	2.80	ND	80.0	___

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

... Laboratories of RTP, Inc.
... Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : ZB343
Response File : ZB336
Date Analyzed : 12/18/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: OA-M23-R2

TLI ID: 61-50-5(A,B,D,F)
Dilution Factor: 8.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
3-Nitroaniline	0	0.413	0.00	3	13.05	ND	80.0	___
Acenaphthene	0	1.285	0.00	3	4.19	ND	80.0	___
2,4-Dinitrophenol	0	0.284	0.00	3	18.97	ND	80.0	___
Phenanthrene-d10	21674		20.02	4		I		H
Anthracene	0	1.059	0.00	4	1.39	ND	80.0	___
Di-n-butylphthalate	0	1.980	0.00	4	0.75	ND	80.0	___
Fluoranthene	0	1.576	0.00	4	0.94	ND	80.0	___
4,6-Dinitro-2-methylphenol	0	0.172	0.00	4	8.58	ND	80.0	___
N-Nitrosodiphenylamine	0	0.351	0.00	4	4.21	ND	80.0	___
4-Bromophenyl-phenylether	0	0.239	0.00	4	6.18	ND	80.0	___
Hexachlorobenzene	0	0.380	0.00	4	3.89	ND	80.0	___
Pentachlorophenol	0	0.262	0.00	4	5.64	ND	80.0	___
Phenanthrene	0	1.018	0.00	4	1.45	ND	80.0	___
Chrysene-d12	32648		26.21	5		I		H
Benzo(a)anthracene	0	1.171	0.00	5	0.84	ND	80.0	___
Pyrene	0	1.164	0.00	5	0.84	ND	80.0	___
Butylbenzylphthalate	720	0.615	24.81	5	11.48	E	80.0	___
3,3'-Dichlorobenzidine	0	0.261	0.00	5	3.76	ND	80.0	___
bis(2-Ethylhexyl)phthalate	0	0.866	0.00	5	1.13	ND	80.0	___
Chrysene	0	0.986	0.00	5	0.99	ND	80.0	___
Perylene-d12	27341		30.51	6		I		H
Di-n-octylphthalate	0	1.729	0.00	6	0.68	ND	80.0	___
Benzo(b)fluoranthene	0	1.437	0.00	6	0.81	ND	80.0	___
Benzo(k)fluoranthene	0	1.359	0.00	6	0.86	ND	80.0	___
Benzo(a)pyrene	0	1.312	0.00	6	0.89	ND	80.0	___
Indeno(1,2,3-cd)pyrene	0	1.573	0.00	6	0.74	ND	80.0	___
Dibenzo(a,h)anthracene	0	1.365	0.00	6	0.86	ND	80.0	___
Benzo(g,h,i)perylene	0	1.440	0.00	6	0.81	ND	80.0	___

Surrogate Summary	Area	RF	RT	ISID	Amount (ug)	Code	%REC
Phenol-d5	811	1.389	9.57	1	89.38	D	89.4
1,4-Dibromobenzene-d4	1254	1.598	13.10	1	120.11	D	120.1
Nitrobenzene-d5	1224	0.494	11.46	2	95.51	D	95.5
1,3,5-Trichlorobenzene-d3	788	0.425	12.18	2	71.54	D	71.5
2-Fluorobiphenyl	1985	1.332	15.30	3	80.30	D	80.3
2,4,6-Tribromophenol	1607	0.610	18.49	3	142.01	D	142.0
Anthracene-d10	5385	0.854	20.14	4	93.10	D	93.1
Pyrene-d10	8864	0.937	23.13	5	92.72	D	92.7
Terphenyl-d14	9234	0.933	23.47	5	97.01	D	97.0

Reviewed by AID Date 1/6/93

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File · ZB310
Response File : ZB309
Date Analyzed : 12/17/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: OA-M23-R3

TLI ID: 61-50-6(A,B,D,F)
Dilution Factor: 8.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
1,4-Dichlorobenzene-d4	5865		10.79	1		I		
2-Chlorophenol	0	1.349	0.00	1	4.04	ND	80.0	___
1,3-Dichlorobenzene	0	1.564	0.00	1	3.49	ND	80.0	___
1,4-Dichlorobenzene	0	1.623	0.00	1	3.36	ND	80.0	___
1,2-Dichlorobenzene	0	1.549	0.00	1	3.52	ND	80.0	___
Benzyl alcohol	0	0.724	0.00	1	7.54	ND	80.0	___
2,2'-oxybis(1-Chloropropane)	0	1.272	0.00	1	4.29	ND	80.0	___
2-Methylphenol	0	1.077	0.00	1	5.07	ND	80.0	___
N-Nitroso-di-n-propylamine	0	0.938	0.00	1	5.82	ND	80.0	___
Hexachloroethane	0	0.731	0.00	1	7.46	ND	80.0	___
Phenol	2318	1.523	10.00	1	83.07	D	80.0	___
bis(2-Chloroethyl)ether	0	1.286	0.00	1	4.24	ND	80.0	___
Naphthalene-d8	21438		13.45	2		I		
bis(2-Chloroethoxy)methane	0	0.450	0.00	2	3.32	ND	80.0	___
Benzoic acid	14562	0.255	12.89	2	852.45	D	80.0	___
2,4-Dichlorophenol	0	0.326	0.00	2	4.58	ND	80.0	___
1,2,4-Trichlorobenzene	0	0.379	0.00	2	3.94	ND	80.0	___
Naphthalene	0	1.065	0.00	2	1.40	ND	80.0	___
4-Chloroaniline	0	0.428	0.00	2	3.49	ND	80.0	___
Hexachlorobutadiene	0	0.264	0.00	2	5.65	ND	80.0	___
4-Chloro-3-methylphenol	0	0.297	0.00	2	5.03	ND	80.0	___
2-Methylnaphthalene	260	0.799	14.98	2	4.87	E	80.0	___
Nitrobenzene	0	0.431	0.00	2	3.46	ND	80.0	___
Isophorone	0	0.776	0.00	2	1.92	ND	80.0	___
2-Nitrophenol	0	0.238	0.00	2	6.27	ND	80.0	___
2,4-Dimethylphenol	0	0.314	0.00	2	4.75	ND	80.0	___
Acenaphthene-d10	13213		17.27	3		I		
4-Nitrophenol	0	0.221	0.00	3	10.96	ND	80.0	___
Dibenzofuran	0	1.785	0.00	3	1.36	ND	80.0	___
Diethylphthalate	717	1.654	18.15	3	10.51	E	80.0	___
4-Chlorophenyl-phenylether	0	0.781	0.00	3	3.10	ND	80.0	___
Fluorene	0	1.515	0.00	3	1.60	ND	80.0	___
4-Nitroaniline	0	0.557	0.00	3	4.35	ND	80.0	___
Hexachlorocyclopentadiene	0	0.306	0.00	3	7.91	ND	80.0	___
2,4,6-Trichlorophenol	0	0.404	0.00	3	5.99	ND	80.0	___
2,4,5-Trichlorophenol	0	0.449	0.00	3	5.39	ND	80.0	___
2-Chloronaphthalene	0	1.159	0.00	3	2.09	ND	80.0	___
2-Nitroaniline	0	0.347	0.00	3	6.98	ND	80.0	___
Dimethylphthalate	0	1.272	0.00	3	1.90	ND	80.0	___
2,6-Dinitrotoluene	0	0.322	0.00	3	7.52	ND	80.0	___
2,4-Dinitrotoluene	0	0.508	0.00	3	4.77	ND	80.0	___
Acenaphthylene	153	1.899	16.96	3	1.96	E	80.0	___

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard   Orgrep v2.5

...oratories of RTP, Inc.
...ola Dr.
...am, NC 27713
(919) 544-5729

Sample File : ZB310
Response File : ZB309
Date Analyzed : 12/17/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: OA-M23-R3

TLI ID: 61-50-6(A,B,D,F)
Dilution Factor: 8.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
3-Nitroaniline	0	0.390	0.00	3	6.21	ND	80.0	___
Acenaphthene	0	1.185	0.00	3	2.04	ND	80.0	___
2,4-Dinitrophenol	0	0.222	0.00	3	10.91	ND	80.0	___
Phenanthrene-d10	38596		20.53	4		I		
Anthracene	0	1.101	0.00	4	0.75	ND	80.0	___
Di-n-butylphthalate	1589	1.975	21.72	4	6.67	E	80.0	___
Fluoranthene	0	1.542	0.00	4	0.54	ND	80.0	___
4,6-Dinitro-2-methylphenol	0	0.131	0.00	4	6.33	ND	80.0	___
N-Nitrosodiphenylamine	0	0.355	0.00	4	2.34	ND	80.0	___
4-Bromophenyl-phenylether	0	0.205	0.00	4	4.04	ND	80.0	___
Hexachlorobenzene	0	0.291	0.00	4	2.85	ND	80.0	___
Pentachlorophenol	0	0.195	0.00	4	4.25	ND	80.0	___
Phenanthrene	505	1.030	20.58	4	4.07	E	80.0	___
Chrysene-d12	45400		26.96	5		I		
Benzo(a)anthracene	0	1.152	0.00	5	0.61	ND	80.0	___
Pyrene	0	1.313	0.00	5	0.54	ND	80.0	___
Butylbenzylphthalate	0	0.601	0.00	5	1.17	ND	80.0	___
3,3'-Dichlorobenzidine	0	0.388	0.00	5	1.82	ND	80.0	___
bis(2-Ethylhexyl)phthalate	2015	0.850	26.85	5	16.72	E	80.0	___
Chrysene	0	1.082	0.00	5	0.65	ND	80.0	___
Perylene-d12	40940		31.43	6		I		
Di-n-octylphthalate	0	1.830	0.00	6	0.43	ND	80.0	___
Benzo(b)fluoranthene	0	1.392	0.00	6	0.56	ND	80.0	___
Benzo(k)fluoranthene	0	1.377	0.00	6	0.57	ND	80.0	___
Benzo(a)pyrene	0	1.328	0.00	6	0.59	ND	80.0	___
Indeno(1,2,3-cd)pyrene	0	1.476	0.00	6	0.53	ND	80.0	___
Dibenzo(a,h)anthracene	0	1.284	0.00	6	0.61	ND	80.0	___
Benzo(g,h,i)perylene	0	1.306	0.00	6	0.60	ND	80.0	___

Surrogate Summary	Area	RF	RT	ISID	Amount (ug)	Code	%REC
Phenol-d5	1664	1.397	9.97	1	65.02	D	65.0
1,4-Dibromobenzene-d4	1662	1.499	13.56	1	60.50	D	60.5
Nitrobenzene-d5	1714	0.453	11.91	2	56.49	D	56.5
1,3,5-Trichlorobenzene-d3	1433	0.444	12.62	2	48.20	D	48.2
2-Fluorobiphenyl	3460	1.271	15.76	3	65.94	D	65.9
2,4,6-Tribromophenol	1629	0.481	18.98	3	82.03	D	82.0
Anthracene-d10	7064	0.863	20.65	4	67.87	D	67.9
Pyrene-d10	9760	1.065	23.66	5	64.59	D	64.6
Terphenyl-d14	8516	0.944	23.98	5	63.59	D	63.6

Reveiwed by MW Date 1/6/93

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : JA808
Response File : JA806
Date Analyzed : 11/22/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: 08-M23-RO

TLI ID: 61-50-12(A,B,E)
Dilution Factor: 1.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
1,4 Dichlorobenzene-d4	3464		8.47	1		I		
1,3-Dichlorobenzene	0	1.598	0.00	1	0.72	ND	10.0	___
1,4-Dichlorobenzene	0	1.573	0.00	1	0.73	ND	10.0	___
1,2-Dichlorobenzene	0	1.466	0.00	1	0.79	ND	10.0	___
2-Methylphenol	0	1.263	0.00	1	0.91	ND	10.0	___
2,2'-oxybis(1-Chloropropane)	0	1.517	0.00	1	0.76	ND	10.0	___
Benzyl alcohol	0	0.646	0.00	1	1.79	ND	10.0	___
4-Methylphenol	0	1.344	0.00	1	0.86	ND	10.0	___
N-Nitroso-di-n-propylamine	0	1.125	0.00	1	1.03	ND	10.0	___
Hexachloroethane	0	0.823	0.00	1	1.40	ND	10.0	___
Phenol	0	1.587	0.00	1	0.73	ND	10.0	___
bis(2-Chloroethyl)ether	0	1.325	0.00	1	0.87	ND	10.0	___
2-Chlorophenol	0	1.309	0.00	1	0.88	ND	10.0	___
Naphthalene-d8	12678		11.48	2		I		
Naphthalene	25121	1.041	11.54	2	76.13	D	10.0	___
4-Chloroaniline	0	0.489	0.00	2	0.65	ND	10.0	___
Hexachlorobutadiene	0	0.230	0.00	2	1.37	ND	10.0	___
4-Chloro-3-methylphenol	0	0.385	0.00	2	0.82	ND	10.0	___
2-Methylnaphthalene	0	0.813	0.00	2	0.39	ND	10.0	___
Nitrobenzene	0	0.485	0.00	2	0.65	ND	10.0	___
Isophorone	0	0.911	0.00	2	0.35	ND	10.0	___
2-Nitrophenol	0	0.203	0.00	2	1.55	ND	10.0	___
2,4-Dimethylphenol	0	0.310	0.00	2	1.02	ND	10.0	___
bis(2-Chloroethoxy)methane	0	0.562	0.00	2	0.56	ND	10.0	___
Benzoic acid	0	0.160	0.00	2	1.97	ND	10.0	___
2,4-Dichlorophenol	0	0.360	0.00	2	0.88	ND	10.0	___
1,2,4-Trichlorobenzene	0	0.401	0.00	2	0.79	ND	10.0	___
Acenaphthene-d10	8676		15.84	3		I		
Hexachlorocyclopentadiene	0	0.221	0.00	3	2.09	ND	10.0	___
2,4,6-Trichlorophenol	0	0.426	0.00	3	1.08	ND	10.0	___
2,4,5-Trichlorophenol	0	0.486	0.00	3	0.95	ND	10.0	___
2-Chloronaphthalene	0	1.300	0.00	3	0.35	ND	10.0	___
2-Nitroaniline	0	0.517	0.00	3	0.89	ND	10.0	___
Dimethylphthalate	0	1.462	0.00	3	0.32	ND	10.0	___
2,6-Dinitrotoluene	0	0.348	0.00	3	1.32	ND	10.0	___
2,4-Dinitrotoluene	0	0.507	0.00	3	0.91	ND	10.0	___
Acenaphthylene	0	1.931	0.00	3	0.24	ND	10.0	___
3-Nitroaniline	0	0.491	0.00	3	0.94	ND	10.0	___
Acenaphthene	0	1.146	0.00	3	0.40	ND	10.0	___
2,4-Dinitrophenol	0	0.098	0.00	3	4.70	ND	10.0	___
4-Nitrophenol	0	0.154	0.00	3	2.99	ND	10.0	___
Dibenzofuran	0	1.773	0.00	3	0.26	ND	10.0	___

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

[...]oratories of RTP, Inc.
[...]itola Dr.
[...]rham, NC 27713
(919) 544-5729

Sample File : JA808
Response File : JA806
Date Analyzed : 11/22/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: 08-M23-RO
TLI ID: 61-50-12(A,B,E)
Dilution Factor: 1.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Diethylphthalate	3204	1.537	17.24	3	9.61	E	10.0	___
4-Chlorophenyl-phenylether	0	0.616	0.00	3	0.75	ND	10.0	___
Fluorene	0	1.295	0.00	3	0.36	ND	10.0	___
4-Nitroaniline	0	0.344	0.00	3	1.34	ND	10.0	___
Phenanthrene-d10	15986		19.47	4		I		
Hexachlorobenzene	0	0.236	0.00	4	1.06	ND	10.0	___
Pentachlorophenol	0	0.096	0.00	4	2.61	ND	10.0	___
Phenanthrene	0	1.136	0.00	4	0.22	ND	10.0	___
Anthracene	0	1.112	0.00	4	0.23	ND	10.0	___
Di-n-butylphthalate	2206	1.512	21.36	4	3.65	E	10.0	___
Fluoranthene	0	0.964	0.00	4	0.26	ND	10.0	___
4,6-Dinitro-2-methylphenol	0	0.097	0.00	4	2.58	ND	10.0	___
N-Nitrosodiphenylamine	0	0.539	0.00	4	0.46	ND	10.0	___
4-Bromophenyl-phenylether	0	0.195	0.00	4	1.28	ND	10.0	___
Chrysene-d12	7609		26.11	5		I		
Chrysene	0	1.177	0.00	5	0.45	ND	10.0	___
Benzo(a)anthracene	0	1.302	0.00	5	0.40	ND	10.0	___
Pyrene	0	1.906	0.00	5	0.28	ND	10.0	___
Butylbenzylphthalate	0	1.054	0.00	5	0.50	ND	10.0	___
3,3'-Dichlorobenzidine	0	0.335	0.00	5	1.57	ND	10.0	___
bis(2-Ethylhexyl)phthalate	217	1.418	26.67	5	0.81	E	10.0	___
Perylene-d12	3968		30.21	6		I		
Di-n-octylphthalate	0	3.296	0.00	6	0.31	ND	10.0	___
Benzo(b)fluoranthene	0	1.528	0.00	6	0.66	ND	10.0	___
Benzo(k)fluoranthene	0	1.437	0.00	6	0.70	ND	10.0	___
Benzo(a)pyrene	0	1.395	0.00	6	0.72	ND	10.0	___
Indeno(1,2,3-cd)pyrene	0	1.022	0.00	6	0.99	ND	10.0	___
Dibenzo(a,h)anthracene	0	0.998	0.00	6	1.01	ND	10.0	___
Benzo(g,h,i)perylene	0	1.027	0.00	6	0.98	ND	10.0	___

AO 1/4/93

Surrogate Summary	Area	RF	RT	ISID	Amount (ug)	Code	%REC
Phenol-d5	7096	1.912	8.03	1	42.85	D	42.9
1,4-Dibromobenzene-d4	5043	1.286	11.58	1	45.27	D	45.3
Nitrobenzene-d5	272	0.593	9.93	2	1.45	D	1.5
2,4,6-Tribromophenol	2124	0.231	17.83	3	42.39	D	42.4
Pyrene-d10	22324	1.816	23.00	5	64.62	D	64.6
Terphenyl-d14	15187	1.292	23.64	5	61.79	D	61.8

Reveiwed by AO Date 1/6/93

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : JA809
Response File : JA806
Date Analyzed : 11/22/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: 05-M23-[illegible]-20
TLI ID: 61-5[illegible]-70
Dilution Factor: 4.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
1,4 Dichlorobenzene-d4	3276		8.45	1		I		
1,3-Dichlorobenzene	0	1.598	0.00	1	3.06	ND	40.0	___
1,4-Dichlorobenzene	0	1.573	0.00	1	3.10	ND	40.0	___
1,2-Dichlorobenzene	0	1.466	0.00	1	3.33	ND	40.0	___
2-Methylphenol	0	1.263	0.00	1	3.87	ND	40.0	___
2,2'-oxybis(1-Chloropropane)	0	1.517	0.00	1	3.22	ND	40.0	___
Benzyl alcohol	0	0.646	0.00	1	7.56	ND	40.0	___
4-Methylphenol	0	1.344	0.00	1	3.63	ND	40.0	___
N-Nitroso-di-n-propylamine	0	1.125	0.00	1	4.34	ND	40.0	___
Hexachloroethane	0	0.823	0.00	1	5.93	ND	40.0	___
Phenol	0	1.587	0.00	1	3.08	ND	40.0	___
bis(2-Chloroethyl)ether	0	1.325	0.00	1	3.69	ND	40.0	___
2-Chlorophenol	0	1.309	0.00	1	3.73	ND	40.0	___
Naphthalene-d8	11644		11.46	2		I		
Naphthalene	0	1.041	0.00	2	1.32	ND	40.0	___
4-Chloroaniline	0	0.489	0.00	2	2.81	ND	40.0	___
Hexachlorobutadiene	0	0.230	0.00	2	5.97	ND	40.0	___
4-Chloro-3-methylphenol	0	0.385	0.00	2	3.57	ND	40.0	___
2-Methylnaphthalene	0	0.813	0.00	2	1.69	ND	40.0	___
Nitrobenzene	0	0.485	0.00	2	2.83	ND	40.0	___
Isophorone	0	0.911	0.00	2	1.51	ND	40.0	___
2-Nitrophenol	0	0.203	0.00	2	6.77	ND	40.0	___
2,4-Dimethylphenol	0	0.310	0.00	2	4.43	ND	40.0	___
bis(2-Chloroethoxy)methane	0	0.562	0.00	2	2.44	ND	40.0	___
Benzoic acid	0	0.160	0.00	2	8.59	ND	40.0	___
2,4-Dichlorophenol	0	0.360	0.00	2	3.82	ND	40.0	___
1,2,4-Trichlorobenzene	0	0.401	0.00	2	3.43	ND	40.0	___
Acenaphthene-d10	6324		15.83	3		I		
Hexachlorocyclopentadiene	0	0.221	0.00	3	11.45	ND	40.0	___
2,4,6-Trichlorophenol	0	0.426	0.00	3	5.94	ND	40.0	___
2,4,5-Trichlorophenol	0	0.486	0.00	3	5.21	ND	40.0	___
2-Chloronaphthalene	0	1.300	0.00	3	1.95	ND	40.0	___
2-Nitroaniline	0	0.517	0.00	3	4.89	ND	40.0	___
Dimethylphthalate	0	1.462	0.00	3	1.73	ND	40.0	___
2,6-Dinitrotoluene	0	0.348	0.00	3	7.27	ND	40.0	___
2,4-Dinitrotoluene	0	0.507	0.00	3	4.99	ND	40.0	___
Acenaphthylene	0	1.931	0.00	3	1.31	ND	40.0	___
3-Nitroaniline	0	0.491	0.00	3	5.15	ND	40.0	___
Acenaphthene	0	1.146	0.00	3	2.21	ND	40.0	___
2,4-Dinitrophenol	0	0.098	0.00	3	25.82	ND	40.0	___
4-Nitrophenol	0	0.154	0.00	3	16.43	ND	40.0	___
Dibenzofuran	0	1.773	0.00	3	1.43	ND	40.0	___

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

...atories of RTP, Inc
...ola Dr.
..., NC 27713
(919) 544-5729

Sample File : JA809
Response File : JA806
Date Analyzed : 11/22/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: 08-M23-R1 H20
TLI ID: 61-50-70
Dilution Factor: 4.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Diethylphthalate	0	1.537	0.00	3	1.65	ND	40.0	___
4-Chlorophenyl-phenylether	0	0.616	0.00	3	4.11	ND	40.0	___
Fluorene	0	1.295	0.00	3	1.95	ND	40.0	___
4-Nitroaniline	0	0.344	0.00	3	7.35	ND	40.0	___
Phenanthrene-d10	9699		19.46	4		I		
Hexachlorobenzene	0	0.236	0.00	4	6.89	ND	40.0	___
Pentachlorophenol	0	0.096	0.00	4	17.18	ND	40.0	___
Phenanthrene	0	1.136	0.00	4	1.45	ND	40.0	___
Anthracene	0	1.112	0.00	4	1.48	ND	40.0	___
Di-n-butylphthalate	0	1.512	0.00	4	1.09	ND	40.0	___
Fluoranthene	0	0.964	0.00	4	1.71	ND	40.0	___
4,6-Dinitro-2-methylphenol	0	0.097	0.00	4	17.01	ND	40.0	___
N-Nitrosodiphenylamine	0	0.539	0.00	4	3.06	ND	40.0	___
4-Bromophenyl-phenylether	0	0.195	0.00	4	8.46	ND	40.0	___
Chrysene-d12	3575		26.10	5		I		
Chrysene	0	1.177	0.00	5	3.80	ND	40.0	___
Benzo(a)anthracene	0	1.302	0.00	5	3.44	ND	40.0	___
Pyrene	0	1.906	0.00	5	2.35	ND	40.0	___
Butylbenzylphthalate	0	1.054	0.00	5	4.25	ND	40.0	___
3,3'-Dichlorobenzidine	0	0.335	0.00	5	13.36	ND	40.0	___
bis(2-Ethylhexyl)phthalate	0	1.418	0.00	5	3.16	ND	40.0	___
Perylene-d12	2215		30.21	6		I		
Di-n-octylphthalate	0	3.296	0.00	6	2.19	ND	40.0	___
Benzo(b)fluoranthene	0	1.528	0.00	6	4.73	ND	40.0	___
Benzo(k)fluoranthene	0	1.437	0.00	6	5.03	ND	40.0	___
Benzo(a)pyrene	0	1.395	0.00	6	5.18	ND	40.0	___
Indeno(1,2,3-cd)pyrene	0	1.022	0.00	6	7.07	ND	40.0	___
Dibenzo(a,h)anthracene	0	0.998	0.00	6	7.24	ND	40.0	___
Benzo(g,h,i)perylene	0	1.027	0.00	6	7.03	ND	40.0	___

JDC 1/6/93

Surrogate Summary	Area	RF	RT	ISID	Amount (ug)	Code	%REC
Nitrobenzene-d5	2372	0.593	9.80	2	54.97	D	55.0
1,3,5-Trichlorobenzene-d4	2085	0.473	10.62	2	60.59	D	60.6
2-Fluorobiphenyl	4181	1.585	14.26	3	66.75	D	66.8
Anthracene-d10	3829	0.989	19.58	4	63.88	D	63.9

Reveived by JDC Date 1/6/93

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : ZB311
Response File : ZB309
Date Analyzed : 12/17/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: 08-M23-R1
TLI ID: 61-50-7(A,B,F)
Dilution Factor: 8.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
1,4-Dichlorobenzene-d4	5650		10.79	1		I		
2-Chlorophenol	0	1.349	0.00	1	4.20	ND	80.0	___
1,3-Dichlorobenzene	0	1.564	0.00	1	3.62	ND	80.0	___
1,4-Dichlorobenzene	0	1.623	0.00	1	3.49	ND	80.0	___
1,2-Dichlorobenzene	0	1.549	0.00	1	3.66	ND	80.0	___
Benzyl alcohol	0	0.724	0.00	1	7.82	ND	80.0	___
2,2'-oxybis(1-Chloropropane)	0	1.272	0.00	1	4.45	ND	80.0	___
2-Methylphenol	0	1.077	0.00	1	5.26	ND	80.0	___
N-Nitroso-di-n-propylamine	0	0.938	0.00	1	6.04	ND	80.0	___
Hexachloroethane	0	0.731	0.00	1	7.75	ND	80.0	___
Phenol	787	1.523	10.00	1	29.28	E	80.0	___
bis(2-Chloroethyl)ether	0	1.286	0.00	1	4.40	ND	80.0	___
Naphthalene-d8	21674		13.45	2		I		
bis(2-Chloroethoxy)methane	0	0.450	0.00	2	3.28	ND	80.0	___
Benzoic acid	8774	0.255	12.84	2	508.01	D	80.0	___
2,4-Dichlorophenol	0	0.326	0.00	2	4.53	ND	80.0	___
1,2,4-Trichlorobenzene	0	0.379	0.00	2	3.90	ND	80.0	___
Naphthalene	0	1.065	0.00	2	1.39	ND	80.0	___
4-Chloroaniline	0	0.428	0.00	2	3.45	ND	80.0	___
Hexachlorobutadiene	0	0.264	0.00	2	5.59	ND	80.0	___
4-Chloro-3-methylphenol	0	0.297	0.00	2	4.97	ND	80.0	___
2-Methylnaphthalene	161	0.799	14.98	2	2.98	E	80.0	___
Nitrobenzene	0	0.431	0.00	2	3.43	ND	80.0	___
Isophorone	0	0.776	0.00	2	1.90	ND	80.0	___
2-Nitrophenol	0	0.238	0.00	2	6.20	ND	80.0	___
2,4-Dimethylphenol	0	0.314	0.00	2	4.70	ND	80.0	___
Acenaphthene-d10	14446		17.26	3		I		
4-Nitrophenol	0	0.221	0.00	3	10.02	ND	80.0	___
Dibenzofuran	0	1.785	0.00	3	1.24	ND	80.0	___
Diethylphthalate	958	1.654	18.14	3	12.83	E	80.0	___
4-Chlorophenyl-phenylether	0	0.781	0.00	3	2.84	ND	80.0	___
Fluorene	0	1.515	0.00	3	1.46	ND	80.0	___
4-Nitroaniline	0	0.557	0.00	3	3.98	ND	80.0	___
Hexachlorocyclopentadiene	0	0.306	0.00	3	7.24	ND	80.0	___
2,4,6-Trichlorophenol	0	0.404	0.00	3	5.48	ND	80.0	___
2,4,5-Trichlorophenol	0	0.449	0.00	3	4.93	ND	80.0	___
2-Chloronaphthalene	0	1.159	0.00	3	1.91	ND	80.0	___
2-Nitroaniline	0	0.347	0.00	3	6.38	ND	80.0	___
Dimethylphthalate	0	1.272	0.00	3	1.74	ND	80.0	___
2,6-Dinitrotoluene	0	0.322	0.00	3	6.88	ND	80.0	___
2,4-Dinitrotoluene	0	0.508	0.00	3	4.36	ND	80.0	___
Acenaphthylene	135	1.899	16.96	3	1.58	E	80.0	___

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

...e Laboratories of RTP, Inc
...T Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : ZB311
Response File : ZB309
Date Analyzed : 12/17/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: 06-M23-R1

TLI ID: 61-50-7(A,B,F)
Dilution Factor: 5.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
3-Nitroaniline	0	0.380	0.00	3	5.68	ND	80.0	___
Acenaphthene	0	1.185	0.00	3	1.87	ND	80.0	___
2,4-Dinitrophenol	0	0.222	0.00	3	9.98	ND	80.0	___
Phenanthrene-d10	44543		20.53	4		I		
Anthracene	0	1.101	0.00	4	0.65	ND	80.0	___
Di-n-butylphthalate	525	1.975	21.71	4	1.91	E	80.0	___
Fluoranthene	0	1.542	0.00	4	0.47	ND	80.0	___
4,6-Dinitro-2-methylphenol	0	0.131	0.00	4	5.48	ND	80.0	___
N-Nitrosodiphenylamine	0	0.355	0.00	4	2.02	ND	80.0	___
4-Bromophenyl-phenylether	0	0.205	0.00	4	3.50	ND	80.0	___
Hexachlorobenzene	0	0.291	0.00	4	2.47	ND	80.0	___
Pentachlorophenol	0	0.195	0.00	4	3.68	ND	80.0	___
Phenanthrene	359	1.030	20.58	4	2.51	E	80.0	___
Chrysene-d12	53047		26.95	5		I		
Benzo(a)anthracene	0	1.152	0.00	5	0.52	ND	80.0	___
Pyrene	0	1.313	0.00	5	0.46	ND	80.0	___
Butylbenzylphthalate	0	0.601	0.00	5	1.00	ND	80.0	___
3,3'-Dichlorobenzidine	0	0.388	0.00	5	1.55	ND	80.0	___
bis(2-Ethylhexyl)phthalate	6294	0.850	26.85	5	44.67	E	80.0	___
Chrysene	0	1.082	0.00	5	0.56	ND	80.0	___
Perylene-d12	45485		31.43	6		I		
Di-n-octylphthalate	0	1.830	0.00	6	0.38	ND	80.0	___
Benzo(b)fluoranthene	0	1.392	0.00	6	0.51	ND	80.0	___
Benzo(k)fluoranthene	0	1.377	0.00	6	0.51	ND	80.0	___
Benzo(a)pyrene	0	1.328	0.00	6	0.53	ND	80.0	___
Indeno(1,2,3-cd)pyrene	0	1.476	0.00	6	0.48	ND	80.0	___
Dibenzo(a,h)anthracene	0	1.284	0.00	6	0.55	ND	80.0	___
Benzo(g,h,i)perylene	0	1.306	0.00	6	0.54	ND	80.0	___

Surrogate Summary	Area	RF	RT	ISID	Amount (ug)	Code	%REC
Phenol-d5	1346	1.397	9.97	1	54.59	D	54.6
1,4-Dibromobenzene-d4	1370	1.499	13.55	1	51.77	D	51.8
2,4,6-Tribromophenol	1492	0.481	18.98	3	68.72	D	68.7
Pyrene-d10	8863	1.065	23.66	5	50.32	D	50.3
Terphenyl-d14	7792	0.944	23.98	5	49.80	D	49.8

Reveiwed by MW Date 1/6/93

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : JA804
Response File : JA795
Date Analyzed : 11/21/92
Date Reported : 01/06/93
Project Number: 22378

Sample ID: 08-M23-R2 H20

TLI ID: 61-50-8C
Dilution Factor: 4.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
1,4 Dichlorobenzene-d4	4342		8.44	1		I		
1,3-Dichlorobenzene	0	1.629	0.00	1	2.26	ND	40.0	___
1,4-Dichlorobenzene	0	1.624	0.00	1	2.27	ND	40.0	___
1,2-Dichlorobenzene	0	1.575	0.00	1	2.34	ND	40.0	___
2-Methylphenol	0	1.289	0.00	1	2.86	ND	40.0	___
2,2'-oxybis(1-Chloropropane)	0	1.586	0.00	1	2.32	ND	40.0	___
Benzyl alcohol	0	0.877	0.00	1	4.20	ND	40.0	___
4-Methylphenol	0	1.461	0.00	1	2.52	ND	40.0	___
N-Nitroso-di-n-propylamine	0	1.190	0.00	1	3.10	ND	40.0	___
Hexachloroethane	0	0.844	0.00	1	4.37	ND	40.0	___
Phenol	0	1.681	0.00	1	2.19	ND	40.0	___
bis(2-Chloroethyl)ether	0	1.426	0.00	1	2.58	ND	40.0	___
2-Chlorophenol	0	1.422	0.00	1	2.59	ND	40.0	___
Naphthalene-d8	15544		11.45	2		I		
Naphthalene	0	1.049	0.00	2	0.98	ND	40.0	___
4-Chloroaniline	0	0.513	0.00	2	2.01	ND	40.0	___
Hexachlorobutadiene	0	0.240	0.00	2	4.29	ND	40.0	___
4-Chloro-3-methylphenol	0	0.408	0.00	2	2.52	ND	40.0	___
2-Methylnaphthalene	0	0.834	0.00	2	1.23	ND	40.0	___
Nitrobenzene	0	0.511	0.00	2	2.01	ND	40.0	___
Isophorone	0	0.963	0.00	2	1.07	ND	40.0	___
2-Nitrophenol	0	0.228	0.00	2	4.51	ND	40.0	___
2,4-Dimethylphenol	0	0.305	0.00	2	3.37	ND	40.0	___
bis(2-Chloroethoxy)methane	0	0.599	0.00	2	1.72	ND	40.0	___
Benzoic acid	0	0.177	0.00	2	5.82	ND	40.0	___
2,4-Dichlorophenol	0	0.376	0.00	2	2.74	ND	40.0	___
1,2,4-Trichlorobenzene	0	0.419	0.00	2	2.46	ND	40.0	___
Acenaphthene-d10	9132		15.82	3		I		
Hexachlorocyclopentadiene	0	0.222	0.00	3	7.89	ND	40.0	___
2,4,6-Trichlorophenol	0	0.425	0.00	3	4.12	ND	40.0	___
2,4,5-Trichlorophenol	0	0.481	0.00	3	3.64	ND	40.0	___
2-Chloronaphthalene	0	1.271	0.00	3	1.38	ND	40.0	___
2-Nitroaniline	0	0.540	0.00	3	3.24	ND	40.0	___
Dimethylphthalate	0	1.501	0.00	3	1.17	ND	40.0	___
2,6-Dinitrotoluene	0	0.360	0.00	3	4.87	ND	40.0	___
2,4-Dinitrotoluene	0	0.520	0.00	3	3.37	ND	40.0	___
Acenaphthylene	0	1.954	0.00	3	0.90	ND	40.0	___
3-Nitroaniline	0	0.503	0.00	3	3.48	ND	40.0	___
Acenaphthene	0	1.127	0.00	3	1.55	ND	40.0	___
2,4-Dinitrophenol	0	0.089	0.00	3	19.68	ND	40.0	___
4-Nitrophenol	0	0.160	0.00	3	10.95	ND	40.0	___
Dibenzofuran	0	1.774	0.00	3	0.99	ND	40.0	___

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

Laboratories of RTP, Inc.
Sitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : JA804
Response File : JA795
Date Analyzed : 11/21/92
Date Reported : 01/06/93
Project Number : 22378

Sample ID: OB-M23-R2 H2O

TLI ID: 61-50-80
Dilution Factor: 4.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
Diethylphthalate	0	1.576	0.00	3	1.11	ND	40.0	___
4-Chlorophenyl-phenylether	0	0.639	0.00	3	2.74	ND	40.0	___
Fluorene	0	1.422	0.00	3	1.23	ND	40.0	___
4-Nitroaniline	0	0.342	0.00	3	5.12	ND	40.0	___
Phenanthrene-d10	16856		19.45	4		I		
Hexachlorobenzene	0	0.232	0.00	4	4.09	ND	40.0	___
Pentachlorophenol	0	0.097	0.00	4	9.79	ND	40.0	___
Phenanthrene	0	1.080	0.00	4	0.88	ND	40.0	___
Anthracene	0	1.092	0.00	4	0.87	ND	40.0	___
Di-n-butylphthalate	0	1.444	0.00	4	0.66	ND	40.0	___
Fluoranthene	0	0.947	0.00	4	1.00	ND	40.0	___
4,6-Dinitro-2-methylphenol	0	0.097	0.00	4	9.79	ND	40.0	___
N-Nitrosodiphenylamine	0	0.511	0.00	4	1.86	ND	40.0	___
4-Bromophenyl-phenylether	0	0.203	0.00	4	4.66	ND	40.0	___
Chrysene-d12	7103		26.08	5		I		
Chrysene	0	1.168	0.00	5	1.93	ND	40.0	___
Benzo(a)anthracene	0	1.275	0.00	5	1.77	ND	40.0	___
Pyrene	0	1.807	0.00	5	1.25	ND	40.0	___
Butylbenzylphthalate	0	1.037	0.00	5	2.17	ND	40.0	___
3,3'-Dichlorobenzidine	0	0.341	0.00	5	6.61	ND	40.0	___
bis(2-Ethylhexyl)phthalate	1092	1.390	26.64	5	17.70	E	40.0	___
Perylene-d12	4398		30.18	6		I		
Di-n-octylphthalate	0	3.407	0.00	6	1.07	ND	40.0	___
Benzo(b)fluoranthene	0	1.615	0.00	6	2.25	ND	40.0	___
Benzo(k)fluoranthene	0	1.412	0.00	6	2.58	ND	40.0	___
Benzo(a)pyrene	0	1.405	0.00	6	2.59	ND	40.0	___
Indeno(1,2,3-cd)pyrene	0	1.019	0.00	6	3.57	ND	40.0	___
Dibenzo(a,h)anthracene	0	1.019	0.00	6	3.57	ND	40.0	___
Benzo(g,h,i)perylene	0	1.062	0.00	6	3.43	ND	40.0	___

AW 1/6/93

Surrogate Summary	Area	RF	RT	ISID	Amount (ug)	Code	%REC
Nitrobenzene-d5	2596	0.611	9.78	2	43.75	D	43.8
1,3,5-Trichlorobenzene-d3 AW 1/6/93	2112	0.510	10.61	2	42.63	D	42.6
2-Fluorobiphenyl	4773	1.632	14.24	3	51.24	D	51.2
Anthracene-d10	4367	0.983	19.56	4	42.18	D	42.2

Reveiwed by AW Date 1/10/93

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File : Z8312
Response File : Z8309
Date Analyzed : 12/17/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: 08-M23-R2

TLI ID: 61-50-8(A,B,F)
Dilution Factor: 8.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
1,4-Dichlorobenzene-d4	4352		10.79	1		I		
2-Chlorophenol	0	1.349	0.00	1	5.45	ND	80.0	___
1,3-Dichlorobenzene	0	1.564	0.00	1	4.70	ND	80.0	___
1,4-Dichlorobenzene	0	1.623	0.00	1	4.53	ND	80.0	___
1,2-Dichlorobenzene	0	1.549	0.00	1	4.75	ND	80.0	___
Benzyl alcohol	0	0.724	0.00	1	10.15	ND	80.0	___
2,2'-oxybis(1-Chloropropane)	0	1.272	0.00	1	5.78	ND	80.0	___
2-Methylphenol	0	1.077	0.00	1	6.83	ND	80.0	___
N-Nitroso-di-n-propylamine	0	0.938	0.00	1	7.84	ND	80.0	___
Hexachloroethane	0	0.731	0.00	1	10.06	ND	80.0	___
Phenol	982	1.523	10.01	1	47.41	E	80.0	___
bis(2-Chloroethyl)ether	0	1.286	0.00	1	5.72	ND	80.0	___
Naphthalene-d8	17962		13.45	2		I		
bis(2-Chloroethoxy)methane	0	0.450	0.00	2	3.96	ND	80.0	___
Benzoic acid	16236	0.255	12.89	2	1134.33	D	80.0	___
2,4-Dichlorophenol	0	0.326	0.00	2	5.46	ND	80.0	___
1,2,4-Trichlorobenzene	0	0.379	0.00	2	4.70	ND	80.0	___
Naphthalene	19927	1.065	13.50	2	333.34	D	80.0	___
4-Chloroaniline	0	0.428	0.00	2	4.16	ND	80.0	___
Hexachlorobutadiene	0	0.264	0.00	2	6.75	ND	80.0	___
4-Chloro-3-methylphenol	0	0.297	0.00	2	6.00	ND	80.0	___
2-Methylnaphthalene	192	0.799	14.98	2	4.28	E	80.0	___
Nitrobenzene	0	0.431	0.00	2	4.13	ND	80.0	___
Isophorone	0	0.776	0.00	2	2.30	ND	80.0	___
2-Nitrophenol	0	0.238	0.00	2	7.49	ND	80.0	___
2,4-Dimethylphenol	0	0.314	0.00	2	5.67	ND	80.0	___
Acenaphthene-d10	12533		17.27	3		I		
4-Nitrophenol	0	0.221	0.00	3	11.55	ND	80.0	___
Dibenzofuran	0	1.785	0.00	3	1.43	ND	80.0	___
Diethylphthalate	0	1.654	0.00	3	1.54	ND	80.0	___
4-Chlorophenyl-phenylether	0	0.781	0.00	3	3.27	ND	80.0	___
Fluorene	0	1.515	0.00	3	1.69	ND	80.0	___
4-Nitroaniline	0	0.557	0.00	3	4.58	ND	80.0	___
Hexachlorocyclopentadiene	0	0.306	0.00	3	8.34	ND	80.0	___
2,4,6-Trichlorophenol	0	0.404	0.00	3	6.32	ND	80.0	___
2,4,5-Trichlorophenol	0	0.449	0.00	3	5.69	ND	80.0	___
2-Chloronaphthalene	0	1.159	0.00	3	2.20	ND	80.0	___
2-Nitroaniline	0	0.347	0.00	3	7.36	ND	80.0	___
Dimethylphthalate	0	1.272	0.00	3	2.01	ND	80.0	___
2,6-Dinitrotoluene	0	0.322	0.00	3	7.93	ND	80.0	___
2,4-Dinitrotoluene	0	0.508	0.00	3	5.03	ND	80.0	___
Acenaphthylene	0	1.899	0.00	3	1.34	ND	80.0	___

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

boratories of RTP, Inc.
tola Dr.
ham, NC 27713
(919) 544-5729

Sample File : 28312
Response File : 28309
Date Analyzed : 12/17/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: 08-M23-R2

TLI ID: 61-50-8(A,B,F)
Dilution Factor: 8.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
3-Nitroaniline	0	0.390	0.00	3	6.55	ND	80.0	
Acenaphthene	0	1.185	0.00	3	2.15	ND	80.0	
2,4-Dinitrophenol	0	0.222	0.00	3	11.50	ND	80.0	
Phenanthrene-d10	42802		20.53	4		I		
Anthracene	0	1.101	0.00	4	0.68	ND	80.0	
Di-n-butylphthalate	1169	1.975	21.71	4	4.43	E	80.0	
Fluoranthene	0	1.542	0.00	4	0.48	ND	80.0	
4,6-Dinitro-2-methylphenol	0	0.131	0.00	4	5.71	ND	80.0	
N-Nitrosodiphenylamine	0	0.355	0.00	4	2.11	ND	80.0	
4-Bromophenyl-phenylether	0	0.205	0.00	4	3.65	ND	80.0	
Hexachlorobenzene	0	0.291	0.00	4	2.57	ND	80.0	
Pentachlorophenol	0	0.195	0.00	4	3.83	ND	80.0	
Phenanthrene	459	1.030	20.58	4	3.34	E	80.0	
Chrysene-d12	49002		26.95	5		I		
Benzo(a)anthracene	0	1.152	0.00	5	0.57	ND	80.0	
Pyrene	0	1.313	0.00	5	0.50	ND	80.0	
Butylbenzylphthalate	0	0.601	0.00	5	1.09	ND	80.0	
3,3'-Dichlorobenzidine	0	0.388	0.00	5	1.68	ND	80.0	
bis(2-Ethylhexyl)phthalate	27710	0.850	26.85	5	212.89	D	80.0	
Chrysene	0	1.082	0.00	5	0.60	ND	80.0	
Perylene-d12	41240		31.43	6		I		
Di-n-octylphthalate	0	1.830	0.00	6	0.42	ND	80.0	
Benzo(b)fluoranthene	0	1.392	0.00	6	0.56	ND	80.0	
Benzo(k)fluoranthene	0	1.377	0.00	6	0.56	ND	80.0	
Benzo(a)pyrene	0	1.328	0.00	6	0.58	ND	80.0	
Indeno(1,2,3-cd)pyrene	0	1.476	0.00	6	0.53	ND	80.0	
Dibenzo(a,h)anthracene	0	1.284	0.00	6	0.60	ND	80.0	
Benzo(g,h,i)perylene	0	1.306	0.00	6	0.59	ND	80.0	

Surrogate Summary	Area	RF	RT	ISID	Amount (ug)	Code	%REC
Phenol-d5	1333	1.397	9.98	1	70.18	D	70.2
1,4-Dibromobenzene-d4	1456	1.499	13.56	1	71.44	D	71.4
2,4,6-Tribromophenol	1859	0.481	18.98	3	98.71	D	98.7
Pyrene-d10	10316	1.065	23.66	5	63.25	D	63.3
Terphenyl-d14	9452	0.944	23.98	5	65.39	D	65.4

Reveiwed by AM Date 1/6/93

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

Triangle Laboratories of RTP, Inc.
801 Capitola Dr.
Durham, NC 27713
(919) 544-5729

Sample File 2B313
Response File : 2B309
Date Analyzed : 12/17/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: 08-M23-R3

TLI ID: 61-50-9(A,B,D,F)
Dilution Factor: 8.00

Quantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
1,4-Dichlorobenzene-d4	5519		10.79	1		I		
2-Chlorophenol	0	1.349	0.00	1	4.30	ND	80.0	___
1,3-Dichlorobenzene	0	1.564	0.00	1	3.71	ND	80.0	___
1,4-Dichlorobenzene	0	1.623	0.00	1	3.57	ND	80.0	___
1,2-Dichlorobenzene	0	1.549	0.00	1	3.74	ND	80.0	___
Benzyl alcohol	0	0.724	0.00	1	8.01	ND	80.0	___
2,2'-oxybis(1-Chloropropane)	0	1.272	0.00	1	4.56	ND	80.0	___
2-Methylphenol	0	1.077	0.00	1	5.38	ND	80.0	___
N-Nitroso-di-n-propylamine	0	0.938	0.00	1	6.18	ND	80.0	___
Hexachloroethane	0	0.731	0.00	1	7.93	ND	80.0	___
Phenol	1057	1.523	10.00	1	40.26	E	80.0	___
bis(2-Chloroethyl)ether	0	1.286	0.00	1	4.51	ND	80.0	___
Naphthalene-d8	21420		13.45	2		I		
bis(2-Chloroethoxy)methane	0	0.450	0.00	2	3.32	ND	80.0	___
Benzoic acid	13805	0.255	12.88	2	808.78	D	80.0	___
2,4-Dichlorophenol	0	0.326	0.00	2	4.58	ND	80.0	___
1,2,4-Trichlorobenzene	0	0.379	0.00	2	3.94	ND	80.0	___
Naphthalene	13016	1.065	13.50	2	182.58	D	80.0	___
4-Chloroaniline	0	0.428	0.00	2	3.49	ND	80.0	___
Hexachlorobutadiene	0	0.264	0.00	2	5.66	ND	80.0	___
4-Chloro-3-methylphenol	0	0.297	0.00	2	5.03	ND	80.0	___
2-Methylnaphthalene	168	0.799	14.98	2	3.15	E	80.0	___
Nitrobenzene	0	0.431	0.00	2	3.47	ND	80.0	___
Isophorone	0	0.776	0.00	2	1.93	ND	80.0	___
2-Nitrophenol	0	0.238	0.00	2	6.28	ND	80.0	___
2,4-Dimethylphenol	0	0.314	0.00	2	4.76	ND	80.0	___
Acenaphthene-d10	15088		17.27	3		I		
4-Nitrophenol	0	0.221	0.00	3	9.60	ND	80.0	___
Dibenzofuran	0	1.785	0.00	3	1.19	ND	80.0	___
Diethylphthalate	1854	1.654	18.15	3	23.77	E	80.0	___
4-Chlorophenyl-phenylether	0	0.781	0.00	3	2.72	ND	80.0	___
Fluorene	0	1.515	0.00	3	1.40	ND	80.0	___
4-Nitroaniline	0	0.557	0.00	3	3.81	ND	80.0	___
Hexachlorocyclopentadiene	0	0.306	0.00	3	6.93	ND	80.0	___
2,4,6-Trichlorophenol	0	0.404	0.00	3	5.25	ND	80.0	___
2,4,5-Trichlorophenol	0	0.449	0.00	3	4.72	ND	80.0	___
2-Chloronaphthalene	0	1.159	0.00	3	1.83	ND	80.0	___
2-Nitroaniline	0	0.347	0.00	3	6.11	ND	80.0	___
Dimethylphthalate	0	1.272	0.00	3	1.67	ND	80.0	___
2,6-Dinitrotoluene	0	0.322	0.00	3	6.59	ND	80.0	___
2,4-Dinitrotoluene	0	0.508	0.00	3	4.17	ND	80.0	___
Acenaphthylene	0	1.899	0.00	3	1.12	ND	80.0	___

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard Orgrep v2.5

..oratories of RTP, Inc.
..ola Dr.
..NC 27713
.., 544-5729

Sample File : 28313
Response File : 28309
Date Analyzed : 12/17/92
Date Reported : 01/06/93
Project Number: 22367

Sample ID: 08-M23-R3

TLI ID: 61-50-9(A,B,D,F)
..ilution Factor: 8.00

..uantitation Results Method 8270

Analyte	Area	RF	RT	ISID	Amt. (ug)	Code	Quan Limit	FLAG
3-Nitroaniline	0	0.390	0.00	3	5.44	ND	80.0	____
Acenaphthene	0	1.185	0.00	3	1.79	ND	80.0	____
2,4-Dinitrophenol	0	0.222	0.00	3	9.55	ND	80.0	____
Phenanthrene-d10	44981		20.53	4		I		
Anthracene	0	1.101	0.00	4	0.65	ND	80.0	____
Di-n-butylphthalate	2545	1.975	21.72	4	9.17	E	80.0	____
Fluoranthene	0	1.542	0.00	4	0.46	ND	80.0	____
4,6-Dinitro-2-methylphenol	0	0.131	0.00	4	5.43	ND	80.0	____
N-Nitrosodiphenylamine	0	0.355	0.00	4	2.00	ND	80.0	____
4-Bromophenyl-phenylether	0	0.205	0.00	4	3.47	ND	80.0	____
Hexachlorobenzene	0	0.291	0.00	4	2.44	ND	80.0	____
Pentachlorophenol	0	0.195	0.00	4	3.65	ND	80.0	____
Phenanthrene	293	1.030	20.58	4	2.03	E	80.0	____
Chrysene-d12	54733		26.96	5		I		
Benzo(a)anthracene	0	1.152	0.00	5	0.51	ND	80.0	____
Pyrene	0	1.313	0.00	5	0.45	ND	80.0	____
Butylbenzylphthalate	0	0.601	0.00	5	0.97	ND	80.0	____
3,3'-Dichlorobenzidine	0	0.388	0.00	5	1.51	ND	80.0	____
bis(2-Ethylhexyl)phthalate	6924	0.850	26.85	5	47.62	E	80.0	____
Chrysene	0	1.082	0.00	5	0.54	ND	80.0	____
Perylene-d12	44964		31.44	6		I		
Di-n-octylphthalate	0	1.830	0.00	6	0.39	ND	80.0	____
Benzo(b)fluoranthene	0	1.392	0.00	6	0.51	ND	80.0	____
Benzo(k)fluoranthene	0	1.377	0.00	6	0.52	ND	80.0	____
Benzo(a)pyrene	0	1.328	0.00	6	0.54	ND	80.0	____
Indeno(1,2,3-cd)pyrene	0	1.476	0.00	6	0.48	ND	80.0	____
Dibenzo(a,h)anthracene	0	1.284	0.00	6	0.55	ND	80.0	____
Benzo(g,h,i)perylene	0	1.306	0.00	6	0.54	ND	80.0	____

Surrogate Summary	Area	RF	RT	ISID	Amount (ug)	Code	%REC
Phenol-d5	1276	1.397	9.98	1	52.97	D	53.0
1,4-Dibromobenzene-d4	1345	1.499	13.56	1	52.03	D	52.0
Nitrobenzene-d5	1394	0.453	11.91	2	46.00	D	46.0
1,3,5-Trichlorobenzene-d3	1035	0.444	12.62	2	34.85	D	34.9
2-Fluorobiphenyl	3066	1.271	15.76	3	51.16	D	51.2
2,4,6-Tribromophenol	1668	0.481	18.99	3	73.55	D	73.6
Anthracene-d10	6578	0.863	20.65	4	54.23	D	54.2
Pyrene-d10	8723	1.065	23.66	5	47.89	D	47.9
Terphenyl-d14	16709	0.944	23.98	5	103.47	D	103.5

Reveived by TD Date 1/6/93

ND -Not Detected; D- Detected; E- Estimated; I- Internal Standard

Orgrep v2.5

G.7 ETHANE AND METHANE LABORATORY DATA

E T S , I N C .

F I E L D   S A M P L E   L O G

Contract No. 92-655
Job I.D.
Test Method TEDLAR BAG

Print Date 12/16/92   Time 09:27:12
Page 1

Sample No.	Container No.	Other I.D.	Run I.D.	Sample Type	Volume,ml no Rinses	Volume,ml w/ Rinses	Analyst	Date	Comments
02100	F1		OB -TED-R1	GAS SAMPLE			NKL	11/11/92	
02101	F1		OB -TED-R3	GAS SAMPLE			NKL	11/11/92	
02102	F1		OB -TED-R2	GAS SAMPLE			NKL	11/11/92	
02103	F1		OA -TED-R1	GAS SAMPLE			NKL	11/11/92	
02104	F1		IN -TED-R1	GAS SAMPLE			NKL	11/11/92	MAY HAVE LEAKED
02105	F1		OA -TED-R2	GAS SAMPLE			NKL	11/11/92	
02106	F1		IN -TED-R2	GAS SAMPLE			NKL	11/11/92	MAY HAVE LEAKED
02109	F1		CYL-TED-R0	GAS SAMPLE			NKL	11/13/92	CYLINDER # 533A
02110	F1		IN -TED-R3	GAS SAMPLE			NKL	11/11/92	
02111	F1		BLK-TED-R0	GAS SAMPLE			NKL	11/11/92	
02112	F1		OA -TED-R3	GAS SAMPLE			NKL	11/11/92	
02114	F1		CYL-TED-R0	GAS SAMPLE			NKL	11/13/92	CYLINDER # 533B

RECEIVED DEC 1 5 1992

ETS Analytical Services, Inc.

Proudly serving industry and government since 1973. A USEPA Contract Laboratory

A subsidiary of ETS International, Inc.

ETS, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012
ATTN: Dr. Mike Visneski

Re: Laboratory Analysis
ETSAS Client No. 6593
Assignment 6-5.3.1

REPORT DATE/NUMBER: December 15, 1992 / 183

SAMPLES COLLECTED BY: CLIENT

DATE RECEIVED AT LAB: 11/16/92

ANALYSIS FOR: Methane, Ethane

METHOD OF ANALYSIS: USEPA Method 18

SAMPLE ANALYSIS DATA

Lab ID: 132542 Client ID: 92-655-2100 Matrix: AIR
Other ID: 92-655 / 6-5.3.1 Description: EPA BRICK PLANT
Ethane —— < 0.050 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.050 ug/ml
Methane —— < 0.101 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.101 ug/ml

Lab ID: 132543 Client ID: 92-655-2101 Matrix: AIR
Other ID: 92-655 / 6-5.3.1 Description: EPA BRICK PLANT
Ethane —— < 0.050 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.050 ug/ml
Methane —— < 0.101 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.101 ug/ml

Lab ID: 132544 Client ID: 92-655-2102 Matrix: AIR
Other ID: 92-655 / 6-5.3.1 Description: EPA BRICK PLANT
Ethane —— < 0.050 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.050 ug/ml

REPORT CONTINUED ON NEXT PAGE

1401 Municipal Road, NW - Roanoke, Virginia 24012-1309 - Telephone: 703-265-0004 - FAX: 703-563-4866

SAMPLE ANALYSIS DATA

Lab ID: 132544 (continued)
Methane —— < 0.101 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.101 ug/ml

Lab ID: 132545 Client ID: 92-655-2103 Matrix: AIR OA-R1
Other ID: 92-655 / 6-5.3.1 Description: EPA BRICK PLANT
Ethane —— < 0.050 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.050 ug/ml
Methane —— < 0.101 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.101 ug/ml

Lab ID: 132546 Client ID: 92-655-2104 Matrix: AIR
Other ID: 92-655 / 6-5.3.1 Description: EPA BRICK PLANT IN-R1
Ethane —— < 0.050 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.050 ug/ml
Methane —— < 0.101 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.101 ug/ml

Lab ID: 132547 Client ID: 92-655-2105 Matrix: AIR
Other ID: 92-655 / 6-5.3.1 Description: EPA BRICK PLANT OA-R2
Ethane —— < 0.050 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.050 ug/ml
Methane —— 6.150 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.101 ug/ml

Lab ID: 132548 Client ID: 92-655-2106 Matrix: AIR IN-R2
Other ID: 92-655 / 6-5.3.1 Description: EPA BRICK PLANT
Ethane —— < 0.050 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.050 ug/ml
Methane —— < 0.101 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.101 ug/ml

Lab ID: 132549 Client ID: 92-655-2109 Matrix: AIR
Other ID: 92-655 / 6-5.3.1 Description: EPA BRICK PLANT
Ethane —— 414 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.050 ug/ml

REPORT CONTINUED ON NEXT PAGE

ETS, Inc.
Report of 12/15/92
Page No. 3

SAMPLE ANALYSIS DATA

Lab ID: 132549 (continued)
Methane ———— 829 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.101 ug/ml

Lab ID: 132550 Client ID: 92-655-2110 Matrix: AIR IN-R3
Other ID: 92-655 / 6-5.3.1 Description: EPA BRICK PLANT
Ethane ———— < 0.050 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.050 ug/ml
Methane ———— < 0.101 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.101 ug/ml

Lab ID: 132551 Client ID: 92-655-2112 Matrix: AIR CK-R3
Other ID: 92-655 / 6-5.3.1 Description: EPA BRICK PLANT
Ethane ———— < 0.050 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.050 ug/ml
Methane ———— < 0.101 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.101 ug/ml

Lab ID: 132552 Client ID: 92-655-2114 Matrix: AIR
Other ID: 92-655 / 6-5.3.1 Description: EPA BRICK PLANT
Ethane ———— 328 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.050 ug/ml
Methane ———— 1324 ug/ml
└>Analysis Date: 12/14/92 by: PW Run ID: 121492T
└>Method: GC/FID; Det Limit= 0.101 ug/ml

NOTE: This work was performed under ETS Contract # 92-655.

Quality Assurance performed on the above data is presented on the following page(s).

If we may be of further assistance, please contact us at any time.

Sincerely,
ETS ANALYTICAL SERVICES, INC.

David F. Tompkins, President

ETS, Inc.
Report of 12/15/92
Page No. 4

QUALITY ASSURANCE SUMMARY

CALIBRATION VERIFICATION

ANALYTE	UNITS	TRUE	FOUND	% REC	QAO	RUN ID
Ethane	ug	6.06	5.84	96.4		121492T
Ethane	ug	6.06	6.51	107.4		121492T
Ethane	ug	10.1	12.2	120.9		121492T
Ethane	ug	35.4	32.7	92.4		121492T
Ethane	ug	6.06	6.60	108.9		121492T
Ethane	ug	6.06	6.84	112.9		121492T
Ethane	ug	6.06	6.58	108.6		121492T
Ethane	ug	6.06	6.41	105.8		121492T
Methane	ug	6.06	5.39	88.9		121492T
Methane	ug	6.06	6.29	103.8		121492T
Methane	ug	10.1	10.4	102.8		121492T
Methane	ug	25.3	24.9	98.6		121492T
Methane	ug	6.06	5.45	89.9		121492T
Methane	ug	6.06	5.64	93.1		121492T
Methane	ug	6.06	5.61	92.6		121492T
Methane	ug	6.06	5.63	92.9		121492T

BLANKS

ANALYTE	UNITS	FOUND	TYPE	QAO	RUN ID
Ethane	ug/ml	<0.05	ICB	<0.05 ug/ml	121492T
Ethane	ug/ml	<0.05	CCB	<0.05 ug/ml	121492T
Ethane	ug/ml	<0.05	CCB	<0.05 ug/ml	121492T
Ethane	ug/ml	<0.05	CCB	<0.05 ug/ml	121492T
Methane	ug/ml	<0.10	ICB	<0.10 ug/ml	121492T
Methane	ug/ml	<0.10	CCB	<0.10 ug/ml	121492T
Methane	ug/ml	<0.10	CCB	<0.10 ug/ml	121492T
Methane	ug/ml	<0.10	CCB	<0.10 ug/ml	121492T

DUPLICATES

LAB ID	ANALYTE	SAMPLE	DUP	UNITS	RPD	QAO	RUN ID
132549	Ethane	407	419	ug/ml	2.9		121492T
132549	Methane	826	810	ug/ml	2.0		121492T
132552	Ethane	317	327	ug/ml	30		121492T
132552	Methane	1239	1357	ug/ml	9.1		121492T

ETS, Inc.
Report of 12/15/92
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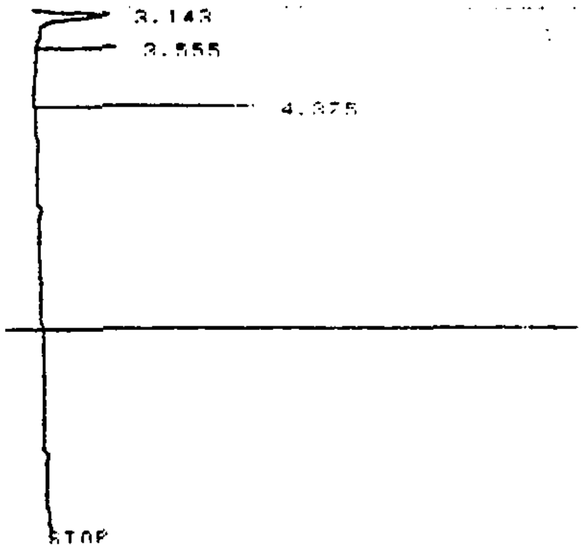
QUALITY ASSURANCE SUMMARY
Continued

SPIKES

LAB ID	ANALYTE	SAMPLE	SPK	ADDED	% REC	QAO	RUN ID
132546	Ethane	<0.05	34.45	30.3	114		121492T
132547	Methane	1.3	17.7	15.2	108		121492T

QAO: Quality Assurance Objective; REC: Recovery; RPD: Relative Percent Difference
NC: Not Calculatable; DUP: Duplicate Analysis Result; SPK: Spiked Analysis Result.
For Duplicates <5X the Detection Limit (DL), ± DL shall apply for the QAO.



