Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

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September 1994

Final Emissions Test Report

Burke-Parson-Bowlby Corporation
DuBois Division
Wood Treatment Plant
DuBois, Pennsylvania

U.S. EPA Contract No. 68-D2-0161
EMB Work Assignment No. 1-2

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1. INTRODUCTION

1.1 Summary of Test Program

The U.S. Environmental Protection Agency (EPA), Office of Air Quality Planning and Standards (OAQPS), Industrial Studies Branch (ISB), and Emission Measurement Branch (EMB), directed Science Applications International Corporation (SAIC) to conduct an emissions test for the purpose of identifying baseline hazardous air pollutant (HAP) emissions and maximum achievable control technology (MACT) for the creosote wood-treating industry.

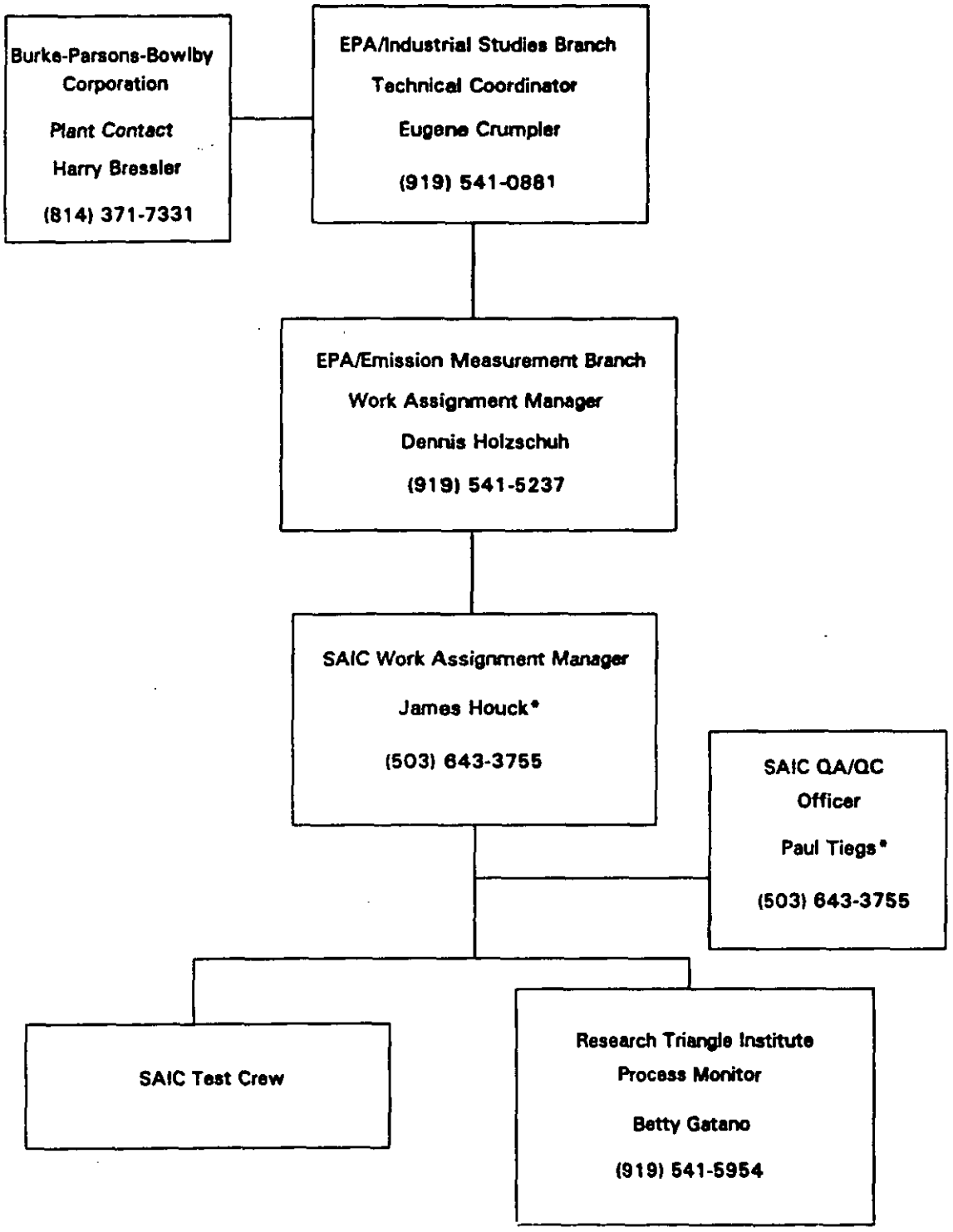
The Burke-Parsons-Bowlby Corporation facility located in DuBois, Pennsylvania was selected for study for this project. The BPB facility has an aqueous scrubber that controls emissions from (1) the vacuum system exhaust, (2) the creosote work and storage tanks, and (3) the wastwater treatment system. This facility was selected for testing for two reasons. First, the facility has small collection hoods over each of its three treatment cylinders. The hoods are not currently being used to collect fugitive emissions from the cylinders. However, they can be used during testing to collect and measure the fugitive emissions. Second, the aqueous scrubber is the most common air pollution control device (APCD) used in the wood treatment industry. Seven wood treatment facilities use water scrubbers to control emissions. Of these seven, three facilities use packed-bed scrubbers and four use spray scrubbers. Thus, aqueous scrubbers may represent MACT for existing sources. As a result, testing at this facility would serve to establish baseline emissions for creosote wood treatment processes and may establish the potential for emissions reduction for the industry MACT.

The testing program consisted of the following: (1) the collection of semivolatile organic compounds by SW846 Method 0010 (Modified Method 5); (2) the monitoring of total organic hydrocarbons by CFR 40 part 60 Appendix A Method 25A; (3) velocity, moisture, and gas composition measurements 1 through 4; and (4) the collection of scrubber water and creosote samples for analysis. Analysis for HAP in the creosote, scrubber water, and Modified Method 5 samples was accomplished with a TO-13 type analysis. In addition, the scrubber water was

analyzed by SW846 methods 9060 and 9070 for total organic carbon (TOC) and oil and grease, as well as for pH (Method 423) and temperature. A preliminary test run was conducted with Method 25A and Methods 1 through 4 to determine appropriate times for the collection of the Modified Method 5 samples and to become familiar with the facility and process. A second and final run was then conducted, collecting dust samples at all Method 25A and Methods 1 through 4 sampling locations, sampling with the Modified Method 5 train, and collecting the creosote and scrubber water samples.

1.2. Test Program Organization

Figure 1-1 presents the organization of the creosote wood treatment facility test program. Major lines of communications, names, and telephone numbers of the responsible individuals are presented.



* No longer employed at SAIC

Figure 1-1. Organizational Chart for the Test Program

7.5x62 = 2739 ft3
7x48 = 1847 ft3
873/1847 = 48%
865/1847 = 47%

2. Plant and Sampling Location Descriptions

2.1. Process Description and Operation

The BPB facility, loated in DuBois, Pennsylvania, uses creosote to treat railroad ties, crossing timber, and bridge timber made from oak and other hardwoods. In 1991, the facility treated roughly 1.4 million cubic feet of wood products and consumed 850,000 gallons of creosote. The facility operates three treatment cylinders for conditioning and treating wood. Each cylinder has an associated storage tank condenser, work tank, and vacuum pump. One cylinder measures 7.5 feet in diameter by 62 feet in length, and the other two measure 7 feet in diameter by 48 feet in length. The creosote facility operates 24 hours per day, 7 days per week. Figure 2-1 shows the layout of the creosote treatment process and its associated APCDs.

The treating solution used at the BPB facility is a 60/40 creosote coal tar mixture and is called P2 creosote. The P2 solution is delivered to the plant by truck and stored in two 18,000-gallon and one 20,000-gallon storage tanks.

The facility either uses air-seasoned wood or it conditions wood by the boulton method prior to treatment. Air seasoning takes months before the wood can be treated, while Boultonizing the wood takes approximately 18 hours. Because of the current wood shortage facing the wood treatment industry, the facility cannot afford to have a large amount of inventory being air-seasoned. As a result, the facility is Boultonizing a larger percentage of wood. For example, the goal of the facility is to treat 50 to 60 percent air-seasoned wood, but because of the wood shortage, only about 15 percent of the wood treated is air-seasoned.

The Boulton process is used to condition green wood prior to treatment at the BPB facility. Initially, the creosote treating cylinder is filled with just enough preservative to immerse the green wood. The total filling time lasts approximately 30 minutes. The creosote is heated to approximately 180 °F. A 20" Hg vacuum is then pulled on the cylinder to lower the boiling point of water in the wood, causing part of the water to evaporate. Vapors from the cylinder

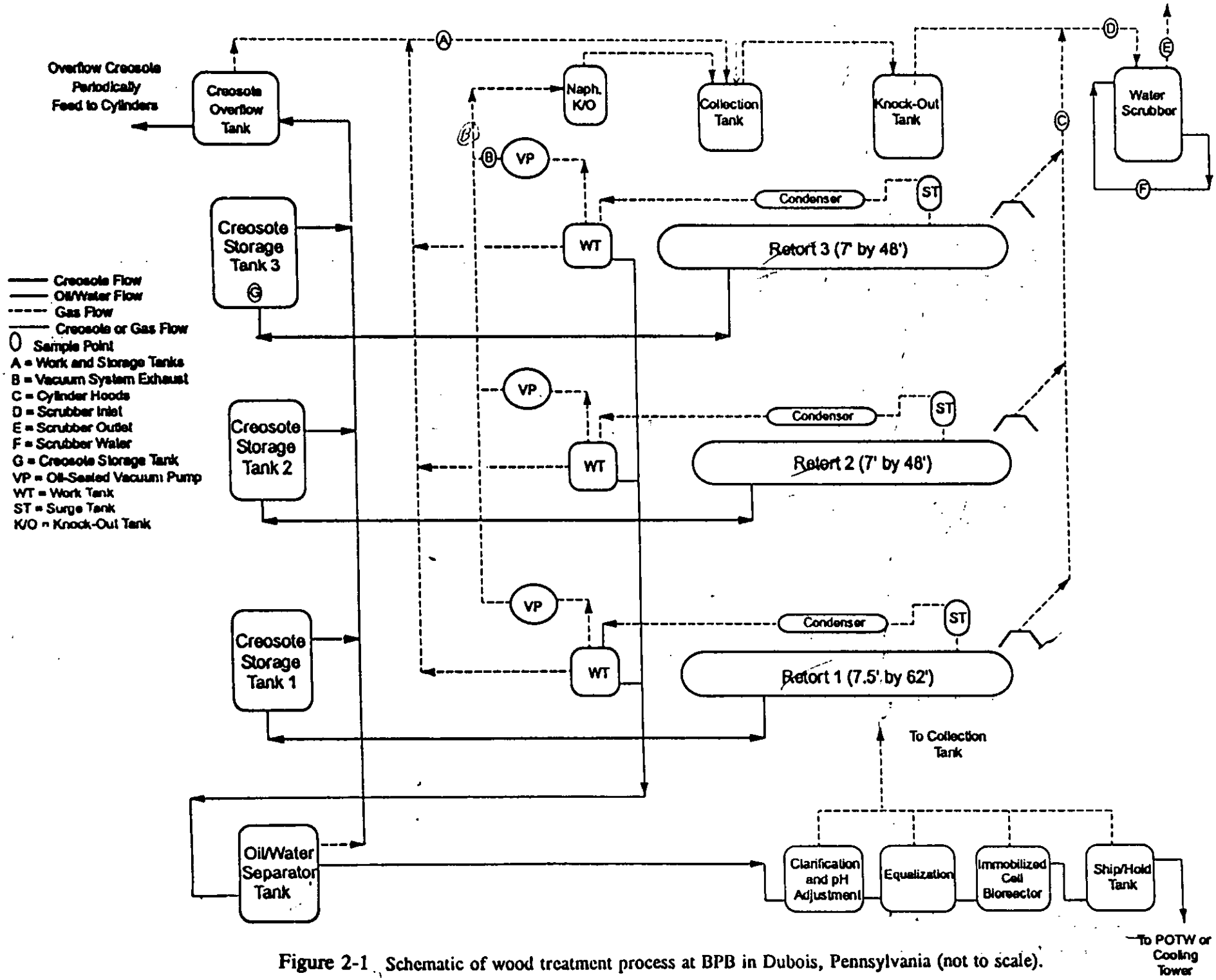


Figure 2-1 Schematic of wood treatment process at BPB in Dubois, Pennsylvania (not to scale).

are condensed in a shell-and-tub condenser, and the condensate collects in the work tank. The vacuum is maintained for 10 to 20 hours depending on the type of wood being conditioned. The average length of the vacuum lasts for 15 hours.

After the wood has been conditioned, the treatment process begins. The BPB facility uses the Reuping method to treat the wood. In this process, the vacuum is broken and the creosote in the cylinder is returned to the storage tank. (1) A brief period of initial air pressure of 30 psig is applied to the cylinder. The cylinder is then filled with creosote while the pressure on the cylinder is maintained. Once filling is complete, pressurization continues until the cylinder pressure reaches 180 psig. Pressure is maintained for one to three hours, depending on the type of wood being treated and the specification of the final product. (2) The pressure on the cylinder is then released to the creosote work tank, and the preservative is drained from the cylinder and returned to the creosote storage tank. (3) A final 20" Hg vacuum is then pulled on the cylinder for at least one hour. Any residual creosote that is released from the wood during the final vacuum is returned to the storage tank. Following this step, the cylinder is opened and the charge is removed. These steps are outlined in Figure 2-2.

Figure 2-2. Boulton (Conditioning) and Rueping (Treatment Processes)

Conditioning Process-Boulton Method

1. Green wood immersed in 180° preservative in treatment cylinder.

2. A 20" Hg vacuum applied for 10-20 hrs, average of 15 hrs, average of 15 hrs. Vacuum causes boiling point of water to lower, and water evaporates.

Treatment Process-Rueping Method

1. Vacuum broken; creosote in cylinder returned to storage tank.

2. Air pressure of 30 psig applied to treatment cylinder.

3. Cylinder filled with creosote.

4. Pressure increased to 180 psig.

5. Pressure maintained for 1-3 hours, depending on nature of wood and product specification.

6. Pressure released to the creosote work tank; creosote returned to creosote storage tank.

7. A 20" Hg vacuum applied to treatment cylinder for 1 hour. Residual creosote returned to storage tank.

8. Cylinder opened and charge removed.

2.2 Control Equipment Description

The facility controls emissions from the work and storage tanks, the vacuum system exhaust, and the wastwater treatment system with several pieces of equipment. Noncondensables from the vacuum system exhaust are initially sent to a naphthalene knock-out tank (See Fig. 2-1). Naphthalene collects in this tank, and the water in the tank is changed approximately once a day. Vapors from the naphthalene knock-out tank, along with displaced air in equilibrium with the creosote in the storage tank, and emissions from the wastewater treatment system, are sent to a collection tank. From the collection tank, vapors are vented to a knock-out tank. Finally, the vapors from the knock-out tank pass through the water scrubber. Any vapors not condensed in the scrubber are released to the atmosphere.

The water scrubber is a Croll-Reynolds venturi jet scrubber, which was installed in 1991. Figure 2-3 is a schematic of the scrubber. The scrubber was sized to handle 2,000 actual cubic feet per minute (ACFM) of vapor and a flow rate of 95 gallons per minute (gpm) of recirculated water. The total capacity of the scrubber is 280 gallons. Treated wastewater is used in the scrubber. Currently, only about 250 ACFM of the scrubber's capacity is used by process emissions. The other 1,750 ACFM results from collection hoods which are installed above each cylinder door. Each hood measures 2 by 5 feet and has an associated capture velocity of 210 cubic feet per minute. However, the hoods are not currently used because the large air flow associated with them makes the scrubber ineffective. For this reason, the facility's operating permit from the Commonwealth of Pennsylvania states that the facility cannot operate the hoods. Ordinarily, a permit variance would be required before testing on the hoods could be conducted. However, the Regional Manager for the Pennsylvania Department of Environmental Resources waived the need for the permit variance, and testing may be conducted without the variance.

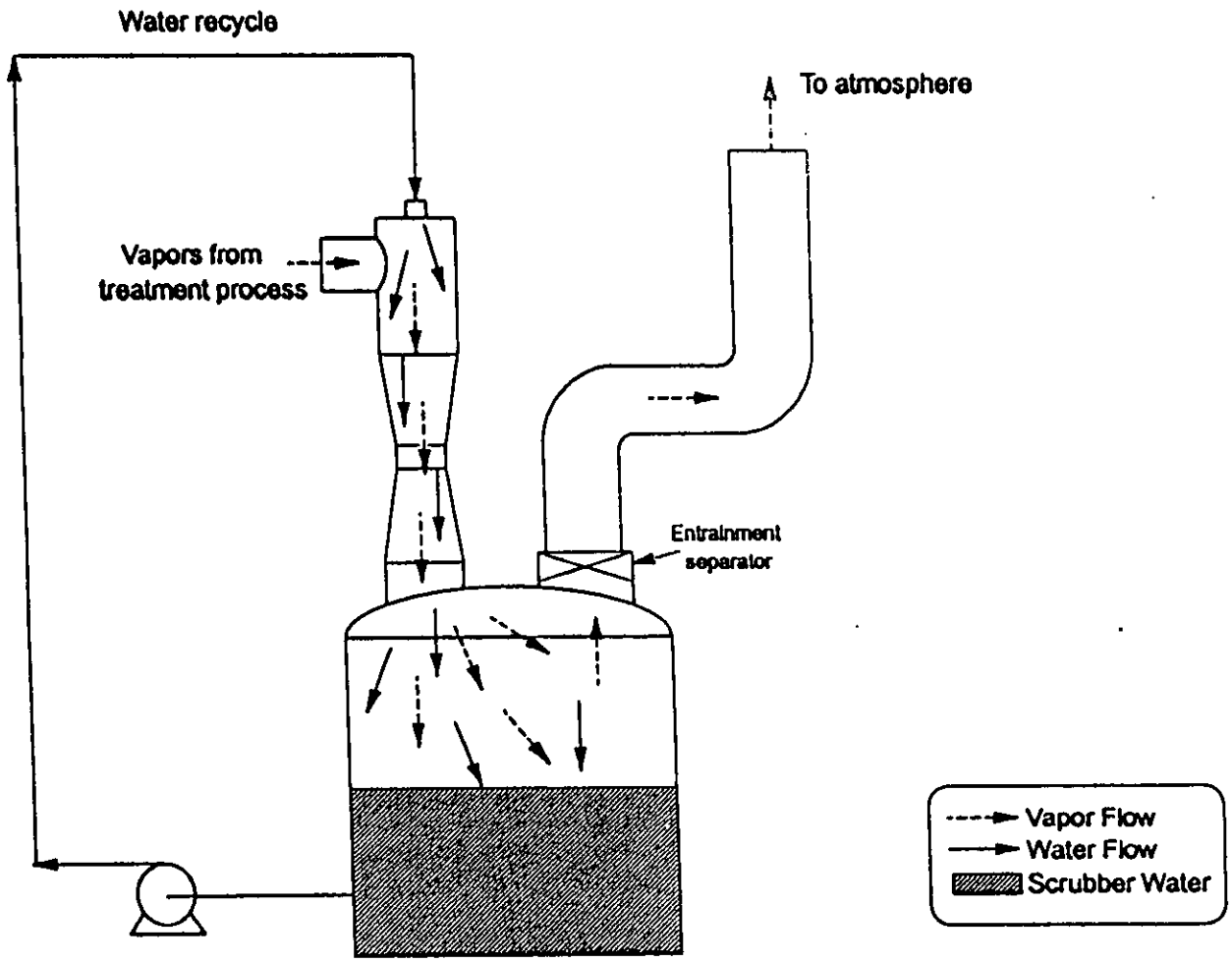


Figure 2- 3 Venturi scrubber at Burke-Parsons-Bowlby Corporation in DuBois, Pennsylvania (not drawn to scale).

2.3. Flue Gas Sampling Locations

Refer to Figure 2-1 for a schematic of sampling locations. Total hydrocarbon sampling (Method25A) was conducted at the following locations: the outlet of creosote storage and work tanks, (Location A work tank vacuum system exhaust, Location B cylinder collection hood vent duct, location C water scrubber inlet, and Location D water scrubber outlet. Speciated organic sampling (Modified Method 5) was conducted at the outlet of creosote storage (Location A) and work tanks and the work tank vacuum system exhaust (Location B).

2.3.1. Work and Storage Tanks

One three-inch port (Modified Method 5) and two one-inch ports (Method 25A and Methods 1-4) were installed consistent with Method 1A. The number of traverse points for the Modified Method 5 test was calculated based on the actual dimensions and spacing of the constructed ports.

2.3.2. Vacuum System Exhaust

One three-inch port (Modified Method 5) and two one-inch ports (Method 25A and Methods 1-4) were installed consistent with Method 1A. The number of traverse points for the Modified Method 5 test was calculated based on the actual dimensions and spacing of the constructed ports

2.3.3. Cylinder hood Vent Duct

A single one-inch port was installed at a location consistent with Method 1A, Section 6.1. This port was used intermittently for Method 25A and Methods 1 through 4.

2.3.4. Scrubber Inlet

The existing half-inch port (which is consistent with Method 1A, section 6.1) was used intermittently for Method 25A and Methods 1 through 4.

2.4. Process Sampling Locations

Liquid samples were collected from the water scrubber tank (Location F) and a creosote storage tank (Location G).

2.4.1. Scrubber Water

The samples were taken from a tap located on the scrubber water storage tank. Three pairs of samples were taken at the beginning, the middle, and the end of the test. Each sample was 273 ml in volume.

2.4.2. Creosote Storage Tank

The sample was taken from a tap connected to the creosote storage tank. A single 273-ml sample was taken during the test run. A 339-ml sample blank was also prepared.

3. Summary and Discussion Test Results

3.1. Objectives and Test Matrix

The purpose of this test program is to provide a characterization of overall emissions from creosote wood treatment plants and information on the performance of the control unit. Specific objectives in order of priority are:

- Measure simultaneously total hydrocarbon (THC) emissions (Method 25A) at four inlet locations and one outlet location of the emissions control system for one cycle of the wood treatment process.

- Measure speciated organic emissions (Modified Method 5) at two inlet locations of the emissions control system for one cycle of the wood treatment process. The specific hazardous air pollutants (HAPs) to be tested for (TO-13 type) are naphthalene, dibenzofuran, biphenly, quinoline, sylenes, cresols, and other polycyclic organic matter.

- Determine the efficiency of the water scrubber by comparing the THC emissions at the scrubber's inlet and outlet.

- Sample the scrubber water before, during, and after the THC test run and analyze samples for total organic carbon (SW846-9060), oil and grease (SW846-9070), and speciated organic constituents (TO-13 type analysis) which may influence the scrubber efficiency.

- Sample creosote solution and analyze (TO-13) for concentrations of HAPs in the preservative.

As mentioned previously, two test runs were conducted at the BPB facility. The preliminary test run served to determine the appropriate times for modified method 5 sampling collection. Both Test #1 and Test #2 were conducted on cylinder number 3. During both tests the Boulton cycle lasted for 12 hours and the final vacuum in the treatment process lasted for 1 hour. Tables 3-1 and 3-2 present the sampling and analytical matrix.

3.2. Field Test Changes and Problems

3.2.1. Duct Conditions at Vacuum Pump (Location B)

The conditions at the sampling port on the outlet side of the vacuum pump presented many problems to sampling. The high pressure and high moisture content made velocity sampling impossible. An effort was made to get a valid velocity reading at this point by draining the water from the naphthalene knock-out tank, but it proved unproductive.

Table 3-1. Duct Sampling Matrix

Run	Date	Sample Type	Test Method	Sampling Locations				
				Work Storage Tank A	Vacuum System Exhaust B	Hood Duct C	Scrubber Inlet D	Scrubber Outlet C
1	9/14-15/93	THC	M25A	2200-0013[a]	2200-0113[a]	2200-0013[a]	2200-0013[a]	0945-0113[a]
2	9/16-17/93	THC	M25A		--	0030-0100[a]	0800-0100[a]	0800-0100[a]
B1	9/16/93	Speciated organics	MM5		0835-0905			
B2	9/16/93	Speciated organics	MM5		112-1142			
B3	9/16/93	Speciated organics	MM5		1825-1855			
B4	9/16/93	Speciated organics	MM5		2303-2318.			
A1	9/16/93	Speciated organics	MM5	2036-2047 2232-2255				

a = intermittent measurements.
* + filter plugged after 15 min; terminated test

Table 3-2. Scrubber and Creosote Storage Tap sampling Matrix

ID #	Date	Sample Type	Analyses	Location/Clock Time (hours)	
				Creosote Pump Tank #3	Scrubber Tap F
DB-SW-1a,b	9/16/93	Scrubber water	GC/MS		0758
DB-SW-1c	9/16/93	Scrubber water	TOC		0758
DB-SW-1d	9/16/93	Scrubber water	Oil & Grease		0758
DB-SW-2a,b	9/16/93	Scrubber water	GC/MS		1245
DB-SW-2c	9/16/93	Scrubber water	TOC		1245
DB-SW-2d	9/16/93	Scrubber water	Oil & Grease		1245
DB-SW-3a,b	9/17/93	Scrubber water	GC/MS		0052
DB-SW-3c	9/17/93	Scrubber water	TOC		0052
DB-SW-3d	9/17/93	Scrubber water	Oil & grease		0052
DB-C-4a,b	9/17/93	Creosote Solution	GC/MS	2245	

These conditions, along with a very high concentration of THC (>100,00 ppm measure as propane), combined to contaminate one of the two operation's THC analyzers. Contamination caused a very slow response time even to dry calibration gases. After attempts to purge the analyzer failed, this sampling point was abandoned for THC and flow rate measurements.

There were no problems encountered for three of the four Modified Method 5 tests done at this sampling location. The fourth was conducted during the final vacuum and experienced a number of difficulties: (1) Temperature of gases was so great that all of the ice in the sampling train melted within five minutes. This also increased the temperature of the XAD trap and condenser coils; and, (2) The filter became nearly completely plugged after approximately 15 minutes so that the control box pump did not have sufficient junction to collect additional sample material through the filter. At this time the test was terminated, as it was assumed that there was sufficient catch for analysis.

3.2.2. Flow Measurements at Storage Tank Location (Location A)

Two problems were encountered at the storage tank outlet sampling loation: (1) pitot tube plugged frequently with water, and (2) flow was observed to reverse frequently. These two conditions combined to make flow measurements at this location nearly impossible.

3.2.3. Napthalene Crystallization in Scrubber Outlet

Most of the creosote wood treatment industry uses P2 creosote. However, under normal conditions, BPB treats wood with a special form of P2 creosote, called low volatile (LV) creosote. Starting about a month before testing, BPB began to receive creosote from its supplier that was supposed to be LV creosote, but in actuality it had a higher-than-normal level of volatile. (Subsequent testing confirmed that the creosote was high in volatile, although it was within the industry's normal specifications for creosote.) Because of the high volatility, BPB began having problems with naphthalene crystallization in server process lines and in its aqueous scrubber. The high volatility also affected the wastewater treatment system at the plant.

3.3. Presentation of Results

3.3.1. THC Concentrations

Tables 3-3 and 3-4 present the average measured THC concentrations (measured as propane) at the sampling locations for various cycles of the wood treatment process for runs 1 and 2, respectively.

3.3.2. Flow Rates

Tables 3-5 and 3-6 present the average flow rates at the sampling loations for the various cycles of the wood treatment process for runs 1 and 2, respectively.

3.3.3. THC Emission Rates

Tables 3-7 and 3-8 present the average THC emission rates at the sampling locations at various cycles of the wood treatment process for runs 1 and 2, respectively.

3.3.4. Modified Method 5

Table 3-9 summarizes the Modified Method 5 (MM5) analytical results. A 339-ml solvent blank (DCM/MeOH blank) and Modified Method 5 blanks were prepared and shipped to the lab for analysis. The laboratory report is provided in Appendix A.

Table 3-3. Average THC Concentrations for Run 1 (ppm as propane)

Conditioning and Treatment Process Cycle	Sampling Location and Scrubber Outlet			
	Work Tank A	Cylinder C	Scrubber Inlet D	Scrubber Outlet E
1st hour Boulton	--	--	--	4710
2nd hour Boulton	--	--	--	4190
3rd hour Boulton	--	--	--	4600
4th hour Boulton	--	--	--	7860[a]
5th hour Boulton	--	--	--	5760
6th hour Boulton	--	--	--	--
7th hour Boulton	--	--	--	2910
8th hour Boulton	--	--	--	--
9th hour Boulton	--	--	--	--
10th hour Boulton	--	--	--	1390
11th hour Boulton	--	--	--	1310
12th hour Boulton	380	--	4460	1640
Average Boulton	--	--	--	3820
First Blowback	2000	20	4540	1820
Pressurization	940	40	4940	2200
Second Vacuum	2380	40	3660	1480
Final Vacuum	--	40	4390	1480
Doors Open (1/2 hour)	2560	1300	3840	1300

a. Water was drained from the naphthalene K/O tank to try to get a valid velocity reading during this hour.

- Please not that THC analyses were not reported for sampling Location B (Vacuum System Exhaust). Very high concentrations of THC (>100,000 ppm) caused contamination and slow response times for the THC analyzer.

Table 3-4. Average THC Concentrations for Run 2

Conditioning and Treatment Process Cycle	Sampling Location			
	Work Tank A	Cylinder C	Scrubber Inlet D	Scrubber Outlet D
1st hour Boulton	--	--	7900	820
2nd hour Boulton	--	--	4390	1460
3rd hour Boulton	--	--	3180	1260
4th hour Boulton	--	--	2880	1160
5th hour Boulton	--	--	2780	1160
6th hour Boulton	--	--	2580	1050
7th hour Boulton	--	--	2470	950
8th hour Boulton	--	40	2270	850
9th hour Boulton	--	--	2170	850
10th hour Boulton	--	--	2070	850
11th hour Boulton	--	--	1870	750
12th hour Boulton	380	--	1560	750
Average Boulton	--	--	3010	990
First Blowback	1380	--	1880	770
Pressurization	--	--	1680	770
Second Vacuum	2080	--	1680	770
Final Vacuum	--	--	2490	970
Doors Open (1/2 hour)	--	1580	2690	1080

Table 3-5. Average Flow Rates for Run 1

Cycle	Average Flow Rates (DSCFM)			
	Work Tank A	Cylinder Hood Duct	Scrubber Inlet D	Scrubber Outlet E
Boulton	22	00	94	306
First Blowback	45.7	--	--	--
Pressurization	[a]	--	159	318
Second Blowback	134	--	--	--
Final Vacuum	44	--	269	--
Open Door	--	786	71	--

a. Flow was fluctuating between positive and negative and was unmeasurable.

Table 3-6. Average Flow Rates for Run 2

Cycle	Average Flow Rates (DSCFM)			
	Work Tank A	Cylinder Hood Duct	Scrubber Inlet D	Scrubber Outlet E
Boulton	[a]	194	80	288
First Blowback	[a]	--	86	392
Pressurization	[a]	--	84	283
Second Blowback	[a]	--	177	304
Final Vacuum	[a]	193	819	274
Open Door	[a]	517	52	816

a. Constant clogging of pitot tube prohibited measurement.

Table 3-7. Average THC Emission Rates for Run (lb/hr propane)[a]

Cycle	Average Emission Rates			
	Work Tank A	Cylinder Hood Duct	Scrubber Inlet D	Scrubber Outlet E
Boulton	--	--	1.8	2.1
First Blowback	--	--	1.2	1.7
Pressurization	--	--	1.0	1.6
Second Blowback	--	--	2.2	1.7
Final Vacuum	--	--	1.5	1.9
Open Door	--	6.0	1.0	6.5

a. Multiply lb/hr propane by 3 to get lb/hr carbon emissions.

Table 3-8. Average THC Emission Rates for Run 2

Cycle	Average Emission Rates (lb/hr propane)[a]			
	Work Tank A	Cylinder Hood Duct	Scrubber Inlet D	Scrubber Outlet E
Boulton	--	--	1.8	2.1
First Blowback	--	--	1.2	1.7
Pressurization	--	--	1.0	1.6
Second Blowback	--	--	2.2	1.7
Final Vacuum	--	--	1.5	1.9
Open Door	--	6.0	1.0	6.5

a. Multiply lb/hr propane by 3 to get lb/hr carbon emissions.

Table 3-9. Modified Method 5 Analytical Results (μg)
Samples Collected 9-16-93

Compound	DCM/ MeOH Blank	MM5 Run B-1	MM5 Run B-2	MM5 RUN B-3	MM5 Run B-4	MM5 Run A-1	MM5 Run Blank	MM5 Blank Dup-licate	Lab Blank
Lower Detection Limit	0.50	43,000	24,000	27,000	32,000	500	0.50	0.50	0.50
Phenol	ND	ND	ND	ND	ND	ND	1.7	2.7	ND
bis(2-Chloroethyl) Ether	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroisopropyl) Ether	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-Propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethoxy) Methane	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ND	11000000	4300000	6400000	17000000 E	150000	19	18	ND
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloro-3-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ND	950000	290000	410000	2600000	32000	5.4	4.9	ND
Hexachloro-cyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 3-9. Modified Method 5 Analytical Results (μg) (continued)

Compound	DCM/ MeOH Blank	MM5 Run B-1	MM5 Run B-2	MM5 RUN B-3	MM5 Run B-4	MM5 Run A-1	MM5 Run Blank	MM5 Blank Dup-licate	Lab Blank
Lower Detection Limit	0.50	43,000	24,000	27,000	32,000	500	0.50	0.50	0.50
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dimethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND	160000	5100	8.5	7.5	ND
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND	34000	1200	5.3	4.5	ND
Diethylphthalate	ND	ND	ND	ND	ND	ND	2.4	2.1	ND
Fluorene	ND	ND	ND	ND	ND	710	4.9	4.0	ND
4-Chlorophenyl-Phenyl Ether	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-2-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl-Phenyl Ether	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	ND	ND	ND	ND	ND	ND	8.8	7.3	ND
Anthracene	ND	ND	ND	ND	ND	ND	1.1	0.97	ND

Table 3-9. Modified Method 5 Analytical Results (μg) (continued)

Compound	DCM/ MeOH Blank	MM5 Run B-1	MM5 Run B-2	MM5 RUN B-3	MM5 Run B-4	MM5 Run A-1	MM5 Run Blank	MM5 Blank Dup-licate	Lab Blank
Lower Detection Limit	0.50	43,000	24,000	27,000	32,000	500	0.50	0.50	0.50
di-n-Butylphthalate	ND	ND	ND	ND	ND	ND	260 E	200 E	ND
Fluoranthene	ND	ND	ND	ND	ND	ND	1.6	1.2	ND
Pyrene	ND	ND	ND	ND	ND	ND	1.1	0.75	ND
Butylbenzylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	ND	ND	ND	ND	ND	ND	6.3	4.6	ND
Di-n-Octylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Biphenyl	ND	ND	ND	ND	82000	1300	1.5	1.2	ND
Quinoline	ND	4000000	ND	ND	260000	4600	29	25	ND
Xylenes	ND	ND	1200000	1100000	ND	ND	0.51	0.51	ND
Cresols	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = Not detected. E = Exceeds instrument calibration range, within linear range.

Table 3-10 summarizes the Modified Method 5 (MM5) emission rates. Calculations for emission rates are provided in Appendix B. The concentrations of the solvent blank and blank MM5 run were negligible compared to concentrations of compounds in the MM5 runs. Since flow rates were not measured during the MM5 runs, results are presented as mass pollutant per unit flue gas volume (miligrams/dry standard cubic meter).

3.3.5. Scrubber Efficiency

Tables 3-11 and 3-12 present scrubber efficiency calculations for the various cycles of the wood treatment process. Representatives of Burke-Parsons-Bowlby Corporation have reviewed this test report and have commented that they believe the scrubber efficiencies listed in Tables 3-11 and 3-12 are incorrect. They agree that the concentration measurements for THC are reasonable and in agreement with other testing that has been completed at the facility. They contest the volume measurements presented and suggest rather that the volume flow in and out of the scrubber should be the same. If the assumption is made concerning flow through the scrubber the efficiencies improve considerably. They recognize the problems associated with flow measurement and suggest that accumulation of naphthalene in the interior of the stack can complicate the estimation of volume flow through a measurement of linear velocity. The complete response included in these comments is included as an Attachment.

3.4. Presentation of Results for Tap Samples

3.4.1. Scrubber Water Analysis

Three sets of water samples were taken from the scrubber tank during run 2. The volume of each sample was 273 ml. The samples were taken before, during, and after the wood treatment process and are labeled DB-SW-1, DB-SW-2, and DB-SW-3, respectively.

Table 3-10. Modified Method 5 Flue Concentrations (μg/DSCM)

Compound	MM5 Run B-1	MM5 Run B-2	MM5 RUN B-3	MM5 Run B-4	MM5 Run A-1
Lower Detection Limit	63	25	35	240	0.69
Phenol	ND	ND	ND	ND	ND
bis(2-Chloroethyl) Ether	ND	ND	ND	ND	ND
2-Chlorophenol	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND
bis(2-Chloroisopropyl) Ether	ND	ND	ND	ND	ND
N-Nitroso-di-n-Propylamine	ND	ND	ND	ND	ND
Hexachloroethane	ND	ND	ND	ND	ND
Nitrobenzene	ND	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND	ND
2-Nitrophenol	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND	ND
Benzoic Acid	ND	ND	ND	ND	ND
bis(2-Chloroethoxy) Methane	ND	ND	ND	ND	ND
2,4-Dichlorophenol	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND
Naphthalene	16,000	4,500	8,200	130,000	1.8
4-Chloroaniline	ND	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND	ND
4-Chloro-3-Methylphenol	ND	ND	ND	ND	ND
2-Methylnaphthalene	1,400	310	530	19,000	38
Hexachloro-cyclopentadiene	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND

Table 3-10. Modified Method 5 Flue Concentrations (μg/DSCM) (continued)

Compound	MM5 Run B-1	MM5 Run B-2	MM5 RUN B-3	MM5 Run B-4	MM5 Run A-1
Lower Detection Limit	63	25	35	240	0.69
2,4,5-Trichlorophenol	ND	ND	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND	ND	ND
2-Nitroaniline	ND	ND	ND	ND	ND
Dimethylphthalate	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND	ND
3-Nitroaniline	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	1,200	6.2
2,4-Dinitrophenol	ND	ND	ND	ND	ND
4-Nitrophenol	ND	ND	ND	ND	ND
2,4-2,4-Dinitrotoluene	ND	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	250	1.4
Diethylphthalate	ND	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND	0.92
4-Chlorophenyl-Phenyl Ether	ND	ND	ND	ND	ND
4-Nitroaniline	ND	ND	ND	ND	ND
4,6-Dinitro-2-Methylphenol	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND	ND	ND
4-Bromophenyl-Phenyl Ether	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND
Phenanthrene	ND	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND	ND
di-n-Butylphthalate	ND	ND	ND	ND	ND

Table 3-10. Modified Method 5 Flue Concentrations (μg/DSCM) (continued)

Compound	MM5 Run B-1	MM5 Run B-2	MM5 RUN B-3	MM5 Run B-4	MM5 Run A-1
Lower Detection Limit	63	25	35	240	0.69
Fluoranthene	ND	ND	ND	ND	ND
Pyrene	ND	ND	ND	ND	ND
Butylbenzylphthalate	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ND	ND	ND	ND	ND
Chrysene	ND	ND	ND	ND	ND
Benzo(a)anthracene	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	ND	ND	ND	ND	ND
Di-n-Octylphthalate	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND
Biphenyl	ND	ND	ND	610	1.6
Quinoline	15,8000	ND	ND	1,900	5.5
Xylenes	ND	1,300	1,400	ND	ND
Cresols	ND	ND	ND	ND	ND

ND = Not detected. E = Exceeds instrument calibration range, within linear range.

Table 3-11. Scrubber Efficiency for Run 1

Cycle	Emission Rates (lb/hr)		Scrubber Efficiency
	Scrubber Inlet	Scrubber Outlet	
Boulton	--	8.6	--
First Blowback	--	--	--
Pressurization	5.8	5.1	12%
Second Blowback	--	--	--
Final Vacuum	8.7	--	--
Open Door	9.5[a]	--	--

a. Due to testing configuration, emissions from the cylinder hood duct were added to reflect the total emissions into the scrubber. For other cycles, the contribution of the cylinder hood duct to emissions was zero.

Table 3-12. Scrubber Efficiency for Run 2

Cycle	Emission Rates (lb/hr)		Scrubber Efficiency
	Scrubber Inlet	Scrubber Outlet	
Boulton	1.8	2.1	17%
First Blowback	1.2	1.7	-42%
Pressurization	1.0	1.6	-60%
Second Blowback	2.2	1.7	23%
Final Vacuum	1.5	1.9	-27%
Open Door	7.0[a]	6.5	7%

a. Due to testing configuration, emissions from the cylinder hood duct were added to reflect the
total emissions into the scrubber. For other cycles the contribution of the hood duct to emissions was zero

Analyses of these samples included total organic carbon (TOC), oil and grease, and special organics via GC-MS. A 273-ml blank was also prepared and shipped (DB-SW-blank). The laboratory report is found in Appendix C. Table 3-13 provides a summary of the sample and blank analytical results.

3.4.2. Preservative Sample

A single 273-ml creosote sample was collected and analyzed for speciated organics by GC/MS. An H_2O blank with a volume of 339 ml was also prepared. Analysis results of this sample and the H_2O blank are summarized in Table 3-14. The laboratory report is provided in Appendix D.

Table 3-11. Scrubber Efficiency for Run 1

Cycle	Emission Rates (lb/hr)		Scrubber Efficiency
	Scrubber Inlet	Scrubber Outlet	
Boulton	–	8.6	–
First Blowback	–	–	–
Pressurization	5.8	5.1	12%
Second Blowback	–	–	–
Final Vacuum	8.7	–	–
Open Door	9.5 [a]	–	–

a. Due to testing configuration, emissions from the hood duct were added to reflect the total emissions into the scrubber. For other cycles, the contribution of the hood duct to emissions was zero.

Table 3-12. Scrubber Efficiency for Run 2

Cycle	Emission Rates (lb/hr)		Scrubber Efficiency
	Scrubber Inlet	Scrubber Outlet	
Boulton	1.8	2.1	17%
First Blowback	1.2	1.7	-42%
Pressurization	1.0	1.6	-60%
Second Blowback	2.2	1.7	23%
Final Vacuum	1.5	1.9	-27%
Open Door	7.0[a]	6.5	7%

a. Due to testing configuration, emissions from the hood duct were added to reflect the total emissions into the scrubber. For other cycles the contribution of the hood duct to emissions was zero.