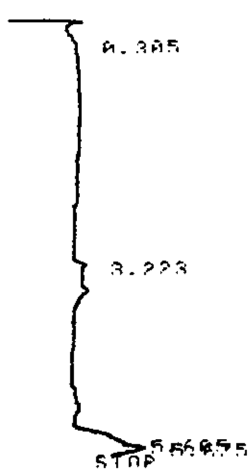
RUN# 280 FEB 12, 1981 00:45:09

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.143	3369	VV	.101	86.45110
3.555	165	VV	.005	4.23403
4.375	363	VV	.004	9.31485

TOTAL AREA= 3897
MUL FACTOR=1.0000E+00

* RUN # 281 FEB 12, 1981 23:55:06
START: not ready



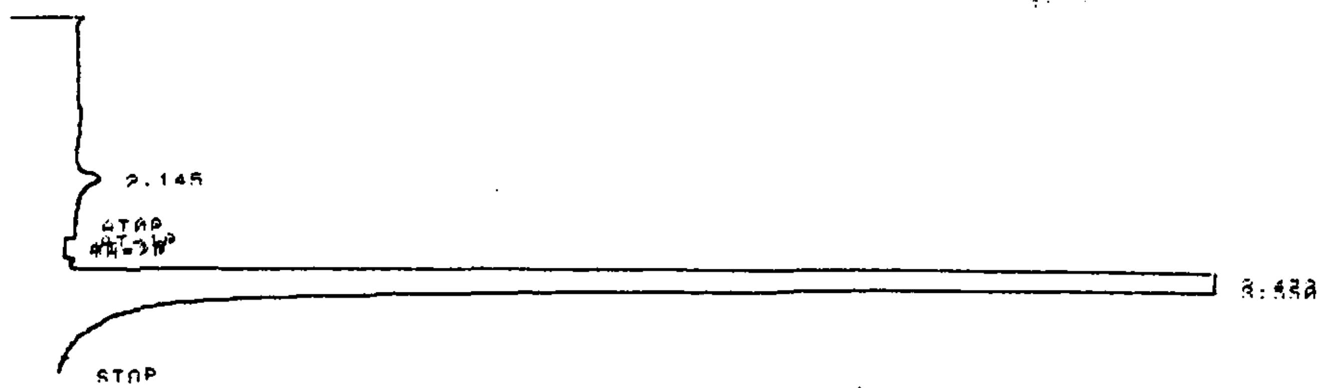
RUN# 281 FEB 12, 1981 23:55:06

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.305	311	PV	.144	3.78300
3.223	512	VV	.095	6.22795
5.605	3201	PV	.146	38.93688
5.675	4197	I VH	.139	51.05219

TOTAL AREA= 8221
MUL FACTOR=1.0000E+00

START: not ready



RUN# 282 FEB 13, 1981 08:01:55

12/10/92
600 ul ETHANE

ICAL 600

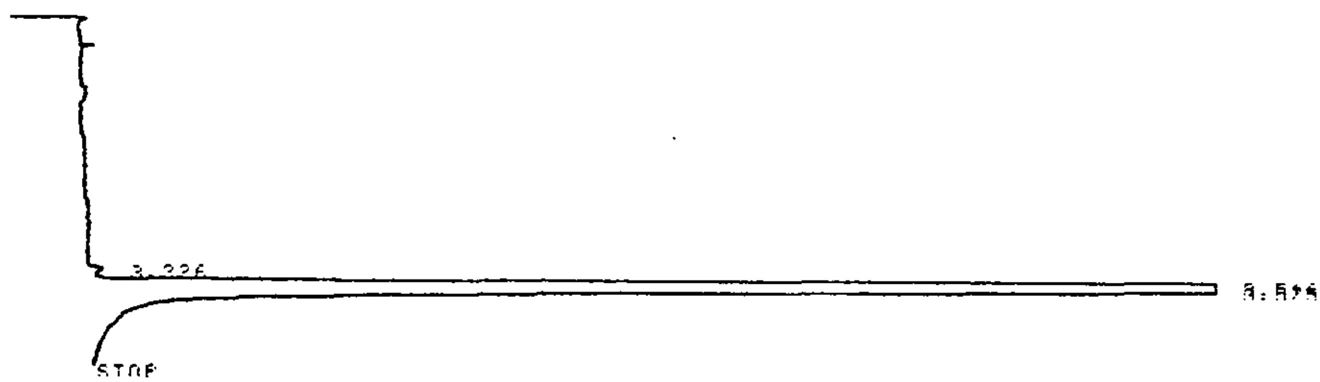
60,600 ug

AREA%

RT	AREA	TYPE	WIDTH	AREA%
2.145	2169	VV	.204	1.40259
3.473	93453	PV	.121	60.43146
3.550	59021	VB	.100	38.16597

TOTAL AREA= 154643
MUL FACTOR=1.0000E+00

* RUN # 283 FEB 13, 1981 08:06:57
START: not ready



RUN# 283 FEB 13, 1981 08:06:57

AREA%

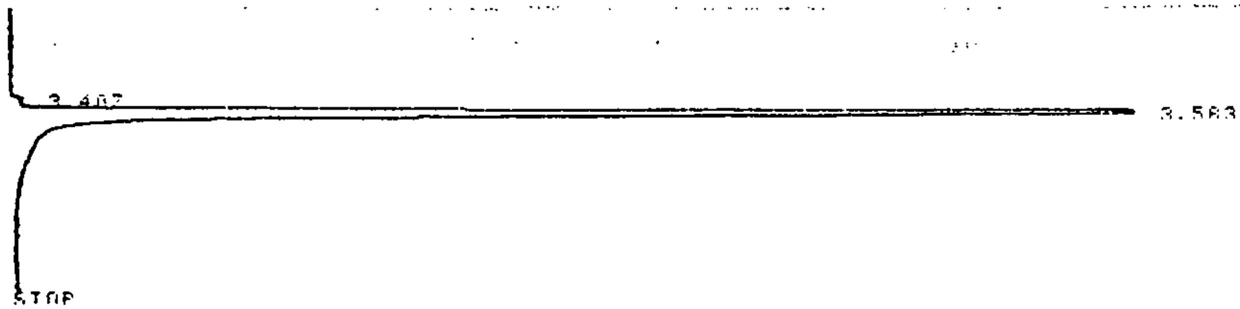
RT	AREA	TYPE	WIDTH	AREA%
3.326	172	PV	.060	.29379
3.516	20260	PV	.048	34.60526
3.575	38114	VB	.091	65.10096

225ul ETHANE

22.73 ug

TOTAL AREA= 58546
MUL FACTOR=1.0000E+00

* RUN # 284 FEB 13, 1981 08:12:31
START: not ready



RUN# 284 FEB 13, 1981 08:12:31

100ul
ICAL 10.1 ETHANE

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.407	58	PV	.036	.22057
3.583	26237	VB	.082	99.77942

TOTAL AREA= 26295
MUL FACTOR=1.0000E+00

* RUN # 285 FEB 13, 1981 08:19:24
START: not ready

RUN# 285 FEB 13, 1981 08:19:24

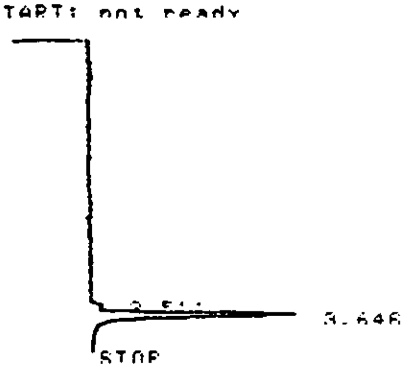
AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.514	69	PV	.036	.54156
3.624	12672	VV	.072	99.45843

50ul ETHANE
ICAL 5.05

TOTAL AREA= 12741
MUL FACTOR=1.0000E+00

* RUN # 286 FEB 13, 1981 08:26:35
START: not ready



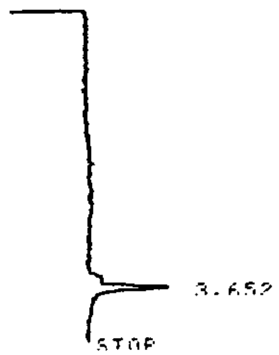
15u ETHANE
ICAL 1.515

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.511	254	PV	.083	6.74814
3.648	3510	VV	.079	93.25187

TOTAL AREA= 3764
MUL FACTOR=1.0000E+00

* RUN # 287 FEB 13, 1981 08:32:22
START: not ready



5ul ETHANE
ICAL 0.505

RUN# 287 FEB 13, 1981 08:32:22

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.652	1376	VV	.080	100.00000

TOTAL AREA= 1376
MUL FACTOR=1.0000E+00

* RUN # 288 FEB 13, 1981 08:37:18
START: not ready

RUN# 288 FEB 13, 1981 08:37:18

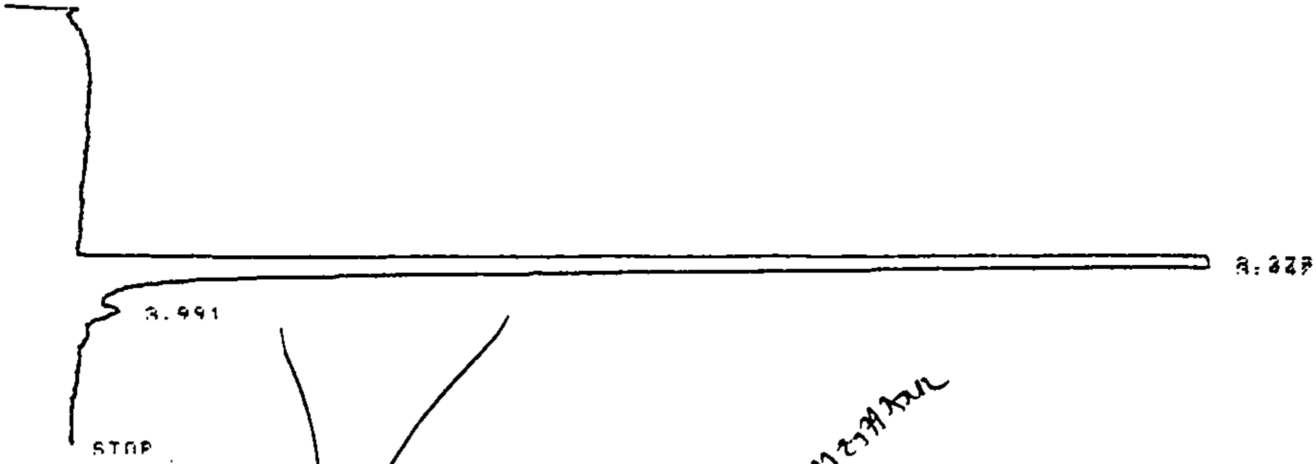
BOTCHED INJ

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.564	11629	BB	.035	100.00000

TOTAL AREA= 11629
MUL FACTOR=1.0000E+00

* RUN # 289 FEB 13, 1981 00:42:22
START: not ready



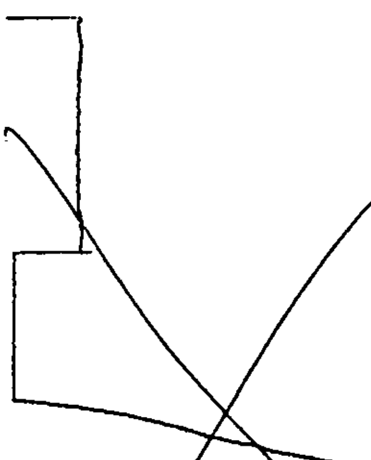
RUN# 289 FEB 13, 1981 00:42:22

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.377	38204	VV	.110	61.39752
3.447	23565	VB	.088	37.87125
3.991	455	VV	.098	.73123

TOTAL AREA= 62224
MUL FACTOR=1.0000E+00

* RUN # 290 FEB 13, 1981 00:49:21
START: not ready

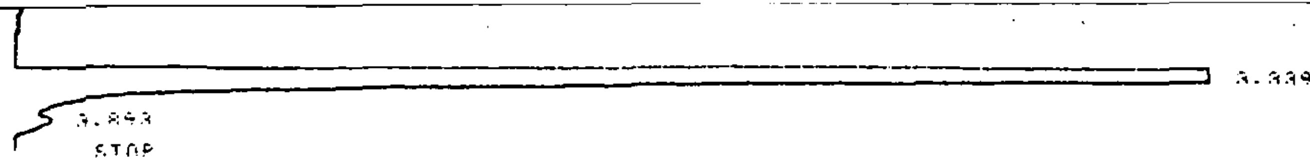


STOP

RUN# 290 FEB 13, 1981 00:49:21

NO RUN PEAKS STORED

* RUN # 291 FEB 13, 1981 01:10:39
START: not ready



RUN# 291 FEB 13, 1981 01:10:39

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.339	82804	BV	.207	99.50611
3.893	411	VV	.052	.49390

TOTAL AREA= 83215
MUL FACTOR=1.0000E+00

500ul METHANE
ICAL 50.5 ug

* RUN # 292 FEB 13, 1981 01:15:10
START: not ready

RUN# 292 FEB 13, 1981 01:15:10

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.498	252	VV	.095	.65820
3.330	9513	BV	.043	24.84721
3.382	28521	VB	.114	74.49459

TOTAL AREA= 38286
MUL FACTOR=1.0000E+00

250ul METHANE
25.25 ug

* RUN # 293 FEB 13, 1981 01:20:20
START: not ready

RUN# 293 FEB 13, 1981 01:20:20

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.411	15073	BV	.100	96.23315
4.022	590	VV	.132	3.76684

TOTAL AREA= 15663
MUL FACTOR=1.0000E+00

ICAL 10.11
100ul methane

* RUN # 294 FEB 13, 1981 01:26:30
START: not ready

60ul methane
ICAL 6.06

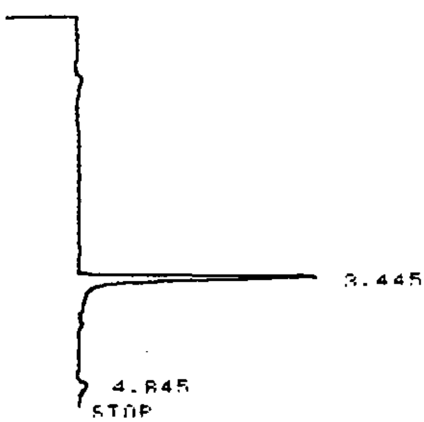
RUN# 294 FEB 13, 1981 01:26:30

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.420	9050	BV	.097	100.00000

TOTAL AREA= 9050
MUL FACTOR=1.0000E+00

* RUN # 295 FEB 13, 1981 01:30:55
START: not ready



ICAL 2.525
25ul methane

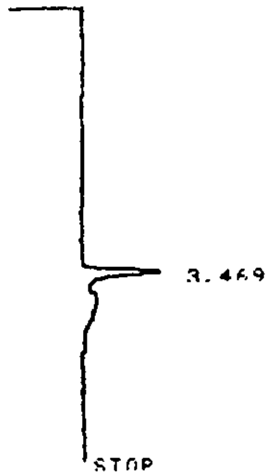
RUN# 295 FEB 13, 1981 01:30:55

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.445	4016	BV	.079	96.51526
4.845	145	BV	.064	3.48474

TOTAL AREA= 4161
MUL FACTOR=1.0000E+00

* RUN # 296 FEB 13, 1981 01:36:25
START: not ready



10 ul METHANE
ICAL 1.01

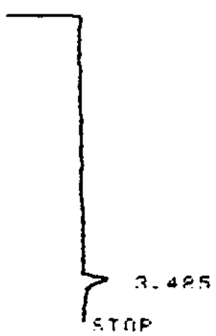
RUN# 296 FEB 13, 1981 01:36:25

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.469	1794	BV	.104	100.00000

TOTAL AREA= 1794
MUL FACTOR=1.0000E+00

* RUN # 297 FEB 13, 1981 01:45:20
START: not ready



METHANE 2.5ul

ICAL 0.2525

RUN# 297 FEB 13, 1981 01:45:20

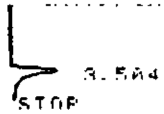
AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.485	551	VV	.096	100.00000

TOTAL AREA= 551
MUL FACTOR=1.0000E+00

* RUN # 298 FEB 13, 1981 01:50:11
START: not ready

ME



METHANE
5

RUN# 298 FEB 13, 1981 01:50:11

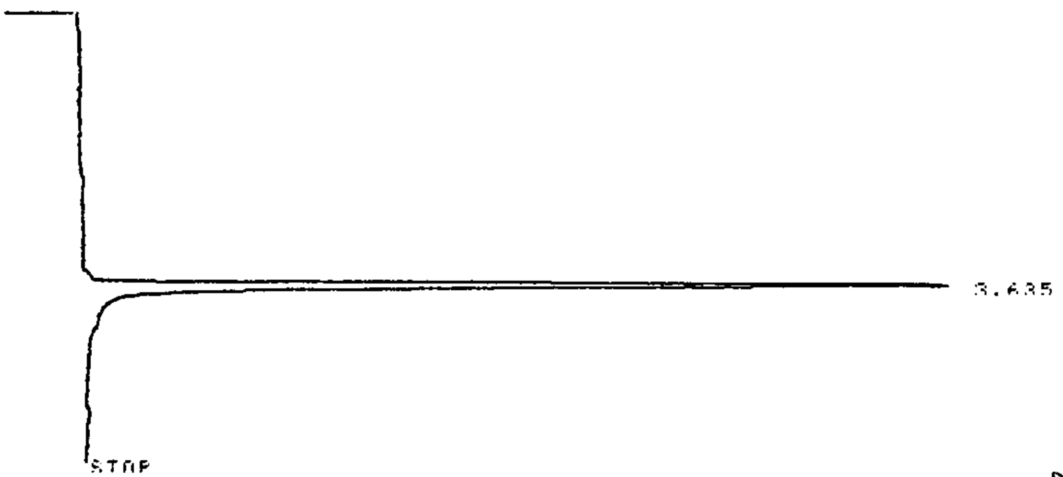
AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.504	1203	PV	.116	100.00000

TOTAL AREA= 1203
MUL FACTOR=1.0000E+00

ETHANE

* RUN # 299 FEB 13, 1981 01:54:24
START: not ready



ETHANE 1CV1
6.06g

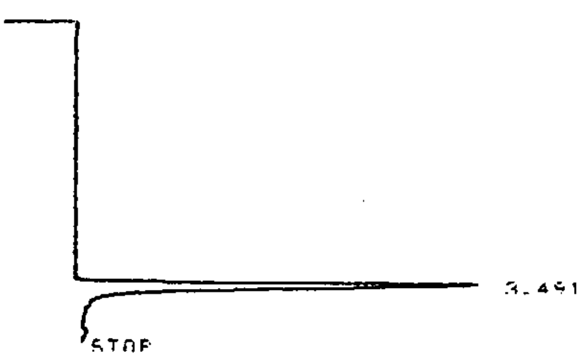
RUN# 299 FEB 13, 1981 01:54:24

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.635	14921	VB	.083	100.00000

TOTAL AREA= 14921
MUL FACTOR=1.0000E+00

* RUN # 300 FEB 13, 1981 02:03:55
START: not ready



METHANE
1CV2 6.06g

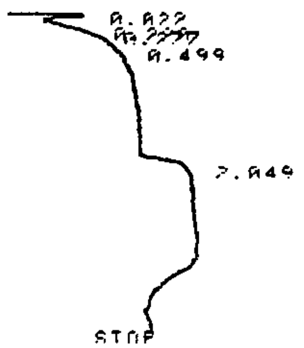
RUN# 300 FEB 13, 1981 02:03:55

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.491	8252	PV	.097	100.00000

TOTAL AREA= 8252
MUL FACTOR=1.0000E+00

* RUN # 301 FEB 13, 1901 02:00:37
START: not ready



RUN# 301 FEB 13, 1901 02:00:37

AREA%

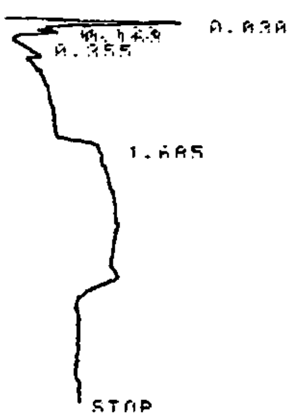
RT	AREA	TYPE	WIDTH	AREA%
.022	229	BP	.030	5.73647
.220	600	PV	.082	15.03006
.277	482	VV	.055	12.07415
.499	1758	VV	.179	44.03806
2.049	923	BV	.145	23.12125

TOTAL AREA= 3992
MUL FACTOR=1.0000E+00

P. LAKE 5 ml 500ul

13254 Y FLAT

* RUN # 302 FEB 13, 1901 02:13:14
START: not ready



RUN# 302 FEB 13, 1901 02:13:14

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.030	1231	BV	.041	48.10472
.123	179	VV	.036	6.99492
.163	282	VP	.039	11.01993
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

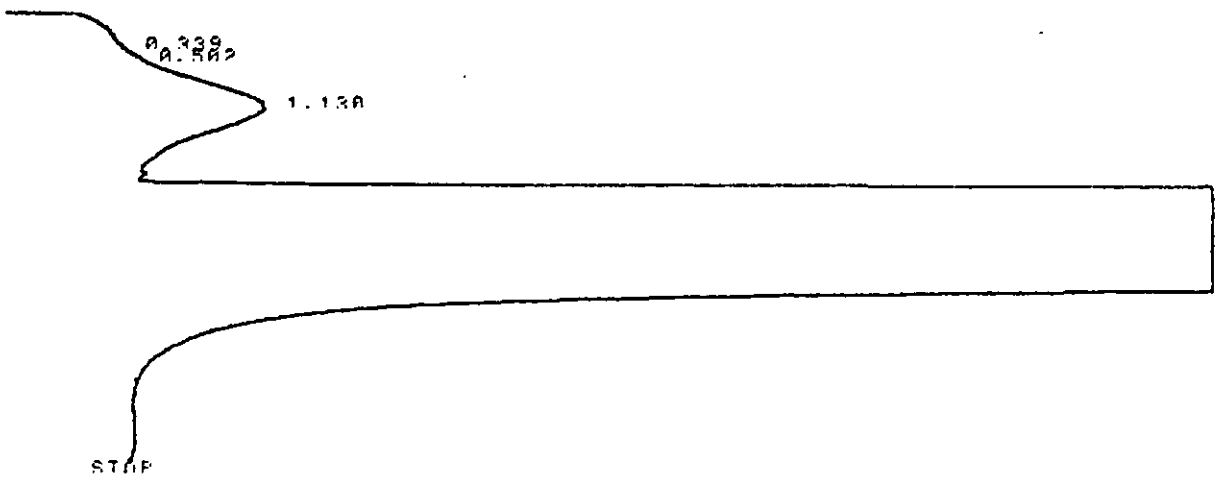
132544 F ~~FLAT~~ 500ul

1.685	237	PV	.102	28.00031

TOTAL AREA= 2559
MUL FACTOR=1.0000E+00

* EXT # <=
BREAK

* RUN # 303 FEB 13, 1981 02:19:52
START: not ready



RUN# 303 FEB 13, 1981 02:19:52

AREA%

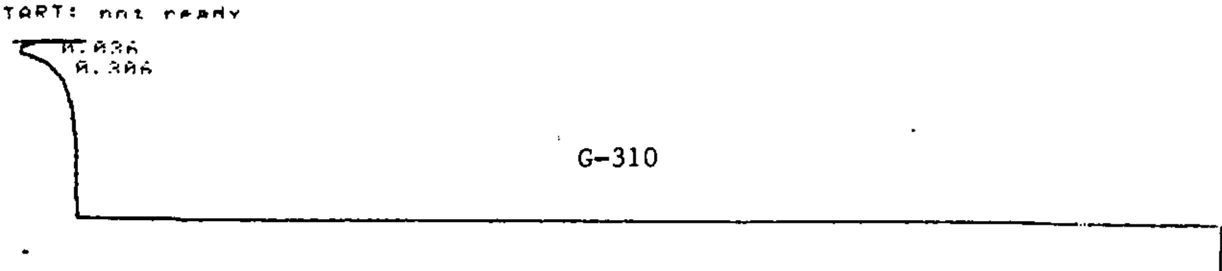
RT	AREA	TYPE	WIDTH	AREA%
.339	723	BV	.223	.33227
.502	351	VV	.077	.16131
1.130	8375	VV	.332	3.84886
2.435	57678	PV	.141	26.50681
2.529	35223	VV	.095	16.18726
2.583	18303	VV	.053	8.41142
2.657	33807	VV	.108	15.53652
2.735	10428	VV	.040	4.79235
2.940	37988	VV	.267	17.45796
3.172	1021	BV	.038	.46922
3.207	1521	VP	.027	.69900
3.316	6551	PP	.079	3.01061
3.427	125	PP	.012	.05745
3.464	1891	PV	.164	.86904
3.554	3612	VB	.077	1.65995

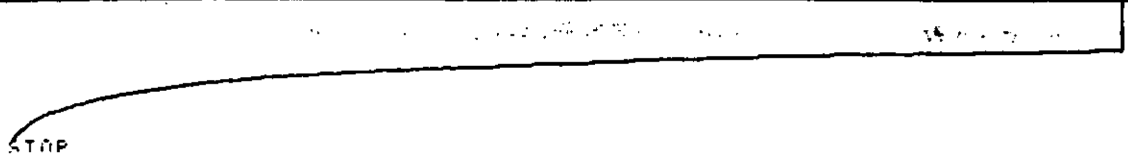
TOTAL AREA= 217597
MUL FACTOR=1.0000E+00

BIG SHOT OF ETHANE/METHANE

3cc inj
132552

* RUN # 304 FEB 13, 1981 02:54:10
START: not ready





STOP

RUN# 304 FEB 13, 1981 02:54:10

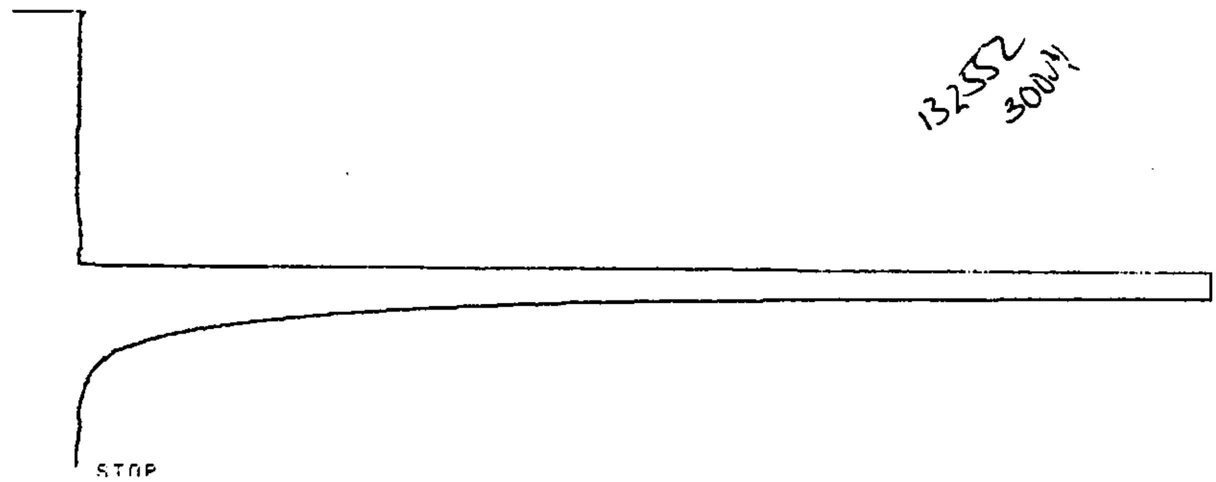
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.036	83	BP	.028	.00203
.306	615	PV	.128	.01501
2.765	1417606	PV	.274	34.59755
2.935	841022	VV	.172	20.52566
3.058	715382	VV	.158	17.45934
3.165	361712	VV	.089	8.82793
3.238	350977	VV	.091	8.56581
3.295	131926	VV	.038	3.21974
3.334	278089	VB	.090	6.78693

TOTAL AREA=4097418
MUL FACTOR=1.0000E+00

* RUN # 305 FEB 13, 1981 03:00:09
START: not ready

132552
300W!



3.458
3.578

STOP

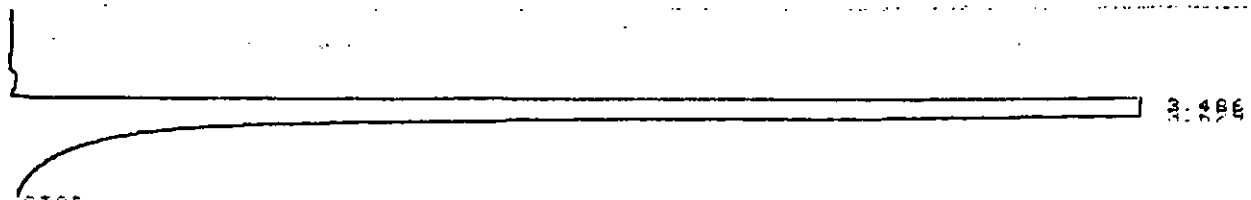
RUN# 305 FEB 13, 1981 03:00:09

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.458	431617	PV	.120	69.48387
3.578	189559	VB	.125	30.51616

TOTAL AREA= 621176
MUL FACTOR=1.0000E+00

* RUN # 306 FEB 13, 1981 03:06:32
START: not ready



13252
50μ

RUN# 306 ~~FEB 13, 1981 03:06:32~~

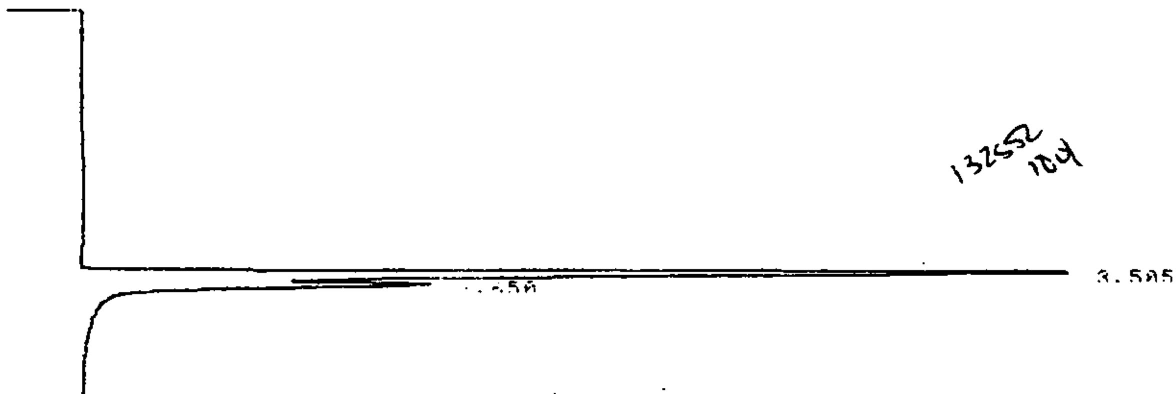
~~AREA%~~

RT	AREA	TYPE	WIDTH	AREA%
~~3.486~~	~~112412~~	~~BV~~	~~.092~~	~~72.64621~~
~~3.629~~	~~42327~~	~~VB~~	~~.097~~	~~27.35381~~

~~TOTAL AREA= 154739~~
~~MUL FACTOR=1.0000E+00~~

* RUN # 307 FEB 13, 1981 03:11:41
START: not ready

13252
10μ



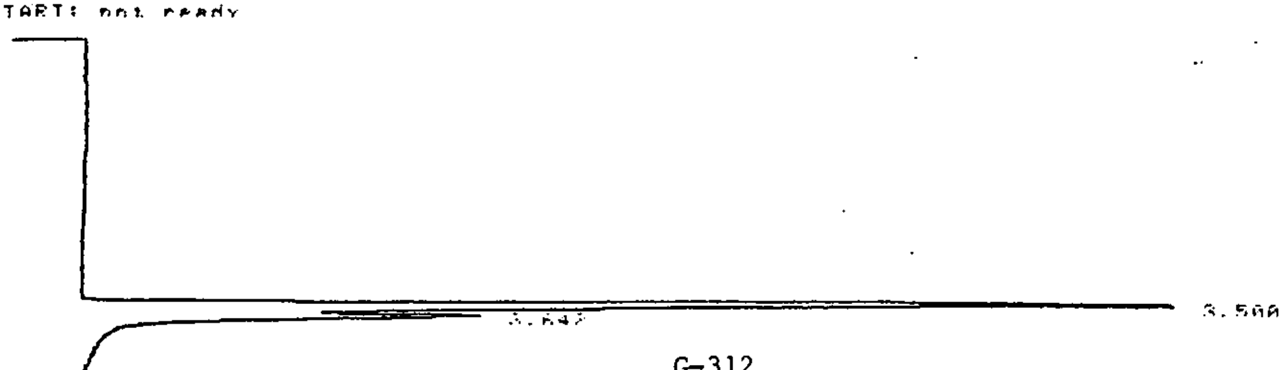
RUN# 307 FEB 13, 1981 03:11:41

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.505	19545	BV	.093	70.44765
3.650	8199	VV	.109	29.55234

TOTAL AREA= 27744
MUL FACTOR=1.0000E+00

* RUN # 308 FEB 13, 1981 03:17:33
START: not ready



RUN# 308 FEB 13, 1981 03:17:33

132552D
1001

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.600	21464	PV	.093	71.77395
3.642	8441	VB	.101	28.22604

TOTAL AREA= 29905
MUL FACTOR=1.0000E+00

* RUN # 309 FEB 13, 1981 03:22:21
START: not ready

RUN# 309 FEB 13, 1981 03:22:21

132549
FE 2501

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.594	33456	PV	.089	55.69779
3.644	26611	VB	.095	44.30221

TOTAL AREA= 60067
MUL FACTOR=1.0000E+00

* RUN # 310 FEB 13, 1981 03:27:08
START: not ready

RUN# 310 FEB 13, 1981 03:27:08

132549
1001

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.534	12836	PV	.088	55.10669
3.678	10457	VV	.096	44.89333

TOTAL AREA= 23293
MUL FACTOR=1.0000E+00

* RUN # 311 FEB 13, 1981 03:31:38
START: not ready

SI W INT ✓

1325/9D
10)

RUN# 311 FEB 13, 1981 03:31:38

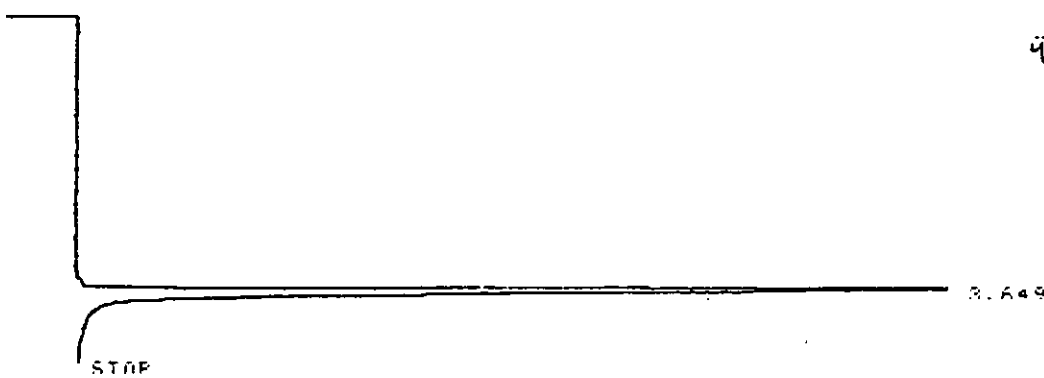
AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.727	12577	PV	.096	53.88834
3.866	10762	VV	.108	46.11166

TOTAL AREA= 23339
MUL FACTOR=1.0000E+00

* RUN # 312 FEB 13, 1981 03:36:35
START: not ready

ETHANE ✓



RUN# 312 FEB 13, 1981 03:36:35

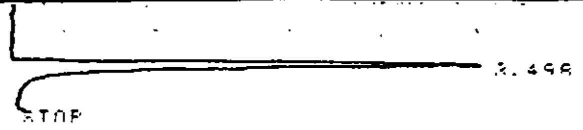
ETHANE
CCV1 6001 6.06g

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.649	16667	VV	.090	100.00000

TOTAL AREA= 16667
MUL FACTOR=1.0000E+00

* RUN # 313 FEB 13, 1981 03:41:37
START: not ready



WITTIO CCV2 6.0ug

600l

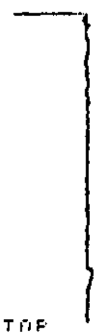
RUN# 313 FEB 13, 1981 03:41:37

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.498	9719	PB	.098	100.00000

TOTAL AREA= 9719
MUL FACTOR=1.0000E+00

* RUN # 314 FEB 13, 1981 03:46:12
START: not ready

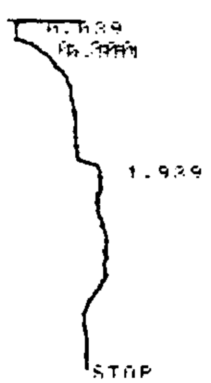


cc 131

RUN# 314 FEB 13, 1981 03:46:12

NO RUN PEAKS STORED

* RUN # 315 FEB 13, 1981 03:51:06
START: not ready



RUN# 315 FEB 13, 1981 03:51:06

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.039	216	BP	.025	10.18388
.300	1109	PV	.116	52.28666
.351	512	VV	.051	24.13956
1.939	284	PV	.092	13.38992

BLANK F
500ul

TOTAL AREA= 2121
MUL FACTOR=1.0000E+00

132545 ↓

* RUN # 316 FEB 13, 1981 03:56:18

START: not ready

RUN# 316 FEB 13, 1981 03:56:18

132548 F

5000 ul

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.051	756	BB	.032	35.89744
.326	783	BV	.148	37.17949
2.489	567	BV	.095	26.92308

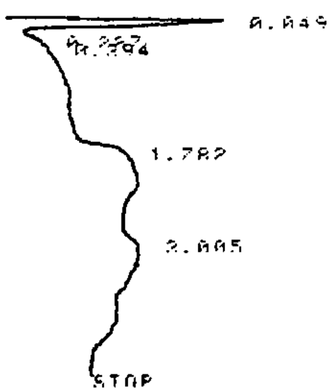
TOTAL AREA= 2106

MUL FACTOR=1.0000E+00

132546F

* RUN # 317 FEB 13, 1981 04:01:55

START: not ready



RUN# 317 FEB 13, 1981 04:01:55

AREA%

132546F

5000 ul

RT	AREA	TYPE	WIDTH	AREA%
.049	2869	BP	.080	66.44282
.282	150	PV	.060	3.47383
.394	324	VV	.089	7.50348
1.282	862	PV	.103	19.96294
3.005	113	T PB	.099	2.61695

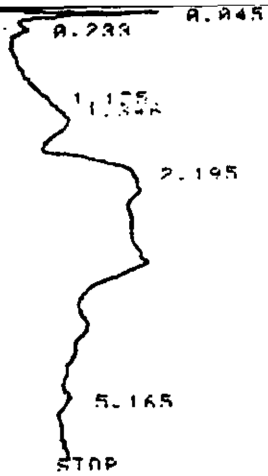
TOTAL AREA= 4318

MUL FACTOR=1.0000E+00

132557 ↓

* RUN # 318 FEB 13, 1981 04:07:09

START: not ready



RUN# 318 FEB 13, 1981 04:07:09

AREA%

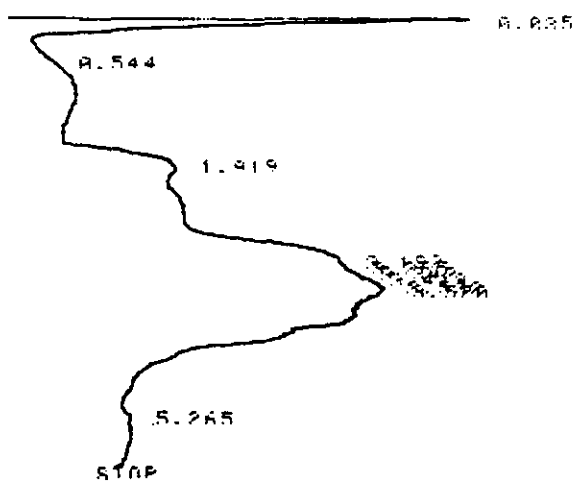
RT	AREA	TYPE	WIDTH	AREA%
.045	1222	BP	.042	21.49516
.233	297	PP	.113	5.22428
1.125	547	VV	.149	9.62181
1.346	591	VV	.101	10.39578
2.195	2725	PV	.192	47.93315
5.165	303	PV	.158	5.32981

TOTAL AREA= 5685
MUL FACTOR=1.0000E+00

132551
5000ul

132550
↓

* RUN # 319 FEB 13, 1981 04:15:21
START: not ready



RUN# 319 FEB 13, 1981 04:15:21

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.035	5871	BP	.070	19.91047
.544	70	PV	.065	.23739
1.919	3317	PV	.186	11.24902
3.192	8335	VV	.297	28.26670
3.265	2004	VV	.072	6.79621
3.342	2088	VV	.075	7.08108
3.419	2111	VV	.074	7.15909
3.532	3313	VV	.110	11.23546

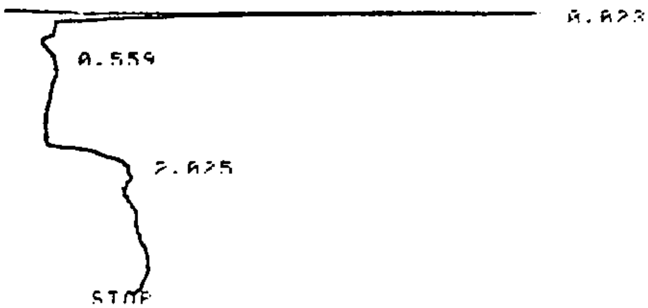
132550
5ml

3.570	2212	VV	.073	7.50161
5.265	166	BV	.081	.56296

TOTAL AREA= 29487
MUL FACTOR=1.0000E+00

132545 ↓

* RUN # 320 FEB 13, 1981 04:22:55
START: not ready



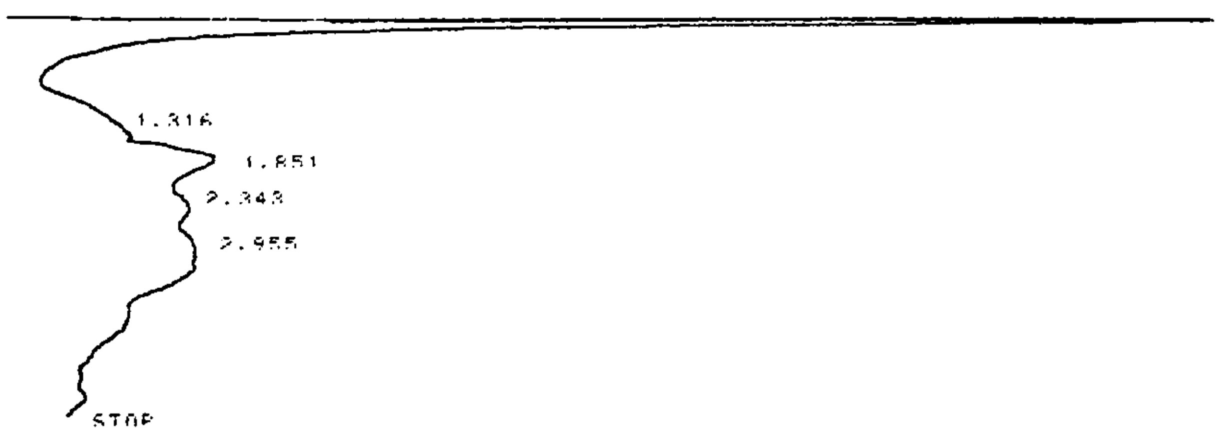
RUN# 320 FEB 13, 1981 04:22:55

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.023	1177	BB	.019	34.51613
.559	100	BV	.134	2.93255
2.025	2133	BV	.213	62.55133

TOTAL AREA= 3410
MUL FACTOR=1.0000E+00

* RUN # 321 FEB 13, 1981 04:27:15
START: not ready



RUN# 321 FEB 13, 1981 04:27:15

132547 500ul

AREA%

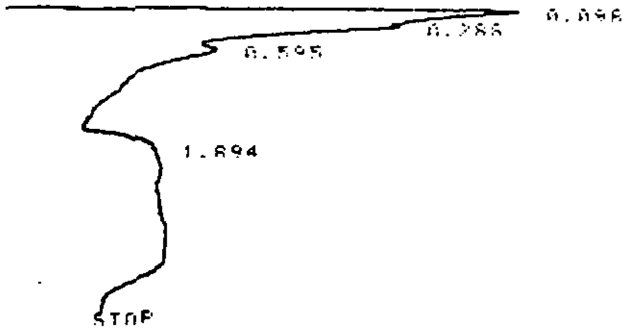
RT	AREA	TYPE	WIDTH	AREA%
1.316	2008	BV	.244	25.00311
1.851	4494	VV	.194	55.95816
2.343	1080	VV	.122	13.44789
2.955	449	VV	.150	5.59084

TOTAL AREA= 8031
MUL FACTOR=1.0000E+00

132542 ↓

* RUN # 322 FEB 13, 1981 04:33:31

START: not ready



RUN# 322 FEB 13, 1981 04:33:31

132542 50001

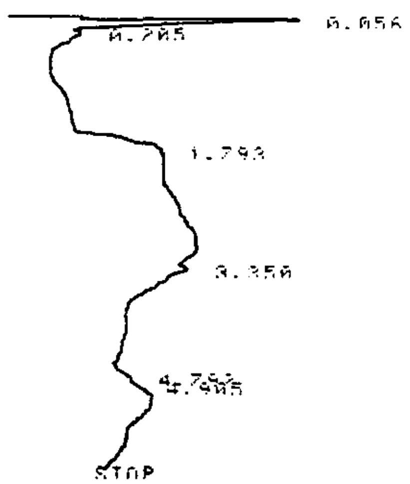
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.098	17182	BV	.177	42.20688
.288	12296	VV	.173	30.20462
.595	9277	VV	.293	22.78858
1.894	1954	PV	.376	4.79992

TOTAL AREA= 40709
MUL FACTOR=1.0000E+00

* RUN # 323 FEB 13, 1981 04:37:47

START: not ready



RUN# 323 FEB 13, 1981 04:37:47

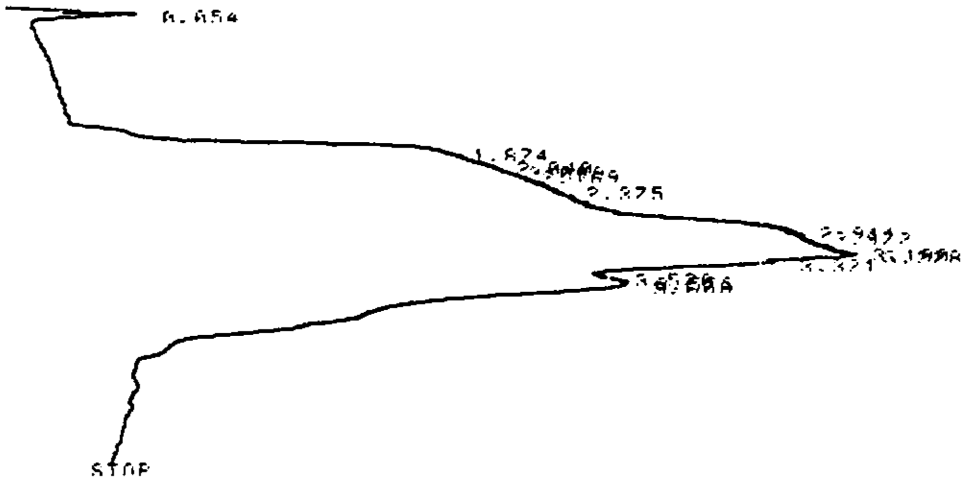
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.056	2799	PV	.059	47.42461
.205	230	VV	.009	3.89698
1.793	1943	PV	.205	32.92106
3.350	293	VV	.086	4.96442
4.792	251	PV	.080	4.25280
4.905	386	VV	.086	6.54016

132543 50001

TOTAL AREA= 5902
MUL FACTOR=1.0000E+00

* RUN # 324 FEB 13, 1981 04:47:13
START: not ready



RUN# 324 FEB 13, 1981 04:47:13

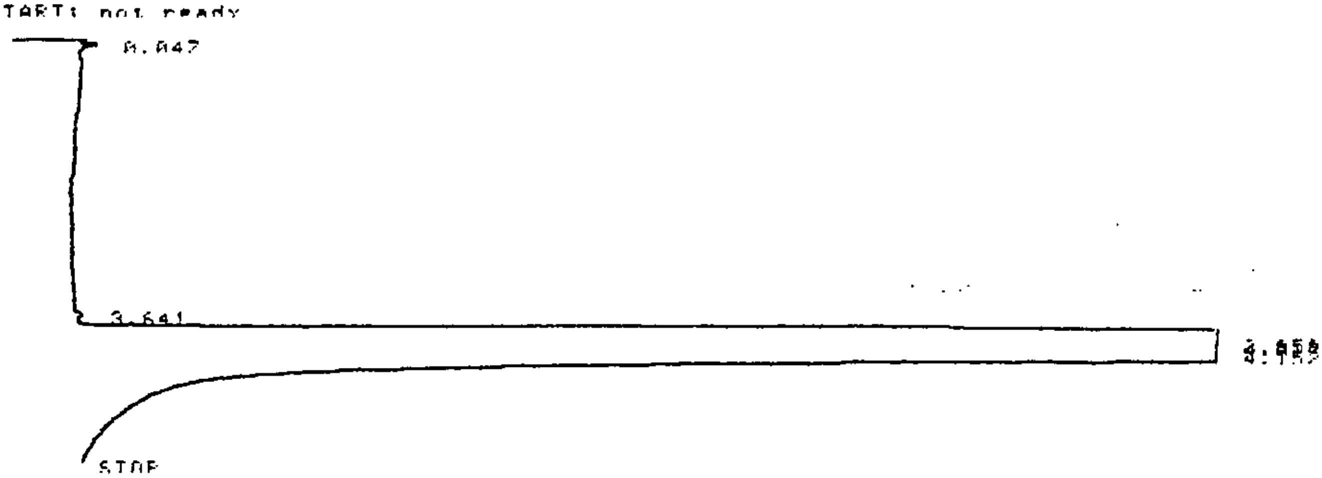
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.054	720	PB	.041	.46862
1.624	10790	BV	.160	7.02286
2.040	11601	VV	.141	7.55072
2.099	4272	VV	.059	2.78051
2.169	5095	VV	.069	3.31617
2.375	15543	VV	.202	10.11644
2.911	46696	VV	.422	30.39293
2.922	6713	VV	.060	4.36926
3.190	24031	VV	.211	15.64101
3.228	6472	VV	.056	4.21242
3.321	10921	BV	.114	7.10813
3.520	3848	VV	.071	2.50454
3.573	3997	VV	.070	2.60152
3.600	2942	VV	.052	1.91485

TOTAL AREA= 153641
MUL FACTOR=1.0000E+00

132550
BTCKV INJ

* RUN # 325 FEB 13, 1981 04:55:44
START: not ready



RUN# 325 FEB 13, 1981 04:55:44

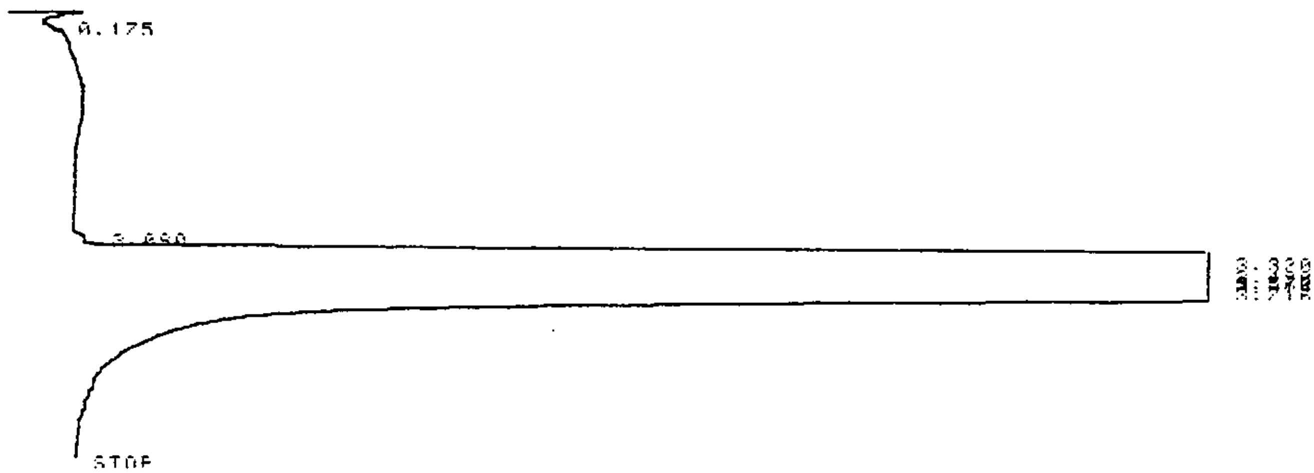
G-320

AREA%

.047	182	BP	.047	.06920
3.641	131	PP	.066	.04981
3.958	124627	PV	.173	47.38904
4.017	70192	VV	.100	26.69030
4.152	67855	VB	.144	25.80166

TOTAL AREA= 262987
MUL FACTOR=1.0000E+00

* RUN # 326 FEB 13, 1981 05:01:36
START: not ready



RUN# 326 FEB 13, 1981 05:01:36

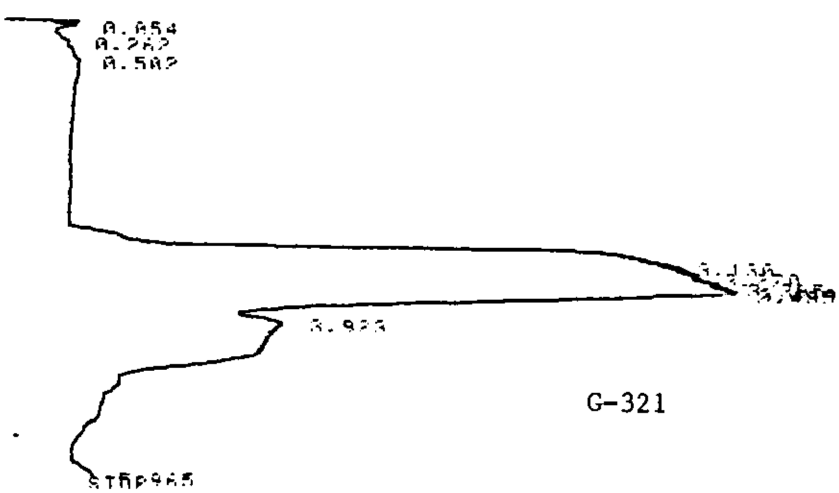
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.175	67	PV	.041	.02073
3.090	9	PP	.012	.00278
3.320	54719	PV	.082	16.92802
3.490	110087	VV	.167	34.05662
3.560	69521	VV	.107	21.50722
3.614	48164	VV	.080	14.90016
3.716	40678	VB	.198	12.58427

TOTAL AREA= 323245
MUL FACTOR=1.0000E+00

BOTCHED
JMJ

* RUN # 327 FEB 13, 1981 05:08:34
START: not ready



RUN# 327 FEB 13, 1981 05:08:34

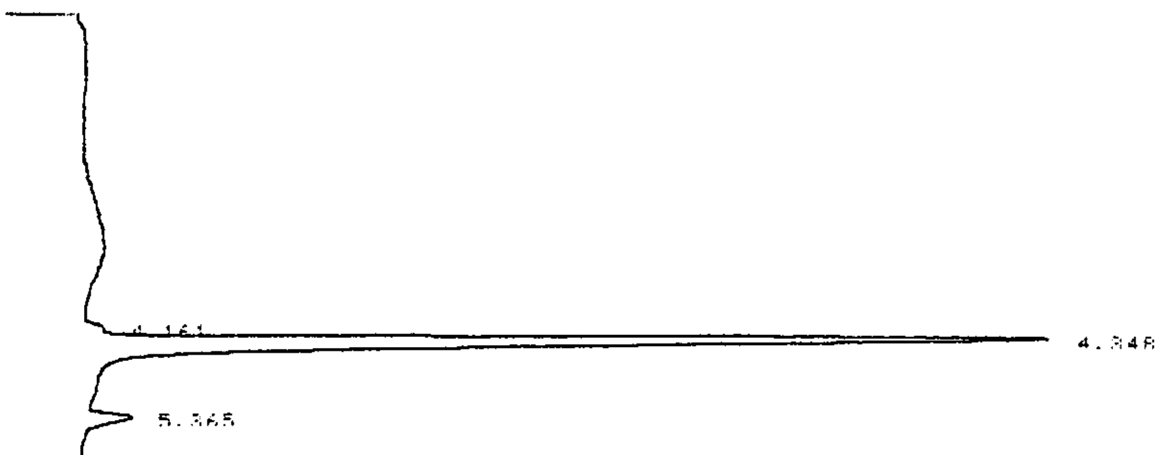
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.054	215	BV	.041	.27262
.262	197	VV	.076	.24980
.502	696	VV	.193	.88254
3.130	23392	PV	.212	29.66156
3.220	17394	VV	.156	22.05597
3.395	11790	VV	.107	14.94998
3.449	5735	VV	.052	7.27211
3.485	18087	VB	.164	22.93470
3.923	856	BV	.071	1.08543
5.965	501	VV	.114	.63528

TOTAL AREA= 78863
MUL FACTOR=1.0000E+00

BOTCHED INJ

* RUN # 328 FEB 13, 1981 05:17:34
START: not ready



RUN# 328 FEB 13, 1981 05:17:34

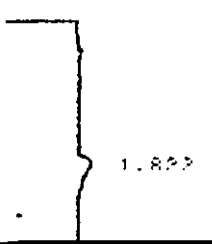
AREA%

RT	AREA	TYPE	WIDTH	AREA%
4.161	358	PV	.071	1.07340
4.348	31033	VV	.151	93.04691
5.365	1961	VV	.175	5.87971

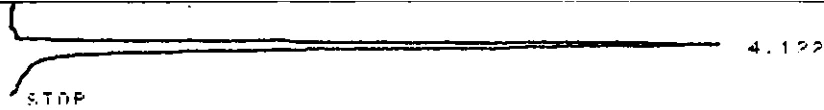
TOTAL AREA= 33352
MUL FACTOR=1.0000E+00

CCV3
ETHANE
100ul 10.14g

* RUN # 329 FEB 13, 1981 05:26:58
START: not ready



CCV4
MOVE



10.1ug

RUN# 329 FEB 13, 1991 05:26:58

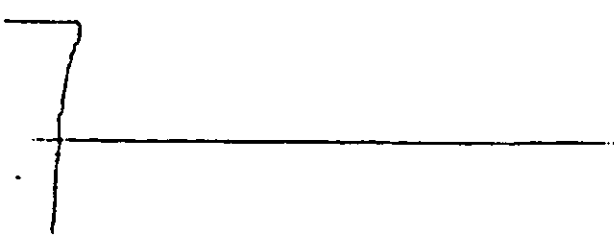
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.822	371	PV	.115	2.21864
4.122	16351	VV	.100	97.78136

TOTAL AREA= 16722
MUL FACTOR=1.0000E+00

12/11/92 P.Williams
R.Lewis
CCB2

RUN # 330 FEB 13, 1991 21:07:31
START: not ready



RUN# 330 FEB 13, 1981 21:07:31

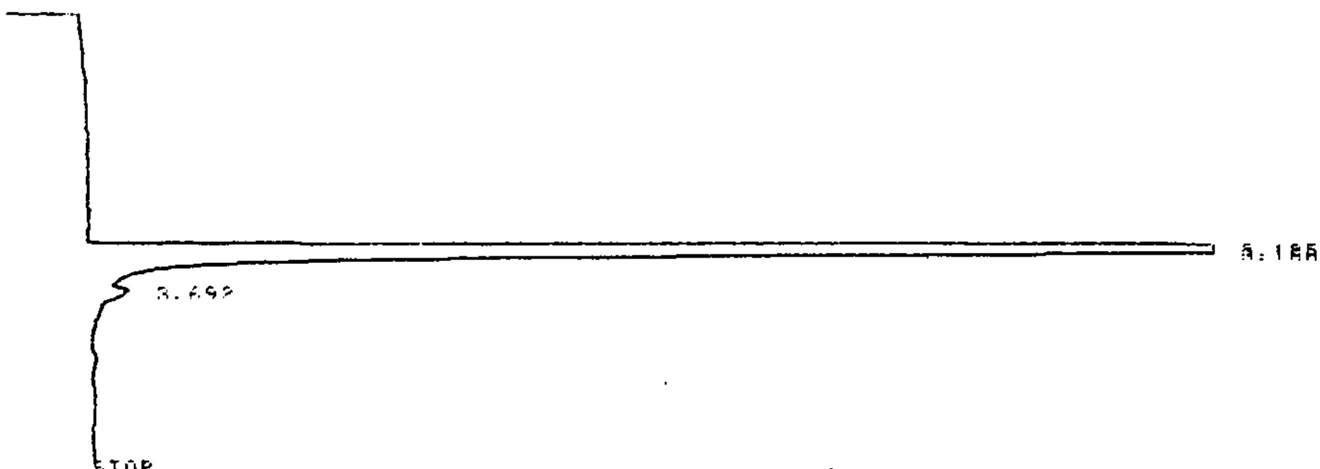
AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.188	446	VV	.098	100.00000

TOTAL AREA= 446
MUL FACTOR=1.0000E+00

methane

* RUN # 331 FEB 13, 1981 21:15:56
START: not ready



CCVS
methane
350ul

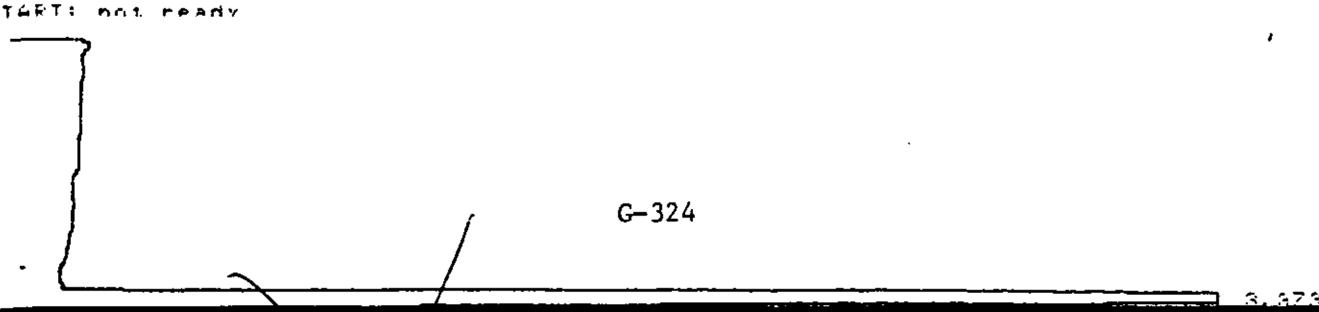
RUN# 331 FEB 13, 1981 21:15:56

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.125	22676	BV	.068	42.51618
3.188	29844	VV	.110	55.95574
3.692	815	VV	.107	1.52808

TOTAL AREA= 53335
MUL FACTOR=1.0000E+00

* RUN # 332 FEB 13, 1981 21:46:21
START: not ready



FAST INJECTION

RJ

[redacted]

OOTC140 INJ

132546 250ul ETHANOL SPIKE

30.3ug SPIKE ETHANOL

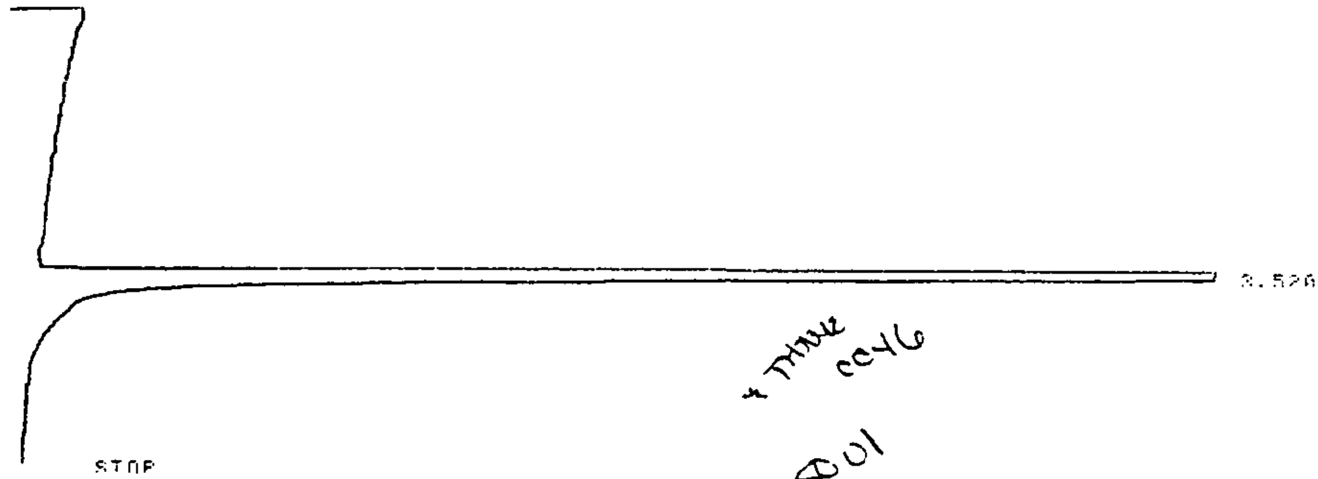
RUN# 332 FEB 13, 1981 21:46:21

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.323	87844	PB	.148	100.00000

TOTAL AREA= 87844
MUL FACTOR=1.0000E+00

* RUN # 333 FEB 13, 1981 21:50:42
START: not ready



+ ETHANOL CC46

250ul

RUN# 333 FEB 13, 1981 21:50:42

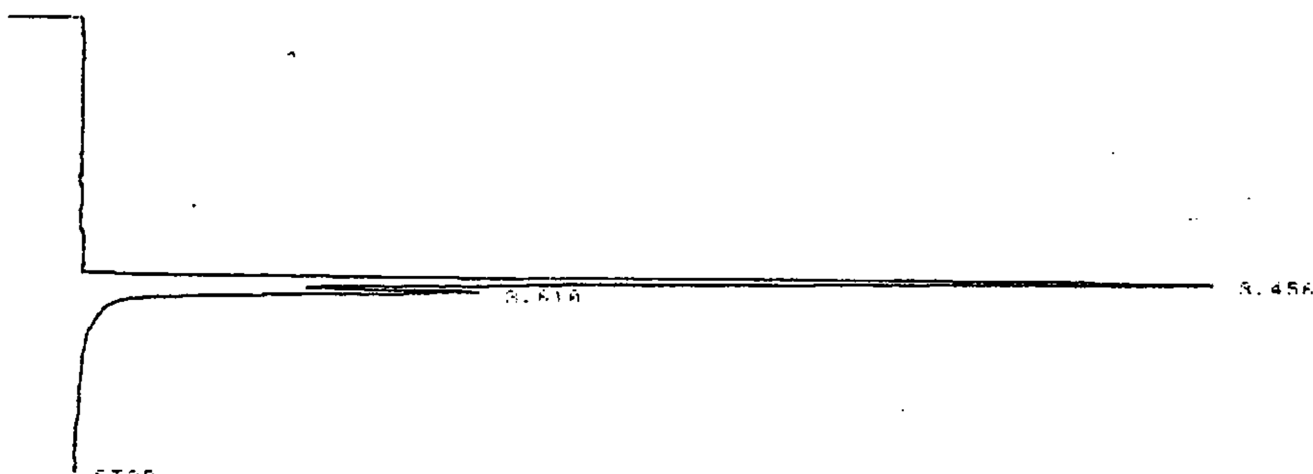
AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.520	62963	PB	.123	100.00000

TOTAL AREA= 62963
MUL FACTOR=1.0000E+00

132552Y
10ul

* RUN # 334 FEB 13, 1981 22:17:30
START: not ready



RUN# 334 FEB 13, 1981 22:17:30

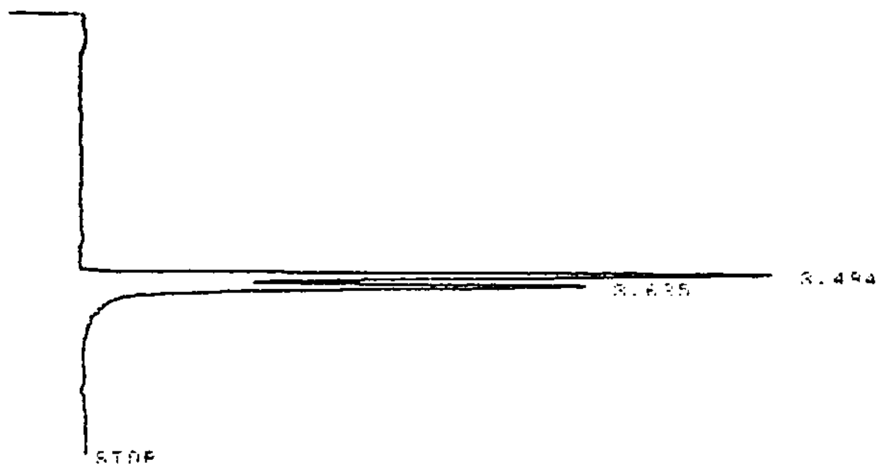
AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.456	21469	VV	.069	71.39283
3.610	8603	VV	.104	28.60718

TOTAL AREA= 30072
MUL FACTOR=1.0000E+00

132549
1001

* RUN # 335 FEB 13, 1981 22:26:20
START: not ready



RUN# 335 FEB 13, 1981 22:26:20

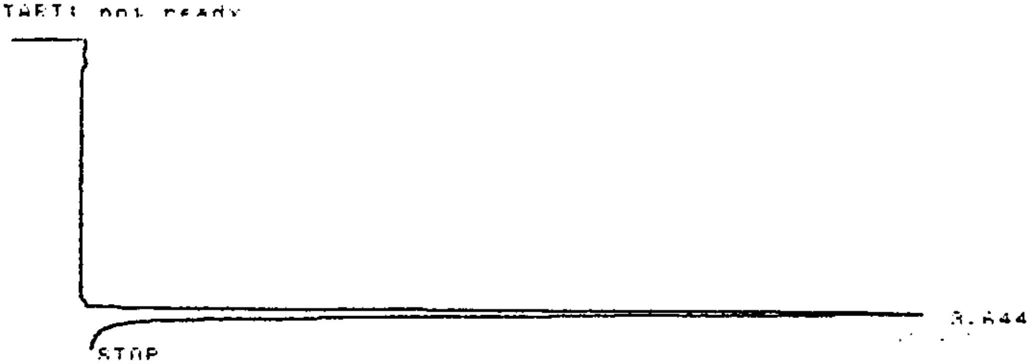
AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.494	13162	PV	.090	55.19178
3.635	10702	VV	.100	44.80824

TOTAL AREA= 23864
MUL FACTOR=1.0000E+00

Ethane ecn 7

* RUN # 336 FEB 13, 1981 22:32:45
START: not ready



RUN# 336 FEB 13, 1981 22:32:45

AREA%

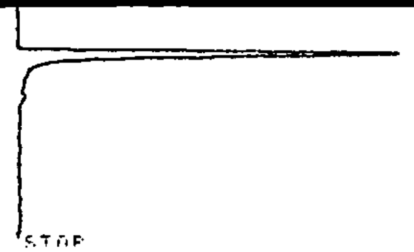
RT	AREA	TYPE	WIDTH	AREA%
3.644	16871	VV	.094	100.00000

Ethane ecn 7
6.060g

TOTAL AREA= 16871
MUL FACTOR=1.0000E+00

BREAK

* RUN # 327   FEB 13, 1981   23:38:16
START: not ready



RUN# 337 FEB 13, 1981 22:38:16

ceus methane
Lobby

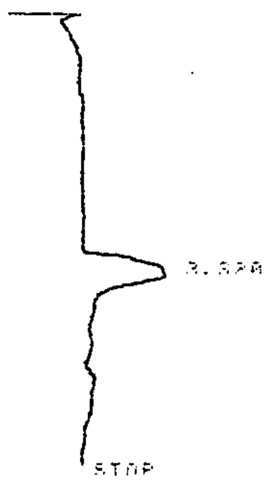
AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.495	8259	PV	.103	100.00000

TOTAL AREA= 8259
MUL FACTOR=1.0000E+00

132842
Kecu

* RUN # 338 FEB 13, 1981 22:50:37
START: not ready



RUN# 338 FEB 13, 1981 22:50:37

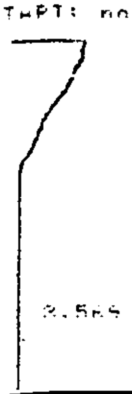
AREA%

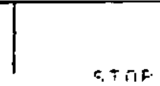
RT	AREA	TYPE	WIDTH	AREA%
3.328	1604	PV	.108	100.00000

TOTAL AREA= 1604
MUL FACTOR=1.0000E+00

132597
60 ml

* RUN # 339 FEB 14, 1981 00:06:28
START: not ready





RUN# 339 FEB 14, 1981 00:06:28

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.569	286	PV	.057	100.00000

TOTAL AREA= 286
MUL FACTOR=1.0000E+00

132542
250 ml

* RUN # 340 FEB 14, 1981 00:13:06
START: not ready

RUN# 340 FEB 14, 1981 00:13:06

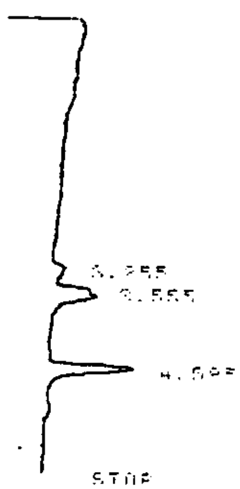
AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.715	668	PV	.082	100.00000

TOTAL AREA= 662
MUL FACTOR=1.0000E+00

132550
250 ml

* RUN # 341 FEB 14, 1981 00:19:51
START: not ready



RUN# 341 FEB 14, 1981 00:19:51

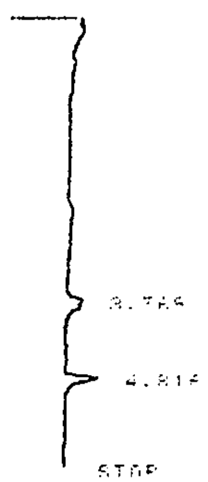
AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.255	294	PV	.102	8.87145
3.555	698	VV	.079	21.06216
4.595	2322	VV	.124	70.06637

TOTAL AREA= 3314
MUL FACTOR=1.0000E+00

132550
100 ml

* RUN # 342 FEB 14, 1981 00:27:14
START: not ready



RUN# 342 FEB 14, 1981 00:27:14

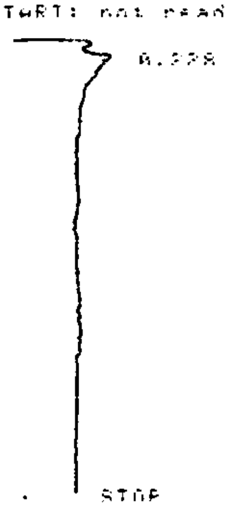
AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.769	277	VV	.077	26.48184
4.816	769	PV	.105	73.51816

TOTAL AREA= 1046
MUL FACTOR=1.0000E+00

132543
250 ml

* RUN # 343 FEB 14, 1981 00:33:52
START: not ready



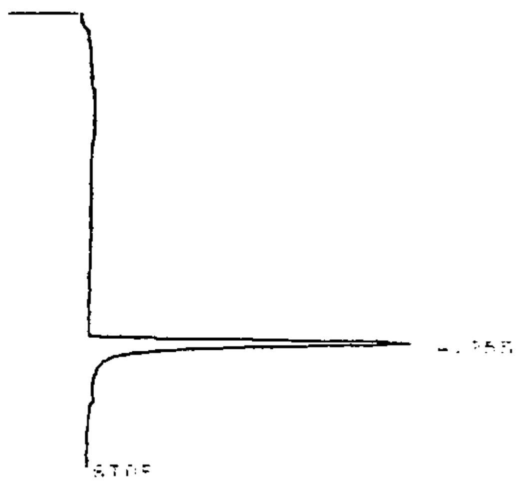
RUN#   343   FEB 14, 1991 00:33:52

AREA%
      RT   AREA TYPE   WIDTH   AREA%
    .392   1085   PV   .144 100.00000

TOTAL AREA=   1085
MUL FACTOR=1.0000E+00

ccv 9
methane

* RUN # 344   FEB 14, 1991 00:44:12
START: not ready



RUN#   344   FEB 14, 1991 00:44:12

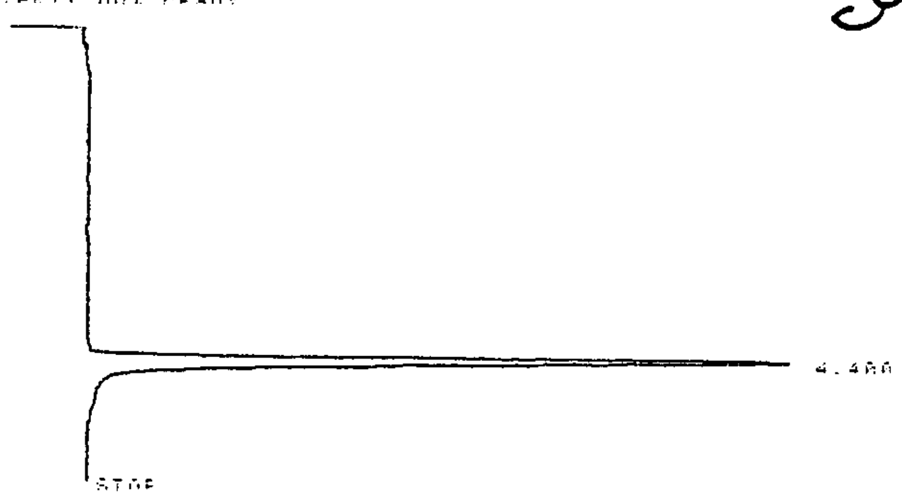
CCV9 methane

AREA%
      RT   AREA TYPE   WIDTH   AREA%
   4.355   8657   PV   .124 100.00000

TOTAL AREA=   8657
MUL FACTOR=1.0000E+00

ccv10
ethane

* RUN # 345   FEB 14, 1991 00:52:23
START: not ready



CCV10
ethane

RUN#   345   FEB 14, 1991 00:52:23

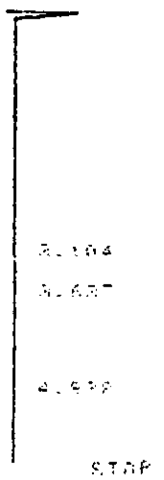
AREA%

RT	AREA	TYPE	WIDTH	AREA%
4.400	17400	VV	.116	100.00000

TOTAL AREA= 17400
MUL FACTOR=1.0000E+00

Blank

* RUN # 346 FEB 14, 1981 01:01:54
START: not ready



RUN# 346 FEB 14, 1981 01:01:54

AREA%

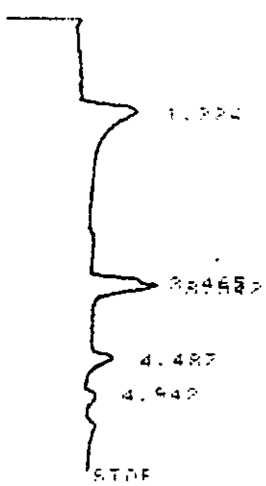
RT	AREA	TYPE	WIDTH	AREA%
3.104	437	BV	.155	62.33952
3.627	86	VV	.085	12.26819
4.938	178	PV	.062	25.39230

TOTAL AREA= 701
MUL FACTOR=1.0000E+00

CC133

132547
250 µl

* RUN # 347 FEB 14, 1981 01:09:45
START: not ready



RUN# 347 FEB 14, 1981 01:09:45

AREA%

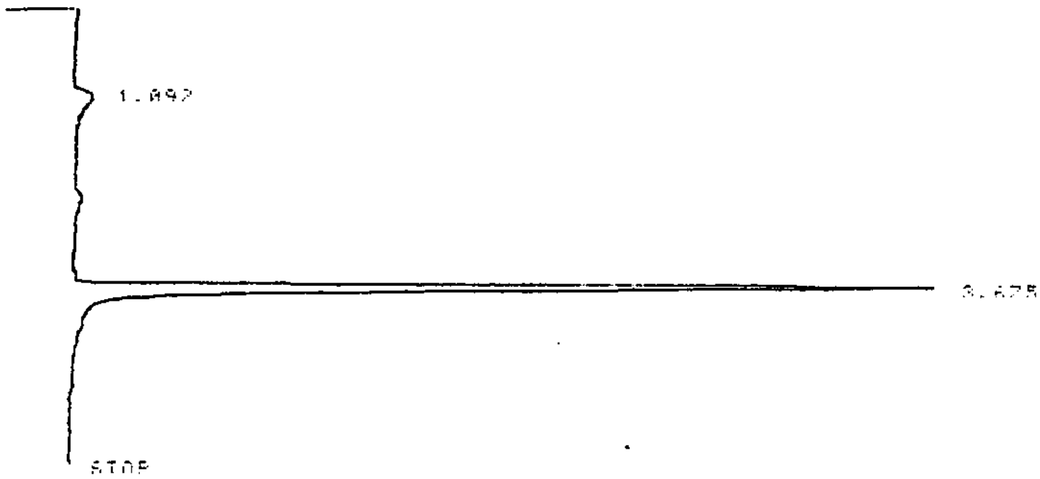
RT AREA TYPE WIDTH AREA%

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3.465	764	BV	.070	12.09815
3.549	2002	VV	.139	31.70230
4.487	823	VV	.154	13.03246
4.947	70	BV	.033	1.10847

TOTAL AREA= 6315
MUL FACTOR=1.0000E+00

CCV 11 ethane

* RUN # 348 FEB 14, 1991 01:16:48
START: not ready



RUN# 348 FEB 14, 1991 01:16:48

AREA%

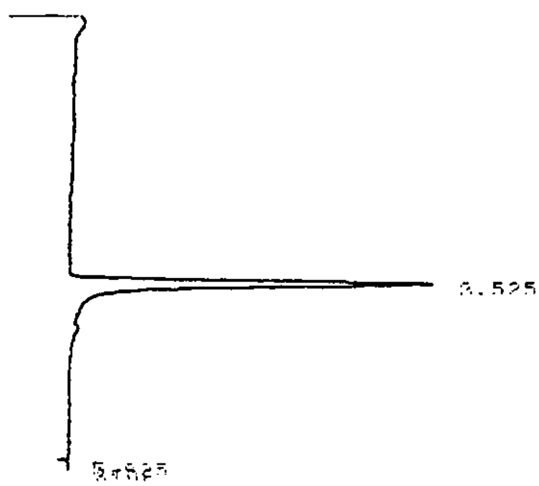
RT	AREA	TYPE	WIDTH	AREA%
1.091	152	BV	.046	.89433
3.625	16844	VV	.092	99.10567

TOTAL AREA= 16996
MUL FACTOR=1.0000E+00

CCV 11 ETHANE

CCV 12 methane

* RUN # 349 FEB 14, 1991 01:23:15
START: not ready



RUN# 349 FEB 14, 1991 01:23:15

CCV 12 CCG METHANE

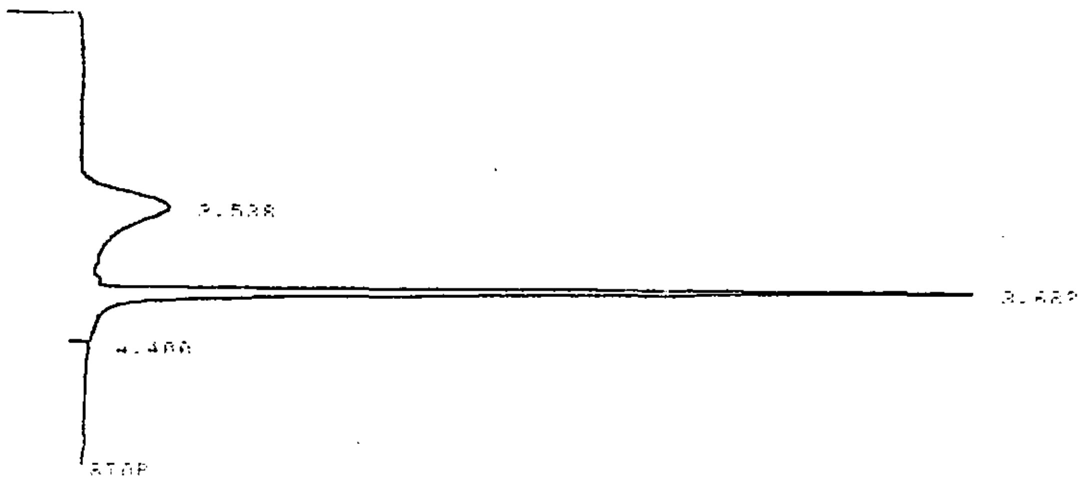
AREA%

RT	AREA	TYPE	WIDTH	AREA%
8.525	6606	PV	.111	98.60221
5.925	122	PV	.075	1.39780

TOTAL AREA= 6728
MUL FACTOR=1.0000E+00

CCV ~~pe~~ ethane

* RUN # 350 FEB 14, 1981 01:29:41
START: not ready



RUN# 350 FEB 14, 1981 01:29:41

CCV13 ETHANE

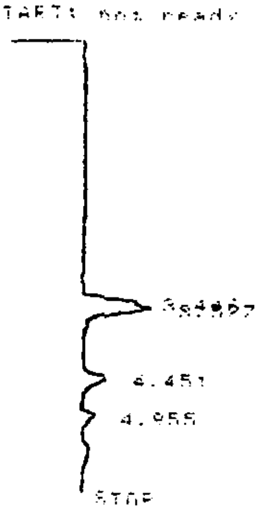
AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.538	9262	VV	.469	33.56139
3.682	19085	VV	.099	65.61350
4.400	240	PV	.045	.82511

TOTAL AREA= 29587
MUL FACTOR=1.0000E+00

132547
250 µl

* RUN # 351 FEB 14, 1981 01:34:41
START: not ready



RUN# 351 FEB 14, 1981 01:36:41

AREA%

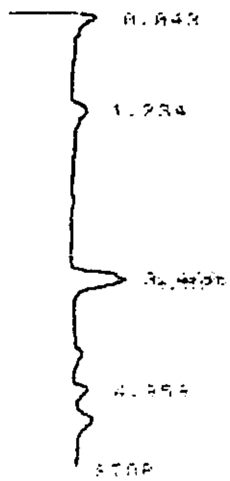
RT	AREA	TYPE	WIDTH	AREA%

3.527	2155	VV	.144	62.55445✓
4.451	213	VV	.045	6.18287
4.955	395	PV	.122	11.46589

TOTAL AREA= 3445
MUL FACTOR=1.0000E+00

132545
250 ml

* RUN # 352 FEB 14, 1981 01:44:50
START: not ready



RUN# 352 FEB 14, 1981 01:44:50

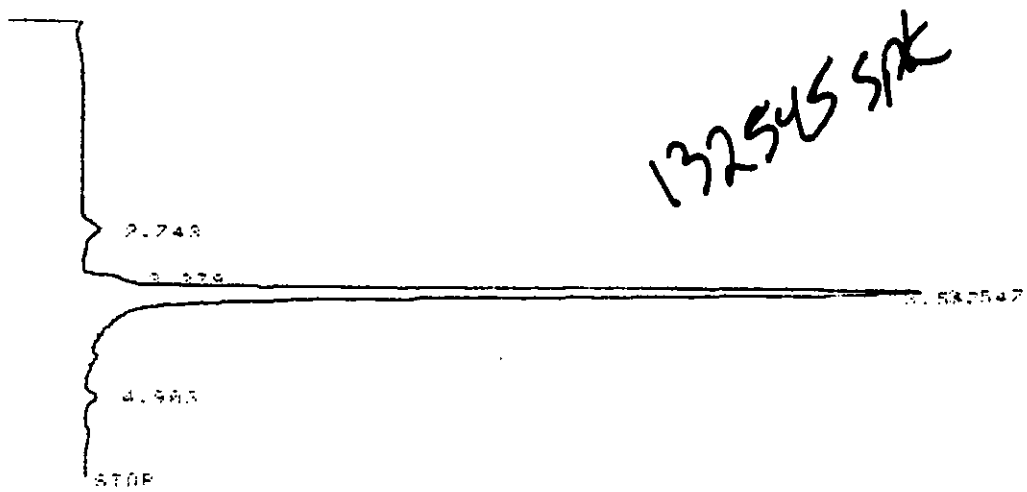
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.043	234	BB	.083	6.17903
1.234	624	BV	.193	16.47742
2.460	769	PV	.076	20.30631
3.521	1646	VV	.102	43.46448 ← nicotine
4.954	514	PV	.153	13.57275

TOTAL AREA= 3787
MUL FACTOR=1.0000E+00

* RUN # 353 FEB 14, 1981 01:55:35
START: not ready

132545 spk



RUN# 353 FEB 14, 1981 01:55:35

AREA%

RT	AREA	TYPE	WIDTH	AREA%
2.743	709	VV	.191	2.40976
3.379	312	BV	.042	1.05082
3.547	13145	VV	.074	44.67746
3.587	15144	VV	.050	51.47168
4.903	106	VV	.038	.36027

methanol spike

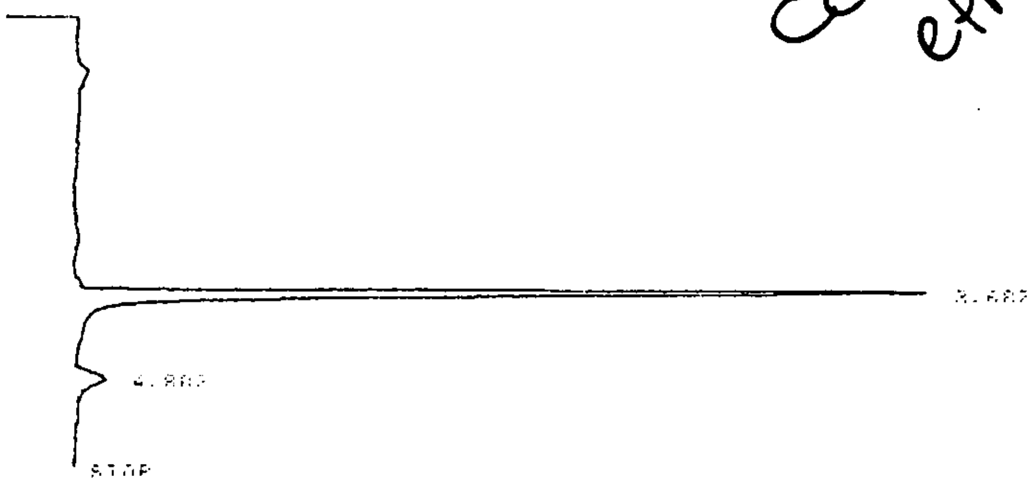
15.15ul SPIKE

150 (pu) ~~25~~ul METHANOL STD TO 250ul SAMPLE 132545

TOTAL AREA= 29422
MUL FACTOR=1.0000E+00

* RUN # 354 FEB 14, 1991 02:04:19
START: not ready

CCV14 ethane



RUN# 354 FEB 14, 1991 02:04:19

AREA%

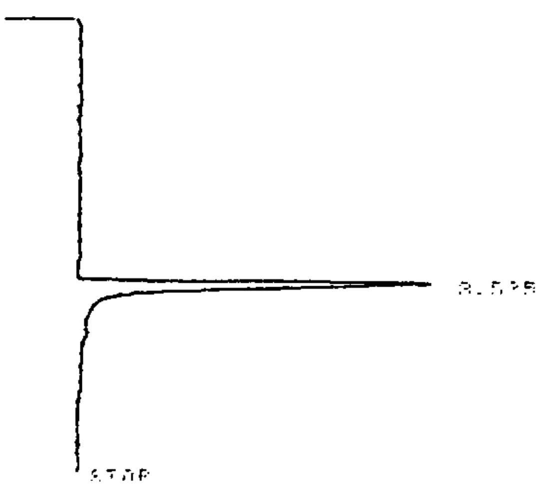
RT	AREA	TYPE	WIDTH	AREA%
3.687	16412	VV	.051	92.30558
4.882	1366	VV	.209	7.69404

CCV14

TOTAL AREA= 17780
MUL FACTOR=1.0000E+00

CCV15 methane

* RUN # 355 FEB 14, 1991 02:17:36
START: not ready



15 (pu) CCV ~~14~~ METHANOL

RUN#   355   FEB 14, 1901 07:17:35

AREA%

RT	AREA	TYPE	WIDTH	AREA%
3.525	8646	BV	.116	100.00000

TOTAL AREA=   8646
MUL FACTOR=1.0000E+00

Blank

CCB4

* RUN # 356   FEB 14, 1901 02:25:31
START: not ready

STOP

RUN#   356   FEB 14, 1901 02:25:31

NO RUN PEAKS STORED

* LIST: LIST
PEAK CAPACITY: 1205

ZERO   = 0, 0.644
ATT 2^ = -1
CHT SP = 1.0
AR REJ = 0

G.8 MOISTURE LABORATORY DATA

RECEIVED NOV 20 1992

ETS Analytical Services, Inc.