Table 3-13. Scrubber Water Analytical Results (μg/ml)
Samples Collected 9-16-93

Compound	Sample ID			
	DB-SW-1a	DB-SW-2a	DB-SW-3a	DB-SW-Blank
Lower Detection Limit	0.18	0.18	0.18	0.0018
Phenol	ND	ND	0.37	ND
bis(2-Chloroethyl) Ether	ND	ND	ND	ND
2-Chlorophenol	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND
bis(2-Chloroisopropyl) Ether	ND	ND	ND	ND
N-Nitroso-di-n-Propylamine	ND	ND	ND	ND
Hexachloroethane	ND	ND	ND	ND
Nitrobenzene	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND
2-Nitrophenol	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND
Benzoic Acid	ND	ND	ND	ND
bis(2-Chloroethoxy) Methane	ND	ND	ND	ND
2,4-Dichlorophenol	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ND	ND	ND	ND
Naphthalene	17	10	36	ND
4-Chloroaniline	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND
4-Chloro-3-Methylphenol	ND	ND	ND	ND
2-Methylnaphthalene	31	2.2	6.6	ND
Hexachlorocyclopentadiene	ND	ND	ND	ND
2,4,6-Trichlorophenol	ND	ND	ND	ND

Table 3-13. Scrubber Water Analytical Results (μg/ml) (continued)

Compound	Sample ID			
	DB-SW-1a	DB-SW-2a	DB-SW-3a	DB-SW-Blank
Lower Detection Limit	0.18	0.18	0.18	0.0018
2,4,5-Trichlorophenol	ND	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND	ND
2-Nitroaniline	ND	ND	ND	ND
Dimethylphthalate	ND	ND	ND	ND
Acenaphthylene	ND	ND	2.1	ND
2,6-Dinitrotoluene	ND	ND	ND	ND
3-Nitroaniline	ND	ND	ND	ND
Acenaphthene	0.27	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND
4-Nitrophenol	ND	ND	ND	ND
2,4-2,4-Dinitrotoluene	ND	ND	ND	ND
Dibenzofuran	ND	ND	0.70	ND
Diethylphthalate	ND	ND	ND	ND
Fluorene	ND	ND	0.44	ND
4-Chlorophenyl-Phenyl Ether	ND	ND	ND	ND
4-Nitroaniline	ND	ND	ND	ND
4,6-Dinitro-2-Methylphenol	ND	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND	ND
4-Bromophenyl-Phenyl Ether	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND
Phenanthrene	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND

Table 3-13. Scrubber Water Analytical Results (μg/ml) (continued)

Compound	Sample ID			
	DB-SW-1a	DB-SW-2a	DB-SW-3a	DB-SW-Blank
Lower Detection Limit	0.18	0.18	0.18	0.0018
di-n-Butylphthalate	ND	ND	ND	ND
Fluoranthene	ND	ND	ND	ND
Pyrene	ND	ND	ND	ND
Butylbenzylphthalate	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ND	ND	ND	ND
Chrysene	ND	ND	ND	ND
Benzo(a)anthracene	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	ND	ND	ND	ND
Di-n-Octylphthalate	ND	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND
Dibenz(a,h)anthracene	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND
Biphenyl	ND	ND	0.70	ND
Quinoline	1.3	4.8	23	ND
Xylenes	1.2	ND	ND	ND
Cresols	ND	ND	1.282	ND

ND = not detected. Samples DB-SW-1b, DB-SW-3a, and DB-SW-3b were furnished to the lab as duplicates but were not analyzed by the client's request.

Table 3-14. Creosote Analytical Results (μg/ml)
Samples Collected 9-16-93

Compound	Sample ID	
	DB-C-4a	H_2O Blank
Lower Detection Limit	2.0	0.0015
Phenol	ND	ND
bis(2-Chloroethyl) Ether	ND	ND
2-Chlorophenol	ND	ND
1,3-Dichlorobenzene	ND	ND
1,4-Dichlorobenzene	ND	ND
1,2-Dichlorobenzene	ND	ND
bis(2-Chloroisopropyl) Ether	ND	ND
N-Nitroso-di-n-Propylamine	ND	ND
Hexachloroethane	ND	ND
Nitrobenzene	ND	ND
Isophorone	ND	ND
2-Nitrophenol	ND	ND
2,4-Dimethylphenol	ND	ND
Benzoic Acid	ND	ND
bis(2-Chloroethoxy) Methane	ND	ND
2,4-Dichlorophenol	ND	ND
1,2,4-Trichlorobenzene	ND	ND
Naphthalene	270	ND
4-Chloroaniline	ND	ND
Hexachlorobutadiene	ND	ND
4-Chloro-3-Methylphenol	ND	ND
2-Methylnaphthalene	180	ND
Hexachlorocyclopentadiene	ND	ND
2,4,6-Trichlorophenol	ND	ND

Table 3-14. Creosote Analytical Results (μg/ml) (continued)

Compound	Sample ID	
	DB-C-4a	H_2O Blank
Lower Detection Limit	2.0	0.0015
2,4,5-Trichlorophenol	ND	ND
2-Chloronaphthalene	ND	ND
2-Nitroaniline	ND	ND
Dimethylphthalate	ND	ND
Acenaphthylene	ND	ND
2,6-Dinitrotoluene	ND	ND
3-Nitroaniline	ND	ND
Acenaphthene	210	ND
2,4-Dinitrophenol	ND	ND
4-Nitrophenol	ND	ND
2,4-2,4-Dinitrotoluene	ND	ND
Dibenzofuran	92	ND
Diethylphthalate	ND	ND
Fluorene	88	ND
4-Chlorophenyl-Phenyl Ether	ND	ND
4-Nitroaniline	ND	ND
4,6-Dinitro-2-Methylphenol	ND	ND
N-Nitrosodiphenylamine	ND	ND
4-Bromophenyl-Phenyl Ether	ND	ND
Hexachlorobenzene	ND	ND
Pentachlorophenol	ND	ND
Phenanthrene	330	ND
Anthracene	44	ND
di-n-Butylphthalate	ND	ND

Table 3-14. Creosote Analytical Results (μg/ml) (continued)

Compound	Sample ID	
	DB-C-4a	H_2O Blank
Lower Detection Limit	2.0	0.0015
Fluoranthene	180	ND
Pyrene	140	ND
Butylbenzylphthalate	ND	ND
3,3'-Dichlorobenzidine	ND	ND
Chrysene	36	ND
Benzo(a)anthracene	40	ND
bis(2-Ethylhexyl)phthalate	ND	ND
Di-n-Octylphthalate	ND	ND
Benzo(b)fluoranthene	ND	ND
Benzo(k)fluoranthene	19	ND
Benzo(a)pyrene	8.8	ND
Indeno(1,2,3-cd)pyrene	14	ND
Dibenz(a,h)anthracene	ND	ND
Benzo(g,h,i)perylene	ND	ND
Biphenyl	40	ND
Quinoline	51	ND
Xylenes	ND	ND
Cresols	ND	ND

ND = not detected
Sample DB-C-4b was furnished to the lab but not analyzed at the client's request

4. Sampling Procedures

4.1. Test Methods

4.1.1. EPA Method 0010 (Modified Method 5)

This method was used to speciate organic compounds at two locations: the outlet from the croesote storage tank; and, the exhaust of the vacuum pump system. The sampler components (i.e., filter, XAD resin, condensed water, probe rinse, and glassware rinse) were sent to the laboratory (Air Toxics Ltd., in Folsom, California) for analysis for HAPs using a Method TO-13 type analysis.

In conjunction with the Modified Method 5 test, EPA Methods 1 through 4 were used for the determination of sampling location, sampling traverse points, gas molecular weight, moisture, and flow rate. The impinger water was analyzed gravimetrically for determination of moisture (Method 4). During MM5 testing, a wet bulb and dry bulb were used for moisture determination. A fyrite analyzer was used to measure O_2 and CO_2 concentrations in the stack for the determination of gas molecular weight (Method 3). A standard or calibrated S-type pitot tube was used to measure the velocity head for the determination of flow rate (Methods 1 and 2).

Deviations from the standard methods include:

(1) One port location for sampling, location, and velocity traverse.

2) A single sample point during MM5 test at the average velocity measurement.

Figures 4-1 and 4-2 are sample train schematic and analysis schemes, respectively.

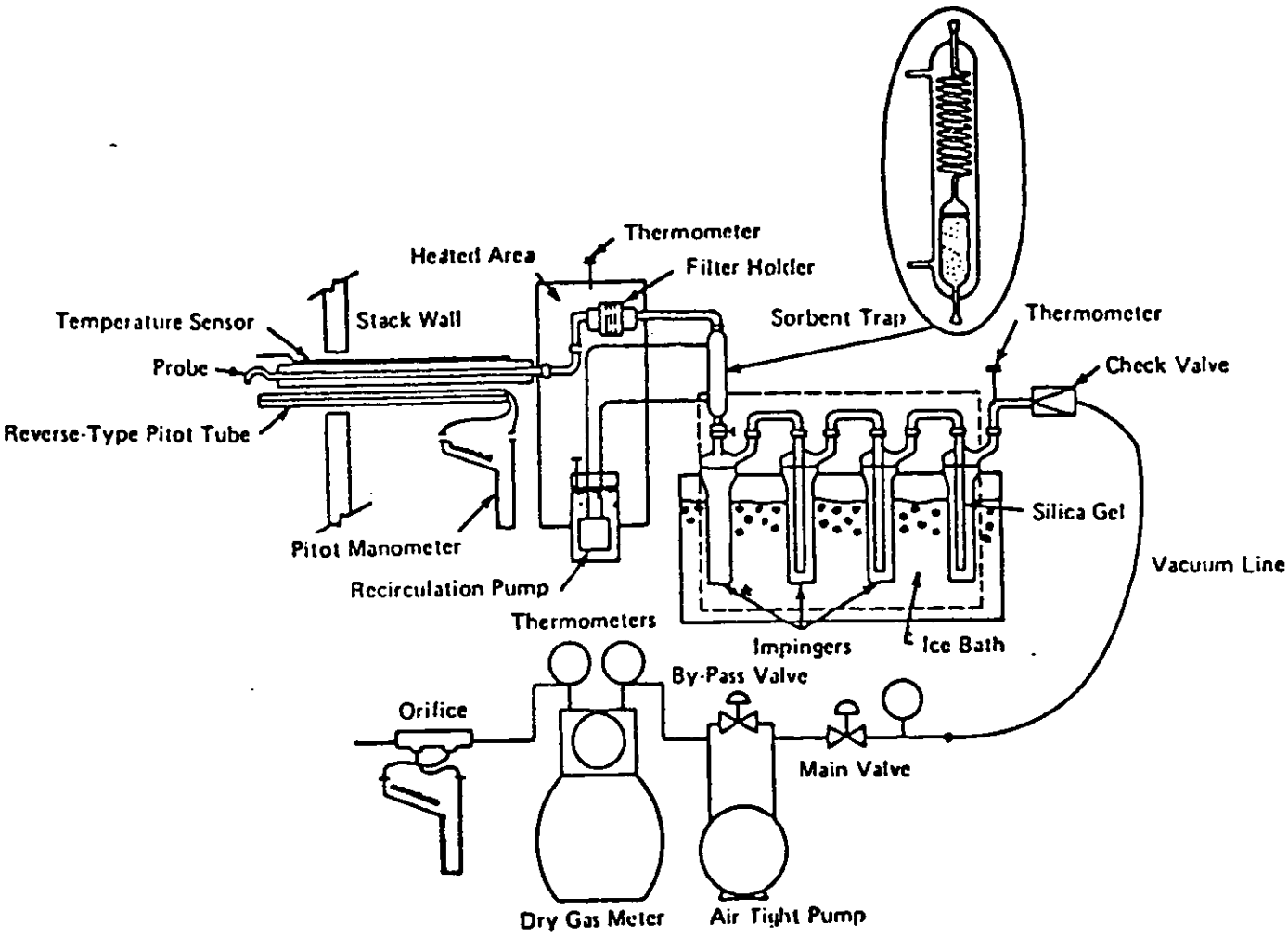


Figure 4-1. Modified method 5 sampling train

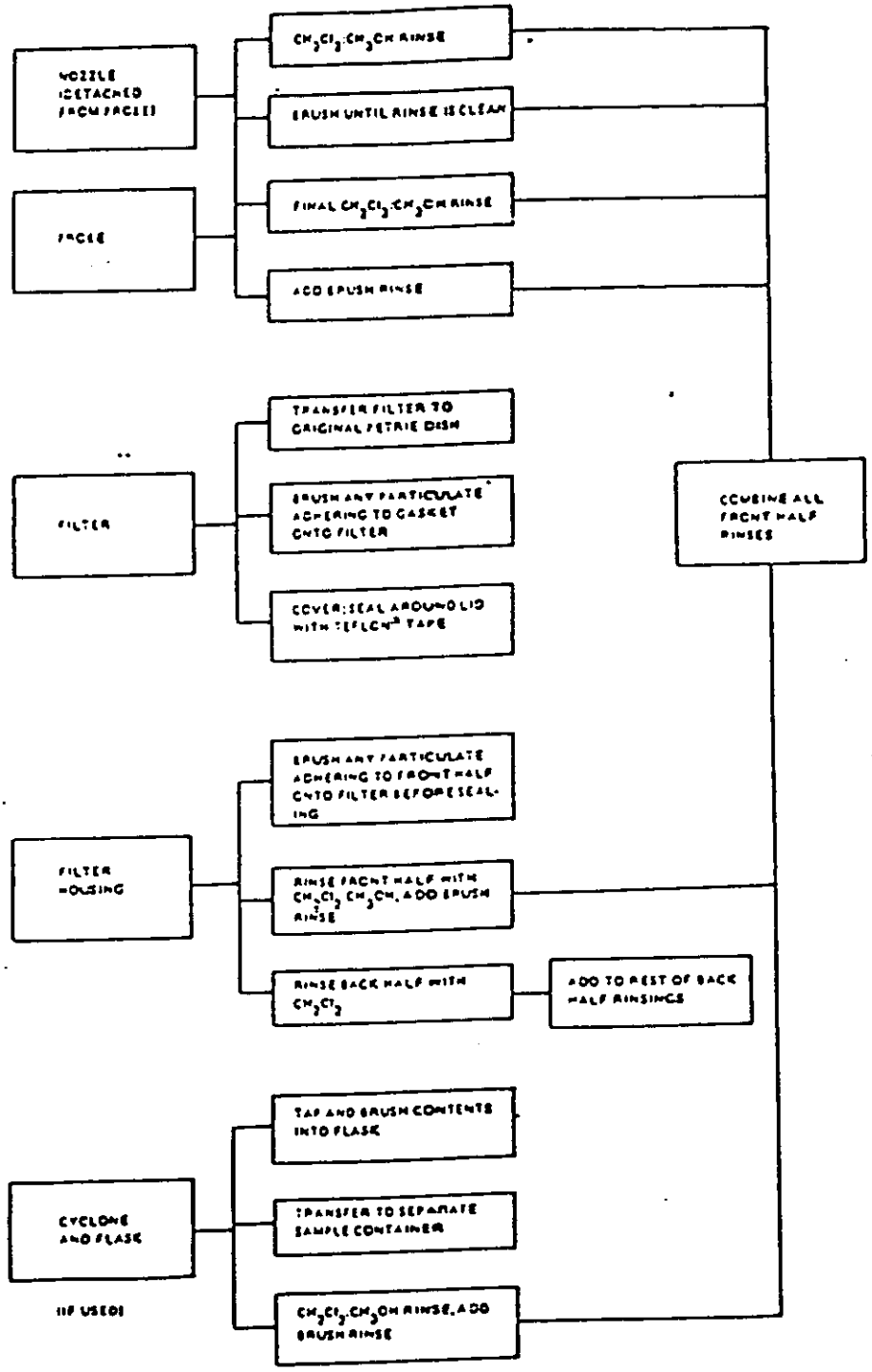


Figure 4-2. Modified method 5 train sample handling.

4.1.2. EPA Test Method 25A

This method was used in the measurement of total hydrocarbon on the inlet and outlet of the water scrubber, outlet of the creosote storage tank, vacuum system exhaust, and exhaust hoods for when the retort cylinder doors are open. The system consisted of an in-stack filter, heated sample line, a Ratfisch Model RS55 total hydrocarbon analyzer, and a strip chart recorder. The analyzer was calibrated once every hour during testing. Calibration gas was an NIST calibrated cylinder of propane with a nitrogen balance. The data were recorded as propane and the final result was converted and reported as carbon.

In conjunction with the EPA Method 25A test, EPA Methods 1 through 4 were used for the determination of sampling location, sampling traverse points, gas molecular weight, moisture, and flow rate. Determination of moisture was conducted using the wet bulb/dry bulb method (Method 4). A fyrite analyzer was used to measure O_2 and CO_2 concentrations for the determination of molecular weight of gas (Method 3). A standard or calibrated S-type pilot tube was used to measure the velocity head for the determination of flow rate (Methods 1 and 2). The only deviation from the test method is that a single port location for velocity traverse was used. Figure 4-3 is the sample train schematic.

4.2. Process Data

Representatives from Research Triangle Institute monitored the wood treatment process during testing. The time, temperature, and pressure of each stage of the treatment and conditioning process was monitored and recorded. Additionally, the type of wood to be treated, the product retention, the total volume of the charge, and the amount of preservative consumed was recorded for each charge treated during testing. These process data are summarized in Tables 4-1 and 4-2. Operator log sheets are provided in Appendix G.

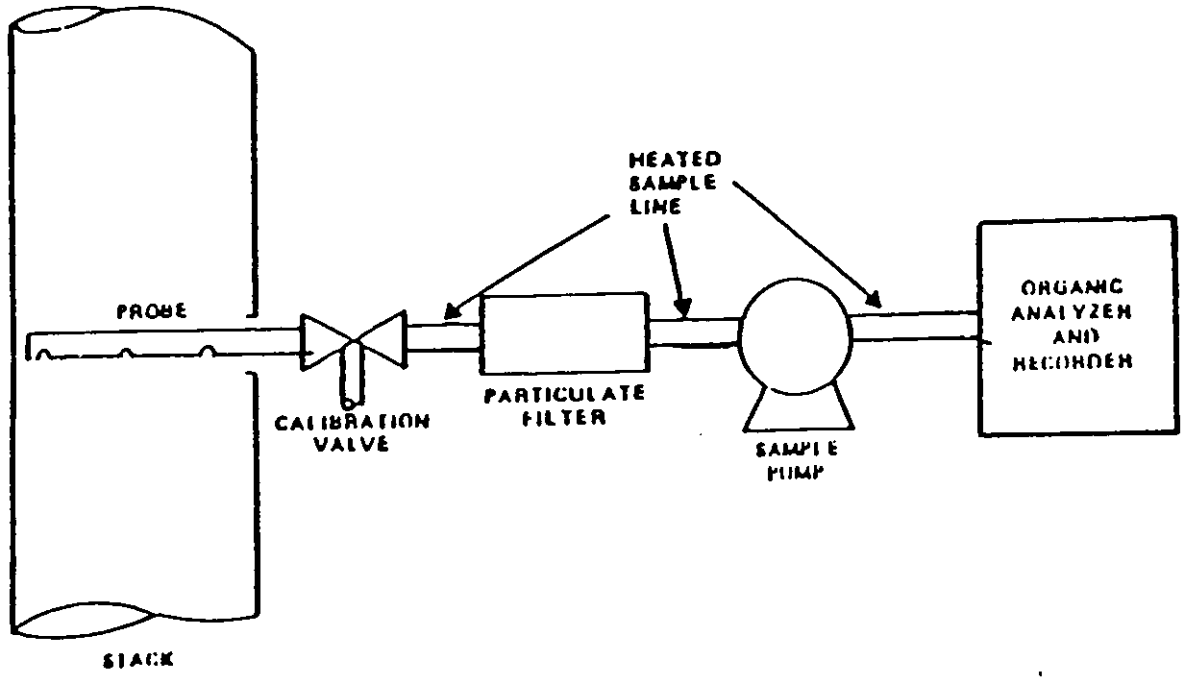


Figure 4-3. Organic concentration measurement system.

Table 4-1. Process Data from Test 1 at Burke-Parsons-Bowlby Corporation in DuBois, Pennsylvania (09/14/93-09/15/93)

Process Event	Time	Hours	Cylinder Temperature (F)	Vacuum (in of Hg) - Pressure (psig)
Begin Filling	9:48 AM	0	105	0
End Filling	9:52	0.07	186	0
Begin Vacuum	9:53	0.08	186	-10
Vacuuming	10:00	0.2	175	-22
Vacuuming	12:00 PM	2.2	185	-22
Vacuuming	14:00	4.2	178	-21
Vacuuming	16:00	6.2	181	-22
Vacuuming	18:00	8.2	183	-22
Vacuuming	20:00	10.2	184	-22
Break Vacuum / Begin Blow Back	21:58	12.2	186	-1
End Blow Back / Initial Pressure	22:10	12.4	179	22
Begin Filling	22:20	12.5	182	46
Pressurization	22:30	12.7	181	165
Pressurization	23:00	13.2	180	168
Pressurization	23:30	13.7	181	175
End Pressurization / Begin Blow Back # 2	23:50	14	181	95
End Blow back / Begin Final Vacuum	23:59	14.2	179	-2
End Final Vacuum	1:00	15.2	140	-22
Open Door	1:13			

Charge Information	
Charge Volume:	868 ft3
Type of Product:	Crossties
Type of Wood:	Oak
Retention (lb/ft3):	7

Table 4-2. Process Data from Test 2 at Burke-Parsons-Bowlby Corporation in DuBois, Pennsylvania (09/16/93-09/17/93)

Process Event	Time	Hours	Temperature (F)	Vacuum (in of Hg) - Pressure (psig)
Begin Vacuum	8:13 AM	0.0	178	-2
Vacuuming	10:00	1.8	169	-22
Vacuuming	12:00 PM	3.8	180	-22
Vacuuming	14:00	5.8	182	-20
Vacuuming	16:00	7.8	181	-20
Vacuuming	18:00	9.8	181	-20
Vacuuming	20:00	11.8	186	-20
Break Vacuum	20:33	12.3	186	-20
Begin Pump Back	20:38	12.4	186	-1
End Pump Back / Initial Pressure	20:50	12.6	179	22
Begin Filling Cylinder	20:56	12.7	183	40
Pressurization	21:00	12.8	185	49
Pressurization	21:30	13.3	185	169
Pressurization	22:00	13.8	188	166
End Pressurization	22:30	14.3	191	169
End Blowback	22:57	14.7	188	-4
Begin Final Vacuum	22:58	14.8	187	-10
Vacuuming	23:30	15.3	152	-22
Vacuuming	0:06	15.9	138	-22
End Final Vacuum	0:15	16.0	146	-2
Open Door	0:28	16.2		

Charge Information	
Charge Volume:	893 ft3
Type of Product:	Crossties
Type of Wood:	Oak
Retention (lb/ft3):	8

4.2.1. Operating Conditions

BPB test #1 was conducted on cylinder number 3. During this test, the Boulton cycle lasted for 12 hours, and the final vacuum lasted for 1 hour. Figure 4-4 shows the temperature and pressure in the cylinder throughout the entire treating process.

BPB test #2 was conducted on cylinder number 3. During this test, the Boulton cycle lasted 12 hours, and the final vacuum lasted 1 hour. Figure 4-5 shows the temperature and pressure in the cylinder throughout the entire conditioning and treating process.

After both tests, the hood on cylinder 3 was used. As seen in Figure 4-6, a temporary plastic canopy was placed over the cylinder door to improve the capture efficiency of the hood. The capture efficiency of the hood was estimated by visual inspection during testing. During both tests, the cylinder door was opened gradually over a period for 20 to 30 minutes. Approximately 85 to 95 percent of the door was opened gradually over a period of 20 to 30 minutes. Approximately 85 to 95 percent of the visual emissions were captured during both tests. However, when the treated charges were removed and the fresh charges were loaded in the cylinder, the capture efficiency was reduced to about 10 percent.

4.2.2. Occurrences during Normal Operations That Would Affect the Recorded Data

Under normal conditions, all three treating cylinders are in operation, but only one cylinder was operating during each of the test runs. The hoods are normally not used, and the line from the hoods to the scrubber is blinded. For the purpose of testing, the blind was removed. Additionally, the dampers were closed at each hood and cardboard was used at each hood to prevent any air flow through the line. When the hood on number 3 cylinder was tested, the cardboard was removed and the damper on number 3 cylinder was opened.

Because of these problems, BPB had their creosote supplier remove all the high volatile creosote

and replace it with LV creosote. With the LV creosote, the plant ran normally for about a week prior to testing. On the Sunday before testing (09/12/93), BPB received another load of creosote that was supposed to be LV creosote. The plant started having similar problems with naphthalene crystallization on the day before testing.

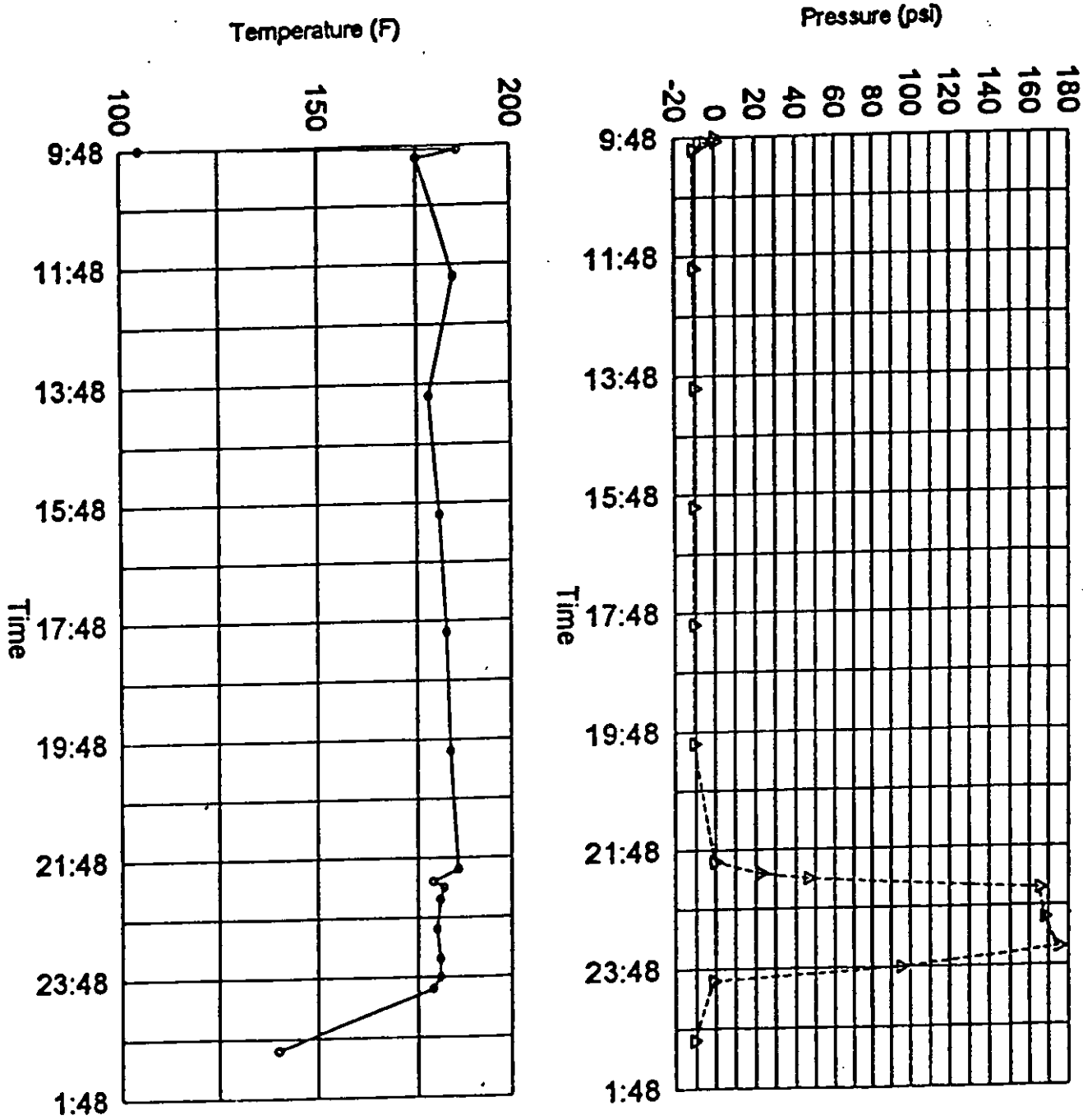


Figure 4-4. Process profile of Test #1 at Burke-Parsons-Bowlby Corporation in Dubois, Pennsylvania (09/14/93-09/15/93).

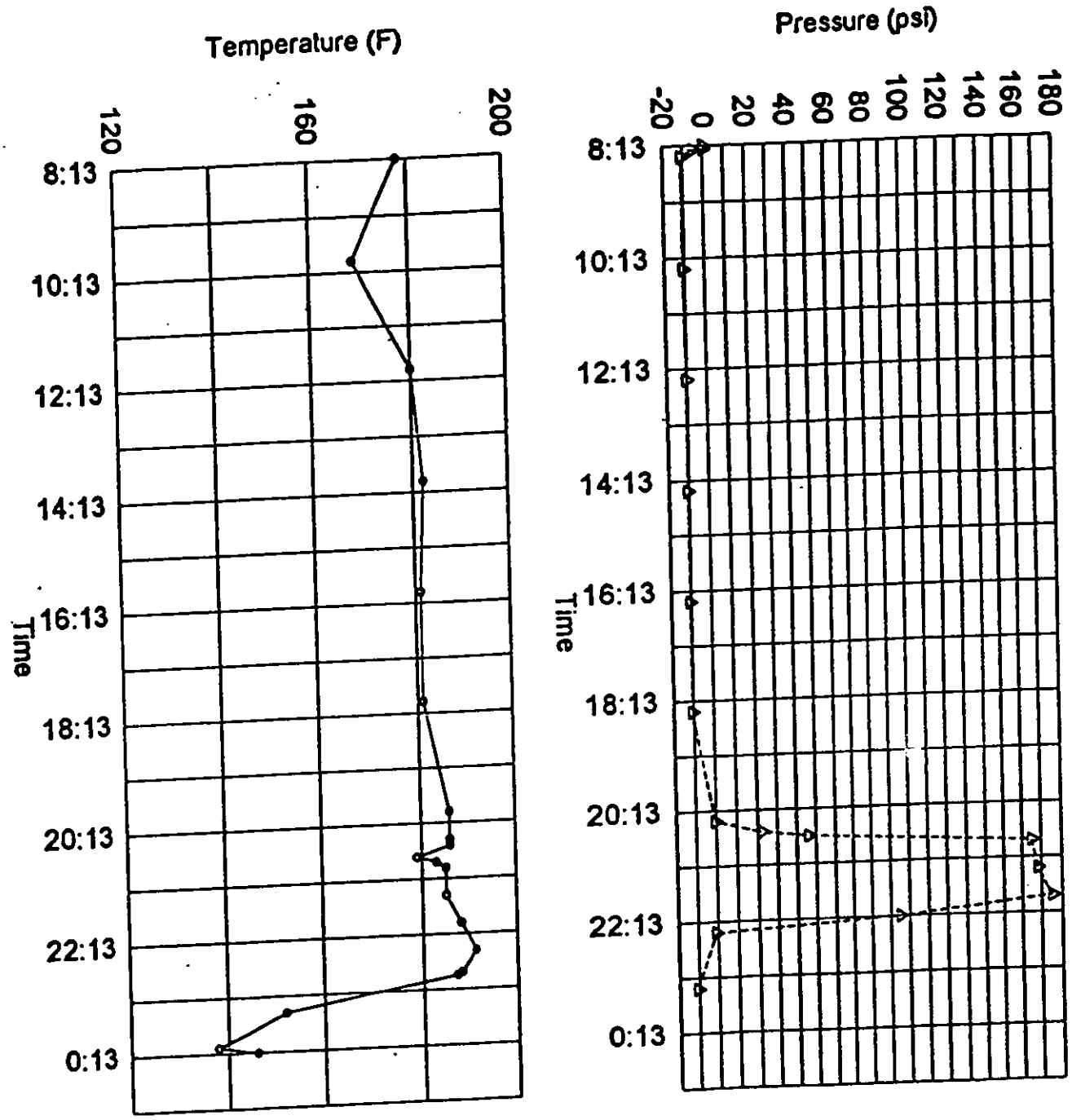


Figure 4-5. Process profile of Test #2 at Burke-Parsons-Bowlby Corporation in DuBois, Pennsylvania (09/16/93-09/17/93).

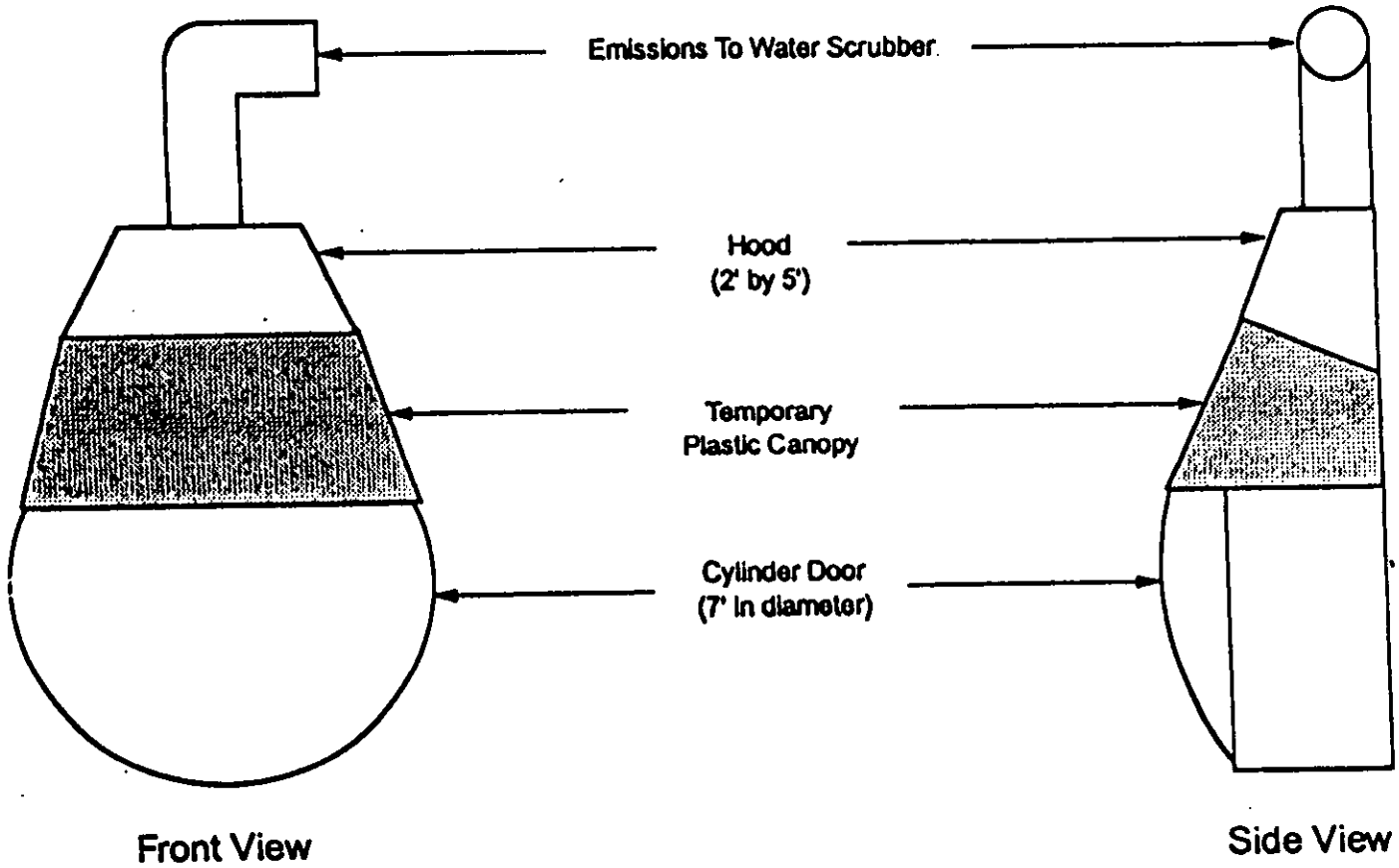


Figure 4-6. Schematic of the hood and canopy on cylinder 3 at BPB (not drawn to scale).

As a result, the scrubber was flushed out before testing began. Because of the crystallization problems, the plant personnel suspected that the last load of creosote that the plant received may have been high in volatile. The plant personnel and the testing contractor both took samples of the creosote for subsequent analysis. The creosote that was suspected to be high in volatile was used throughout the testing period. During BPB test #1 (9:50 a.m. to 1:30 a.m., 9/14/93 and 9/15/93), the plant ran normally. During BPB test #1, high total hydrocarbon measurements at the outlet of the scrubber suggested to plant personnel that naphthalene might have crystallized in the scrubber. Following test #1 and prior to test #2, the scrubber was opened and inspected, and crystallized napthalene was observed. The scrubber was then flushed out to remove the naphthalene. During normal operations, the scrubber water is changed on a daily basis, but the scrubber is not cleaned out.

During BPB test #2 (8:15 a.m. to 1:00 a.m., 9/16/93 and 9/17/93), the plant ran normally.

5. Internal QA/QC Activities

5.1. QA/QC Problems

The only QA/QC problems occurred at the vacuum pump sampling location, as mentioned in Section 3.2.1.

5.2. QA Audits

Calibrations of the THC analyzers were done at approximately two-hour intervals using certified gases of known concentrations of THC (propane). The certifications are contained in Appendix E.

Calibration of the Modified Method 5 control box was done both prior to and following the test program. Table 5-1 presents the pre-test and post-test calibration data. Pre-test and post-test calibration worksheets are contained in Appendix F.

Sample blanks were prepared and shipped to the laboratory for analysis. Results are presented in the appropriate Appendix.

Table 5-1. Modified Method 5 Calibration Data

Control Box ID	Gas Meter Coefficient (y^d)		Deviation
	Pre-Test	Post-Test	
71-12	0.988	[a]	[a]
71-15	1.006	[a]	[a]

[a] post-test calibration not available

Appendix A

Modified Method 5 Laboratory Results

AIR TOXICS LTD.

SAMPLE NAME: DCM/MeOH blank

ID#: 9309158-08A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092506	Date of Collection:	9/16/93
Dil. Factor:	1.0	Date of Extraction:	NA
		Date of Analysis:	9/25/93

Compound	Det. Limit (uG)	Amount (uG)
Phenol	0.50	Not Detected
bis(2-Chloroethyl) Ether	0.50	Not Detected
2-Chlorophenol	0.50	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected
bis(2-Chloroisopropyl) Ether	0.50	Not Detected
N-Nitroso-di-n-Propylamine	0.50	Not Detected
Hexachloroethane	0.50	Not Detected
Nitrobenzene	0.50	Not Detected
Isophorone	0.50	Not Detected
2-Nitrophenol	0.50	Not Detected
2,4-Dimethylphenol	0.50	Not Detected
Benzoic Acid	0.50	Not Detected
bis(2-Chloroethoxy) Methane	0.50	Not Detected
2,4-Dichlorophenol	0.50	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected
Naphthalene	0.50	Not Detected
4-Chloroaniline	0.50	Not Detected
Hexachlorobutadiene	0.50	Not Detected
4-Chloro-3-Methylphenol	0.50	Not Detected
2-Methylnaphthalene	0.50	Not Detected
Hexachlorocyclopentadiene	0.50	Not Detected
2,4,6-Trichlorophenol	0.50	Not Detected
2,4,5-Trichlorophenol	0.50	Not Detected
2-Chloronaphthalene	0.50	Not Detected
2-Nitroaniline	0.50	Not Detected
Dimethylphthalate	0.50	Not Detected
Acenaphthylene	0.50	Not Detected
2,6-Dinitrotoluene	0.50	Not Detected
3-Nitroaniline	0.50	Not Detected
Acenaphthene	0.50	Not Detected
2,4-Dinitrophenol	0.50	Not Detected
4-Nitrophenol	0.50	Not Detected
2,4-Dinitrotoluene	0.50	Not Detected
Dibenzofuran	0.50	Not Detected
Diethylphthalate	0.50	Not Detected
Fluorene	0.50	Not Detected
4-Chlorophenyl-Phenyl Ether	0.50	Not Detected
4-Nitroaniline	0.50	Not Detected
4,6-Dinitro-2-Methylphenol	0.50	Not Detected
N-Nitrosodiphenylamine	0.50	Not Detected

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: DCM/MeOH blank

ID#: 9309158-08A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	90925063	Date of Collection: 9/16/93
Dil. Factor:	1.0	Date of Extraction: NA
		Date of Analysis: 9/25/93

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	0.50	Not Detected
Hexachlorobenzene	0.50	Not Detected
Pentachlorophenol	0.50	Not Detected
Phenanthrene	0.50	Not Detected
Anthracene	0.50	Not Detected
di-n-Butylphthalate	0.50	Not Detected
Fluoranthene	0.50	Not Detected
Pyrene	0.50	Not Detected
Butylbenzylphthalate	0.50	Not Detected
3,3'-Dichlorobenzidine	0.50	Not Detected
Chrysene	0.50	Not Detected
Benzo(a)anthracene	0.50	Not Detected
bis(2-Ethylhexyl)phthalate	0.50	Not Detected
Di-n-Octylphthalate	0.50	Not Detected
Benzo(b)fluoranthene	0.50	Not Detected
Benzo(k)fluoranthene	0.50	Not Detected
Benzo(a)pyrene	0.50	Not Detected
Indeno(1,2,3-cd)pyrene	0.50	Not Detected
Dibenz(a,h)anthracene	0.50	Not Detected
Benzo(g,h,i)perylene	0.50	Not Detected
Biphenyl	0.50	Not Detected
Quinoline	0.50	Not Detected
Xylenes	0.50	Not Detected
Cresols	0.50	Not Detected

Surrogates	% Recovery	Method Limits
2-Fluorophenol	121	25-121
Phenol-d5	84	24-113
Nitrobenzene-d5	120	23-120
2-Fluorobiphenyl	94	30-115
2,4,6-Tribromophenol	82	19-122
Terphenyl-d14	132	18-137

AIR TOXICS LTD.