Proudly serving industry and government since 1973. A USEPA Contract Laboratory

A subsidiary of ETS International, Inc.

ETS, Inc.
1401 Municipal Road N.W.
Roanoke, VA 24012
ATTN: Dr. Ted Handel

Re: Laboratory Analysis
ETSAS Client No. 6593
Contract No. 92-655

REPORT DATE/NUMBER: November 20, 1992 / 178

SAMPLES COLLECTED BY: CLIENT

DATE RECEIVED AT LAB: 11/13/92

ANALYSIS FOR: Percent Moisture

METHOD OF ANALYSIS: ASTM D 2016, Dried at 103 deg C

SAMPLE ANALYSIS DATA

Lab ID: 132518 Client ID: 10/28 1615 Matrix: SOIL
Other ID: 92-655 / 6-6.2 Description: GRINDING ROOM EXIT
Collected by: CLIENT Date: 10/28/92 Time: 1615
Percent Moisture ———— 14.2 %

Lab ID: 132519 Client ID: 10/28 0810 Matrix: SOIL
Other ID: 92-655 / 6-6.2 Description: GRINDING BUILDING EXIT
Collected by: CLIENT Date: 10/28/92 Time: 0810
Percent Moisture ———— 13.0 %

Lab ID: 132520 Client ID: 10/27 1430 Matrix: SOIL
Other ID: 92-655 / 6-6.2 Description: GRINDING BUILDING EXIT
Collected by: CLIENT Date: 10/27/92 Time: 1430
Percent Moisture ———— 13.0 %

Lab ID: 132521 Client ID: 10/28 1330 Matrix: SOIL
Other ID: 92-655 / 6-6.2 Description: GRINDING ROOM EXIT
Collected by: CLIENT Date: 10/28/92 Time: 1330
Percent Moisture ———— 13.7 %

Lab ID: 132522 Client ID: 10/29 1330 Matrix: SAWDUST
Other ID: 92-655 / 6-6.2 Description: DRIED SAWDUST
Collected by: CLIENT Date: 10/29/92 Time: 1330

REPORT CONTINUED ON NEXT PAGE

1401 Municipal Road, NW - Roanoke, Virginia 24012-1309 - Telephone: 703-265-0004 - FAX: 703-563-4866

SAMPLE ANALYSIS DATA

Lab ID: 132522 (continued)
Percent Moisture ——— 2.7 %

Lab ID: 132523 Client ID: 10/30 1045 Matrix: SAWDUST
Other ID: 92-655 / 6-6.2 Description: DRIED SAWDUST
Collected by: CLIENT Date: 10/30/92 Time: 1045
Percent Moisture ——— 1.8 %

Lab ID: 132524 Client ID: 11/04 1415 Matrix: SAWDUST
Other ID: 92-655 / 6-6.2 Description: DRIED SAWDUST
Collected by: CLIENT Date: 11/04/92 Time: 1415
Percent Moisture ——— 4.4 %

Lab ID: 132525 Client ID: 11/03 1600 Matrix: SAWDUST
Other ID: 92-655 / 6-6.2 Description: DRIED SAWDUST
Collected by: CLIENT Date: 11/03/92 Time: 1600
Percent Moisture ——— 2.5 %

Lab ID: 132526 Client ID: 11/02 1530 Matrix: SAWDUST
Other ID: 92-655 / 6-6.2 Description: DRIED SAWDUST
Collected by: CLIENT Date: 11/03/92 Time: 1530
Percent Moisture ——— 2.4 %

Lab ID: 132527 Client ID: 11/06 1530 Matrix: SAWDUST
Other ID: 92-655 / 6-6.2 Description: DRIED SAWDUST
Collected by: CLIENT Date: 11/06/92 Time: 1530
Percent Moisture ——— 2.8 %

Lab ID: 132528 Client ID: 11/05 1530 Matrix: SAWDUST
Other ID: 92-655 / 6-6.2 Description: DRIED SAWDUST
Collected by: CLIENT Date: 11/05/92 Time: 1530
Percent Moisture ——— 1.9 %

Lab ID: 132529 Client ID: 11/04 1400 Matrix: SAWDUST
Other ID: 92-655 / 6-6.2 Description: WET SAWDUST
Collected by: CLIENT Date: 11/04/92 Time: 1400
Percent Moisture ——— 47.2 %

Lab ID: 132530 Client ID: 11/07 0940 Matrix: SAWDUST
Other ID: 92-655 / 6-6.2 Description: DRIED SAWDUST
Collected by: CLIENT Date: 11/07/92 Time: 0940
Percent Moisture ——— 3.1 %

REPORT CONTINUED ON NEXT PAGE

EIS Analytical Services • A Division of EIS, Inc.
[redacted]
1401 Municipal Road N.W.
Roanoke, VA 24012 1309
Phone (703) 265 0004 / FAX (703) 563 4866

CHAIN OF CUSTODY RECORD

PROJ. NO.: 92-6556
PROJECT NAME: EPA Brick

SAMPLERS: (Signature)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CON-TAINERS							REMARKS
	10/28	16:15			Grinding Room Exit	Soil							Taken by Brian Shreger
	10/28	08:10			Grinding Building Exit	Soil							Taken by Brian Shreger
	10/27	14:30			Grinding Building Exit	Soil							Taken by Richard Meninshaw & Brian Shreger
	10/28	13:00			Grinding Room Exit	Soil							Taken by Brian Shreger
	10/29	13:30			Dried Sawdust								Taken by Richard Meninshaw
	10/30	10:45			Dried Sawdust								Taken by Brian Shreger
	11/4	14:15			Dried Sawdust								Taken by Brian Shreger
	11/3	16:00			Dried Sawdust								Taken by Brian Shreger
	11/2	15:30			Dried Sawdust								Taken By Brian Shreger
	11/6	15:30			Dried Sawdust								Taken By Brian Shreger
	11/5	15:30			Dried Sawdust								Taken By Brian Shreger
	11/4	14:00			Wet Sawdust								Taken By John Brown
	11/7	09:40			Dried Sawdust								Taken By Brian Shreger

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		Susan Sheppard	11/13/92 1240		

Original Accompanies Shipment

If we may be of further assistance, please contact us at any time.

Sincerely,
ETS ANALYTICAL SERVICES, INC.

Chris Southworth

Chris Southworth, Project Manager

DATE: November 13, 1992

TO: Chris Southworth

FROM: Mike Visneski

SUBJECT: Free Moisture Analysis

Thirteen samples are being submitted to ETSAS for free moisture analysis. There are four (4) soil samples, eight (8) dried sawdust samples, and one (1) wet sawdust sample.

I am not sure if there is an ASTM method for free moisture analyses for these types of samples. If there is, please reference the method when reporting the results.

Please use as little of each sample as possible, because a screen size analysis also needs to be performed on the samples. Following the moisture analyses please return the samples to Nancy Lewis and she will forward them to Terry Williamson. Terry will be performing the screen size analysis.

Reference Contract No. 92-655 and Work Code 6-6.2 for billing purposes. If you have any questions, please contract me directly.

xc: Nancy Lewis
with Sample Custody forms

H

H.0 CONTINUOUS EMISSIONS MONITORING CALIBRATION DATA

H.1 CEM CALIBRATION DATA AND BIAS CHECKS
SAWDUST DRYER INLET

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Calibration Data - O2/CO2
11/2/92

Starting
11-02-92

Time	Inlet O2 %dv	Inlet CO2 %dv
07:03	0.02L	0.02L
07:04	1.60	0.29
07:05	19.12	5.56
07:06	14.25	5.58
07:07	14.26	5.59
07:08	14.23L	5.61
07:09	9.84	9.66
07:10	6.08	13.62
07:11	6.07L	13.85L
07:12	10.63	9.37
07:13	14.26	5.92L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Bias Check - O2/CO2 Monitors
11/2/92

Starting
11-02-92

Time	Inlet O_2 %dv	Inlet CO_2 %dv
12:20	0.05R	0.03R
12:21	8.33	2.08
12:22	14.34R	5.75R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Drift Check - Run 1 - Post-Test
11/2/92

Starting
11-02-92

Time	Inlet O2 %dv	Inlet CO2 %dv
15:55	0.05L	0.00L
15:56	7.38	2.81
15:57	14.34	5.69
15:58	14.33L	5.72
15:59	14.27	9.69
16:00	14.22	13.63L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Calibration Data - CO/NOx Monitors
11/2/92

Starting
11-02-92

Time	Inlet CO ppmdv	Inlet NOx ppmdv
16:00	0.85L	0.11L
16:01	1.41	0.05
16:02	62.57	0.02
16:03	811.00	0.05
16:04	849.00	0.09
16:05	860.00L	0.14
16:06	743.00	0.22
16:07	501.50	0.28
16:08	501.70	0.32
16:09	501.00L	0.35
16:10	498.50	34.05
16:11	139.90	161.10
16:12	41.78	212.50
16:13	41.74	213.10
16:14	41.76	212.70
16:15	42.58	212.00L
16:16	42.21	145.30
16:17	42.04	136.00L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Bias Check - CO/NOx Monitors
11/2/92

Starting
11-02-92

Time	Inlet CO ppmdv	Inlet NOx ppmdv
17:09	0.76R	2.03R
17:10	37.44	2.09
17:11	341.40	2.19
17:12	446.10	2.19
17:13	501.40R	2.16
17:14	490.80	26.33
17:15	147.40	138.80
17:16	1.01	139.50R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Drift Check - Run 2 - Post-Test
11/2/92

Starting
11-02-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
19:51	0.04L	0.03L	0.55L	4.52L
19:52	2.70	0.89	0.53	4.78
19:53	14.27	5.74	0.53	5.20
19:54	14.32L	5.81	0.54	5.38
19:55	9.32	10.67	0.53	5.47
19:56	6.12	13.51	0.53	5.52
19:57	6.63	13.58L	2.41	5.54
19:58	8.02	13.51	765.00	5.51
19:59	9.15	13.52	850.00L	5.50
20:00	10.20	13.50	741.00	59.96
20:01	11.11	13.48	59.60	218.60L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Final Bias Check
11/2/92

Starting
11-02-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
20:20	0.07R	0.03R	0.56R	4.84R
20:21	6.86	1.98	0.56	4.81
20:22	14.27	5.74	0.59	4.76
20:23	14.29R	5.78R	0.57	4.76
20:24	9.95	3.42	18.27	4.78
20:25	0.02	0.05	424.10	4.78
20:26	0.08	0.05	497.50	4.75
20:27	0.06	0.03	497.60R	4.73
20:28	1.42	0.04	445.50	45.87
20:29	0.04	0.03	34.95	142.20R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Calibration Data
11/3/92

Starting
11-03-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
06:48	0.03L	0.01L	0.85L	0.78L
06:49	5.64	2.30	0.92	0.79
06:50	14.86	5.92	0.98	0.80
06:51	14.92	5.93	0.97	0.79
06:52	14.85	5.93	0.94	0.78
06:53	14.22	5.93	0.81	0.76
06:54	14.21	5.94	0.91	0.75
06:55	14.20L	5.94	1.06	0.73
06:56	9.88	10.36	1.05	0.71
06:57	6.04	13.94	1.03	0.73
06:58	6.05	13.81	1.05	0.78
06:59	6.03L	13.81L	1.06	0.81
07:00	6.49	9.72	1.04	0.85
07:01	7.77	5.91L	1.06	0.84
07:02	4.97	2.36	62.28	0.84
07:03	0.12	0.03	810.00	0.85
07:04	0.10	0.02	861.00	0.84
07:05	0.10	0.02	859.00	0.86
07:06	0.09	0.02	863.00L	0.88
07:07	0.12	0.02	813.00	0.90
07:08	0.02	0.02	512.90	0.93
07:09	0.02	0.02	504.20L	0.95
07:10	0.18	0.03	470.70	58.52
07:11	0.04	0.02	107.20	215.30
07:12	0.05	0.02	2.16	212.30
07:13	0.01	0.01	2.06	212.10
07:14	0.00	0.01	1.70	211.20
07:15	0.06	0.01	1.56	211.80L
07:16	0.09	0.01	1.91	167.40
07:17	0.02	0.02	1.99	136.30
07:18	0.01	0.01	1.95	136.60
07:19	0.01	0.01	1.82	136.80L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Bias Check
11/3/92

Starting
11-03-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
08:07	0.07R	0.05R	0.93R	1.79R
08:08	8.57	1.92	0.89	1.81
08:09	14.31R	5.87R	0.89	1.83
08:10	10.58	3.16	17.37	1.86
08:11	0.02	0.06	431.90	1.89
08:12	0.03	0.05	498.80	1.99
08:13	0.07	0.05	499.60R	1.41
08:14	3.01	0.05	449.60	29.55
08:15	0.06	0.05	45.39	134.00
08:16	0.04	0.05	1.79	134.70R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Drift Check - Run 3 - Post-Test
11/3/92

Starting
11-03-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
11:39	0.04L	0.01L	0.86L	7.20L
11:40	7.99	3.05	0.86	7.34
11:41	14.60L	5.73	0.85	7.32
11:42	9.15	9.96	0.86	7.16
11:43	7.00	13.61	0.85	7.11
11:44	8.37	13.62	0.90	7.10
11:45	9.59	13.62L	0.89	7.09
11:46	10.62	4.37	149.40	7.11
11:47	11.53	0.78	792.00	7.08
11:48	12.32	0.76	834.00	7.06
11:49	13.02	0.75	835.00	7.05
11:50	13.66	0.75	834.00L	7.01
11:51	14.23	0.75	677.80	84.50
11:52	14.72	0.75	55.36	216.00L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Data - Run 4 - Pre Test
11/3/92

Starting
11-03-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
15:30	0.03L	0.01L	0.84L	0.21L
15:31	1.91	0.62	0.84	0.27
15:32	14.10	5.90	0.86	0.26
15:33	14.19	5.92	0.86	0.27
15:34	14.21L	5.92	0.85	0.27
15:35	6.80	13.31	0.52	0.27
15:36	6.07	13.93L	0.84	0.28
15:37	4.75	10.98	5.39	0.30
15:38	0.10	0.03	644.90	0.34
15:39	0.07	0.02	862.00	0.34
15:40	0.08	0.01	863.00	0.36
15:41	0.09	0.01	858.00	0.37
15:42	0.07	0.01	865.00	0.39
15:43	0.08	0.01	859.00L	0.41
15:44	0.08	0.01	752.00	91.50
15:45	0.03	0.01	56.11	212.40
15:46	0.00	0.01	1.25	212.30L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Drift Check - Run 4 - Post Test
11/3/92

Starting
11-03-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
19:43	0.17L	0.03L	0.40L	-1.54L
19:44	13.14	5.47	0.14	-1.55
19:45	14.33	5.92	0.37	-1.56
19:46	14.34L	5.93	0.30	-1.58
19:47	12.63	7.69	0.31	-1.56
19:48	6.15	13.92	0.11	-1.54
19:49	6.03	13.89L	0.11	-1.53
19:50	-0.22	0.16	301.80	-1.42
19:51	-0.11	0.04	860.00	-1.31
19:52	0.13	0.04	859.00L	-1.29
19:53	-0.07	0.03	568.40	-1.25
19:54	0.02	0.03	1.54	166.10
19:55	0.03	0.03	0.88	206.20
19:56	0.02	0.03	0.67	207.80L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Final Bias Check
11/3/92

Starting
11-03-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
20:37	0.04R	0.04R	1.02R	-0.67R
20:38	5.68	1.19	1.18	-0.70
20:39	14.27	5.89	0.98	-0.73
20:40	14.27	5.90	1.02	-0.77
20:41	14.28R	5.89R	0.83	-0.79
20:42	10.10	1.93	36.05	-0.73
20:43	0.07	0.04	453.50	-0.74
20:44	0.04	0.04	498.30	-0.70
20:45	0.04	0.04	499.10	-0.69
20:46	0.04	0.03	500.60R	-0.71
20:47	3.26	0.03	437.20	33.80
20:48	0.07	0.03	26.60	129.40
20:49	0.03	0.03	1.07	130.30R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Calibration Data
11/4/92

Starting
11-04-92

Time	Inlet O2 dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
06:57	0.03L	0.01L	0.17L	0.28L
06:58	5.95	2.46	0.20	0.28
06:59	12.96	5.88	0.22	0.27
07:00	12.99	5.90	0.15	0.40
07:01	13.99	5.91	0.24	0.41
07:02	14.20	5.90	0.24	0.41
07:03	14.20	5.90	0.17	0.43
07:04	14.20L	5.90	0.16	0.43
07:05	12.59	7.63	0.23	0.44
07:06	6.07	13.87	0.14	0.45
07:07	6.02	13.88	0.19	0.44
07:08	6.05	13.84	0.19	0.44
07:09	6.04	13.87	0.19	0.45
07:10	6.05	13.85	0.19	0.46
07:11	6.04	13.85	0.20	0.50
07:12	6.04L	13.87L	0.20	0.51
07:13	6.65	13.28	0.20	0.52
07:14	14.09	5.92	0.20	0.53
07:15	14.18	5.90	0.20	0.55
07:16	14.18	5.90L	0.20	0.57
07:17	9.36	3.69	0.20	0.59
07:18	0.14	0.03	0.03	0.60
07:19	0.11	0.02	265.70	0.61
07:20	0.11	0.02	728.00	0.60
07:21	0.11	0.01	764.00	0.61
07:22	0.09	0.01	789.00	0.62
07:23	0.08	0.01	879.00	0.63
07:24	0.09	0.01	858.00	0.65
07:25	0.08	0.01	859.00	0.64
07:26	0.09	0.01	857.00	0.65
07:27	0.08	0.01	858.00L	0.65
07:28	0.06	0.01	715.00	0.66
07:29	0.04	0.01	271.70	0.70
07:30	0.02	0.01	501.30	0.73
07:31	0.01	0.01	499.30	0.73
07:32	0.00	0.01	500.20L	0.73
07:33	0.03	0.01	476.30	47.24
07:34	0.02	0.01	302.50	176.10
07:35	0.01	0.01	256.70	210.30
07:36	0.01	0.01	256.60	212.20

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Calibration Data
11/4/92
(continued)

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
07:37	0.01	0.01	256.00	212.40L
07:38	0.07	0.01	256.10	177.30
07:39	0.00	0.01	256.10	137.80
07:40	0.05	0.01	255.60	137.00L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Bias Check
11/4/92

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
08:03	0.06R	0.05R	0.20R	2.42R
08:04	4.59	3.71	0.83	2.48
08:05	6.06R	13.77R	0.44	2.44
08:06	7.29	12.57	0.15	2.45
08:07	2.53	0.70	215.60	2.59
08:08	0.02	0.08	495.20R	2.53
08:09	2.39	0.06	425.90	44.45
08:10	0.04	0.05	24.69	136.80R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Drift Check - Run 5 - Post Test
11/4/92

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
13:04	0.05L	0.01L	-0.37L	4.60L
13:05	5.31	1.99	-0.44	4.59
13:06	14.55	5.74	-0.13	4.24
13:07	14.56	5.76	0.23	3.85
13:08	14.57L	5.76	-0.30	3.54
13:09	10.33	9.76	-0.37	3.39
13:10	6.18	13.44	0.09	3.36
13:11	6.15	13.44	-0.19	3.34
13:12	6.17	13.44L	0.28	3.33
13:13	6.44	13.39	-0.07	3.41
13:14	0.33	0.31	404.00	3.35
13:15	0.02	0.01	843.00	3.28
13:16	0.12	0.01	844.00L	3.25
13:17	0.04	0.01	803.00	45.11
13:18	-0.04	0.01	84.50	206.90
13:19	0.02	0.00	0.77	208.80
13:20	-0.01	0.01	0.20	208.50L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Data - Run 6 - Pre Test
11/4/92

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
13:34	0.03L	0.00L	0.05L	0.30L
13:35	6.28	2.37	-0.04	0.34
13:36	14.36	5.72	0.31	0.24
13:37	14.21L	5.73	-0.02	0.19
13:38	14.87	5.74	-0.51	0.16
13:39	10.01	9.76	-0.31	0.15
13:40	6.05	13.82	0.02	0.10
13:41	6.05	13.83	-0.70	0.00
13:42	6.04	13.81L	0.04	-0.01
13:43	3.64	8.31	7.70	0.07
13:44	0.10	0.02	466.20	-0.02
13:45	0.10	0.01	835.00	-0.06
13:46	0.08	0.01	854.00	-0.10
13:47	0.09	0.01	856.00	-0.11
13:48	0.07	0.01	857.00L	-0.16
13:49	0.09	0.01	826.00	10.39
13:50	0.02	0.01	143.30	202.10
13:51	0.00	0.01	1.26	211.70
13:52	0.02	0.01	0.62	212.10L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Drift Check - Run 6 - Post Test
11/4/92

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
16:55	0.03L	0.01L	-0.28L	4.86L
16:56	6.91	2.78	-0.57	4.90
16:57	14.60	5.85	0.03	4.81
16:58	14.61L	5.86	0.11	4.78
16:59	11.63	8.76	-0.56	4.83
17:00	6.26	13.81	-0.56	4.77
17:01	6.23	13.81L	-0.22	4.74
17:02	4.33	9.32	17.93	4.74
17:03	0.10	0.02	657.20	4.63
17:04	0.09	0.01	835.00	4.52
17:05	0.09	0.01	838.00L	4.52
17:06	0.09	0.01	714.00	95.90
17:07	0.02	0.01	28.28	208.00
17:08	0.02	0.01	-0.46	208.40L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Data - Run 7 - Pre Test
11/4/92

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
17:15	0.02L	0.01L	0.16L	0.24L
17:16	5.50	2.27	-0.09	0.14
17:17	14.44	5.86	-0.33	0.04
17:18	14.14	5.85	0.03	0.00
17:19	14.17	5.87	-0.11	-0.11
17:20	14.17L	5.86	-0.33	-0.12
17:21	9.22	10.77	-0.26	-0.20
17:22	6.04	13.82	-0.36	-0.28
17:23	6.03	13.86	-0.67	-0.36
17:24	6.03	13.86L	-0.40	-0.44
17:25	3.31	7.33	78.10	-0.49
17:26	0.09	0.02	799.00	-0.54
17:27	0.09	0.01	896.00	-0.61
17:28	0.08	0.01	900.00	-0.68
17:29	0.08	0.01	904.00	-0.79
17:30	0.08	0.01	881.00	-0.85
17:31	0.07	0.01	858.00L	-0.94
17:32	0.06	0.01	761.00	72.10
17:33	0.02	0.01	52.82	204.90
17:34	0.02	0.01	0.79	211.70
17:35	0.02	0.01	0.33	211.60
17:36	0.02	0.01	0.89	211.60
17:37	0.00	0.01	0.59	211.20
17:38	0.01	0.01	0.18	211.40L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Drift Check - Run 7 - Post Test
11/4/92

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
23:00	0.02L	0.03L	-0.77L	1.07L
23:01	3.90	1.68	-0.12	1.13
23:02	14.02	5.86	-0.52	1.13
23:03	14.05	5.87	-0.08	1.13
23:04	14.04L	5.88	-0.50	1.13
23:05	14.00	5.86	0.18	1.23
23:06	12.45	7.27	0.24	1.22
23:07	6.01	13.83	0.39	1.08
23:08	5.99	13.84	-0.52	1.07
23:09	5.98	13.84L	-0.03	1.08
23:10	4.76	10.68	0.83	1.09
23:11	0.11	0.06	513.20	1.15
23:12	0.10	0.05	854.00	1.08
23:13	0.06	0.04	859.00L	1.13
23:14	0.13	0.05	849.00	1.14
23:15	0.02	0.04	230.60	190.00
23:16	0.05	0.03	0.65	201.00
23:17	0.03	0.03	0.75	204.50
23:18	0.02	0.03	0.11	209.90L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Final Bias Check
11/4/92

Starting
11-04-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
23:24	0.03R	0.04R	-0.53R	2.84R
23:25	4.78	4.79	-0.23	2.83
23:26	5.97R	13.77R	-0.40	2.69
23:27	7.19	11.90	-0.64	2.64
23:28	0.93	0.11	279.40	2.73
23:29	0.03	0.06	490.30	2.70
23:30	0.01	0.05	496.90R	2.69
23:31	3.46	0.03	439.90	30.06
23:32	0.04	0.05	36.18	132.00R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Calibration Data
11/5/92

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
06:53	0.01L	0.05L	0.38L	-0.20L
06:54	0.13	0.05	0.87	-0.30
06:55	12.10	4.86	-0.13	-0.38
06:56	14.29	5.95	0.67	-0.44
06:57	14.20	5.95	0.32	-0.62
06:58	14.20L	5.96	-0.42	-0.76
06:59	14.13	5.95	0.22	-0.85
07:00	7.49	12.56	-0.32	-0.93
07:01	6.05	13.97	0.34	-1.03
07:02	6.04	13.86	-0.10	-1.10
07:03	6.03	13.84	-0.69	-1.19
07:04	6.01L	13.85L	-0.53	-1.30
07:05	6.09	13.44	-0.31	-1.36
07:06	6.59	5.98	-0.21	-1.47
07:07	7.28	5.92	-0.42	-1.56
07:08	7.91	5.93	-0.37	-1.64
07:09	8.48	5.92L	-0.08	-1.72
07:10	9.01	5.91	367.50	-1.75
07:11	9.49	5.91	883.00	-1.82
07:12	9.94	5.90	866.00	-1.90
07:13	10.35	5.91	852.00	-1.98
07:14	10.71	5.91	860.00	-2.06
07:15	11.04	5.90	854.00	-2.15
07:16	11.36	5.90	861.00	-2.24
07:17	11.67	5.90	859.00	-2.29
07:18	11.98	5.90	861.00L	-2.45
07:19	12.25	5.90	853.00	-2.48
07:20	12.48	5.89	798.00	-2.61
07:21	12.73	5.88	504.90	-2.68
07:22	12.92	5.88	501.30	-2.75
07:23	13.12	5.89	500.70	-2.84
07:24	13.33	5.89	500.50L	-2.73
07:25	13.49	5.89	463.00	-3.13
07:26	13.65	5.88	94.80	-0.28
07:27	13.80	5.88	1.77	0.37
07:28	13.94	5.88	2.05	0.25
07:29	14.08	5.88	1.51	6.19
07:30	14.21	5.87	1.45	172.50
07:31	14.34	5.87	0.62	166.10
07:32	14.46	5.86	1.19	165.60

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Calibration Data
11/5/92
(continued)

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
07:33	14.58	5.85	0.74	165.40
07:34	14.69	5.85	1.63	165.20
07:35	14.81	5.85	1.16	179.80
07:36	14.93	5.85	1.20	211.40
07:37	15.04	5.84	1.35	211.30
07:38	15.14	5.84	1.81	211.70
07:39	15.24	5.84	1.44	211.50
07:40	15.35	5.83	1.21	211.10
07:41	15.46	5.83	1.17	210.90
07:42	15.55	5.83	1.28	211.00
07:43	15.64	5.83	1.21	210.40
07:44	15.71	5.83	0.64	210.30
07:45	15.79	5.82	0.53	210.30
07:46	15.87	5.82	0.82	210.20
07:47	15.93	5.83	1.45	209.50
07:48	16.01	5.82	1.22	209.10
07:49	16.06	5.83	0.99	209.30
07:50	16.10	5.83	1.07	208.80
07:51	16.16	5.81	1.22	210.10
07:52	16.21	5.81	0.68	212.00
07:53	16.27	5.81	0.90	212.30L
07:54	16.32	5.81	1.40	145.70
07:55	16.35	5.80	1.50	137.00L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Bias Check
11/5/92

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
08:00	0.04R	0.09R	0.68R	2.37R
08:01	8.00	2.33	2.74	2.29
08:02	14.32	5.84	1.80	1.85
08:03	14.28R	5.88R	0.61	1.67
08:04	13.30	5.70	0.70	1.50
08:05	6.68	0.67	122.80	1.69
08:06	0.05	0.10	492.20R	1.33
08:07	8.62	0.13	463.70	1.33
08:08	0.49	0.10	65.05	115.30
08:09	0.46	0.07	0.63	138.20R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Drift Check - Run 8 - Post Test
11/5/92

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
12:06	0.03L	0.05L	0.72L	4.05L
12:07	5.15	2.14	0.17	4.10
12:08	14.07	5.86	0.44	4.14
12:09	14.10L	5.86	1.28	4.19
12:10	12.05	7.93	0.24	4.15
12:11	6.02	13.75	-0.61	4.08
12:12	6.01	13.76L	0.48	3.98
12:13	6.22	13.69	33.16	3.90
12:14	6.94	13.66	697.30	3.77
12:15	7.68	13.67	859.00L	3.68
12:16	8.42	13.68	780.00	40.24
12:17	9.08	13.67	616.60	194.90
12:18	9.70	13.65	615.90	205.40L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Data - Run 9 - Pre Test
11/5/92

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
12:24	0.03L	0.09L	0.19L	0.02L
12:25	5.65	2.36	0.43	0.01
12:26	14.19	5.86	0.71	0.33
12:27	14.22	5.90	0.54	0.66
12:28	14.22L	5.84	0.95	0.66
12:29	14.10	10.52	1.13	0.68
12:30	14.06	13.64	1.56	0.55
12:31	14.25	13.87	0.36	0.46
12:32	14.38	13.83L	0.60	0.44
12:33	14.51	13.88	0.67	0.38
12:34	14.66	6.74	0.19	0.38
12:35	14.80	0.11	516.20	0.38
12:36	14.94	0.08	859.00	0.38
12:37	15.06	0.07	857.00	0.42
12:38	15.21	0.06	856.00	0.42
12:39	15.31	0.06	858.00L	0.43
12:40	15.46	0.06	561.70	0.38
12:41	15.57	0.06	5.23	158.60
12:42	15.70	0.06	4.69	211.90
12:43	15.81	0.05	3.47	211.70L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Drift Check - Run 9 - Post Test
11/5/92

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
15:59	0.20L	0.05L	-0.47L	6.57L
16:00	8.38	0.05	0.28	6.75
16:01	14.63L	0.06	0.32	6.88
16:02	9.64	1.43	0.84	7.06
16:03	6.59	13.82L	0.63	7.19
16:04	7.32	13.79	12.46	7.13
16:05	8.06	13.78	669.20	7.12
16:06	8.73	13.77	849.00	7.02
16:07	9.35	13.75	843.00L	7.07
16:08	9.88	13.74	621.60	67.39
16:09	10.34	13.74	199.80	212.60
16:10	10.79	13.73	200.10	211.90L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Data - Run 10 - Pre Test
11/5/92

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
16:16	0.02L	0.05L	1.46L	0.70L
16:17	2.04	0.05	0.89	0.81
16:18	14.53	0.06	0.59	1.20
16:19	14.20	0.06	-1.93	1.15
16:20	14.20L	0.07	1.30	1.08
16:21	14.06	6.74	-0.92	1.13
16:22	14.00	13.82	5.44	0.96
16:23	14.03	13.84L	-1.39	0.81
16:24	13.91	13.79	4.32	0.67
16:25	13.97	13.78	636.40	0.45
16:26	14.19	13.77	853.00	0.36
16:27	14.25	13.76	855.00	0.17
16:28	14.33	13.76	851.00L	-0.40
16:29	14.42	13.75	854.00	169.30
16:30	14.53	13.73	852.00	210.90
16:31	14.63	13.73	854.00	211.70L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Drift Check - Run 10 - Post Test
11/5/92

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
18:06	0.04L	0.06L	0.28L	1.82L
18:07	5.16	0.05	0.30	1.98
18:08	13.99	0.06	0.82	2.01
18:09	14.02L	0.06	0.81	2.05
18:10	14.01	6.18	0.81	1.88
18:11	14.27	13.84L	0.90	1.73
18:12	14.53	4.93	12.34	1.53
18:13	14.76	0.14	696.10	1.35
18:14	15.02	0.14	856.00L	1.00
18:15	15.20	0.15	838.00	0.74
18:16	15.31	0.15	404.00	153.70
18:17	15.55	0.16	370.50	205.50L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Final Bias Check
11/5/92

Starting
11-05-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
18:22	0.06R	0.09R	0.80R	-0.90R
18:23	4.60	4.98	0.75	-1.24
18:24	5.92R	13.77R	0.11	-1.56
18:25	6.47	7.77	11.93	-1.72
18:26	0.06	0.11	416.20	-1.78
18:27	0.05	0.10	498.40	-1.90
18:28	0.04	0.09	499.10R	-2.00
18:29	2.28	0.08	449.00	26.96
18:30	0.29	0.09	41.87	125.40
18:31	2.38	0.09	1.32	130.70R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Calibration Data
11/6/92

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
07:30	0.02L	0.05L	0.88L	0.26L
07:31	1.66	0.80	0.85	0.21
07:32	12.80	5.96	1.73	0.14
07:33	14.20	5.94	1.17	0.09
07:34	14.22	5.93	-0.35	0.06
07:35	14.19L	5.93	2.50	0.03
07:36	13.00	5.94	0.32	-0.08
07:37	6.08	9.19	-0.07	-0.14
07:38	6.09	13.95	0.04	-0.17
07:39	6.02	13.86	-0.33	-0.27
07:40	6.03L	13.87L	2.47	-0.32
07:41	6.22	13.14	1.95	-0.42
07:42	7.24	5.98	3.71	-0.47
07:43	8.28	5.95	1.03	-0.50
07:44	9.17	5.92L	0.38	-0.53
07:45	9.95	5.92	42.05	-0.62
07:46	10.62	5.92	633.10	-0.63
07:47	11.25	5.92	860.00	-0.72
07:48	11.75	5.92	845.00	-0.77
07:49	12.14	5.93	837.00	-0.82
07:50	12.49	5.93	855.00	-0.85
07:51	12.87	5.93	866.00	-0.83
07:52	13.22	5.92	854.00	-0.86
07:53	13.54	5.92	852.00L	-0.87
07:54	13.79	5.91	845.00	-0.90
07:55	14.02	5.91	559.00	-0.95
07:56	14.27	5.91	500.30	-0.97
07:57	14.50	5.91	500.20L	-0.98
07:58	14.73	5.91	485.90	-0.97
07:59	14.89	5.90	160.30	133.50
08:00	15.06	5.90	129.10	121.60
08:01	15.21	5.90	130.80	-0.35
08:02	15.35	5.90	129.50	0.13
08:03	15.44	5.90	130.70	0.12
08:04	15.53	5.91	131.40	71.30
08:05	15.67	5.89	131.50	205.30
08:06	15.80	5.89	131.10	212.30
08:07	15.94	5.88	130.80	211.50
08:08	16.05	5.88	129.70	212.20L
08:09	16.16	5.87	130.90	211.70

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Calibration Data
11/6/92
(continued)

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
08:10	16.24	5.88	130.30	139.00
08:11	16.31	5.88	131.00	137.00
08:12	16.41	5.88	128.20	134.80L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Bias Check
11/6/92

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
09:09	0.06R	0.11R	-2.74R	2.27R
09:10	5.74	3.60	2.27	2.21
09:11	6.14R	13.82R	0.60	2.23
09:12	9.29	8.01	5.91	2.24
09:13	2.67	0.14	318.20	2.28
09:14	0.05	0.12	477.50	2.29
09:15	0.05	0.11	493.80R	2.32
09:16	5.18	0.13	455.00	12.66
09:17	0.06	0.11	47.86	135.40R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Drift Check - Run 11 - Post Test
11/6/92

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO %dv	Inlet NOx %dv
15:33	0.21L	0.05L	-0.17L	5.09L
15:34	8.18	3.28	1.86	5.26
15:35	14.20	5.76	-1.43	5.32
15:36	14.24	5.76	1.08	5.45
15:37	14.28L	5.76	1.48	5.81
15:38	14.02	5.76	1.48	6.17
15:39	6.51	12.91	1.15	5.63
15:40	7.43	13.62	0.73	5.54
15:41	8.29	13.65	0.24	5.45
15:42	9.06	13.67L	1.01	5.55
15:43	9.90	13.67	0.61	5.52
15:44	10.71	11.07	1.91	5.55
15:45	11.36	0.35	1.23	5.51
15:46	11.87	0.35	304.50	5.51
15:47	12.36	0.36	809.00	5.45
15:48	12.91	0.37	816.00	5.41
15:49	13.50	0.37	823.00L	5.42
15:50	13.87	0.37	543.90	67.75
15:51	14.16	0.38	4.00	208.70
15:52	14.43	0.38	1.20	209.10
15:53	14.70	0.39	1.14	209.70L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Data - Run 12 - Pre Test
11/6/92

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
16:01	0.06L	0.05L	-0.48L	0.14L
16:02	11.50	4.69	1.05	0.19
16:03	14.25	5.87	2.90	0.44
16:04	14.25	5.86	-1.18	0.53
16:05	14.24L	5.85	-0.07	0.91
16:06	9.99	7.24	0.01	0.89
16:07	6.90	13.87	-1.73	0.70
16:08	7.98	13.89L	1.23	0.55
16:09	8.87	7.45	-1.70	0.36
16:10	9.66	0.13	520.10	0.26
16:11	10.38	0.14	827.00	0.54
16:12	11.04	0.14	837.00	0.46
16:13	11.58	0.14	863.00	0.54
16:14	12.06	0.15	856.00L	0.34
16:15	12.46	0.16	860.00	0.18
16:16	12.81	0.16	864.00	33.74
16:17	13.25	0.16	860.00	213.40
16:18	13.66	0.17	855.00	212.40
16:19	13.98	0.18	858.00	213.20L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Drift Check - Run 12 - Post Test
11/6/92

Starting
11-06-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO %dv	Inlet NOx %dv
21:14	0.04L	0.06L	1.06L	2.23L
21:15	5.94	1.89	1.04	2.24
21:16	13.85L	5.82	3.69	1.96
21:17	13.30	5.82	1.47	2.08
21:18	5.99	5.82	0.71	2.40
21:19	6.04	11.00	0.44	2.36
21:20	6.61	13.72L	-3.82	2.43
21:21	7.30	7.25	0.66	2.39
21:22	7.93	0.15	412.80	2.30
21:23	8.50	0.15	842.00	2.05
21:24	9.05	0.16	842.00L	1.69
21:25	7.69	0.17	592.60	1.68
21:26	0.35	0.17	111.80	189.90
21:27	0.75	0.18	112.60	214.70L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Calibration Data
11/7/92

Starting
11-07-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
07:12	0.05L	0.05L	1.25L	-0.72L
07:13	0.15	0.05	1.70	-0.76
07:14	10.08	3.68	1.49	-0.90
07:15	15.41	5.80	1.20	-1.22
07:16	14.61	5.80	1.38	-1.31
07:17	14.27	5.79	1.13	-1.57
07:18	14.27	5.78	1.94	-1.83
07:19	14.26L	5.78	1.68	-1.98
07:20	14.10	5.77	1.40	-2.13
07:21	9.37	5.72	1.92	-2.29
07:22	14.21	7.16	1.41	-2.34
07:23	14.24	13.83	2.00	-2.44
07:24	14.17	13.83	1.08	-2.50
07:25	14.21	13.82L	1.13	-2.60
07:26	12.25	13.78	1.80	-2.74
07:27	6.15	13.75	1.29	-2.75
07:28	6.18	13.75	1.43	-2.81
07:29	6.20L	13.76	1.51	-2.90
07:30	11.95	10.72	1.26	-2.90
07:31	14.21	5.95L	1.36	-2.95
07:32	14.20	2.14	1.78	-3.04
07:33	14.19	0.16	584.80	-2.99
07:34	14.43	0.17	852.00	-3.06
07:35	14.60	0.17	859.00	-3.10
07:36	14.77	0.18	859.00	-3.06
07:37	14.93	0.19	859.00L	-3.12
07:38	15.08	0.19	787.00	-3.14
07:39	15.23	0.20	506.30	-3.28
07:40	15.36	0.20	502.00L	-3.27
07:41	15.52	0.14	493.90	-3.34
07:42	15.65	0.06	44.59	-3.35
07:43	15.77	0.06	2.12	132.60
07:44	15.88	0.06	5.14	209.70
07:45	16.03	0.06	0.67	212.00
07:46	16.13	0.07	4.64	212.40L
07:47	16.25	0.07	1.83	161.10
07:48	16.33	0.07	2.16	136.50L

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Calibration Data
11/7/92
(continued)

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Bias Check
11/7/92

Starting
11-07-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
07:53	0.05R	0.09R	2.34R	-0.45R
07:54	8.85	1.07	3.42	-0.48
07:55	14.32R	5.84R	3.18	-0.47
07:56	17.76	1.11	3.56	-0.09
07:57	20.57	0.12	135.10	-0.06
07:58	20.62	0.12	499.20R	0.20
07:59	21.77	0.12	385.60	23.16
08:00	20.15	0.12	95.76	135.70R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Drift Check - Run 13 - Post Test
11/7/92

Starting
11-07-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO %dv	Inlet NOx %dv
13:26	0.04L	0.05L	1.11L	6.67L
13:27	2.09	1.52	0.80	6.73
13:28	14.18	5.86	0.61	6.79
13:29	14.21L	5.85	0.85	6.78
13:30	9.58	9.30	1.27	6.74
13:31	6.72	13.81L	0.40	6.85
13:32	7.55	13.79	29.28	6.49
13:33	8.38	13.78	708.00	6.19
13:34	9.05	13.76	854.00L	5.91
13:35	9.68	13.73	856.00	34.40
13:36	10.26	13.72	849.00	213.20
13:37	10.74	13.73	855.00	218.10L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Final Bias Check
11/7/92

Starting
11-07-92

Time	Inlet O2 %dv	Inlet CO2 %dv	Inlet CO ppmdv	Inlet NOx ppmdv
14:17	0.56R	0.06R	0.88R	2.68R
14:18	1.07	0.06	0.95	2.64
14:19	10.54	2.07	1.01	2.55
14:20	14.17R	5.83R	0.96	2.42
14:21	12.22	3.85	0.99	2.28
14:22	2.56	0.08	1.00	2.14
14:23	2.84	0.08	0.94	2.07
14:24	3.07	0.11	124.50	1.95
14:25	3.15	0.11	857.20R	1.78
14:26	2.95	0.09	654.30	78.45
14:27	2.01	0.05	187.20	215.20
14:28	2.16	0.03	34.92	215.60R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Calibration Data
11/06/92

Starting
11-06-92

Time	Inlet THC ppmwv
08:24	-0.81R
08:25	1.51
08:26	1.28
08:27	1.12
08:28	1.05
08:29	1.08
08:30	1.05
08:31	1.12
08:32	457.90
08:33	843.00
08:34	850.00R
08:35	62.50
08:36	1.72
08:37	1.32
08:38	1.30
08:39	1.36
08:40	1.38
08:41	1.60
08:42	1.31
08:43	1.44
08:44	1.52
08:45	1.35
08:46	1.36
08:47	1.52
08:48	1.36
08:49	1.36
08:50	1.34
08:51	1.42
08:52	248.00
08:53	558.20R
08:54	78.10
08:55	219.20
08:56	258.10
08:57	258.10R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Drift Check - Run 1 - Post Test
11/06/92

Starting
11-06-92

Time	Inlet THC ppmwv
16:31	-0.04R
16:32	185.50
16:33	813.00
16:34	821.00
16:35	822.00R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Data - Run 2 - Pre Test
11/06/92

Starting
11-06-92

Time	Inlet THC ppmwv
18:09	-0.14R
18:10	5.12
18:11	743.00
18:12	848.00R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Drift Check - Run 2 - Post Test
11/06/92

Starting
11-06-92

Time	Inlet THC ppmwv
21:32	4.09R
21:33	748.00
21:34	850.00R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Initial Calibration Data
11/07/92

Starting
11-07-92

Time	Inlet THC ppmwv
08:35	0.06R
08:36	18.57
08:37	774.00
08:38	841.00
08:39	852.00
08:40	850.00R
08:41	721.00
08:42	556.80
08:43	557.40R
08:44	312.90
08:45	258.10
08:46	258.40R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Kiln Outlet/Sawdust Dryer Inlet
Calibration Drift Check - Run 3 - Post Test
11/07/92

Starting
11-07-92

Time	Inlet THC ppmwv
13:43	1.58R
13:44	705.00
13:45	857.00R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	✓	

H.2 CEM CALIBRATION DATA AND BIAS CHECKS
SAWDUST DRYER OUTLET A

Pine Hall Brick
Cyclone Outlet A
Initial Calibration Data
11/2/92

Starting
11-02-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv
07:48	0.06L	0.06L
07:49	5.03	2.12
07:50	14.32	5.91
07:51	14.23L	5.92
07:52	9.07	11.01
07:53	6.10	13.83
07:54	6.10	13.85
07:55	6.10L	13.86L
07:56	7.37	12.26
07:57	14.21	5.89
07:58	14.25	5.88L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local Calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Initial Bias Check - O2/CO2 Monitors
11/2/92

Starting
11-02-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv
12:41	0.54R	0.06R
12:42	9.42	2.32
12:43	14.24	5.69
12:44	14.24	5.69
12:45	14.23R	5.71R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local Calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Check - Run 1 - Post-Test
11/2/92

Starting
11-02-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv
16:11	0.05L	0.05L
16:12	2.10	0.93
16:13	14.05	5.76
16:14	14.07L	5.76
16:15	10.15	9.87
16:16	6.04	13.55
16:17	6.02	13.64L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local Calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Initial Calibration Data - CO/NOx Monitors
11/2/92

Starting
11-02-92

Time	Outlet A CO ppmdv	Outlet A NOx ppmdv
16:12	0.84L	0.05L
16:13	1.22	73.40
16:14	1.20	42.55
16:15	1.09	22.44
16:16	0.95	13.80
16:17	0.97	9.29
16:18	0.89	6.92
16:19	130.30	5.69
16:20	856.00	4.56
16:21	853.00	3.83
16:22	858.00L	3.68
16:23	686.10	3.19
16:24	485.80	2.76
16:25	484.90	2.51
16:26	485.50L	2.35
16:27	406.10	199.60
16:28	265.20	211.90
16:29	132.40	211.80L
16:30	49.13	160.90
16:31	6.71	137.30L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local Calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Initial Bias Check - CO/NOx Monitors
11/2/92

Starting
11-02-92

Time	Outlet A CO ppmdv	Outlet A NOx ppmdv
16:52	0.79R	0.35R
16:53	11.21	0.34
16:54	408.70	0.34
16:55	471.10	0.36
16:56	471.70R	0.36
16:57	394.80	42.10
16:58	9.40	134.30
16:59	0.83	136.20R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local Calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Check - Run 2 - Post-Test - O2/CO2
11/2/92

Starting
11-02-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv
20:04	0.05L	0.11L
20:05	1.62	0.90
20:06	13.99	5.88
20:07	14.03	5.80
20:08	14.02L	5.76
20:09	14.01	5.72
20:10	7.91	12.11
20:11	6.01	13.53L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local Calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Report - Run 2 - Post Test - CO/NOx
11/2/92

Starting
11-02-92

Time	Outlet A CO ppmdv	Outlet A NOx ppmdv
20:04	0.78L	1.08L
20:05	0.77	1.04
20:06	0.46	7.48
20:07	0.53	76.40
20:08	1.08	46.68
20:09	1.05	32.22
20:10	0.86	25.58
20:11	0.83	21.55
20:12	0.79	18.85
20:13	409.50	16.49
20:14	852.00L	14.62
20:15	835.00	13.33
20:16	650.40	212.80L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local Calibration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Final Bias Check
11/2/92

Starting
11-02-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
20:34	0.84R	0.05R	0.82R	0.06R
20:35	1.08	0.04	0.81	0.10
20:36	1.29	0.09	0.81	0.20
20:37	5.02	0.08	0.88	0.21
20:38	16.62	3.43	0.69	0.24
20:39	14.26	5.56	0.79	0.30
20:40	14.24R	5.51R	0.96	0.33
20:41	13.63	3.76	0.97	0.33
20:42	1.16	0.10	311.50	0.29
20:43	0.81	0.06	463.20	0.36
20:44	0.66	0.04	465.50	0.38
20:45	0.43	0.09	473.20R	0.38
20:46	2.29	0.06	428.30	47.38
20:47	0.47	0.04	28.94	135.20
20:48	0.44	0.08	0.85	136.70R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Initial Calibration Data
11/3/92

Starting
11-03-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
07:24	0.05L	0.05L	0.20L	0.14L
07:25	6.44	2.86	0.17	0.56
07:26	14.23	5.91	0.38	3.49
07:27	14.21L	5.91	0.40	3.75
07:28	9.53	10.86	0.28	3.51
07:29	6.09	13.06	0.17	3.37
07:30	6.08	13.71	0.17	3.25
07:31	6.08	13.78	0.16	3.25
07:32	6.08	13.80	0.18	3.22
07:33	6.08L	13.81L	0.17	3.13
07:34	8.95	10.62	0.27	3.13
07:35	14.18	5.88	0.42	3.06
07:36	14.19	5.88L	0.38	2.94
07:37	6.53	2.44	63.06	2.89
07:38	0.13	0.05	789.00	2.89
07:39	0.12	0.05	851.00	2.87
07:40	0.11	0.04	856.00	2.84
07:41	0.11	0.04	855.00	2.80
07:42	0.10	0.04	860.00	2.76
07:43	0.09	0.04	861.00	2.61
07:44	0.10	0.04	858.00L	2.51
07:45	0.09	0.05	778.00	2.48
07:46	0.04	0.04	488.20	2.43
07:47	0.04	0.04	482.70L	2.41
07:48	0.06	0.04	399.30	80.50
07:49	0.03	0.04	28.74	210.30
07:50	0.04	0.04	1.03	211.70L
07:51	0.07	0.04	0.99	167.40
07:52	0.04	0.04	1.02	137.50L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	✓	
L	Local caliration(Initial Calibration or Drift Check)	✓	
P	Port Change(Data not included in average)	✓	
R	Remote Calibration(System Bias Check)	✓	

Pine Hall Brick
Cyclone Outlet A
Initial Bias Check
11/3/92

Starting
11-03-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
08:22	0.57R	0.07R	0.99R	1.48R
08:23	7.12	1.32	1.01	1.13
08:24	14.25	5.69	0.84	0.90
08:25	14.26	5.70	0.51	0.70
08:26	14.26R	5.66R	1.02	0.67
08:27	14.07	4.25	0.73	0.67
08:28	1.57	0.09	261.90	0.72
08:29	0.87	0.07	461.10	0.73
08:30	0.94	0.06	460.60R	0.71
08:31	3.26	0.07	444.40	16.51
08:32	0.96	0.07	46.88	131.40
08:33	1.10	0.07	1.02	134.60R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Check - Run 3 - Post Test
11/3/92

Starting
11-03-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
11:58	0.05L	0.05L	-0.13L	2.36L
11:59	0.30	0.05	-0.09	92.30
12:00	11.39	4.96	0.23	94.10
12:01	13.65L	5.91	0.27	94.50
12:02	13.62	5.90	0.36	60.89
12:03	11.50	8.75	0.12	48.77
12:04	6.05	13.89	-0.01	41.33
12:05	6.05	13.90L	0.05	35.34
12:06	6.24	6.01	65.43	30.64
12:07	6.70	0.73	783.00	26.93
12:08	7.25	0.69	836.00	23.99
12:09	7.81	0.68	837.00L	21.86
12:10	8.37	0.67	773.00	18.84
12:11	8.79	0.66	203.50	24.53
12:12	9.16	0.66	1.75	89.40
12:13	9.59	0.67	1.08	218.90L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Data - Run 4 - Pre Test
11/3/92

Starting
11-03-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
15:26	0.05L	0.06L	0.76L	0.03L
15:27	4.26	2.09	0.87	0.13
15:28	14.18L	5.91	0.21	0.09
15:29	10.27	10.03	0.86	0.13
15:30	6.08	13.95L	-0.03	0.12
15:31	4.25	9.11	0.79	0.20
15:32	0.17	0.09	597.90	0.22
15:33	0.15	0.08	889.00	0.22
15:34	0.15	0.06	864.00	0.25
15:35	0.13	0.07	859.00L	0.26
15:36	0.10	0.07	552.90	127.80
15:37	0.05	0.06	1.13	212.40L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Check - Run 4 - Post Test
11/3/92

Starting 11-03-92 Time	Outlet A O_2 %dv	Outlet A CO_2 %dv	Outlet A CO ppmdv	Outlet A NO_x ppmdv
19:38	0.06L	0.07L	0.72L	-1.08L
19:39	3.26	1.69	0.83	-0.68
19:40	13.84	6.09	0.36	-0.72
19:41	14.28L	5.94	1.08	-0.69
19:42	10.91	9.56	0.97	-0.58
19:43	6.12	13.89	0.05	-0.61
19:44	6.11	13.88	0.05	-0.62
19:45	6.16	13.87L	0.08	4.22
19:46	0.35	0.19	456.70	-0.56
19:47	0.12	0.09	860.00	-0.30
19:48	0.11	0.09	861.00L	-0.27
19:49	0.12	0.07	829.00	40.52
19:50	0.01	0.09	79.10	208.70
19:51	0.04	0.06	0.89	208.90L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Final Bias Check
11/3/92

Starting
11-03-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
20:20	0.85R	0.09R	0.88R	-1.00R
20:21	8.88	2.52	0.95	-1.02
20:22	14.35R	5.35R	1.14	-1.04
20:23	10.41	2.54	56.58	-1.00
20:24	2.03	0.09	771.40	-1.01
20:25	1.89	0.06	851.60	-1.06
20:26	1.88	0.05	849.40	-1.12
20:27	3.18	0.06	850.50R	-1.13
20:28	3.02	0.06	272.90	117.03
20:29	1.80	0.08	0.94	123.12
20:30	1.68	0.07	0.99	124.31
20:31	2.32	0.06	1.01	127.94R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Initial Calibration Data
11/4/92

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
07:04	0.04L	0.05L	0.07L	0.06L
07:05	1.38	0.66	0.09	1.03
07:06	14.40	5.82	0.57	1.93
07:07	14.53	5.87	0.50	4.21
07:08	14.42	5.87	0.47	3.81
07:09	14.21	5.87	0.49	3.77
07:10	14.21	5.87	0.45	3.61
07:11	14.21	5.86	0.48	3.64
07:12	14.21L	5.86	0.46	3.53
07:13	14.14	5.83	0.46	3.42
07:14	6.43	13.79	0.19	3.40
07:15	6.09	13.78	0.18	3.34
07:16	6.09	13.82	0.17	3.26
07:17	6.09L	13.83L	0.19	3.22
07:18	6.10	13.78	0.18	3.11
07:19	6.39	13.68	0.18	3.09
07:20	6.97	13.68	0.22	3.08
07:21	7.49	13.67	0.26	2.96
07:22	7.96	13.66	0.23	3.00
07:23	8.37	13.65	0.28	2.92
07:24	11.25	9.38	0.40	2.91
07:25	14.18	5.88	0.45	2.92
07:26	14.20	5.88	0.48	2.89
07:27	14.18	5.89	0.44	2.78
07:28	14.16	5.88L	0.44	2.70
07:29	2.67	0.86	0.14	2.70
07:30	0.15	0.05	477.80	2.74
07:31	0.13	0.05	802.00	2.70
07:32	0.11	0.05	854.00	2.71
07:33	0.11	0.05	856.00	2.71
07:34	0.10	0.05	856.00	2.72
07:35	0.10	0.05	858.00L	2.72
07:36	0.08	0.04	775.00	2.75
07:37	0.03	0.04	483.90	2.72
07:38	0.04	0.04	482.40	2.68
07:39	0.02	0.04	483.40L	2.56
07:40	0.06	0.05	448.40	56.13
07:41	0.02	0.05	68.60	185.70
07:42	0.04	0.04	0.23	182.80
07:43	0.03	0.05	0.09	194.20

Pine Hall Brick
Cyclone Outlet A
Initial Calibration Data
11/4/92
(continued)

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
07:44	0.02	0.04	0.07	213.10
07:45	0.01	0.04	0.22	212.80
07:46	0.03	0.04	0.21	211.70
07:47	0.03	0.04	0.40	211.60L
07:48	0.06	0.05	0.05	176.40
07:49	0.04	0.05	0.05	134.90L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Initial Bias Check
11/4/92

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
09:44	0.11R	0.08R	0.05R	1.18R
09:45	3.37	1.88	0.12	1.24
09:46	6.46	13.35	0.20	1.23
09:47	6.02R	13.74R	0.20	1.24
09:48	4.00	4.68	83.00	1.28
09:49	0.08	0.09	462.60	1.34
09:50	0.08	0.07	476.10	1.36
09:51	0.07	0.08	475.20R	1.34
09:52	2.73	0.08	381.90	69.78
09:53	0.06	0.08	8.37	134.40R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Check - Run 5 - Post Test
11/4/92

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
13:08	0.06L	0.05L	0.01L	1.10L
13:09	3.15	1.53	0.09	-.70E+04
13:10	13.90	5.81	0.39	1.32
13:11	13.94	5.83	0.34	1.12
13:12	13.94L	5.83	0.39	1.09
13:13	12.41	7.52	0.34	11.71
13:14	5.99	13.74	-0.09	1.10
13:15	5.98	13.72	0.10	1.05
13:16	5.97	13.72L	0.08	1.03
13:17	6.07	13.60	0.13	9.44
13:18	4.39	9.08	139.30	21.82
13:19	0.14	0.05	838.00	1.19
13:20	0.12	0.05	843.00	1.23
13:21	0.11	0.05	841.00L	1.30
13:22	0.20	0.05	839.00	29.10
13:23	0.03	0.05	213.40	206.90
13:24	0.03	0.05	0.04	208.10
13:25	0.02	0.05	-0.05	208.50L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Data - Run 6 - Pre Test
11/4/92

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
13:34	0.03L	0.05L	-0.04L	0.57L
13:35	5.09	2.36	0.09	0.85
13:36	14.00	5.83	0.38	0.55
13:37	14.22L	5.84	0.40	0.44
13:38	14.28	5.84	0.37	0.39
13:39	10.23	9.96	0.19	0.46
13:40	6.09	13.83	0.13	0.38
13:41	6.09	13.84	0.04	0.37
13:42	6.08	13.82L	0.11	0.36
13:43	4.06	8.80	1.74	0.45
13:44	0.11	0.05	580.60	0.37
13:45	0.10	0.05	848.00	0.36
13:46	0.08	0.05	850.09	0.35
13:47	0.09	0.05	858.00	0.35
13:48	0.09	0.05	858.00L	0.37
13:49	0.09	0.05	847.00	27.02
13:50	0.02	0.05	149.20	205.80
13:51	0.02	0.05	0.02	211.30
13:52	0.02	0.04	0.03	211.90L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Check - Run 6 - Post Test
11/4/92

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
16:55	0.05L	0.05L	-0.06L	1.02L
16:56	5.92	2.70	0.01	19.45
16:57	14.08	5.86	0.34	1.00
16:58	14.09L	5.88	0.29	0.91
16:59	11.47	8.73	0.21	5.73
17:00	6.05	13.85	-0.28	0.91
17:01	6.03	13.88L	0.04	0.86
17:02	4.58	9.95	4.11	1.65
17:03	0.11	0.06	657.50	0.86
17:04	0.10	0.05	850.00	0.85
17:05	0.10	0.05	849.00L	0.83
17:06	0.11	0.07	744.00	103.30
17:07	0.03	0.05	31.04	216.10
17:08	0.03	0.06	-0.09	216.70L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Data - Run 7 - Pre Test
11/4/92

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
17:15	0.01L	0.05L	-0.14L	0.35L
17:16	4.62	2.18	0.05	1.09
17:17	14.13	5.88	0.32	0.35
17:18	14.21	5.88	0.29	0.37
17:19	14.23	5.88	0.17	0.38
17:20	14.24L	5.88	0.25	0.38
17:21	9.62	10.62	0.09	0.43
17:22	6.10	13.88	0.00	0.40
17:23	6.09	13.84	0.05	0.39
17:24	6.09	13.87L	0.09	0.39
17:25	3.68	7.68	49.74	0.42
17:26	0.10	0.06	785.00	0.38
17:27	0.09	0.06	871.00	0.36
17:28	0.09	0.06	861.00	0.34
17:29	0.09	0.06	864.00	0.31
17:30	0.08	0.05	864.00	0.27
17:31	0.09	0.05	861.00L	0.25
17:32	0.09	0.06	786.00	84.90
17:33	0.02	0.05	56.27	214.80
17:34	0.03	0.05	0.27	212.70
17:35	0.02	0.05	-0.12	212.00
17:36	0.02	0.05	-0.02	212.90
17:37	0.02	0.05	-0.08	213.80
17:38	0.01	0.05	-0.09	211.40L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	✓	
L	Local caliration(Initial Calibration or Drift Check)	✓	
P	Port Change(Data not included in average)	✓	
R	Remote Calibration(System Bias Check)	✓	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Check - Run 7 - Post Test
11/4/92

Starting
11-04-92

Time	Outlet A O_2 %dv	Outlet A CO_2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
23:00	0.02L	0.11L	-0.14L	-0.11L
23:01	3.13	1.57	0.05	0.66
23:02	14.13	5.86	0.33	-0.16
23:03	14.22	5.83	0.40	-0.20
23:04	14.19L	5.84	0.40	-0.22
23:05	13.87	5.80	0.38	6.68
23:06	12.47	6.95	0.36	7.15
23:07	6.15	13.89	0.14	-0.23
23:08	6.11	13.92	0.05	-0.30
23:09	6.10	13.91L	0.12	-0.31
23:10	5.09	10.79	0.00	-0.30
23:11	0.14	0.09	546.30	-0.34
23:12	0.11	0.08	856.00	-0.34
23:13	0.11	0.07	857.00L	-0.32
23:14	0.18	0.07	854.00	17.40
23:15	0.05	0.08	258.90	187.80
23:16	0.03	0.08	0.76	188.90
23:17	0.03	0.09	-0.03	200.50
23:18	0.03	0.10	-0.07	204.30L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Final Bias Check
11/4/92

Starting
11-04-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
23:50	0.07R	0.08R	-0.10R	0.52R
23:51	4.71	5.50	0.06	0.51
23:52	6.07	13.68	0.09	0.46
23:53	6.06R	13.71R	0.12	0.45
23:54	3.90	6.61	70.10	0.49
23:55	0.05	0.10	456.60	0.50
23:56	0.04	0.09	478.90R	0.50
23:57	1.90	0.10	442.40	50.86
23:58	0.06	0.09	40.55	127.70R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	✓	
L	Local caliration(Initial Calibration or Drift Check)	✓	
P	Port Change(Data not included in average)	✓	
R	Remote Calibration(System Bias Check)	✓	

Pine Hall Brick
Cyclone Outlet A
Initial Calibration Data
11/5/92

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
06:53	0.03L	0.06L	-0.24L	-0.23L
06:54	0.21	0.06	-0.11	6.09
06:55	10.60	4.67	0.16	4.92
06:56	14.07	5.87	0.30	12.28
06:57	14.21	5.87	0.33	11.84
06:58	14.24L	5.87	0.26	12.24
06:59	14.11	5.84	0.32	12.22
07:00	7.85	12.48	0.05	12.00
07:01	6.13	13.85	0.04	11.66
07:02	6.13	13.84	-0.02	11.10
07:03	6.13	13.83	-0.06	10.51
07:04	6.12L	13.82L	0.04	9.91
07:05	6.17	13.48	-0.01	9.25
07:06	6.49	6.01	0.02	8.80
07:07	6.88	5.89	0.08	8.43
07:08	7.23	5.88	0.05	7.99
07:09	7.56	5.84L	0.09	7.57
07:10	7.88	5.83	324.80	7.19
07:11	8.18	5.82	891.00	6.81
07:12	8.46	5.82	884.00	6.39
07:13	8.71	5.81	865.00	5.95
07:14	8.94	6.07	865.00	5.43
07:15	9.16	4.04	861.00	5.04
07:16	9.37	2.45	863.00	4.74
07:17	9.57	1.46	863.00	4.31
07:18	9.78	0.98	862.00L	4.13
07:19	9.99	0.91	856.00	3.68
07:20	10.19	0.87	796.00	3.39
07:21	10.33	0.62	487.30	3.22
07:22	10.43	0.69	486.90	2.96
07:23	10.56	0.36	486.90	2.85
07:24	10.72	0.38	485.10L	2.18
07:25	10.89	0.41	247.40	-1.61
07:26	11.02	0.25	0.43	-1.03
07:27	11.15	0.18	0.28	0.35
07:28	11.27	0.33	0.28	0.33
07:29	11.40	0.58	0.25	27.91
07:30	11.54	0.44	0.37	-.70E+04
07:31	11.67	0.30	1.45	189.90
07:32	11.79	0.23	2.21	190.40

Pine Hall Brick
Cyclone Outlet A
Initial Calibration Data
11/5/92

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
07:33	11.90	0.21	2.33	190.70
07:34	12.03	0.20	2.23	190.80
07:35	12.14	0.28	2.32	191.60
07:36	12.27	0.42	2.35	199.70
07:37	12.39	0.27	2.30	211.20
07:38	12.51	0.21	1.38	210.40
07:39	12.62	0.19	1.36	209.60
07:40	12.74	0.17	1.41	210.00
07:41	12.85	0.17	1.37	210.50
07:42	12.96	0.16	1.33	209.50
07:43	13.07	0.15	1.34	208.70
07:44	13.17	0.14	1.38	207.90
07:45	13.27	0.13	1.32	207.40
07:46	13.35	0.13	1.41	207.30
07:47	13.45	0.12	1.38	207.20
07:48	13.53	0.12	1.37	207.20
07:49	13.61	0.11	1.45	206.70
07:50	13.69	0.11	1.46	206.30
07:51	13.77	0.11	1.42	205.80
07:52	13.86	0.11	1.44	208.10
07:53	13.94	0.10	1.49	211.40L
07:54	14.03	0.10	1.41	142.90
07:55	14.11	0.10	1.40	135.80L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Initial Bias Check
11/5/92

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
08:15	0.12R	0.07R	-0.02R	0.81R
08:16	7.79	1.49	0.24	1.04
08:17	14.33	5.80	0.45	1.05
08:18	14.33R	5.81R	0.41	1.05
08:19	7.75	2.99	62.26	1.09
08:20	0.10	0.08	465.80	1.02
08:21	0.08	0.08	485.60R	0.96
08:22	1.58	0.08	477.00	24.15
08:23	0.08	0.08	79.90	139.20R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Check - Run 8 - Post Test
11/5/92

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
12:06	0.07L	0.05L	-0.05L	0.32L
12:07	4.28	2.00	0.04	6.32
12:08	14.25	5.82	0.43	55.27
12:09	14.29L	5.82	0.47	56.05
12:10	12.28	7.89	0.43	44.09
12:11	6.17	13.73	0.12	37.77
12:12	6.15	13.75L	0.15	32.76
12:13	6.28	13.64	0.15	28.43
12:14	6.74	13.57	551.60	25.04
12:15	7.26	13.54	866.00L	22.17
12:16	7.72	13.53	834.00	86.60
12:17	8.13	13.52	706.00	205.30
12:18	8.51	13.50	619.20	206.80L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Data - Run 9 - Pre Test
11/5/92