SAMPLE NAME: MM5 Run B-1 (A-E Composite)

ID#: 9309158-09A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092314	Date of Collection:	9/16/93
Dil. Factor:	86000	Date of Extraction:	9/22/93
		Date of Analysis:	9/23/93

Compound	Det. Limit (uG)	Amount (uG)
Phenol	43000	Not Detected
bis(2-Chloroethyl) Ether	43000	Not Detected
2-Chlorophenol	43000	Not Detected
1,3-Dichlorobenzene	43000	Not Detected
1,4-Dichlorobenzene	43000	Not Detected
1,2-Dichlorobenzene	43000	Not Detected
bis(2-Chloroisopropyl) Ether	43000	Not Detected
N-Nitroso-di-n-Propylamine	43000	Not Detected
Hexachloroethane	43000	Not Detected
Nitrobenzene	43000	Not Detected
Isophorone	43000	Not Detected
2-Nitrophenol	43000	Not Detected
2,4-Dimethylphenol	43000	Not Detected
Benzoic Acid	43000	Not Detected
bis(2-Chloroethoxy) Methane	43000	Not Detected
2,4-Dichlorophenol	43000	Not Detected
1,2,4-Trichlorobenzene	43000	Not Detected
Naphthalene	43000	11000000
4-Chloroaniline	43000	Not Detected
Hexachlorobutadiene	43000	Not Detected
4-Chloro-3-Methylphenol	43000	Not Detected
2-Methylnaphthalene	43000	950000
Hexachlorocyclopentadiene	43000	Not Detected
2,4,6-Trichlorophenol	43000	Not Detected
2,4,5-Trichlorophenol	43000	Not Detected
2-Chloronaphthalene	43000	Not Detected
2-Nitroaniline	43000	Not Detected
Dimethylphthalate	43000	Not Detected
Acenaphthylene	43000	Not Detected
2,6-Dinitrotoluene	43000	Not Detected
3-Nitroaniline	43000	Not Detected
Acenaphthene	43000	Not Detected
2,4-Dinitrophenol	43000	Not Detected
4-Nitrophenol	43000	Not Detected
2,4-Dinitrotoluene	43000	Not Detected
Dibenzofuran	43000	Not Detected
Diethylphthalate	43000	Not Detected
Fluorene	43000	Not Detected
4-Chlorophenyl-Phenyl Ether	43000	Not Detected
4-Nitroaniline	43000	Not Detected
4,6-Dinitro-2-Methylphenol	43000	Not Detected
N-Nitrosodiphenylamine	43000	Not Detected

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: MM5 Run B-1 (A-E Composite)

ID#: 9309158-09A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092314	Date of Collection:	9/15/93
Dil. Factor:	86000	Date of Extraction:	9/22/93
		Date of Analysis:	9/23/93

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	43000	Not Detected
Hexachlorobenzene	43000	Not Detected
Pentachlorophenol	43000	Not Detected
Phenanthrene	43000	Not Detected
Anthracene	43000	Not Detected
di-n-Butylphthalate	43000	Not Detected
Fluoranthene	43000	Not Detected
Pyrene	43000	Not Detected
Butylbenzylphthalate	43000	Not Detected
3,3'-Dichlorobenzidine	43000	Not Detected
Chrysene	43000	Not Detected
Benzo(a)anthracene	43000	Not Detected
bis(2-Ethylhexyl)phthalate	43000	Not Detected
Di-n-Octylphthalate	43000	Not Detected
Benzo(b)fluoranthene	43000	Not Detected
Benzo(k)fluoranthene	43000	Not Detected
Benzo(a)pyrene	43000	Not Detected
Indeno(1,2,3-cd)pyrene	43000	Not Detected
Dibenz(a,h)anthracene	43000	Not Detected
Benzo(g,h,i)perylene	43000	Not Detected
Biphenyl	43000	Not Detected
Quinoline	43000	4000000
Xylenes	43000	Not Detected
Cresols	43000	Not Detected

*Surrogates diluted out.

Surrogates	% Recovery	Method Limits
2-Fluorophenol	*	25-121
Phenol-d5	*	24-113
Nitrobenzene-d5	*	23-120
2-Fluorobiphenyl	*	30-115
2,4,6-Tribromophenol	*	19-122
Terphenyl-d14	*	18-137

AIR TOXICS LTD.

SAMPLE NAME: MM5 Run B-2 (A-E Composite)

ID#: 9309158-10A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092405	Date of Collection:	9/16/93
Dil. Factor:	48000	Date of Extraction:	9/22/93
		Date of Analysis:	9/24/93

Compound	Det. Limit (uG)	Amount (uG)
Phenol	24000	Not Detected
bis(2-Chloroethyl) Ether	24000	Not Detected
2-Chlorophenol	24000	Not Detected
1,3-Dichlorobenzene	24000	Not Detected
1,4-Dichlorobenzene	24000	Not Detected
1,2-Dichlorobenzene	24000	Not Detected
bis(2-Chloroisopropyl) Ether	24000	Not Detected
N-Nitroso-di-n-Propylamine	24000	Not Detected
Hexachloroethane	24000	Not Detected
Nitrobenzene	24000	Not Detected
Isophorone	24000	Not Detected
2-Nitrophenol	24000	Not Detected
2,4-Dimethylphenol	24000	Not Detected
Benzoic Acid	24000	Not Detected
bis(2-Chloroethoxy) Methane	24000	Not Detected
2,4-Dichlorophenol	24000	Not Detected
1,2,4-Trichlorobenzene	24000	Not Detected
Naphthalene	24000	4300000
4-Chloroaniline	24000	Not Detected
Hexachlorobutadiene	24000	Not Detected
4-Chloro-3-Methylphenol	24000	Not Detected
2-Methylnaphthalene	24000	290000
Hexachlorocyclopentadiene	24000	Not Detected
2,4,6-Trichlorophenol	24000	Not Detected
2,4,5-Trichlorophenol	24000	Not Detected
2-Chloronaphthalene	24000	Not Detected
2-Nitroaniline	24000	Not Detected
Dimethylphthalate	24000	Not Detected
Acenaphthylene	24000	Not Detected
2,6-Dinitrotoluene	24000	Not Detected
3-Nitroaniline	24000	Not Detected
Acenaphthene	24000	Not Detected
2,4-Dinitrophenol	24000	Not Detected
4-Nitrophenol	24000	Not Detected
2,4-Dinitrotoluene	24000	Not Detected
Dibenzofuran	24000	Not Detected
Diethylphthalate	24000	Not Detected
Fluorene	24000	Not Detected
4-Chlorophenyl-Phenyl Ether	24000	Not Detected
4-Nitroaniline	24000	Not Detected
4,6-Dinitro-2-Methylphenol	24000	Not Detected
N-Nitrosodiphenylamine	24000	Not Detected

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: MM5 Run B-2 (A-E Composite)

ID#: 9309158-10A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092405	Date of Collection:	9/16/93
Dil. Factor:	48000	Date of Extraction:	9/22/93
		Date of Analysis:	9/24/93

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	24000	Not Detected
Hexachlorobenzene	24000	Not Detected
Pentachlorophenol	24000	Not Detected
Phenanthrene	24000	Not Detected
Anthracene	24000	Not Detected
di-n-Butylphthalate	24000	Not Detected
Fluoranthene	24000	Not Detected
Pyrene	24000	Not Detected
Butylbenzylphthalate	24000	Not Detected
3,3'-Dichlorobenzidine	24000	Not Detected
Chrysene	24000	Not Detected
Benzo(a)anthracene	24000	Not Detected
bis(2-Ethylhexyl)phthalate	24000	Not Detected
Di-n-Octylphthalate	24000	Not Detected
Benzo(b)fluoranthene	24000	Not Detected
Benzo(k)fluoranthene	24000	Not Detected
Benzo(a)pyrene	24000	Not Detected
Indeno(1,2,3-cd)pyrene	24000	Not Detected
Dibenz(a,h)anthracene	24000	Not Detected
Benzo(g,h,i)perylene	24000	Not Detected
Biphenyl	24000	Not Detected
Quinoline	24000	Not Detected
Xylenes	24000	1200000
Cresols	24000	Not Detected

*Surrogates diluted out.

Surrogates	% Recovery	Method Limits
2-Fluorophenol	*	25-121
Phenol-d5	*	24-113
Nitrobenzene-d5	*	23-120
2-Fluorobiphenyl	*	30-115
2,4,6-Tribromophenol	*	19-122
Terphenyl-d14	*	18-137

AIR TOXICS LTD.

SAMPLE NAME: MM5 Run B-3 (A-E Composite)

ID#: 9309158-11A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092406	Date of Collection:	9/16/93
Dil. Factor:	54000	Date of Extraction:	9/22/93
		Date of Analysis:	9/24/93

Compound	Det. Limit (uG)	Amount (uG)
Phenol	27000	Not Detected
bis(2-Chloroethyl) Ether	27000	Not Detected
2-Chlorophenol	27000	Not Detected
1,3-Dichlorobenzene	27000	Not Detected
1,4-Dichlorobenzene	27000	Not Detected
1,2-Dichlorobenzene	27000	Not Detected
bis(2-Chloroisopropyl) Ether	27000	Not Detected
N-Nitroso-di-n-Propylamine	27000	Not Detected
Hexachloroethane	27000	Not Detected
Nitrobenzene	27000	Not Detected
Isophorone	27000	Not Detected
2-Nitrophenol	27000	Not Detected
2,4-Dimethylphenol	27000	Not Detected
Benzoic Acid	27000	Not Detected
bis(2-Chloroethoxy) Methane	27000	Not Detected
2,4-Dichlorophenol	27000	Not Detected
1,2,4-Trichlorobenzene	27000	Not Detected
Naphthalene	27000	6400000
4-Chloroaniline	27000	Not Detected
Hexachlorobutadiene	27000	Not Detected
4-Chloro-3-Methylphenol	27000	Not Detected
2-Methylnaphthalene	27000	410000
Hexachlorocyclopentadiene	27000	Not Detected
2,4,6-Trichlorophenol	27000	Not Detected
2,4,5-Trichlorophenol	27000	Not Detected
2-Chloronaphthalene	27000	Not Detected
2-Nitroaniline	27000	Not Detected
Dimethylphthalate	27000	Not Detected
Acenaphthylene	27000	Not Detected
2,6-Dinitrotoluene	27000	Not Detected
3-Nitroaniline	27000	Not Detected
Acenaphthene	27000	Not Detected
2,4-Dinitrophenol	27000	Not Detected
4-Nitrophenol	27000	Not Detected
2,4-Dinitrotoluene	27000	Not Detected
Dibenzofuran	27000	Not Detected
Diethylphthalate	27000	Not Detected
Fluorene	27000	Not Detected
4-Chlorophenyl-Phenyl Ether	27000	Not Detected
4-Nitroaniline	27000	Not Detected
4,6-Dinitro-2-Methylphenol	27000	Not Detected
N-Nitrosodiphenylamine	27000	Not Detected

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: MM5 Run B-3 (A-E Composite)

ID#: 9309158-11A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092406	Date of Collection:	9/16/93
Dil. Factor:	54000	Date of Extraction:	9/22/93
		Date of Analysis:	9/24/93

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	27000	Not Detected
Hexachlorobenzene	27000	Not Detected
Pentachlorophenol	27000	Not Detected
Phenanthrene	27000	Not Detected
Anthracene	27000	Not Detected
di-n-Butylphthalate	27000	Not Detected
Fluoranthene	27000	Not Detected
Pyrene	27000	Not Detected
Butylbenzylphthalate	27000	Not Detected
3,3'-Dichlorobenzidine	27000	Not Detected
Chrysene	27000	Not Detected
Benzo(a)anthracene	27000	Not Detected
bis(2-Ethylhexyl)phthalate	27000	Not Detected
Di-n-Octylphthalate	27000	Not Detected
Benzo(b)fluoranthene	27000	Not Detected
Benzo(k)fluoranthene	27000	Not Detected
Benzo(a)pyrene	27000	Not Detected
Indeno(1,2,3-cd)pyrene	27000	Not Detected
Dibenz(a,h)anthracene	27000	Not Detected
Benzo(g,h,i)perylene	27000	Not Detected
Biphenyl	27000	Not Detected
Quinoline	27000	Not Detected
Xylenes	27000	1100000
Cresols	27000	Not Detected

*Surrogates diluted out.

Surrogates	% Recovery	Method Limits
2-Fluorophenol	*	25-121
Phenol-d5	*	24-113
Nitrobenzene-d5	*	23-120
2-Fluorobiphenyl	*	30-115
2,4,6-Tribromophenol	*	19-122
Terphenyl-d14	*	18-137

AIR TOXICS LTD.

SAMPLE NAME: MM5 Run B-4 (A-F Composite)

ID#: 9309158-12A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092317	Date of Collection:	9/16/93
Dil. Factor:	64000	Date of Extraction:	9/22/93
		Date of Analysis:	9/23/93

Compound	Det. Limit (uG)	Amount (uG)
Phenol	32000	Not Detected
bis(2-Chloroethyl) Ether	32000	Not Detected
2-Chlorophenol	32000	Not Detected
1,3-Dichlorobenzene	32000	Not Detected
1,4-Dichlorobenzene	32000	Not Detected
1,2-Dichlorobenzene	32000	Not Detected
bis(2-Chloroisopropyl) Ether	32000	Not Detected
N-Nitroso-di-n-Propylamine	32000	Not Detected
Hexachloroethane	32000	Not Detected
Nitrobenzene	32000	Not Detected
Isophorone	32000	Not Detected
2-Nitrophenol	32000	Not Detected
2,4-Dimethylphenol	32000	Not Detected
Benzoic Acid	32000	Not Detected
bis(2-Chloroethoxy) Methane	32000	Not Detected
2,4-Dichlorophenol	32000	Not Detected
1,2,4-Trichlorobenzene	32000	Not Detected
Naphthalene	32000	17000000 E
4-Chloroaniline	32000	Not Detected
Hexachlorobutadiene	32000	Not Detected
4-Chloro-3-Methylphenol	32000	Not Detected
2-Methylnaphthalene	32000	2600000
Hexachlorocyclopentadiene	32000	Not Detected
2,4,6-Trichlorophenol	32000	Not Detected
2,4,5-Trichlorophenol	32000	Not Detected
2-Chloronaphthalene	32000	Not Detected
2-Nitroaniline	32000	Not Detected
Dimethylphthalate	32000	Not Detected
Acenaphthylene	32000	Not Detected
2,6-Dinitrotoluene	32000	Not Detected
3-Nitroaniline	32000	Not Detected
Acenaphthene	32000	160000
2,4-Dinitrophenol	32000	Not Detected
4-Nitrophenol	32000	Not Detected
2,4-Dinitrotoluene	32000	Not Detected
Dibenzofuran	32000	34000
Diethylphthalate	32000	Not Detected
Fluorene	32000	Not Detected
4-Chlorophenyl-Phenyl Ether	32000	Not Detected
4-Nitroaniline	32000	Not Detected
4,6-Dinitro-2-Methylphenol	32000	Not Detected
N-Nitrosodiphenylamine	32000	Not Detected

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: MM5 Run B-4 (A-F Composite)

ID#: 9309158-12A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092317	Date of Collection:	9/16/93
Dil. Factor:	64000	Date of Extraction:	9/22/93
		Date of Analysis:	9/23/93

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	32000	Not Detected
Hexachlorobenzene	32000	Not Detected
Pentachlorophenol	32000	Not Detected
Phenanthrene	32000	Not Detected
Anthracene	32000	Not Detected
di-n-Butylphthalate	32000	Not Detected
Fluoranthene	32000	Not Detected
Pyrene	32000	Not Detected
Butylbenzylphthalate	32000	Not Detected
3,3'-Dichlorobenzidine	32000	Not Detected
Chrysene	32000	Not Detected
Benzo(a)anthracene	32000	Not Detected
bis(2-Ethylhexyl)phthalate	32000	Not Detected
Di-n-Octylphthalate	32000	Not Detected
Benzo(b)fluoranthene	32000	Not Detected
Benzo(k)fluoranthene	32000	Not Detected
Benzo(a)pyrene	32000	Not Detected
Indeno(1,2,3-cd)pyrene	32000	Not Detected
Dibenz(a,h)anthracene	32000	Not Detected
Benzo(g,h,i)perylene	32000	Not Detected
Biphenyl	32000	82000
Quinoline	32000	260000
Xylenes	32000	Not Detected
Cresols	32000	Not Detected

E = Exceeds instrument calibration range, but within linear range.

***Surogates diluted out.**

Surrogates	% Recovery	Method Limits
2-Fluorophenol	*	25-121
Phenol-d5	*	24-113
Nitrobenzene-d5	*	23-120
2-Fluorobiphenyl	*	30-115
2,4,6-Tribromophenol	*	19-122
Terphenyl-d14	*	18-137

AIR TOXICS LTD.

SAMPLE NAME: MM5 Run A-1 (A-E Composite)

ID#: 9309158-13A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092407	Date of Collection:	9/16/93
Dil. Factor:	1000	Date of Extraction:	9/22/93
		Date of Analysis:	9/24/93

Compound	Det. Limit (uG)	Amount (uG)
Phenol	500	Not Detected
bis(2-Chloroethyl) Ether	500	Not Detected
2-Chlorophenol	500	Not Detected
1,3-Dichlorobenzene	500	Not Detected
1,4-Dichlorobenzene	500	Not Detected
1,2-Dichlorobenzene	500	Not Detected
bis(2-Chloroisopropyl) Ether	500	Not Detected
N-Nitroso-di-n-Propylamine	500	Not Detected
Hexachloroethane	500	Not Detected
Nitrobenzene	500	Not Detected
Isophorone	500	Not Detected
2-Nitrophenol	500	Not Detected
2,4-Dimethylphenol	500	Not Detected
Benzoic Acid	500	Not Detected
bis(2-Chloroethoxy) Methane	500	Not Detected
2,4-Dichlorophenol	500	Not Detected
1,2,4-Trichlorobenzene	500	Not Detected
Naphthalene	500	150000
4-Chloroaniline	500	Not Detected
Hexachlorobutadiene	500	Not Detected
4-Chloro-3-Methylphenol	500	Not Detected
2-Methylnaphthalene	500	32000
Hexachlorocyclopentadiene	500	Not Detected
2,4,6-Trichlorophenol	500	Not Detected
2,4,5-Trichlorophenol	500	Not Detected
2-Chloronaphthalene	500	Not Detected
2-Nitroaniline	500	Not Detected
Dimethylphthalate	500	Not Detected
Acenaphthylene	500	Not Detected
2,6-Dinitrotoluene	500	Not Detected
3-Nitroaniline	500	Not Detected
Acenaphthene	500	5100
2,4-Dinitrophenol	500	Not Detected
4-Nitrophenol	500	Not Detected
2,4-Dinitrotoluene	500	Not Detected
Dibenzofuran	500	1200
Diethylphthalate	500	Not Detected
Fluorene	500	710
4-Chlorophenyl-Phenyl Ether	500	Not Detected
4-Nitroaniline	500	Not Detected
4,6-Dinitro-2-Methylphenol	500	Not Detected
N-Nitrosodiphenylamine	500	Not Detected

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: MM5 Run A-1 (A-E Composite)

ID#: 9309158-13A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092407	Date of Collection:	9/16/93
Dil. Factor:	1000	Date of Extraction:	9/22/93
		Date of Analysis:	9/24/93

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	500	Not Detected
Hexachlorobenzene	500	Not Detected
Pentachlorophenol	500	Not Detected
Phenanthrene	500	Not Detected
Anthracene	500	Not Detected
di-n-Butylphthalate	500	Not Detected
Fluoranthene	500	Not Detected
Pyrene	500	Not Detected
Butylbenzylphthalate	500	Not Detected
3,3'-Dichlorobenzidine	500	Not Detected
Chrysene	500	Not Detected
Benzo(a)anthracene	500	Not Detected
bis(2-Ethylhexyl)phthalate	500	Not Detected
Di-n-Octylphthalate	500	Not Detected
Benzo(b)fluoranthene	500	Not Detected
Benzo(k)fluoranthene	500	Not Detected
Benzo(a)pyrene	500	Not Detected
Indeno(1,2,3-cd)pyrene	500	Not Detected
Dibenz(a,h)anthracene	500	Not Detected
Benzo(g,h,i)perylene	500	Not Detected
Biphenyl	500	1300
Quinoline	500	4600
Xylenes	500	Not Detected
Cresols	500	Not Detected

*Surrogates diluted out.

Surrogates	% Recovery	Method Limits
2-Fluorophenol	*	25-121
Phenol-d5	*	24-113
Nitrobenzene-d5	*	23-120
2-Fluorobiphenyl	*	30-115
2,4,6-Tribromophenol	*	19-122
Terphenyl-d14	*	18-137

AIR TOXICS LTD.

SAMPLE NAME: MM5 Blank Run (A-E Composite)

ID#: 9309158-14A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092304	Date of Collection:	9/16/93
Dil. Factor:	1.0	Date of Extraction:	9/22/93
		Date of Analysis:	9/23/93

Compound	Det. Limit (uG)	Amount (uG)
Phenol	0.50	1.7
bis(2-Chloroethyl) Ether	0.50	Not Detected
2-Chlorophenol	0.50	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected
bis(2-Chloroisopropyl) Ether	0.50	Not Detected
N-Nitroso-di-n-Propylamine	0.50	Not Detected
Hexachloroethane	0.50	Not Detected
Nitrobenzene	0.50	Not Detected
Isophorone	0.50	Not Detected
2-Nitrophenol	0.50	Not Detected
2,4-Dimethylphenol	0.50	Not Detected
Benzoic Acid	0.50	Not Detected
bis(2-Chloroethoxy) Methane	0.50	Not Detected
2,4-Dichlorophenol	0.50	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected
Naphthalene	0.50	19
4-Chloroaniline	0.50	Not Detected
Hexachlorobutadiene	0.50	Not Detected
4-Chloro-3-Methylphenol	0.50	Not Detected
2-Methylnaphthalene	0.50	5.4
Hexachlorocyclopentadiene	0.50	Not Detected
2,4,6-Trichlorophenol	0.50	Not Detected
2,4,5-Trichlorophenol	0.50	Not Detected
2-Chloronaphthalene	0.50	Not Detected
2-Nitroaniline	0.50	Not Detected
Dimethylphthalate	0.50	Not Detected
Acenaphthylene	0.50	Not Detected
2,6-Dinitrotoluene	0.50	Not Detected
3-Nitroaniline	0.50	Not Detected
Acenaphthene	0.50	8.5
2,4-Dinitrophenol	0.50	Not Detected
4-Nitrophenol	0.50	Not Detected
2,4-Dinitrotoluene	0.50	Not Detected
Dibenzofuran	0.50	5.3
Diethylphthalate	0.50	2.4
Fluorene	0.50	4.9
4-Chlorophenyl-Phenyl Ether	0.50	Not Detected
4-Nitroaniline	0.50	Not Detected
4,6-Dinitro-2-Methylphenol	0.50	Not Detected
N-Nitrosodiphenylamine	0.50	Not Detected

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: MM5 Blank Run (A-E Composite)

ID#: 9309158-14A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092304	Date of Collection:	9/16/93
Dil. Factor:	1.0	Date of Extraction:	9/22/93
		Date of Analysis:	9/23/93

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	0.50	Not Detected
Hexachlorobenzene	0.50	Not Detected
Pentachlorophenol	0.50	Not Detected
Phenanthrene	0.50	8.8
Anthracene	0.50	1.1
di-n-Butylphthalate	0.50	260 E
Fluoranthene	0.50	1.6
Pyrene	0.50	1.1
Butylbenzylphthalate	0.50	Not Detected
3,3'-Dichlorobenzidine	0.50	Not Detected
Chrysene	0.50	Not Detected
Benzo(a)anthracene	0.50	Not Detected
bis(2-Ethylhexyl)phthalate	0.50	6.3
Di-n-Octylphthalate	0.50	Not Detected
Benzo(b)fluoranthene	0.50	Not Detected
Benzo(k)fluoranthene	0.50	Not Detected
Benzo(a)pyrene	0.50	Not Detected
Indeno(1,2,3-cd)pyrene	0.50	Not Detected
Dibenz(a,h)anthracene	0.50	Not Detected
Benzo(g,h,i)perylene	0.50	Not Detected
Biphenyl	0.50	1.5
Quinoline	0.50	29
Xylenes	0.50	0.51
Cresols	0.50	Not Detected

E = Exceeds instrument calibration range but within linear range.
Q = Exceeds Quality Control limits of 70% to 130%.

Surrogates	% Recovery	Method Limits
2-Fluorophenol	12 Q	25-121
Phenol-d5	9.4 Q	24-113
Nitrobenzene-d5	9.6 Q	23-120
2-Fluorobiphenyl	8.3 Q	30-115
2,4,6-Tribromophenol	43	19-122
Terphenyl-d14	22	18-137

AIR TOXICS LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

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FOLSOM, CA 95630
(916) 985-1000 • FAX (916) 985-1020

CHAIN OF CUSTODY RECORD

Page 1 of ___

PROJECT # 01-1179-03-4790 PO # _____ COLLECTED BY (Signature) [signature]
REMARKS _____

	FIELD SAMPLE I.D.#	SAMPLING MEDIA (Tenax, Canister etc.)	DATE/TIME	ANALYSIS	VAC./PRESSURE	LAB I.D. #
13C	A-1-C	XAD	9/16/93	Composite all components of each run. GC/MS on composite		
09C	B-1-C					
10C	B-2-C					
	B-3-C					
11C	B-4-C					
12C	Blank-1-C					
14C				* See other sheet.		

RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME	RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME
	L. Polinson ATL 9/20/93 1000		

LAB USE ONLY

SHIPPER NAME	AIR BILL #	OPENED BY: DATE/TIME	TEMP(°C)	CONDITION

REMARKS _____

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CHAIN OF CUSTODY RECORD

Page 3 of ____

PROJECT # 01-1179-03-4790 PO # _____ COLLECTED BY (Signature) [signature]
REMARKS _____

	FIELD SAMPLE I.D.#	SAMPLING MEDIA (Tenax, Canister etc.)	DATE/TIME	ANALYSIS	VAC./PRESSURE	LAB I.D. #
01A	AV-C-1	250 ml bottle	9-16-93	sample } GC/MS		
01B	AV-C-2			duplicate sample }		
02A	DB-C-4a			sample } GC/MS		
02B	DB-C-4b			duplicate sample }		
03A	H_2O Blank	300 ml bottle		GC/MS		

RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME	RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME
	L. Robinson ATL 9/22/93 1000		

LAB USE ONLY

SHIPPER NAME	AIR BILL #	OPENED BY: DATE/TIME	TEMP(°C)	CONDITION

REMARKS _____

3

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CHAIN OF CUSTODY RECORD

Page 4 of ___

PROJECT # 01-1179-03-4790 PO # _____ COLLECTED BY (Signature) [signature]

REMARKS Each sample (a) has a duplicate (b)

	FIELD SAMPLE I.D.#	SAMPLING MEDIA (Tenax, Canister etc.)	DATE/TIME	ANALYSIS	VAC./PRESSURE	LAB I.D. #
	S	250 ml Bottle				
04A	DB-SW-1a		9-16-93	GC/MS		
04B	DB-SW-1b					
05A	DB-SW-2a			GC/MS		
05B	DB-SW-2b					
06A	DB-SW-3a			GC/MS		
06B	DB-SW-3b					
07A	DB-SW-blank			GC/MS		

RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME	RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME
	[signature] Robinson/ATL 7/20/93 1200		

LAB USE ONLY

SHIPPER NAME	AIR BILL #	OPENED BY: DATE/TIME	TEMP(°C)	CONDITION

REMARKS _____

AIR TOXICS LTD.
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CHAIN OF CUSTODY RECORD

PROJECT # 01-1179-03-4790 PO # _____ COLLECTED BY (Signature) [signature]
REMARKS _____

	FIELD SAMPLE I.D.#	SAMPLING MEDIA (Tenax, Canister etc.)	DATE/TIME	ANALYSIS	VAC./PRESSURE	LAB I.D. #
13D	1A-1-D	500 ml bottle	9/16/93			
09D	B-1-D			* See other page		
10D	B-2-D					
11D	B-3-D					
12D1	B-4-D1					
12D2	B-4-D2	300 ml bottle				

RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME	RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME
	L. Robinson AIL 9/27/93 1200		

LAB USE ONLY

SHIPPER NAME	AIR BILL #	OPENED BY: DATE/TIME	TEMP (°C)	CONDITION

REMARKS _____

2.

AIR TOXICS LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

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CHAIN OF CUSTODY RECORD

PROJECT # 01-1179-03-4790 PO # _____ COLLECTED BY (Signature) [signature]
REMARKS _____

	FIELD SAMPLE I.D.#	SAMPLING MEDIA (Tenax, Canister etc.)	DATE/TIME	ANALYSIS	VAC./PRESSURE	LAB I.D. #
13B	A-1-B	500 ml bottle	9-16-97			
D9B	B-1-B			* See attached sheet		
10B	B-2-B					
11B	B-3-B					
12B	B-4-B					
1-E	Blank-1-E					
1-B	Blank-1-B					
68A	DCM/MeOH	300 ml bottle				

RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME	RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME
	D. Johnson ATL 9/24/97 1200		

LAB USE ONLY

SHIPPER NAME	AIR BILL #	OPENED BY: DATE/TIME	TEMP (°C)	CONDITION

REMARKS _____

CLIENT EPA/EMB I-2
LOCATION DuBOIS, PA
PROJECT # NAPHTHALENE
RUN# RUN1 SOURCE B
DATE 9/16/93
TRAIN ID 2B

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	16015.2417	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	6.9969	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	24.131	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	77.3	(DEGREES F)
(H) AVERAGE DELTA H.....	2.250	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	619.3	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	30.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	11000.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	24.2108	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA/EMB I-2
LOCATION	DuBOIS, PA
PROJECT #	NAPHTHALENE
RUN#	RUN1 SOURCE B
DATE	9/16/93
TRAIN ID	2B
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	646.176
GAS METER READING ENDING(CORR.IF NEC)	670.307
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	11000.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	30.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA/EMB I-2
LOCATION DuBOIS, PA
PROJECT # QUINOLINE
RUN# RUN1 SOURCE B
DATE 9/16/93
TRAIN ID 2B

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	5823.6618	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	2.5443	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	24.131	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	77.3	(DEGREES F)
(H) AVERAGE DELTA H.....	2.250	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	619.3	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	30.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	4000.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	24.2108	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA/EMB I-2
LOCATION	DuBOIS, PA
PROJECT #	QUINOLINE
RUN#	RUN1 SOURCE B
DATE	9/16/93
TRAIN ID	2B
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	646.176
GAS METER READING ENDING(CORR.IF NEC)	670.307
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	4000.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	30.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA/EMB I-2
LOCATION DuBOIS, PA
PROJECT # LOWER DETECTION LIMIT
RUN#. RUN1 SOURCE B
DATE 9/16/93
TRAIN ID 2B

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	62.716	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.0274	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	24.131	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	77.3	(DEGREES F)
(H) AVERAGE DELTA H.....	2.250	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	619.3	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	30.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	43.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	24.2108	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA/EMB I-2
LOCATION	DuBOIS, PA
PROJECT #	LOWER DETECTION LIMIT
RUN#	RUN1 SOURCE B
DATE	9/16/93
TRAIN ID	2B
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	646.176
GAS METER READING ENDING(CORR.IF NEC)	670.307
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	43.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	30.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA/EMB I-2
LOCATION DuBOIS, PA
PROJECT # 2-METHYLNAPHTHALENE
RUN# RUN1 SOURCE B
DATE 9/16/93
TRAIN ID 2B

(Cmf)	FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)	FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)	FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb)	BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)	BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)	TOTAL EMISSIONS (metric).....	1383.1855	(MG/DSCM)
(Cg)	TOTAL PARTICULATE GRAIN LOAD	0.6043	(GRAINS/SCF)
(Ct)	TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm)	SAMPLE GAS VOLUME METER CONDITIONS ..	24.131	(CUBIC FEET)
(tm)	TEMPERATURE GAS METER.....	77.3	(DEGREES F)
(H)	AVERAGE DELTA H.....	2.250	(INCHES H2O)
(Po)	BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv)	WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md)	MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps)	STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S)	AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp)	PITOT TUBE COEFFICIENT.....	0.000	
(As)	STACK AREA.....	0.00	(SQUARE INCHES)
(Ts)	STACK TEMPERATURE DEGREES R.....	619.3	(DEGREES R)
(Dn)	DIAMETER NOZZLE.....	0.000	(INCHES)
(T)	TOTAL TIME OF TEST.....	30.00	(MINUTES)
(wf)	FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb)	BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w)	TOTAL PARTICULATES.....	950.000	(MILLIGRAMS)
(Qd)	TOTAL SAMPLE VOL. (STD. COND.).....	24.2108	(DSCF)
(Qv)	CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv)	% MOISTURE IN STACK GAS.....	0.00	(%)
(md)	MOLE FRACTION OF DRY GAS.....	1.000	
(Ms)	MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs)	AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa)	STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs)	STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I)	ISOKINETIC.....	ERR	(PERCENT)

AIR TOXICS LTD.

SAMPLE NAME: MM5 Blank Run (A-E Composite) Dup

ID#: 9309158-14B

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092307	Date of Collection:	9/16/93
Dil. Factor:	1.0	Date of Extraction:	9/22/93
		Date of Analysis:	9/23/93

Compound	Det. Limit (uG)	Amount (uG)
Phenol	0.50	2.7
bis(2-Chloroethyl) Ether	0.50	Not Detected
2-Chlorophenol	0.50	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected
bis(2-Chloroisopropyl) Ether	0.50	Not Detected
N-Nitroso-di-n-Propylamine	0.50	Not Detected
Hexachloroethane	0.50	Not Detected
Nitrobenzene	0.50	Not Detected
Isophorone	0.50	Not Detected
2-Nitrophenol	0.50	Not Detected
2,4-Dimethylphenol	0.50	Not Detected
Benzoic Acid	0.50	Not Detected
bis(2-Chloroethoxy) Methane	0.50	Not Detected
2,4-Dichlorophenol	0.50	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected
Naphthalene	0.50	18
4-Chloroaniline	0.50	Not Detected
Hexachlorobutadiene	0.50	Not Detected
4-Chloro-3-Methylphenol	0.50	Not Detected
2-Methylnaphthalene	0.50	4.9
Hexachlorocyclopentadiene	0.50	Not Detected
2,4,6-Trichlorophenol	0.50	Not Detected
2,4,5-Trichlorophenol	0.50	Not Detected
2-Chloronaphthalene	0.50	Not Detected
2-Nitroaniline	0.50	Not Detected
Dimethylphthalate	0.50	Not Detected
Acenaphthylene	0.50	Not Detected
2,6-Dinitrotoluene	0.50	Not Detected
3-Nitroaniline	0.50	Not Detected
Acenaphthene	0.50	7.5
2,4-Dinitrophenol	0.50	Not Detected
4-Nitrophenol	0.50	Not Detected
2,4-Dinitrotoluene	0.50	Not Detected
Dibenzofuran	0.50	4.5
Diethylphthalate	0.50	2.1
Fluorene	0.50	4.0
4-Chlorophenyl-Phenyl Ether	0.50	Not Detected
4-Nitroaniline	0.50	Not Detected
4,6-Dinitro-2-Methylphenol	0.50	Not Detected
N-Nitrosodiphenylamine	0.50	Not Detected

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: MM5 Blank Run (A-E Composite) Dup
ID#: 9309158-14B
Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092307	Date of Collection:	9/16/93
Dil. Factor:	1.0	Date of Extraction:	9/22/93
		Date of Analysis:	9/23/93

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	0.50	Not Detected
Hexachlorobenzene	0.50	Not Detected
Pentachlorophenol	0.50	Not Detected
Phenanthrene	0.50	7.3
Anthracene	0.50	0.97
di-n-Butylphthalate	0.50	200 E
Fluoranthene	0.50	1.2
Pyrene	0.50	0.75
Butylbenzylphthalate	0.50	Not Detected
3,3'-Dichlorobenzidine	0.50	Not Detected
Chrysene	0.50	Not Detected
Benzo(a)anthracene	0.50	Not Detected
bis(2-Ethylhexyl)phthalate	0.50	4.6
Di-n-Octylphthalate	0.50	Not Detected
Benzo(b)fluoranthene	0.50	Not Detected
Benzo(k)fluoranthene	0.50	Not Detected
Benzo(a)pyrene	0.50	Not Detected
Indeno(1,2,3-cd)pyrene	0.50	Not Detected
Dibenz(a,h)anthracene	0.50	Not Detected
Benzo(g,h,i)perylene	0.50	Not Detected
Biphenyl	0.50	1.2
Quinoline	0.50	25
Xylenes	0.50	0.51
Cresols	0.50	Not Detected

E = Exceeds instrument calibration range but within linear range.
Q = Exceeds Quality Control limits of 70% to 130%.

Surrogates	% Recovery	Method Limits
2-Fluorophenol	14 Q	25-121
Phenol-d5	16 Q	24-113
Nitrobenzene-d5	9.6 Q	23-120
2-Fluorobiphenyl	7.2 Q	30-115
2,4,6-Tribromophenol	38	19-122
Terphenyl-d14	16 Q	18-137

AIR TOXICS LTD.

SAMPLE NAME: Method Spike

ID#: 9309158-15A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name: 9092302		Date of Collection: 9/16/93
Dil Factor: 1.0		Date of Extraction: NA
		Date of Analysis: 9/23/93

Compound	Det. Limit (uG)	% Recovery
Phenol	0.50	116
bis(2-Chloroethyl) Ether	0.50	125
2-Chlorophenol	0.50	113
1,3-Dichlorobenzene	0.50	92
1,4-Dichlorobenzene	0.50	90
1,2-Dichlorobenzene	0.50	92
bis(2-Chloroisopropyl) Ether	0.50	81
N-Nitroso-di-n-Propylamine	0.50	110
Hexachloroethane	0.50	121
Nitrobenzene	0.50	93
Isophorone	0.50	127
2-Nitrophenol	0.50	115
2,4-Dimethylphenol	0.50	103
Benzoic Acid	0.50	133 Q
bis(2-Chloroethoxy) Methane	0.50	123
2,4-Dichlorophenol	0.50	87
1,2,4-Trichlorobenzene	0.50	73
Naphthalene	0.50	100
4-Chloroaniline	0.50	37 Q
Hexachlorobutadiene	0.50	86
4-Chloro-3-Methylphenol	0.50	113
2-Methylnaphthalene	0.50	77
Hexachlorocyclopentadiene	0.50	116
2,4,6-Trichlorophenol	0.50	100
2,4,5-Trichlorophenol	0.50	82
2-Chloronaphthalene	0.50	106
2-Nitroaniline	0.50	129
Dimethylphthalate	0.50	113
Acenaphthylene	0.50	108
2,6-Dinitrotoluene	0.50	116
3-Nitroaniline	0.50	128
Acenaphthene	0.50	107
2,4-Dinitrophenol	0.50	107
4-Nitrophenol	0.50	128
2,4-Dinitrotoluene	0.50	108
Dibenzofuran	0.50	103
Diethylphthalate	0.50	126
Fluorene	0.50	97
4-Chlorophenyl-Phenyl Ether	0.50	86
4-Nitroaniline	0.50	119
4,6-Dinitro-2-Methylphenol	0.50	106
N-Nitrosodiphenylamine	0.50	51 Q

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: Method Spike

ID#: 9309158-15A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092302	Date of Collection:	9/16/93
Dil. Factor:	1.0	Date of Extraction:	NA
		Date of Analysis:	9/23/93

Compound	Det. Limit (uG)	% Recovery
4-Bromophenyl-Phenyl Ether	0.50	100
Hexachlorobenzene	0.50	101
Pentachlorophenol	0.50	112
Phenanthrene	0.50	104
Anthracene	0.50	86
di-n-Butylphthalate	0.50	124
Fluoranthene	0.50	93
Pyrene	0.50	101
Butylbenzylphthalate	0.50	127
3,3'-Dichlorobenzidine	0.50	91
Chrysene	0.50	100
Benzo(a)anthracene	0.50	92
bis(2-Ethylhexyl)phthalate	0.50	128
Di-n-Octylphthalate	0.50	170 Q
Benzo(b)fluoranthene	0.50	126
Benzo(k)fluoranthene	0.50	79
Benzo(a)pyrene	0.50	101
Indeno(1,2,3-cd)pyrene	0.50	102
Dibenz(a,h)anthracene	0.50	116
Benzo(g,h,i)perylene	0.50	103
Biphenyl	0.50	100
Quinoline	0.50	100
Xylenes	0.50	100
Cresols	0.50	100

Q = Exceeds Quality Control limits of 70% to 130%.

Surrogates	% Recovery	Method Limits
2-Fluorophenol	57	25-121
Phenol-d5	50	24-113
Nitrobenzene-d5	71	23-120
2-Fluorobiphenyl	55	30-115
2,4,6-Tribromophenol	58	19-122
Terphenyl-d14	56	18-137

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 9309158-16A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092505	Date of Collection:	9/16/93
Dil. Factor:	1.0	Date of Extraction:	9/24/93
		Date of Analysis:	9/25/93

Compound	Det. Limit (uG)	Amount (uG)
Phenol	0.50	Not Detected
bis(2-Chloroethyl) Ether	0.50	Not Detected
2-Chlorophenol	0.50	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected
bis(2-Chloroisopropyl) Ether	0.50	Not Detected
N-Nitroso-di-n-Propylamine	0.50	Not Detected
Hexachloroethane	0.50	Not Detected
Nitrobenzene	0.50	Not Detected
Isophorone	0.50	Not Detected
2-Nitrophenol	0.50	Not Detected
2,4-Dimethylphenol	0.50	Not Detected
Benzoic Acid	0.50	Not Detected
bis(2-Chloroethoxy) Methane	0.50	Not Detected
2,4-Dichlorophenol	0.50	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected
Naphthalene	0.50	Not Detected
4-Chloroaniline	0.50	Not Detected
Hexachlorobutadiene	0.50	Not Detected
4-Chloro-3-Methylphenol	0.50	Not Detected
2-Methylnaphthalene	0.50	Not Detected
Hexachlorocyclopentadiene	0.50	Not Detected
2,4,6-Trichlorophenol	0.50	Not Detected
2,4,5-Trichlorophenol	0.50	Not Detected
2-Chloronaphthalene	0.50	Not Detected
2-Nitroaniline	0.50	Not Detected
Dimethylphthalate	0.50	Not Detected
Acenaphthylene	0.50	Not Detected
2,6-Dinitrotoluene	0.50	Not Detected
3-Nitroaniline	0.50	Not Detected
Acenaphthene	0.50	Not Detected
2,4-Dinitrophenol	0.50	Not Detected
4-Nitrophenol	0.50	Not Detected
2,4-Dinitrotoluene	0.50	Not Detected
Dibenzofuran	0.50	Not Detected
Diethylphthalate	0.50	Not Detected
Fluorene	0.50	Not Detected
4-Chlorophenyl-Phenyl Ether	0.50	Not Detected
4-Nitroaniline	0.50	Not Detected
4,6-Dinitro-2-Methylphenol	0.50	Not Detected
N-Nitrosodiphenylamine	0.50	Not Detected

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 9309158-16A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092505	Date of Collection:	9/16/93
Dil. Factor:	1.0	Date of Extraction:	9/24/93
		Date of Analysis:	9/25/93

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	0.50	Not Detected
Hexachlorobenzene	0.50	Not Detected
Pentachlorophenol	0.50	Not Detected
Phenanthrene	0.50	Not Detected
Anthracene	0.50	Not Detected
di-n-Butylphthalate	0.50	Not Detected
Fluoranthene	0.50	Not Detected
Pyrene	0.50	Not Detected
Butylbenzylphthalate	0.50	Not Detected
3,3'-Dichlorobenzidine	0.50	Not Detected
Chrysene	0.50	Not Detected
Benzo(a)anthracene	0.50	Not Detected
bis(2-Ethylhexyl)phthalate	0.50	Not Detected
Di-n-Octylphthalate	0.50	Not Detected
Benzo(b)fluoranthene	0.50	Not Detected
Benzo(k)fluoranthene	0.50	Not Detected
Benzo(a)pyrene	0.50	Not Detected
Indeno(1,2,3-cd)pyrene	0.50	Not Detected
Dibenz(a,h)anthracene	0.50	Not Detected
Benzo(g,h,i)perylene	0.50	Not Detected
Biphenyl	0.50	Not Detected
Quinoline	0.50	Not Detected
Xylenes	0.50	Not Detected
Cresols	0.50	Not Detected

Surrogates	% Recovery	Method Limits
2-Fluorophenol	64	25-121
Phenol-d5	51	24-113
Nitrobenzene-d5	90	23-120
2-Fluorobiphenyl	68	30-115
2,4,6-Tribromophenol	46	19-122
Terphenyl-d14	107	18-137

Appendix B

Modified Method 5 Calculations

4

AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630
(916) 985-1000 • FAX (916) 985-1020