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
12:24	0.04L	0.05L	0.01L	0.28L
12:25	4.58	2.19	0.09	0.85
12:26	14.26	5.80	0.47	11.32
12:27	14.26	5.81	0.47	13.06
12:28	14.24L	5.83	0.45	12.70
12:29	14.02	10.49	0.50	12.94
12:30	13.88	13.77	0.41	14.08
12:31	13.84	13.76	0.29	13.53
12:32	13.84	13.80L	0.36	12.82
12:33	13.86	13.77	0.39	12.44
12:34	13.91	7.25	54.91	12.09
12:35	13.96	0.14	784.00	11.70
12:36	14.03	0.09	873.00	11.49
12:37	14.10	0.08	872.00	11.20
12:38	14.18	0.08	861.00	11.00
12:39	14.25	0.07	859.00L	10.87
12:40	14.34	0.08	700.00	87.40
12:41	14.43	0.06	429.40	208.70
12:42	14.50	0.06	328.80	211.60
12:43	14.59	0.06	242.30	212.30L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Check - Run 9 - Post Test
11/5/92

Starting
11-05-92

Time	Outlet A O_2 %dv	Outlet A CO_2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
15:59	0.27L	0.06L	-0.15L	13.30L
16:00	7.05	0.07	0.09	35.81
16:01	14.10L	0.08	0.40	33.66
16:02	9.73	6.08	0.19	32.49
16:03	6.72	13.83L	0.00	31.60
16:04	7.12	13.62	10.31	29.48
16:05	7.53	13.58	670.30	27.27
16:06	7.88	13.53	845.00	25.59
16:07	8.18	13.51	843.00L	24.26
16:08	8.47	13.50	573.50	23.30
16:09	8.73	13.49	3.26	188.40
16:10	9.00	12.59	2.10	218.70L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Data - Run 10 - Pre Test
11/5/92

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
16:16	0.04L	0.06L	-0.19L	0.44L
16:17	1.12	0.06	-0.16	4.39
16:18	13.97	0.07	0.34	15.30
16:19	14.19	0.08	0.31	15.34
16:20	14.24L	0.08	0.34	15.74
16:21	14.01	6.57	0.31	17.27
16:22	13.79	13.80	0.32	17.48
16:23	13.69	13.81L	0.27	16.48
16:24	13.63	13.65	3.64	15.85
16:25	13.57	13.61	623.20	15.36
16:26	13.56	13.58	850.00	15.00
16:27	13.58	13.42	856.00	14.77
16:28	13.60	8.13	854.00L	3.50
16:29	13.63	3.66	850.00	191.30
16:30	13.70	2.06	818.00	213.80
16:31	13.76	1.42	713.00	211.60L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Check - Run 10 - Post Test
11/5/92

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
18:06	0.06L	0.06L	-0.14L	-1.04L
18:07	4.46	0.06	0.08	8.09
18:08	14.21	0.07	0.30	26.45
18:09	14.27L	1.99	0.35	23.53
18:10	14.16	7.55	0.37	20.65
18:11	14.19	13.78L	0.39	18.54
18:12	14.25	5.22	108.00	16.30
18:13	14.31	0.61	827.00	14.64
18:14	14.42	0.51	854.00L	13.68
18:15	14.50	1.73	847.00	12.75
18:16	14.58	0.98	209.90	127.20
18:17	14.69	0.60	80.30	205.10L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Final Bias Check
11/5/92

Starting
11-05-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
18:34	0.09R	0.07R	-0.11R	-0.68R
18:35	4.80	4.74	0.05	-0.67
18:36	6.10R	13.62R	0.05	-0.74
18:37	3.55	6.72	73.60	-0.69
18:38	0.06	0.08	458.80	-0.70
18:39	0.04	0.07	479.90R	-0.76
18:40	1.28	0.08	401.00	65.04
18:41	0.05	0.07	18.31	132.20R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Initial Calibration Data
11/6/92

Starting
11-06-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
07:30	0.03L	0.05L	0.06L	0.13L
07:31	1.08	0.67	0.09	0.20
07:32	14.61	5.88	0.37	0.20
07:33	14.65	5.86	0.36	1.15
07:34	14.22	5.86	0.43	1.24
07:35	14.23L	5.86	0.37	1.24
07:36	13.31	5.86	0.39	1.20
07:37	6.19	12.56	0.16	1.18
07:38	6.13	14.03	0.22	1.20
07:39	6.12	13.89	0.17	1.17
07:40	6.11L	13.84L	0.19	1.14
07:41	6.19	13.09	0.21	1.10
07:42	6.55	5.94	0.20	1.07
07:43	6.99	5.91	0.18	1.05
07:44	7.38	5.86L	0.25	1.03
07:45	7.75	5.85	399.20	1.05
07:46	8.10	5.94	888.00	0.99
07:47	8.42	1.10	882.00	1.00
07:48	8.71	0.17	852.00	0.98
07:49	8.97	0.14	852.00	0.94
07:50	9.21	0.12	853.00	0.93
07:51	9.44	0.11	852.00	0.92
07:52	9.65	0.10	855.00	0.89
07:53	9.86	0.10	852.00L	0.89
07:54	10.05	0.10	843.00	0.90
07:55	10.23	0.19	547.60	0.88
07:56	10.40	0.09	483.00	0.87
07:57	10.57	0.08	483.50L	0.86
07:58	10.73	0.07	470.70	0.86
07:59	10.89	0.13	98.10	105.50
08:00	11.03	0.10	22.93	107.70
08:01	11.17	0.07	10.66	0.15
08:02	11.30	0.05	4.11	0.08
08:03	11.44	0.05	2.03	0.08
08:04	11.57	0.05	1.39	85.90
08:05	11.70	0.10	1.39	196.10
08:06	11.84	0.07	1.38	212.00
08:07	11.94	0.06	1.37	212.30
08:08	12.04	0.06	1.38	212.30L
08:09	12.15	0.06	1.69	210.30

Pine Hall Brick
Cyclone Outlet A
Initial Calibration Data
11/6/92

Starting
11-06-92

Time	Outlet A O_2 %dv	Outlet A CO_2 %dv	Outlet A CO ppmdv	Outlet A NO_x ppmdv
08:10	12.26	0.06	1.61	139.10
08:11	12.37	0.05	1.35	139.00
08:12	12.48	0.05	1.65	138.90L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Initial Bias Check
11/6/92

Starting
11-06-92

Time	Outlet A O_2 %dv	Outlet A CO_2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
09:24	0.08R	0.06R	0.00R	0.95R
09:25	8.53	1.85	0.21	0.95
09:26	14.06R	5.84R	0.44	0.94
09:27	9.39	3.44	40.50	0.90
09:28	0.73	0.07	416.40	0.91
09:29	0.08	0.06	477.20R	0.96
09:30	1.88	0.06	366.90	70.80
09:31	0.05	0.06	7.39	140.30R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Check - Run 11 - Post Test
11/6/92

Starting
11-06-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
15:33	0.38L	0.05L	-0.11L	8.44L
15:34	7.42	1.56	0.12	13.85
15:35	13.98	5.82	0.22	28.72
15:36	14.00	5.85	0.25	33.38
15:37	14.00L	5.85	0.28	30.08
15:38	13.94	5.85	0.19	28.09
15:39	6.52	12.42	0.03	26.65
15:40	6.71	13.90	0.03	25.29
15:41	7.14	13.90	0.00	23.99
15:42	7.53	13.91L	0.04	22.62
15:43	7.88	13.79	0.00	21.46
15:44	8.22	13.42	0.14	20.40
15:45	8.53	12.94	533.00	19.46
15:46	8.81	7.41	834.00	18.67
15:47	9.10	3.46	839.00	17.70
15:48	9.43	1.25	837.00	16.99
15:49	9.78	0.65	836.00L	16.47
15:50	10.06	0.52	569.20	82.40
15:51	10.25	0.44	2.03	206.70
15:52	10.41	0.29	1.14	207.50
15:53	10.58	0.23	1.12	207.80L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Data - Run 12 - Pre Test
11/6/92

Starting
11-06-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
16:01	0.06L	0.05L	-0.10L	0.71L
16:02	9.59	4.28	0.11	1.46
16:03	14.12	5.84	0.15	7.60
16:04	14.25	5.85	0.23	8.68
16:05	14.27L	5.86	0.21	8.33
16:06	10.26	8.93	0.05	8.52
16:07	6.71	13.89	-0.03	8.91
16:08	7.11	13.89L	0.03	9.35
16:09	7.45	7.52	13.95	9.28
16:10	7.75	0.78	681.80	9.20
16:11	8.06	0.40	835.00	9.10
16:12	8.33	0.20	838.00	9.03
16:13	8.58	0.17	855.00	9.00
16:14	8.80	0.16	860.00L	8.93
16:15	9.02	0.15	858.00	8.92
16:16	9.21	0.14	857.00	46.18
16:17	9.42	0.35	855.00	208.10
16:18	9.66	0.34	798.00	212.00
16:19	9.87	0.19	697.70	212.10L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	✓	
L	Local caliration(Initial Calibration or Drift Check)	✓	
P	Port Change(Data not included in average)	✓	
R	Remote Calibration(System Bias Check)	✓	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Check - Run 12 - Post Test
11/6/92

Starting
11-06-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
21:14	0.09L	0.05L	-0.07L	-0.47L
21:15	5.61	2.71	0.14	-0.34
21:16	14.38L	5.84	0.34	45.21
21:17	14.24	6.80	0.29	75.40
21:18	14.20	13.79	0.33	57.80
21:19	14.21	13.88	0.26	46.15
21:20	14.25	13.88L	0.30	38.41
21:21	14.28	10.99	38.58	32.51
21:22	14.32	2.16	736.00	28.02
21:23	14.36	0.87	859.00	24.42
21:24	14.42	0.31	861.00L	21.43
21:25	14.49	0.25	605.20	19.21
21:26	14.55	0.49	77.20	110.40
21:27	14.66	0.23	39.34	206.50L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Final Bias Check
11/6/92

Starting
11-06-92

Time	Outlet A O_2 %dv	Outlet A CO_2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
22:12	0.11R	0.06R	0.10R	-1.30R
22:13	1.46	0.06	0.08	-0.73
22:14	12.88	4.06	0.06	2.28
22:15	14.45R	5.85R	0.08	3.08
22:16	3.66	1.23	0.03	3.39
22:17	3.97	0.06	27.76	3.62
22:18	16.80	0.05	257.80	3.68
22:19	19.15	0.05	479.20R	3.59
22:20	17.92	0.05	332.50	3.41
22:21	17.09	0.05	15.85	63.17
22:22	16.50	0.06	2.83	207.30R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Initial Calibration Data
11/7/92

Starting
11-07-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
07:12	0.03L	0.05L	0.02L	-0.23L
07:13	0.02	0.05	0.05	-0.30
07:14	8.27	3.94	0.24	-0.33
07:15	14.44	5.84	0.41	0.30
07:16	13.71	5.85	0.35	0.82
07:17	14.21	5.86	0.41	0.89
07:18	14.22	5.86	0.36	0.97
07:19	14.22L	5.86	0.37	1.06
07:20	13.33	5.86	0.35	1.25
07:21	6.28	5.85	0.16	1.42
07:22	6.60	7.93	0.16	1.56
07:23	7.04	13.94	0.16	1.61
07:24	7.46	13.88	0.21	1.63
07:25	7.82	13.86L	0.19	1.64
07:26	6.88	13.71	0.21	1.71
07:27	6.10	13.68	0.16	1.76
07:28	6.10	13.68	0.13	1.71
07:29	6.09L	13.69	0.26	1.60
07:30	6.20	8.71	0.17	1.64
07:31	6.51	5.91L	0.16	1.65
07:32	6.98	4.38	0.18	1.59
07:33	7.33	0.26	414.20	1.50
07:34	7.70	0.52	866.00	1.39
07:35	8.05	0.27	866.00	1.28
07:36	8.39	0.20	862.00	1.22
07:37	8.69	0.19	858.00L	1.24
07:38	8.95	0.19	781.00	1.28
07:39	9.21	0.32	490.10	1.33
07:40	9.43	0.13	483.10L	1.41
07:41	9.66	0.12	464.80	47.60
07:42	9.89	0.12	33.99	196.70
07:43	10.12	0.06	1.30	199.40
07:44	10.32	0.06	1.37	204.00
07:45	10.51	0.06	1.27	212.00
07:46	10.67	0.06	1.33	212.70L
07:47	10.84	0.06	1.33	155.00
07:48	11.00	0.14	1.59	140.60L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Initial Bias Check
11/7/92

Starting
11-07-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
08:05	0.09R	0.06R	0.01R	0.91R
08:06	8.84	1.20	0.47	2.46
08:07	9.26	3.19	0.82	2.37
08:08	14.27R	5.82R	0.25	2.12
08:09	14.02	5.65	0.58	2.08
08:10	13.91	5.61	123.50	2.27
08:11	13.90	5.61	376.00	2.53
08:12	13.90	5.62	482.40R	2.21
08:13	13.89	5.63	387.10	2.28
08:14	13.95	5.57	285.70	2.35
08:15	14.02	5.50	277.60	87.54
08:16	14.26	5.34	277.70	141.30R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Check - Run 13 - Post Test
11/7/92

Starting
11-07-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
13:26	0.07L	0.05L	0.01L	0.40L
13:27	3.33	0.05	0.12	0.70
13:28	14.20	1.26	0.45	1.00
13:29	14.26L	5.76	0.34	8.61
13:30	11.54	8.14	0.38	13.65
13:31	9.67	13.83L	0.23	13.23
13:32	9.93	13.69	15.87	11.10
13:33	10.19	13.54	690.50	12.35
13:34	10.42	7.31	855.00L	13.76
13:35	10.65	0.98	854.00	71.20
13:36	10.86	0.42	848.00	194.40
13:37	11.02	0.71	836.00	204.80L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Final Bias Check
11/7/92

Starting
11-07-92

Time	Outlet A O2 %dv	Outlet A CO2 %dv	Outlet A CO ppmdv	Outlet A NOx ppmdv
14:21	0.06R	0.08R	-0.02R	1.01R
14:22	0.70	0.05	-0.03	2.14
14:23	11.46	3.04	-0.01	9.85
14:24	14.31R	5.97R	-0.01	11.28
14:25	12.16	1.09	0.01	10.83
14:26	2.46	0.06	12.34	10.13
14:27	2.71	0.07	95.67	9.41
14:28	2.94	0.07	138.70R	8.80
14:29	3.12	0.07	110.60	34.25
14:30	3.12	0.07	65.78	206.70R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
L	Local caliration(Initial Calibration or Drift Check)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Initial Calibration Data
11/06/92

Starting
11-06-92

Time	Outlet A THC ppmwv
08:29	1.23R
08:30	1.24
08:31	1.13
08:32	1.15
08:33	1.39
08:34	1.49
08:35	1.58
08:36	557.00
08:37	852.00
08:38	851.00
08:39	852.00R
08:40	433.40
08:41	2.41
08:42	1.81
08:43	1.65
08:44	1.71
08:45	1.62
08:46	1.62
08:47	1.62
08:48	166.80
08:49	560.80
08:50	562.00
08:51	562.20R
08:52	110.50
08:53	5.20
08:54	2.01
08:55	1.65
08:56	1.54
08:57	1.47
08:58	1.48
08:59	1.43
09:00	1.52
09:01	1.51
09:02	1.52
09:03	108.80
09:04	259.30
09:05	259.50R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Check - Run 1 - Post Test
11/06/92

Starting
11-06-92

Time	Outlet A THC ppmwv
16:40	0.50R
16:41	236.60
16:42	745.00
16:43	843.00
16:44	844.00R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Data - Run 2 - Pre Test
11/06/92

Starting
11-06-92

Time	Outlet A THC ppmwv
17:26	-0.24R
17:27	0.72
17:28	768.00
17:29	852.00R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Check - Run 2 - Post Test
11/06/92

Starting
11-06-92

Time	Outlet A THC ppmwv
21:56	1.39R
21:57	251.30
21:58	820.00
21:59	828.00R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Initial Calibration Data
11/07/92

Starting
11-07-92

Time	Outlet A THC ppmwv
08:23	0.17R
08:24	621.70
08:25	831.00
08:26	852.00
08:27	852.00R
08:28	793.00
08:29	615.00
08:30	564.50R
08:31	345.10
08:32	259.70
08:33	260.80R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet A
Calibration Drift Check - Run 3 - Post Test
11/07/92

Starting
11-07-92

Time	Outlet A THC ppmwv
14:00	0.64R
14:01	693.60
14:02	869.00
14:03	872.00R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

H.3 CEM CALIBRATION DATA AND BIAS CHECKS
SAWDUST DRYER OUTLET B

Pine Hall Brick
Cyclone Outlet B
Initial Calibration Data
11/2/92

Starting
11-02-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
08:22	0.03L	0.05L
08:23	5.54	2.25
08:24	14.38	5.57
08:25	14.20L	5.57
08:26	9.03	10.65
08:27	6.07L	13.82L
08:28	5.88	13.82
08:29	7.11	12.50
08:30	14.16	5.87
08:31	14.18	5.87
08:32	14.18	5.86L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Initial Bias Check - O_2/CO_2 Monitors
11/2/92

Starting
11-02-92

Time	Outlet B O_2 %dv	Outlet B CO_2 %dv
12:30	0.07R	0.06R
12:31	6.80	2.08
12:32	14.26	5.86
12:33	14.26	5.88
12:34	14.26R	5.90R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Check - Run 1 - Post-Test
11/2/92

Starting
11-02-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
16:25	0.04L	0.06L
16:26	3.01	1.12
16:27	14.18	5.78
16:28	14.19L	5.78
16:29	9.78	10.21
16:30	6.07	13.64L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Initial Calibration Data - CO/NOx Monitors
11/2/92

Starting
11-02-92

Time	Outlet B CO ppmdv	Outlet B NOx ppmdv
16:12	0.84L	0.05L
16:13	1.22	73.40
16:14	1.20	42.55
16:15	1.09	22.44
16:16	0.95	13.80
16:17	0.97	9.29
16:18	0.89	6.92
16:19	130.30	5.69
16:20	856.00	4.56
16:21	853.00	3.83
16:22	858.00L	3.68
16:23	686.10	3.19
16:24	485.80	2.76
16:25	484.90	2.51
16:26	485.50L	2.35
16:27	406.10	199.60
16:28	265.20	211.90
16:29	132.40	211.80L
16:30	49.13	160.90
16:31	6.71	137.30L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Initial Bias Check - CO/NOx Monitors
11/2/92

Starting
11-02-92

Time	Outlet B CO ppmdv	Outlet B NOx ppmdv
16:45	1.31R	0.13R
16:46	388.20	0.15
16:47	483.20R	0.19
17:03	1.43	140.50R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Check - Run 2 - Post Test - O_2/CO_2
11/2/92

Starting
11-02-92

Time	Outlet B O_2 %dv	Outlet B CO_2 %dv
20:09	0.02L	0.06L
20:10	8.68	3.59
20:11	14.09L	5.74
20:12	11.81	7.81
20:13	6.03	13.54L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Report - Run 2 - Post Test - CO/NOx
11/2/92

Starting
11-02-92

Time	Outlet B CO ppmdv	Outlet B NOx ppmdv
20:04	0.78L	1.08L
20:05	0.77	1.04
20:06	0.46	7.48
20:07	0.53	76.40
20:08	1.08	46.68
20:09	1.05	32.22
20:10	0.86	25.58
20:11	0.83	21.55
20:12	0.79	18.85
20:13	409.50	16.49
20:14	852.00L	14.62
20:15	835.00	13.33
20:16	650.40	212.80L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Final Bias Check
11/2/92

Starting
11-02-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
20:53	0.04R	0.06R	0.93R	0.23R
20:54	5.16	1.88	0.94	0.31
20:55	14.01	5.73	0.77	0.37
20:56	14.02R	5.73R	0.94	0.47
20:57	13.79	4.26	0.94	0.58
20:58	0.28	0.09	341.90	0.59
20:59	0.05	0.08	481.80R	0.61
21:00	1.12	0.06	458.40	34.77
21:01	0.04	0.07	50.63	138.10R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Initial Calibration Data - O2/CO2 Monitors
11/3/92

Starting
11-03-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
07:55	0.03L	0.06L
07:56	8.65	3.65
07:57	14.22	5.86
07:58	14.21L	5.86
07:59	9.48	10.71
08:00	6.08	13.81
08:01	6.07L	13.83L
08:02	10.09	9.58
08:03	14.20	5.86
08:04	14.11	5.80
08:05	14.22	5.80L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Initial Bias Check - O2/CO2 Monitors
11/3/92

Starting
11-03-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
08:40	0.03R	0.06R
08:41	5.50	1.44
08:42	14.07	5.82
08:43	14.12R	5.84R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Initial Bias Check - CO/NOx Monitors
11/3/92

Starting
11-03-92

Time	Outlet B CO ppmdv	Outlet B NOx ppmdv
08:43	0.49R	1.32R
08:44	0.54	1.09
08:45	298.60	1.34
08:46	478.70R	1.41
08:47	451.70	33.14
08:48	50.62	136.10R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Check - Run 3 - Post Test - O2/CO2
11/3/92

Starting
11-03-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
12:18	0.47L	0.24L
12:19	14.05	5.90
12:20	14.17L	5.91
12:21	9.93	10.27
12:22	6.06	13.88
12:23	6.04	13.83
12:24	6.03	13.72
12:25	6.09	13.72L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Data - Run 4 - Pre Test - CO/NOx Monitors
11/3/92

Starting
11-03-92

Time	Outlet B CO ppmdv	Outlet B NOx ppmdv
15:02	0.43L	-0.02L
15:03	60.68	0.08
15:04	862.00	0.10
15:05	835.00	0.15
15:06	863.00	0.14
15:07	863.00	0.19
15:08	860.00	0.19
15:09	860.00	0.23
15:10	861.00L	0.26
15:11	859.00	0.29
15:12	366.10	0.28
15:13	1.43	54.67
15:14	0.39	212.40
15:15	0.37	212.40L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Data - Run 4 - Pre Test - O2/CO2 Monitors
11/3/92

Starting
11-03-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv
15:20	0.15L	0.05L
15:21	4.15	2.03
15:22	14.17	5.89
15:23	14.18	5.88
15:24	14.17	5.88
15:25	14.11	5.83
15:26	14.11L	5.82
15:27	18.69	7.24
15:28	18.10	13.67L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Check - Run 4 - Post Test
11/3/92

Starting
11-03-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
19:34	0.03L	0.05L	0.21L	-0.90L
19:35	4.71	2.20	0.22	-0.92
19:36	14.19	5.86	0.30	-0.93
19:37	14.20	5.89	0.30	-0.95
19:38	14.21L	5.89	0.32	-0.96
19:39	10.31	9.84	0.30	-0.96
19:40	6.08	13.93	0.26	-0.98
19:41	6.08	13.89L	-0.13	-0.98
19:42	5.95	13.28	-0.14	-0.96
19:43	0.21	0.09	612.60	-0.97
19:44	0.05	0.06	846.00L	-0.98
19:45	0.07	0.06	833.00	28.89
19:46	0.01	0.06	55.33	183.50
19:47	0.01	0.05	0.05	206.00
19:48	0.01	0.06	-0.08	206.10L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Final Bias Check
11/3/92

Starting
11-03-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
20:03	0.04R	0.08R	0.30R	-0.30R
20:04	6.77	1.94	0.29	-0.34
20:05	14.12R	5.84R	0.30	-0.40
20:06	10.61	3.45	23.87	-0.42
20:07	0.13	0.08	716.00	-0.43
20:08	0.09	0.06	843.00R	-0.45
20:09	3.78	0.08	788.00	20.20
20:10	0.06	0.06	88.10	133.90
20:11	0.02	0.05	1.32	133.30R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Initial Calibration Data
11/4/92

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
07:17	0.38L	0.06L	0.15L	0.15L
07:18	13.43	5.61	0.00	0.17
07:19	14.36	5.84	0.00	0.16
07:20	14.20	5.84	-0.00	0.17
07:21	14.20	5.84	0.00	0.18
07:22	14.20	5.84	0.02	0.20
07:23	14.20L	5.84	0.01	0.22
07:24	11.22	8.94	0.01	0.22
07:25	6.08	13.77	0.02	0.24
07:26	6.07	13.79	0.00	0.25
07:27	6.06	13.81	0.01	0.25
07:28	6.06L	13.78L	0.00	0.27
07:29	8.87	10.66	0.01	0.27
07:30	14.18	5.85	0.00	0.29
07:31	14.18	5.85	0.00	0.29
07:32	14.19	5.85	0.00	0.28
07:33	14.12	5.79	0.02	0.30
07:34	14.12	5.78	0.00	0.31
07:35	14.14	5.78L	0.02	0.32
07:36	13.40	5.34	0.01	0.33
07:37	0.20	0.05	344.00	0.33
07:38	0.09	0.05	830.00	0.34
07:39	0.08	0.05	856.00	0.35
07:40	0.08	0.05	857.00	0.35
07:41	0.08	0.05	861.00	0.52
07:42	0.08	0.05	860.00	0.72
07:43	0.07	0.05	862.00L	0.57
07:44	0.04	0.04	755.00	0.49
07:45	0.01	0.04	486.40	0.57
07:46	0.01	0.04	484.20	0.50
07:47	0.01	0.04	484.10L	0.48
07:48	0.01	0.05	475.60	6.57
07:49	0.01	0.05	88.10	161.50
07:50	0.01	0.05	0.00	204.40
07:51	0.01	0.05	0.00	212.00
07:52	0.01	0.05	0.00	212.10
07:53	0.01	0.05	0.01	212.20L
07:54	0.02	0.05	0.00	194.00
07:55	0.01	0.05	-0.00	137.50L

Pine Hall Brick
Cyclone Outlet B
Initial Calibration Data
11/4/92
(continued)

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Initial Bias Check
11/4/92

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
09:56	0.06R	0.06R	0.25R	1.48R
09:57	4.85	4.09	0.30	1.51
09:58	6.02	13.84	0.28	1.51
09:59	6.02	13.76	0.21	1.58
10:00	6.01R	13.69R	0.23	1.59
10:01	6.00	13.69	0.24	1.62
10:02	6.11	9.78	8.35	1.66
10:03	0.24	0.34	401.90	1.73
10:04	2.08	0.17	433.10	1.75
10:05	0.07	0.13	480.60	1.77
10:06	0.24	0.11	484.20R	1.79
10:07	2.38	0.10	324.80	87.90
10:08	0.19	0.13	8.09	136.80R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Check - Run 5 - Post Test
11/4/92

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
13:12	0.02L	0.05L	-0.08L	1.10L
13:13	1.62	0.84	-0.08	1.14
13:14	13.92	5.85	-0.04	1.13
13:15	14.00	5.88	-0.07	1.15
13:16	14.00L	5.88	-0.05	1.17
13:17	13.92	5.82	-0.10	1.26
13:18	6.91	13.26	-0.11	1.20
13:19	5.99	13.89	-0.13	1.18
13:20	5.98	13.90	-0.05	1.20
13:21	5.98	13.91L	-0.03	1.21
13:22	5.96	13.78	-0.05	1.28
13:23	1.08	2.10	203.90	1.25
13:24	0.08	0.05	846.00	1.25
13:25	0.07	0.05	858.00L	1.27
13:26	0.05	0.05	755.00	55.09
13:27	0.01	0.05	29.13	217.20L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Data - Run 6 - Pre Test
11/4/92

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
13:34	0.01L	0.05L	-0.09L	0.68L
13:35	5.47	2.50	0.02	0.71
13:36	14.01	5.88	0.13	0.66
13:37	14.21L	5.89	0.10	0.66
13:38	14.20	5.90	0.18	0.65
13:39	10.14	10.14	0.10	0.66
13:40	6.08	13.95	-0.09	0.64
13:41	6.07	13.88	0.01	0.65
13:42	6.07	13.82L	-0.06	0.64
13:43	3.95	8.49	2.46	0.67
13:44	0.09	0.05	565.70	0.65
13:45	0.08	0.05	859.00	0.65
13:46	0.07	0.05	859.00	0.64
13:47	0.07	0.05	858.00	0.64
13:48	0.07	0.05	857.00L	0.64
13:49	0.06	0.05	840.00	27.86
13:50	0.01	0.05	135.30	211.60
13:51	0.01	0.04	-0.13	211.50
13:52	0.01	0.05	-0.15	211.40L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Check - Run 6 - Post Test
11/4/92

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
16:55	0.02L	0.05L	-0.25L	2.23L
16:56	6.18	2.75	-0.03	2.26
16:57	14.06	5.83	0.05	2.20
16:58	14.08L	5.84	0.11	2.19
16:59	11.27	8.73	0.02	2.21
17:00	6.02	13.84	-0.16	2.16
17:01	6.01	13.86L	-0.12	2.16
17:02	4.36	9.55	10.52	2.17
17:03	0.09	0.05	680.00	2.13
17:04	0.08	0.05	860.00	2.13
17:05	0.08	0.05	860.00L	2.12
17:06	0.05	0.06	740.00	113.50
17:07	0.01	0.05	28.72	217.50
17:08	0.01	0.05	-0.19	217.80L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Data - Run 7 - Pre Test
11/4/92

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
17:15	0.00L	0.05L	-0.22L	0.42L
17:16	4.86	2.26	-0.13	0.48
17:17	14.11	5.87	0.19	0.40
17:18	14.20	5.86	0.12	0.41
17:19	14.21	5.86	0.14	0.39
17:20	14.22L	5.86	0.08	0.45
17:21	9.46	10.73	-0.04	0.46
17:22	6.08	13.86	-0.11	0.46
17:23	6.08	13.84	-0.11	0.45
17:24	6.08	13.89L	-0.09	0.45
17:25	3.51	7.41	58.85	0.46
17:26	0.09	0.05	780.00	0.44
17:27	0.08	0.05	863.00	0.43
17:28	0.07	0.05	861.00	0.44
17:29	0.07	0.05	860.00	0.42
17:30	0.07	0.05	860.00	0.42
17:31	0.07	0.05	860.00L	0.41
17:32	0.05	0.05	774.00	108.80
17:33	0.01	0.04	48.69	255.40
17:34	0.01	0.05	-0.17	244.00
17:35	0.01	0.05	-0.17	211.20
17:36	0.01	0.05	-0.26	191.60
17:37	0.01	0.05	-0.18	201.20
17:38	0.01	0.05	-0.18	211.40L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Check - Run 7 - Post Test
11/4/92

Starting
11-04-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
23:00	0.01L	0.06L	-0.17L	1.81L
23:01	3.11	1.46	-0.13	2.16
23:02	13.65	5.65	0.09	1.83
23:03	13.74	5.72	0.05	1.83
23:04	13.73L	5.72	0.09	1.88
23:05	13.66	5.72	0.03	2.49
23:06	12.25	6.73	-0.04	2.47
23:07	5.93	13.57	-0.17	1.78
23:08	5.90	13.55	-0.07	1.75
23:09	5.89	13.58L	-0.16	1.71
23:10	4.90	10.69	0.56	1.77
23:11	0.14	0.10	570.00	1.71
23:12	0.09	0.10	837.00	1.70
23:13	0.08	0.10	839.00L	1.70
23:14	0.10	0.11	833.00	11.71
23:15	0.02	0.09	185.20	163.80
23:16	0.01	0.09	0.51	166.30
23:17	0.01	0.07	-0.19	194.90
23:18	0.01	0.06	-0.15	214.50L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Final Bias Check
11/4/92

Starting
11-04-92

Time	Outlet B O_2 %dv	Outlet B CO_2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
23:33	0.02R	0.06R	-0.17R	2.61R
23:34	3.23	1.91	-0.19	2.63
23:35	6.19	13.26	-0.17	2.63
23:36	5.88R	13.56R	-0.19	2.62
23:37	6.91	7.45	9.53	2.70
23:38	10.42	0.14	274.80	2.94
23:39	13.57	0.10	149.40	2.85
23:40	0.43	0.08	406.00	2.66
23:41	0.03	0.08	479.40	2.62
23:42	0.03	0.06	480.00R	2.59
23:43	2.43	0.06	431.70	47.73
23:44	0.65	0.07	28.24	135.40
23:45	0.03	0.06	0.87	140.20R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Initial Calibration Data
11/5/92

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
06:53	0.02L	0.06L	-0.24L	-0.04L
06:54	0.03	0.06	-0.31	2.27
06:55	10.72	4.61	0.04	2.15
06:56	14.18	5.83	-0.01	3.83
06:57	14.21	5.83	0.03	2.94
06:58	14.22L	5.84	0.07	2.09
06:59	14.17	5.81	-0.00	1.46
07:00	7.87	12.35	-0.07	1.01
07:01	6.12	13.80	-0.23	0.64
07:02	6.12	13.81	-0.09	0.39
07:03	6.12	13.83	-0.10	0.23
07:04	6.12L	13.83L	-0.17	0.11
07:05	6.09	13.50	-0.12	-0.02
07:06	6.11	6.05	-0.12	-0.09
07:07	6.18	5.88	-0.12	-0.18
07:08	6.26	5.87	-0.08	-0.25
07:09	6.37	5.82L	0.43	-0.31
07:10	6.49	5.80	335.40	-0.39
07:11	6.62	5.81	902.00	-0.45
07:12	6.76	5.80	895.00	-0.49
07:13	6.91	5.79	873.00	-0.57
07:14	7.05	5.80	871.00	-0.63
07:15	7.21	5.79	849.00	-0.68
07:16	7.37	5.79	852.00	-0.67
07:17	7.53	5.78	856.00	-0.73
07:18	7.69	5.78	855.00L	-0.79
07:19	7.86	5.77	854.00	-0.82
07:20	8.02	5.76	790.00	-0.85
07:21	8.18	5.74	490.80	-0.88
07:22	8.34	5.74	488.50	-0.91
07:23	8.50	5.72	488.00	-0.79
07:24	8.66	5.72	487.50L	19.10
07:25	8.82	5.71	243.80	-1.61
07:26	8.97	5.71	1.22	-1.64
07:27	9.12	5.70	1.10	-0.10
07:28	9.26	5.70	1.13	0.33
07:29	9.41	5.69	1.15	28.01
07:30	9.56	5.68	1.14	242.30
07:31	9.70	5.67	1.16	240.00
07:32	9.84	5.66	1.15	240.10

Pine Hall Brick
Cyclone Outlet B
Initial Calibration Data
11/5/92
(continued)

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
07:33	9.98	5.65	1.17	240.30
07:34	10.12	5.66	1.16	240.60
07:35	10.25	5.66	1.17	240.90
07:36	10.39	5.65	1.21	239.50
07:37	10.52	5.65	1.17	211.60
07:38	10.65	5.65	1.18	211.50
07:39	10.77	5.65	1.18	211.50
07:40	10.90	5.64	1.23	211.20
07:41	11.03	5.64	1.22	210.90
07:42	11.15	5.64	1.23	210.60
07:43	11.27	5.64	1.21	210.30
07:44	11.39	5.63	1.22	210.10
07:45	11.51	5.62	1.22	209.80
07:46	11.63	5.62	1.21	209.70
07:47	11.74	5.62	1.24	209.50
07:48	11.85	5.62	1.25	209.40
07:49	11.95	5.62	1.24	209.30
07:50	12.06	5.62	1.25	209.20
07:51	12.16	5.62	1.20	209.10
07:52	12.26	5.61	1.25	210.90
07:53	12.36	5.60	1.23	210.60L
07:54	12.47	5.60	1.22	139.70
07:55	12.56	5.60	1.19	135.00L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Initial Bias Check
11/5/92

Starting
11-05-92

Time	Outlet B O_2 %dv	Outlet B CO_2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
08:26	0.06	0.07	1.33	140.60R
08:27	0.03	0.06	1.37	141.20
08:28	1.67	0.08	23.09	82.60
08:29	0.03	0.07	446.60	-0.96
08:30	0.03	0.06	487.50R	-0.92
08:31	6.87	2.02	436.50	-0.97
08:32	14.35R	5.76R	28.21	-0.92

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Check - Run 8 - Post Test
11/5/92

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
12:06	0.04L	0.06L	-0.15L	-1.01L
12:07	4.18	1.95	-0.03	-0.74
12:08	14.40	5.85	0.25	0.88
12:09	14.45L	5.85	0.21	0.94
12:10	12.43	7.93	0.10	0.80
12:11	6.23	13.82	-0.04	0.65
12:12	6.22	13.85L	-0.05	0.50
12:13	6.17	13.71	-0.06	0.40
12:14	6.20	13.65	482.80	0.33
12:15	6.27	13.63	856.00L	0.30
12:16	6.36	13.63	833.00	61.04
12:17	6.48	13.62	788.00	186.80
12:18	6.61	13.60	787.00	204.70L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Data - Run 9 - Pre Test
11/5/92

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
12:24	0.01L	0.06L	-0.20L	0.14L
12:25	4.61	2.18	-0.04	0.47
12:26	14.42	5.82	0.09	3.68
12:27	14.31	5.84	0.12	4.53
12:28	14.27L	5.83	0.14	4.61
12:29	14.18	10.43	0.15	4.30
12:30	14.15	13.78	0.19	3.88
12:31	14.17	13.84	0.24	3.48
12:32	14.20	13.85L	0.20	3.17
12:33	14.23	13.86	0.19	2.95
12:34	14.26	7.84	45.26	2.75
12:35	14.30	0.16	778.00	2.60
12:36	14.35	0.11	861.00	2.49
12:37	14.40	0.10	861.00	2.41
12:38	14.45	0.09	861.00	2.37
12:39	14.50	0.09	863.00L	2.32
12:40	14.56	0.10	720.00	64.26
12:41	14.62	0.07	543.00	198.40
12:42	14.67	0.07	542.50	204.80
12:43	14.73	0.07	542.10	212.50L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Check - Run 9 - Post Test
11/5/92

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
15:59	0.02L	0.06L	-0.32L	3.43L
16:00	6.59	0.05	-0.07	3.90
16:01	14.09L	0.06	0.19	4.13
16:02	9.61	4.62	-0.03	4.19
16:03	6.52	13.83L	-0.13	4.25
16:04	6.65	13.66	5.71	4.29
16:05	6.78	13.65	641.10	4.34
16:06	6.90	13.64	865.00	4.40
16:07	7.03	13.64	867.00L	4.45
16:08	7.17	13.63	588.80	4.50
16:09	7.31	13.62	5.74	197.30
16:10	7.46	13.61	6.49	217.90L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Data - Run 10 - Pre Test
11/15/92

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
16:16	0.01L	0.06L	-0.26L	0.49L
16:17	0.82	0.05	-0.19	0.75
16:18	13.91	0.06	0.11	1.09
16:19	14.16	0.07	0.12	1.21
16:20	14.23L	0.08	0.05	1.19
16:21	14.14	5.99	0.08	1.18
16:22	14.14	13.81	0.16	1.19
16:23	14.15	13.84L	0.12	1.22
16:24	14.02	13.69	2.18	1.24
16:25	14.29	13.67	621.10	1.25
16:26	14.64	13.66	865.00	1.30
16:27	14.27	13.64	863.00	1.35
16:28	14.31	13.64	862.00L	0.86
16:29	14.35	13.64	862.00	189.30
16:30	14.40	13.62	861.00	212.50
16:31	14.43	13.60	859.00	212.00L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Check - Run 10 - Post Test
11/5/92

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
18:06	0.03L	0.06L	-0.20L	-0.67L
18:07	4.40	0.06	-0.08	-0.44
18:08	14.15	0.06	0.19	-0.22
18:09	14.21L	0.06	0.15	-0.16
18:10	14.15	6.75	0.16	-0.16
18:11	14.16	13.81L	0.19	-0.19
18:12	14.19	11.82	93.10	-0.23
18:13	14.22	10.63	823.00	-0.24
18:14	14.27	10.52	857.00L	-0.26
18:15	14.30	10.43	846.00	-0.26
18:16	14.35	10.36	233.20	111.70
18:17	14.40	10.31	128.40	204.90L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Final Bias Check
11/5/92

Starting
11-05-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
18:45	0.51R	0.07R	0.07R	-0.92R
18:46	4.20	6.29	0.02	-0.98
18:47	6.10R	13.65R	-0.07	-1.05
18:48	5.77	9.10	7.05	-1.07
18:49	0.05	0.09	400.10	-1.07
18:50	0.03	0.06	486.80R	-1.12
18:51	2.35	0.06	433.90	45.89
18:52	0.03	0.06	27.54	140.10R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Initial Calibration Data
11/6/92

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
07:30	0.01L	0.05L	-0.08L	0.07L
07:31	1.11	0.64	-0.02	0.05
07:32	14.67	5.90	0.15	0.03
07:33	14.44	5.88	0.17	0.03
07:34	14.21	5.86	0.13	0.05
07:35	14.22L	5.85	0.22	0.01
07:36	13.36	5.86	0.14	-0.02
07:37	6.20	11.90	0.05	-0.03
07:38	6.13	14.11	0.01	-0.04
07:39	6.11	14.01	0.00	-0.05
07:40	6.11L	13.84L	-0.01	-0.07
07:41	6.08	13.26	0.03	-0.09
07:42	6.11	5.96	0.06	-0.09
07:43	6.17	5.91	0.10	-0.11
07:44	6.26	5.85L	0.05	-0.11
07:45	6.36	5.84	360.80	-0.11
07:46	6.47	5.83	858.00	-0.14
07:47	6.59	5.83	856.00	-0.13
07:48	6.72	5.83	853.00	-0.11
07:49	6.85	5.83	854.00	-0.14
07:50	6.98	5.83	855.00	-0.12
07:51	7.12	5.83	858.00	-0.11
07:52	7.27	5.84	856.00	-0.12
07:53	7.41	5.83	856.00L	-0.12
07:54	7.55	5.83	848.00	-0.10
07:55	7.70	5.82	542.40	-0.10
07:56	7.84	5.82	485.80	-0.10
07:57	7.98	5.82	485.10L	-0.10
07:58	8.12	5.82	472.60	-0.08
07:59	8.26	5.82	87.30	88.00
08:00	8.40	5.82	27.96	90.90
08:01	8.53	5.81	27.98	0.34
08:02	8.67	5.80	27.92	0.20
08:03	8.80	5.79	27.94	0.13
08:04	8.93	5.80	27.95	76.00
08:05	9.06	5.79	27.95	169.60
08:06	9.19	5.78	27.98	189.00
08:07	9.32	5.77	27.97	211.70
08:08	9.44	5.76	27.99	211.90L
08:09	9.56	5.76	28.19	208.00

Pine Hall Brick
Cyclone Outlet B
Initial Calibration Data
11/6/92
(continued)

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
08:10	9.67	5.76	28.18	138.30
08:11	9.79	5.76	27.95	137.80
08:12	9.91	5.75	28.18	136.10L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Initial Bias Check
11/6/92

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
09:38	0.02R	0.06R	-0.06R	0.68R
09:39	10.69	3.56	-0.10	0.70
09:40	14.28	5.63	0.01	0.67
09:41	14.32R	5.61R	-0.02	0.67
09:42	13.78	3.25	1.44	0.71
09:43	2.73	0.08	321.90	0.72
09:44	1.53	0.07	447.60	0.73
09:45	1.50	0.07	450.80	0.74
09:46	0.85	0.06	455.60	0.78
09:47	0.03	0.06	484.00R	0.80
09:48	4.11	0.06	451.40	30.22
09:49	0.06	0.06	34.67	140.30R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Check - Run 11 - Post Test
11/6/92

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
15:33	0.06L	0.06L	-0.29L	2.94L
15:34	7.60	0.09	-0.12	3.00
15:35	14.11	0.11	0.02	3.11
15:36	14.12	0.11	-0.01	3.15
15:37	14.13L	0.11	-0.01	3.17
15:38	14.06	0.12	0.00	3.19
15:39	6.55	10.79	-0.15	3.21
15:40	6.59	13.86	-0.17	3.23
15:41	6.71	13.87	-0.13	3.23
15:42	6.83	13.86L	-0.15	3.26
15:43	6.96	13.74	-0.06	3.24
15:44	7.09	13.06	-0.08	3.26
15:45	7.22	11.21	489.70	3.32
15:46	7.36	11.22	862.00	3.29
15:47	7.52	11.23	865.00	3.27
15:48	7.68	11.22	865.00	3.26
15:49	7.86	11.21	865.00L	3.30
15:50	8.01	11.20	592.80	66.05
15:51	8.15	11.21	5.07	216.68
15:52	8.30	11.23	1.84	217.57
15:53	8.44	11.24	1.02	218.29L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Data - Run 12 - Pre Test
11/6/92

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
16:01	0.01L	0.05L	-0.30L	0.55L
16:02	9.95	2.10	-0.14	0.71
16:03	14.16	2.99	0.00	0.87
16:04	14.24	3.06	-0.05	0.91
16:05	14.26L	3.11	-0.06	0.90
16:06	10.40	6.45	-0.08	0.96
16:07	6.93	13.88	-0.15	0.94
16:08	7.07	13.89L	-0.19	0.90
16:09	7.20	7.74	3.86	0.93
16:10	7.33	0.55	694.50	0.92
16:11	7.45	0.56	866.00	0.91
16:12	7.58	0.56	868.00	0.90
16:13	7.71	0.56	866.00	0.91
16:14	7.83	0.57	863.00L	0.92
16:15	7.95	0.58	860.00	0.94
16:16	8.08	0.58	860.00	56.47
16:17	8.21	0.58	860.00	215.50
16:18	8.35	0.58	858.00	212.40
16:19	8.47	0.59	859.00	212.40L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Check - Run 12 - Post Test
11/6/92

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
21:14	0.05L	0.06L	-0.16L	-1.26L
21:15	5.80	2.61	-0.15	-1.27
21:16	14.38L	5.83	0.04	-1.16
21:17	14.26	6.47	0.01	-1.14
21:18	14.25	13.83	-0.07	-1.15
21:19	14.26	13.88	-0.14	-1.18
21:20	14.28	13.88L	-0.11	-1.20
21:21	14.30	12.55	23.07	-1.24
21:22	14.33	11.62	727.00	-1.29
21:23	14.37	11.62	853.00	-1.32
21:24	14.41	11.63	853.00L	-1.35
21:25	14.45	11.63	608.90	-1.37
21:26	14.49	11.64	158.30	97.00
21:27	14.53	11.63	158.40	213.90L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Final Bias Check
11/6/92

Starting
11-06-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
22:17	0.05R	0.05R	0.32R	-1.24R
22:18	8.69	1.23	0.32	-1.09
22:19	14.41R	5.84R	0.62	-1.06
22:20	7.84	1.05	67.43	-0.93
22:21	7.06	0.08	376.50	-0.97
22:22	6.44	0.09	486.20R	-0.98
22:23	5.93	0.09	207.60	1.65
22:24	5.53	0.10	56.53	139.80
22:25	5.22	0.10	0.59	141.60R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Initial Calibration Data
11/7/92

Starting
11-07-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
07:12	0.01L	0.05L	-0.11L	-0.34L
07:13	0.22	0.05	-0.15	-0.38
07:14	8.00	3.71	0.05	-0.43
07:15	14.46	5.83	0.09	-0.44
07:16	14.51	5.82	0.11	-0.50
07:17	14.23	5.82	0.04	-0.55
07:18	14.24	5.81	0.10	-0.57
07:19	14.25L	5.81	0.10	-0.59
07:20	13.44	5.80	0.12	-0.63
07:21	6.25	5.80	0.03	-0.64
07:22	6.33	8.11	0.09	-0.68
07:23	6.43	13.97	0.09	-0.67
07:24	6.54	13.87	0.14	-0.70
07:25	6.66	13.83L	0.20	-0.69
07:26	6.46	13.65	0.08	-0.71
07:27	6.11	13.61	-0.08	-0.70
07:28	6.11	13.60	-0.10	-0.71
07:29	6.11L	13.62	0.02	-0.72
07:30	6.27	8.77	0.02	-0.71
07:31	6.35	5.91L	0.14	-0.70
07:32	5.48	4.53	0.21	-0.72
07:33	6.16	0.39	346.10	-0.71
07:34	6.54	0.40	846.00	-0.70
07:35	6.68	0.40	849.00	-0.74
07:36	6.80	0.41	852.00	-0.74
07:37	6.93	0.41	851.00L	-0.75
07:38	7.07	0.41	779.00	-0.75
07:39	7.21	0.42	490.60	-0.77
07:40	7.35	0.42	483.00L	-0.77
07:41	7.50	0.43	467.90	65.72
07:42	7.66	0.43	33.26	251.30
07:43	7.82	0.43	1.14	233.50
07:44	7.97	0.44	1.13	211.90
07:45	8.12	0.44	1.18	211.80
07:46	8.27	0.44	1.16	212.10L
07:47	8.42	0.45	1.20	148.50
07:48	8.56	0.45	1.20	138.90L

Pine Hall Brick
Cyclone Outlet B
Initial Calibration Data
11/7/92
(continued)

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	✓	
D	Sampling halted due to power loss(Data not averaged)	✓	
E	Equipment failure at Outlet A(Data not averaged)	✓	
L	Local calibration(Initial Calibration or Drift Check)	✓	
M	Maintenance on sampling system(Data not averaged)	✓	
P	Port Change(Data not included in average)	✓	
R	Remote Calibration(System Bias Check)	✓	

Pine Hall Brick
Cyclone Outlet B
Initial Bias Check
11/7/92

Starting
11-07-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
08:01	0.02R	0.05R	0.23R	-0.48R
08:02	5.00	0.06	0.38	-0.47
08:03	14.34	5.82	0.38	-0.50
08:04	14.37R	5.83R	0.38	-0.48
08:05	13.25	5.76	0.29	-0.41
08:06	13.15	5.61	12.45	-0.40
08:07	13.05	5.23	262.30	-0.41
08:08	13.45	5.06	485.20R	-0.46
08:09	14.10	4.98	412.30	78.52
08:10	14.25	4.56	302.50	138.90
08:11	14.65	4.58	301.90	139.60R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Check - Run 13 - Post Test
11/7/92

Starting
11-07-92

Time	Outlet B O_2 %dv	Outlet B CO_2 %dv	Outlet B CO ppmdv	Outlet B NO_x ppmdv
13:26	0.04L	0.05L	-0.20L	-0.43L
13:27	3.47	0.05	-0.18	-0.37
13:28	14.10	0.06	0.11	-0.34
13:29	14.16L	0.06	0.18	-0.34
13:30	10.97	5.11	0.01	-0.35
13:31	9.03	13.81L	-0.05	-0.36
13:32	9.14	13.68	24.56	-0.38
13:33	9.23	13.65	704.00	-0.39
13:34	9.34	13.62	855.00L	-0.40
13:35	9.45	13.60	855.00	35.20
13:36	9.56	13.60	853.00	185.30
13:37	9.66	13.59	854.00	206.90L

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Final Bias Check
11/7/92

Starting
11-07-92

Time	Outlet B O2 %dv	Outlet B CO2 %dv	Outlet B CO ppmdv	Outlet B NOx ppmdv
14:29	0.04R	0.06R	-0.14R	-0.68R
14:30	2.74	0.96	-0.16	-0.58
14:31	14.35R	5.81R	-0.16	-0.64
14:32	14.32	5.76	-0.17	-0.59
14:33	14.26	5.65	5.67	-0.60
14:34	14.17	5.64	267.40	-0.59
14:35	14.18	5.57	487.50R	-0.63
14:36	14.12	5.49	311.50	57.65
14:37	14.09	5.40	65.34	133.10R

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
D	Sampling halted due to power loss(Data not averaged)	√	
E	Equipment failure at Outlet A(Data not averaged)	√	
L	Local calibration(Initial Calibration or Drift Check)	√	
M	Maintenance on sampling system(Data not averaged)	√	
P	Port Change(Data not included in average)	√	
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Initial Calibration Data
11/06/92

Starting
11-06-92

Time	Outlet B THC ppmwv
08:31	1.87R
08:32	2.06
08:33	2.38
08:34	2.53
08:35	2.34
08:36	2.06
08:37	2.14
08:38	2.09
08:39	2.08
08:40	2.02
08:41	742.00
08:42	843.00
08:43	851.00R
08:44	348.70
08:45	11.45
08:46	396.80
08:47	562.70R
08:48	12.64
08:49	2.78
08:50	2.55
08:51	2.51
08:52	2.52
08:53	2.69
08:54	2.58
08:55	2.44
08:56	2.55
08:57	2.61
08:58	96.50
08:59	255.90
09:00	256.20
09:01	256.50
09:02	256.70R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Check - Run 1 - Post Test
11/06/92

Starting
11-06-92

Time	Outlet B THC ppmwv
16:43	2.77R
16:44	3.34
16:45	490.60
16:46	792.00
16:47	852.00
16:48	851.00
16:49	852.00R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Data - Run 2 - Pre Test
11/06/92

Starting
11-06-92

Time	Outlet B THC ppmwv
17:45	-0.00R
17:46	177.80
17:47	794.00
17:48	850.00R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Check - Run 2 - Post Test
11/06/92

Starting
11-06-92

Time	Outlet B THC ppmwv
21:49	0.22R
21:50	123.00
21:51	825.00
21:52	839.00R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Initial Calibration Data
11/07/92

Starting
11-07-92

Time	Outlet B THC ppmwv
08:12	0.06R
08:13	147.20
08:14	844.00
08:15	850.00
08:16	851.00
08:17	852.00R
08:18	694.30
08:19	561.00
08:20	560.30R
08:21	310.20
08:22	254.70R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

Pine Hall Brick
Cyclone Outlet B
Calibration Drift Check - Run 3 - Post Test
11/07/92

Starting
11-07-92

Time	Outlet B THC ppmwv
13:52	0.81R
13:53	127.10
13:54	834.00
13:55	849.00R

Marker	Description	Display	Average
R	Remote Calibration(System Bias Check)	√	

1

I.0 FIELD EQUIPMENT CALIBRATION DATA

E T S , I N C .

METER CONSOLE CALIBRATION FORM

Contract No. 92-774
Job I.D.

Print Date 10/20/92

Meter Box No.: 4
Delta H: 1.7797
Gamma: 1.0067

Analyst: wch
Calibration Date: 10/20/92
Test Meter No. 9548
Barometric Pressure 29.23

Run	Orf Set	Initial Test	Final Test	Volume Test	Init Temp	Finl Temp	Test Temp	Initial Box	Final Box	Volume Box	I-I Temp	I-O Temp	F-I Temp	F-O Temp	Temp	Time	Delta H	Gamma
1	0.5	319.618	330.170	10.552	72.0	75.0	73.50	759.444	769.667	10.223	63.0	57.0	67.0	75.0	65.50	25.5	1.71517	1.01543
2	1.0	330.432	341.369	10.937	74.0	75.0	74.50	769.925	780.836	10.911	75.0	67.0	73.0	82.0	74.25	19.0	1.75022	0.99940
3	1.5	341.579	351.914	10.335	74.0	74.0	74.00	781.042	791.380	10.338	73.0	81.0	76.0	85.0	78.75	15.0	1.81375	1.00481
4	2.0	352.155	362.480	10.325	74.0	75.0	74.50	791.622	801.950	10.328	83.0	76.0	79.0	88.0	81.50	13.0	1.81411	1.00773
5	2.5	362.693	372.942	10.249	75.0	75.0	75.00	802.149	812.440	10.291	86.0	79.0	80.0	88.0	83.25	11.5	1.79850	1.00496
6	3.0	373.182	383.449	10.267	74.0	75.0	74.50	812.674	822.970	10.296	87.0	80.0	81.0	89.0	84.25	10.5	1.78624	1.00777

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BL4 - #1

Ambient Temperature: 764 °F Barometric pressure: 28.79 "Hg

Calibrator: D. Vecchio Reference: Mercury-in-glass: HHDI-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	31	3.33
		100	101	1.00
		200	202	1.00
		300	303	1.00
		400	402	0.50
		500	501	0.20
		600	603	0.50
		700	703	0.43
		800	803	0.38
		900	903	0.33
			Average % difference	0.79

a Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath

2) Furnace

b Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX4 - #2

Ambient Temperature: 74 °F Barometric pressure: 28.79 "Hg

Calibrator: [illegible] Reference: Mercury-in-glass: HH71-ML-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	31	3.33
		100	101	1.00
		200	202	1.00
		300	303	[illegible]
		400	401	[illegible]
		500	501	[illegible]
		600	603	[illegible]
		700	703	[illegible]
		800	803	.39
		900	903	[illegible]
			Average % difference	[illegible]

[a] Every 100°F for each reference point when using furnace up to 900°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BY4 - #3

Ambient Temperature: 74 °F Barometric pressure: 28.79 "Hg

Calibrator: D. Vecellio Reference: Mercury-in-glass: HH71-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	31	3.33
		100	101	1.00
		200	202	1.00
		300	303	1.00
		400	402	0.50
		500	502	0.40
		600	603	0.50
		700	703	0.43
		800	803	0.38
		900	903	0.33
			Average % difference	0.81

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
  2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX4 - #4

Ambient Temperature: 74 °F Barometric pressure: 28.79 "Hg

Calibrator: D Vicellio Reference: Mercury-in-glass: HH71-CAL-K

Other: ____

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	31	3.33
		100	101	1.00
		200	203	1.50
		300	303	1.00
		400	402	0.50
		500	502	0.40
		600	604	0.67
		700	703	0.43
		800	803	0.38
		900	903	0.33
			Average % difference	0.87

a Every 100°F for each reference point when using furnace up to 900°F.

* Source: 1) Ice bath
2) Furnace

b Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX4 - #5

Ambient Temperature: 74 °F Barometric pressure: 28.79 "Hg

Calibrator: D. Vancellotti Reference: Mercury-in-glass: HHT-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	31	3.33
		100	101	1.00
		200	203	1.50
		300	303	1.00
		400	402	0.50
		500	502	0.40
		600	604	0.67
		700	703	0.43
		800	803	0.38
		900	903	0.33
			Average % difference	0.87

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BV4 - #6

Ambient Temperature: 74 °F Barometric pressure: 28.79 "Hg

Calibrator: D. Vecchio Reference: Mercury-in-glass: HH71-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	202	1.00
		300	303	1.00
		400	402	0.50
		500	502	0.40
		600	604	0.67
		700	703	0.43
		800	803	0.38
		900	904	0.44
			Average % difference	0.44

a Every 100°F for each reference point when using furnace up to 500°F.

* Source: [] Ice bath
[] Furnace

b Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX4 - #7

Ambient Temperature: 74 °F Barometric pressure: 28.79 "Hg

Calibrator: D. Vecellio Reference: Mercury-in-glass: HH71-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	202	1.00
		300	303	1.00
		400	401	0.25
		500	500	0
		600	603	0.50
		700	702	0.29
		800	801	0.13
		900	901	0.11
			Average % difference	0.30

a Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

b Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

E T S , I N C .

METER CONSOLE CALIBRATION FORM

Contract No. 92-655
Job I.D.

Print Date 11/20/92

Meter Box No.: 4
Delta H: 1.7799
Gamma: 1.0128

Analyst: DV
Calibration Date: 11/20/92
Test Meter No. 9548
Barometric Pressure 29.34

Run	Orf Set	Initial Test	Final Test	Volume Test	Init Temp	Finl Temp	Test Temp	Initial Box	Final Box	Volume Box	I-I Temp	I-O Temp	F-I Temp	F-O Temp	Temp	Time	Delta H	Gamma
1	0.5	492.763	503.074	10.311	74.0	74.0	74.00	937.002	947.241	10.239	76.0	74.0	81.0	76.0	76.75	25.0	1.68717	1.01095
2	1.0	503.429	516.943	13.514	74.0	75.0	74.50	947.591	961.021	13.430	80.0	76.0	86.0	79.0	80.25	23.5	1.72770	1.01454
3	1.5	517.114	527.406	10.292	75.0	74.0	74.50	961.203	971.410	10.207	84.0	79.0	87.0	80.0	82.50	15.0	1.81288	1.01959
4	2.0	530.880	542.217	11.337	73.0	74.0	73.50	974.855	986.140	11.285	77.0	76.0	85.0	78.0	79.00	14.5	1.86659	1.00990
5	2.5	542.457	554.037	11.580	74.0	74.0	74.00	986.379	997.988	11.609	83.0	77.0	88.0	79.0	81.75	13.0	1.79181	1.00568
6	3.0	554.246	565.934	11.688	74.0	74.0	74.00	998.107	1009.72	11.613	85.0	79.0	89.0	80.0	83.25	12.0	1.79343	1.01625

E T S , I N C .

METER CONSOLE CALIBRATION FORM

Contract No. 92-774
Job I.D.

Print Date 10/21/92

Meter Box No.: 5
Delta H: 1.6944
Gamma: 1.0069

Analyst: wch
Calibration Date: 10/20/92
Test Meter No. 9548
Barometric Pressure 29.12

Run	Orf Set	Initial Test	Final Test	Volume Test	Init Temp	Finl Temp	Test Temp	Initial Box	Final Box	Volume Box	I-I Temp	I-O Temp	F-I Temp	F-O Temp	Temp	Time	Delta H	Gamma
1	0.5	389.004	399.749	10.745	74.0	75.0	74.50	784.095	794.803	10.708	74.0	72.0	79.0	75.0	75.00	25.5	1.63699	1.00313
2	1.0	400.118	414.545	14.427	75.0	75.0	75.00	795.168	809.535	14.367	78.0	75.0	85.0	78.0	79.00	24.5	1.66712	1.00914
3	1.5	414.705	427.031	12.326	75.0	75.0	75.00	809.696	821.991	12.295	78.0	84.0	87.0	80.0	82.25	17.5	1.73740	1.01227
4	2.0	427.203	437.445	10.242	75.0	75.0	75.00	822.179	832.418	10.239	80.0	85.0	88.0	81.0	83.50	12.5	1.70788	1.01108
5	2.5	437.616	455.876	18.260	75.0	75.0	75.00	832.581	850.971	18.390	81.0	87.0	90.0	82.0	85.00	20.0	1.71466	1.00515
6	3.0	456.075	472.602	16.527	75.0	74.0	74.50	851.182	867.933	16.751	82.0	89.0	91.0	83.0	86.25	16.5	1.70244	1.00074

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX5 - #1

Ambient Temperature: 7 °F Barometric pressure: 28.70 "Hg

Calibrator: D. Vonollio Reference: Mercury-in-glass: AH71-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	99	1.00
		200	200	0
		300	301	0.33
		400	400	0
		500	500	0
		600	600	0
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.12

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX5 - #2

Ambient Temperature: 76 °F Barometric pressure: 28.70 "Hg

Calibrator: D. [illegible] Reference: Mercury-in-glass: HH71-CAL-K

Other: ____________

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	200	0
		300	301	0.33
		400	400	0
		500	500	0
		600	601	0.17
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.05

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F - thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX5 - #3

Ambient Temperature: 76 °F Barometric pressure: 28.70 "Hg

Calibrator: D. Vecellio Reference: Mercury-in-glass: HH71-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	200	0
		300	301	0.33
		400	400	0
		500	500	0
		600	601	0.17
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.05

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
  2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

ETS, INC.

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX5 - #4

Ambient Temperature: 76 °F Barometric pressure: 28.70 "Hg

Calibrator: D. Vacellio Reference: Mercury-in-glass: HH71-CAL-K

Other: ____________

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	200	0
		300	301	0.33
		400	400	0
		500	500	0
		600	601	0.17
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.05

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
  2) Furnace

[b] **Percent difference ≤ 1.5%**

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

ETS, INC.

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX5 - #5

Ambient Temperature: 76 °F Barometric pressure: 28.70 "Hg

Calibrator: D. [illegible] Reference: Mercury-in-glass: HH71-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	99	1.00
		200	200	0
		300	301	0.33
		400	400	0
		500	500	0
		600	601	0.17
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.05

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
  2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F - thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

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THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX5 - #6

Ambient Temperature: 76 °F Barometric pressure: 28.70 "Hg

Calibrator: D. Vocellir Reference: Mercury-in-glass: HH71-CAL-K

Other: ____________

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	99	1.00
		200	200	0
		300	301	0.33
		400	400	0
		500	500	0
		600	600	0
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.12

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

ETS, INC.

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX5 - #7

Ambient Temperature: 76 °F Barometric pressure: 28.70 "Hg

Calibrator: D. Vecellio Reference: Mercury-in-glass: HH71-CAL-K

Other: ________

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	99	1.00
		200	200	0
		300	301	0.33
		400	400	0
		500	500	0
		600	601	0.17
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.14

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
 2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F - thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

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E T S , I N C .

METER CONSOLE CALIBRATION FORM

Contract No. 92-655
Job I.D.

Print Date 11/13/92

Meter Box No.: 5
Delta H: 1.6898
Gamma: 0.9841

Analyst: wch
Calibration Date: 11/12/92
Test Meter No. 9548
Barometric Pressure 28.81

Run	Orf Set	Initial Test	Final Test	Volume Test	Init Temp	Finl Temp	Test Temp	Initial Box	Final Box	Volume Box	I-I Temp	I-O Temp	F-I Temp	F-O Temp	Temp	Time	Delta H	Gamma
1	0.5	29.679	39.876	10.197	71.0	71.0	71.00	845.702	856.084	10.382	71.0	71.0	73.0	76.0	72.75	24.0	1.61298	0.98416
2	1.0	40.176	52.873	12.697	71.0	71.0	71.00	856.393	869.381	12.988	77.0	73.0	75.0	81.0	76.50	21.5	1.65810	0.98521
3	1.5	53.120	65.181	12.061	71.0	72.0	71.50	869.635	881.994	12.359	80.0	75.0	77.0	83.0	78.75	17.0	1.71932	0.98543
4	2.0	65.390	78.008	12.618	72.0	71.0	71.50	882.207	895.181	12.974	82.0	77.0	78.0	85.0	80.50	15.5	1.73556	0.98401
5	2.5	78.275	92.048	13.773	72.0	71.0	71.50	895.450	909.636	14.186	82.0	78.0	79.0	87.0	81.50	15.0	1.70212	0.98288
6	3.0	92.297	102.331	10.034	72.0	72.0	72.00	909.893	920.227	10.334	85.0	79.0	79.0	87.0	82.50	10.0	1.71046	0.98261

E T S , I N C .

METER CONSOLE CALIBRATION FORM

Contract No. 92-774
Job I.D.

Print Date 10/21/92

Meter Box No.: 6
Delta H: 1.7326
Gamma: 0.9915

Analyst: wch
Calibration Date: 10/21/92
Test Meter No. 9548
Barometric Pressure 29.16

Run	Orf Set	Initial Test	Final Test	Volume Test	Init Temp	Finl Temp	Test Temp	Initial Box	Final Box	Volume Box	I-I Temp	I-O Temp	F-I Temp	F-O Temp	Temp	Time	Delta H	Gamma
1	0.5	476.826	487.065	10.239	74.0	76.0	75.00	655.211	665.565	10.354	74.0	72.0	76.0	81.0	75.75	24.5	1.66266	0.98903
2	1.0	487.275	498.934	11.659	75.0	77.0	76.00	665.765	677.598	11.833	80.0	76.0	79.0	86.0	80.25	20.0	1.70116	0.99061
3	1.5	499.162	509.182	10.020	76.0	76.0	76.00	677.835	688.012	10.177	85.0	79.0	80.0	88.0	83.00	14.5	1.80673	0.99367
4	2.0	509.572	526.960	17.388	74.0	77.0	75.50	688.419	706.037	17.618	76.0	76.0	79.0	86.0	79.25	21.5	1.76770	0.98887
5	2.5	527.135	538.503	11.368	77.0	78.0	77.50	706.212	717.740	11.528	85.0	79.0	82.0	91.0	84.25	12.5	1.74430	0.99225
6	3.0	538.695	555.232	16.537	77.0	77.0	77.00	717.944	734.742	16.798	89.0	82.0	84.0	91.0	86.50	16.5	1.71319	0.99436

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX6 - #1

Ambient Temperature: 76 °F Barometric pressure: 28.70 "Hg

Calibrator: D. Vocolbio Reference: Mercury-in-glass: HH71-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	201	0.50
		300	301	0.33
		400	400	0
		500	500	0
		600	601	0.17
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.09

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F - thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX6 - #2

Ambient Temperature: 76 °F Barometric pressure: 28.70 "Hg

Calibrator: D. [illegible] Reference: Mercury-in-glass: HH71-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	201	0.50
		300	300	0
		400	400	0
		500	500	0
		600	601	0.17
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.06

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

ITS, INC.

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX6- #3

Ambient Temperature: 76 °F Barometric pressure: 28.70 "Hg

Calibrator: D. Vocollio Reference: Mercury-in-glass: HH71-CAL-K

Other: ___

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	201	0.50
		300	301	0.33
		400	400	0
		500	500	0
		600	601	0.17
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.09

a Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

b Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX6 - #4

Ambient Temperature: 76 °F Barometric pressure: 28.70 "Hg

Calibrator: D. Vicarellio Reference: Mercury-in-glass: HH71-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	200	0
		300	301	0.33
		400	400	0
		500	500	0
		600	600	0
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.03

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

ETC, INC.

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX6 - #5

Ambient Temperature: 76 °F Barometric pressure: 28.70 "Hg

Calibrator: D. Vecellio Reference: Mercury-in-glass: HH71-CAL-K

Other: ________

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	200	0
		300	301	0.33
		400	400	0
		500	500	0
		600	600	0
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.03

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath

2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F - thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

ETS, INC.

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX6-#6

Ambient Temperature: 76 °F Barometric pressure: 28.70 "Hg

Calibrator: D. Vecellio Reference: Mercury-in-glass: HH74-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	200	0
		300	301	0.33
		400	400	0
		500	500	0
		600	600	0
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.03

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 28 October 1992 Thermocouple No.: BX6 - #7

Ambient Temperature: 76 °F Barometric pressure: 28.96 "Hg

Calibrator: D. Vecellio Reference: Mercury-in-glass: HH21-CAL-K

Other: ____________

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	200	0
		300	301	0.33
		400	400	0
		500	500	0
		600	600	0
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.03

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

E T S , I N C .

METER CONSOLE CALIBRATION FORM

Contract No. 92-655
Job I.D.

Print Date 11/13/92

Meter Box No.: 6
Delta H: 1.7298
Gamma: 0.9942

Analyst: wch
Calibration Date: 11/12/92
Test Meter No. 9548
Barometric Pressure 28.63

Run	Orf Set	Initial Test	Final Test	Volume Test	Init Temp	Finl Temp	Test Temp	Initial Box	Final Box	Volume Box	I-I Temp	I-O Temp	F-I Temp	F-O Temp	Temp	Time	Delta H	Gamma
1	0.5	102.898	114.187	11.289	74.0	75.0	74.50	511.166	522.562	11.396	72.0	71.0	76.0	80.0	74.75	27.0	1.69188	0.98980
2	1.0	114.381	125.010	10.629	75.0	75.0	75.00	522.754	533.494	10.740	80.0	76.0	78.0	81.0	78.75	18.0	1.68701	0.99405
3	1.5	125.176	139.335	14.159	75.0	75.0	75.00	533.661	548.021	14.360	80.0	78.0	80.0	87.0	81.25	20.1	1.76997	0.99369
4	2.0	139.489	154.493	15.004	75.0	75.0	75.00	548.183	563.427	15.244	86.0	80.0	82.0	89.0	84.25	18.5	1.77054	0.99616
5	2.5	154.685	167.533	12.848	75.0	75.0	75.00	563.606	576.673	13.067	87.0	82.0	83.0	90.0	85.50	14.0	1.72455	0.99614
6	3.0	167.748	178.273	10.525	75.0	75.0	75.00	576.895	587.596	10.701	87.0	82.0	83.0	90.0	85.50	10.5	1.73463	0.99519

E T S , I N C .

METER CONSOLE CALIBRATION FORM

Contract No. 92-703
Job I.D.

Print Date 10/23/92

Meter Box No.: 7
Delta H: 1.7651
Gamma: 1.0082

Analyst: wch
Calibration Date: 10/23/92
Test Meter No. 9548
Barometric Pressure 29.16

Run	Orf Set	Initial Test	Final Test	Volume Test	Init Temp	Finl Temp	Test Temp	Initial Box	Final Box	Volume Box	I-I Temp	I-O Temp	F-I Temp	F-O Temp	Temp	Time	Delta H	Gamma
1	0.5	791.195	801.400	10.205	77.0	80.0	78.50	814.352	824.548	10.196	76.0	75.0	87.0	80.0	79.50	24.5	1.68394	1.00148
2	1.0	801.800	811.838	10.038	79.0	79.0	79.00	824.941	835.021	10.080	85.0	81.0	93.0	85.0	86.00	17.5	1.75808	1.00623
3	1.5	812.108	822.549	10.441	79.0	79.0	79.00	835.291	845.791	10.500	91.0	85.0	97.0	87.0	90.00	15.0	1.77777	1.01085
4	2.0	822.860	832.839	9.979	78.0	78.0	78.00	846.114	856.180	10.066	92.0	86.0	98.0	90.0	91.50	12.5	1.79047	1.01113
5	2.5	833.187	843.476	10.289	78.0	76.0	77.00	856.534	866.932	10.398	96.0	89.0	92.0	89.0	91.50	11.5	1.77527	1.00987
6	3.0	843.648	854.815	11.167	76.0	78.0	77.00	867.096	878.393	11.297	88.0	92.0	99.0	91.0	92.50	11.5	1.80523	1.00939

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 29 October 1992 Thermocouple No.: BX7 - #1

Ambient Temperature: 76 °F Barometric pressure: 28.81 "Hg

Calibrator: [illegible] Reference: Mercury-in-glass: HH71-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	201	0.50
		300	302	0.67
		400	400	0
		500	500	0
		600	601	0.17
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.12

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath

2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 29 October 1992 Thermocouple No.: BX7 - #2

Ambient Temperature: 76 °F Barometric pressure: 28.81 "Hg

Calibrator: D. Vecollio Reference: Mercury-in-glass: HI-TI-CAL-K

Other: ___

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	200	0
		300	301	0.33
		400	400	0
		500	500	0
		600	601	0.17
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.05

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath

2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

ITS, INC.

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 29 October 1992 Thermocouple No.: BX2 - #3

Ambient Temperature: 76 °F Barometric pressure: 28.81 "Hg

Calibrator: D. Vercellino Reference: Mercury-in-glass: HH71-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	201	0.50
		300	302	0.67
		400	400	0
		500	500	0
		600	601	0.17
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.12

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 29 October 1992 Thermocouple No.: BX7 - #4

Ambient Temperature: 76 °F Barometric pressure: 28.81 "Hg

Calibrator: D. Vicellio Reference: Mercury-in-glass: HH71-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	201	0.50
		300	301	0.33
		400	400	0
		500	500	0
		600	601	0.17
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.09

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 29 October 1992 Thermocouple No.: BK7 - #5

Ambient Temperature: 76 °F Barometric pressure: 28.81 "Hg

Calibrator: D. Vicollic Reference: Mercury-in-glass: HHDI-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	201	0.50
		300	302	0.67
		400	400	0
		500	500	0
		600	601	0.17
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.12

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
  2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 29 October 1992 Thermocouple No.: BX7 - #6

Ambient Temperature: 76 °F Barometric pressure: 28.81 "Hg

Calibrator: [illegible] Reference: Mercury-in-glass: HH71-CAL-K

Other: ________

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	200	0
		300	301	0.33
		400	400	0
		500	500	0
		600	600	0
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.03

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 29 October 1992 Thermocouple No.: BX7- #7

Ambient Temperature: 76 °F Barometric pressure: 28.81 "Hg

Calibrator: D. VanWie Reference: Mercury-in-glass: HH71-CAL-K

Other: ________

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	200	0
		300	300	0
		400	400	0
		500	499	0.20
		600	600	0
		700	700	0
		800	800	0
		900	900	0
			Average % difference	0.02

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

E T S , I N C .