CHAIN OF CUSTODY RECORD

Page 2 of ___

PROJECT # D1-1179-03-4790 PO # _____ COLLECTED BY (Signature) [signature]

REMARKS _____

	FIELD SAMPLE I.D.#	SAMPLING MEDIA (Tenax, Canister etc.)	DATE/TIME	ANALYSIS	VAC./PRESSURE	LAB I.D. #
13A	A-1-A	filter	9/16/93			
09A	B-1-A					
10A	B-2-A			Composite components of each run for a single GC/MS		
11A	B-3-A					
12A	B-4-A					
14A	Blank-1-A					
				* SEE OTHER PAGE		

RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME	RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME
	L. Robinson ATL 9/20/93 1200		

LAB USE ONLY

SHIPPER NAME	AIR BILL #	OPENED BY: DATE/TIME	TEMP (°C)	CONDITION

REMARKS _____

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA/EMB I-2
LOCATION	DuBOIS, PA
PROJECT #	2-METHYLNAPHTHALENE
RUN#	RUN1 SOURCE B
DATE	9/16/93
TRAIN ID	2B
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	646.176
GAS METER READING ENDING(CORR.IF NEC)	670.307
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	950.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	30.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA/EMB I-2
LOCATION DuBOIS, PA
PROJECT # NAPHTHALENE
RUN# DBRUN2B
DATE 9/16/93
TRAIN ID 1A

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	4551.7171	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	1.9886	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	33.371	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	80.7	(DEGREES F)
(H) AVERAGE DELTA H.....	2.733	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	575.3	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	30.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	4300.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	33.2997	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA/EMB I-2
LOCATION	DuBOIS, PA
PROJECT #	NAPHTHALENE
RUN#	DBRUN2B
DATE	9/16/93
TRAIN ID	1A
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	669.958
GAS METER READING ENDING(CORR.IF NEC)	703.329
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	4300.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	30.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

CLIENT EPA/EMB I-2
LOCATION DuBOIS, PA
PROJECT # XYLENES
RUN# DBRUN2B
DATE 9/16/93
TRAIN ID 1A

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	1270.3425	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.5550	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	33.371	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	80.7	(DEGREES F)
(H) AVERAGE DELTA H.....	2.733	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	575.3	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	30.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	1200.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	33.2997	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA/EMB I-2
LOCATION	DuBOIS, PA
PROJECT #	XYLENES
RUN#	DBRUN2B
DATE	9/16/93
TRAIN ID	1A
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	669.958
GAS METER READING ENDING(CORR.IF NEC)	703.329
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	1200.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	30.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA/EMB I-2
LOCATION DuBOIS, PA
PROJECT # LOWER DETECTION LIMIT
RUN# DBRUN2B
DATE 9/16/93
TRAIN ID 1A

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	25.4068	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.0111	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	33.371	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	80.7	(DEGREES F)
(H) AVERAGE DELTA H.....	2.733	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	575.3	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	30.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	24.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	33.2997	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA/EMB I-2
LOCATION	DuBOIS, PA
PROJECT #	LOWER DETECTION LIMIT
RUN#	DBRUN2B
DATE	9/16/93
TRAIN ID	1A
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	669.958
GAS METER READING ENDING(CORR.IF NEC)	703.329
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	24.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	30.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA/EMB I-2
LOCATION DuBOIS, PA
PROJECT # 2-METHYLNAPHTHALENE
RUN# DBRUN2B
DATE 9/16/93
TRAIN ID 1A

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	306.9422	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.1341	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	33.371	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	80.7	(DEGREES F)
(H) AVERAGE DELTA H.....	2.733	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	575.3	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	30.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	290.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	33.2997	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA/EMB I-2
LOCATION	DuBOIS, PA
PROJECT #	2-METHYLNAPHTHALENE
RUN#	DBRUN2B
DATE	9/16/93
TRAIN ID	1A
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	669.958
GAS METER READING ENDING(CORR.IF NEC)	703.329
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	290.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	30.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA /EMB I-2
LOCATION DuBOIS, PA
PROJECT # NAPHTHALENE
RUN# RUN 3 SOURCE B
DATE 9/16/93
TRAIN ID 2B

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	8195.4255	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	3.5805	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	27.772	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	84.7	(DEGREES F)
(H) AVERAGE DELTA H.....	3.000	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	592.0	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	30.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	6400.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	27.5270	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA /EMB I-2
LOCATION	DuBOIS, PA
PROJECT #	NAPHTHALENE
RUN#	RUN 3 SOURCE B
DATE	9/16/93
TRAIN ID	2B
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	708.268
GAS METER READING ENDING(CORR.IF NEC)	736.040
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	6400.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	30.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA /EMB I-2
LOCATION DuBOIS, PA
PROJECT # 2-METHYLNAPHTHALENE
RUN# RUN 3 SOURCE B
DATE 9/16/93
TRAIN ID 2B

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	525.0749	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.2294	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	27.772	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	84.7	(DEGREES F)
(H) AVERAGE DELTA H.....	3.000	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	592.0	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	30.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	410.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	27.5270	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA /EMB I-2
LOCATION	DuBOIS, PA
PROJECT #	2-METHYLNAPHTHALENE
RUN#	RUN 3 SOURCE B
DATE	9/16/93
TRAIN ID	2B
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	708.268
GAS METER READING ENDING(CORR.IF NEC)	736.040
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	410.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	30.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA /EMB I-2
LOCATION DuBOIS, PA
PROJECT # XYLENES
RUN# RUN 3 SOURCE B
DATE 9/16/93
TRAIN ID 2B

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	1408.5923	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.6154	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	27.772	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	84.7	(DEGREES F)
(H) AVERAGE DELTA H.....	3.000	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	592.0	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	30.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	1100.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	27.5270	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA /EMB I-2
LOCATION	DuBOIS, PA
PROJECT #	XYLENES
RUN#	RUN 3 SOURCE B
DATE	9/16/93
TRAIN ID	2B
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	708.268
GAS METER READING ENDING(CORR.IF NEC)	736.040
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	1100.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	30.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA /EMB I-2
LOCATION DuBOIS, PA
PROJECT # LOWER DECTECTION LIMIT
RUN# RUN 3 SOURCE B
DATE 9/16/93
TRAIN ID 2B

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD.....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	34.5625	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.0151	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ...	27.772	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	84.7	(DEGREES F)
(H) AVERAGE DELTA H.....	3.000	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	592.0	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	30.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	27.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	27.5270	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA /EMB I-2
LOCATION	DuBOIS, PA
PROJECT #	LOWER DECTECTION LIMIT
RUN#	RUN 3 SOURCE B
DATE	9/16/93
TRAIN ID	2B
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	708.268
GAS METER READING ENDING(CORR.IF NEC)	736.040
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	27.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	30.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA EMB WA I 2
LOCATION DuBOIS,PA
PROJECT # NAPHTHALENE
RUN# 4 SOURCE B
DATE 9/16/93
TRAIN ID 2B

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	127364.077	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	55.6441	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	4.751	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	81.8	(DEGREES F)
(H) AVERAGE DELTA H.....	0.428	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	663.5	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	15.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	17000.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	4.7049	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA EMB WA I 2
LOCATION	DuBOIS,PA
PROJECT #	NAPHTHALENE
RUN#	4 SOURCE B
DATE	9/16/93
TRAIN ID	2B
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	740.015
GAS METER READING ENDING(CORR.IF NEC)	744.766
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	17000.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	15.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA EMB WA I 2
LOCATION DuBOIS,PA
PROJECT # 2-METHYLNAPHTHALENE
RUN# 4 SOURCE B
DATE 9/16/93
TRAIN ID 2B

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	19479.2711	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	8.5103	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	4.751	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	81.8	(DEGREES F)
(H) AVERAGE DELTA H.....	0.428	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	663.5	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	15.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	2600.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	4.7049	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA EMB WA I 2
LOCATION	DuBOIS,PA
PROJECT #	2-METHYLNAPHTHALENE
RUN#	4 SOURCE B
DATE	9/16/93
TRAIN ID	2B

DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	740.015
GAS METER READING ENDING(CORR.IF NEC)	744.766
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	2600.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	15.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA EMB WA I 2
LOCATION DuBOIS,PA
PROJECT # ACENAPHTHENE
RUN# 4 SOURCE B
DATE 9/16/93
TRAIN ID 2B

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	1198.6997	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.5237	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	4.751	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	81.8	(DEGREES F)
(H) AVERAGE DELTA H.....	0.428	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	663.5	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	15.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	160.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	4.7049	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT EPA EMB WA I 2
LOCATION DuBOIS,PA
PROJECT # ACENAPHTHENE
RUN# 4 SOURCE B
DATE 9/16/93
TRAIN ID 2B

DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	740.015
GAS METER READING ENDING(CORR.IF NEC)	744.766
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	160.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	15.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA EMB WA I 2
LOCATION DuBOIS,PA
PROJECT # DIBENZOFURAN
RUN# 4 SOURCE B
DATE 9/16/93
TRAIN ID 2B

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	254.7552	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.1113	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	4.751	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	81.8	(DEGREES F)
(H) AVERAGE DELTA H.....	0.428	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	663.5	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	15.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	34.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	4.7049	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA EMB WA I 2
LOCATION	DuBOIS,PA
PROJECT #	DIBENZOFURAN
RUN#	4 SOURCE B
DATE	9/16/93
TRAIN ID	2B

DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	740.015
GAS METER READING ENDING(CORR.IF NEC)	744.766
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	34.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	15.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA EMB WA I 2
LOCATION DuBOIS,PA
PROJECT # BIPHENYL
RUN# 4 SOURCE B
DATE 9/16/93
TRAIN ID 2B

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	614.3422	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.2684	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	4.751	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	81.8	(DEGREES F)
(H) AVERAGE DELTA H.....	0.428	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	663.5	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	15.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	82.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	4.7049	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA EMB WA I 2
LOCATION	DuBOIS,PA
PROJECT #	BIPHENYL
RUN#	4 SOURCE B
DATE	9/16/93
TRAIN ID	2B
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	740.015
GAS METER READING ENDING(CORR.IF NEC)	744.766
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	82.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	15.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA EMB WA I 2
LOCATION DuBOIS,PA
PROJECT # QUINOLINE
RUN# 4 SOURCE B
DATE 9/16/93
TRAIN ID 2B

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	1947.8584	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.8510	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

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(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	4.751	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	81.8	(DEGREES F)
(H) AVERAGE DELTA H.....	0.428	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	663.5	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	15.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	260.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	4.7049	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA EMB WA I 2
LOCATION	DuBOIS,PA
PROJECT #	QUINOLINE
RUN#	4 SOURCE B
DATE	9/16/93
TRAIN ID	2B
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	740.015
GAS METER READING ENDING(CORR.IF NEC)	744.766
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	260.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	15.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA EMB WA I 2
LOCATION DuBOIS,PA
PROJECT # LOWER DETECTION LIMIT
RUN# 4 SOURCE B
DATE 9/16/93
TRAIN ID 2B

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	239.6484	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.1047	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0000	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	4.751	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	81.8	(DEGREES F)
(H) AVERAGE DELTA H.....	0.428	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	0.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.800	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.200	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	0.0000	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.000	
(As) STACK AREA.....	0.00	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	663.5	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	15.00	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	32.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	4.7049	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	0.0000	(SCF)
(mv) % MOISTURE IN STACK GAS.....	0.00	(%)
(md) MOLE FRACTION OF DRY GAS.....	1.000	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.80	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	0.00	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	0.00	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	0.00	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA EMB WA I 2
LOCATION	DuBOIS,PA
PROJECT #	LOWER DETECTION LIMIT
RUN#	4 SOURCE B
DATE	9/16/93
TRAIN ID	2B
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	740.015
GAS METER READING ENDING(CORR.IF NEC)	744.766
STATIC PRESSURE AVG. PT(IN.H2O)	
Y=GAS METER CALIB. FACTOR	1.006
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	32.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	
DIAMETER OF STACK (INCHES)	
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	15.00
PITOT TUBE COEFFICIENT	

AVG ARITHMETIC DELTA P	ERR
AVG CALC. DELTA P	0.000
CO2 PERCENT	4.000
O2 PERCENT	4.000

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA/EMB I-2
LOCATION DuBOIS, PA.
PROJECT # NAPHTHALENE
RUN# RUN1AND 2 SOURCE A
DATE 9/16/93
TRAIN ID 1A

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	178.5346	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.0780	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0600	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	30.143	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	79.5	(DEGREES F)
(H) AVERAGE DELTA H.....	2.556	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	22.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.838	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.031	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	2.7342	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.990	
(As) STACK AREA.....	28.27	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	534.0	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	34.50	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	150.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	29.6083	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	1.0428	(SCF)
(mv) % MOISTURE IN STACK GAS.....	3.40	(%)
(md) MOLE FRACTION OF DRY GAS.....	0.966	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.47	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	474.85	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	93.24	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	89.71	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA/EMB I-2
LOCATION	DuBOIS, PA.
PROJECT #	NAPHTHALENE
RUN#	RUN1AND 2 SOURCE A
DATE	9/16/93
TRAIN ID	1A
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	477.254
GAS METER READING ENDING(CORR.IF NEC)	507.397
STATIC PRESSURE AVG. PT(IN.H2O)	-2.300
Y=GAS METER CALIB. FACTOR	0.988
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	150.00
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	22.0
DIAMETER OF STACK (INCHES)	6.0
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	34.50
PITOT TUBE COEFFICIENT	0.990

AVG ARITHMETIC DELTA P	0.014
AVG CALC. DELTA P	0.014
CO2 PERCENT	0.010
O2 PERCENT	20.900

CLIENT EPA/EMB I-2
LOCATION DuBOIS, PA.
PROJECT # QUINOLINE
RUN# RUN1AND 2 SOURCE A
DATE 9/16/93
TRAIN ID 1A

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	5.4934	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.0024	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0018	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	30.143	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	79.5	(DEGREES F)
(H) AVERAGE DELTA H.....	2.556	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	22.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.838	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.031	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	2.7342	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.990	
(As) STACK AREA.....	28.27	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	534.0	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	34.50	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	4.600	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	29.6083	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	1.0428	(SCF)
(mv) % MOISTURE IN STACK GAS.....	3.40	(%)
(md) MOLE FRACTION OF DRY GAS.....	0.966	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.47	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	474.85	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	93.24	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	89.71	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

CLIENT	EPA/EMB I-2
LOCATION	DuBOIS, PA.
PROJECT #	QUINOLINE
RUN#	RUN1AND 2 SOURCE A
DATE	9/16/93
TRAIN ID	1A
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	477.254
GAS METER READING ENDING(CORR.IF NEC)	507.397
STATIC PRESSURE AVG. PT(IN.H2O)	-2.300
Y=GAS METER CALIB. FACTOR	0.988
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	4.60
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	22.0
DIAMETER OF STACK (INCHES)	6.0
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	34.50
PITOT TUBE COEFFICIENT	0.990

AVG ARITHMETIC DELTA P	0.014
AVG CALC. DELTA P	0.014
CO2 PERCENT	0.010
O2 PERCENT	20.900

CLIENT EPA/EMB I-2
LOCATION DuBOIS, PA.
PROJECT # BIPHENYL
RUN# RUN1AND 2 SOURCE A
DATE 9/16/93
TRAIN ID 1A

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	1.6022	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.0007	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0005	(LBS./HOUR)

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(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	30.143	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	79.5	(DEGREES F)
(H) AVERAGE DELTA H.....	2.556	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	22.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.838	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.031	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	2.7342	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.990	
(As) STACK AREA.....	28.27	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	534.0	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	34.50	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	1.300	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	29.6083	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	1.0428	(SCF)
(mv) % MOISTURE IN STACK GAS.....	3.40	(%)
(md) MOLE FRACTION OF DRY GAS.....	0.966	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.47	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	474.85	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	93.24	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	89.71	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

CLIENT EPA/EMB I-2
LOCATION DuBOIS, PA.
PROJECT # BIPHENYL
RUN# RUN1AND 2 SOURCE A
DATE 9/16/93
TRAIN ID 1A

DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	477.254
GAS METER READING ENDING(CORR.IF NEC)	507.397
STATIC PRESSURE AVG. PT(IN.H2O)	-2.300
Y=GAS METER CALIB. FACTOR	0.988
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	1.30
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	22.0
DIAMETER OF STACK (INCHES)	6.0
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	34.50
PITOT TUBE COEFFICIENT	0.990

AVG ARITHMETIC DELTA P	0.014
AVG CALC. DELTA P	0.014
CO2 PERCENT	0.010
O2 PERCENT	20.900

CLIENT EPA/EMB I-2
LOCATION DuBOIS, PA.
PROJECT # FLUORENE
RUN# RUN1AND 2 SOURCE A
DATE 9/16/93
TRAIN ID 1A

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	0.9156	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.0004	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0003	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	30.143	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	79.5	(DEGREES F)
(H) AVERAGE DELTA H.....	2.556	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	22.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.838	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.031	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	2.7342	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.990	
(As) STACK AREA.....	28.27	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	534.0	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	34.50	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	0.710	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	29.6083	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	1.0428	(SCF)
(mv) % MOISTURE IN STACK GAS.....	3.40	(%)
(md) MOLE FRACTION OF DRY GAS.....	0.966	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.47	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	474.85	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	93.24	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	89.71	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

CLIENT	EPA/EMB I-2
LOCATION	DuBOIS, PA.
PROJECT #	FLUORENE
RUN#	RUN1AND 2 SOURCE A
DATE	9/16/93
TRAIN ID	1A
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	477.254
GAS METER READING ENDING(CORR.IF NEC)	507.397
STATIC PRESSURE AVG. PT(IN.H2O)	-2.300
Y=GAS METER CALIB. FACTOR	0.988
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	0.71
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	22.0
DIAMETER OF STACK (INCHES)	6.0
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	34.50
PITOT TUBE COEFFICIENT	0.990

AVG ARITHMETIC DELTA P	0.014
AVG CALC. DELTA P	0.014
CO2 PERCENT	0.010
O2 PERCENT	20.900

CLIENT EPA/EMB I-2
LOCATION DuBOIS, PA.
PROJECT # DIBENZOFURAN
RUN# RUN1AND 2 SOURCE A
DATE 9/16/93
TRAIN ID 1A

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	1.3733	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.0006	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0005	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	30.143	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	79.5	(DEGREES F)
(H) AVERAGE DELTA H.....	2.556	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	22.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.838	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.031	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	2.7342	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.990	
(As) STACK AREA.....	28.27	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	534.0	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	34.50	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	1.200	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	29.6083	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	1.0428	(SCF)
(mv) % MOISTURE IN STACK GAS.....	3.40	(%)
(md) MOLE FRACTION OF DRY GAS.....	0.966	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.47	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	474.85	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	93.24	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	89.71	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA/EMB I-2
LOCATION	DuBOIS, PA.
PROJECT #	DIBENZOFURAN
RUN#	RUN1AND 2 SOURCE A
DATE	9/16/93
TRAIN ID	1A
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	477.254
GAS METER READING ENDING(CORR.IF NEC)	507.397
STATIC PRESSURE AVG. PT(IN.H2O)	-2.300
Y=GAS METER CALIB. FACTOR	0.988
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	1.20
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	22.0
DIAMETER OF STACK (INCHES)	6.0
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	34.50
PITOT TUBE COEFFICIENT	0.990

AVG ARITHMETIC DELTA P	0.014
AVG CALC. DELTA P	0.014
CO2 PERCENT	0.010
O2 PERCENT	20.900

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA/EMB I-2
LOCATION DuBOIS, PA.
PROJECT # ACENAPHTHENE
RUN# RUN1AND 2 SOURCE A
DATE 9/16/93
TRAIN ID 1A

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	6.18	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.0027	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0021	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	30.143	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	79.5	(DEGREES F)
(H) AVERAGE DELTA H.....	2.556	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	22.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.838	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.031	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	2.7342	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.990	
(As) STACK AREA.....	28.27	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	534.0	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	34.50	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	5.100	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	29.6083	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	1.0428	(SCF)
(mv) % MOISTURE IN STACK GAS.....	3.40	(%)
(md) MOLE FRACTION OF DRY GAS.....	0.966	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.47	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	474.85	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	93.24	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	89.71	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

EPA METHOD 5 LAB DATA TABLE

CLIENT	EPA/EMB I-2
LOCATION	DuBOIS, PA.
PROJECT #	ACENAPHTHENE
RUN#	RUN1AND 2 SOURCE A
DATE	9/16/93
TRAIN ID	1A
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	477.254
GAS METER READING ENDING(CORR.IF NEC)	507.397
STATIC PRESSURE AVG. PT(IN.H2O)	-2.300
Y=GAS METER CALIB. FACTOR	0.988
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	5.10
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	22.0
DIAMETER OF STACK (INCHES)	6.0
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	34.50
PITOT TUBE COEFFICIENT	0.990

AVG ARITHMETIC DELTA P	0.014
AVG CALC. DELTA P	0.014
CO2 PERCENT	0.010
O2 PERCENT	20.900

EPA METHOD 5 SOURCE TEST RESULTS

CLIENT EPA/EMB I-2
LOCATION DuBOIS, PA.
PROJECT # 2-METHYLNAPHTHALENE
RUN# RUN1AND 2 SOURCE A
DATE 9/16/93
TRAIN ID 1A

(Cmf)FRONT HALF EMISSIONS (metric).....	0	(MG/DSCM)
(Cgf)FRONT HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctf)FRONT HALF EMISSIONS (english).....	0.0000	(LBS./HOUR)
(Cgb) BACK HALF PARTICULATE GRAIN LOAD....	0.0000	(GRAINS/SCF)
(Ctb)BACK HALF EMISSIONS (english)	0.0000	(LBS./HOUR)
(Cmt)TOTAL EMISSIONS (metric).....	37.9958	(MG/DSCM)
(Cg)TOTAL PARTICULATE GRAIN LOAD	0.0166	(GRAINS/SCF)
(Ct) TOTAL EMISSION (english).....	0.0128	(LBS./HOUR)

****

(Qm) SAMPLE GAS VOLUME METER CONDITIONS ..	30.143	(CUBIC FEET)
(tm) TEMPERATURE GAS METER.....	79.5	(DEGREES F)
(H) AVERAGE DELTA H.....	2.556	(INCHES H2O)
(Po) BAROMETRIC PRESSURE.....	30.20	(INCHES HG)
(Vv) WEIGHT OF CONDENSED WATER.....	22.0	(GRAMS)
(Md) MOL. WT DRY GAS.....	28.838	(LB/LB MOLE)
(Ps) STACK PRESSURE ABSOLUTE.....	30.031	(INCHES HG)
(S) AVERAGE DELTA P * Ts.....	2.7342	(INCHES H2O)
(Cp) PITOT TUBE COEFFICIENT.....	0.990	
(As) STACK AREA.....	28.27	(SQUARE INCHES)
(Ts) STACK TEMPERATURE DEGREES R.....	534.0	(DEGREES R)
(Dn) DIAMETER NOZZLE.....	0.000	(INCHES)
(T) TOTAL TIME OF TEST.....	34.50	(MINUTES)
(wf) FRONT HALF PARTICULATES	0.000	(MILLIGRAMS)
(wb) BACK HALF PARTICULATES	0.000	(MILLIGRAMS)
(w) TOTAL PARTICULATES.....	32.000	(MILLIGRAMS)
(Qd) TOTAL SAMPLE VOL. (STD. COND.).....	29.6083	(DSCF)
(Qv) CONDENSED VAPOR (STD. COND).....	1.0428	(SCF)
(mv) % MOISTURE IN STACK GAS.....	3.40	(%)
(md) MOLE FRACTION OF DRY GAS.....	0.966	
(Ms) MOLECULAR WEIGHT OF STACK GAS.....	28.47	(LB/LB MOLE)
(Vs) AVERAGE GAS VELOCITY	474.85	(FPM)
(Qa) STACK FLOWRATE AT STACK COND.....	93.24	(ACFM)
(Qs) STACK FLOWRATE AT STD. COND.....	89.71	(DSCFM)
(I) ISOKINETIC.....	ERR	(PERCENT)

AIR TOXICS LTD.