METER CONSOLE CALIBRATION FORM

Contract No. 92-655
Job I.D.

Print Date 11/16/92

Meter Box No.: 7
Delta H: 1.8033
Gamma: 1.0139

Analyst: DV
Calibration Date: 11/16/92
Test Meter No. 9548
Barometric Pressure 29.19

Run	Orf Set	Initial Test	Final Test	Volume Test	Init Temp	Finl Temp	Test Temp	Initial Box	Final Box	Volume Box	I-I Temp	I-O Temp	F-I Temp	F-O Temp	Temp	Time	Delta H	Gamma
1	0.5	260.987	271.221	10.234	74.0	75.0	74.50	712.600	722.767	10.167	75.0	75.0	80.0	76.0	76.50	25.0	1.72548	1.00909
2	1.0	271.434	281.949	10.515	74.0	75.0	74.50	722.956	733.404	10.448	79.0	76.0	84.0	78.0	79.25	18.5	1.78096	1.01281
3	1.5	282.192	294.444	12.252	74.0	74.0	74.00	733.638	745.810	12.172	82.0	78.0	86.0	79.0	81.25	18.0	1.85239	1.01640
4	2.0	294.948	306.392	11.444	73.0	74.0	73.50	746.315	757.719	11.404	82.0	78.0	87.0	79.0	81.50	14.5	1.83276	1.01345
5	2.5	306.689	316.920	10.231	74.0	74.0	74.00	758.021	768.193	10.172	84.0	79.0	88.0	80.0	82.75	11.5	1.80222	1.01588
6	3.0	317.189	327.814	10.625	73.0	73.0	73.00	768.466	779.046	10.580	85.0	79.0	89.0	80.0	83.25	11.0	1.82612	1.01589

E.T.S. INC.
METER CONSOLE CALIBRATION FORM

Meter Box No........... 8 Barometric Pressure Pb .. 29.28
Test Meter Number ..... 9548 Date 22-Oct-92

Run Number	1	2	3	4	5	6	7	8	
Orifice Setting Delta H	0.50	1.00	1.50	2.00	2.50	3.00	4.00	5.00	
Final Reading - Test	665.423	682.161	693.450	704.367	715.882	730.243	745.792	757.138	
Initial Reading - Test	655.370	665.634	682.392	693.938	704.699	716.098	730.649	746.286	
Volume,Vt	10.053	16.527	11.058	10.429	11.183	14.145	15.143	10.852	
Temp, Tinitt	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	
Temp, Tfinal	75.0	74.0	73.0	74.0	73.0	73.0	74.0	73.0	
Temp, Test	74.5	74.0	73.5	74.0	73.5	73.5	74.0	73.5	
Final Reading - Box	139.026	155.752	167.049	177.956	189.462	203.808	219.296	230.564	
Initial Reading - Box	128.962	139.230	155.974	167.528	178.297	189.685	204.197	219.786	
Volume, Vb	10.064	16.522	11.075	10.428	11.165	14.123	15.099	10.778	
Temp, Initin	78.0	81.0	85.0	86.0	88.0	85.0	89.0	91.0	
Temp, Initout	76.0	78.0	80.0	81.0	82.0	82.0	82.0	83.0	
Temp, Tfinalin	78.0	86.0	88.0	89.0	91.0	91.0	94.0	94.0	
Temp, Finalout	81.0	80.0	81.0	81.0	82.0	82.0	83.0	83.0	
Temp, Tb	78.25	81.25	83.50	84.25	85.75	85.00	87.00	87.75	
Elapsed Time Et	25.00	29.50	16.50	13.50	13.00	15.00	14.00	9.00	
									AVERAGE
Delta Ha	1.77712	1.81756	1.89375	1.90127	1.90780	1.90773	1.92990	1.93495	1.8838
Gamma	1.00465	1.01134	1.01336	1.01420	1.01822	1.01550	1.01711	1.02094	1.0144

Calibration Performed By .......W.C.Hayes

Post Test Calibration-Contract #--------

Pre-Test Calibration-Contract #---------

Comments:

ETS, INC.

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 29 October 1992 Thermocouple No.: BX8 - #1

Ambient Temperature: 76 °F Barometric pressure: 28.81 "Hg

Calibrator: D Vecellio Reference: Mercury-in-glass: HH71-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	201	0.50
		300	303	1.00
		400	402	0.50
		500	502	0.40
		600	604	0.67
		700	704	0.57
		800	805	0.63
		900	905	0.56
			Average % difference	0.44

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: October 29, 1992 Thermocouple No.: BX8 - #2

Ambient Temperature: 76 °F Barometric pressure: 28.81 "Hg

Calibrator: D. Vicellio Reference: Mercury-in-glass: HH91-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	29	3.33
		100	99	1.00
		200	200	0
		300	302	0.67
		400	401	0.25
		500	501	0.20
		600	604	0.67
		700	704	0.57
		800	805	0.63
		900	906	0.67
			Average % difference	0.73

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 29 October 1992 Thermocouple No.: BX8 - #3

Ambient Temperature: 76 °F Barometric pressure: 28.81 "Hg

Calibrator: [illegible] Reference: Mercury-in-glass: HH71-CAL-K

Other: ____________

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	201	0.50
		300	302	0.67
		400	401	0.25
		500	501	0.20
		600	604	0.67
		700	700	0
		800	804	0.50
		900	905	0.56
			Average % difference	0.30

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

ETL, INC.

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 29 October 1992 Thermocouple No.: B18 - #4

Ambient Temperature: 76 °F Barometric pressure: 28.81 "Hg

Calibrator: D. Vicedelli Reference: Mercury-in-glass: HH71-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	201	0.50
		300	302	0.67
		400	401	0.25
		500	502	0.40
		600	604	0.67
		700	704	0.57
		800	805	0.63
		900	905	0.56
			Average % difference	0.39

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
  2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

DIA. INC.

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 29 October 1992 Thermocouple No.: BX8 - #5

Ambient Temperature: 76 °F Barometric pressure: 28.81 "Hg

Calibrator: D. Vecoltro Reference: Mercury-in-glass: HH71-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	101	1.00
		200	201	0.50
		300	302	0.67
		400	401	0.25
		500	501	0.20
		600	604	0.67
		700	704	0.57
		800	804	0.50
		900	905	0.56
			Average % difference	0.45

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 29 October 1992 Thermocouple No.: BX8 - #6

Ambient Temperature: 76 °F Barometric pressure: 28.81 "Hg

Calibrator: [illegible] Reference: Mercury-in-glass: A471-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	201	0.50
		300	303	1.00
		400	402	0.50
		500	502	0.40
		600	604	0.67
		700	705	0.71
		800	805	0.63
		900	906	0.67
			Average % difference	0.46

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F - thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

STL, INC.

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 29 October 1992 Thermocouple No.: BX8 - #7

Ambient Temperature: 76 °F Barometric pressure: 28.81 "Hg

Calibrator: D. Vacellio Reference: Mercury-in-glass: HH71-CAL-K

Other: ______

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		30	30	0
		100	100	0
		200	201	0.50
		300	303	1.00
		400	402	0.50
		500	501	0.20
		600	604	0.67
		700	704	0.57
		800	804	0.50
		900	905	0.56
			Average % difference	0.41

a Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

b Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F - thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

E T S , I N C .

METER CONSOLE CALIBRATION FORM

Contract No. 92-655
Job I.D.

Print Date 11/16/92

Meter Box No.: 8
Delta H: 1.9307
Gamma: 1.0064

Analyst: DV
Calibration Date: 11/16/92
Test Meter No. 9548
Barometric Pressure 29.28

Run	Orf Set	Initial Test	Final Test	Volume Test	Init Temp	Finl Temp	Test Temp	Initial Box	Final Box	Volume Box	I-I Temp	I-O Temp	F-I Temp	F-O Temp	Temp	Time	Delta H	Gamma
1	0.5	182.425	193.051	10.626	71.0	72.0	71.50	430.424	441.046	10.622	71.0	67.0	77.0	72.0	71.75	27.0	1.85671	0.99959
2	1.0	193.262	203.708	10.446	72.0	73.0	72.50	441.259	451.717	10.458	75.0	73.0	81.0	75.0	76.00	19.0	1.89483	1.00290
3	1.5	203.861	214.140	10.279	73.0	73.0	73.00	451.875	462.166	10.291	81.0	75.0	84.0	77.0	79.25	15.5	1.94538	1.00675
4	2.0	219.568	229.853	10.285	73.0	73.0	73.00	467.591	477.920	10.329	83.0	78.0	86.0	79.0	81.50	13.5	1.95719	1.00656
5	2.5	236.568	246.798	10.230	73.0	73.0	73.00	484.563	494.723	10.160	78.0	74.0	84.0	76.0	78.00	12.0	1.96658	1.00999
6	3.0	246.994	258.184	11.190	73.0	73.0	73.00	494.932	506.054	11.122	82.0	76.0	87.0	77.0	80.50	12.0	1.96323	1.01264

E T S , I N C .

METER CONSOLE CALIBRATION FORM

Contract No. 92-759
Job I.D.

Print Date 10/15/92

Meter Box No.: 17
Delta H: ~~12.048~~
Gamma: 1.0047

Analyst: DV
Calibration Date: 10/15/92
Test Meter No. 9548
Barometric Pressure 29.03

Run	Orf Set	Initial Test	Final Test	Volume Test	Init Temp	Finl Temp	Test Temp	Initial Box	Final Box	Volume Box	I-I Temp	I-O Temp	F-I Temp	F-O Temp	Temp	Time	Delta H	Gamma
1	0.0	298.762	299.082	0.320	73.0	77.0	75.00	56.398	56.732	0.334	72.0	72.0	86.0	86.0	79.00	30.5	37.1908	0.96523
2	0.0	299.087	299.945	0.858	76.0	77.0	76.50	56.738	57.613	0.875	86.0	86.0	98.0	98.0	92.00	30.5	15.9732	1.00884
3	0.0	299.948	301.500	1.552	76.0	77.0	76.50	57.621	59.230	1.609	97.0	97.0	104	104	100.5	30.0	8.50670	1.00762
4	0.1	303.932	307.230	3.298	78.0	80.0	79.00	61.747	65.183	3.436	105	105	109	109	107.0	30.0	4.74076	1.00944
5	0.1	307.284	311.576	4.292	79.0	80.0	79.50	65.230	69.697	4.467	108	108	111	111	109.5	30.0	3.03200	1.01397
6	0.2	311.597	317.061	5.464	79.0	80.0	79.50	69.716	75.362	5.646	109	109	112	112	110.5	30.0	2.84663	1.02293

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 27 Nov 90 Thermocouple No.: 1

Ambient Temperature: 64 °F Barometric pressure: 30.16 "Hg

Calibrator: [signature] Reference: Mercury-in-glass: HH71CAL

Other: B0417

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		32	31	3.125
		75	74	1.33
		100	99	1.0
		200	201	-.5
		300	301	-.33
		400	400	0
		500	500	0
			Average % difference	.786

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

ETS, INC.

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 27 Nov 90 Thermocouple No.: 2

Ambient Temperature: 64 °F Barometric pressure: 30.16 "Hg

Calibrator: [signature] Reference: Mercury-in-glass: HH71CAL

Other: BOX17

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		32	31	3.125
		75	74	1.33
		100	99	1.0
		200	200	.5
		300	301	.33
		400	400	0
		500	500	0
			Average % difference	.726

a Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

b Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

ETS, INC.

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 7 Nov 90 Thermocouple No.: 3

Ambient Temperature: 64 °F Barometric pressure: 30.16 "Hg

Calibrator: [signature] Reference: ~~Mercury-in-glass~~: HH71CLL

Other: 60' 17

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		32	31	3.125
		75	74	1.33
		100	99	1.0
		200	200	.5
		300	301	.33
		400	400	0
		500	500	0
			Average % difference	.786

a Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
2) Furnace

b Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

LTS, INC.

THERMOCOUPLE CALIBRATION DATA SHEET

Date: 27 Nov 90 Thermocouple No.: 4

Ambient Temperature: 64 °F Barometric pressure: 30.16 "Hg

Calibrator: [illegible] Reference: Mercury-in-glass: HH71CLC

Other: BOX 17

Reference point No.[a]	Source* (specify)	Reference thermometer temperature, °F	Thermocouple potentiometer temperature, °F	Difference,[b] %
		0	0	0
		32	31	3.125
		75	74	1.33
		100	99	1.0
		200	200	.5
		300	301	.33
		400	400	0
		500	500	0
			Average % difference	.786

[a] Every 100°F for each reference point when using furnace up to 500°F.

* Source: 1) Ice bath
  2) Furnace

[b] Percent difference ≤ 1.5%

$$\frac{\text{Ref. temp. °F} - \text{thermocouple temp. °F}}{\text{Ref. temp. °F}} \times 100$$

E T S , I N C .

METER CONSOLE CALIBRATION FORM

Contract No. 92-655
Job I.D.

Print Date 11/18/92

Meter Box No.: 17
Delta H: ~~10.953~~
Gamma: 0.9952

Analyst: dv
Calibration Date: 11/17/92
Test Meter No. 9548
Barometric Pressure 29.07

Run	Orf Set	Initial Test	Final Test	Volume Test	Init Temp	Finl Temp	Test Temp	Initial Box	Final Box	Volume Box	I-I Temp	I-O Temp	F-I Temp	F-O Temp	Temp	Time	Delta H	Gamma
1	0.0	327.911	328.255	0.344	73.0	75.0	74.00	102.281	102.638	0.357	72.0	72.0	85.0	85.0	78.50	30.0	31.0057	0.97169
2	0.0	328.262	329.117	0.855	73.0	75.0	74.00	102.642	103.560	0.918	84.0	93.0	84.0	93.0	88.50	30.0	15.4947	0.95661
3	0.0	329.494	331.065	1.571	70.0	75.0	72.50	103.900	105.474	1.574	68.0	84.0	68.0	84.0	76.00	30.0	8.54092	1.00455
4	0.1	331.072	334.413	3.341	73.0	74.0	73.50	105.481	108.893	3.412	84.0	96.0	84.0	96.0	90.00	30.0	4.65918	1.00921
5	0.1	334.433	339.258	4.825	74.0	75.0	74.50	108.913	113.905	4.992	95.0	104	95.0	104	99.50	34.0	3.07452	1.01147
6	0.2	339.286	344.638	5.352	74.0	76.0	75.00	113.933	119.481	5.548	102	107	102	107	104.5	30.0	2.94468	1.01743

71-V-11

Proof Record

6-92

NUTECH CORP. [redacted]
DURHAM, N.C.

	#1 5"	#2 5"	#3 5"	#4 5"	#5 5"		IN OPOF	IN CHDF		OUT CFOC	OUT CHOOF	
Company Meter Number	C	D	E	F	G	H	I	J	K	L	M	PURCHASE O
American DTM-115												PO# 9317
	Ave	Yds		Low Flow				High Flow				
M 900559				1.00				1.0004				
Overall Average Yds												.0007

102 S. Main Street ○ P.O. Box 997 ○ Huntersville, NC 28078 ○ (704) 875

71-V-12

WO# [illegible]

Proof Record

GRASEBY NUTECH

DURHAM, N.C.

	#1 Repair	#2 Repair	#3 Repair	#4 Repair	#5 Repair		IN PROOF OPEN	IN PROOF CHECK		OUT PROOF OPEN	OUT PROOF CHECK	DA[illegible]
Company Meter Number	C	D	E	F	G	H	I	J	K	L	M	PURCHASE
American DTM-115												PO# 93[illegible]
	Ave.	Yd=		Low	Flow			High	Flow			
M 900567				1.0010				1.0008				
Overall Average Yd=												1.0009

Measurement Controls, Inc.

102 S. Main Street • P.O. Box 997 Huntersville, NC 28078 • (704) [illegible]

E.T.S. Inc.

Environmental Testing Service

Pitot Tube Calibration Worksheet

Pitot Tube Identification # 7' #1 Date 9/8/92

Calibrated by DY, WL

DATA

delta P std	delta P "A"	delta P "B"	delta P std
.36	.50	.50	.35
.36	.50	.50	.34
.34	.50	.50	.35

	SIDE "A" CALIBRATION			
RUN NO.	delta P std (in. WATER)	delta P (s) (in. WATER)	Cp (s)	DEVIATION Cp(s) − $\overline{Cp}$(A)
1	0.355	0.50	0.8342	+ 0.0003
2	0.350	0.50	0.8367	+ 0.0028
3	0.345	0.50	0.8307	− 0.0032
		$\overline{Cp}$ (side A)	0.8339	

	SIDE "B" CALIBRATION			
RUN NO.	delta P std (in. WATER)	delta P (s) (in. WATER)	Cp (s)	DEVIATION Cp(s) − $\overline{Cp}$(B)
1	0.355	0.50	0.8342	+0.0003
2	0.350	0.50	0.8367	+0.0028
3	0.345	0.50	0.8307	−0.0032
		$\overline{Cp}$(side B)	0.8339	

Avg Dev Side "A" 0 (< 0.01)

Avg Dev Side "B" 0 (< 0.01)

$\overline{Cp}$(side A) − $\overline{Cp}$(side B) 0 (< 0.01)

Cp for pit # 0 0.8339

E.T.S. Inc.

Environmental Testing Service

Pitot Tube Calibration Worksheet

Pitot Tube Identification # 6' #1 Date 9/8/92

Calibrated by DV & WL

DATA

delta P std	delta P "A"	delta P "B"	delta P std
.36	.50	.50	.36
.36	.50	.50	.36
.36	.50	.50	.36

SIDE "A" CALIBRATION

RUN NO.	delta P std (in. WATER)	delta P (s) (in. WATER)	Cp (s)	DEVIATION Cp(s) - $\overline{Cp}$(A)
1	0.36	0.50	0.8400	0
2	0.36	0.50	0.8400	0
3	0.36	0.50	0.8400	0
		$\overline{Cp}$ (side A)	0.8400	

SIDE "B" CALIBRATION

RUN NO.	delta P std (in. WATER)	delta P (s) (in. WATER)	Cp (s)	DEVIATION Cp(s) - $\overline{Cp}$(B)
1	0.36	0.50	0.8400	0
2	0.36	0.50	0.8400	0
3	0.36	0.50	0.8400	0
		$\overline{Cp}$(side B)	0.8400	

Avg Dev Side "A" 0 (< 0.01)

Avg Dev Side "B" 0 (< 0.01)

$\overline{Cp}$(side A) - $\overline{Cp}$(side B) 0 (< 0.01)

Cp for pitot # 0.8400

E.T.S. Inc.

Environmental Testing Service

Pitot Tube Calibration Worksheet

Pitot Tube Identification #__1__ Date 9/10/92

Calibrated by __DV__

DATA

delta P std	delta P "A"	delta P "B"	delta P std
0.38	.53	.53	.38
0.38	.53	.53	.38
0.37	.53	.52	.38

SIDE "A" CALIBRATION

RUN NO.	delta P std (in. WATER)	delta P (s) (in. WATER)	Cp (s)	DEVIATION Cp(s) - $\bar{Cp}$(A)
1	0.38	0.53	0.8383	+0.0019
2	0.38	0.53	0.8383	+0.0019
3	0.375	0.53	0.8327	-0.0037
		$\bar{Cp}$ (side A)	0.8364	

SIDE "B" CALIBRATION

RUN NO.	delta P std (in. WATER)	delta P (s) (in. WATER)	Cp (s)	DEVIATION Cp(s) - $\bar{Cp}$(B)
1	0.38	0.53	0.8383	-0.0008
2	0.38	0.53	0.8383	-0.0008
3	0.375	0.52	0.8407	+0.0016
		$\bar{Cp}$(side B)	0.8391	

Avg Dev Side "A" __0__ (< 0.01)

Avg Dev Side "B" __0__ (< 0.01)

$\bar{Cp}$(side A) - $\bar{Cp}$(side B) __-0.003__ (< 0.01)

Cp for pitot # ____ 0.838

METER BOX CALIBRATION

METER BOX DATE AVG. Y = 1.0781 AVG. DELTA H = 1.8891

ORIFICE	0.5	0.5	1	1	2	2	4	4	6	6	8	8
CU.FT. WET	5	5	5	5	10	10	10	10	10	10	10	10
P BAR	29.7	29.7	29.7	29.7	29.7	29.7	29.7	29.7	29.7	29.7	29.7	29.7
CU.FT. DRY START	145.516	150.079	155.161	159.965	165.24	174.796	184.753	194.344	204.336	214.005	224.351	234.035
INLET-T DRY	84	90	98	102	108	110	116	117	118	118	118	118
OUTLET-T DRY	78	79	82	84	86	89	90	92	93	94	94	95
T WET	75	75	75	75	75	75	75	75	75	75	75	75
CU.FT. DRY FINISH	150.079	154.91	159.965	164.765	174.796	184.394	194.344	203.965	214.005	223.699	234.035	243.721
TIME MIN. SEC.	11.98 0	12.67 0	8.9 0	8.92 0	13.21 0	13.2 0	9.2 0	9.2 0	7.76 0	7.75 0	6.75 0	6.75 0
CUBIC FT. DIFFERENCE	4.563	4.831	4.804	4.8	9.556	9.598	9.591	9.621	9.669	9.694	9.684	9.686
T AVG.	81	84.5	90	93	97	99.5	103	104.5	105.5	106	106	106.5
Y	1.1067	1.0521	1.0673	1.0740	1.0841	1.0842	1.0865	1.0860	1.0776	1.0757	1.0713	1.0720
DELTA H	1.6299	1.8197	1.7859	1.7873	1.9528	1.9392	1.8805	1.8737	1.9960	1.9873	2.0100	2.0064

Date 7-31-92 Box No. RAC-6 Meter No.

Pump ✓

Pump oil ✓

Clean quick connects ✓ Valves ✓

Manometers ✓

Dry test meter ✓

Thermometers ✓

Lights ✓ Buzzer

Electrical check - Amphenol ✓ 110 V recept.

Variac

Vacuum guage

Leak check at 27" Hg. - Leakage = 0.005 C.F.M.

Remarks

METER BOX CALIBRATION

METER BOX RAC-8 DATE 8/11/92 AVG. Y = 0.9756 AVG. DELTA H = 1.9690

ORIFICE	0.5	0.5	1	1	2	2	4	4	6	6	8	8
CU.FT. WET	5	5	5	5	10	10	10	10	10	10	10	10
P BAR	29.68	29.68	29.68	29.68	29.68	29.68	29.68	29.68	29.86	29.86	29.86	29.86
CU.FT. DRY START	123.31	128.516	133.939	139.192	144.627	155.178	166.059	176.607	187.682	198.017	208.79	219.141
INLET-T DRY	90	92	96	96	98	99	102	102	87	96	99	102
OUTLET-T DRY	79	82	84	86	86	87	88	89	81	82	84	86
T WET	74	74	75	75	74	74	74	74	75	75	75	75
CU.FT. DRY FINISH	128.516	133.75	139.192	144.464	155.178	165.737	176.607	187.17	198.017	208.378	219.141	229.539
TIME MIN. SEC.	12 13.5	12 14	9 3.8	9 5	13 18	13 17	9 37	9 37	7 54	7 58	6 55	6 56
CUBIC FT. DIFFERENCE	5.206	5.234	5.253	5.272	10.551	10.559	10.548	10.563	10.335	10.361	10.351	10.398
T AVG.	84.5	87	90	91	92	93	95	95.5	84	89	91.5	94
Y	0.9781	0.9773	0.9761	0.9744	0.9749	0.9759	0.9757	0.9752	0.9699	0.9763	0.9767	0.9766
DELTA H	1.6890	1.6819	1.8465	1.8478	1.9734	1.9649	2.0559	2.0522	2.1032	2.1349	2.1378	2.1402

Date 8-11-92 Box No. RAC-8 Meter No.

Pump ✓

Pump oil ✓

Clean quick connects ✓ Valves ✓

Manometers ✓

Dry test meter ✓

Thermometers ✓

Lights ✓ Buzzer

Electrical check - Amphenol ✓ 110 V recept.

Variac ✓

Vacuum guage ✓

Leak check at 27" Hg. - Leakage = 0.00 C.F.M.

Remarks REPLACED PUMP SWITCH

METER BOX CALIBRATION

METER BOX RAC-9 DATE 8/4/92 AVG. Y = 1.0796 AVG. DELTA H = 1.6312

ORIFICE	0.5	0.5	1	1	2	2	4	4	6	6	8	8
CU.FT. WET	5	5	5	5	10	10	10	10	10	10	10	10
P BAR	29.64	29.64	29.64	29.64	29.64	29.64	29.64	29.64	29.64	29.64	29.64	29.64
CU.FT. DRY START	112.744	117.222	121.936	126.692	131.401	141.219	151.079	160.98	170.947	180.934	190.853	211.214
INLET-T DRY	88	95	102	107	118	122	132	138	137	132	136	142
OUTLET-T DRY	75	80	85	88	94	98	101	104	106	106	108	110
T WET	77	77	77	77	77	77	77	77	77	77	77	77
CU.FT. DRY FINISH	117.222	121.936	126.692	131.401	141.219	151.079	160.98	170.947	180.934	190.853	200.788	221.197
TIME MIN.. SEC.	11.12 0	11.35 0	8.18 0	8.33 0	12.25 0	12.25 0	8.58 0	9.01 0	7.29 0	7.24 0	6.28 0	6.29 0
CUBIC FT. DIFFERENCE	4.478	4.714	4.756	4.709	9.818	9.86	9.901	9.967	9.987	9.919	9.935	9.983
T AVG.	81.5	87.5	93.5	97.5	106	110	116.5	121	121.5	119	122	126
Y	1.1245	1.0801	1.0809	1.0996	1.0682	1.0712	1.0736	1.0749	1.0687	1.0714	1.0697	1.0718
DELTA H	1.4257	1.4715	1.5146	1.5621	1.6708	1.6588	1.6188	1.7757	1.7375	1.7137	1.7131	1.7126

Date 8-4-92 Box No. RAC-9 Meter No.

Pump ✓

Pump oil ✓

Clean quick connects ✓ Valves ✓

Manometers ✓

Dry test meter ✓

Thermometers

Lights ✓ Buzzer

Electrical check - Amphenol ✓ 110 V recept.

Variac ✓

Vacuum guage ✓

Leak check at 27" Hg. - Leakage = 0.0 C.F.M.

Remarks

METER BOX CALIBRATION

METER BOX RAC-7 DATE 8/6/92 AVG. Y = 1.0118 AVG. DELTA H = 1.9757

ORIFICE	0.5	0.5	1	1	2	2	4	4	6	6	8	8
CU.FT. WET	5	5	5	5	10	10	10	10	10	10	10	10
P BAR	29.92	29.92	29.92	29.92	29.92	29.92	29.92	29.92	29.92	29.92	29.92	29.92
CU.FT. DRY START	528.049	533.042	538.174	543.215	560.401	570.833	581.289	591.713	602.123	612.552	623.039	633.522
INLET-T DRY	86	95	104	104	113	114	120	120	122	123	124	124
OUTLET-T DRY	76	83	88	92	98	100	102	102	104	104	105	106
T WET	74	74	74	74	74	74	74	74	74	73	73	73
CU.FT. DRY FINISH	533.042	538.174	543.215	548.452	570.833	581.289	591.713	602.123	612.552	623.039	633.522	643.947
TIME MIN. SEC.	12.4 0	12.73 0	9.01 0	9.54 0	13.6 0	13.51 0	9.75 0	9.73 0	8.03 0	8 0	7.07 0	7 0
CUBIC FT. DIFFERENCE	4.993	5.132	5.041	5.237	10.432	10.456	10.424	10.41	10.429	10.487	10.483	10.425
T AVG.	81	89	96	98	105.5	107	111	111	113	113.5	114.5	115
Y	1.0133	1.0004	1.0302	0.9952	1.0102	1.0105	1.0158	1.0172	1.0143	1.0114	1.0084	1.0149
DELTA H	1.7334	1.8033	1.7902	1.9925	2.0029	1.9694	2.0442	2.0358	2.0724	2.0493	2.1303	2.0846

Date 8-6-92 Box No. RAC-7 Meter No.

Pump ✓

Pump oil ✓

Clean quick connects ✓ Valves

Manometers ✓

Dry test meter ✓

Thermometers ✓

Lights ✓ Buzzer

Electrical check - Amphenol ✓ 110 V recept.

Variac ✓

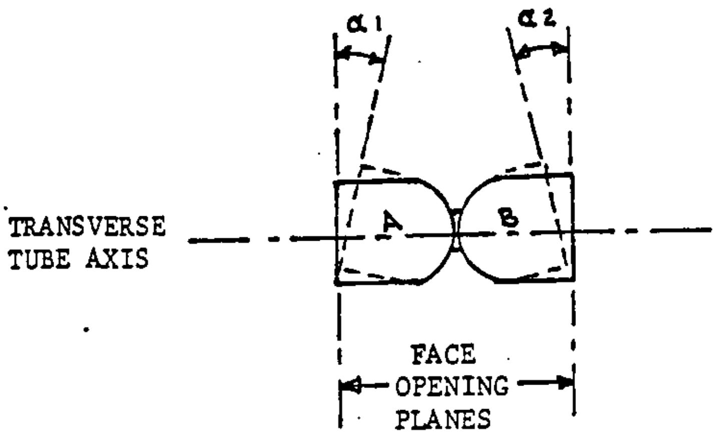
Vacuum quage ✓

Leak check at 27" Hg. - Leakage = ~0.002 C.F.M.

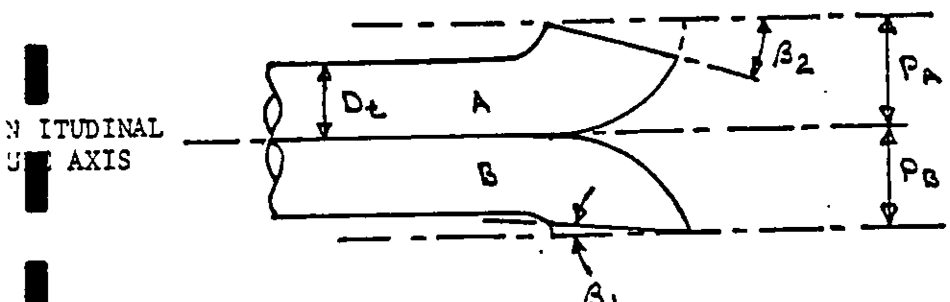
Remarks REPLACED MANOMETER ADJUSTER

S-TYPE PITOT GEOMETRIC CALIBRATION

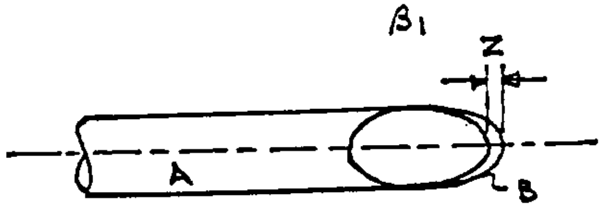
PITOT IDENTIFICATION D-2
DATE 10-7-92
CALIBRATED BY JWB



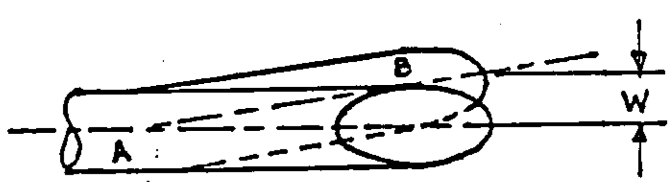
α_1 & $\alpha_2 < 10°$



$1.05\ D_t \leq P \leq 1.50\ D_t$
$P_A = P_B$
β_1 & $\beta_2 < 5°$



Z < 1/8" (0.32 cm)



W < 1/8" (0.32 cm)

MEASURED VALUES

	α_1	α_2	β_1	β_2	P_A	P_B	Z	W
	3°	2°	0°	0°	17/32"	17/32"	1/16"	1/32"
L? SPEC.	✓	✓	✓	✓	✓	✓	✓	✓
T SPEC.								

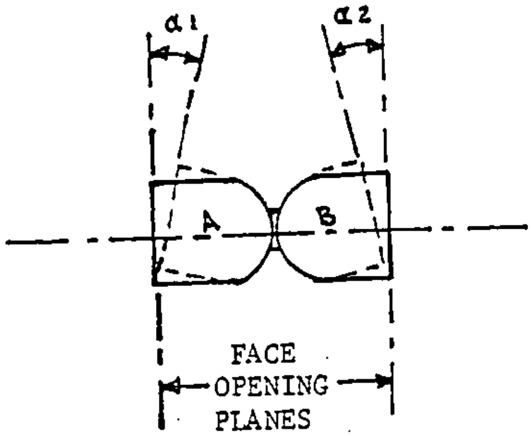
S-TYPE PITOT GEOMETRIC CALIBRATION

PITOT IDENTIFICATION E

DATE 10-7-92

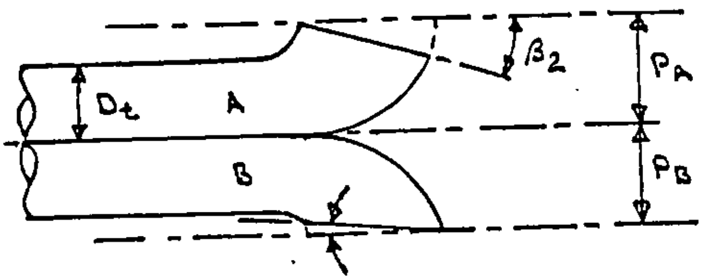
CALIBRATED BY JWB

TRANSVERSE TUBE AXIS



α_1 & α_2 < 10°

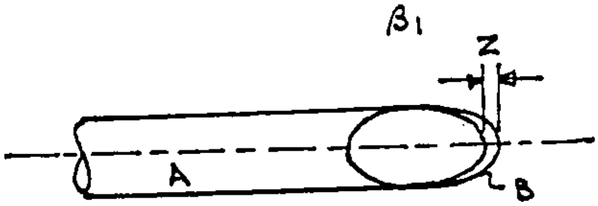
LONGITUDINAL TUBE AXIS



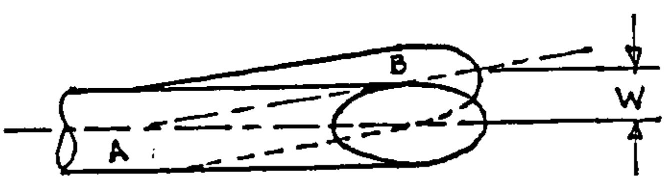
$1.05\ D_t \leq P \leq 1.50\ D_t$

$P_A = P_B$

β_1 & β_2 < 5°



Z < 1/8" (0.32 cm)



W < 1/8" (0.32 cm)

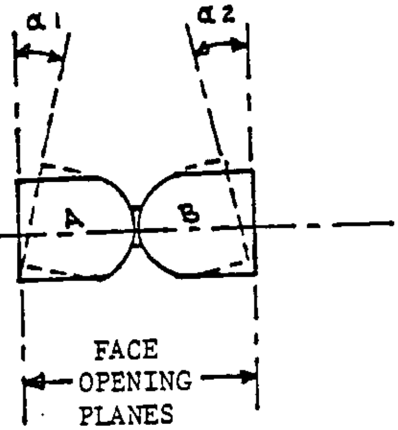
MEASURED VALUES

	α_1	α_2	β_1	β_2	P_A	P_B	Z	W
VALUE	4°	0°	0°	0°	13/32"	13/32"	1/32"	0
IN SPEC.	✓	✓	✓	✓	✓	✓	✓	✓
OUT SPEC.								

S-TYPE PITOT GEOMETRIC CALIBRATION

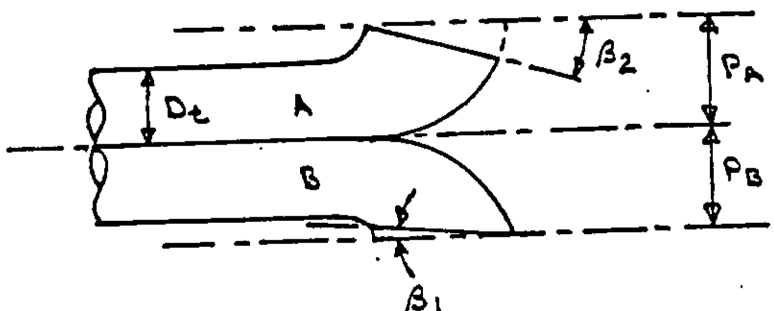
PITOT IDENTIFICATION D-1
DATE 10-7-92
CALIBRATED BY JWB

TRANSVERSE TUBE AXIS

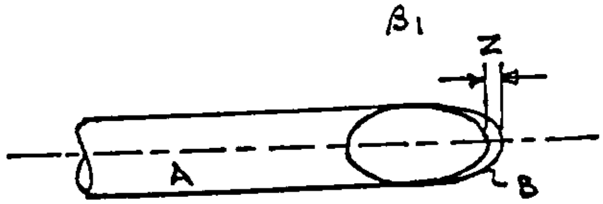


α_1 & $\alpha_2 < 10°$

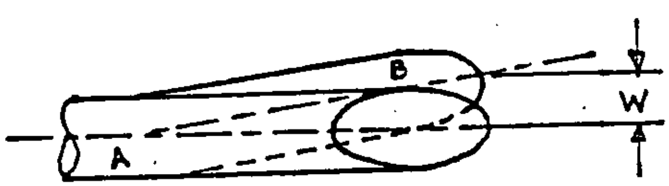
LONGITUDINAL TUBE AXIS



$1.05\ D_t \leq P \leq 1.50\ D_t$
$P_A = P_B$
β_1 & $\beta_2 < 5°$



$Z < 1/8''$ (0.32 cm)



$W < 1/8''$ (0.32 cm)

MEASURED VALUES

	α_1	α_2	β_1	β_2	P_A	P_B	Z	W
E	0°	3°	1°	0°	7/16"	7/16"	1/32"	0
N SPEC.	✓	✓	✓	✓	✓	✓	✓	✓
UT SPEC.								

Date 10/16/92 Meter box number EGR #1 (yellow)

bagging

Barometric pressure, P_b = 29.80 in. Hg Calibrated by Roy

Orifice manometer setting (ΔH), in. H_2O	Gas volume: Wet test meter (V_w), ft^3	Gas volume: Dry gas meter (V_d), ft^3	Temperatures: Wet test meter (t_w), °F	Dry gas meter: ~~Inlet (t_{d_i})~~, ~~°F~~ ΔP	Dry gas meter: ~~Outlet (t_{d_o})~~, ~~°F~~ Inlet prs	Dry gas meter: Avg[a] (t_d), °F	Time (Θ), min	Y_i	$ΔH@_i$, in. H_2O
0.5	83	111.408 ~~111.163~~ 114.469	.72	.77	1.2	78	17.4	.9899	- -
1.0	83	117.530	↓	1.03	2.0	80	12.5	.9936	
1.5	105	122.635		1.25	2.8	81	17.48	.9935	
2.0	105	127.748		1.45	3.7	82	15.2	.9938	
3.0	105	132.878		1.79	5.2	83	12.6	.9899	
4.0	105	137.99		2.05	6.7	83	10.9	.9934	
	P_b = 29.75 @ end						Avg	.99236	

ΔH, in. H_2O	$\frac{\Delta H}{13.6}$	$Y_i = \frac{V_w P_b(t_d + 460)}{V_d(P_b + \frac{\Delta H}{13.6})(t_w + 460)}$	$\Delta H@_i = \frac{0.0317\ \Delta H}{P_b(t_d + 460)}\left[\frac{(t_w + 460)\ \theta}{V_w}\right]^2$
0.5	0.0368	~~.9789~~ .9899	9.4126 ✓
1.0	0.0737	.9887	9.6794 9.693
1.5	0.110	.9923	10.2202 [illegible]
2.0	0.147	.9914	10.267 [illegible]
3.0	0.221		10.577
4.0	0.294		[illegible].528 Avg [illegible]

[a] If there is only one thermometer on the dry gas meter, record the temperature under t_d.

Figure 2.3A Dry gas meter calibration data (English units). (front side)

LFE CALIBRATION SHEET USING WET TEST METER

LFE I.D. #1
DATE: 10/20/92
OPERATOR: REM

This calibration uses the fit:

$$Q_{LFE} = X\,\Delta P\left(\frac{\mu_{STD}}{\mu_{LFE}}\right) + Y$$

where: Q = LFE flowrate
ΔP = pressure drop
M_{LFE} = Gas viscosity at LFE
X,Y = Calibration constants

BAROMETRIC PRESSURE (In Hg) = 30.14

TEMPERATURES (°F):
Ambient = 64
LFE = 72 - 87 = 78 AVG

VISCOSITY (STD) = 180.1 micropoise

VISCOSITY (LFE) = $163.526 + 0.2552\,(T_{LFE}) + 3.2355 \times 10^{-5}\,(T_{LFE})^2$

= 183.6 micropoise (Note: For T_{LFE} in °F)

RUN	WTM VOLUME (Ft^3)	TIME (min)	Recycle DP LFE (In H_2O)	DP System (In H_2O)	Q WTM (ACFM)	Q LFE (ACFM)	Inlet Total LFE
1	3	66.5	.5	.1	.0451	.0451	.0373 .5
2	3	36.75	1.0	~~.8~~ .5	0.0816	—	2.0
3	3	~~16.28~~ 26.25	1.5	.5	0.1142	—	
4	3	17.5	2.0	.65	0.1714	.1713	2.5 .1665
5	3	11.5	3.0	1.1	0.2609	.2589	5.5 .25..
6	3.2	9.25	4.0	1.5	0.3459		7.5
7							
8							

NOTE: D_p system is the pressure differential between the LFE inlet and ambient.

$$Q_{LFE} = \left[\frac{V_{(WTM)}}{Time}\right]\left[\frac{P_{AMB}}{P_{AMB} + (\frac{DP\ syst}{13.6})}\right]\left[\frac{(T_{LFE} + 460)}{(T_{WTM} + 460)}\right]$$

Calibration Results: X = .0878054 Y = -.005761

$Q = X\,\Delta P\left(\frac{\mu}{\mu}\right) - \ldots$

$R^2 = 0.997$
slope b = .089517
intercept a = -0.005797

DRY GAS METER/ORIFICE
(STANDARD: TEST METER)
CALIBRATION SHEET

Sheet I.D.____

Dry Gas Meter I.D. EGR#1 Standard Test Meter I.D. ________
Barometric Pressure, P_B 30.23 in. Hg; Orifice I.D. ________
Calibrated by: ________ Date: 11/9 Leak Check: ok

Run #	1	2	3	4	
Orifice Setting, ΔH	.5	.5	1.0	1.5	
Final Reading (STM)	3.0	6.0	9.0	2.0	
Initial Reading (STM)	0	3.0	6.0	9.0	
Volume V_T, ft^3					
Temp T_T, °F	63	64	65	66	
ΔP_T, in. H_2O	.8	.8	1.1	1.3	
Final Reading (DGM)	354.017	357.083	360.15	363.22	
Initial Reading (DGM)	350.971	354.017	357.083	360.15	
Volume V_{DGM}, ft^3					
Temp T_{DGM}, °F	70/72	72/73	74/75	75/76	
Elapsed Time θ, min.	17.30sec	17m10s	12m36s	10m24s	
DGM Flow Rate Q, acfm					
$\alpha = \left[\frac{\Delta H (T_{DGM}+460)}{(P_B+\frac{\Delta H}{13.6}) MW_D}\right]$					Avg
$\Delta H@_i$	9.[illegible]	8.5780	8.[illegible]600	9.[illegible]57	9.1261
Correction Factor, Y_i	1.0057	.9941	.9952	.9934	.9956
% Error = $(\frac{\bar{Y}}{Y_i} - 1)$ 100%					

Previous Calibration:
Date: 10/16/92
Old Y [illegible]

Orifice ΔH from:
✓ Manometer
___ Magnehelic
Zero ✓

Equipment Set Up:
___ Positive Pressure
(M5 w/leakless pump)
✓ Other

Inlet total LFE

1	2	3	4
2.5	2.5	4	5.3

T_{LFE}
78

$$\Delta H@ = \frac{(0.0317)\Delta H}{P_B (T_{DGM}+460)} \left[\frac{(T_T+460)}{V_T}\theta\right]^2; \quad Y = \frac{V_T (P_B + \frac{\Delta P_T}{13.6})(T_{DGM}+460)}{V_{DGM}(P_B + \frac{\Delta H}{13.6})(T_T+460)}$$

Deviation = $\left(\frac{\bar{Y}_{new} - \bar{Y}_{previous}}{\bar{Y}_{previous}}\right)$ 100% = 0.3% Note: Must be within ±5%.

Note: Y_i criteria (±2%); (MW_D is Dry molecular weight (28.97 for Standard air). If a Laminar Flow Element is substituted for the Standard Test Meter the STM columns may be used to record ΔP_{LFE} (in. H_2O) and ΔP_{SYS} (gauge pressure at orifice inlet, in. H_2O) if different from ΔH. For a Positive Pressure equipment arrangement $\Delta P_{SYS} = \Delta H$.

((

DRY GAS METER/ORIFICE
(STANDARD: TEST METER)
CALIBRATION SHEET

Sheet I.D.____

EGR#3

Dry Gas Meter I.D.__________ Standard Test Meter I.D.__________
Barometric Pressure, P_B 30.13 in. Hg; Orifice I.D. __________
Calibrated by: [illegible] Date: 10/20/92 Leak Check: OK

Run #	1	2	3	4
Orifice Setting, ΔH	.5	1.0	1.5	2.0
Final Reading (STM)	[illegible]	–	–	10.00
Initial Reading (STM)	0	–	–	5.08
Volume V_T, ft^3	[illegible]	3	5.08	4.92
Temp T_T, °F	75	74	74	75
ΔP_T, in. H_2O	.78	1.2	1.45	1.60
Final Reading (DGM)	116.804	119.738	124.834	129.626
Initial Reading (DGM)	113.870	116.804	119.855	124.834
Volume V_{DGM}, ft^3	2.934	2.934	4.949	4.7920
Temp T_{DGM}, °F	74	74	75	76
Elapsed Time θ, min.	15:44	11:16	15:45	13:03
DGM Flow Rate Q, acfm				
$\alpha = \left[\frac{\Delta H (T_{DGM}+460)}{(P_B+\frac{\Delta H}{13.6}) MW_D}\right]$				
$\Delta H@_i$	7.771	7.959	8.116	7.905
Correction Factor, Y_i	1.0213	1.021	1.0283	1.0296
% Error = $(\frac{\bar{Y}}{Y_i} - 1)$ 100%				

Avg: $\Delta H@$ ____ ; Y ____

Previous Calibration:
Date:__________
Old γ __________

Orifice ΔH from:
____ Manometer
____ Magnehelic
Zero __________

Equipment Set Up:
____ Positive Pressure
(M5 w/leakless pump)
____ Other

.5 I [illegible] 4.8
1.0
1.5 6.7
2.0 8.5

$$\Delta H@ = \frac{(0.0317)\Delta H}{P_B (T_{DGM}+460)} \left[\frac{(T_T+460)}{V_T}\,\theta\right]^2; \quad Y = \frac{V_T (P_B + \frac{\Delta P_T}{13.6})(T_{DGM}+460)}{V_{DGM}(P_B + \frac{\Delta H}{13.6})(T_T+460)}$$

Deviation = $\left(\frac{\bar{Y}_{new} - \bar{Y}_{previous}}{\bar{Y}_{previous}}\right)$ 100% = __________ Note: Must be within ±5%.

Note: Y_i criteria (±2%); (MW_D is Dry molecular weight (28.97 for Standard air). If a Laminar Flow Element is substituted for the Standard Test Meter the STM columns may be used to record ΔP_{LFE} (in. H_2O) and ΔP_{SYS} (gauge pressure at orifice inlet, in. H_2O) if different from ΔH. For a Positive Pressure equipment arrangement $\Delta P_{SYS} = \Delta H$.

Sheet I.D.____

DRY GAS METER/ORIFICE
(STANDARD: TEST METER)
CALIBRATION SHEET

Dry Gas Meter I.D.______________ Standard Test Meter I.D. EGR#3
Barometric Pressure, P_B 30.13 in. Hg; Orifice I.D. ____________
Calibrated by: Roy Date: 10/20/92 Leak Check: ok

Run #	1	2	3	4	
Orifice Setting, ΔH	3.0	4.0			
Final Reading (STM)	–	–			
Initial Reading (STM)	–	–			
Volume V_T, ft^3	5.05	5.00			
Temp T_T, °F	75	76			
ΔP_T, in. H_2O	2.0	2.3			
Final Reading (DGM)	134.527	139.349			
Initial Reading (DGM)	129.626	134.527			
Volume V_{DGM}, ft^3	4.901	4.822			
Temp T_{DGM}, °F	78	77			
Elapsed Time θ, min.	10.33	9.00			
DGM Flow Rate Q, acfm					
$\alpha = \left[\frac{\Delta H (T_{DGM}+460)}{(P_B+\frac{\Delta H}{13.6}) MW_D}\right]$					Avg
$\Delta H@_i$	7.329	7.295			7.729
Correction Factor, γ_i	1.0337	1.0346			1.028
% Error $= (\frac{\bar{\gamma}}{\gamma_i} - 1)$ 100%					

Previous Calibration:
Date: ____________
Old γ ____________

Orifice ΔH from:
____ Manometer
____ Magnehelic
Zero ____________

Equipment Set Up:
____ Positive Pressure
____ (M5 w/leakless pump)
____ Other

3.0 inlet total LFE - 12.5
4.0 160

$$\Delta H@ = \frac{(0.0317)\Delta H}{P_B(T_{DGM}+460)}\left[\frac{(T_T+460)}{V_T}\theta\right]^2; \quad \gamma = \frac{V_T(P_B+\frac{\Delta P_T}{13.6})(T_{DGM}+460)}{V_{DGM}(P_B+\frac{\Delta H}{13.6})(T_T+460)}$$

Deviation $= \left(\frac{\bar{\gamma}_{new} - \bar{\gamma}_{previous}}{\bar{\gamma}_{previous}}\right) 100\% =$ ____________ Note: Must be within ±5%.

Note: γ_i criteria (±2%); (MW_D is Dry molecular weight (28.97 for Standard air). If a Laminar Flow Element is substituted for the Standard Test Meter the STM columns may be used to record ΔP_{LFE} (in. H_2O) and ΔP_{SYS} (gauge pressure at orifice inlet, in. H_2O) if different from ΔH. For a Positive Pressure equipment arrangement $\Delta P_{SYS} = \Delta H$.

LFE CALIBRATION SHEET USING WET TEST METER

LFE I.D. Recycle LFE #3
DATE: 10/21
OPERATOR: Kry

BAROMETRIC PRESSURE (In Hg) = 30.12

TEMPERATURES (°F):
Ambient = 73
LFE = 72

This calibration uses the fit:

$$Q_{LFE} = X\,\Delta P \left(\frac{\mu_{STD}}{\mu_{LFE}}\right) + Y$$

where: Q = LFE flowrate
ΔP = pressure drop
M_{LFE} = Gas viscosity at LFE
X,Y = Calibration constants

VISCOSITY (STD) = 180.1 micropoise

VISCOSITY (LFE) = $163.526 + 0.2552\,(T_{LFE}) + 3.2355 \times 10^{-5}\,(T_{LFE})^2$

= 182.07 micropoise (Note: For T_{LFE} in °F)

inlet ~~trail~~

RUN LFE Temp	WTM VOLUME (Ft³)	TIME (min)	Recycle DP LFE (In H₂O)	LFE DP System (In H₂O)	Q WTM (ACFM)	Q LFE (ACFM)	ΔP total LFE
1 73-76	2.86	51.3	0.5	0.8	.0558	.0555	.2
2 76-79	3.00	29.43	1.0	1.7			.4
3 79 78	8.3	55.00	1.5	2.6			.6
4 81	7.0	36.3	2.0	3.7			.81
5 83-87	3.25	11.0	3.0	5.7			1.25
6 87-92	7.69	14.0	4.0	8.2			1.65
7							
8							

NOTE: D_p system is the pressure differential between the LFE inlet and ambient.

$$Q_{LFE} = \left[\frac{V_{(WTM)}}{Time}\right]\left[\frac{P_{AMB}}{P_{AMB} + \left(\frac{DP\ syst.}{13.6}\right)}\right]\left[\frac{(T_{LFE} + 460)}{(T_{WTM} + 460)}\right]$$

Calibration Results: X = ________ Y = ________

AP-42 Section 11.3
Reference 11 (Vol. 4)

FINAL TEST REPORT

APPENDIX J

FOR

USEPA TEST PROGRAM

CONDUCTED AT

PINE HALL BRICK PLANT
MADISON, NORTH CAROLINA

USEPA CONTRACT NO. 68-D2-0029

EMB WORK ASSIGNMENT 6

AUGUST 1993

ETS CONTRACT NO. 92-655

APPENDIX J.0

MISCELLANEOUS METHODS NOT CONTAINED IN CFR 40

APPENDIX J.1

METHOD 29

DETERMINATION OF METALS EMISSIONS FROM STATIONARY SOURCES

RECEIVED MAR 2 4 1993

It is proposed that 40 CFR Parts 60 and 61 be amended as follows:

1. The authority citations for Parts 60 and 61 continue to read as follows:

42 U.S.C. 7401, 7411, 7412, 7414, 7416, and 7601.

2. In Part 60, by adding Method 29 to Appendix A as follows:

Appendix A - Test Methods

* * * * *

Method 29 - Determination of Metals Emissions from Stationary Sources

1. Applicability and Principle

1.1 Applicability. This method is applicable to the determination of total chromium (Cr), cadmium (Cd), arsenic (As), nickel (Ni), manganese (Mn), beryllium (Be), copper (Cu), zinc (Zn), lead (Pb), selenium (Se), phosphorus (P), thallium (Tl), silver (Ag), antimony (Sb), barium (Ba), and mercury (Hg) emissions from stationary sources This method may also be used for determining particulate emissions when the prescribed procedures and precautions are followed. Changes in the procedures to further facilitate particulate determination may affect the front-half mercury determination.

1.2 Principle. A stack sample is withdrawn isokinetically from the source, with particulate emissions collected in the probe and on a heated filter and gaseous emissions collected in solutions of acidic hydrogen peroxide and acidic potassium permanganate. The recovered samples are digested, and appropriate fractions are analyzed for mercury by cold vapor atomic absorption spectroscopy (CVAAS) and for Cr, Cd, Ni, Mn, Be, Cu, Zn, Pb, Se, P, Tl, Ag, Sb, Ba, and As by inductively coupled argon plasma emission spectroscopy (ICAP) or atomic absorption spectroscopy (AAS). Graphite furnace atomic absorption spectroscopy (GFAAS) is used for analysis of Sb, As, Dc, Pb, Se, and Tl if these elements require greater analytical sensitivity than can be obtained by ICAP. Additionally, if desired, the tester may use AAS for analysis of all metals if the resulting in-stack method detection limits meet the goal of the testing program.

2. Range, Sensitivity, Precision, and Interferences

2.1 Range. For the analysis described and for similar analyses, the ICAP response is linear over several orders of magnitude. Samples containing metal concentrations in the nanograms per ml (ng/ml) to micrograms per ml (μg/ml) range in the final analytical solution can be analyzed using this method. Samples containing greater than approximately 50 μg/ml Cr, Pb, or As should be diluted to that level or lower for final analysis. Samples containing greater than approximately 20 μg/ml of Cd should be diluted to that level before analysis.

2.2 Analytical Sensitivity. ICAP analytical detection limits for the sample solutions (based on <u>SW-846</u>, Method 6010) are approximately as follows: Sb (32 ng/ml), As (53 ng/ml), Ba (2 ng/ml), Be (0.3 ng/ml), Cd (4 ng/ml), Cr (7 ng/ml), Cu (6 ng/ml), Pb (42 ng/ml), Mn (2 ng/ml), Ni (15 ng/ml), P (75 ng/ml), Se (75 ng/ml), Ag (7 ng/ml), Tl (40 ng/ml), and Zn (2 ng/ml). The actual method detection limits are sample dependent and may vary as the sample matrix may affect the limits. The analytical detection limits for analysis by direct aspiration AAS (based on SW-846, Method 7000 series) are approximately as follows: Sb (200 ng/ml), As (2 ng/ml), Ba (100 ng/ml), Be (5 ng/ml), Cd (5 ng/ml), Cr (50 ng/ml), Cu (20 ng/ml), Pb (100 ng/ml), Mn (10 ng/ml), Ni (40 ng/ml), Se (2 ng/ml), Ag (10 ng/ml), Tl (100 ng/ml), and Zn (5 ng/ml). The detection limit for mercury by CVAAS is approximately 0.2 ng/ml. The use of GFAAS can give added sensitivity compared to direct aspiration AAS for the following metals: Sb (3 ng/ml), As (1 ng/ml), Be (0.2 ng/ml), Cd (0.1 ng/ml), Cr (1 ng/ml), Pb (1 ng/ml), Se (2 ng/ml), and Tl (1 ng/ml).

2.3 In-stack Detection Limit.

2.3.1 Using (1) the procedures described in this method, (2) the analytical detection limits described in the previous paragraph, (3) a volume of 300 ml (Fraction 1) for the front-half and 150 ml (Fraction 2A) for the back-half samples, and (4) a stack gas sample volume of 1.25 m^3, the corresponding in-stack method detection limits are presented in Table 29-1 and calculated using Eq. 29-1.

$$A \times B/C = D \qquad \text{Eq. 29-1}$$

where:

A = Analytical detection limit, μg/ml.

B = Volume of sample prior to aliquotting for analysis, ml.

C = Stack sample volume, dsm^3.

D = In-stack detection limit, $\mu g/m^3$.

Values in Table 29-1 are calculated for the front- and back-half and/or the total train.

2.3.2 To ensure optimum sensitivity in the measurements, the concentrations of target metals in the solutions are suggested to be at least ten times the analytical detection limits. Under certain conditions, and with greater care in the analytical procedure, this concentration can be as low as approximately three times the analytical detection limit. In all cases, on at least one sample (run) in the source test and for each metal analyzed, repetitive analyses, method of standard additions (MSA), serial dilution, or matrix spike addition, etc., shall be used to establish the quality of the data.

2.3.3 Actual in-stack method detection limits will be determined based on actual source sampling parameters and analytical results as described above. If required, the method in-stack detection limits can be made more sensitive than those shown in Table 29-1 for a specific test by using one or more of the following options:

2.3.4 A 1-hour sampling run may collect a stack gas sampling volume of about 1.25 m^3. If the sampling time is increased and 5 m^3 are collected, the in-stack method detection limits would be one fourth the values shown in Table 29-1 (with this change, the method is four times more sensitive than a 1-hour run. Larger sample volumes (longer runs) would make it even more sensitive.

2.3.5 The in-stack detection limits assume that all of the sample is digested (except the aliquot for mercury) and the final liquid volumes for analysis are 300 ml (Fraction 1) for the front-half and 150 ml (Fraction 2A) for the back-half sample. If the front-half volume is reduced from 300 to 30 ml, the front-half in-stack detection limits would be one tenth the values shown above (ten times more sensitive). If the back-half volume is reduced from 150 to 25 ml, the in-stack detection limits would be one sixth the above values. Matrix effect checks are necessary on sample analyses and typically are of greater significance for samples that have been concentrated to less than the normal original sample volume. Reduction to a volume of less than 25 ml may not allow redissolving of the residue and may increase interference by other compounds.

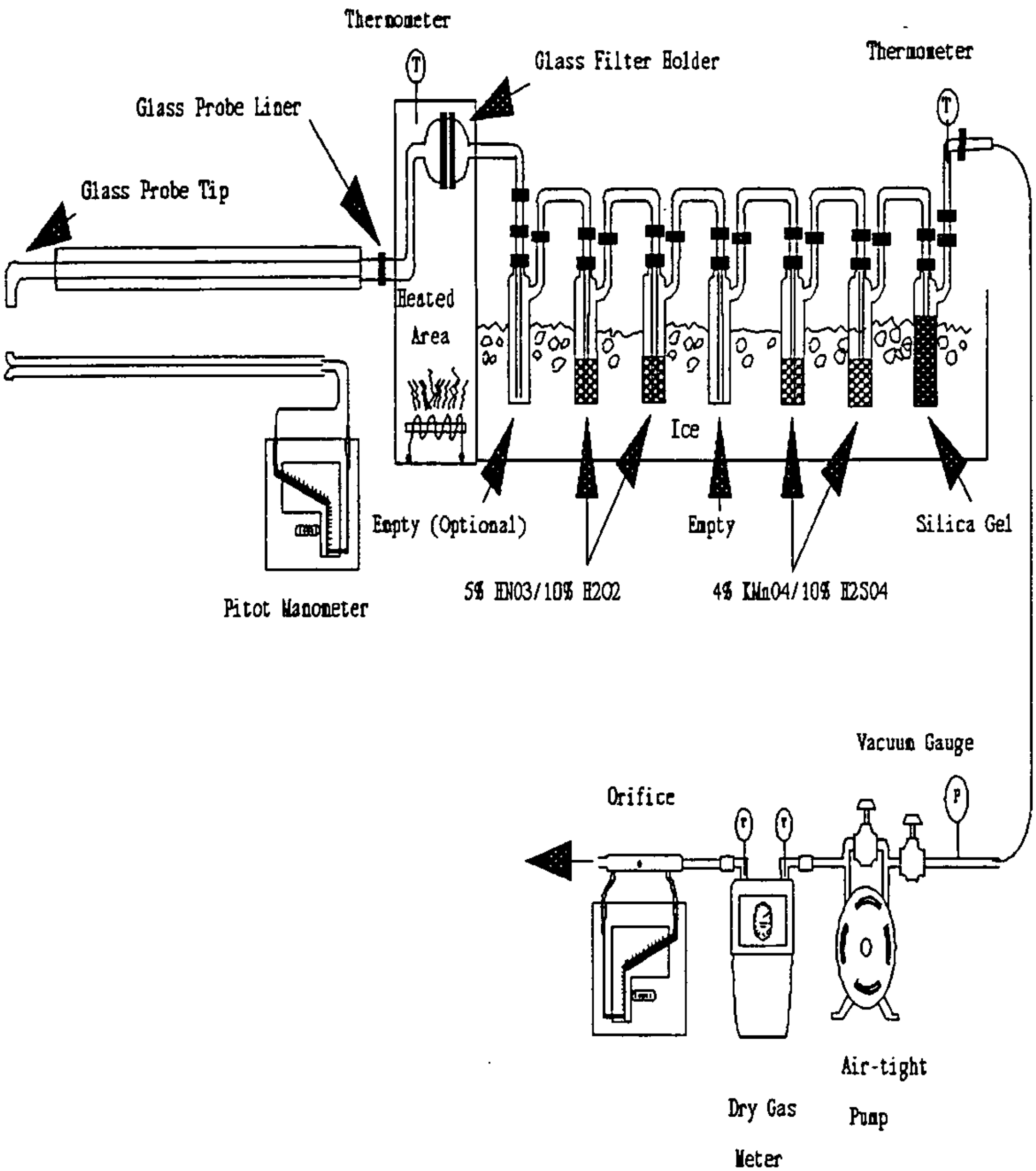
2.3.6 When both of the above modifications are used simultaneously on one sample, the resultant improvements are multiplicative. For example, where stack gas volume is increased by a factor of five and the total liquid sample digested volume of both the front- and back-halves is reduced by a factor of six, the in-stack method detection limit is reduced by a factor of thirty (the method is thirty times more sensitive). Conversely, reducing stack sample volume and increasing sample liquid volume will increase in-stack detection limits (the method would then be less sensitive). The front-half and back-half samples (Fractions 1A and 2A) can be combined proportionally (see Section 1.2) prior to analysis. The resultant liquid volume (excluding the mercury fractions, which must be analyzed separately) is recorded. Combining the sample in this manner does not allow the point of capture in the train to be determined. The in-stack method detection limit then becomes a single value for all metals except mercury (due to exclusion of the mercury fraction). This discussion assumes no blank correction. Blank corrections are discussed later in this method.

2.4 Precision. The precision (relative standard deviation) for each metal detected in a method development test at a sewage sludge incinerator are as follows: Sb (12.7 percent), As (13.5 percent), Ba (20.6 percent), Cd (11.5 percent), Cr (11.2 percent), Cu (11.5 percent), Pb (11.6 percent), P (14.6 percent), Se (15.3 percent), Tl (12.3 percent), and Zn (11.8 percent). The precision for Ni was 7.7 percent for another test conducted at a source simulator. Beryllium, Mn, and Ag were not detected in the tests; however, based on the analytical sensitivity of the ICAP for these metals, it is assumed that their precisions should be similar to those for the other metals when detected at similar levels.

2.5 Interferences. Iron can be a spectral interference during the analysis of As, Cr, and Cd by ICAP. Al can be a spectral interference during the analysis of As and Pb by ICAP. Generally, these interferences can be reduced by diluting the sample, but this increases the method detection limit (in-stack detection limit). Refer to Method 6010 of Citation 1 of the Bibliography or the other analytical methods used for details on potential interferences to this method. The analyst must eliminate or reduce interferences to acceptable levels. For all GFAAS analyses, matrix modifiers should be used to limit interferences, and standards should be matrix matched.

3. Apparatus

3.1 Sampling Train. A schematic of the sampling train is shown in Figure 29-1. It is similar to the Method 5 train and consists of the following components.



12a

Figure 29-1. Sampling train.

3.1.1 Probe Nozzle (Probe Tip) and Borosilicate or Quartz Glass Probe Liner. Same as Method 5, Sections 2.1.1 and 2.1.2, except that glass nozzles are required unless alternate tips are constructed of materials that are free from contamination and will not interfere with the sample. If a probe tip other than glass is used, no correction to the sample test results may be made to compensate for its effect on the sample. Probe fittings of plastic such as Teflon, polypropylene, etc. are recommended over metal fittings to prevent contamination; further, if desired, a single glass piece consisting of a combined probe tip and probe liner may be used, but such a single glass piece is <u>not</u> a requirement of this methodology)

3.1.2 Pitot Tube and Differential Pressure Gauge. Same as Method 2, Sections 2.1 and 2.2, respectively.

3.1.3 Filter Holder. Glass, same as Method 5, Section 2.1.5, except a Teflon filter support or other non-metallic, non-contaminating support must be used in place of the glass frit.

3.1.4 Filter Heating System. Same as Method 5, Section 2.1.6.

3.1.5 Condenser. The following system shall be used for condensing and collecting gaseous metals and determining the moisture content of the stack gas. The condensing system should consist of four to seven impingers connected in series with leak-free ground glass fittings or other leak-free, non-contaminating fittings. The first impinger is optional and is recommended as a moisture trap. The second impinger (or the first HNO_3/H_2O_2 impinger) shall be as described for the first impinger in Method 5. The third impinger (or second HNO_3/H_2O_2 impinger) shall be the Greenburg Smith impinger with the standard tip described as the second impinger in Method 5, Section 2.1.7. All other impingers are the same as the first HNO_3/H_2O_2 impinger previously described. A thermometer capable of measuring to within 1°C (2°F) shall be placed at the outlet of the last impinger. If mercury analysis is not to be performed, the potassium permanganate impingers and the empty impinger preceding them are removed.

3.1.6 Metering System, Barometer, and Gas Density Determination Equipment. Same as Method 5, Sections 2.1.8 through 2.1.10, respectively.

3.1.7 Teflon Tape. For capping openings and sealing connections, if necessary, on the sampling train.

3.2 Sample Recovery. Same as Method 5, Sections 2.2.1 through 2.2.8 (Probe-Liner and Probe-Nozzle Brushes or Swabs, Wash Bottles, Sample Storage Containers, Petri Dishes, Glass Graduated Cylinder, Plastic Storage Containers, Funnel and Rubber Policeman, and Glass Funnel), respectively, with the following exceptions and additions:

3.2.1 Non-metallic Probe-Liner and Probe-Nozzle Brushes or Swabs. For quantitative recovery of materials collected in the front-half of the sampling train. A description of acceptable all-Teflon component brushes or swabs are to be included in EPA's Emission Measurement Technical Information Center (EMTIC) files.

3.2.2 Sample Storage Containers. Glass bottles with Teflon-lined caps which are non-reactive to the oxidizing solutions, with capacities of 1000- and 500-ml shall be used for $KMnO_4$-containing samples and blanks. Polyethylene bottles may be used for other sample types.

3.2.3 Graduated Cylinder. Glass or equivalent.

3.2.4 Funnel. Glass or equivalent.

3.2.5 Labels. For identifying samples.

3.2.6 Polypropylene Tweezers and/or Plastic Gloves. For recovery of the filter from the sampling train filter holder.

3.3 Sample Preparation and Analysis. For the analysis, the following equipment is needed:

3.3.1 Volumetric Flasks, 100-ml, 250-ml, and 1000-ml. For preparation of standards and sample dilutions.

3.3.2 Graduated Cylinders. For preparation of reagents.

3.3.3 Parr[R] Bombs or Microwave Pressure Relief Vessels with Capping Station (CEM Corporation model or equivalent).

3.3.4 Beakers and Watch Glasses. 250-ml beakers for sample digestion with watch glasses to cover the tops.

3.3.5 Ring Stands and Clamps. For securing equipment such as filtration apparatus.

3.3.6 Filter Funnels. For holding filter paper.

3.3.7 Disposable Pasteur Pipets and Bulbs.

3.3.8 Volumetric Pipets.

3.3.9 Analytical Balance. Accurate to within 0.1 mg.

3.3.10 Microwave or Conventional Oven. For heating samples at fixed power levels or temperatures.

3.3.11 Hot Plates.

3.3.12 Atomic Absorption Spectrometer (AAS). Equipped with a background corrector.

3.3.12.1 Graphite Furnace Attachment. With Sb, As, Cd, Pb, Se, and Tl hollow cathode lamps (HCLs) or electrodeless discharge lamps (EDLs). Same as Bibliography Citation 1 Methods 7041 (Sb), 7060 (As), 7131 (Cd), 7421 (Pb), 7740 (Se), and 7841 (Tl).

3.3.12.2 Cold Vapor Mercury Attachment. With a mercury HCL or EDL. The equipment needed for the cold vapor mercury attachment includes an air recirculation pump, a quartz cell, an aerator apparatus, and a heat lamp or desiccator tube. The heat lamp should be capable of raising the ambient temperature at the quartz cell by 10°C such that no condensation forms on the wall of the quartz cell. Same as Method 7470 in Citation 2 of the Bibliography.

3.3.13 Inductively Coupled Argon Plasma Spectrometer. With either a direct or sequential reader and an alumina torch. Same as EPA Method 6010 in Citation 1 of the Bibliography.

4. Reagents

4.1 Unless otherwise indicated, it is intended that all reagents conform to the specifications established by the Committee on Analytical Reagents of the American Chemical

Society, where such specifications are available; otherwise, use the best available grade.

4.2 Sampling. The reagents used in sampling are as follows:

4.2.1 Filters. The filters shall contain less than 1.3 $\mu g/in.^2$ of each of the metals to be measured. Analytical results provided by filter manufacturers are acceptable. However, if no such results are available, filter blanks must be analyzed for each target metal prior to emission testing. Quartz or glass fiber filters without organic binders shall be used. The filters should exhibit at least 99.95 percent efficiency (<0.05 percent penetration) on 0.3-μ dioctyl phthalate smoke particles. The filter efficiency test shall be conducted in accordance with ASTM Standard Method D2986-71 (incorporated by reference). For particulate determination in sources containing sulfur dioxide (SO_2) or sulfur trioxide (SO_3), the filter material must be of a type that is unreactive to SO_2 or SO_3, as described in Method 5. Quartz fiber filters meeting these requirements are recommended.

4.2.2 Water. To conform to ASTM Specification D1193-77, Type II (incorporated by reference). If necessary, analyze the water for all target metals prior to field use. All target metals should be less than 1 ng/ml.

4.2.3 Nitric Acid. Concentrated. Baker Instra-analyzed or equivalent.

4.2.4 Hydrochloric Acid. Concentrated. Baker Instra-analyzed or equivalent.

4.2.5 Hydrogen Peroxide, 30 Percent (V/V).

4.2.6 Potassium Permanganate.

4.2.7 Sulfuric Acid. Concentrated.

4.2.8 Silica Gel and Crushed Ice. Same as Method 5, Sections 3.1.2 and 3.1.4, respectively.

4.3 Pretest Preparation of Sampling Reagents.

4.3.1 Nitric Acid (HNO_3)/Hydrogen Peroxide (H_2O_2) Absorbing Solution, 5 Percent HNO_3/10 Percent H_2O_2. Add carefully with stirring 50 ml of concentrated HNO_3 to a 1000-ml volumetric flask containing approximately 500 ml of water, and then add carefully with stirring 333 ml of 30 percent H_2O_2. Dilute to volume with water. Mix well. The reagent shall contain less than 2 ng/ml of each target metal.

4.3.2 Acidic Potassium Permanganate ($KMnO_4$) Absorbing Solution, 4 Percent $KMnO_4$ (W/V), 10 Percent H_2SO_4 (V/V). Prepare fresh daily. Mix carefully, with stirring, 100 ml of concentrated H_2SO_4 into approximately 800 ml of water, and add water with stirring to make a volume of 1 liter: this solution is 10 percent H_2SO_4 (V/V). Dissolve, with stirring, 40 g of $KMnO_4$ into 10 percent H_2SO_4 (V/V) and add 10 percent H_2SO_4 (V/V) with stirring to make a volume of 1 liter: this is the acidic potassium permanganate absorbing solution. Prepare and store in glass bottles to prevent degradation. The reagent shall contain less than 2 ng/ml of Hg.

Precaution: To prevent autocatalytic decomposition of the permanganate solution, filter the solution through Whatman 541 filter paper. Also, due to the potential reaction of the potassium permanganate with the acid, there may be pressure buildup in the sample storage bottle; these bottles shall not be fully filled and shall be vented to relieve excess pressure and prevent explosion potentials. Venting is required, but should not allow contamination of the sample; a No. 70-72 hole drilled in the container cap and Teflon liner has been used.

4.3.3 Nitric Acid, 0.1 N. Add with stirring 6.3 ml of concentrated HNO_3 (70 percent) to a flask containing approximately 900 ml of water. Dilute to 1000 ml with water. Mix well. The reagent shall contain less than 2 ng/ml of each target metal.

4.3.4 Hydrochloric Acid (HCl), 8 N. Make the desired volume of 8N HCl in the following proportions. Carefully add with stirring 690 ml of concentrated HCl to a flask containing 250 ml of water. Dilute to 1000 ml with water. Mix well. The reagent shall contain less than 2 ng/ml of Hg.

4.4 Glassware Cleaning Reagents.

4.4.1 Nitric Acid, Concentrated. Fisher ACS grade or equivalent.

4.4.2 Water. To conform to ASTM Specifications D1193-77, Type II.

4.4.3 Nitric Acid, 10 Percent (V/V). Add with stirring 500 ml of concentrated HNO_3 to a flask containing approximately

4000 ml of water. Dilute to 5000 ml with water. Mix well. Reagent shall contain less than 2 ng/ml of each target metal.

4.5 Sample Digestion and Analysis Reagents.

4.5.1 Hydrochloric Acid, Concentrated.

4.5.2 Hydrofluoric Acid, Concentrated.

4.5.3 Nitric Acid, Concentrated. Baker Instra-analyzed or equivalent.

4.5.4 Nitric Acid, 50 Percent (V/V). Add with stirring 125 ml of concentrated HNO_3 to 100 ml of water. Dilute to 250 ml with water. Mix well. Reagent shall contain less than 2 ng/ml of each target metal.

4.5.5 Nitric Acid, 5 Percent (V/V). Add with stirring 50 ml of concentrated HNO_3 to 800 ml of water. Dilute to 1000 ml with water. Mix well. Reagent shall contain less than 2 ng/ml of each target metal.

4.5.6 Water. To conform to ASTM Specifications D1193-77, Type II.

4.5.7 Hydroxylamine Hydrochloride and Sodium Chloride Solution. See Citation 2 of the Bibliography for preparation.

4.5.8 Stannous Chloride. See Citation 2 of the Bibliography for preparation.

4.5.9 Potassium Permanganate, 5 Percent (W/V). See Citation 2 of the Bibliography for preparation.

4.5.10 Sulfuric Acid, Concentrated.

4.5.11 Nitric Acid, 50 Percent (V/V).

4.5.12 Potassium Persulfate, 5 Percent (W/V). See Citation 2 of the Bibliography for preparation.

4.5.13 Nickel Nitrate, $Ni(NO_3)_2 \cdot 6H_2O$.

4.5.14 Lanthanum Oxide, La_2O_3.

4.5.15 Hg Standard (AAS Grade), 1000 µg/ml.

4.5.16 Pb Standard (AAS Grade), 1000 µg/ml.

4.5.17 As Standard (AAS Grade), 1000 µg/ml.

4.5.18 Cd Standard (AAS Grade), 1000 µg/ml.

4.5.19 Cr Standard (AAS Grade), 1000 µg/ml.

4.5.20 Sb Standard (AAS Grade), 1000 µg/ml.

4.5.21 Ba Standard (AAS Grade), 1000 µg/ml.

4.5.22 Be Standard (AAS Grade), 1000 µg/ml.

4.5.23 Cu Standard (AAS Grade), 1000 µg/ml.

4.5.24 Mn Standard (AAS Grade), 1000 µg/ml.

4.5.25 Ni Standard (AAS Grade), 1000 µg/ml.

4.5.26 P Standard (AAS Grade), 1000 µg/ml.

4.5.27 Se Standard (AAS Grade), 1000 µg/ml.

4.5.28 Ag Standard (AAS Grade), 1000 µg/ml.

4.5.29 Tl Standard (AAS Grade), 1000 µg/ml.

4.5.30 Zn Standard (AAS Grade), 1000 µg/ml.

4.5.31 Al Standard (AAS Grade), 1000 µg/ml.

4.5.32 Fe Standard (AAS Grade), 1000 µg/ml.

4.5.33 The metals standards may also be made from solid chemicals as described in Citation 3 of the Bibliography. Citations 1, 2, or 4 of the Bibliography should be referred to for additional information on mercury standards.

4.5.34 Mercury Standards and Quality Control Samples. Prepare fresh weekly a 10 μg/ml intermediate mercury standard by adding 5 ml of 1000 μg/ml mercury stock solution to a 500-ml volumetric flask; dilute with stirring to 500 ml by first carefully adding 20 ml of 15 percent HNO_3 and then adding water to the 500-ml volume. Mix well. Prepare a 200 ng/ml working mercury standard solution fresh daily: add 5 ml of the 10 μg/ml intermediate standard to a 250-ml volumetric flask, and dilute to 250 ml with 5 ml of 4 percent $KMnO_4$, 5 ml of 15 percent HNO_3, and then water. Mix well. At least six separate aliquots of the working mercury standard solution should be used to prepare the standard curve. These aliquots should contain 0.0, 1.0, 2.0, 3.0, 4.0, and 5.0 ml of the working standard solution containing 0, 200, 400, 600, 800, and 1000 ng mercury, respectively. Quality control samples should be prepared by making a separate 10 μg/ml standard and diluting until in the range of the calibration.

4.5.35 ICAP Standards and Quality Control Samples. Calibration standards for ICAP analysis can be combined into four different mixed standard solutions as shown below.

MIXED STANDARD SOLUTIONS FOR ICAP ANALYSIS

Solution	Elements
I	As, Be, Cd, Mn, Pb, Se, Zn
II	Ba, Cu, Fe
III	Al, Cr, Ni
IV	Ag, P, Sb, Tl

Prepare these standards by combining and diluting the appropriate volumes of the 1000 μg/ml solutions with 5 percent HNO_3. A minimum of one standard and a blank can be used to form each calibration curve. However, a separate quality control sample spiked with known amounts of the target metals in quantities in the mid-range of the calibration curve should be prepared. Suggested standard levels are 25 μg/ml for AL, Cr and Pb, 15 μg/ml for Fe, and 10 μg/ml for the remaining elements. Prepare any standards containing less than 1 μg/ml of metal on a daily basis. Standards containing greater than 1 μg/ml of metal should be stable for a minimum of 1 to 2 weeks.

4.5.36 Graphite Furnace AAS Standards. Sb, As, Cd, Pb, Se, and Tl. Prepare a 10 μg/ml standard by adding 1 ml of 1000 μg/ml standard to a 100-ml volumetric flask. Dilute with stirring to 100 ml with 10 percent HNO_3. For graphite furnace AAS, the standards must be matrix matched. Prepare a 100 ng/ml standard by adding 1 ml of the 10 μg/ml standard to a 100-ml volumetric flask, and dilute to 100 ml with the appropriate matrix solution. Other standards should be prepared by diluting the 100 ng/ml standards. At least five standards should be used to make up the standard curve. Suggested levels are 0, 10, 50, 75, and 100 ng/ml. Quality control samples should be prepared by making a separate 10 μg/ml standard and diluting until it is in the range of the samples. Any standards containing less than 1 μg/ml of metal should be prepared on a daily basis. Standards containing greater than 1 μg/ml of metal should be stable for a minimum of 1 to 2 weeks.

4.5.37 Matrix Modifiers.

4.5.37.1 Nickel Nitrate, 1 Percent (V/V). Dissolve 4.956 g of $Ni(NO_3)_2 \cdot 6H_2O$ in approximately 50 ml of water in a 100-ml volumetric flask. Dilute to 100 ml with water.

4.5.37.2 Nickel Nitrate, 0.1 Percent (V/V). Dilute 10 ml of the 1 percent nickel nitrate solution from Section 4.5.37.1 above to 100 ml with water. Inject an equal amount of sample and this modifier into the graphite furnace during AAS analysis for As.

4.5.37.3 Lanthanum. Carefully dissolve 0.5864 g of La_2O_3 in 10 ml of concentrated HNO_3, and dilute the solution by adding it with stirring to approximately 50 ml of water. Dilute to 100 ml with water, and mix well. Inject an equal amount of sample and this modifier into the graphite furnace during AAS analysis for Pb.

4.5.38 Whatman 541 Filter Paper (or equivalent). For filtration of digested samples.

5. Procedure

5.1 Sampling. The complexity of this method is such that, to obtain reliable results, testers and analysts should be trained and experienced with the test procedures, including source sampling, reagent preparation and handling, sample handling, safety equipment, analytical calculations, reporting, and specific descriptions throughout this method.

5.1.1 Pretest Preparation. Follow the same general procedure given in Method 5, Section 4.1.1, except that, unless particulate emissions are to be determined, the filter need not be desiccated or weighed. All sampling train glassware should first be rinsed with hot tap water and then washed in hot soapy water. Next, glassware should be rinsed three times with tap water, followed by three additional rinses with water. All glassware should then be soaked in a 10 percent (V/V) nitric acid solution for a minimum of 4 hours, rinsed three times with water, rinsed a final time with acetone, and allowed to air dry. All glassware openings where contamination can occur should be covered until the sampling train is assembled for sampling.

5.1.2 Preliminary Determinations. Same as Method 5, Section 4.1.2.

5.1.3 Preparation of Sampling Train.

5.1.3.1 Follow the same general procedures given in Method 5, Section 4.1.3, except place 100 ml of the HNO_3/H_2O_2 solution (Section 4.2.1) in each of the two impingers as shown in Figure 29-1 (normally the second and third impingers). Place 100 ml of the acidic $KMnO_4$ absorbing solution (Section 4.2.2) in each of the two impingers as shown in Figure 29-1, and transfer approximately 200 to 300 g of preweighed silica gel from its container to the last impinger. Alternatively, the silica gel may be weighed directly in the impinger just prior to train assembly.

5.1.3.2 Several options are available to the tester based on the sampling requirements and conditions. The use of an empty first impinger can be eliminated if the moisture to be collected in the impingers will be less than approximately 100 ml. If necessary, use as applicable to this methodology the procedure described in Section 7.1.1 of Method 101A, 40 CFR Part 61, Appendix B, to maintain the desired color in the last permanganate impinger.

5.1.3.3 Retain for reagent blanks volumes of the HNO_3/H_2O_2 solution per Section 5.2.16 of this method and of the acidic $KMnO_4$ solution per Section 5.2.17. These reagent blanks should be labeled and analyzed as described in Section 7. Set up the sampling train as shown in Figure 29-1. If mercury analysis is not desired, delete the empty impinger and the two permanganate impingers following the HNO_3/H_2O_2 impingers. If necessary to ensure leak-free sampling train connections, Teflon tape or other non-contaminating material should be used instead of silicone grease to prevent contamination. Precaution: Extreme care should be taken to prevent contamination within the train. Prevent the mercury collection reagent (acidic $KMnO_4$) from contacting any glassware of the train which is washed and analyzed for Mn. Prevent H_2O_2 from mixing with the acidic $KMnO_4$.

5.1.3.4 Mercury emissions can be measured, alternatively, in a separate train using EPA Method 101A with the modifications for processing the permanganate containers as described in the precaution in Section 4.3.2 and the note in Section 5.2.11 of this method). This alternative method is applicable for measurement of mercury emissions, and it may be of special interest to sources which must measure both mercury and manganese emissions.

5.1.4 Leak-Check Procedures. Follow the leak-check procedures given in Method 5, Section 4.1.4.1 (Pretest Leak-Check), Section 4.1.4.2 (Leak-Checks During the Sample Run), and Section 4.1.4.3 (Post-Test Leak-Checks).

5.1.5 Sampling Train Operation. Follow the procedures given in Method 5, Section 4.1.5. For each run, record the data required on a data sheet such as the one shown in Figure 5-2 of Method 5.

5.1.6 Calculation of Percent Isokinetic. Same as Method 5, Section 4.1.6.

5.2 Sample Recovery.

5.2.1 Begin cleanup procedures as soon as the probe is removed from the stack at the end of a sampling period. The probe should be allowed to cool prior to sample recovery. When it can be safely handled, wipe off all external particulate matter near the tip of the probe nozzle and place a rinsed, non-contaminating cap over the probe nozzle to prevent losing or gaining particulate matter. Do not cap the probe tip tightly while the sampling train is cooling; a vacuum may form in the filter holder with the undesired result of drawing liquid from the impingers onto the filter.

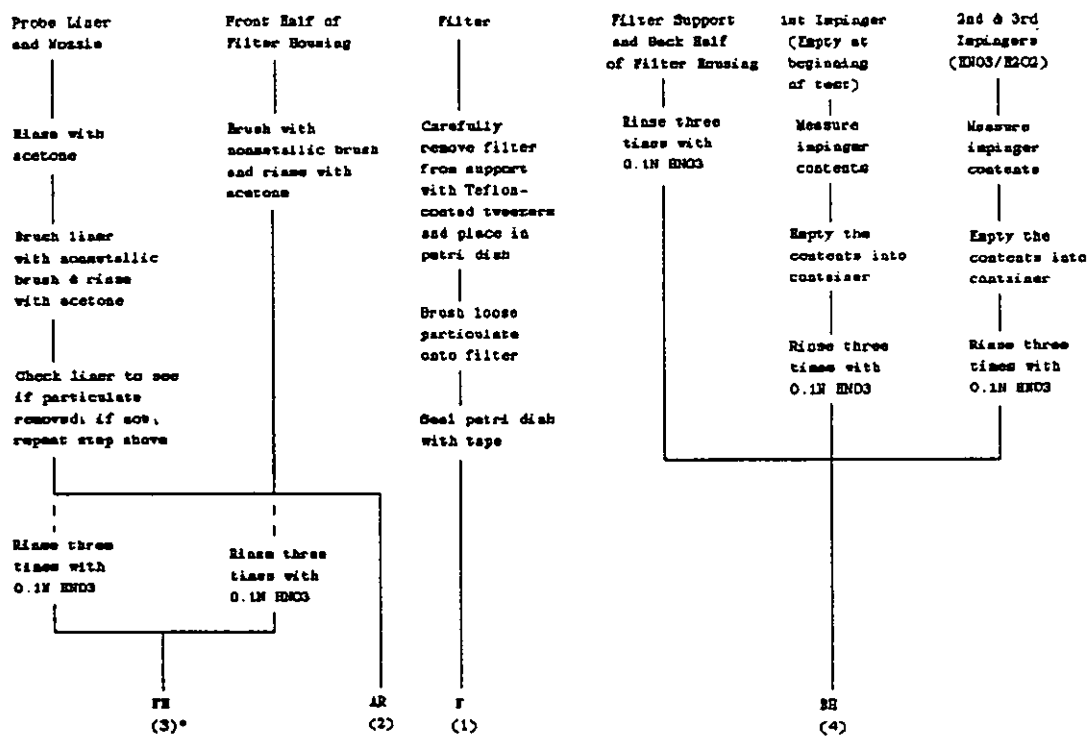
5.2.2 Before moving the sampling train to the cleanup site, remove the probe from the sampling train and cap the open outlet.

Be careful not to lose any condensate that might be present. Cap the filter inlet where the probe was fastened. Remove the umbilical cord from the last impinger and cap the impinger. Cap off the filter holder outlet and impinger inlet. Use non-contaminating caps, whether ground-glass stoppers, plastic caps, serum caps, or Teflon tape to close these openings.

5.2.3 Alternatively, the train can be disassembled before the probe and filter holder/oven are completely cooled if this procedure is followed: Initially disconnect the filter holder outlet/impinger inlet and loosely cap the open ends. Then disconnect the probe from the filter holder or cyclone inlet and loosely cap the open ends. Cap the probe tip and remove the umbilical cord as previously described.

5.2.4 Transfer the probe and filter-impinger assembly to a cleanup area that is clean and protected from the wind and other potential causes of contamination or loss of sample. Inspect the train before and during disassembly and note any abnormal conditions. The sample is recovered and treated as follows (see schematic in Figures 29-2a and 29-2b). Assure that all items necessary for recovery of the sample do not contaminate it.

28a



* Number in parentheses indicates container number

Figure 29-2a. Sample recovery scheme.

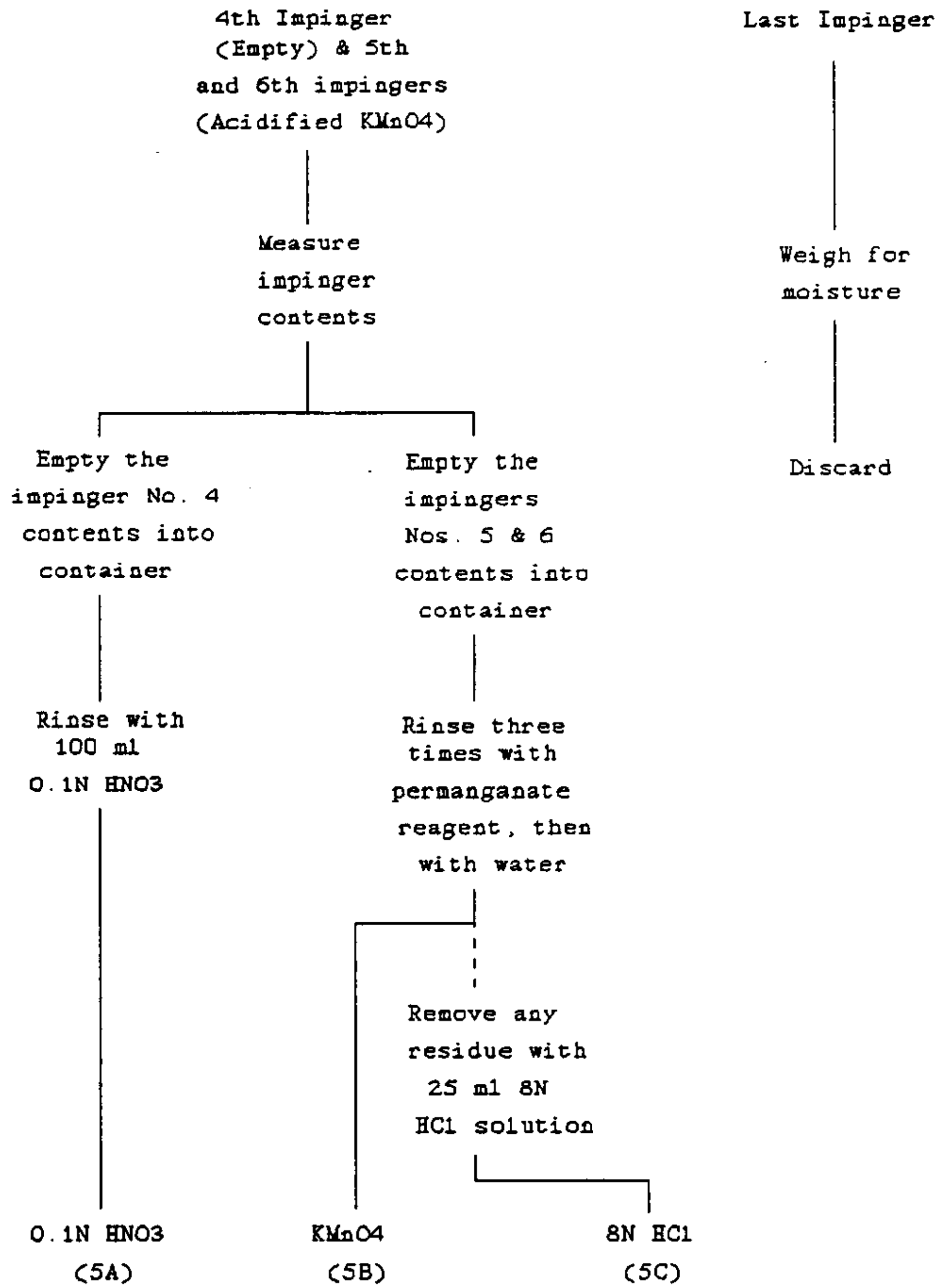


Figure 29-2b. Sample recovery scheme.

5.2.5 Container No. 1 (Filter). Carefully remove the filter from the filter holder and place it in its identified petri dish container. Acid-washed polypropylene or Teflon coated tweezers or clean, disposable surgical gloves rinsed with water and dried should be used to handle the filters. If it is necessary to fold the filter, make certain the particulate cake is inside the fold. Carefully transfer the filter and any particulate matter or filter fibers that adhere to the filter holder gasket to the petri dish by using a dry (acid-cleaned) nylon bristle brush. Do not use any metal-containing materials when recovering this train. Seal the labeled petri dish.

5.2.6 Container No. 2 (Acetone Rinse). <u>**NOTE**</u>: Perform this section only if determination of particulate emissions are desired in addition to metals emissions. Ensuring that dust on the outside of the probe or other exterior surfaces does not get into the sample, quantitatively recover particulate matter and any condensate from the probe nozzle, probe fitting, probe liner, and front half of the filter holder by washing these components with 100 ml of acetone and placing the wash in a glass container. <u>**NOTE**</u>: The use of exactly 100 ml is necessary for the subsequent blank correction procedures. Distilled water may be used instead of acetone when approved by the Administrator and shall be used when specified by the Administrator; in these cases, save a water blank and follow the Administrator's directions on analysis. Perform the acetone rinse as follows: Carefully remove the probe nozzle and clean the inside surface by rinsing with acetone from a wash bottle and brushing with a non-metallic brush. Brush until the acetone rinse shows no visible particles, after which make a final rinse of the inside surface with acetone.

5.2.7 Brush and rinse the sample exposed inside parts of the fitting with acetone in a similar way until no visible particles remain. Rinse the probe liner with acetone by tilting and rotating the probe while squirting acetone into its upper end so that all inside surfaces will be wetted with acetone. Allow the acetone to drain from the lower end into the sample container. A funnel may be used to aid in transferring liquid washings to the container. Follow the acetone rinse with a non-metallic probe brush. Hold the probe in an inclined position, squirt acetone into the upper end as the probe brush is being pushed with a twisting action through the probe. Hold a sample container underneath the lower end of the probe, and catch any acetone and particulate matter which is brushed through the probe three times or more until no visible particulate matter is carried out with the acetone or until none remains in the probe liner on visual inspection. Rinse the brush with acetone, and quantitatively collect these washings in the sample container. After the brushing, make a final acetone rinse of the probe as described above.

5.2.8 It is recommended that two people clean the probe to minimize sample losses. Between sampling runs, keep brushes clean and protected from contamination. Clean the inside of the front-half of the filter holder by rubbing the surfaces with a non-metallic nylon bristle brush and rinsing with acetone. Rinse each surface three times or more if needed to remove visible particulate. Make a final rinse of the brush and filter holder. After all acetone washings and particulate matter have been collected in the sample container, tighten the lid so that acetone will not leak out when shipped to the laboratory. Mark the height of the fluid level to determine whether or not leakage occurred during transport. Label the container clearly to identify its contents.

5.2.9 Container No. 3 (Probe Rinse). Keep the probe assembly clean and free from contamination during the probe rinse. Rinse the probe nozzle and fitting, probe liner, and front-half of the filter holder thoroughly with 100 ml of 0.1 N HNO_3, and place the wash into a sample storage container. **NOTE**: The use of exactly 100 ml is necessary for the subsequent blank correction procedures. Perform the rinses as applicable and generally as described in Method 12, Section 5.2.2. Record the volume of the combined rinse. Mark the height of the fluid level on the outside of the storage container and use this mark to determine if leakage occurs during transport. Seal the container, and clearly label the contents. Finally, rinse the nozzle, probe liner, and front-half of the filter holder with water followed by acetone, and discard these rinses.

5.2.10 Container No. 4 (Impingers 1 through 3, HNO_3/H_2O_2 Impingers and Moisture Knockout Impinger, when used, Contents and

Rinses). Due to the potentially large quantity of liquid involved, the tester may place the impinger solutions from impingers 1 through 3 in more than one container. Measure the liquid in the first three impingers to within 0.5 ml using a graduated cylinder. Record the volume. This information is required to calculate the moisture content of the sampled flue gas. Clean each of the first three impingers, the filter support, the back half of the filter housing, and connecting glassware by thoroughly rinsing with 100 ml of 0.1 N HNO_3 using the procedure as applicable in Method 12, Section 5.2.4. **NOTE**: The use of exactly 100 ml of 0.1 N HNO_3 rinse is necessary for the subsequent blank correction procedures. Combine the rinses and impinger solutions, measure and record the volume. Mark the height of the fluid level, seal the container, and clearly label the contents.

5.2.11 Container Nos. 5A (0.1 N HNO_3), 5B ($KMnO_4/H_2SO_4$ absorbing solution), and 5C (8 N HCl rinse and dilution). Pour all the liquid, if any, from the impinger which was empty at the start of the run and which immediately precedes the two permanganate impingers (normally impinger No. 4) into a graduated cylinder and measure the volume to within 0.5 ml. This information is required to calculate the moisture content of the sampled flue gas. Place the liquid in Sample Container No. 5A. Rinse the impinger (No. 4) with 100 ml of 0.1 N HNO_3 and place this into Container No. 5A.

5.2.12 Pour all the liquid from the two permanganate impingers into a graduated cylinder and measure the volume to within 0.5 ml. This information is required to calculate the moisture content of the sampled flue gas. Place this $KMnO_4$ solution into Container No. 5B. Using 100 ml total of fresh acidified $KMnO_4$ solution, rinse the two permanganate impingers and connecting glass a minimum of three times. Pour the rinses into Container No. 5B, carefully assuring transfer of all loose precipitated materials from the two impingers. Using 100 ml total of water, rinse the permanganate impingers and connecting glass a minimum of three times, and pour the rinses into Container 5B, carefully assuring transfer of all loose precipitated material, if any. Mark the height of the fluid level, and clearly label the contents. Note the precaution in Section 4.3.2. **NOTE**: Due to the potential reaction of $KMnO_4$ with acid, there may be pressure buildup in the sample storage bottles. These bottles shall not be filled completely and shall be vented to relieve excess pressure. A No. 70-72 hole drilled in the container cap and Teflon liner has been used successfully.

5.2.13 If no visible deposits remain after the above described water rinse, no further rinse is necessary. However, if deposits do remain on the glassware, wash the impinger surfaces with 25 ml of 8 N HCl, and place the wash in a separate sample container labeled Container No. 5C containing 200 ml of water as follows. Place 200 ml of water in a sample container labeled Container No. 5C. Wash the impinger walls and stem with the HCl by turning the impinger on its side and rotating it so that the HCl contacts all inside surfaces. Use a total of only 25 ml of 8 N HCl for rinsing both permanganate impingers combined. Rinse the first impinger, then pour the actual rinse used for the first impinger into the second impinger for its rinse. Finally, pour the 25 ml of 8 N HCl rinse carefully into Container No. 5C. Mark the height of the fluid level on the outside of the bottle to determine if leakage occurs during transport.

5.2.14 Container No. 6 (Silica Gel). Note the color of the indicating silica gel to determine whether it has been completely spent and make a notation of its condition. Transfer the silica gel from its impinger to its original container and seal. The tester may use a funnel to pour the silica gel and a rubber policeman to remove the silica gel from the impinger. The small amount of particles that may adhere to the impinger wall need not be removed. Do not use water or other liquids to transfer the silica gel since weight gained in the silica gel impinger is used for moisture calculations. Alternatively, if a balance is available in the field, record the weight of the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g.

5.2.15 Container No. 7 (Acetone Blank). If particulate emissions are to be determined, at least once during each field test, place a 100-ml portion of the acetone used in the sample recovery process into a labeled container for use in the front-half field reagent blank. Seal the container.

5.2.16 Container No. 8A (0.1 N HNO_3 Blank). At least once during each field test, place 300 ml of the 0.1 N HNO_3 solution used in the sample recovery process into a labeled container for use in the front-half and back-half field reagent blanks. Seal the container.

5.2.17 Container No. 8B (water blank). At least once during each field test, place 100 ml of the water used in the sample recovery process into a labeled Container No. 8B. Seal the container.

5.2.18 Container No. 9 (5 Percent HNO_3/10 Percent H_2O_2 Blank). At least once during each field test, place 200 ml of the 5 Percent HNO_3/10 Percent H_2O_2 solution used as the nitric acid impinger reagent into a labeled container for use in the back-half field reagent blank. Seal the container.

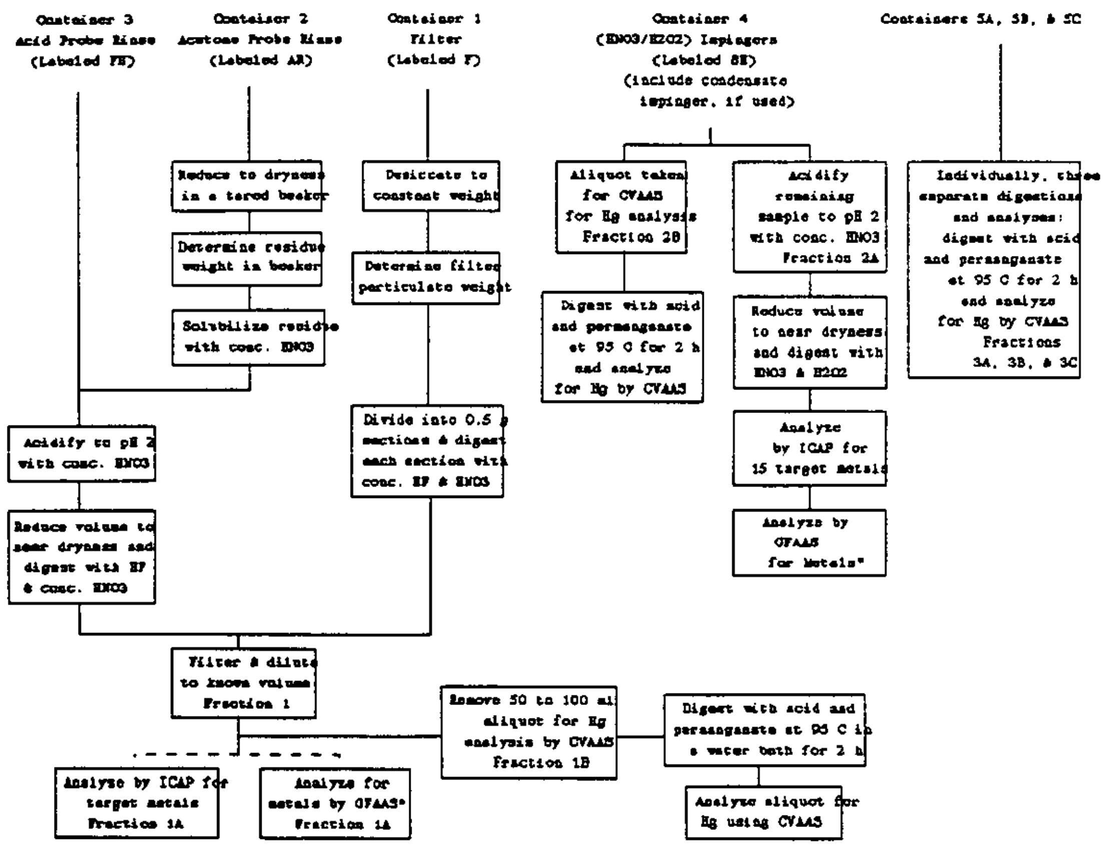
5.2.19 Container No. 10 (Acidified $KMnO_4$ Blank). At least once during each field test, place 100 ml of the acidified $KMnO_4$ solution used as the impinger solution and in the sample recovery process into a labeled container for use in the back-half field reagent blank for mercury analysis. Prepare the container as described in Section 5.2.11. See the note in Section 5.2.12.

5.2.20 Container No. 11 (8 N HCl Blank). At least once during each field test, perform <u>both</u> of the following. Place 200 ml of water into a sample container. Pour 25 ml of 8 N HCl carefully with stirring into the container. Mix well and seal the container.

5.2.21 Container No. 12 (Filter Blank). Once during each field test, place three unused blank filters from the same lot as the sampling filters in a labeled petri dish. Seal the petri dish. These will be used in the front-half field reagent blank.

5.3 Sample Preparation. Note the level of the liquid in each of the containers and determine if any sample was lost during shipment. If a noticeable amount of leakage has occurred, either void the sample or use methods, subject to the approval of the Administrator, to correct the final results. A diagram illustrating sample preparation and analysis procedures for each of the sample train components is shown in Figure 29-3.

5.3.1 Container No. 1 (Filter). If particulate emissions are being determined, desiccate the filter and filter catch without added heat and weigh to a constant weight as described in Section 4.3 of Method 5. For analysis of metals, divide the filter with its filter catch into portions containing approximately 0.5 g each and place into the analyst's choice of either individual microwave pressure relief vessels or Parr^R Bombs. Add 6 ml of concentrated HNO_3 and 4 ml of concentrated HF to each vessel. For microwave heating, microwave the sample vessels for approximately 12-15 minutes in intervals of 1 to 2 minutes at 600 Watts. For conventional heating, heat the Parr^R Bombs at 140°C (285°F) for 6 hours. Then cool the samples to room temperature, and combine with the acid digested probe rinse as required in Section 5.3.3, below. <u>**NOTES**</u>:



*Analysis by AAS for metals found at less than 2 ug/ml in digestate solution, if desired. Or analyze for each metal by AAS, if desired.

Figure 29-3. Sample preparation and analysis scheme.

5.3.1.1 Suggested microwave heating times are approximate and are dependent upon the number of samples being digested. Twelve to 15 minute heating times have been found to be acceptable for simultaneous digestion of up to 12 individual samples. Sufficient heating is evidenced by sorbent reflux within the vessel.

5.3.1.2 If the sampling train uses an optional cyclone, the cyclone catch should be prepared and digested using the same procedures described for the filters and combined with the digested filter samples.

5.3.2 Container No. 2 (Acetone Rinse). Note the level of liquid in the container and confirm on the analysis sheet whether or not leakage occurred during transport. If a noticeable amount of leakage has occurred, either void the sample or use methods, subject to the approval of the Administrator, to correct the final results. Measure the liquid in this container either volumetrically within 1 ml or gravimetrically within 0.5 g. Transfer the contents to an acid-cleaned, tared 250-ml beaker and evaporate to dryness at ambient temperature and pressure. If particulate emissions are being determined, desiccate for 24 hours without added heat, weigh to a constant weight according to the procedures described in Section 4.3 of Method 5, and report the results to the nearest 0.1 mg. Redissolve the residue with 10 ml of concentrated HNO_3. Quantitatively combine the resultant sample, including all liquid and any particulate matter, with Container No. 3 before beginning Section 5.3.3.

5.3.3 Container No. 3 (Probe Rinse). The pH of this sample shall be 2 or lower. If the pH is higher, the sample should be acidified by careful addition with stirring of concentrated HNO_3 to pH 2. The sample should be rinsed into a beaker with water, and the beaker should be covered with a ribbed watch glass. The sample volume should be reduced to approximately 20 ml by heating on a hot plate at a temperature just below boiling. Digest the sample in microwave vessels or Parr[R] Bombs by quantitatively transferring the sample to the vessel or bomb, carefully adding the 6 ml of concentrated HNO_3, 4 ml of concentrated HF, and then continuing to follow the procedures described in Section 5.3.1. Then combine the resultant sample directly with the acid digested portions of the filter prepared previously in Section 5.3.1. The resultant combined sample is referred to as Fraction 1 precursor. Filter the combined solution of the acid digested filter and probe rinse samples using Whatman 541 filter paper. Dilute to 300 ml (or the appropriate volume for the expected metals concentration) with water. This dilution is Fraction 1. Measure and record the volume of the Fraction 1 solution to within 0.1 ml. Quantitatively remove a 50-ml aliquot and label as Fraction 1B. Label the remaining 250-ml portion as Fraction 1A. Fraction 1A is used for ICAP or AAS analysis. Fraction 1B is used for the determination of front-half mercury.

5.3.4 Container No. 4 (Impingers 1-3). Measure and record the total volume of this sample (Fraction 2) to within 0.5 ml. Remove a 75- to 100-ml aliquot for mercury analysis and label as

Fraction 2B. Label the remaining portion of Container No. 4 as aliquot Fraction 2A. Aliquot Fraction 2A defines the volume of 2A prior to digestion. All of aliquot Fraction 2A is digested to produce concentrated Fraction 2A. Concentrated Fraction 2A defines the volume of 2A after digestion and is normally 150 ml. Only concentrated Fraction 2A is analyzed for metals (except that it is not analyzed for mercury). The Fraction 2B aliquot should be prepared and analyzed for mercury as described in Section 5.4.3. Aliquot Fraction 2A shall have a pH of 2 or lower. If necessary, use concentrated HNO_3 by careful addition and stirring to lower aliquot Fraction 2A to pH 2. The sample should be rinsed into a beaker with water and the beaker covered with a ribbed watchglass. The sample volume should be reduced to approximately 20 ml by heating on a hot plate at a temperature just below boiling. Then follow either of the digestion procedures described in Sections 5.3.4.1 and 5.3.4.2, below.

5.3.4.1 Conventional Digestion Procedure. Add 30 ml of 50 percent HNO_3, and heat for 30 minutes on a hot plate to just below boiling. Add 10 ml of 3 percent H_2O_2 and heat for 10 more minutes. Add 50 ml of hot water, and heat the sample for an additional 20 minutes. Cool, filter the sample, and dilute to 150 ml (or the appropriate volume for the expected metals concentrations) with water. This dilution is concentrated Fraction 2A. Measure and record the volume of the Fraction 2A solution to within 0.1 ml.

5.3.4.2 Microwave Digestion Procedure. Add 10 ml of 50 percent HNO_3 and heat for 6 minutes in intervals of 1 to 2 minutes at 600 Watts. Allow the sample to cool. Add 10 ml of 3 percent H_2O_2 and heat for 2 more minutes. Add 50 ml of hot water, and heat for an additional 5 minutes. Cool, filter the sample, and dilute to 150 ml (or the appropriate volume for the expected metals concentrations) with water. This dilution is concentrated Fraction 2A. Measure and record the volume of the Fraction 2A solution to within 0.1 ml. <u>NOTE</u>: All microwave heating times given are approximate and are dependent upon the number of samples being digested at a time. Heating times as given above have been found acceptable for simultaneous digestion of up to 12 individual samples. Sufficient heating is evidenced by solvent reflux within the vessel.

5.3.5 Container Nos. 5A, 5B, and 5C (Impingers 4, 5, and 6). Keep these samples separate from each other and measure and record the volumes of 5A and 5B separately to within 0.5 ml. Dilute sample 5C to 500 ml with water. These samples 5A, 5B, and 5C are referred to respectively as Fractions 3A, 3B, and 3C. Follow the analysis procedures described in Section 5.4.3. Because the permanganate rinse and water rinse have the capability to recover a high percentage of the mercury from the permanganate impingers, the amount of mercury in the HCl rinse (Fraction 3C) may be very small, possibly even insignificantly small. However, as instructed in this method, add the total of any mercury measured in and calculated for the HCl rinse

(Fraction 3C) to that for Fractions 1B, 2B, 3A, and 3B for calculation of the total sample mercury concentration.

5.3.6 Container No. 6 (Silica Gel). Weigh the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g using a balance. (This step may be conducted in the field.)

5.4 Sample Analysis. For each sampling train, seven individual samples are generated for analysis. A schematic identifying each sample and the prescribed sample preparation and analysis scheme is shown in Figure 29-3. The first two samples, labeled Fractions 1A and 1B, consist of the digested samples from the front-half of the train. Fraction 1A is for ICAP or AAS analysis as described in Sections 5.4.1 and/or 5.4.2. Fraction 1B is for determination of front-half mercury as described in Section 5.4.3. The back-half of the train was used to prepare the third through seventh samples. The third and fourth samples, labeled Fractions 2A and 2B, contain the digested samples from the moisture knockout, if used, and HNO_3/H_2O_2 Impingers 1 through 3. Fraction 2A is for ICAP or AAS analysis. Fraction 2B will be analyzed for mercury. The fifth through seventh samples, labeled Fractions 3A, 3B, and 3C, consist of the impinger contents and rinses from the empty and permanganate impingers 4, 5, and 6. These samples are analyzed for mercury as described in Section 5.4.3. The total back-half mercury catch is determined from the sum of Fraction 2B and Fractions 3A, 3B, and 3C.

5.4.1 ICAP Analysis. Fraction 1A and Fraction 2A are analyzed by ICAP using Method 6010 or Method 200.7 (40 CFR 136, Appendix C). Calibrate the ICAP, and set up an analysis program as described in Method 6010 or Method 200.7. The quality control procedures described in Section 7.3.1 shall be followed. Recommended wavelengths for use in the analysis are listed below.

Element	Wavelength (nm)
Aluminum	308.215
Antimony	206.833
Arsenic	193.696
Barium	455.403
Beryllium	313.042
Cadmium	226.502
Chromium	267.716
Copper	324.754
Iron	259.940
Lead	220.353
Manganese	257.610
Nickel	231.604
Phosphorous	214.914
Selenium	196.026
Silver	328.068
Thallium	190.864
Zinc	213.856

The wavelengths listed are recommended because of their sensitivity and overall acceptance. Other wavelengths may be substituted if they can provide the needed sensitivity and are treated with the same corrective techniques for spectral interference. Initially, analyze all samples for the desired target metals (except mercury) plus iron and aluminum. If iron and aluminum are present, the sample may have to be diluted so that each of these elements is at a concentration of less than 50 ppm to reduce their spectral interferences on arsenic, cadmium, chromium, and lead. **NOTE**: When analyzing samples in a

HF matrix, an alumina torch should be used; since all front-half samples will contain HF, use an alumina torch.

5.4.2 AAS by Direct Aspiration and/or Graphite Furnace. If analysis of metals in Fraction 1A and Fraction 2A using graphite furnace or direct aspiration AAS is desired, Table 29-2 should be used to determine which techniques and methods should be applied for each target metal. Table 29-2 should also be consulted to determine possible interferences and techniques to be followed for their minimization. Calibrate the instrument according to Section 6.3 and follow the quality control procedures specified in Section 7.3.2.

Table 29-2. Applicable techniques, methods and minimization of interferences.

Metal	Technique	SW-846 Method No.	Wavelength (nm)	Interferences Cause	Interferences Minimization
Fe	Aspiration	7380	248.3	Contamination	Great care taken to avoid contamination
Pb	Aspiration	7420	283.3	217.0 nm alternate	Background correction required
Pb	Furnace	7421	283.3	Poor recoveries	Matrix modifier, add 10 ul of phosphorus acid to 1 ml of prepared sample in sampler cup
Mn	Aspiration	7460	279.5	403.1 nm alternate	Background correction required
Ni	Aspiration	7520	232.0	352.4 nm alternate	Background correction required
				Fe, Co, and Cr	Matrix matching or nitrous-oxide/acetylene flame
				Nonlinear response	Sample dilution or use 352.3 nm line
Se	Furnace	7740	196.0	Volatility	Spike samples and reference materials and add nickel nitrate to minimize volatilization
				Adsorption & scatt	Background correction is required and Zeeman background correction can be useful
Ag	Aspiration	7760	328.1	Adsorption & scatt	Background correction is required
				AgCl insoluble	Avoid hydrochloric acid unless silver is in solution as a chloride complex
					Sample and standards monitored for aspiration rate
Tl	Aspiration	7840	276.8		Background correction is required Hydrochloric acid should not be used
Tl	Furnace	7841	276.8	Hydrochloric acid or chloride	Background correction is required Verify that losses are not occurring for volatization by spiked samples or standard addition; Palladium is a suitable matrix modifier
Zn	Aspiration	7950	213.9	High Si, Cu, & P	Strontium removes Cu and phosphate
				Contamination	Great care taken to avoid contamination

Table 29-2 cont.

Metal	Technique	SW-846 Method No.	Wavelength (nm)	Interferences Cause	Minimization
Sb	Aspiration	7040	217.6	1000 mg/ml Pb Ni, Cu, or acid	Use secondary wavelenthe of 231.1 nm; match sample & standards' acid concentration or use nitrous oxide/acetylene flame
Sb	Furnace	7041	217.6	High Pb	Secondary wavelength or Zeeman correction
As	Furnace	7060	193.7	Arsenic volatilization	Spiked samples and add nickel nitrate solution to digestates prior to analysis
				Aluminum	Use Zeeman background correction
Ba	Aspiration	7080	553.6	Calcium	High hollow cathode current and narrow band set
				Barium ionization	2 ml of KCl per 100 ml of sample
Be	Aspiration	7090	234.9	500 ppm Al High Mg and Si	Add 0.1% fluoride Use method of standard additions
Be	Furnace	7091	234.9	Be in optical path	Optimize parameters to minimize effects
Cd	Aspiration	7130	228.8	Absorption and light scattering	Background correction is required
Cd	Furnace	7131	228.8	As above Excess chloride	As above Ammonium phosphate used as a matrix modifier
				Pipet tips	Use cadmium-free tips
Cr	Aspiration	7190	357.9	Alkali metal	KCl ionization suppressant in samples and standards Consult manufacturer's literature
Cr	Furnace	7191	357.9	200 mg/L Ca and P	All calcium nitrate for a known constant effect and to eliminate effect of phosphate
Cu	Aspiration	7210	324.7	Absorption & scatter	Consult manufacturer's manual

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5.4.3 Cold Vapor AAS Mercury Analysis. Fractions 1B, 2B, 3A, 3B, and 3C should be analyzed separately for mercury using CVAAS following the method outlined in EPA SW-846 Method 7470 or in Standard Methods for Water and Wastewater Analysis, 15th Edition, Method 303F. Set up the calibration curve (zero to 1000 ng) as described in SW-846 Method 7470 or similar to Method 303F using 300-ml BOD bottles instead of Erlenmeyers. Dilute separately, as described below, an aliquot sized from 1 ml to 10 ml of each original sample to 100 ml with water. Record the amount of the aliquot used for dilution to 100 ml. If no prior knowledge exists of the expected amount of mercury in the sample, a 5-ml aliquot is suggested for the first dilution to 100 ml and analysis. In determining the emission value for mercury, the size of the sample aliquot used for dilution and analysis is dependent upon its mercury content. The total amount of mercury in the aliquot shall be less than 1 μg and within the range (zero to 1000 ng) of the calibration curve. Place each sample aliquot into a separate 300-ml BOD bottle, and add enough water to make a total volume of 100 ml. Then analyze the sample for mercury by adding to it sequentially the sample preparation solutions and performing the sample preparation and analysis as described in the procedures of SW-846 Method 7470 or Method 303F. If the reading maximums are off-scale (because mercury in the aliquot exceeded the calibration range), including the dilution of 1-ml aliquots of the original sample, then perform the following:

dilute the original sample (or a portion of it) with 0.15 percent HNO_3 (1.5 ml concentrated HNO_3 per liter aqueous solution) so that when a 1- to 10-ml aliquot of the original sample is further diluted to 100 ml and analyzed by the procedures described above, it will yield an analysis within the range of the calibration curve.

6. Calibration

Maintain a laboratory log of all calibrations.

6.1 Sampling Train Calibration. Calibrate the sampling train components according to the indicated sections of Method 5: Probe Nozzle (Section 5.1); Pitot Tube (Section 5.2); Metering System (Section 5.3); Probe Heater (Section 5.4); Temperature Gauges (Section 5.5); Leak-Check of the Metering System (Section 5.6); and Barometer (Section 5.7).

6.2 Inductively Coupled Argon Plasma Spectrometer Calibration. Prepare standards as outlined in Section 4.5. Profile and calibrate the instrument according to the manufacturer's recommended procedures using the above standards. The calibration should be checked once per hour. If the instrument does not reproduce the standard concentrations within 10 percent, the complete calibration procedures should be performed.

6.3 Atomic Absorption Spectrometer - Direct Aspiration, Graphite Furnace and Cold Vapor Mercury Analyses. Prepare the standards as outlined in Section 4.5 and use to calibrate the spectrometer. Calibration procedures are also outlined in the

EPA methods referred to in Table 29-2 and in SW-846 Method 7470 or Standard Methods for Water and Wastewater Method 303F (for mercury). Each standard curve should be run in duplicate and the mean values used to calculate the calibration line. The instrument should be recalibrated approximately once every 10 to 12 samples.

7. **Quality Control**

7.1 Sampling. Field Reagent Blanks. When analyzed, the blanks in Container Nos. 7 through 12 produced previously in Sections 5.2.14 through 5.2.19, respectively, shall be processed, digested, and analyzed as follows. Digest and process one of the filters from Container No. 12 per Section 5.3.1, 100 ml from Container No. 7 per Section 5.3.2, and 100 ml from Container No. 8A per Section 5.3.3. This produces Fraction Blanks 1A and 1B from Fraction Blank 1. [If desired, the other two filters may be digested separately according to Section 5.3.1, diluted separately to 300 ml each, and analyzed separately to produce a blank value for each of the two additional filters. If these analyses are performed, they will produce two additional values for each of Fraction Blanks 1A and 1B. The three Fraction Blank 1A values will be calculated as three values of M_{fhb} in Equation 3 of Section 8.4.3, then the three values shall be totalled and divided by 3 to become the value M_{fhb} to be used in computing M_t by Equation 3. Similarly, the three Fraction Blank 1B values will be calculated separately as three values, totalled, averaged, and used as the value for Hg_{fhb} in Equation 8 of Section 8.5.3. The analyses of the two extra filters are optional and are not a requirement of this method, but if the analyses are performed, the results must be considered as described above.] Combine 100 ml of Container No. 8A with 200 ml from Container No. 9, and digest and process the resultant volume per Section 5.3.4. This produces concentrated Fraction Blanks 2A and 2B from Fraction Blank 2. A 100-ml portion of Container No. 8A is Fraction Blank 3A. Combine 100 ml from Container No. 10 with 33 ml from Container No. 8B. This produces Fraction Blank 3B (use 400 ml as the volume of Fraction Blank 3B when calculating the blank value. Use the actual volumes when calculating all the other blank values). Dilute 225 ml from Container No. 11 to 500 ml with water. This produces Fraction Blank 3C. Analyze Fraction Blank 1A and Fraction Blank 2A per Section 5.4.1 and/or 5.4.2. Analyze Fraction Blank 1B, Fraction Blank 2B, and Fraction Blanks 3A, 3B, and 3C per Section 5.4.3. The analysis of Fraction Blank 1A produces the front-half reagent blank correction values for the metals except for mercury; the analysis of Fraction Blank 1B produces the front-half reagent blank correction value for mercury. The analysis of concentrated Fraction Blank 2A produces the back-half reagent blank correction values for the metals except for mercury, while separate analyses of Fraction Blanks 2B, 3A, 3B, and 3C produce the back-half reagent blank correction value for mercury.

7.2 An attempt may be made to determine if the laboratory reagents used in Section 5.3 caused contamination. They should be analyzed by the procedures in Section 5.4. The Administrator will determine whether or not the laboratory blank reagent values can be used in the calculation of the test results.

7.3 Quality Control Samples. The following quality control samples should be analyzed.

7.3.1 ICAP Analysis. Follow the quality control shown in Section 8 of Method 6010. For the purposes of a three run test series, these requirements have been modified to include the following: two instrument check standard runs, two calibration blank runs, one interference check sample at the beginning of the analysis (must be within 25 percent or analyze by standard additions), one quality control sample to check the accuracy of the calibration standards (must be within 25 percent of calibration), and one duplicate analysis (must be within 10 percent of average or repeat all analyses).

7.3.2 Direct Aspiration and/or Graphite Furnace AAS Analysis for Sb, As, Ba, Be, Cd, Cu, Cr, Pb, Ni, Mn, Hg, P, Se, Ag, Tl, and Zn. All samples should be analyzed in duplicate. Perform a matrix spike on at least one front-half sample and one back-half sample or one combined sample. If recoveries of less than 75 percent or greater than 125 percent are obtained for the matrix spike, analyze each sample by the method of additions. A quality control sample should be analyzed to check the accuracy of the calibration standards. The results must be within 10 percent or the calibration repeated.

7.3.3 Cold Vapor AAS Analysis for Mercury. All samples should be analyzed in duplicate. A quality control sample should be analyzed to check the accuracy of the calibration standards (within 15 percent or repeat calibration). Perform a matrix spike on one sample from the HNO_3 impinger portion (must be within 25 percent or samples must be analyzed by the method of standard additions). Additional information on quality control can be obtained from EPA SW-846 Method 7470 or in Standard Methods for Water and Wastewater Method 303F.

8. Calculations

8.1 Dry Gas Volume. Using the data from this test, calculate $V_{m(std)}$, the dry gas sample volume at standard conditions as outlined in Section 6.3 of Method 5.

8.2 Volume of Water Vapor and Moisture Content. Using the data obtained from this test, calculate the volume of water vapor $V_{w(std)}$ and the moisture content B_{ws} of the stack gas. Use Equations 5-2 and 5-3 of Method 5.

8.3 Stack Gas Velocity. Using the data from this test and Equation 2-9 of Method 2, calculate the average stack gas velocity.

8.4 Metals (Except Mercury) in Source Sample.

8.4.1 Fraction 1A, Front-Half, Metals (except Hg). Calculate separately the amount of each metal collected in Fraction 1 of the sampling train using the following equation:

$$M_{fh} = C_{a1} \; F_d \; V_{soln,1} \qquad \text{Eq. 29-1}$$

where:

M_{fh} = Total mass of each metal (except Hg) collected in the front half of the sampling train (Fraction 1), μg.

C_{a1} = Concentration of metal in sample Fraction 1A as read from the standard curve, $\mu g/ml$.

F_d = Dilution factor (F_d = the inverse of the fractional portion of the concentrated sample in the solution actually used in the instrument to produce the reading C_{a1}. For example, when 2 ml of Fraction 1A are diluted to 10 ml, $F_d = 5$).

$V_{soln,1}$ = Total volume of digested sample solution (Fraction 1), ml.

NOTE: If Fractions 1A and 2A are combined, proportional aliquots must be used. Appropriate changes must be made in Equations 29-1 to 29-3 to reflect this approach.

8.4.2 Fraction 2A, Back-Half, Metals (except Hg). Calculate separately the amount of each metal collected in Fraction 2 of the sampling train using the following equation.

$$M_{bh} = C_{a2}\ F_a\ V_a \qquad \text{Eq. 29-2}$$

where:

M_{bh} = Total mass of each metal (except Hg) collected in the back-half of the sampling train (Fraction 2), μg.

C_{a2} = Concentration of metal in sample concentrated Fraction 2A as read from the standard curve, (μg/ml).

F_a = Aliquot factor, volume of Fraction 2 divided by volume of aliquot Fraction 2A (see Section 5.3.4).

V_a = Total volume of digested sample solution (concentrated Fraction 2A), ml (see Section 5.3.4.1 or 5.3.4.2, as applicable).

8.4.3 Total Train, Metals (except Hg). Calculate the total amount of each of the quantified metals collected in the sampling train as follows:

$$M_t = (M_{fh} - M_{fhb}) + (M_{bh} - M_{bhb}) \qquad \text{Eq. 29-3}$$

where:

M_t = Total mass of each metal (separately stated for each metal) collected in the sampling train, μg.

M_{fhb} = Blank correction value for mass of metal detected in front-half field reagent blank, μg.

M_{bhb} = Blank correction value for mass of metal detected in back-half field reagent blank, μg.

NOTE: If the measured blank value for the front half (m_{fhb}) is in the range 0.0 to A μg [where A μg equals the value determined by multiplying 1.4 μg/in.^{2} times the actual area in in.^{2} of the filter used in the emission sample], m_{fhb} may be used to correct the emission sample value (m_{fh}); if m_{fhb} exceeds A μg, the greater of the two following values may be used:

I. A μg, or

II. the lesser of (a) m_{fhb}, or (b) 5 percent of m_{fh}.

If the measured blank value for the back-half (m_{bhb}) is in the range 0.0 to 1 μg, m_{bhb} may be used to correct the emission sample value (m_{bh}); if m_{bhb} exceeds 1 μg, the greater of the two following values may be used: 1 μg or 5 percent of m_{bh}.

8.5 Mercury in Source Sample.

8.5.1 Fraction 1B, Front-Half, Mercury. Calculate the amount of mercury collected in the front-half, Fraction 1, of the sampling train using the following equation:

$$Hg_{fh} = \frac{Q_{fh}}{V_{f1B}} (V_{soln,1}) \qquad \text{Eq. 29-4}$$

where:

Hg_{fh} = Total mass of mercury collected in the front-half of the sampling train (Fraction 1), μg.

Q_{fh} = Quantity of mercury in analyzed sample, μg.

$V_{soln,1}$ = Total volume of digested sample solution (Fraction 1), ml.

V_{f1B} = Volume of Fraction 1B analyzed, ml. See the following Note.

Note: V_{f1B} is the actual amount of Fraction 1B analyzed. For example, if 1 ml of Fraction 1B were diluted to 100 ml to bring it into the proper analytical range, and 1 ml of the 100-ml dilution were analyzed, V_{f1B} would be 0.01.

8.5.2 Fractions 2B, 3A, 3B, and 3C, Back Half, Mercury. Calculate the amount of mercury collected in Fractions 2 using Equation 5 and in Fractions 3A, 3B, and 3C using Equation 6. Calculate the total amount of mercury collected in the back-half of the sampling train using Eq. 29-7.

$$Hg_{bh2} = \frac{Q_{bh2}}{V_{f2B}} (V_{soln,2}) \qquad \text{Eq. 29-5}$$

where:

Hg_{bh2} = Total mass of mercury collected in Fraction 2, μg.

Q_{bh2} = Quantity of mercury in analyzed sample, μg.

$V_{soln,2}$ = Total volume of Fraction 2, ml.

V_{f2B} = Volume of Fraction 2B analyzed, ml (see the following note).

Note: V_{f2B} is the actual amount of Fraction 2B analyzed. For example, if 1 ml of Fraction 2B were diluted to 10 ml to bring it into the proper analytical range, and 5 ml of the 10-ml dilution was analyzed, V_{f2B} would be 0.5. Use Equation 6 to calculate separately the back-half mercury for Fractions 3A, then 3B, then 3C.

where:

$$Hg_{bh3(A,B,C)} = \frac{Q_{bh3(A,B,C)}}{V_{f3(A,B,C)}} (V_{soln,3(A,B,C,)} \qquad \text{Eq. 29-6}$$

$Hg_{bh3(A,B,C)}$ = Total mass of mercury collected separately in Fraction 3A, 3B, or 3C, µg.

$Q_{bh3(A,B,C)}$ = Quantity of mercury in separately analyzed samples, µg.

$V_{f3(A,B,C)}$ = Volume of Fraction 3A, 3B, or 3C analyzed, ml (see note in Sections 8.5.1 and 8.5.2, and calculate similarly).

$V_{soln,3(A,B,C)}$ = Total volume of Fraction 3A, 3B, or 3C, ml.

$$Hg_{bh} = Hg_{bh2} + Hg_{bh3A} + Hg_{bh3B} + Hg_{bh3C} \qquad \text{Eq. 29-7}$$

where:

Hg_{bh} = Total mass of mercury collected in the back-half of the sampling train, µg.

8.5.3 Total Train Mercury Catch. Calculate the total amount of mercury collected in the sampling train using Eq 29-8.

$$Hg_t = (Hg_{fh} - Hg_{fhb}) + (Hg_{bh} - Hg_{bhb}) \qquad \text{Eq. 29-8}$$

where:

Hg_t = Total mass of mercury collected in the sampling train, ug.

Hg_{fhb} = Blank correction value for mass of mercury detected in front-half field reagent blank, µg.

Hg_{bhb} = Blank correction value for mass of mercury detected in back-half field reagent blanks, µg.

Note: If the total of the measured blank values (Hg_{fhb} + Hg_{bhb}) is in the range of 0 to 6 μg, then the total may be used to correct the sample value (Hg_{fh} + Hg_{bh}); if it exceeds 6 μg, the greater of the following two values may be used: 6 μg or 5 percent of the sample value (Hg_{fh} + Hg_{bh}).

8.6 Metal Concentration in Stack Gas. Calculate each metal separately for the Cd, total Cr, As, Ni, Mn, Be, Cu, Pb, P, Tl, Ag, Ba, Zn, Se, Sb, and Hg concentrations in the stack gas (dry basis, adjusted to standard conditions) as follows:

$$C_s = \frac{K_4 \, M_t}{V_{m(std)}} \qquad \text{Eq. 29-9}$$

where:

C_s = Concentration of each metal in the stack gas, mg/dscm.

K_4 = 10^{-3} mg/μg.

M_t = Total mass of each metal collected in the sampling train, μg; (substitute Hg_t for M_t for the mercury calculation).

$V_{m(std)}$ = Volume of gas sample as measured by the dry gas meter, corrected to dry standard conditions, dscm.

8.7 Isokinetic Variation and Acceptable Results. Same as Method 5, Sections 6.11 and 6.12, respectively.

9. Bibliography

1. Method 303F in Standard Methods for the Examination of Water Wastewater, 15th Edition, 1980. Available from the American Public Health Association, 1015 18th Street N.W., Washington, D.C. 20036.

2. EPA Methods 6010, 7000, 7041, 7060, 7131, 7421, 7470, 7740, and 7841, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. SW-846, Third Edition. September 1988. Office of Solid Waste and Emergency Response, U. S. Environmental Protection Agency, Washington, D.C. 20460.

3. EPA Method 200.7, Code of Federal Regulations, Title 40, Part 136, Appendix C. July 1, 1987.

4. EPA Methods 1 through 5, Code of Federal Regulations, Title 40, Part 60, Appendix A, July 1, 1991.

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3. In Part 61, Method 101A of Appendix B, by revising the Title, Sections 7.2.1, 7.3.1, 7.3.2, 7.3.3, and 9.2 and adding Sections 5.2.4 through 5.2.7, 6.1.5, 6.1.7, 6.1.8, 7.2.1.1 through 7.2.1.3, 7.2.6, and Citation 3 of the Bibliography as follows:

Appendix B - Test Methods

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Method 101A - Determination of Particulate and Gaseous Mercury Emissions from Stationary Sources

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5. * * *

5.2 * * *

5.2.4 Atomic Absorption Spectrophotometer or Equivalent. Any atomic absorption unit with an open sample presentation area in which to mount the optical cell is suitable. Instrument settings recommended by the particular manufacturer should be followed. Instruments designed specifically for the measurement of mercury using the cold-vapor technique are commercially available and may be substituted for the atomic absorption spectrophotometer.

5.2.5 Optical Cell. Alternatively, a heat lamp mounted above the cell or a moisture trap installed upstream of the cell may be used.

5.2.6 Aeration Cell. Alternatively, aeration cells available with commercial cold vapor instrumentation may be used.

5.2.7 Aeration Gas Cylinder. Nitrogen, argon, or dry, Hg-free air, equipped with a single-stage regulator. Alternatively, aeration may be provided by a peristaltic metering pump. If a commercial cold vapor instrument is used, follow the manufacturer's recommendations.

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6. * * *

6.1 * * *

6.1.5 Sulfuric Acid (H_2SO_4), 10 Percent (V/V). Carefully add and mix 100 ml of concentrated H_2SO_4 to 900 ml of deionized distilled water.

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6.1.7 Hydrochloric Acid. Trace-metals grade is recommended. If other grades are used, the Hg level must be less than 3 ng/ml Hg.

6.1.8 Hydrochloric Acid, 8 N. Dilute 67 ml of concentrated HCl to 100 ml with water (slowly add the HCl to the water).

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7. * * *

7.2 * * *

7.2.1 Container No. 1 (Impinger, Probe, and Filter Holder) and, if applicable, No. 1A (HCl rinse).

7.2.1.1 Using a graduated cylinder, measure the liquid in the first three impingers to within 1 ml. Record the volume of liquid present (e.g., see Figure 5-3 of Method 5 in 40 CFR Part 60). This information is needed to calculate the moisture content of the effluent gas. (Use only graduated cylinder and glass storage bottles that have been precleaned as in Section 7.1.2.) Place the contents of the first three impingers (four if an extra impinger was added as described in Section 7.1.1) into a 1000-ml glass sample bottle labeled Container No. 1. (<u>Note</u>: If a filter is used, remove the filter from its holder as outlined under "Container No. 3" below.)

7.2.1.2 Taking care that dust on the outside of the probe or other exterior surfaces does not get into the sample, quantitatively recover the Hg (and any condensate) from the probe nozzle, probe fitting, probe liner, front half of the filter holder (if applicable), and impingers as follows: Rinse these components with a total of 400 ml (350 ml if an extra impinger was added as described in Section 7.1.1) of fresh acidified 4 percent $KMnO_4$ solution carefully assuring removal of all loose particulate matter from the impingers; add all washings to the 1000-ml glass sample bottle. To remove any residual brown deposits on the glassware following the permanganate rinse, rinse with approximately 100 ml of water carefully assuring removal of all loose particulate matter from the impingers, and add this rinse to Container No. 1. If no visible deposits remain after this water rinse, do not rinse with 8 N HCl. However, if deposits do remain on the glassware after the water rinse, wash impinger walls and stems with 25 ml of 8 N HCl, and place the wash in a separate container labeled Container No. 1A as follows: Place 150 ml of water in a sample container labeled Container No. 1A. Use only a total of 25 ml of 8 N HCl to rinse all impingers. Wash the impinger walls and stem with the HCl by turning and shaking the impinger so that the HCl contacts all inside surfaces. Pour the HCl wash carefully, with stirring, into Container No. 1A. Rinse the impinger walls and stem with a total of 50 ml of water, and place this rinse into Container No. 1A. This separate container (No. 1A) is used for safety reasons.

7.2.1.3 After all washings have been collected in the sample container, tighten the lid on the container to prevent leakage during shipment to the laboratory. Mark the height of the fluid level to determine whether leakage occurs during transport. Label the container to identify its contents clearly.

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7.2.6 Container No. 6 (HCl rinse blank). For a blank, place 200 ml of water in a 1000-ml sample bottle, and add 25 ml of 8 N HCl carefully with stirring. Seal the container. Only one blank sample per 3 runs is required.

* * * * *

7.3 * * *

7.3.1 Containers No. 3 and No. 4 (Filter and Filter Blank). If a filter is used, place the contents, including the filter, of Containers No. 3 and 4 in separate 250-ml beakers, and heat the beakers on a steam bath until most of the liquid has evaporated. Do not take to dryness. Add 20 ml of concentrated HNO_3 to the beakers, cover them with a watch glass, and heat on a hot plate at 70°C for 2 hours. Remove from the hot plate. Filter the solution from digestion of the Container No. 3 contents through Whatman No. 40 filter paper, and save the filtrate for addition to the Container No. 1 filtrate as described in Section 7.3.2 below. Discard the filter. Filter solution from the digestion of the Container No. 4 contents through Whatman No. 40 filter paper, and save the filtrate for addition to Container No. 5 filtrate as described in Section 7.3.3 below. Discard the filter.

7.3.2 Container No. 1 (Impingers, Probe, and Filter Holder) and, if applicable, No. 1A (HCl rinse). Filter the contents of

Container No. 1 through Whatman 40 filter paper into a 1-liter volumetric flask to remove the brown MnO_2 precipitate. Save the filter for digestion of the brown MnO_2 precipitate. Add the sample filtrate from Container No.3 to the 1-liter volumetric flask, and dilute to volume with water. If the combined filtrates are greater than 1000 ml, determine the volume to the nearest ml and make the appropriate corrections for blank subtractions. Mix thoroughly. Mark the filtrate as analysis Sample No A.1 and analyze for Hg within 48 hr of the filtration step. Place the saved filter, which was used to remove the brown MnO_2 precipitate, into an appropriate sized container. In a laboratory hood, add 25 ml of 8 N HCl to the filter and allow to digest for a minimum of 24 hours at room temperature. Filter the contents of Container 1A through Whatman 40 paper into a 500-ml volumetric flask. Then filter the digestate of the brown MnO_2 precipitate from Container No. 1 through Whatman paper into the same 500-ml volumetric flask, and dilute to volume with water. Mark this combined 500-ml dilute solution as analysis Sample No. HCl A.2, and analyze for Hg. Discard the filters.

7.3.3 Container No. 5 (Absorbing Solution Blank) and No. 6 (HCl Rinse Blank). Treat Container No. 5 the same as Container No. 1 as described in Section 7.3.2. Add the filter blank filtrate from Container No. 4 to the 1-liter volumetric flask, and dilute to volume. Mix thoroughly. Mark this as Sample No. A.1 blank, and analyze for Hg within 48 hr of the filtration step. Digest any brown precipitate remaining on the filter from the filtration of Container No. 5 by the same procedure as described in Section 7.3.2. Filter the contents of Container No. 6 by the same procedure as described in Section 7.3.2, and combine in the 500-ml volumetric flask with the filtrate from the digested blank MnO_2 precipitate. Mark this resultant 500-ml combined dilute solution as analysis Sample No. HCl A.2 blank. (Note: When analyzing samples A.1 blank and HCl A.2 blank, always begin with 10-ml aliquots. This applies specifically to blank samples.)

* * * * *

9. * * *

9.2 Total Mercury. For each source sample, correct the average maximum absorbance of the two consecutive samples whose peak heights agree within 3 percent of their average for the contribution of the blank. Then calculate the total Hg content in μg in each sample. Correct for any dilutions made to bring the sample into the working range of the spectrophotometer.

Eq. 101A-1

$$m_{(HCl)Hg} = \frac{[C_{(HCl)Hg}\ \ D.F.]}{S} - \frac{[C_{(HCl\ blk)Hg}\ \ D.F._{blk}]}{S_{blk}}\ Vf_{(HCl)}\ (10^{-3})$$

where:

$m_{(HCl)Hg}$ = Total blank corrected μg of Hg in HCl rinse and HCl digestate of filter sample

$C_{(HCl)Hg}$ = Total ng of Hg analyzed in the aliquot from the 500-ml analysis Sample No. HCl A.2.

$C_{(HCl\ blk)Hg}$ = Total ng of Hg analyzed in aliquot of the 500-ml analysis Sample No. HCl A.2 blank.

D.F. = Dilution factor for the HCl-digested Hg-containing solution, Analysis Sample No. "HCl A.2." This dilution factor applies only to the intermediate dilution steps, since the original sample volume $[(V_f)_{HCL}]$ of "HCl A.2" has been factored out in the equation along with the sample aliquot (S). In Eq. 6.9, the sample aliquot, S, is introduced directly into the aeration cell for analysis according to the procedure outlined in Section 3.19.5.3.4. A dilution factor is required only if it is necessary to bring the sample into the analytical instrument's calibration range.

$D.F._{blk}$ = Dilution factor for the HCl-digested Hg-containing solution, Analysis Sample No. "HCl A.2 blank." (Refer to sample No. "HCl A.2" dilution factor information above.)

$V_{f(HCl)}$ = Solution volume of original sample, 500 ml for samples diluted as described in Section 7.3.1.

10^{-3} = Conversion factor, µg/ng.

S = Aliquot volume of sample added to aeration cell, ml.

S_{blk} = Aliquot volume of blank added to aeration cell, ml.

Note: The maximum allowable blank subtraction for the HCl is the lesser of the two following values: (1) the actual blank measured value (analysis Sample No. HCl A.2 blank), or (2) 5% of the Hg content in the combined HCl rinse and digested sample (analysis Sample No. HCl A.2).

Eq. 101A-2

$$m_{(fltr)Hg} = \frac{[C_{(fltr)Hg}\, D.F.\ V_{f(fltr)}]}{S} - \frac{[C_{(fltr\ blk)Hg}\, D.F._{blk}\ V_{f(blk)}]}{S_{blk}} \ (10^{-3})$$

where:

$m_{(fltr)Hg}$ = Total blank corrected μg of Hg in $KMnO_4$ filtrate and HNO_3 digestion of filter sample.

$C_{(fltr)Hg}$ = Total ng of Hg in aliquot of $KMnO_4$ filtrate and HNO_3 digestion of filter analyzed (aliquot of analysis Sample No. A.1).

$C_{(fltr\ blk)Hg}$ = Total ng of Hg in aliquot of $KMnO_4$ blank and HNO_3 digestion of blank filter analyzed (aliquot of analysis Sample No. A.1 blank).

$V_{f(fltr)}$ = Solution volume of original sample, normally 1000 ml for samples diluted as described in Section 7.3.2.

$V_{f(blk)}$ = Solution volume of blank sample, 1000 ml for samples diluted as described in Section 7.3.2.

Note: The maximum allowable blank subtraction for the HCl is the lesser of the two following values: (1) the actual blank measured value (analysis Sample No. "A.1 blank"), or (2) 5% of the Hg content in the filtrate (analysis Sample No. "A.1").

$$m_{Hg} = m_{(HCl)Hg} + m_{(fltr)Hg} \qquad \text{Eq. 101A-3}$$

where:

m_{Hg} = Total blank corrected Hg content in each sample, μg.

$m_{(HCl)Hg}$ = Total blank corrected μg of Hg in HCl rinse and HCl digestate of filter sample.

$m_{(fltr)Hg}$ = Total blank corrected μg of Hg in $KMnO_4$ filtrate and HNO_3 digestion of filter sample.

* * * * *

10. * * *

3. Wilshire, Frank W., J.E. Knoll, T.E. Ward, and M.R. Midgett. Reliability Study of the U.S. EPA's Method 101A - Determination of Particulate and Gaseous Mercury Emissions. U.S. Environmental Protection Agency, Research Triangle Park, NC. Report No. 600/D-31/219 AREAL 367, NTIS Acc No. PB91-233361.

* * * * *

5. In Appendix B of Part 61, by revising the second and last sentences, respectively, in Section 7.1.1 of Method 101A as follows: "In this method, highly oxidizable matter may make it impossible to sample for the desired minimum time." "In cases where an excess of water condensation is encountered, collect two

runs to make one sample, or add an extra impinger in front of the first impinger (also containing acidified $KMnO_4$ solution).

6. In Appendix B of Part 61, by replacing "500" in Section 7.2.5 of Method 101A with "650."

7. In Appendix B of Part 61, by replacing "150" in Section 7.2.3 of Method 101A with "100."

* * * * *

Front-half Metal	Back-half Fraction 1 Probe and Filter	Back-half Fraction 2 Impingers 1-3	Fractions "Hg, only" Impingers 4-6	Total Train
Antimony	7.7 (0.7)*	3.8 (0.4)*		11.5 (1.1)*
Arsenic	12.7 (0.3)*	6.4 (0.1)*		19.1 (0.4)*
Barium	0.5	0.3		0.8
Beryllium	0.07 (0.05)*	0.04 (0.03)*		0.11 (0.08)*
Cadmium	1.0 (0.02)*	0.5 (0.01)*		1.5 (0.03)*
Chromium	1.7 (0.2)*	0.8 (0.1)*		2.5 (0.3)*
Copper	1.4	0.7		2.1
Lead	10.1 (0.2)*	5.0 (0.1)*		15.1 (0.3)*
Manganese	0.5 (0.2)*	0.2 (0.1)*		0.7 (0.3)*
Mercury	0.6**	3.0**	2.0**	5.6**
Nickel	3.6	1.8		5.4
Phosphorus	18	9		27
Selenium	18 (0.5)*	9 (0.3)*		27 (0.8)*
Silver	1.7	0.9		2.6
Thallium	9.6 (0.2)*	4.8 (0.1)*		14.4 (0.3)*
Zinc	0.5	0.3		0.8

( )* Detection limit when analyzed by GFAAS.

** Detection limit when analyzed by CVAAS, estimated for back-Half and total Train.

Note: Actual method in-stack detection limits will be determined based on actual source sampling parameters and analytical results as described earlier in this section.

Table 29-1. In-stack method detection limits.

APPENDIX J.2

METHOD 0010

MODIFIED METHOD 5 SAMPLING TRAIN (SEMI-VOST)

METHOD 0010

MODIFIED METHOD 5 SAMPLING TRAIN

1.0 SCOPE AND APPLICATION

1.1 This method is applicable to the determination of Destruction and Removal Efficiency (DRE) of semivolatile Principal Organic Hazardous Compounds (POHCs) from incineration systems (PHS, 1967). This method also may be used to determine particulate emission rates from stationary sources as per EPA Method 5 (see References at end of this method).

2.0 SUMMARY OF METHOD

2.1 Gaseous and particulate pollutants are withdrawn from an emission source at an isokinetic sampling rate and are collected in a multicomponent sampling train. Principal components of the train include a high-efficiency glass- or quartz-fiber filter and a packed bed of porous polymeric adsorbent resin. The filter is used to collect organic-laden particulate materials and the porous polymeric resin to adsorb semivolatile organic species. Semivolatile species are defined as compounds with boiling points >100°C.

2.2 Comprehensive chemical analyses of the collected sample are conducted to determine the concentration and identity of the organic materials.

3.0 INTERFERENCES

3.1 Oxides of nitrogen (NO_x) are possible interferents in the determination of certain water-soluble compounds such as dioxane, phenol, and urethane; reaction of these compounds with NO_x in the presence of moisture will reduce their concentration. Other possibilities that could result in positive or negative bias are (1) stability of the compounds in methylene chloride, (2) the formation of water-soluble organic salts on the resin in the presence of moisture, and (3) the solvent extraction efficiency of water-soluble compounds from aqueous media. Use of two or more ions per compound for qualitative and quantitative analysis can overcome interference at one mass. These concerns should be addressed on a compound-by-compound basis before using this method.

4.0 APPARATUS AND MATERIALS

4.1 Sampling train:

4.1.1 A schematic of the sampling train used in this method is shown in Figure 1. This sampling train configuration is adapted from EPA Method 5 procedures, and, as such, the majority of the required equipment

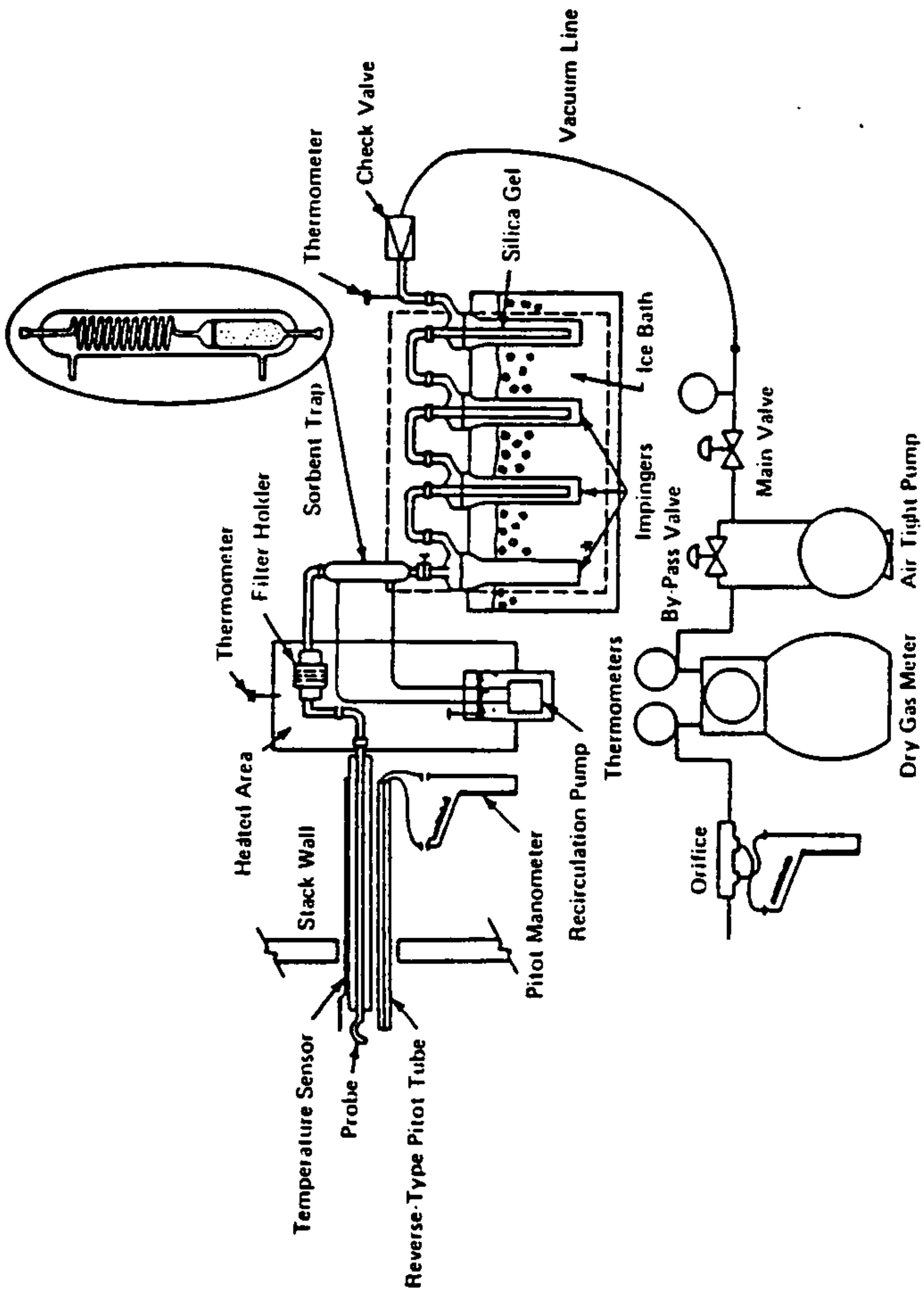

Figure 1. Modified Method 5 Sampling Train.

is identical to that used in EPA Method 5 determinations. The new components required are a condenser coil and a sorbent module, which are used to collect semivolatile organic materials that pass through the glass- or quartz-fiber filter in the gas phase.

4.1.2 Construction details for the basic train components are given in APTD-0581 (see Martin, 1971, in Section 13.0, References); commercial models of this equipment are also available. Specifications for the sorbent module are provided in the following subsections. Additionally, the following subsections list changes to APTD-0581 and identify allowable train configuration modifications.

4.1.3 Basic operating and maintenance procedures for the sampling train are described in APTD-0576 (see Rom, 1972, in Section 13.0, References). As correct usage is important in obtaining valid results, all users should refer to APTD-0576 and adopt the operating and maintenance procedures outlined therein unless otherwise specified. The sampling train consists of the components detailed below.

4.1.3.1 Probe nozzle: Stainless steel (316) or glass with sharp, tapered (30° angle) leading edge. The taper shall be on the outside to preserve a constant I.D. The nozzle shall be buttonhook or elbow design and constructed from seamless tubing (if made of stainless steel). Other construction materials may be considered for particular applications. A range of nozzle sizes suitable for isokinetic sampling should be available in increments of 0.16 cm (1/16 in.), e.g., 0.32-1.27 cm (1/8-1/2 in.), or larger if higher volume sampling trains are used. Each nozzle shall be calibrated according to the procedures outlined in Paragraph 9.1.

4.1.3.2 Probe liner: Borosilicate or quartz-glass tubing with a heating system capable of maintaining a gas temperature of 120 ± 14°C (248 ± 25°F) at the exit end during sampling. (The tester may opt to operate the equipment at a temperature lower than that specified.) Because the actual temperature at the outlet of the probe is not usually monitored during sampling, probes constructed according to APTD-0581 and utilizing the calibration curves of APTD-0576 (or calibrated according to the procedure outlined in APTD-0576) are considered acceptable. Either borosilicate or quartz-glass probe liners may be used for stack temperatures up to about 480°C (900°F). Quartz liners shall be used for temperatures between 480 and 900°C (900 and 1650°F). (The softening temperature for borosilicate is 820°C (1508°F), and for quartz 1500°C (2732°F).) Water-cooling of the stainless steel sheath will be necessary at temperatures approaching and exceeding 500°C.

4.1.3.3 Pitot tube: Type S, as described in Section 2.1 of EPA Method 2, or other appropriate devices (Vollaro, 1976). The pitot tube shall be attached to the probe to allow constant monitoring of the stack-gas velocity. The impact (high-pressure) opening plane of the pitot tube shall be even with or above the nozzle entry plane (see EPA Method 2, Figure 2-6b) during sampling. The Type S pitot tube assembly shall have a known coefficient, determined as outlined in Section 4 of EPA Method 2.

4.1.3.4 Differential pressure gauge: Inclined manometer or equivalent device as described in Section 2.2 of EPA Method 2. One manometer shall be used for velocity-head (ΔP) readings and the other for orifice differential pressure (ΔH) readings.

4.1.3.5 Filter holder: Borosilicate glass, with a glass frit filter support and a sealing gasket. The sealing gasket should be made of materials that will not introduce organic material into the gas stream at the temperature at which the filter holder will be maintained. The gasket shall be constructed of Teflon or materials of equal or better characteristics. The holder design shall provide a positive seal against leakage at any point along the filter circumference. The holder shall be attached immediately to the outlet of the cyclone or cyclone bypass.

4.1.3.6 Filter heating system: Any heating system capable of maintaining a temperature of 120 $\pm$ 14°C (248 $\pm$ 25°F) around the filter holder during sampling. Other temperatures may be appropriate for particular applications. Alternatively, the tester may opt to operate the equipment at temperatures other than that specified. A temperature gauge capable of measuring temperature to within 3°C (5.4°F) shall be installed so that the temperature around the filter holder can be regulated and monitored during sampling. Heating systems other than the one shown in APTD-0581 may be used.

4.1.3.7 Organic sampling module: This unit consists of three sections, including a gas-conditioning section, a sorbent trap, and a condensate knockout trap. The gas-conditioning system shall be capable of conditioning the gas leaving the back half of the filter holder to a temperature not exceeding 20°C (68°F). The sorbent trap shall be sized to contain approximately 20 g of porous polymeric resin (Rohm and Haas XAD-2 or equivalent) and shall be jacketed to maintain the internal gas temperature at 17 $\pm$ 3°C (62.5 $\pm$ 5.4°F). The most commonly used coolant is ice water from the impinger ice-water bath, constantly circulated through the outer jacket, using rubber or plastic tubing and a peristaltic pump. The sorbent trap should be outfitted with a glass well or depression, appropriately sized to accommodate a small thermocouple in the trap for monitoring the gas entry temperature. The condensate knockout trap shall be of sufficient size to collect the condensate following gas conditioning. The organic module components shall be oriented to direct the flow of condensate formed vertically downward from the conditioning section, through the adsorbent media, and into the condensate knockout trap. The knockout trap is usually similar in appearance to an empty impinger directly underneath the sorbent module; it may be oversized but should have a shortened center stem (at a minimum, one-half the length of the normal impinger stems) to collect a large volume of condensate without bubbling and overflowing into the impinger train. All surfaces of the organic module wetted by the gas sample shall be fabricated of borosilicate glass, Teflon, or other inert materials. Commercial versions of the complete organic module are not currently available, but may be assembled from commercially available laboratory glassware and a custom-fabricated sorbent trap. Details of two acceptable designs are shown in Figures 2 and 3 (the thermocouple well is shown in Figure 2).

4.1.3.8 Impinger train: To determine the stack-gas moisture content, four 500-mL impingers, connected in series with leak-free ground-glass joints, follow the knockout trap. The first, third, and fourth impingers shall be of the Greenburg-Smith design, modified by replacing the tip with a 1.3-cm (1/2-in.) I.D. glass tube extending about 1.3 cm (1/2 in.) from the bottom of the outer cylinder. The second impinger shall be of the Greenburg-Smith design with the standard tip. The first and second impingers shall contain known quantities of water or appropriate trapping solution. The third shall be empty or charged with a caustic solution, should the stack gas contain hydrochloric acid (HCl). The fourth shall contain a known weight of silica gel or equivalent desiccant.

4.1.3.9 Metering system: The necessary components are a vacuum gauge, leak-free pump, thermometers capable of measuring temperature to within 3°C (5.4°F), dry-gas meter capable of measuring volume to within 1%, and related equipment, as shown in Figure 1. At a minimum, the pump should be capable of 4 cfm free flow, and the dry-gas meter should have a recording capacity of 0-999.9 cu ft with a resolution of 0.005 cu ft. Other metering systems capable of maintaining sampling rates within 10% of isokineticity and of determining sample volumes to within 2% may be used. The metering system must be used in conjunction with a pitot tube to enable checks of isokinetic sampling rates. Sampling trains using metering systems designed for flow rates higher than those described in APTD-0581 and APTD-0576 may be used, provided that the specifications of this method are met.

4.1.3.10 Barometer: Mercury, aneroid, or other barometer capable of measuring atmospheric pressure to within 2.5 mm Hg (0.1 in. Hg). In many cases the barometric reading may be obtained from a nearby National Weather Service station, in which case the station value (which is the absolute barometric pressure) is requested and an adjustment for elevation differences between the weather station and sampling point is applied at a rate of minus 2.5 mm Hg (0.1 in. Hg) per 30-m (100 ft) elevation increase (vice versa for elevation decrease).

4.1.3.11 Gas density determination equipment: Temperature sensor and pressure gauge (as described in Sections 2.3 and 2.4 of EPA Method 2), and gas analyzer, if necessary (as described in EPA Method 3). The temperature sensor ideally should be permanently attached to the pitot tube or sampling probe in a fixed configuration such that the tip of the sensor extends beyond the leading edge of the probe sheath and does not touch any metal.

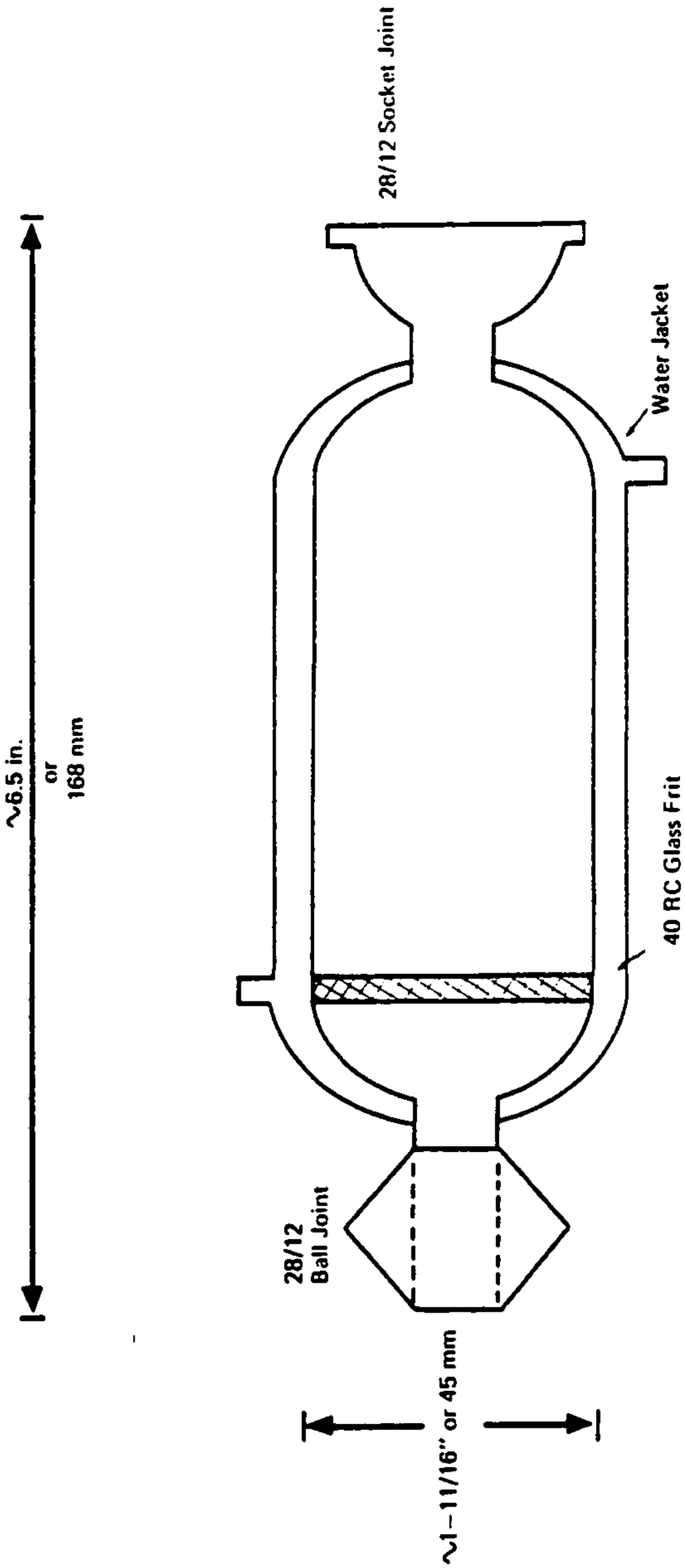

Figure 2. Adsorbent Sampling System.

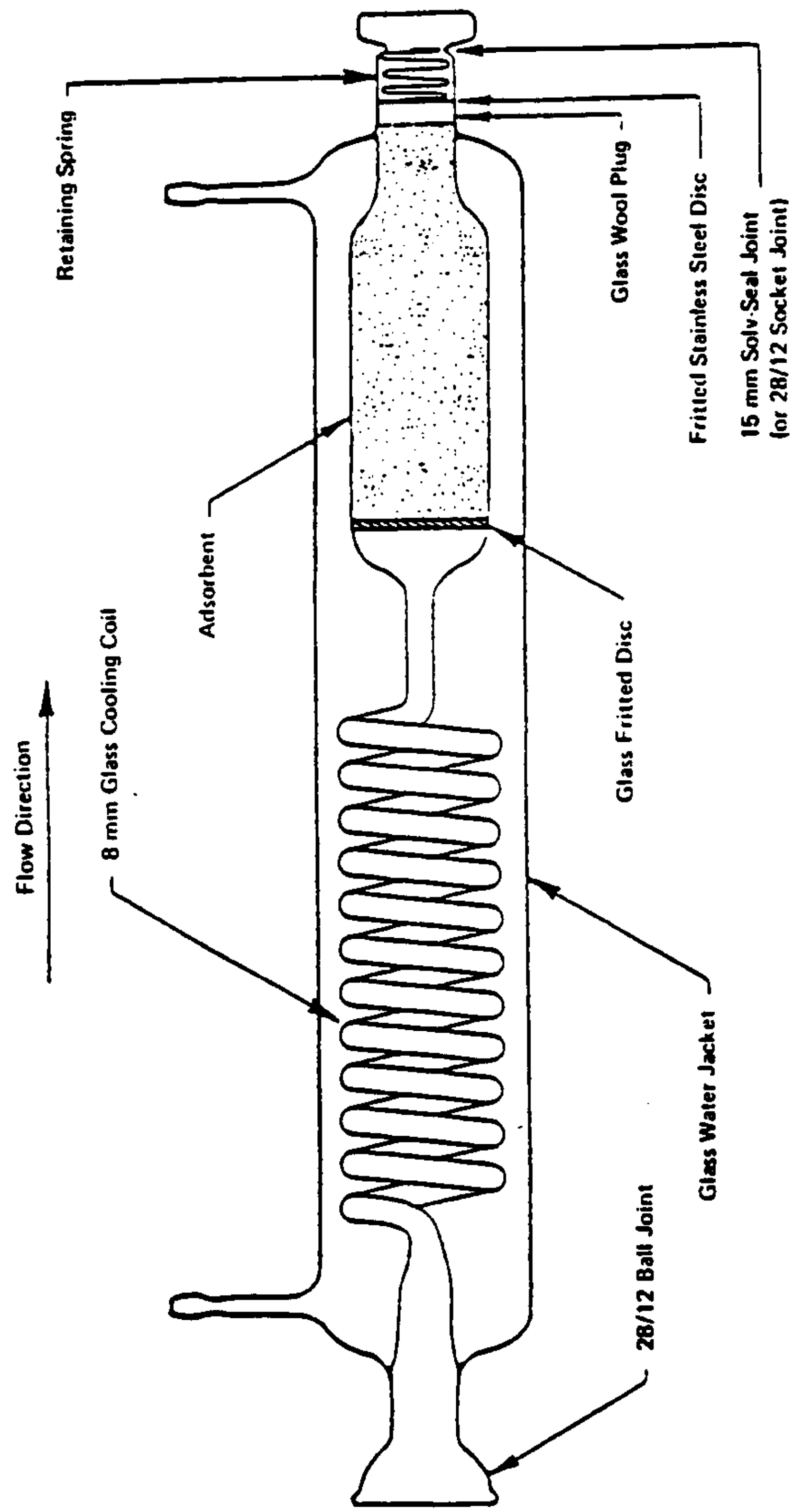

Figure 3. Adsorbent Sampling System.

Alternatively, the sensor may be attached just prior to use in the field. Note, however, that if the temperature sensor is attached in the field, the sensor must be placed in an interference-free arrangement with respect to the Type S pitot tube openings (see EPA Method 2, Figure 2-7). As a second alternative, if a difference of no more than 1% in the average velocity measurement is to be introduced, the temperature gauge need not be attached to the probe or pitot tube.

4.1.3.12 Calibration/field-preparation record: A permanently bound laboratory notebook, in which duplicate copies of data may be made as they are being recorded, is required for documenting and recording calibrations and preparation procedures (i.e., filter and silica gel tare weights, clean XAD-2, quality assurance/quality control check results, dry-gas meter, and thermocouple calibrations, etc.). The duplicate copies should be detachable and should be stored separately in the test program archives.

4.2 Sample Recovery:

4.2.1 **Probe liner:** Probe nozzle and organic module conditioning section brushes; nylon bristle brushes with stainless steel wire handles are required. The probe brush shall have extensions of stainless steel, Teflon, or inert material at least as long as the probe. The brushes shall be properly sized and shaped to brush out the probe liner, the probe nozzle, and the organic module conditioning section.

4.2.2 **Wash bottles:** Three. Teflon or glass wash bottles are recommended; polyethylene wash bottles should not be used because organic contaminants may be extracted by exposure to organic solvents used for sample recovery.

4.2.3 **Glass sample storage containers:** Chemically resistant, borosilicate amber and clear glass bottles, 500-mL or 1,000-mL. Bottles should be tinted to prevent action of light on sample. Screw-cap liners shall be either Teflon or constructed so as to be leak-free and resistant to chemical attack by organic recovery solvents. Narrow-mouth glass bottles have been found to exhibit less tendency toward leakage.

4.2.4 **Petri dishes:** Glass, sealed around the circumference with wide (1-in.) Teflon tape, for storage and transport of filter samples.

4.2.5 **Graduated cylinder and/or balances:** To measure condensed water to the nearest 1 mL or 1 g. Graduated cylinders shall have subdivisions not $>$2 mL. Laboratory triple-beam balances capable of weighing to $\pm$0.5 g or better are required.

4.2.6 **Plastic storage containers:** Screw-cap polypropylene or polyethylene containers to store silica gel.

4.2.7 **Funnel and rubber policeman:** To aid in transfer of silica gel to container (not necessary if silica gel is weighed in field).

4.2.8 Funnels: Glass, to aid in sample recovery.

4.3 Filters: Glass- or quartz-fiber filters, without organic binder, exhibiting at least 99.95% efficiency (<0.05% penetration) on 0.3-um dioctyl phthalate smoke particles. The filter efficiency test shall be conducted in accordance with ASTM standard method D2986-71. Test data from the supplier's quality control program are sufficient for this purpose. In sources containing SO_2 or SO_3, the filter material must be of a type that is unreactive to SO_2 or SO_3. Reeve Angel 934 AH or Schleicher and Schwell #3 filters work well under these conditions.

4.4 Crushed ice: Quantities ranging from 10-50 lb may be necessary during a sampling run, depending on ambient air temperature.

4.5 Stopcock grease: Solvent-insoluble, heat-stable silicone grease. Use of silicone grease upstream of the module is not permitted, and amounts used on components located downstream of the organic module shall be minimized. Silicone grease usage is not necessary if screw-on connectors and Teflon sleeves or ground-glass joints are used.

4.6 Glass wool: Used to plug the unfritted end of the sorbent module. The glass-wool fiber should be solvent-extracted with methylene chloride in a Soxhlet extractor for 12 hr and air-dried prior to use.

5.0 REAGENTS

5.1 Adsorbent resin: Porous polymeric resin (XAD-2 or equivalent) is recommended. These resins shall be cleaned prior to their use for sample collection. Appendix A of this method should be consulted to determine appropriate precleaning procedure. For best results, resin used should not exhibit a blank of higher than 4 mg/kg of total chromatographable organics (TCO) (see Appendix B) prior to use. Once cleaned, resin should be stored in an airtight, wide-mouth amber glass container with a Teflon-lined cap or placed in one of the glass sorbent modules tightly sealed with Teflon film and elastic bands. The resin should be used within 4 wk of the preparation.

5.2 Silica gel: Indicating type, 6-16 mesh. If previously used, dry at 175°C (350°F) for 2 hr before using. New silica gel may be used as received. Alternatively, other types of desiccants (equivalent or better) may be used, subject to the approval of the Administrator.

5.3 Impinger solutions: Distilled organic-free water (Type II) shall be used, unless sampling is intended to quantify a particular inorganic gaseous species. If sampling is intended to quantify the concentration of additional species, the impinger solution of choice shall be subject to Administrator approval. This water should be prescreened for any compounds of interest. One hundred mL will be added to the specified impinger; the third impinger in the train may be charged with a basic solution (1 N sodium hydroxide or sodium acetate) to protect the sampling pump from acidic gases. Sodium acetate should be used when large sample volumes are anticipated because sodium hydroxide will react with carbon dioxide in aqueous media to form sodium carbonate, which may possibly plug the impinger.

5.4 Sample recovery reagents:

5.4.1 **Methylene chloride:** Distilled-in-glass grade is required for sample recovery and cleanup (see Note to 5.4.2 below).

5.4.2 **Methyl alcohol:** Distilled-in-glass grade is required for sample recovery and cleanup.

NOTE: Organic solvents from metal containers may have a high residue blank and should not be used. Sometimes suppliers transfer solvents from metal to glass bottles; thus blanks shall be run prior to field use and only solvents with low blank value (<0.001%) shall be used.

5.4.3 **Water:** Water (Type II) shall be used for rinsing the organic module and condenser component.

6.0 SAMPLE COLLECTION, PRESERVATION, AND HANDLING

6.1 Because of complexity of this method, field personnel should be trained in and experienced with the test procedures in order to obtain reliable results.

6.2 Laboratory preparation:

6.2.1 All the components shall be maintained and calibrated according to the procedure described in APTD-0576, unless otherwise specified.

6.2.2 Weigh several 200- to 300-g portions of silica gel in airtight containers to the nearest 0.5 g. Record on each container the total weight of the silica gel plus containers. As an alternative to preweighing the silica gel, it may instead be weighed directly in the impinger or sampling holder just prior to train assembly.

6.2.3 Check filters visually against light for irregularities and flaws or pinhole leaks. Label the shipping containers (glass Petri dishes) and keep the filters in these containers at all times except during sampling and weighing.

6.2.4 Desiccate the filters at 20 $\pm$ 5.6°C (68 $\pm$ 10°F) and ambient pressure for at least 24 hr, and weigh at intervals of at least 6 hr to a constant weight (i.e., <0.5-mg change from previous weighing), recording results to the nearest 0.1 mg. During each weighing the filter must not be exposed for more than a 2-min period to the laboratory atmosphere and relative humidity above 50%. Alternatively (unless otherwise specified by the Administrator), the filters may be oven-dried at 105°C (220°F) for 2-3 hr, desiccated for 2 hr, and weighed.

6.3 Preliminary field determinations:

6.3.1 Select the sampling site and the minimum number of sampling points according to EPA Method 1 or as specified by the Administrator. Determine the stack pressure, temperature, and range of velocity heads using EPA Method 2. It is recommended that a leak-check of the pitot lines (see EPA Method 2, Section 3.1) be performed. Determine the stack-gas moisture content using EPA Approximation Method 4 or its alternatives to establish estimates of isokinetic sampling-rate settings. Determine the stack-gas dry molecular weight, as described in EPA Method 2, Section 3.6. If integrated EPA Method 3 sampling is used for molecular weight determination, the integrated bag sample shall be taken simultaneously with, and for the same total length of time as, the sample run.

6.3.2 Select a nozzle size based on the range of velocity heads so that it is not necessary to change the nozzle size in order to maintain isokinetic sampling rates. During the run, do not change the nozzle. Ensure that the proper differential pressure gauge is chosen for the range of velocity heads encountered (see Section 2.2 of EPA Method 2).

6.3.3 Select a suitable probe liner and probe length so that all traverse points can be sampled. For large stacks, to reduce the length of the probe, consider sampling from opposite sides of the stack.

6.3.4 A minimum of 3 dscm (105.9 dscf) of sample volume is required for the determination of the Destruction and Removal Efficiency (DRE) of POHCs from incineration systems. Additional sample volume shall be collected as necessitated by analytical detection limit constraints. To determine the minimum sample volume required, refer to sample calculations in Section 10.0.

6.3.5 Determine the total length of sampling time needed to obtain the identified minimum volume by comparing the anticipated average sampling rate with the volume requirement. Allocate the same time to all traverse points defined by EPA Method 1. To avoid timekeeping errors, the length of time sampled at each traverse point should be an integer or an integer plus one-half min.

6.3.6 In some circumstances (e.g., batch cycles) it may be necessary to sample for shorter times at the traverse points and to obtain smaller gas-sample volumes. In these cases, the Administrator's approval must first be obtained.

6.4 Preparation of collection train:

6.4.1 During preparation and assembly of the sampling train, keep all openings where contamination can occur covered with Teflon film or aluminum foil until just prior to assembly or until sampling is about to begin.

6.4.2 Fill the sorbent trap section of the organic module with approximately 20 g of clean adsorbent resin. While filling, ensure that the trap packs uniformly, to eliminate the possibility of channeling. When freshly cleaned, many adsorbent resins carry a static charge, which will cause clinging to trap walls. This may be minimized by filling the trap in the presence of an antistatic device. Commercial antistatic devices include Model-204 and Model-210 manufactured by the 3M Company, St. Paul, Minnesota.

6.4.3 If an impinger train is used to collect moisture, place 100 mL of water in each of the first two impingers, leave the third impinger empty (or charge with caustic solution, as necessary), and transfer approximately 200-300 g of preweighed silica gel from its container to the fourth impinger. More silica gel may be used, but care should be taken to ensure that it is not entrained and carried out from the impinger during sampling. Place the container in a clean place for later use in the sample recovery. Alternatively, the weight of the silica gel plus impinger may be determined to the nearest 0.5 g and recorded.

6.4.4 Using a tweezer or clean disposable surgical gloves, place a labeled (identified) and weighed filter in the filter holder. Be sure that the filter is properly centered and the gasket properly placed to prevent the sample gas stream from circumventing the filter. Check the filter for tears after assembly is completed.

6.4.5 When glass liners are used, install the selected nozzle using a Viton-A O-ring when stack temperatures are $<$260°C (500°F) and a woven glass-fiber gasket when temperatures are higher. See APTD-0576 (Rom, 1972) for details. Other connecting systems utilizing either 316 stainless steel or Teflon ferrules may be used. When metal liners are used, install the nozzle as above, or by a leak-free direct mechanical connection. Mark the probe with heat-resistant tape or by some other method to denote the proper distance into the stack or duct for each sampling point.

6.4.6 Set up the train as in Figure 1. During assembly, do not use any silicone grease on ground-glass joints that are located upstream of the organic module. A very light coating of silicone grease may be used on all ground-glass joints that are located downstream of the organic module, but it should be limited to the outer portion (see APTD-0576) of the ground-glass joints to minimize silicone-grease contamination. Subject to the approval of the Administrator, a glass cyclone may be used between the probe and the filter holder when the total particulate catch is expected to exceed 100 mg or when water droplets are present in the stack. The organic module condenser must be maintained at a temperature of 17 $\pm$ 3°C. Connect all temperature sensors to an appropriate potentiometer/display unit. Check all temperature sensors at ambient temperature.

6.4.7 Place crushed ice around the impingers and the organic module condensate knockout.

6.4.8 Turn on the sorbent module and condenser coil coolant recirculating pump and begin monitoring the sorbent module gas entry temperature. Ensure proper sorbent module gas entry temperature before proceeding and again before any sampling is initiated. It is extremely important that the XAD-2 resin temperature never exceed 50°C (122°F), because thermal decomposition will occur. During testing, the XAD-2 temperature must not exceed 20°C (68°F) for efficient capture of the semivolatile species of interest.

6.4.9 Turn on and set the filter and probe heating systems at the desired operating temperatures. Allow time for the temperatures to stabilize.

6.5 <u>Leak-check procedures</u>

6.5.1 **Pre-test leak-check:**

6.5.1.1 Because the number of additional intercomponent connections in the Semi-VOST train (over the M5 Train) increases the possibility of leakage, a pre-test leak-check is required.

6.5.1.2 After the sampling train has been assembled, turn on and set the filter and probe heating systems at the desired operating temperatures. Allow time for the temperatures to stabilize. If a Viton A O-ring or other leak-free connection is used in assembling the probe nozzle to the probe liner, leak-check the train at the sampling site by plugging the nozzle and pulling a 381-mm Hg (15-in. Hg) vacuum.
(NOTE: A lower vacuum may be used, provided that it is not exceeded during the test.)

6.5.1.3 If an asbestos string is used, do not connect the probe to the train during the leak-check. Instead, leak-check the train by first attaching a carbon-filled leak-check impinger (shown in Figure 4) to the inlet of the filter holder (cyclone, if applicable) and then plugging the inlet and pulling a 381-mm Hg (15-in. Hg) vacuum. (Again, a lower vacuum may be used, provided that it is not exceeded during the test.) Then, connect the probe to the train and leak-check at about 25-mm Hg (1-in. Hg) vacuum; alternatively, leak-check the probe with the rest of the sampling train in one step at 381-mm Hg (15-in. Hg) vacuum. Leakage rates in excess of 4% of the average sampling rate or >0.00057 m^3/min (0.02 cfm), whichever is less, are unacceptable.

6.5.1.4 The following leak-check instructions for the sampling train described in APTD-0576 and APTD-0581 may be helpful. Start the pump with fine-adjust valve fully open and coarse-adjust valve completely closed. Partially open the coarse-adjust valve and slowly close the fine-adjust valve until the desired vacuum is reached. *Do <u>not</u> reverse direction of the fine-adjust valve;* this will cause water to back up into the organic module. If the desired vacuum is exceeded, either leak-check at this higher vacuum or end the leak-check, as shown below, and start over.

CROSS SECTIONAL VIEW

Leak Testing Apparatus

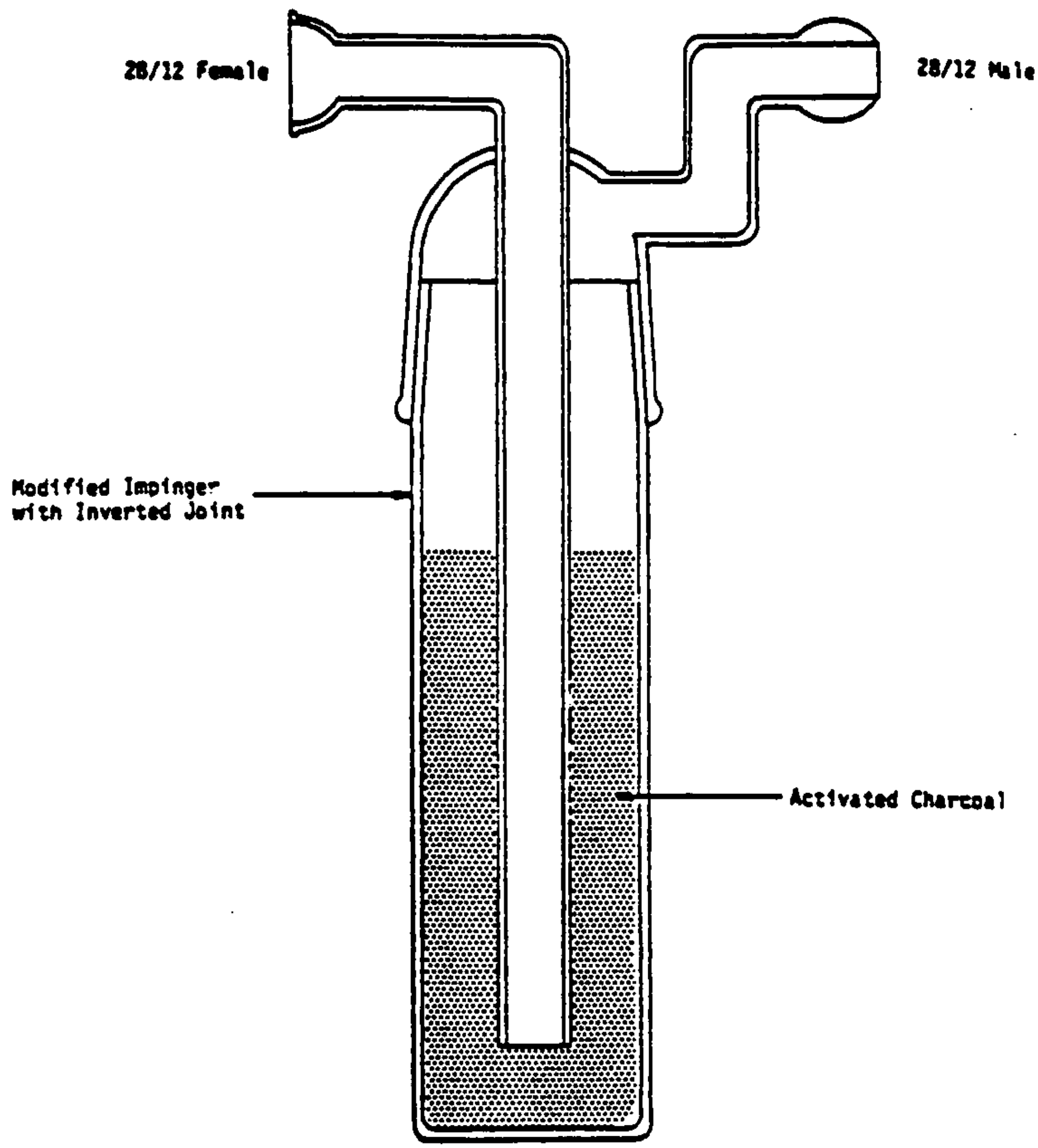

Figure 4. Leak-check impinger.

6.5.1.5 When the leak-check is completed, first slowly remove the plug from the inlet to the probe, filter holder, or cyclone (if applicable). When the vacuum drops to 127 mm (5 in.) Hg or less, immediately close the coarse-adjust valve. Switch off the pumping system and reopen the fine-adjust valve. Do not reopen the fine-adjust valve until the coarse-adjust valve has been closed. This prevents the water in the impingers from being forced backward into the organic module and silica gel from being entrained backward into the third impinger.

6.5.2 Leak-checks during sampling run:

6.5.2.1 If, during the sampling run, a component (e.g., filter assembly, impinger, or sorbent trap) change becomes necessary, a leak-check shall be conducted immediately after the interruption of sampling and before the change is made. The leak-check shall be done according to the procedure outlined in Paragraph 6.5.1, except that it shall be done at a vacuum greater than or equal to the maximum value recorded up to that point in the test. If the leakage rate is found to be no greater than 0.00057 m^3/min (0.02 cfm) or 4% of the average sampling rate (whichever is less), the results are acceptable, and no correction will need to be applied to the total volume of dry gas metered. If a higher leakage rate is obtained, the tester shall void the sampling run. (It should be noted that any "correction" of the sample volume by calculation by calculation reduces the integrity of the pollutant concentrations data generated and must be avoided.)

6.5.2.2 Immediately after a component change, and before sampling is reinitiated, a leak-check similar to a pre-test leak-check must also be conducted.

6.5.3 Post-test leak-check:

6.5.3.1 A leak-check is mandatory at the conclusion of each sampling run. The leak-check shall be done with the same procedures as those with the pre-test leak-check, except that it shall be conducted at a vacuum greater than or equal to the maximum value reached during the sampling run. If the leakage rate is found to be no greater than 0.00057 m^3/min (0.02 cfm) or 4% of the average sampling rate (whichever is less), the results are acceptable, and no correction need be applied to the total volume of dry gas metered. If, however, a higher leakage rate is obtained, the tester shall either record the leakage rate, correct the sample volume (as shown in the calculation section of this method), and consider the data obtained of questionable reliability, or void the sampling run.

6.6 <u>Sampling-train operation</u>:

6.6.1 During the sampling run, maintain an isokinetic sampling rate to within 10% of true isokinetic, unless otherwise specified by the Administrator. Maintain a temperature around the filter of 120 $\pm$ 14°C (248 $\pm$ 25°F) and a gas temperature entering the sorbent trap at a maximum of 20°C (68°F).

6.6.2 For each run, record the data required on a data sheet such as the one shown in Figure 5. Be sure to record the initial dry-gas meter reading. Record the dry-gas meter readings at the beginning and end of each sampling time increment, when changes in flow rates are made before and after each leak-check, and when sampling is halted. Take other readings required by Figure 5 at least once at each sample point during each time increment and additional readings when significant changes (20% variation in velocity-head readings) necessitate additional adjustments in flow rate. Level and zero the manometer. Because the manometer level and zero may drift due to vibrations and temperature changes, make periodic checks during the traverse.

6.6.3 Clean the stack access ports prior to the test run to eliminate the chance of sampling deposited material. To begin sampling, remove the nozzle cap, verify that the filter and probe heating systems are at the specified temperature, and verify that the pitot tube and probe are properly positioned. Position the nozzle at the first traverse point, with the tip pointing directly into the gas stream. Immediately start the pump and adjust the flow to isokinetic conditions. Nomographs, which aid in the rapid adjustment of the isokinetic sampling rate without excessive computations, are available. These nomographs are designed for use when the Type S pitot-tube coefficient is 0.84 $\pm$ 0.02 and the stack-gas equivalent density (dry molecular weight) is equal to 29 $\pm$ 4. APTD-0576 details the procedure for using the nomographs. If the stack-gas molecular weight and the pitot-tube coefficient are outside the above ranges, do not use the nomographs unless appropriate steps (Shigehara, 1974) are taken to compensate for the deviations.

6.6.4 When the stack is under significant negative pressure (equivalent to the height of the impinger stem), take care to close the coarse-adjust valve before inserting the probe into the stack, to prevent water from backing into the organic module. If necessary, the pump may be turned on with the coarse-adjust valve closed.

6.6.5 When the probe is in position, block off the openings around the probe and stack access port to prevent unrepresentative dilution of the gas stream.

6.6.6 Traverse the stack cross section, as required by EPA Method 1 or as specified by the Administrator, being careful not to bump the probe nozzle into the stack walls when sampling near the walls or when removing or inserting the probe through the access port, in order to minimize the chance of extracting deposited material.

6.6.7 During the test run, make periodic adjustments to keep the temperature around the filter holder and the organic module at the proper levels; add more ice and, if necessary, salt to maintain a temperature of <20°C (68°F) at the condenser/silica gel outlet. Also, periodically check the level and zero of the manometer.

Plant ____________________
Location ____________________
Operator ____________________
Date ____________________
Run No. ____________________
Sample Box No. ____________________
Meter Box No. ____________________
Meter H@ ____________________
C Factor ____________________
Pitot Tube Coefficient C_p ____________________

Schematic of Stack Cross Section

Ambient Temperature ____________________
Barometric Pressure ____________________
Assumed Moisture % ____________________
Probe Length, m (ft) ____________________
Nozzle Identification No. ____________________
Average Calibrated Nozzle Diameter, cm (in) ____________________
Probe Heater Setting ____________________
Leak Rate, m^3/min, (cfm) ____________________
Probe Liner Material ____________________
Static Pressure, mm Hg (in. Hg) ____________________
Filter No. ____________________

Traverse Point Number	Sampling Time (θ) min.	Vacuum mm Hg (in. Hg)	Stack Temperature (T_s) °C(°F)	Velocity Head (P_s) mm (in) H_2O	Pressure Differential Across Orifice Meter mm (H_2O) (in H_2O)	Gas Sample Volume m^3 (ft^3)	Gas Sample Temp. at Dry Gas Meter Inlet °C(°F)	Gas Sample Temp. at Dry Gas Meter Outlet °C(°F)	Filter Holder Temperature °C(F°)	Temperature of Gas Entering Sorbent Trap °C(F°)	Temperature of Gas Leaving Condenser or Last Impinger
Total							Avg.	Avg.			
Average											

Figure 5. Particulate field data.

6.6.8 If the pressure drop across the filter or sorbent trap becomes too high, making isokinetic sampling difficult to maintain, the filter/sorbent trap may be replaced in the midst of a sample run. Using another complete filter holder/sorbent trap assembly is recommended, rather than attempting to change the filter and resin themselves. After a new filter/sorbent trap assembly is installed, conduct a leak-check. The total particulate weight shall include the summation of all filter assembly catches.

6.6.9 A single train shall be used for the entire sample run, except in cases where simultaneous sampling is required in two or more separate ducts or at two or more different locations within the same duct, or in cases where equipment failure necessitates a change of trains. In all other situations, the use of two or more trains will be subject to the approval of the Administrator.

6.6.10 Note that when two or more trains are used, separate analysis of the front-half (if applicable) organic-module and impinger (if applicable) catches from each train shall be performed, unless identical nozzle sizes were used on all trains. In that case, the front-half catches from the individual trains may be combined (as may the impinger catches), and one analysis of front-half catch and one analysis of impinger catch may be performed.

6.6.11 At the end of the sample run, turn off the coarse-adjust valve, remove the probe and nozzle from the stack, turn off the pump, record the final dry-gas meter reading, and conduct a post-test leak-check. Also, leak-check the pitot lines as described in EPA Method 2. The lines must pass this leak-check in order to validate the velocity-head data.

6.6.12 Calculate percent isokineticity (see Section 10.8) to determine whether the run was valid or another test run should be made.

7.0 SAMPLE RECOVERY

7.1 Preparation:

7.1.1 Proper cleanup procedure begins as soon as the probe is removed from the stack at the end of the sampling period. Allow the probe to cool. When the probe can be safely handled, wipe off all external particulate matter near the tip of the probe nozzle and place a cap over the tip to prevent losing or gaining particulate matter. Do not cap the probe tip tightly while the sampling train is cooling down because this will create a vacuum in the filter holder, drawing water from the impingers into the sorbent module.

7.1.2 Before moving the sample train to the cleanup site, remove the probe from the sample train and cap the open outlet, being careful not to lose any condensate that might be present. Cap the filter inlet.

Remove the umbilical cord from the last impinger and cap the impinger. If a flexible line is used between the organic module and the filter holder, disconnect the line at the filter holder and let any condensed water or liquid drain into the organic module.

7.1.3 Cap the filter-holder outlet and the inlet to the organic module. Separate the sorbent trap section of the organic module from the condensate knockout trap and the gas-conditioning section. Cap all organic module openings. Disconnect the organic-module knockout trap from the impinger train inlet and cap both of these openings. Ground-glass stoppers, Teflon caps, or caps of other inert materials may be used to seal all openings.

7.1.4 Transfer the probe, the filter, the organic-module components, and the impinger/condenser assembly to the cleanup area. This area should be clean and protected from the weather to minimize sample contamination or loss.

7.1.5 Save a portion of all washing solutions (methanol/methylene chloride, Type II water) used for cleanup as a blank. Transfer 200 mL of each solution directly from the wash bottle being used and place each in a separate, prelabeled glass sample container.

7.1.6 Inspect the train prior to and during disassembly and note any abnormal conditions.

7.2 Sample containers:

7.2.1 **Container no. 1:** Carefully remove the filter from the filter holder and place it in its identified Petri dish container. Use a pair or pairs of tweezers to handle the filter. If it is necessary to fold the filter, ensure that the particulate cake is inside the fold. Carefully transfer to the Petri dish any particulate matter or filter fibers that adhere to the filter-holder gasket, using a dry nylon bristle brush or sharp-edged blade, or both. Label the container and seal with 1-in.-wide Teflon tape around the circumference of the lid.

7.2.2 **Container no. 2:** Taking care that dust on the outside of the probe or other exterior surfaces does not get into the sample, quantitatively recover particulate matter or any condensate from the probe nozzle, probe fitting, probe liner, and front half of the filter holder by washing these components first with methanol/methylene chloride (1:1 v/v) into a glass container. Distilled water may also be used. Retain a water and solvent blank and analyze in the same manner as with the samples. Perform rinses as follows:

7.2.2.1 Carefully remove the probe nozzle and clean the inside surface by rinsing with the solvent mixture (1:1 v/v methanol/-methylene chloride) from a wash bottle and brushing with a nylon bristle brush. Brush until the rinse shows no visible particles; then make a final rinse of the inside surface with the solvent mix. Brush and rinse the inside parts of the Swagelok fitting with the solvent mix in a similar way until no visible particles remain.

7.2.2.2 Have two people rinse the probe liner with the solvent mix by tilting and rotating the probe while squirting solvent into its upper end so that all inside surfaces will be wetted with solvent. Let the solvent drain from the lower end into the sample container. A glass funnel may be used to aid in transferring liquid washes to the container.

7.2.2.3 Follow the solvent rinse with a probe brush. Hold the probe in an inclined position and squirt solvent into the upper end while pushing the probe brush through the probe with a twisting action; place a sample container underneath the lower end of the probe and catch any solvent and particulate matter that is brushed from the probe. Run the brush through the probe three times or more until no visible particulate matter is carried out with the solvent or until none remains in the probe liner on visual inspection. With stainless steel or other metal probes, run the brush through in the above-prescribed manner at least six times (metal probes have small crevices in which particulate matter can be entrapped). Rinse the brush with solvent and quantitatively collect these washings in the sample container. After the brushing, make a final solvent rinse of the probe as described above.

7.2.2.4 It is recommended that two people work together to clean the probe to minimize sample losses. Between sampling runs, keep brushes clean and protected from contamination.

7.2.2.5 Clean the inside of the front half of the filter holder and cyclone/cyclone flask, if used, by rubbing the surfaces with a nylon bristle brush and rinsing with methanol/methylene chloride (1:1 v/v) mixture. Rinse each surface three times or more if needed to remove visible particulate. Make a final rinse of the brush and filter holder. Carefully rinse out the glass cyclone and cyclone flask (if applicable). Brush and rinse any particulate material adhering to the inner surfaces of these components into the front-half rinse sample. After all solvent washings and particulate matter have been collected in the sample container, tighten the lid on the sample container so that solvent will not leak out when it is shipped to the laboratory. Mark the height of the fluid level to determine whether leakage occurs during transport. Label the container to identify its contents.

7.2.3 **Container no. 3:** The sorbent trap section of the organic module may be used as a sample transport container, or the spent resin may be transferred to a separate glass bottle for shipment. If the sorbent trap itself is used as the transport container, both ends should be sealed with tightly fitting caps or plugs. Ground-glass stoppers or Teflon caps may be used. The sorbent trap should then be labeled, covered with aluminum foil, and packaged on ice for transport to the laboratory. If a separate bottle is used, the spent resin should be quantitatively transferred from the trap into the clean bottle. Resin that adheres to the walls of the trap should be recovered using a rubber policeman or spatula and added to this bottle.

7.2.4 **Container no. 4:** Measure the volume of condensate collected in the condensate knockout section of the organic module to within $\pm$1 mL by using a graduated cylinder or by weighing to within $\pm$0.5 g using a triple-beam balance. Record the volume or weight of liquid present and note any discoloration or film in the liquid catch. Transfer this liquid to a prelabeled glass sample container. Inspect the back half of the filter housing and the gas-conditioning section of the organic module. If condensate is observed, transfer it to a graduated or weighing bottle and measure the volume, as described above. Add this material to the condensate knockout-trap catch.

7.2.5 **Container no. 5:** All sampling train components located between the high-efficiency glass- or quartz-fiber filter and the first wet impinger or the final condenser system (including the heated Teflon line connecting the filter outlet to the condenser) should be thoroughly rinsed with methanol/methylene chloride (1:1 v/v) and the rinsings combined. This rinse shall be separated from the condensate. If the spent resin is transferred from the sorbent trap to a separate sample container for transport, the sorbent trap shall be thoroughly rinsed until all sample-wetted surfaces appear clean. Visible films should be removed by brushing. Whenever train components are brushed, the brush should be subsequently rinsed with solvent mixture and the rinsings added to this container.

7.2.6 **Container no. 6:** Note the color of the indicating silica gel to determine if it has been completely spent and make a notation of its condition. Transfer the silica gel from the fourth impinger to its original container and seal. A funnel may make it easier to pour the silica gel without spilling. A rubber policeman may be used as an aid in removing the silica gel from the impinger. It is not necessary to remove the small amount of dust particles that may adhere strongly to the impinger wall. Because the gain in weight is to be used for moisture calculations, do not use any water or other liquids to transfer the silica gel. If a balance is available in the field, weigh the container and its contents to 0.5 g or better.

7.3 <u>Impinger water</u>:

7.3.1 Make a notation of any color or film in the liquid catch. Measure the liquid in the first three impingers to within $\pm$1 mL by using a graduated cylinder or by weighing it to within $\pm$0.5 g by using a balance (if one is available). Record the volume or weight of liquid present. This information is required to calculate the moisture content of the effluent gas.

7.3.2 Discard the liquid after measuring and recording the volume or weight, unless analysis of the impinger catch is required (see Paragraph 4.1.3.7). Amber glass containers should be used for storage of impinger catch, if required.

7.3.3 If a different type of condenser is used, measure the amount of moisture condensed either volumetrically or gravimetrically.

7.4 Sample preparation for shipment: Prior to shipment, recheck all sample containers to ensure that the caps are well secured. Seal the lids of all containers around the circumference with Teflon tape. Ship all liquid samples upright on ice and all particulate filters with the particulate catch facing upward. The particulate filters should be shipped unrefrigerated.

8.0 ANALYSIS

8.1 Sample preparation:

8.1.1 **General:** The preparation steps for all samples will result in a finite volume of concentrated solvent. The final sample volume (usually in the 1- to 10-mL range) is then subjected to analysis by GC/MS. All samples should be inspected and the appearance documented. All samples are to be spiked with surrogate standards as received from the field prior to any sample manipulations. The spike should be at a level equivalent to 10 times the MDL when the solvent is reduced in volume to the desired level (i.e., 10 mL). The spiking compounds should be the stable isotopically labeled analog of the compounds of interest or a compound that would exhibit properties similar to the compounds of interest, be easily chromatographed, and not interfere with the analysis of the compounds of interest. Suggested surrogate spiking compounds are: deuterated naphthalene, chrysene, phenol, nitrobenzene, chlorobenzene, toluene, and carbon-13-labeled pentachlorophenol.

8.1.2 **Condensate:** The "condensate" is the moisture collected in the first impinger following the XAD-2 module. Spike the condensate with the surrogate standards. The volume is measured and recorded and then transferred to a separatory funnel. The pH is to be adjusted to pH 2 with 6 N sulfuric acid, if necessary. The sample container and graduated cylinder are sequentially rinsed with three successive 10-mL aliquots of the extraction solvent and added to the separatory funnel. The ratio of solvent to aqueous sample should be maintained at 1:3. Extract the sample by vigorously shaking the separatory funnel for 5 min. After complete separation of the phases, remove the solvent and transfer to a Kuderna-Danish concentrator (K-D), filtering through a bed of precleaned, dry sodium sulfate. Repeat the extraction step two additional times. Adjust the pH to 11 with 6 N sodium hydroxide and reextract combining the acid and base extracts. Rinse the sodium sulfate into the K-D with fresh solvent and discard the desiccant. Add Teflon boiling chips and concentrate to 10 mL by reducing the volume to slightly less than 10 mL and then bringing to volume with fresh solvent. In order to achieve the necessary detection limit, the sample volume can be further reduced to 1 mL by using a micro column K-D or nitrogen blow-down. Should the sample start to exhibit precipitation, the concentration step should be stopped and the sample redissolved with fresh solvent taking the volume to some finite amount. After adding a standard (for the purpose of quantitation by GC/MS), the sample is ready for analysis, as discussed in Paragraph 8.2.

8.1.3 **Impinger:** Spike the sample with the surrogate standards; measure and record the volume and transfer to a separatory funnel. Proceed as described in Paragraph 8.1.2.

8.1.4 **XAD-2:** Spike the resin directly with the surrogate standards. Transfer the resin to the all-glass thimbles by the following procedure (care should be taken so as not to contaminate the thimble by touching it with anything other than tweezers or other solvent-rinsed mechanical holding devices). Suspend the XAD-2 module directly over the thimble. The glass frit of the module (see Figure 2) should be in the up position. The thimble is contained in a clean beaker, which will serve to catch the solvent rinses. Using a Teflon squeeze bottle, flush the XAD-2 into the thimble. Thoroughly rinse the glass module with solvent into the beaker containing the thimble. Add the XAD-2 glass-wool plug to the thimble. Cover the XAD-2 in the thimble with a precleaned glass-wool plug sufficient to prevent the resin from floating into the solvent reservoir of the extractor. If the resin is wet, effective extraction can be accomplished by loosely packing the resin in the thimble. If a question arises concerning the completeness of the extraction, a second extraction, without a spike, is advised. The thimble is placed in the extractor and the rinse solvent contained in the beaker is added to the solvent reservoir. Additional solvent is added to make the reservoir approximately two-thirds full. Add Teflon boiling chips and assemble the apparatus. Adjust the heat source to cause the extractor to cycle 5-6 times per hr. Extract the resin for 16 hr. Transfer the solvent and three 10-mL rinses of the reservoir to a K-D and concentrate as described in Paragraph 8.1.2.

8.1.5 **Particulate filter (and cyclone catch):** If particulate loading is to be determined, weigh the filter (and cyclone catch, if applicable). The particulate filter (and cyclone catch, if applicable) is transferred to the glass thimble and extracted simultaneously with the XAD-2 resin.

8.1.6 **Train solvent rinses:** All train rinses (i.e., probe, impinger, filter housing) using the extraction solvent and methanol are returned to the laboratory as a single sample. If the rinses are contained in more than one container, the intended spike is divided equally among the containers proportioned from a single syringe volume. Transfer the rinse to a separatory funnel and add a sufficient amount of organic-free water so that the methylene chloride becomes immiscible and its volume no longer increases with the addition of more water. The extraction and concentration steps are then performed as described in Paragraph 8.1.2.

8.2 Sample analysis:

8.2.1 The primary analytical tool for the measurement of emissions from hazardous waste incinerators is GC/MS using fused-silica capillary GC columns, as described in Method 8270 in Chapter Four of this manual. Because of the nature of GC/MS instrumentation and the cost associated with sample analysis, prescreening of the sample extracts by gas chromatography/flame ionization detection (GC/FID) or with electron capture (GC/ECD) is encouraged. Information regarding the complexity and concentration level of a sample prior to GC/MS analysis can be of enormous help. This information can be obtained by using either capillary columns or less expensive packed columns. However, the FID screen should be performed with a column similar to that used with the GC/MS. Keep in mind that GC/FID has a slightly lower detection limit than GC/MS and, therefore, that the concentration of the sample can be adjusted either up or down prior to analysis by GC/MS.

8.2.2 The mass spectrometer will be operated in a full scan (40-450) mode for most of the analyses. The range for which data are acquired in a GC/MS run will be sufficiently broad to encompass the major ions, as listed in Chapter Four, Method 8270, for each of the designated POHCs in an incinerator effluent analysis.

8.2.3 For most purposes, electron ionization (EI) spectra will be collected because a majority of the POHCs give reasonable EI spectra. Also, EI spectra are compatible with the NBS Library of Mass Spectra and other mass spectral references, which aid in the identification process for other components in the incinerator process streams.

8.2.4 To clarify some identifications, chemical ionization (CI) spectra using either positive ions or negative ions will be used to elucidate molecular-weight information and simplify the fragmentation patterns of some compounds. In no case, however, should CI spectra alone be used for compound identification. Refer to Chapter Four, Method 8270, for complete descriptions of GC conditions, MS conditions, and quantitative and quantitative identification.

9.0 CALIBRATION

9.1 Probe nozzle: Probe nozzles shall be calibrated before their initial use in the field. Using a micrometer, measure the inside diameter of the nozzle to the nearest 0.025 mm (0.001 in.). Make measurements at three separate places across the diameter and obtain the average of the measurements. The difference between the high and low numbers shall not exceed 0.1 mm (0.004 in.). When nozzles become nicked, dented, or corroded, they shall be reshaped, sharpened, and recalibrated before use. Each nozzle shall be permanently and uniquely identified.

9.2 Pitot tube: The Type S pitot tube assembly shall be calibrated according to the procedure outlined in Section 4 of EPA Method 2, or assigned a nominal coefficient of 0.84 if it is not visibly nicked, dented, or corroded and if it meets design and intercomponent spacing specifications.

9.3 Metering system:

9.3.1 Before its initial use in the field, the metering system shall be calibrated according to the procedure outlined in APTD-0576. Instead of physically adjusting the dry-gas meter dial readings to correspond to the wet-test meter readings, calibration factors may be used to correct the gas meter dial readings mathematically to the proper values. Before calibrating the metering system, it is suggested that a leak-check be conducted. For metering systems having diaphragm pumps, the normal leak-check procedure will not detect leakages within the pump. For these cases the following leak-check procedure is suggested: Make a 10-min calibration run at 0.00057 m^3/min (0.02 cfm); at the end of the run, take the difference of the measured wet-test and dry-gas meter volumes and divide the difference by 10 to get the leak rate. The leak rate should not exceed 0.00057 m^3/min (0.02 cfm).

9.3.2 After each field use, the calibration of the metering system shall be checked by performing three calibration runs at a single intermediate orifice setting (based on the previous field test). The vacuum shall be set at the maximum value reached during the test series. To adjust the vacuum, insert a valve between the wet-test meter and the inlet of the metering system. Calculate the average value of the calibration factor. If the calibration has changed by more than 5%, recalibrate the meter over the full range of orifice settings, as outlined in APTD-0576.

9.3.3 **Leak-check of metering system:** That portion of the sampling train from the pump to the orifice meter (see Figure 1) should be leak-checked prior to initial use and after each shipment. Leakage after the pump will result in less volume being recorded than is actually sampled. The following procedure is suggested (see Figure 6): Close the main valve on the meter box. Insert a one-hole rubber stopper with rubber tubing attached into the orifice exhaust pipe. Disconnect and vent the low side of the orifice manometer. Close off the low side orifice tap. Pressurize the system to 13-18 cm (5-7 in.) water column by blowing into the rubber tubing. Pinch off the tubing and observe the manometer for 1 min. A loss of pressure on the manometer indicates a leak in the meter box. Leaks, if present, must be corrected.

NOTE: If the dry-gas-meter coefficient values obtained before and after a test series differ by >5%, either the test series shall be voided or calculations for test series shall be performed using whichever meter coefficient value (i.e., before or after) gives the lower value of total sample volume.

9.4 Probe heater: The probe-heating system shall be calibrated before its initial use in the field according to the procedure outlined in APTD-0576. Probes constructed according to APTD-0581 need not be calibrated if the calibration curves in APTD-0576 are used.

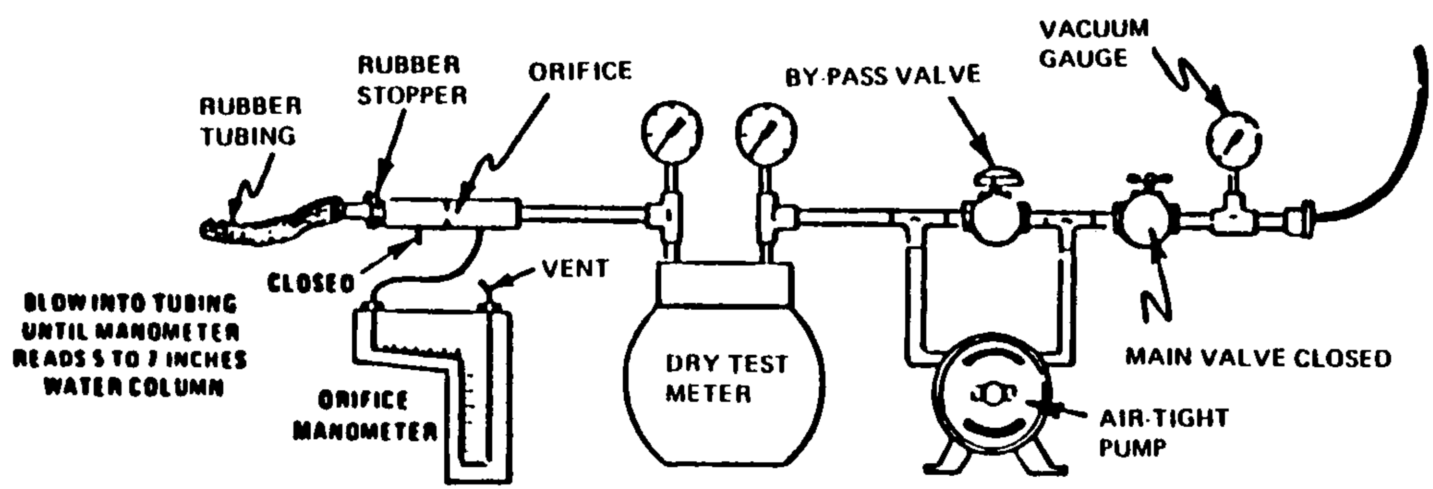

Figure 6. Leak-check of meter box.

9.5 Temperature gauges: Each thermocouple must be permanently and uniquely marked on the casting; all mercury-in-glass reference thermometers must conform to ASTM E-1 63C or 63F specifications. Thermocouples should be calibrated in the laboratory with and without the use of extension leads. If extension leads are used in the field, the thermocouple readings at ambient air temperatures, with and without the extension lead, must be noted and recorded. Correction is necessary if the use of an extension lead produces a change >1.5%.

9.5.1 **Impinger, organic module, and dry-gas meter thermocouples:** For the thermocouples used to measure the temperature of the gas leaving the impinger train and the XAD-2 resin bed, three-point calibration at ice-water, room-air, and boiling-water temperatures is necessary. Accept the thermocouples only if the readings at all three temperatures agree to $\pm$2°C (3.6°F) with those of the absolute value of the reference thermometer.

9.5.2 **Probe and stack thermocouple:** For the thermocouples used to indicate the probe and stack temperatures, a three-point calibration at ice-water, boiling-water, and hot-oil-bath temperatures must be performed; it is recommended that room-air temperature be added, and that the thermometer and the thermocouple agree to within 1.5% at each of the calibration points. A calibration curve (equation) may be constructed (calculated) and the data extrapolated to cover the entire temperature range suggested by the manufacturer.

9.6 Barometer: Adjust the barometer initially and before each test series to agree to within $\pm$25 mm Hg (0.1 in. Hg) of the mercury barometer or the corrected barometric pressure value reported by a nearby National Weather Service Station (same altitude above sea level).

9.7 Triple-beam balance: Calibrate the triple-beam balance before each test series, using Class-S standard weights; the weights must be within $\pm$0.5% of the standards, or the balance must be adjusted to meet these limits.

10.0 CALCULATIONS

10.1 Carry out calculations. Round off figures after the final calculation to the correct number of significant figures.

10.2 Nomenclature:

A_n = Cross-sectional area of nozzle, m^2 (ft^2).

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

C_d = Type S pitot tube coefficient (nominally 0.84 $\pm$ 0.02), dimensionless.

I = Percent of isokinetic sampling.

L_a = Maximum acceptable leakage rate for a leak-check, either pre-test or following a component change; equal to 0.00057 m^3/min (0.02 cfm) or 4% of the average sampling rate, whichever is less.

L_i = Individual leakage rate observed during the leak-check conducted prior to the "i^{th}" component change (i = 1, 2, 3...n) m^3/min (cfm).

L_p = Leakage rate observed during the post-test leak-check, m^3/min (cfm).

M_d = Stack-gas dry molecular weight, g/g-mole (lb/lb-mole).

M_w = Molecular weight of water, 18.0 g/g-mole (18.0 lb/lb-mole).

P_{bar} = Barometric pressure at the sampling site, mm Hg (in. Hg).

P_s = Absolute stack-gas pressure, mm Hg (in. Hg).

P_{std} = Standard absolute pressure, 760 mm Hg (29.92 in. Hg).

R = Ideal gas constant, 0.06236 mm Hg-m^3/K-g-mole (21.85 in. Hg-ft^3/°R-lb-mole).

T_m = Absolute average dry-gas meter temperature (see Figure 6), K (°R).

T_s = Absolute average stack-gas temperature (see Figure 6), K (°R).

T_{std} = Standard absolute temperature, 293K (528°R).

V_{lc} = Total volume of liquid collected in the organic module condensate knockout trap, the impingers, and silica gel, mL.

V_m = Volume of gas sample as measured by dry-gas meter, dscm (dscf).

$V_{m(std)}$ = Volume of gas sample measured by the dry-gas meter, corrected to standard conditions, dscm (dscf).

$V_{w(std)}$ = Volume of water vapor in the gas sample, corrected to standard conditions, scm (scf).

V_s = Stack-gas velocity, calculated by Method 2, Equation 2-9, using data obtained from Method 5, m/sec (ft/sec).

W_a = Weight of residue in acetone wash, mg.

γ = Dry-gas-meter calibration factor, dimensionless.

ΔH = Average pressure differential across the orifice meter (see Figure 2), mm H_2O (in. H_2O).

ρ_w = Density of water, 0.9982 g/mL (0.002201 lb/mL).

θ = Total sampling time, min.

θ_1 = Sampling time interval from the beginning of a run until the first component change, min.

θ_i = Sampling time interval between two successive component changes, beginning with the interval between the first and second changes, min.

θ_p = Sampling time interval from the final (n^{th}) component change until the end of the sampling run, min.

13.6 = Specific gravity of mercury.

60 = sec/min.

100 = Conversion to percent.

10.3 <u>Average dry-gas-meter temperature and average orifice pressure drop</u>: See data sheet (Figure 5, above).

10.4 <u>Dry-gas volume</u>: Correct the sample measured by the dry-gas meter to standard conditions (20°C, 760 mm Hg [68°F, 29.92 in. Hg]) by using Equation 1:

$$V_{m(std)} = V_m \gamma \frac{T_{std}}{T_m} \frac{P_{bar} + \Delta H/13.6}{P_{std}} = K_1 V_m \gamma \frac{P_{bar} + \Delta H/13.6}{T_m} \qquad (1)$$

where:

K_1 = 0.3858 K/mm Hg for metric units, or
K_1 = 17.64°R/in. Hg for English units.

It should be noted that Equation 1 can be used as written, unless the leakage rate observed during any of the mandatory leak-checks (i.e., the post-test leak-check or leak-checks conducted prior to component changes) exceeds L_a. If L_p or L_i exceeds L_a, Equation 1 must be modified as follows:

a. <u>Case I</u> (no component changes made during sampling run): Replace V_m in Equation 1 with the expression:

$$V_m - (L_p - L_a)$$

b. <u>Case II</u> (one or more component changes made during the sampling run): Replace V_m in Equation 1 by the expression:

$$V_m - (L_1 - L_a)\theta_1 - \sum_{i=2}^{n} (L_i - L_a)\theta_i - (L_p - L_a)\theta_p$$

and substitute only for those leakage rates (L_1 or L_p) that exceed L_a.

10.5 <u>Volume of water vapor</u>:

$$V_{w(std)} = V_{1c} \frac{P_w}{M_w} \frac{RT_{std}}{P_{std}} = K_2 V_{1c} \qquad (2)$$

where:

K_2 = 0.001333 m^3/mL for metric units, or
K_2 = 0.04707 ft^3/mL for English units.

10.6 <u>Moisture content</u>:

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

NOTE: In saturated or water-droplet-laden gas streams, two calculations of the moisture content of the stack gas shall be made, one from the impinger analysis (Equation 3) and a second from the assumption of saturated conditions. The lower of the two values of B_w shall be considered correct. The procedure for determining the moisture content based upon assumption of saturated conditions is given in the Note to Section 1.2 of Method 4. For the purposes of this method, the average stack-gas temperature from Figure 6 may be used to make this determination, provided that the accuracy of the in-stack temperature sensor is $\pm$1°C (2°F).

10.7 <u>Conversion factors</u>:

From	To	Multiply by
scf	m^3	0.02832
g/ft^3	gr/ft^3	15.43
g/ft^3	lb/ft^3	2.205×10^{-3}
g/ft^3	g/m^3	35.31

10.8 <u>Isokinetic variation</u>:

10.8.1 **Calculation from raw data:**

$$I = \frac{100\ T_s[K_3F_{lc} + (V_m/T_m)\ (P_{bar} + \Delta H/13.6)]}{60\theta V_s P_s A_n} \tag{4}$$

where:

K_3 = 0.003454 mm Hg-m^3/mL-K for metric units, or
K_3 = 0.002669 in. Hg-ft^3/mL-°R for English units.

10.8.2 **Calculation for intermediate values:**

$$I = \frac{T_s V_{m(std)} P_{std} 100}{T_{std} V_s \theta A_n P_s 60(1-B_{ws})}$$

$$= K_4 \frac{T_s V_{m(std)}}{P_s V_s A_n \theta (1-B_{ws})} \tag{5}$$

where:

K_4 = 4.320 for metric units, or
K_4 = 0.09450 for English units.

10.8.3 **Acceptable results:** If 90% $\leq$ I $\leq$ 110%, the results are acceptable. If the results are low in comparison with the standard and I is beyond the acceptable range, or if I is less than 90%, the Administrator may opt to accept the results.

10.9 To determine the minimum sample volume that shall be collected, the following sequence of calculations shall be used.

10.9.1 From prior analysis of the waste feed, the concentration of POHCs introduced into the combustion system can be calculated. The degree of destruction and removal efficiency that is required is used to determine the maximum amount of POHC allowed to be present in the effluent. This may be expressed as:

$$\frac{(WF)\ (POHC_i\ conc)}{100}\ \frac{(100-\%DRE)}{100} = \text{Max } POHC_i \text{ Mass} \tag{6}$$

where:

WF = mass flow rate of waste feed per hr, g/hr (lb/hr).

$POHC_i$ = concentration of Principal Organic Hazardous Compound (wt %) introduced into the combustion process.

DRE = percent Destruction and Removal Efficiency required.

Max POHC = mass flow rate (g/hr [lb/hr]) of POHC emitted from the combustion source.

10.9.2 The average discharge concentration of the POHC in the effluent gas is determined by comparing the Max POHC with the volumetric flow rate being exhausted from the source. Volumetric flow rate data are available as a result of preliminary Method 1-4 determinations:

$$\frac{\text{Max POHC}_i \text{ Mass}}{DV_{eff(std)}} = \text{Max POHC}_i \text{ conc} \qquad (7)$$

where:

$DV_{eff(std)}$ = volumetric flow rate of exhaust gas, dscm (dscf).

$POHC_i$ conc = anticipated concentration of the POHC in the exhaust gas stream, g/dscm (lb/dscf).

10.9.3 In making this calculation, it is recommended that a safety margin of at least ten be included:

$$\frac{LDL_{POHC} \times 10}{POHC_{i\ conc}} = V_{TBC} \qquad (8)$$

where:

LDL_{POHC} = detectable amount of POHC in entire sampling train.
NOTE: The whole extract from an XAD-2 cartridge is seldom if ever, injected at once. Therefore, if aliquoting factors are involved, the LDL_{POHC} is not the same as the analytical (or column) detection limit.

V_{TBC} = minimum dry standard volume to be collected at dry-gas meter.

10.10 Concentration of any given POHC in the gaseous emissions of a combustion process:

1) Multiply the concentration of the POHC as determined in Method 8270 by the final concentration volume, typically 10 mL.

C_{POHC} (ug/mL) x sample volume (mL) = amount (ug) of POHC in sample (9)

where:

C_{POHC} = concentration of POHC as analyzed by Method 8270.

2) Sum the amount of POHC found in all samples associated with a single train.

Total (ug) = XAD-2 (ug) + condensate (ug) + rinses (ug) + impinger (ug) (10)

3) Divide the total ug found by the volume of stack gas sampled (m^3).

(Total ug)/(train sample volume) = concentration of POHC (ug/m^3) (11)

11.0 QUALITY CONTROL

11.1 Sampling: See EPA Manual 600/4-77-027b for Method 5 quality control.

11.2 Analysis: The quality assurance program required for this study includes the analysis of field and method blanks, procedure validations, incorporation of stable labeled surrogate compounds, quantitation versus stable labeled internal standards, capillary column performance checks, and external performance tests. The surrogate spiking compounds selected for a particular analysis are used as primary indicators of the quality of the analytical data for a wide range of compounds and a variety of sample matrices. The assessment of combustion data, positive identification, and quantitation of the selected compounds are dependent on the integrity of the samples received and the precision and accuracy of the analytical methods employed. The quality assurance procedures for this method are designed to monitor the performance of the analytical method and to provide the required information to take corrective action if problems are observed in laboratory operations or in field sampling activities.

11.2.1 **Field Blanks:** Field blanks must be submitted with the samples collected at each sampling site. The field blanks include the sample bottles containing aliquots of sample recovery solvents, unused filters, and resin cartridges. At a minimum, one complete sampling train will be assembled in the field staging area, taken to the sampling area, and leak-checked at the beginning and end of the testing (or for the same total number of times as the actual test train). The filter housing and probe of the blank train will be heated during the sample test. The train will be recovered as if it were an actual test sample. No gaseous sample will be passed through the sampling train.

11.2.2 **Method blanks:** A method blank must be prepared for each set of analytical operations, to evaluate contamination and artifacts that can be derived from glassware, reagents, and sample handling in the laboratory.

11.2.3 Refer to Method 8270 for additional quality control considerations.

12.0 METHOD PERFORMANCE

12.1 Method performance evaluation: Evaluation of analytical procedures for a selected series of compounds must include the sample-preparation procedures and each associated analytical determination. The analytical procedures should be challenged by the test compounds spiked at appropriate levels and carried through the procedures.

12.2 Method detection limit: The overall method detection limits (lower and upper) must be determined on a compound-by-compound basis because different compounds may exhibit different collection, retention, and extraction efficiencies as well as instrumental minimum detection limit (MDL). The method detection limit must be quoted relative to a given sample volume. The upper limits for the method must be determined relative to compound retention volumes (breakthrough).

12.3 Method precision and bias: The overall method precision and bias must be determined on a compound-by-compound basis at a given concentration level. The method precision value would include a combined variability due to sampling, sample preparation, and instrumental analysis. The method bias would be dependent upon the collection, retention, and extraction efficiency of the train components. From evaluation studies to date using a dynamic spiking system, method biases of -13% and -16% have been determined for toluene and 1,1,2,2-tetrachloroethane, respectively. A precision of 19.9% was calculated from a field test data set representing seven degrees of freedom which resulted from a series of paired, unspiked Semivolatile Organic Sampling trains (Semi-VOST) sampling emissions from a hazardous waste incinerator.

13.0 REFERENCES

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METHOD 0010, APPENDIX A

PREPARATION OF XAD-2 SORBENT RESIN

1.0 SCOPE AND APPLICATION

1.1 XAD-2 resin as supplied by the manufacturer is impregnated with a bicarbonate solution to inhibit microbial growth during storage. Both the salt solution and any residual extractable monomer and polymer species must be removed before use. The resin is prepared by a series of water and organic extractions, followed by careful drying.

2.0 EXTRACTION

2.1 Method 1: The procedure may be carried out in a giant Soxhlet extractor. An all-glass thimble containing an extra-coarse frit is used for extraction of XAD-2. The frit is recessed 10-15 mm above a crenellated ring at the bottom of the thimble to facilitate drainage. The resin must be carefully retained in the extractor cup with a glass-wool plug and stainless steel screen because it floats on methylene chloride. This process involves sequential extraction in the following order.

Solvent	Procedure
Water	Initial rinse: Place resin in a beaker, rinse once with Type II water, and discard. Fill with water a second time, let stand overnight, and discard.
Water	Extract with H_2O for 8 hr.
Methyl alcohol	Extract for 22 hr.
Methylene chloride	Extract for 22 hr.
Methylene chloride (fresh)	Extract for 22 hr.

2.2 Method 2:

2.2.1 As an alternative to Soxhlet extraction, a continuous extractor has been fabricated for the extraction sequence. This extractor has been found to be acceptable. The particular canister used for the apparatus shown in Figure A-1 contains about 500 g of finished XAD-2. Any size may be constructed; the choice is dependent on the needs of the sampling programs. The XAD-2 is held under light spring tension between a pair of coarse and fine screens. Spacers under the bottom screen allow for even distribution of clean solvent. The three-necked flask should be of sufficient size (3-liter in this case) to hold solvent

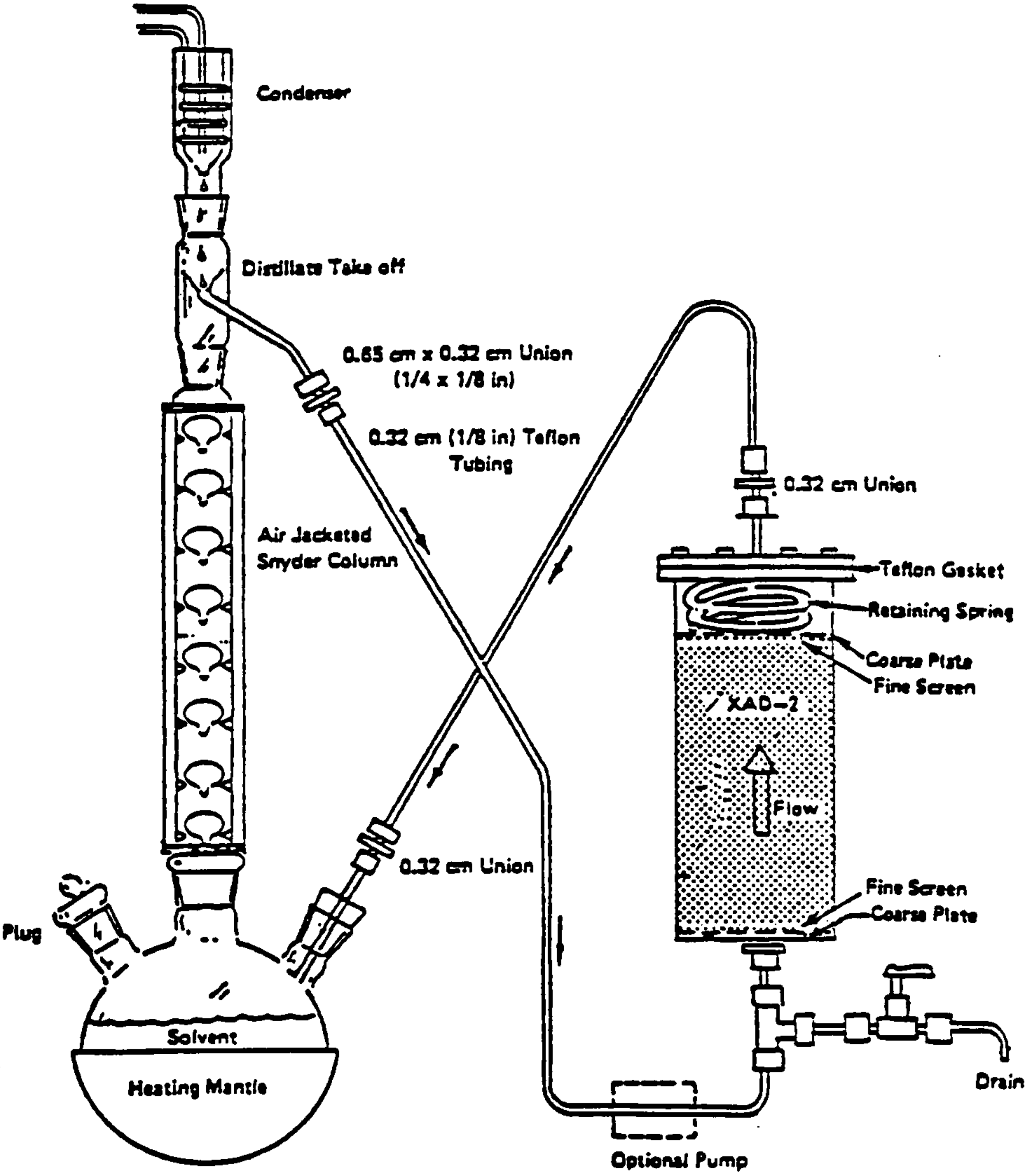


Figure A-1. XAD-2 cleanup extraction apparatus.

equal to twice the dead volume of the XAD-2 canister. Solvent is refluxed through the Snyder column, and the distillate is continuously cycled up through the XAD-2 for extraction and returned to the flask. The flow is maintained upward through the XAD-2 to allow maximum solvent contact and prevent channeling. A valve at the bottom of the canister allows removal of solvent from the canister between changes.

2.2.2 Experience has shown that it is very difficult to cycle sufficient water in this mode. Therefore the aqueous rinse is accomplished by simply flushing the canister with about 20 liters of distilled water. A small pump may be useful for pumping the water through the canister. The water extraction should be carried out at the rate of about 20-40 mL/min.

2.2.3 After draining the water, subsequent methyl alcohol and methylene chloride extractions are carried out using the refluxing apparatus. An overnight or 10- to 20-hr period is normally sufficient for each extraction.

2.2.4 All materials of construction are glass, Teflon, or stainless steel. Pumps, if used, should not contain extractable materials. Pumps are not used with methanol and methylene chloride.

3.0 DRYING

3.1 After evaluation of several methods of removing residual solvent, a fluidized-bed technique has proved to be the fastest and most reliable drying method.

3.2 A simple column with suitable retainers, as shown in Figure A-2, will serve as a satisfactory column. A 10.2-cm (4-in.) Pyrex pipe 0.6 m (2 ft) long will hold all of the XAD-2 from the extractor shown in Figure A-1 or the Soxhlet extractor, with sufficient space for fluidizing the bed while generating a minimum resin load at the exit of the column.

3.3 Method 1: The gas used to remove the solvent is the key to preserving the cleanliness of the XAD-2. Liquid nitrogen from a standard commercial liquid nitrogen cylinder has routinely proved to be a reliable source of large volumes of gas free from organic contaminants. The liquid nitrogen cylinder is connected to the column by a length of precleaned 0.95-cm (3/8-in.) copper tubing, coiled to pass through a heat source. As nitrogen is bled from the cylinder, it is vaporized in the heat source and passes through the column. A convenient heat source is a water bath heated from a steam line. The final nitrogen temperature should only be warm to the touch and not over 40°C. Experience has shown that about 500 g of XAD-2 may be dried overnight by consuming a full 160-liter cylinder of liquid nitrogen.

3.4 Method 2: As a second choice, high-purity tank nitrogen may be used to dry the XAD-2. The high-purity nitrogen must first be passed through a bed

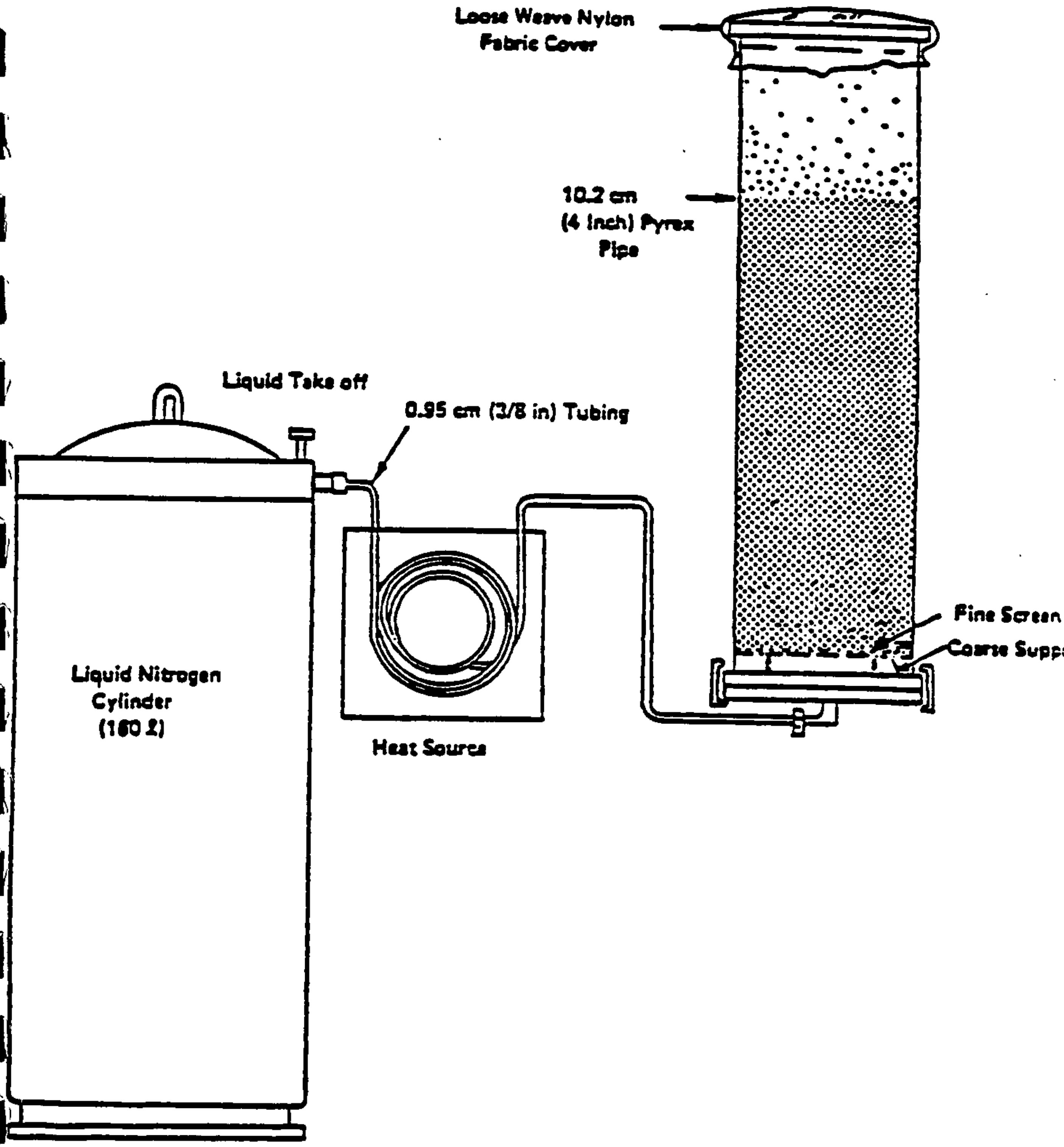


Figure A-2. XAD-2 fluidized-bed drying apparatus.

of activated charcoal approximately 150 mL in volume. With either type of drying method, the rate of flow should gently agitate the bed. Excessive fluidization may cause the particles to break up.

4.0 QUALITY CONTROL PROCEDURES

4.1 For both Methods 1 and 2, the quality control results must be reported for the batch. The batch must be reextracted if the residual extractable organics are >20 ug/mL by TCO analysis or the gravimetric residue is >0.5 mg/20 g XAD-2 extracted. (See also section 5.1, Method 0010.)

4.2 Four control procedures are used with the final XAD-2 to check for (1) residual methylene chloride, (2) extractable organics (TCO), (3) specific compounds of interest as determined by GC/MS, as described in Section 4.5 below, and (4) residue (GRAV).

4.3 Procedure for residual methylene chloride:

4.3.1 **Description:** A 1±0.1-g sample of dried resin is weighed into a small vial, 3 mL of toluene are added, and the vial is capped and well shaken. Five uL of toluene (now containing extracted methylene chloride) are injected into a gas chromatograph, and the resulting integrated area is compared with a reference standard. The reference solution consists of 2.5 uL of methylene chloride in 100 mL of toluene, simulating 100 ug of residual methylene chloride on the resin. The acceptable maximum content is 1,000 ug/g resin.

4.3.2 **Experimental:** The gas chromatograph conditions are as follows:

6-ft x 1/8-in. stainless steel column containing 10% OV-101 on 100/120 Supelcoport;

Helium carrier at 30 mL/min;

FID operated on 4 x 10^{-11} A/mV;

Injection port temperature: 250°C;

Detector temperature: 305°C;

Program: 30°C(4 min) 40°C/min 250°C (hold); and

Program terminated at 1,000 sec.

4.4 Procedure for residual extractable organics:

4.4.1 **Description:** A 20±0.1-g sample of cleaned, dried resin is weighed into a precleaned alundum or cellulose thimble which is plugged with cleaned glass wool. (Note that 20 g of resin will fill a thimble, and the resin will float out unless well plugged.) The thimble containing the resin is extracted for 24 hr with 200-mL of pesticide- grade methylene chloride (Burdick and Jackson pesticide-grade or equivalent purity). The 200-mL extract is reduced in volume to 10-mL using a Kuderna-Danish concentrator and/or a nitrogen evaporation stream. Five uL of that solution are analyzed by gas chromatography using the TCO analysis procedure. The concentrated solution should not contain >20 ug/mL of TCO extracted from the XAD-2. This is equivalent to 10 ug/g of TCO in the XAD-2 and would correspond to 1.3 mg of TCO in the extract of the 130-g XAD-2 module. Care should be taken to correct the TCO data for a solvent blank prepared (200 mL reduced to 10 mL) in a similar manner.

4.4.2 **Experimental**: Use the TCO analysis conditions described in the revised Level 1 manual (EPA 600/7-78-201).

4.5 GC/MS Screen: The extract, as prepared in paragraph 4.4.1, is subjected to GC/MS analysis for each of the individual compounds of interest. The GC/MS procedure is described in Chapter Four, Method 8270. The extract is screened at the MDL of each compound. The presence of any compound at a concentration >25 ug/mL in the concentrated extract will require the XAD-2 to be recleaned by repeating the methylene chloride step.

4.6 Methodology for residual gravimetric determination: After the TCO value and GC/MS data are obtained for the resin batch by the above procedures, dry the remainder of the extract in a tared vessel. There must be <0.5 mg residue registered or the batch of resin will have to be extracted with fresh methylene chloride again until it meets this criterion. This level corresponds to 25 ug/g in the XAD-2, or about 3.25 mg in a resin charge of 130 g.

METHOD 0010, APPENDIX B

TOTAL CHROMATOGRAPHABLE ORGANIC MATERIAL ANALYSIS

1.0 SCOPE AND APPLICATION

1.1 In this procedure, gas chromatography is used to determine the quantity of lower boiling hydrocarbons (boiling points between 90° and 300°C) in the concentrates of all organic solvent rinses, XAD-2 resin and LC fractions - when Method 1 is used (see References, Method 0010) - encountered in Level 1 environmental sample analyses. Data obtained using this procedure serve a twofold purpose. First, the total quantity of the lower boiling hydrocarbons in the sample is determined. Then whenever the hydrocarbon concentrations in the original concentrates exceed 75 ug/m^3, the chromatography results are reexamined to determine the amounts of individual species.

The extent of compound identification is limited to representing all materials as normal alkanes based upon comparison of boiling points. Thus the method is not qualitative. In a similar manner, the analysis is semiquantitative; calibrations are prepared using only one hydrocarbon. They are replicated but samples routinely are not.

1.2 Application: This procedure applies solely to the Level 1 C7-C16 gas chromatographic analysis of concentrates of organic extracts, neat liquids, and of LC fractions. Throughout the procedure, it is assumed the analyst has been given a properly prepared sample.

1.3 Sensitivity: The sensitivity of this procedure, defined as the slope of a plot of response versus concentration, is dependent on the instrument and must be verified regularly. TRW experience indicates the nominal range is of the order of 77 uV·V·sec·uL/ng of n-heptane and 79 uV·sec·ul/ng of n-hexadecane. The instrument is capable of perhaps one hundredfold greater sensitivity. The level specified here is sufficient for Level 1 analysis.

1.4 Detection limit: The detection limit of this procedure as written is 1.3 ng/uL for a 1 uL injection of n-decane. This limit is arbitrarily based on defining the minimum detectable response as 100 uv·sec. This is an easier operational definition than defining the minimum detection limit to be that amount of material which yields a signal twice the noise level.

1.5 Range: The range of the procedure will be concentrations of 1.3 ng/uL and greater.

1.6 Limitations

1.6.1 **Reporting limitations:** It should be noted that a typical environmental sample will contain compounds which: (a) will not elute in the specified boiling ranges and thus will not be reported, and/or (b) will not elute from the column at all and thus will not be reported. Consequently, the organic content of the sample as reported is a lower bound and should be regarded as such.

1.6.2 **Calibration limitations:** Quantitation is based on calibration with n-decane. Data should therefore be reported as, e.g., mg C8/m^3 as n-decane. Since response varies linearly with carbon number (over a wide range the assumption may involve a 20% error), it is clear that heptane (C7) detected in a sample and quantitated as decane will be overestimated. Likewise, hexadecane (C16) quantitated as decane will be underestimated. From previous data, it is estimated the error involved is on the order of 6-7%.

1.6.3 **Detection limitations:** The sensitivity of the flame ionization detector varies from compound to compound. However, n-alkanes have a greater response than other classes. Consequently, using an n-alkane as a calibrant and assuming equal responses of all other compounds tends to give low reported values.

2.0 SUMMARY OF METHOD

2.1 A mL aliquot of all 10-mL concentrates is disbursed for GC-TCO analysis. With boiling point-retention time and response-amount calibration curves, the data (peak retention times and peak areas) are interpreted by first summing peak areas in the ranges obtained from the boiling point-retention time calibration. Then, with the response-amount calibration curve, the area sums are converted to amounts of material in the reported boiling point ranges.

2.2 After the instrument is set up, the boiling point-retention time calibration is effected by injecting a mixture of n-C7 through n-C16 hydrocarbons and operating the standard temperature program. Response-quantity calibrations are accomplished by injecting n-decane in n-pentane standards and performing the standard temperature program.

2.3 Definitions

2.3.1 **GC:** Gas chromatography or gas chromatograph.

2.3.2 **C7-C16 n-alkanes:** Heptane through hexadecane.

2.3.3 **GCA temperature program:** 4 min isothermal at 60°C, 10°C/min from 60° to 220°C.

2.3.4 **TRW temperature program:** 5 min isothermal at room temperature, then program from 30°C to 250°C at 15°C/min.

3.0 INTERFERENCES

Not applicable.

4.0 APPARATUS AND MATERIALS

4.1 Gas chromatograph: This procedure is intended for use on a Varian 1860 gas chromatograph, equipped with dual flame ionization detectors and a linear temperature programmer. Any equivalent instrument can be used provided that electrometer settings, etc., be changed appropriately.

4.2 Gases:

4.2.1 **Helium:** Minimum quality is reactor grade. A 4A or 13X molecular sieve drying tube is required. A filter must be placed between the trap and the instrument. The trap should be recharged after every third tank of helium.

4.2.2 **Air:** Zero grade is satisfactory.

4.2.3 **Hydrogen:** Zero grade.

4.3 Syringe: Syringes are Hamilton 701N, 10 uL, or equivalent.

4.4 Septa: Septa will be of such quality as to produce very low bleed during the temperature program. An appropriate septum is Supelco Microsep 138, which is Teflon-backed. If septum bleed cannot be reduced to a negligible level, it will be necessary to install septum swingers on the instrument.

4.5 Recorder: The recorder of this procedure must be capable of not less than 1 mV full-scale display, a 1-sec time constant and 0.5 in. per min chart rate.

4.6 Integrator: An integrator is required. Peak area measurement by hand is satisfactory but too time-consuming. If manual integration is required, the method of "height times width at half height" is used.

4.7 Columns:

4.7.1 **Preferred column:** 6 ft x 1/8 in. O.D. stainless steel column of 10% OV-101 on 100/120 mesh Supelcoport.

4.7.2 **Alternate column:** 6 ft x 1/8 in. O.D. stainless steel column of 10% OV-1 (or other silicon phase) on 100/120 mesh Supelcoport.

4.8 Syringe cleaner: Hamilton syringe cleaner or equivalent connected to a suitable vacuum source.

5.0 REAGENTS

5.1 Pentane: "Distilled-in-Glass" (reg. trademark) or "Nanograde" (reg. trademark) for standards and for syringe cleaning.

5.2 Methylene chloride: "Distilled-in-Glass" (reg. trademark) or "Nanograde" (reg. trademark) for syringe cleaning.

6.0 SAMPLING HANDLING AND PRESERVATION

6.1 The extracts are concentrated in a Kuderna-Danish evaporator to a volume less than 10 mL. The concentrate is then quantitatively transferred to a 10-mL volumetric flask and diluted to volume. A 1-mL aliquot is taken for both this analysis and possible subsequent GC/MS analysis and set aside in the sample bank. For each GC-TCO analysis, obtain the sample sufficiently in advance to allow it to warm to room temperature. For example, after one analysis is started, return that sample to the sample bank and take the next sample.

7.0 PROCEDURES

7.1 Setup and checkout: Each day, the operator will verify the following:

7.1.1 That supplies of carrier gas, air and hydrogen are sufficient, i.e., that each tank contains $>$ 100 psig.

7.1.2 That, after replacement of any gas cylinder, all connections leading to the chromatograph have been leak-checked.

7.1.3 That the carrier gas flow rate is 30 $\pm$ 2 mL/min, the hydrogen flow rate is 30 $\pm$ 2 mL/min, and the air flow rate is 300 $\pm$ 20 mL/min.

7.1.4 That the electrometer is functioning properly.

7.1.5 That the recorder and integrator are functioning properly.

7.1.6 That the septa have been leak-checked (leak-checking is effected by placing the soap bubble flow meter inlet tube over the injection port adaptors), and that no septum will be used for more than 20 injections.

7.1.7 That the list of samples to be run is ready.

7.2 Retention time calibration:

7.2.1 To obtain the temperature ranges for reporting the results of the analyses, the chromatograph is given a normal boiling point-retention time calibration. The n-alkanes, their boiling points, and data reporting ranges are given in the table below:

	NBP, °C	Reporting Range, °C	Report As
n-heptane	98	90-110	C7
n-octane	126	110-140	C8
n-nonane	151	140-160	C9
n-decane	174	160-180	C10
n-undecane	194	180-200	C11
n-dodecane	214	200-220	C12
n-tridecane	234	220-240	C13
n-tetradecane	252	240-260	C14
n-pentadecane	270	260-280	C15
n-hexadecane	288	280-300	C16

7.2.2 **Preparation of standards:** Preparing a mixture of the C7-C16 alkanes is required. There are two approaches: (1) use of a standards kit (e.g., Polyscience Kit) containing bottles of mixtures of selected n-alkanes which may be combined to produce a C7-C16 standard; or (2) use of bottles of the individual C7-C16 alkanes from which accurately known volumes may be taken and combined to give a C7-C16 mixture.

7.2.3 **Procedure for retention time calibration:** This calibration is performed at the start of an analytical program; the mixture is chromatographed at the start of each day. To attain the required retention time precision, both the carrier gas flow rate and the temperature program specifications must be observed. Details of the procedure depend on the instrument being used. The general procedure is as follows:

7.2.3.1 Set the programmer upper limit at 250°C. If this setting does not produce a column temperature of 250°C, find the correct setting.

7.2.3.2 Set the programmer lower limit at 30°C.

7.2.3.3 Verify that the instrument and samples are at room temperature.

7.2.3.4 Inject 1 uL of the n-alkane mixture.

7.2.3.5 Start the integrator and recorder.

7.2.3.6 Allow the instrument to run isothermally at room temperature for five min.

7.2.3.7 Shut the oven door.

7.2.3.8 Change the mode to Automatic and start the temperature program.

7.2.3.9 Repeat Steps 1-9 a sufficient number of times so that the relative standard deviation of the retention times for each peak is <5%.

7.3 Response calibration:

7.3.1 For the purposes of a Level 1 analysis, response-quantity calibration with n-decane is adequate. A 10-uL volume of n-decane is injected into a tared 10 mL volumetric flask. The weight injected is obtained and the flask is diluted to the mark with n-pentane. This standard contains about 730 ng n-decane per uL n-pentane. The exact concentration depends on temperature, so that a weight is required. Two serial tenfold dilutions are made from this standard, giving standards at about 730, 73, and 7.3 ng n-decane per uL n-pentane, respectively.

7.3.2 **Procedure for response calibration:** This calibration is performed at the start of an analytical program and monthly thereafter. The most concentrated standard is injected once each day. Any change in calibration necessitates a full calibration with new standards. Standards are stored in the refrigerator locker and are made up monthly.

7.3.2.1 Verify that the instrument is set up properly.

7.3.2.2 Set electrometer at 1×10^{-10} A/mV.

7.3.2.3 Inject 1 uL of the highest concentration standard.

7.3.2.4 Run standard temperature program as specified above.

7.3.2.5 Clean syringe.

7.3.2.6 Make repeated injections of all three standards until the relative standard deviations of the areas of each standard are ≤5%.

7.4 Sample analysis procedure:

7.4.1 The following apparatus is required:

7.4.1.1 Gas chromatograph set up and working.

7.4.1.2 Recorder, integrator working.

7.4.1.3 Syringe and syringe cleaning apparatus.

7.4.1.4 **Parameters:** Electrometer setting is 1×10^{-10} A/mV; recorder is set at 0.5 in./min and 1 mV full-scale.

7.4.2 Steps in the procedure are:

7.4.2.1 Label chromatogram with the data, sample number, etc.

7.4.2.2 Inject sample.

7.4.2.3 Start integrator and recorder.

7.4.2.4 After isothermal operation for 5 min, begin temperature program.

7.4.2.5 Clean syringe.

7.4.2.6 Return sample; obtain new sample.

7.4.2.7 When analysis is finished, allow instrument to cool. Turn chromatogram and integrator output and data sheet over to data analyst.

7.5 Syringe cleaning procedure:

7.5.1 Remove plunger from syringe.

7.5.2 Insert syringe into cleaner; turn on aspirator.

7.5.3 Fill pipet with pentane; run pentane through syringe.

7.5.4 Repeat with methylene chloride from a separate pipet.

7.5.5 Flush plunger with pentane followed by methylene chloride.

7.5.6 Repeat with methylene chloride.

7.6 Sample analysis decision criterion: The data from the TCO analyses of organic extract and rinse concentrates are first used to calculate the total concentration of C7-C16 hydrocarbon-equivalents (Paragraph 7.7.3) in the sample with respect to the volume of air actually sampled, i.e., ug/m^3. On this basis, a decision is made both on whether to calculate the quantity of each n-alkane equivalent present and on which analytical procedural pathway will be followed. If the total organic content is great enough to warrant continuing the analysis -- >500 ug/m^3 -- a TCO of less than 75 ug/m^3 will require only LC fractionation and gravimetric determinations and IR spectra to be obtained on each fraction. If the TCO is greater than 75 ug/m^3, then the first seven LC fractions of each sample will be reanalyzed using this same gas chromatographic technique.

7.7 Calculations:

7.7.1 **Boiling Point - Retention Time Calibration:** The required data for this calibration are on the chromatogram and on the data sheet. The data reduction is performed as follows:

7.7.1.1 Average the retention times and calculate relative standard deviations for each n-hydrocarbon.

7.7.1.2 Plot average retention times as abscissae versus normal boiling points as ordinates.

7.7.1.3 Draw in calibration curve.

7.7.1.4 Locate and record retention times corresonding to boiling ranges 90-100, 110-140, 140-160, 160-180, 180-200, 200-220, 220-240, 240-260, 260-280, 280-300°C.

7.7.2 **Response-amount calibration:** The required data for this calibration are on the chromatogram and on the data sheet. The data reduction is performed as follows:

7.7.2.1 Average the area responses of each standard and calculate relative standard deviations.

7.7.2.2 Plot response (uv·sec) as ordinate versus ng/uL as abscissa.

7.7.2.3 Draw in the curve. Perform least squares regression and obtain slope (uV·sec·uL/ng).

7.7.3 **Total C7-C16 hydrocarbons analysis:** The required data for this calculation are on the chromatogram and on the data sheet. The data reduction is performed as follows:

7.7.3.1 Sum the areas of all peaks within the retention time range of interest.

7.7.3.2 Convert this area (uV·sec) to ng/uL by dividing by the weight response for n-decane (uV·sec.uL/ng).

7.7.3.3 Multiply this weight by the total concentrate volume (10 mL) to get the weight of the C7-C16 hydrocarbons in the sample.

7.7.3.4 Using the volume of gas sampled or the total weight of sample acquired, convert the result of Step 7.7.3.3 above to ug/m^3.

7.7.3.5 If the value of total C7-C16 hydrocarbons from Step 7.7.3.4 above exceeds 75 ug/m^3, calculate individual hydrocarbon concentrations in accordance with the instructions in Paragraph 7.7.5.5 below.

7.7.4 **Individual C7-C16 n-Alkane Equivalent Analysis:** The required data from the analyses are on the chromatogram and on the data sheet. The data reduction is performed as follows:

7.7.4.1 Sum the areas of peaks in the proper retention time ranges.

7.7.4.2 Convert areas (uV·sec) to ng/uL by dividing by the proper weight response (uV·sec·uL/ng).

7.7.4.3 Multiply each weight by total concentrate volume (10 mL) to get weight of species in each range of the sample.

7.7.4.4 Using the volume of gas sampled on the total weight of sample acquired, convert the result of Step 7.7.4.3 above to ug/m^3.

8.0 QUALITY CONTROL

8.1 Appropriate QC is found in the pertinent procedures throughout the method.

9.0 METHOD PERFORMANCE

9.1 Even relatively comprehensive error propagation analysis is beyond the scope of this procedure. With reasonable care, peak area reproducibility of a standard should be of the order of 1% RSD. The relative standard deviation of the sum of all peaks in a fairly complex waste might be of the order of 5-10%. Accuracy is more difficult to assess. With good analytical technique, accuracy and precision should be of the order of 10-20%.

10.0 REFERENCES

1. Emissions Assessment of Conventional Stationary Combustion Systems: Methods and Procedure Manual for Sampling and Analysis, Interagency Energy/Environmental R&D Program, Industrial Environmental Research Laboratory, Research Triangle Park, NC 27711, EPA-600/7-79-029a, January 1979.

APPENDIX J.3

METHOD 0030

VOLATILE ORGANIC SAMPLING TRAIN (VOST)

METHOD 0030

VOLATILE ORGANIC SAMPLING TRAIN

1.0 PRINCIPLE AND APPLICATION

1.1 Principle

1.1.1 This method describes the collection of volatile principal organic hazardous constituents (POHCs) from the stack gas effluents of hazardous waste incinerators. For the purpose of definition, volatile POHCs are those POHCs with boiling points less than 100°C. If the boiling point of a POHC of interest is less than 30°C, the POHC may break through the sorbent under the conditions of the sample collection procedure.

1.1.2 Field application for POHCs of this type should be supported by laboratory data which demonstrate the efficiency of a volatile organic sampling train (VOST) to collect POHCs with boiling points less than 30°C. This may require using reduced sample volumes collected at flow rates between 250 and 500 mL/min. Many compounds which boil above 100°C (e.g., chlorobenzene) may also be efficiently collected and analyzed using this method. VOST collection efficiency for these compounds should be demonstrated, where necessary, by laboratory data of the type described above.

1.1.3 This method employs a 20-liter sample of effluent gas containing volatile POHCs which is withdrawn from a gaseous effluent source at a flow rate of 1 L/min, using a glass-lined probe and a volatile organic sampling train (VOST). (Operation of the VOST under these conditions has been called FAST-VOST.) The gas stream is cooled to 20°C by passage through a water-cooled condenser and volatile POHCs are collected on a pair of sorbent resin traps. Liquid condensate is collected in an impinger placed between the two resin traps. The first resin trap (front trap) contains approximately 1.6 g Tenax and the second trap (back trap) contains approximately 1 g each of Tenax and petroleum-based charcoal (SKC Lot 104 or equivalent), 3:1 by volume. A total of six pairs of sorbent traps may be used to collect volatile POHCs from the effluent gas stream.

1.1.4 An alternative set of conditions for sample collection has been used. This method involves collecting sample volume of 20 liters or less at reduced flow rate. (Operation of the VOST under these conditions has been referred to as SLO-VOST.) This method has been used to collect 5 liters of sample (0.25 L/min for 20 min) or 20 liters of sample (0.5 L/min for 40 min) on each pair of sorbent cartridges. Smaller sample volumes collected at lower flow rates should be considered when the boiling points of the POHCs of interest are below 35°C. A total of six pairs of sorbent traps may be used to collect volatile POHCs from the effluent gas stream.

1.1.5 Analysis of the traps is carried out by thermal desorption purge-and-trap by gas chromatography/mass spectrometry (see Method 5040). The VOST is designed to be operated at 1 L/min with traps being replaced every 20 min for a total sampling time of 2 hr. Traps may be analyzed separately or combined onto one trap to improve detection limit. However, additional flow rates and sampling times are acceptable. Recent experience has shown that when less than maximum detection ability is required, it is acceptable and probably preferable to operate the VOST at 0.5 L/min for a total of three 40-min periods. This preserves the 2-hr sampling period, but reduces the number of cartridge changes in the field as well as the number of analyses required.

1.2 Application

1.2.1 This method is applicable to the determination of volatile POHCs in the stack gas effluent of hazardous waste incinerators. This method is designed for use in calculating destruction and removal efficiency (DRE) for the volatile POHCs and to enable a determination that DRE values for removal of the volatile POHCs are equal to or greater than 99.99%.

1.2.2 The sensitivity of this method is dependent upon the level of interferences in the sample and the presence of detectable levels of volatile POHCs in blanks. The target detection limit of this method is 0.1 ug/m^3 (ng/L) of flue gas, to permit calculation of a DRE equal to or greater than 99.99% for volatile POHCs which may be present in the waste stream at 100 ppm. The upper end of the range of applicability of this method is limited by breakthrough of the volatile POHCs on the sorbent traps used to collect the sample. Laboratory development data have demonstrated a range of 0.1 to 100 ug/m^3 (ng/L) for selected volatile POHCs collected on a pair of sorbent traps using a total sample volume of 20 liters or less (see Paragraph 1.1.4).

1.2.3 This method is recommended for use only by experienced sampling personnel and analytical chemists or under close supervision by such qualified persons.

1.2.4 Interferences arise primarily from background contamination of sorbent traps prior to or after use in sample collection. Many potential interferences can be due to exposure of the sorbent materials to solvent vapors prior to assembly and exposure to significant concentrations of volatile POHCs in the ambient air at hazardous waste incinerator sites.

1.2.5 To avoid or minimize the low-level contamination of train components with volatile POHCs, care should be taken to avoid contact of all interior surface or train components with synthetic organic materials (e.g., organic solvents, lubricating and sealing greases), and train components should be carefully cleaned and conditioned according to the procedures described in this protocol.

2.0 APPARATUS

2.1 <u>Volatile Organic Sampling Train</u>: A schematic diagram of the principal components of the VOST is shown in Figure 1 and a diagram of one acceptable version of the VOST is shown in Figure 2. The VOST consists of a glass-lined probe followed by an isolation valve, a water-cooled glass condenser, a sorbent cartridge containing Tenax (1.6 g), an empty impinger for condensate removal, a second water-cooled glass condenser, a second sorbent cartridge containing Tenax and petroleum-based charcoal (3:1 by volume; approximately 1 g of each), a silica gel drying tube, a calibrated rotameter, a sampling pump, and a dry gas meter. The gas pressure during sampling and for leak-checking is monitored by pressure gauges which are in line and downstream of the silica gel drying tube. The components of the sampling train are described below.

2.1.1 **Probe**: The probe should be made of stainless steel with a borosilicate or quartz glass liner. The temperature of the probe is to be maintained above 130°C but low enough to ensure a resin temperature of 20°C. A water-cooled probe may be required at elevated stack temperatures to protect the probe and meet the above requirements. Isokinetic sample collection is not a requirement for the use of VOST since the compounds of interest are in the vapor phase at the point of sample collection.

2.1.2 **Isolation valve**: The isolation valve should be a greaseless stopcock with a glass bore and sliding Teflon plug with Teflon wipers (Ace 8193 or equivalent).

2.1.3 **Condensers**: The condensers (Ace 5979-14 or equivalent) should be of sufficient capacity to cool the gas stream to 20°C or less prior to passage through the first sorbent cartridge. The top connection of the condenser should be able to form a leak-free, vacuum-tight seal without using sealing greases.

2.1.4 **Sorbent cartridges**:

2.1.4.1 The sorbent cartridges used for the VOST may be used in either of two configurations: the inside-outside (I/O) configuration in which the cartridge is held within an outer glass tube and in a metal carrier, and the inside-inside (I/I) configuration in which only a single glass tube is used, with or without a metal carrier. In either case, the sorbent packing will be the same.

2.1.4.1.1 The first of a pair of sorbent cartridges shall be packed with approximately 1.6 g Tenax GC resin and the second cartridge of a pair shall be packed with Tenax GC and petroleum-based charcoal (3:1 by volume; approximately 1 g of each).

2.1.4.1.2 The second sorbent cartridge shall be packed so that the sample gas stream passes through the Tenax layer first and then through the charcoal layer.

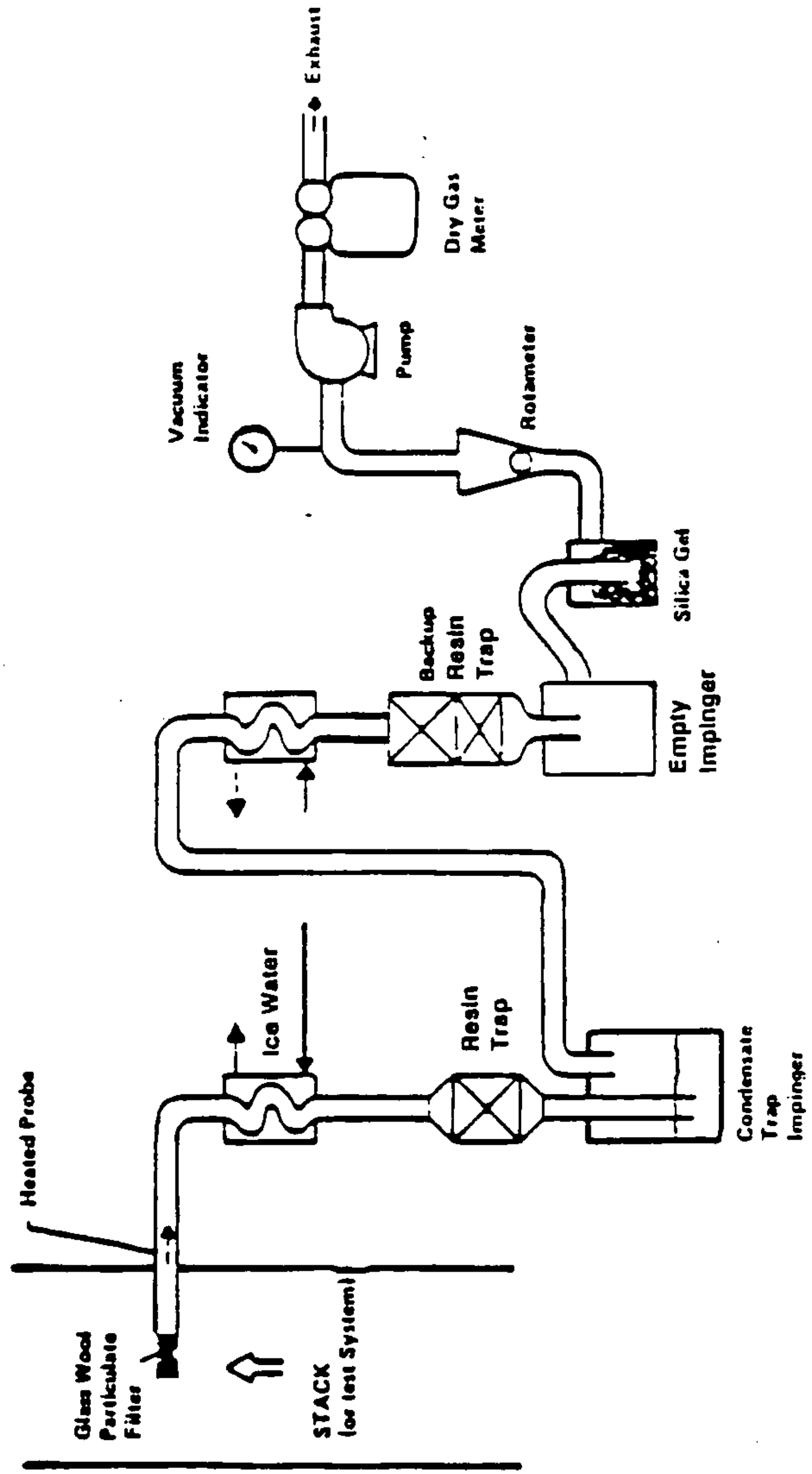


Figure 1. Schematic of Volatile Organic Sampling Train (VOST).

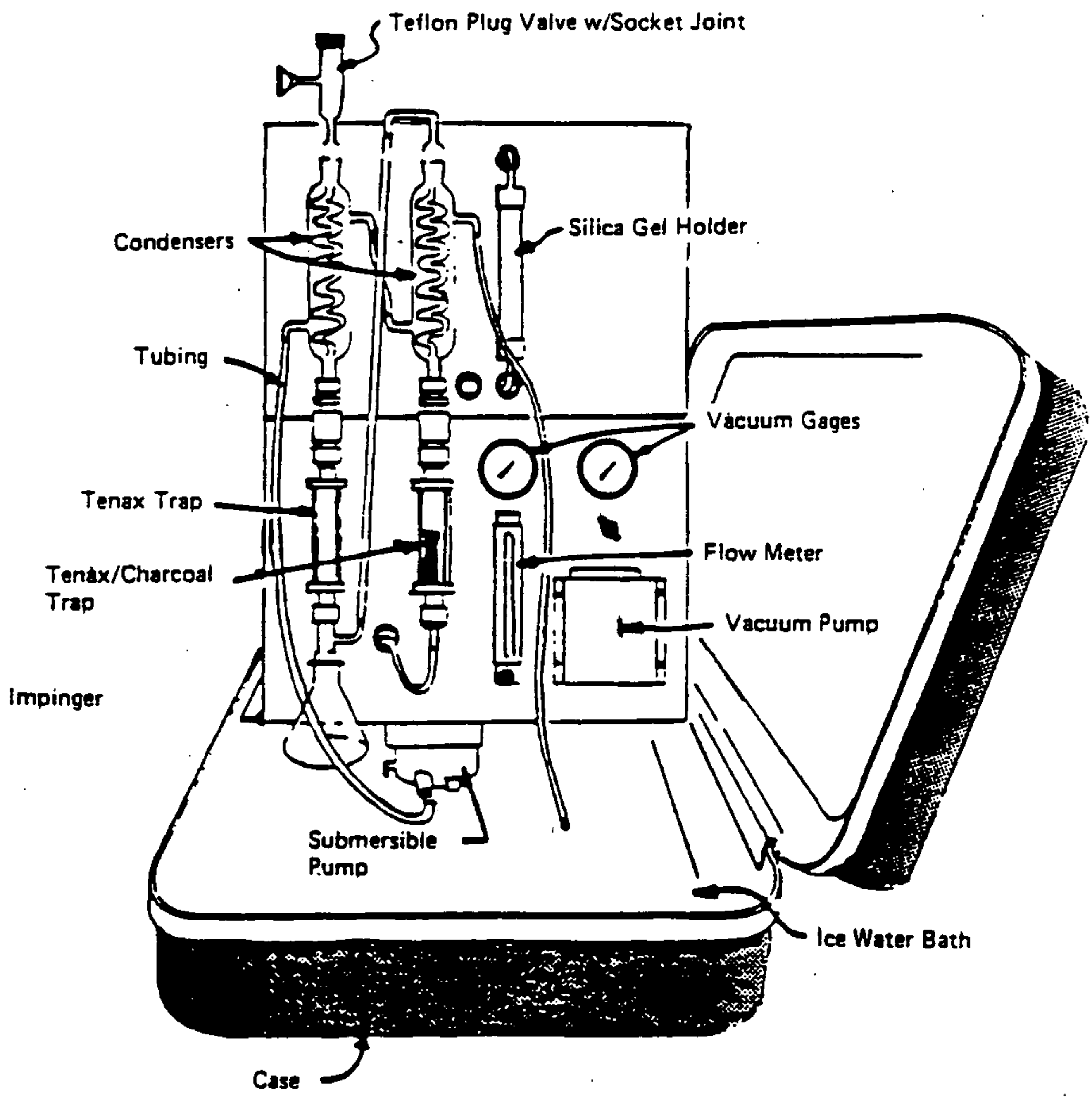


Figure 2. Volatile Organic Sampling Train (VOST).

2.1.4.2 The sorbent cartridges shall be glass tubes with approximate dimensions of 10 cm by 1.6 cm I.D. The two acceptable designs (I/O, I/I) for the sorbent cartridge are described in further detail below.

2.1.4.2.1 **Inside/Inside sorbent cartridge:** A diagram of an I/I sorbent cartridge is shown in Figure 3. This cartridge is a single glass tube (10 cm by 1.6 cm I.D.) which has the ends reduced in size to accommodate a 1/4- or 3/8-in. Swagelok or Cajon gas fitting. The resin is held in place by glass wool at each end of the resin layer. The amounts of each type of sorbent material used in the I/I design are the same as for the I/O design. Threaded end caps are placed on the sorbent cartridge after packing with sorbent to protect the sorbent from contamination during storage and transport.

2.1.4.2.2 **Inside/Outside type sorbent cartridge:** A diagram of an I/O sorbent cartridge is shown in Figure 4. In this design the sorbent materials are held in the glass tube with a fine mesh stainless steel screen and a C-clip. The glass tube is then placed within a larger diameter glass tube and held in place using Viton O-rings. The purpose of the outer glass tube is to protect the exterior of the resin-containing tube from contamination. The two glass tubes are held in a stainless steel cartridge holder, where the ends of the glass tubes are held in place by Viton O-rings placed in machine grooves in each metal end piece. The three cylindrical rods are secured in one of the metal end pieces and fastened to the other end piece using knurled nuts, thus sealing the glass tubes into the cartridge holder. The end pieces are fitted with a threaded nut onto which a threaded end cap is fitted with a Viton O-ring seal, to protect the resin from contamination during transport and storage.

2.1.5 **Metering system:** The metering system for VOST shall consist of vacuum gauges, a leak-free pump (Thomas Model 107 or equivalent, Thomas Industries, Sheboygan, Wisconsin), a calibrated rotameter (Linde Model 150, Linde Division of Union Carbide, Keasbey, New Jersey) for monitoring the gas flow rate, a dry gas meter with 2% accuracy at the required sampling rate, and related valves and equipment. Provisions should be made for monitoring the temperature of the sample gas stream between the first condenser and first sorbent cartridge. This can be done by placing a thermocouple on the exterior glass surface of the outlet from the first condenser. The temperature at that point should be less than 20°C. If it is not, an alternative condenser providing the required cooling capacity must be used.

2.1.6 **Sample transfer lines:** All sample transfer lines to connect the probe to the VOST shall be less than 5 ft in length, and shall be heat-traced Teflon with connecting fittings which are capable of forming leak-free, vacuum-tight connections without the use of sealing grease.

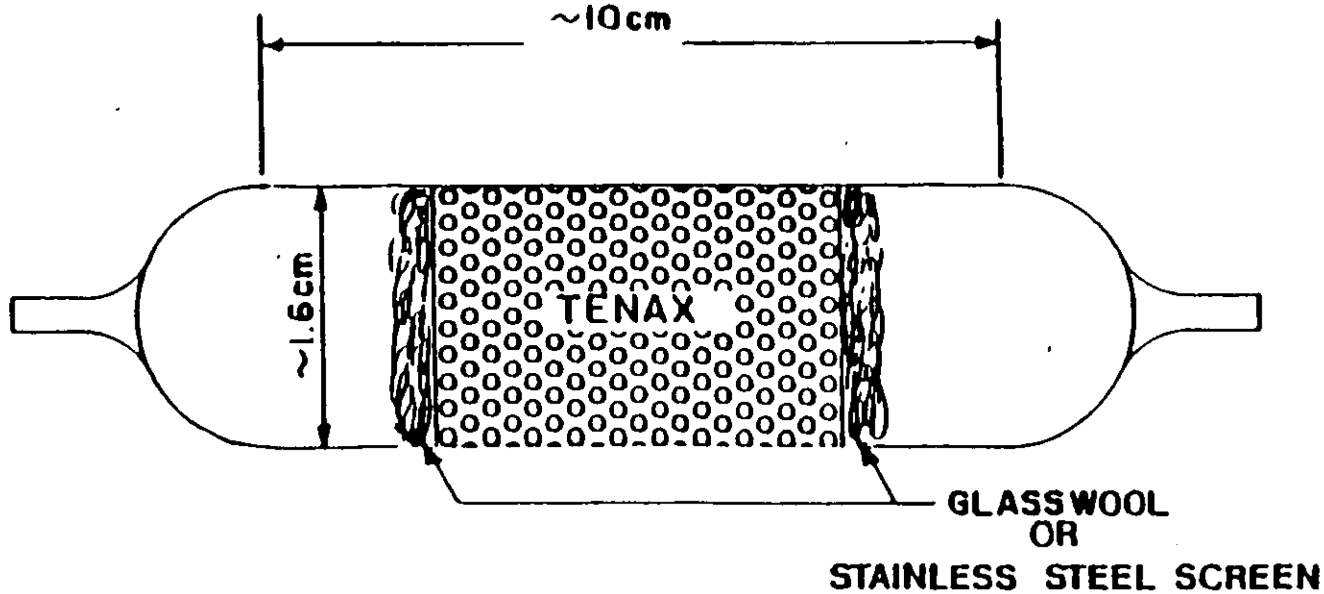
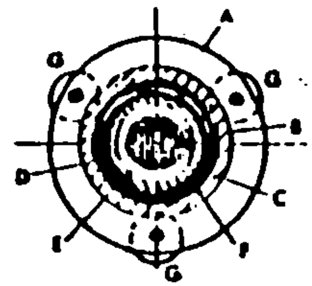


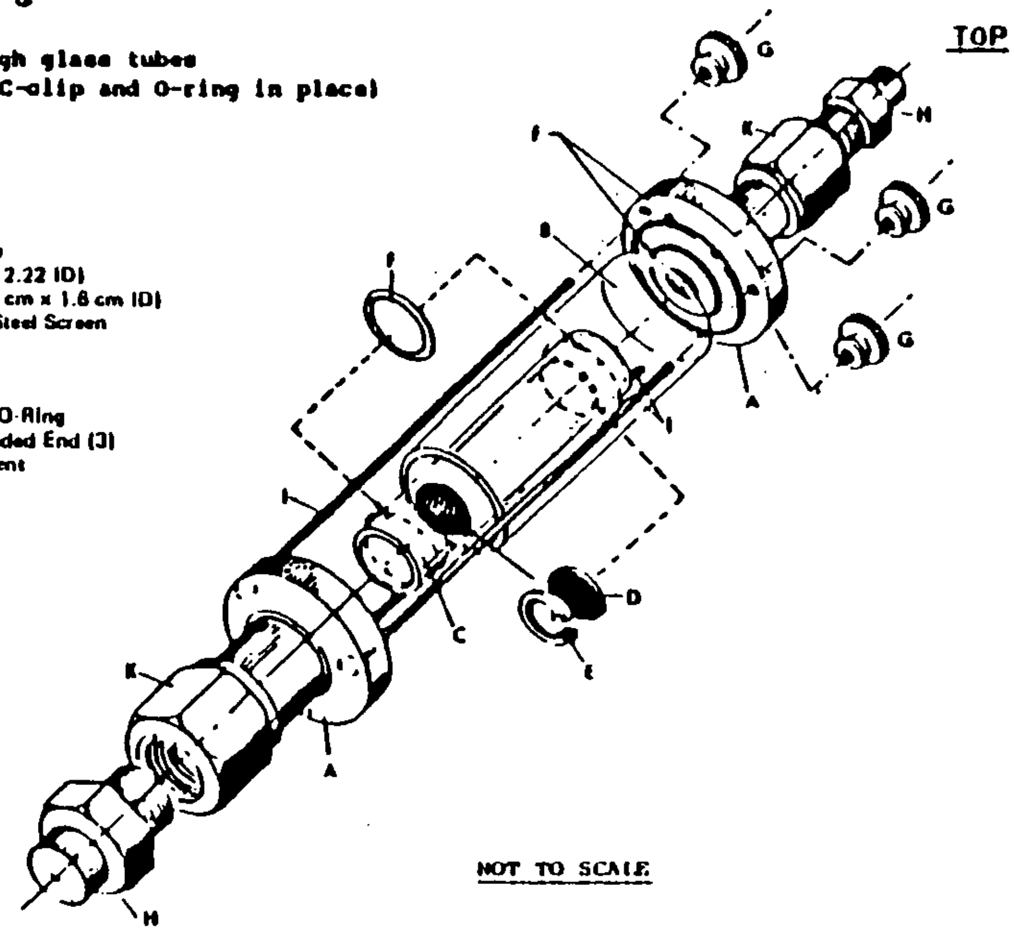
Figure 3. Inside-inside vost cartridge

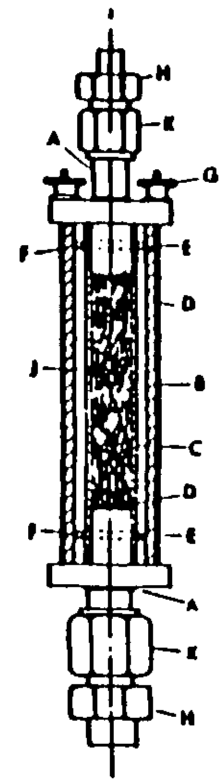


Section cut through glass tubes
(showing screen, C-clip and O-ring in place)

LEGEND

A - Stainless Steel Carrier
B - Glass Tube (9.84 L x 2.22 ID)
C - Small Glass Tube (10 cm x 1.8 cm ID)
D - Fine Mesh Stainless Steel Screen
E - Stainless Steel C-Clip
F - O-Ring (Viton)
G - Nuts (+)
H - End Cap with Viton O-Ring
I - Metal Rod with Threaded End (3)
J - Tenax/Charcoal Sorbent
K - Cajon Fitting





Assembled Trap
NTS

Figure 4. Sorbent Trap Assembly (I/O)
Volatile Organic Sampling Train (VOST)

All other sample transfer lines used with the VOST shall be Teflon with connecting fittings that are capable of forming leak-free, vacuum-tight connections without the use of sealing grease.

3.0 REAGENTS AND MATERIALS

3.1 2,6-Diphenylene oxide polymer (Tenax, 35/60 mesh):

3.1.1 The new Tenax is Soxhlet extracted for 24 hr with methanol (Burdick & Jackson, pesticide grade or equivalent). The Tenax is dried for 6 hr in a vacuum oven at 50°C before use. Users of I/O and I/I sorbent cartridges have used slightly different thermal conditioning procedures. I/O sorbent cartridges packed with Tenax are thermally conditioned by flowing organic-free nitrogen (30 mL/min) through the resin while heating to 190°C. Some users have extracted new Tenax and charcoal with pentane to remove nonpolar impurities. However, these users have experienced problems with residual pentane in the sorbents during analysis.

3.1.2 If very high concentrations of volatile POHCs have been collected on the resin (e.g., micrograms of analytes), the sorbent may require Soxhlet extraction as described above. Previously used Tenax cartridges are thermally reconditioned by the method described above.

3.2 Charcoal (SKC petroleum-base or equivalent): New charcoal is prepared and charcoal is reconditioned as described in Paragraph 4.4. New charcoal does not require treatment prior to assembly into sorbent cartridges. Users of VOST have restricted the types of charcoal used in sorbent cartridges to only petroleum-based types. Criteria for other types of charcoal are acceptable if recovery of POHC in laboratory evaluations meet the criteria of 50 to 150%.

3.3 Viton-O-Ring: All O-rings used in VOST shall be Viton. Prior to use, these O-rings should be thermally conditioned at 200°C for 48 hr. O-rings should be stored in clean, screw-capped glass containers prior to use.

3.4 Glass tubes/Condensers: The glass resin tubes and condensers should be cleaned with a nonionic detergent in an ultrasonic bath, rinsed well with organic-free water, and dried at 110°C. Resin tubes of the I/O design should be assembled prior to storage as described in Paragraph 4.1. Resin tubes of the I/I design can be stored in glass culture tube containers with cotton cushioning and Teflon-lined screw caps. Condensers can be capped with appropriate end caps prior to use.

3.5 Metal parts: The stainless steel carriers, C-clips, end plugs, and screens used in the I/O VOST design are cleaned by ultrasonication in a warm nonionic detergent solution, rinsed with distilled water, air-dried, and heated in a muffle furnace for 2 hr at 400°C. Resin tubes of the I/I design require Swagelok or equivalent end caps with Supelco M-1 ferrules. These should be heated at 190°C along with the assembled cartridges.

3.6 Silica gel (Indicating type, 6-16 mesh): New silica gel may be used as received. Silica gel which has been previously used should be dried for 2 hr at 175°C (350°F).

3.7 Cold packs: Any commercially available reusable liquids or gels that can be repeatedly frozen are acceptable. They are typically sold in plastic containers as "Blue Ice" or "Ice-Packs." Enough should be used to keep cartridges at or near 4°C.

3.8 Water: Water used for cooling train components in the field may be tap water; and water used for rinsing glassware should be organic-free.

3.9 Glass wool: Glass wool should be Soxhlet extracted for 8 to 16 hr, using methanol, and oven dried at 110°C before use.

4.0 SAMPLE HANDLING AND PROCEDURE

4.1 Assembly:

4.1.1 The assembly and packing of the sorbent cartridges should be carried out in an area free of volatile organic material, preferably a laboratory in which no organic solvents are handled or stored and in which the laboratory air is charcoal filtered. Alternatively, the assembly procedures can be conducted in a glove box which can be purged with organic-free nitrogen.

4.2 Tenax cartridges:

4.2.1 The Tenax, glass tubes, and metal cartridge parts are cleaned and stored (see Section 3.0). Approximately 1.6 g of Tenax is weighed and packed into the sorbent tube which has a stainless steel screen and C-clip (I/O design) or glass wool (I/I design) in the downstream end. The Tenax is held in place by inserting a stainless steel screen and C-clips in the upstream end (I/O design) or glass wool (I/I design). Each cartridge should be marked, using an engraving tool, with an arrow to indicate the direction of sample flow, and a serial number.

4.2.2 Conditioned resin tubes of the I/O design are then assembled into the metal carriers according to the previously described inside/inside or inside/outside procedures (with end caps) and are placed on cold packs for storage and transport. Conditioned resin tubes of the I/I design are capped and placed on cold packs for storage and transport.

4.3 Tenax/Charcoal tubes

4.3.1 The Tenax, charcoal, and metal cartridge parts are cleaned and stored as previously described (see Section 3.0). The tubes are packed with approximately a 3:1 volume ratio of Tenax and charcoal (approximately 1 g each). The Tenax and charcoal are held in place by the stainless steel screens and C-clips (I/O design) or by glass wool (I/I design). The glass tubes containing the Tenax and charcoal are then conditioned as described below (see Paragraph 4.4). Place the I/O glass tubes in the metal carriers (see Paragraph 2.1.4.2.2), put end caps on the assembled cartridges, mark direction of sample flow and serial number, and place the assembled cartridges on cold packs for storage and transport.

4.3.2 Glass tubes of the I/I design are conditioned, and stored in the same manner as the I/O tubes.

4.4 <u>Trap Conditioning - QC</u>

4.4.1 Following assembly and leak-checking, the traps are connected in reverse direction to sampling to a source of organic-free nitrogen, and nitrogen is passed through each trap at a flow rate of 40 mL/min, while the traps are heated to 190°C for 12-28 hr. The actual conditioning period may be determined based on adequacy of the resulting blank checks.

4.4.2 The following procedure is used to blank check each set of sampling cartridges prior to sampling to ensure cleanliness. The procedure provides semi-quantitative data for organic compounds with boiling points below 110°C on Tenax and Tenax/Charcoal cartridges. It is not intended as a substitute for Method 5040.

4.4.2.1 The procedure is based on thermal desorption of each set of two cartridges, cryofocusing with liquid nitrogen onto a trap packed with glass beads, followed by thermal desorption from the trap and analysis by GC/FID.

4.4.2.2 The detection limit is based on the analysis of Tenax cartridges spiked with benzene and toluene and is around 2 ng for each compound.

4.4.2.3 The results of analyzing spiked cartridges on a daily basis should not vary by more than 20 percent. If the results are outside this range, the analytical system must be evaluated for the probable cause and a second spiked cartridge analyzed.

4.4.2.4 The GC operating conditions are as follows:

<u>GC Operating Conditions</u>

Column: Packed column 6 ft x 1/8" stainless steel 1.0 percent SP-1000 on Carbopack B 60/80, or equivalent.
Temperature program: 50°C for 5 min, 20°C/min increase to 190°C, hold 13 min.
Injector: 200°C.
Detector: F.I.D. 250°C.
Carrier Gas: Helium at 25 mL/min.
Sample valve: Valco 6-port with 40" x 1/16" stainless steel trap packed with 60/80 mesh glass beads.
Cryogen: Liquid nitrogen.
Trap heater: Boiling water, hot oil, or electrically heated.

Desorption heater: Supelco "clam shell" (high capacity carrier gas purifier) heater and Variac, adjusted to 180°C to 200°C.

4.4.2.5 Calibration is accomplished by preparing a spiked Tenax cartridge with benzene and toluene and analyzing according to the standard operating procedure. A standard of benzene, toluene and bromofluorobenzene (BFB) is prepared by injecting 2.0 uL of benzene and toluene and 1.0 uL of BFB into 10 mL of methanol. The concentration of this stock is 175 ng/uL of benzene and toluene, and 150 ng/uL BFB. One microliter of the stock standard is injected onto a Tenax cartridge through a heated injection port set at 150°C. A GC oven can be used for this with the oven at room temperature. Helium carrier gas is set at 50 mL/min. The solvent flush technique should be used. After two min, remove the Tenax cartridge and place in the desorption heater for analysis. BFB is also used as an internal standard spike for GC/MS analysis which provides a good comparison between GC/FID and GC/MS. The results of this spike analysis should not vary more than 20 percent day to day. Initially and then periodically this spiked Tenax should be reanalyzed a second time to verify that the 10 min desorption time and 180-200°C temperature are adequate to remove all of the spiked components. It should be noted that only one spiked Tenax cartridge need be prepared and analyzed daily unless otherwise needed to ensure proper instrument operation.

An acceptable blank level is left to the discretion of the method analyst. An acceptable level is one that allows adequate determination of expected components emitted from the waste being burned.

4.4.3 After conditioning, traps are sealed and placed on cold packs until sampling is accomplished. Conditioned traps should be held for a minimum amount of time to prevent the possibility of contamination.

4.4.4 It may be useful to spike the Tenax and Tenax/charcoal traps with the compounds of interest to ensure that they can be thermally desorbed under laboratory conditions. After spiked traps are analyzed they may be reconditioned and packed for sampling.

4.5 <u>Pretest preparation</u>:

4.5.1 All train components shall be cleaned and assembled as previously described. A dry gas meter shall have been calibrated within 30 days prior to use, using an EPA-supplied standard orifice.

4.5.2 The VOST is assembled according to the schematic diagram in Figure 1. The cartridges should be positioned so that sample flow is through the Tenax first and then the Tenax/charcoal. Cooling water should be circulated to the condensers and the temperature of the cooling water should be maintained near 0°C. The end caps of the sorbent cartridges should be placed in a clean screw-capped glass container during sample collection.

4.6 Leak-checking:

4.6.1 The train is leak-checked by closing the valve at the inlet to the first condenser and pulling a vacuum of 250 mm (10 in. Hg) above the normal operating pressure. The traps and condensers are isolated from the pump and the leak rate noted. The leak rate should be less than 2.5 mm Hg after 1 min. The train is then returned to atmospheric pressure by attaching a charcoal-filled tube to the train inlet and admitting ambient air filtered through the charcoal. This procedure will minimize contamination of the VOST components by excessive exposure to the fugitive emissions at hazardous waste incinerator sites.

4.7 Sample Collection

4.7.1 After leak-checking, sample collection is accomplished by opening the valve at the inlet to the first condenser, turning on the pump, and sampling at a rate of 1 liter/min for 20 min. The volume of sample for any pair of traps should not exceed 20 liters.

4.7.2 Following collection of 20 liters of sample, the train is leak-checked a second time at the highest pressure drop encountered during the run to minimize the chance of vacuum desorption of organics from the Tenax. The train is returned to atmospheric pressure, using the method discussed in Paragraph 4.1 and the two sorbent cartridges are removed. The end caps are replaced and the cartridges shall be placed in a suitable environment for storage and transport until analysis. The sample is considered invalid if the leak test does not meet specification.

4.7.3 A new pair of cartridges is placed in the VOST, the VOST leak-checked, and the sample collection process repeated as described above. Sample collection continues until six pairs of traps have been used.

4.7.4 All sample cartridges should be kept on cold packs until they are ready for analysis.

4.8 Blanks

4.8.1 Field blanks/trip blanks: Blank Tenax and Tenax/charcoal cartridges are taken to the sampling site and the end caps removed for the period of time required to exchange two pairs of traps on VOST. After the two VOST traps have been exchanged, the end caps are replaced on the blank Tenax and Tenax/charcoal tubes and these are returned to the cold packs and analyzed with the sample traps. At least one pair of field blanks (one Tenax, one Tenax/charcoal) shall be included with each six pairs of sample cartridges collected (or for each field trial using VOST to collect volatile POHCs).

4.8.2 **Trip blanks:** At least one pair of blank cartridges (one Tenax, one Tenax/charcoal) shall be included with shipment of cartridges to a hazardous waste incinerator site. These "field blanks" will be treated like any other cartridges except that the end caps will not be removed during storage at the site. This pair of traps will be analyzed to monitor potential contamination which may occur during storage and shipment.

4.8.3 **Laboratory blanks:** One pair of blank cartridges (one Tenax, one Tenax/charcoal) will remain in the laboratory using the method of storage which is used for field samples. If the field and trip blanks contain high concentrations of contaminants (e.g., greater than 2 ng of a particular POHC), the laboratory blank shall be analyzed in order to identify the source of contamination.

5.0 CALCULATIONS (for sample volume)

5.1 The following nomenclature are used in the calculation of sample volume:

P_{bar} = Barometric pressure at the exit orifice of the dry gas meter, mm (in.) Hg.

P_{std} = Standard absolute pressure, 760 mm (29.92 in.) Hg.

T_m = Dry gas meter average absolute temperature, K (°R).

T_{std} = Standard absolute temperature, 293K (528°R).

V_m = Dry gas volume measured by dry gas meter, dcm (dcf).

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

γ = Dry gas meter calibration factor.

5.2 The volume of gas sampled is calculated as follows:

$$V_{m(std)} = V_m \gamma \frac{T_{std}\, P_{bar}}{T_m\, P_{std}} = K_1 \gamma \frac{V_m\, P_{bar}}{T_m}$$

where:

K_1 = 0.3858 K/mm Hg for metric units, or

K_1 = 17.64 °R/in. Hg for English units.

6.0 ANALYTICAL PROCEDURE

See Method 5040.

7.0 PRECISION AND ACCURACY REQUIREMENTS

7.1 Method Performance Check

Prior to field operation of the VOST at a hazardous waste incinerator, a method performance check should be conducted using either selected volatile POHCs of interest or two or more of the volatile POHCs for which data are available. This check may be conducted on the entire system (VOST/GC/MS) by analysis of a gas cylinder containing POHCs of interest or on only the analytical system by spiking of the POHCs onto the traps. The results of this check for replicate pairs of traps should demonstrate that recovery of the analytes fall within 50% to 150% of the expected values.

7.2 Performance Audit

During a trial burn a performance audit must be completed. The audit results should agree within 50% to 150% of the expected value for each specific target compound. This audit consists of collecting a gas sample containing one or more POHCs in the VOST from an EPA ppb gas cylinder. Collection of the audit sample in the VOST may be conducted either in the laboratory or at the trial burn site. Anaysis of the VOST audit sample must be by the same person, at the same time, and with the same analytical procedure as used for the regular VOST trail burn samples. EPA ppb gas cylinders currently available for VOST Audit are shown in Table 1 below.

The audit procedure, audit equipment and audit cylinder may be obtained by writing:

Audit Cylinder Gas Coordinator (MD-77B)
Quality Assurance Division
Environmental Monitoring Systems Laboratory
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

or by calling the Audit Cylinder Gas Coordinator at (919) 541-4531.

The request for the audit must be made at least 30 days prior to the scheduled trial burn. If a POHC is selected for which EPA does not have an audit cylinder, this audit is not required.

8.0 REFERENCES

1. Protocol for the Collection and Analysis of Volatile POHCs Using VOST. EPA/600/8-84/007, March 1984.

2. Sykes, A.L., Standard Operating Procedure for Blanking Tenax and Tenax/Charcoal Sampling Cartridges for Volatile Organic Sampling Train (VOST), Radion Corporation, P.O. Box 13000, Research Triangle Park, NC 27709.

3. Validation of the Volatile Organic Sampling Train (VOST) Protocol, Vols. I and II, EPA/600/4-86/014a, January 1986.

TABLE 1: Organic Gases in the ppb Audit Repository

Group I	Ranges of cylinders currently available:
5 Organics in N_2:	7 - 90 ppb
Carbon tetrachloride	90 - 430 ppb
Chloroform	430 - 10,000 ppb
Perchloroethylene	
Vinyl chloride	
Benzene	

Group II	Ranges of cylinders currently available:
9 Organics in N_2	7 - 90 ppb
Trichloroethylene	90 - 430 ppb
1,2-Dichloroethane	
1,2-Dibromoethane	
F-12	
F-11	
Bromomethane	
Methyl ethyl ketone	
1,1,1-Trichloroethane	
Acetronitrile	

TABLE 1: Organic Gases in the ppb Audit Repository (Continued)

Group III	Ranges of cylinders currently available:
7 Organics in N_2:	7 - 90 ppb
Vinylidene chloride	90 - 430 ppb
F-113	
F-114	
Acetone	
1,4-Dioxane	
Toluene	
Chlorobenzene	

Group IV	Ranges of cylinders currently available:
6 Organics in N_2:	7 - 90 ppb
Acrylonitrile	430 - 10,000
1,3-Butadiene	
Ethylene oxide	
Methylene chloride	
Propylene oxide	
Ortho-xylene	