SAMPLE NAME: DB-SW-1b*

ID#: 9309158-04B

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	NA	Date of Collection:	9/16/93
Dil. Factor:	1.0	Date of Extraction:	NA
		Date of Analysis:	NA

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	0.50	Not Analyzed
Hexachlorobenzene	0.50	Not Analyzed
Pentachlorophenol	0.50	Not Analyzed
Phenanthrene	0.50	Not Analyzed
Anthracene	0.50	Not Analyzed
di-n-Butylphthalate	0.50	Not Analyzed
Fluoranthene	0.50	Not Analyzed
Pyrene	0.50	Not Analyzed
Butylbenzylphthalate	0.50	Not Analyzed
3,3'-Dichlorobenzidine	0.50	Not Analyzed
Chrysene	0.50	Not Analyzed
Benzo(a)anthracene	0.50	Not Analyzed
bis(2-Ethylhexyl)phthalate	0.50	Not Analyzed
Di-n-Octylphthalate	0.50	Not Analyzed
Benzo(b)fluoranthene	0.50	Not Analyzed
Benzo(k)fluoranthene	0.50	Not Analyzed
Benzo(a)pyrene	0.50	Not Analyzed
Indeno(1,2,3-cd)pyrene	0.50	Not Analyzed
Dibenz(a,h)anthracene	0.50	Not Analyzed
Benzo(g,h,i)perylene	0.50	Not Detected
Biphenyl	0.50	Not Detected
Quinoline	0.50	Not Detected
Xylenes	0.50	Not Detected
Cresols	0.50	Not Detected

*Not analyzed per client's request.

Surrogates	% Recovery	Method Limits
2-Fluorophenol	NA	25-121
Phenol-d5	NA	24-113
Nitrobenzene-d5	NA	23-120
2-Fluorobiphenyl	NA	30-115
2,4,6-Tribromophenol	NA	19-122
Terphenyl-d14	NA	18-137

AIR TOXICS LTD.

SAMPLE NAME: DB-SW-2a

ID#: 9309158-05A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092404	Date of Collection:	9/16/93
Dil. Factor:	100	Date of Extraction:	9/22/93
		Date of Analysis:	9/24/93

Compound	Det. Limit (uG)	Amount (uG)
Phenol	50	Not Detected
bis(2-Chloroethyl) Ether	50	Not Detected
2-Chlorophenol	50	Not Detected
1,3-Dichlorobenzene	50	Not Detected
1,4-Dichlorobenzene	50	Not Detected
1,2-Dichlorobenzene	50	Not Detected
bis(2-Chloroisopropyl) Ether	50	Not Detected
N-Nitroso-di-n-Propylamine	50	Not Detected
Hexachloroethane	50	Not Detected
Nitrobenzene	50	Not Detected
Isophorone	50	Not Detected
2-Nitrophenol	50	Not Detected
2,4-Dimethylphenol	50	Not Detected
Benzoic Acid	50	Not Detected
bis(2-Chloroethoxy) Methane	50	Not Detected
2,4-Dichlorophenol	50	Not Detected
1,2,4-Trichlorobenzene	50	Not Detected
Naphthalene	50	2800
4-Chloroaniline	50	Not Detected
Hexachlorobutadiene	50	Not Detected
4-Chloro-3-Methylphenol	50	Not Detected
2-Methylnaphthalene	50	610
Hexachlorocyclopentadiene	50	Not Detected
2,4,6-Trichlorophenol	50	Not Detected
2,4,5-Trichlorophenol	50	Not Detected
2-Chloronaphthalene	50	Not Detected
2-Nitroaniline	50	Not Detected
Dimethylphthalate	50	Not Detected
Acenaphthylene	50	Not Detected
2,6-Dinitrotoluene	50	Not Detected
3-Nitroaniline	50	Not Detected
Acenaphthene	50	Not Detected
2,4-Dinitrophenol	50	Not Detected
4-Nitrophenol	50	Not Detected
2,4-Dinitrotoluene	50	Not Detected
Dibenzofuran	50	Not Detected
Diethylphthalate	50	Not Detected
Fluorene	50	Not Detected
4-Chlorophenyl-Phenyl Ether	50	Not Detected
4-Nitroaniline	50	Not Detected
4,6-Dinitro-2-Methylphenol	50	Not Detected
N-Nitrosodiphenylamine	50	Not Detected

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: DB-SW-2a

ID#: 9309158-05A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092404	Date of Collection:	9/16/93
Dil. Factor:	100	Date of Extraction:	9/22/93
		Date of Analysis:	9/24/93

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	50	Not Detected
Hexachlorobenzene	50	Not Detected
Pentachlorophenol	50	Not Detected
Phenanthrene	50	Not Detected
Anthracene	50	Not Detected
di-n-Butylphthalate	50	Not Detected
Fluoranthene	50	Not Detected
Pyrene	50	Not Detected
Butylbenzylphthalate	50	Not Detected
3,3'-Dichlorobenzidine	50	Not Detected
Chrysene	50	Not Detected
Benzo(a)anthracene	50	Not Detected
bis(2-Ethylhexyl)phthalate	50	Not Detected
Di-n-Octylphthalate	50	Not Detected
Benzo(b)fluoranthene	50	Not Detected
Benzo(k)fluoranthene	50	Not Detected
Benzo(a)pyrene	50	Not Detected
Indeno(1,2,3-cd)pyrene	50	Not Detected
Dibenz(a,h)anthracene	50	Not Detected
Benzo(g,h,i)perylene	50	Not Detected
Biphenyl	50	Not Detected
Quinoline	50	1300
Xylenes	50	Not Detected
Cresols	50	Not Detected

*Surrogates diluted out.

Surrogates	% Recovery	Method Limits
2-Fluorophenol	*	25-121
Phenol-d5	*	24-113
Nitrobenzene-d5	*	23-120
2-Fluorobiphenyl	*	30-115
2,4,6-Tribromophenol	*	19-122
Terphenyl-d14	*	18-137

AIR TOXICS LTD.

SAMPLE NAME: DB-SW-2b*

ID#: 9309158-05B

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	NA	Date of Collection: 9/16/93
DIL Factor:	1.0	Date of Extraction: NA
		Date of Analysis: NA

Compound	Det. Limit (uG)	Amount (uG)
Phenol	0.50	Not Analyzed
bis(2-Chloroethyl) Ether	0.50	Not Analyzed
2-Chlorophenol	0.50	Not Analyzed
1,3-Dichlorobenzene	0.50	Not Analyzed
1,4-Dichlorobenzene	0.50	Not Analyzed
1,2-Dichlorobenzene	0.50	Not Analyzed
bis(2-Chloroisopropyl) Ether	0.50	Not Analyzed
N-Nitroso-di-n-Propylamine	0.50	Not Analyzed
Hexachloroethane	0.50	Not Analyzed
Nitrobenzene	0.50	Not Analyzed
Isophorone	0.50	Not Analyzed
2-Nitrophenol	0.50	Not Analyzed
2,4-Dimethylphenol	0.50	Not Analyzed
Benzoic Acid	0.50	Not Analyzed
bis(2-Chloroethoxy) Methane	0.50	Not Analyzed
2,4-Dichlorophenol	0.50	Not Analyzed
1,2,4-Trichlorobenzene	0.50	Not Analyzed
Naphthalene	0.50	Not Analyzed
4-Chloroaniline	0.50	Not Analyzed
Hexachlorobutadiene	0.50	Not Analyzed
4-Chloro-3-Methylphenol	0.50	Not Analyzed
2-Methylnaphthalene	0.50	Not Analyzed
Hexachlorocyclopentadiene	0.50	Not Analyzed
2,4,6-Trichlorophenol	0.50	Not Analyzed
2,4,5-Trichlorophenol	0.50	Not Analyzed
2-Chloronaphthalene	0.50	Not Analyzed
2-Nitroaniline	0.50	Not Analyzed
Dimethylphthalate	0.50	Not Analyzed
Acenaphthylene	0.50	Not Analyzed
2,6-Dinitrotoluene	0.50	Not Analyzed
3-Nitroaniline	0.50	Not Analyzed
Acenaphthene	0.50	Not Analyzed
2,4-Dinitrophenol	0.50	Not Analyzed
4-Nitrophenol	0.50	Not Analyzed
2,4-Dinitrotoluene	0.50	Not Analyzed
Dibenzofuran	0.50	Not Analyzed
Diethylphthalate	0.50	Not Analyzed
Fluorene	0.50	Not Analyzed
4-Chlorophenyl-Phenyl Ether	0.50	Not Analyzed
4-Nitroaniline	0.50	Not Analyzed
4,6-Dinitro-2-Methylphenol	0.50	Not Analyzed
N-Nitrosodiphenylamine	0.50	Not Analyzed

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: DB-SW-2b*

ID#: 9309158-05B

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	NA	Date of Collection:	9/16/93
Dil. Factor:	1.0	Date of Extraction:	NA
		Date of Analysis:	NA

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	0.50	Not Analyzed
Hexachlorobenzene	0.50	Not Analyzed
Pentachlorophenol	0.50	Not Analyzed
Phenanthrene	0.50	Not Analyzed
Anthracene	0.50	Not Analyzed
di-n-Butylphthalate	0.50	Not Analyzed
Fluoranthene	0.50	Not Analyzed
Pyrene	0.50	Not Analyzed
Butylbenzylphthalate	0.50	Not Analyzed
3,3'-Dichlorobenzidine	0.50	Not Analyzed
Chrysene	0.50	Not Analyzed
Benzo(a)anthracene	0.50	Not Analyzed
bis(2-Ethylhexyl)phthalate	0.50	Not Analyzed
Di-n-Octylphthalate	0.50	Not Analyzed
Benzo(b)fluoranthene	0.50	Not Analyzed
Benzo(k)fluoranthene	0.50	Not Analyzed
Benzo(a)pyrene	0.50	Not Analyzed
Indeno(1,2,3-cd)pyrene	0.50	Not Analyzed
Dibenz(a,h)anthracene	0.50	Not Analyzed
Benzo(g,h,i)perylene	0.50	Not Analyzed
Biphenyl	0.50	Not Analyzed
Quinoline	0.50	Not Analyzed
Xylenes	0.50	Not Analyzed
Cresols	0.50	Not Analyzed

*Not analyzed per client's request.

Surrogates	% Recovery	Method Limits
2-Fluorophenol	NA	25-121
Phenol-d5	NA	24-113
Nitrobenzene-d5	NA	23-120
2-Fluorobiphenyl	NA	30-115
2,4,6-Tribromophenol	NA	19-122
Terphenyl-d14	NA	18-137

AIR TOXICS LTD.

SAMPLE NAME: DB-SW-3a

ID#: 9309158-06A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092214	Date of Collection:	9/16/93
Dil. Factor:	100	Date of Extraction:	9/22/93
		Date of Analysis:	9/22/93

Compound	Det. Limit (uG)	Amount (uG)
Phenol	50	100
bis(2-Chloroethyl) Ether	50	Not Detected
2-Chlorophenol	50	Not Detected
1,3-Dichlorobenzene	50	Not Detected
1,4-Dichlorobenzene	50	Not Detected
1,2-Dichlorobenzene	50	Not Detected
bis(2-Chloroisopropyl) Ether	50	Not Detected
N-Nitroso-di-n-Propylamine	50	Not Detected
Hexachloroethane	50	Not Detected
Nitrobenzene	50	Not Detected
Isophorone	50	Not Detected
2-Nitrophenol	50	Not Detected
2,4-Dimethylphenol	50	Not Detected
Benzoic Acid	50	Not Detected
bis(2-Chloroethoxy) Methane	50	Not Detected
2,4-Dichlorophenol	50	Not Detected
1,2,4-Trichlorobenzene	50	Not Detected
Naphthalene	50	9700
4-Chloroaniline	50	Not Detected
Hexachlorobutadiene	50	Not Detected
4-Chloro-3-Methylphenol	50	Not Detected
2-Methylnaphthalene	50	1800
Hexachlorocyclopentadiene	50	Not Detected
2,4,6-Trichlorophenol	50	Not Detected
2,4,5-Trichlorophenol	50	Not Detected
2-Chloronaphthalene	50	Not Detected
2-Nitroaniline	50	Not Detected
Dimethylphthalate	50	Not Detected
Acenaphthylene	50	560
2,6-Dinitrotoluene	50	Not Detected
3-Nitroaniline	50	Not Detected
Acenaphthene	50	Not Detected
2,4-Dinitrophenol	50	Not Detected
4-Nitrophenol	50	Not Detected
2,4-Dinitrotoluene	50	Not Detected
Dibenzofuran	50	190
Diethylphthalate	50	Not Detected
Fluorene	50	120
4-Chlorophenyl-Phenyl Ether	50	Not Detected
4-Nitroaniline	50	Not Detected
4,6-Dinitro-2-Methylphenol	50	Not Detected
N-Nitrosodiphenylamine	50	Not Detected

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: DB-SW-3a

ID#: 9309158-06A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092214	Date of Collection:	9/16/93
Dil. Factor:	100	Date of Extraction:	9/22/93
		Date of Analysis:	9/22/93

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	50	Not Detected
Hexachlorobenzene	50	Not Detected
Pentachlorophenol	50	Not Detected
Phenanthrene	50	Not Detected
Anthracene	50	Not Detected
di-n-Butylphthalate	50	Not Detected
Fluoranthene	50	Not Detected
Pyrene	50	Not Detected
Butylbenzylphthalate	50	Not Detected
3,3'-Dichlorobenzidine	50	Not Detected
Chrysene	50	Not Detected
Benzo(a)anthracene	50	Not Detected
bis(2-Ethylhexyl)phthalate	50	Not Detected
Di-n-Octylphthalate	50	Not Detected
Benzo(b)fluoranthene	50	Not Detected
Benzo(k)fluoranthene	50	Not Detected
Benzo(a)pyrene	50	Not Detected
Indeno(1,2,3-cd)pyrene	50	Not Detected
Dibenz(a,h)anthracene	50	Not Detected
Benzo(g,h,i)perylene	50	Not Detected
Biphenyl	50	190
Quinoline	50	6300
Xylenes	50	Not Detected
Cresols	50	350

*Surrogates diluted out.

Surrogates	% Recovery	Method Limits
2-Fluorophenol	*	25-121
Phenol-d5	*	24-113
Nitrobenzene-d5	*	23-120
2-Fluorobiphenyl	*	30-115
2,4,6-Tribromophenol	*	19-122
Terphenyl-d14	*	18-137

AIR TOXICS LTD.

SAMPLE NAME: DB-SW-3b*

ID#: 9309158-06B

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name: NA	Date of Collection: 9/16/93
Dil. Factor: 1.0	Date of Extraction: NA
	Date of Analysis: NA

Compound	Det. Limit (uG)	Amount (uG)
Phenol	0.50	Not Analyzed
bis(2-Chloroethyl) Ether	0.50	Not Analyzed
2-Chlorophenol	0.50	Not Analyzed
1,3-Dichlorobenzene	0.50	Not Analyzed
1,4-Dichlorobenzene	0.50	Not Analyzed
1,2-Dichlorobenzene	0.50	Not Analyzed
bis(2-Chloroisopropyl) Ether	0.50	Not Analyzed
N-Nitroso-di-n-Propylamine	0.50	Not Analyzed
Hexachloroethane	0.50	Not Analyzed
Nitrobenzene	0.50	Not Analyzed
Isophorone	0.50	Not Analyzed
2-Nitrophenol	0.50	Not Analyzed
2,4-Dimethylphenol	0.50	Not Analyzed
Benzoic Acid	0.50	Not Analyzed
bis(2-Chloroethoxy) Methane	0.50	Not Analyzed
2,4-Dichlorophenol	0.50	Not Analyzed
1,2,4-Trichlorobenzene	0.50	Not Analyzed
Naphthalene	0.50	Not Analyzed
4-Chloroaniline	0.50	Not Analyzed
Hexachlorobutadiene	0.50	Not Analyzed
4-Chloro-3-Methylphenol	0.50	Not Analyzed
2-Methylnaphthalene	0.50	Not Analyzed
Hexachlorocyclopentadiene	0.50	Not Analyzed
2,4,6-Trichlorophenol	0.50	Not Analyzed
2,4,5-Trichlorophenol	0.50	Not Analyzed
2-Chloronaphthalene	0.50	Not Analyzed
2-Nitroaniline	0.50	Not Analyzed
Dimethylphthalate	0.50	Not Analyzed
Acenaphthylene	0.50	Not Analyzed
2,6-Dinitrotoluene	0.50	Not Analyzed
3-Nitroaniline	0.50	Not Analyzed
Acenaphthene	0.50	Not Analyzed
2,4-Dinitrophenol	0.50	Not Analyzed
4-Nitrophenol	0.50	Not Analyzed
2,4-Dinitrotoluene	0.50	Not Analyzed
Dibenzofuran	0.50	Not Analyzed
Diethylphthalate	0.50	Not Analyzed
Fluorene	0.50	Not Analyzed
4-Chlorophenyl-Phenyl Ether	0.50	Not Analyzed
4-Nitroaniline	0.50	Not Analyzed
4,6-Dinitro-2-Methylphenol	0.50	Not Analyzed
N-Nitrosodiphenylamine	0.50	Not Analyzed

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: DB-SW-3b*

ID#: 9309158-06B

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	NA	Date of Collection:	9/16/93
Dil. Factor:	1.0	Date of Extraction:	NA
		Date of Analysis:	NA

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	0.50	Not Analyzed
Hexachlorobenzene	0.50	Not Analyzed
Pentachlorophenol	0.50	Not Analyzed
Phenanthrene	0.50	Not Analyzed
Anthracene	0.50	Not Analyzed
di-n-Butylphthalate	0.50	Not Analyzed
Fluoranthene	0.50	Not Analyzed
Pyrene	0.50	Not Analyzed
Butylbenzylphthalate	0.50	Not Analyzed
3,3'-Dichlorobenzidine	0.50	Not Analyzed
Chrysene	0.50	Not Analyzed
Benzo(a)anthracene	0.50	Not Analyzed
bis(2-Ethylhexyl)phthalate	0.50	Not Analyzed
Di-n-Octylphthalate	0.50	Not Analyzed
Benzo(b)fluoranthene	0.50	Not Analyzed
Benzo(k)fluoranthene	0.50	Not Analyzed
Benzo(a)pyrene	0.50	Not Analyzed
Indeno(1,2,3-cd)pyrene	0.50	Not Analyzed
Dibenz(a,h)anthracene	0.50	Not Analyzed
Benzo(g,h,i)perylene	0.50	Not Analyzed
Biphenyl	0.50	Not Analyzed
Quinoline	0.50	Not Analyzed
Xylenes	0.50	Not Analyzed
Cresols	0.50	Not Analyzed

*Not analyzed per client's request.

Surrogates	% Recovery	Method Limits
2-Fluorophenol	NA	25-121
Phenol-d5	NA	24-113
Nitrobenzene-d5	NA	23-120
2-Fluorobiphenyl	NA	30-115
2,4,6-Tribromophenol	NA	19-122
Terphenyl-d14	NA	18-137

AIR TOXICS LTD.

SAMPLE NAME: DB-SW-blank

ID#: 9309158-07A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092205	Date of Collection:	9/16/93
Dil. Factor:	1.0	Date of Extraction:	9/22/93
		Date of Analysis:	9/22/93

Compound	Det. Limit (uG)	Amount (uG)
Phenol	0.50	Not Detected
bis(2-Chloroethyl) Ether	0.50	Not Detected
2-Chlorophenol	0.50	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected
bis(2-Chloroisopropyl) Ether	0.50	Not Detected
N-Nitroso-di-n-Propylamine	0.50	Not Detected
Hexachloroethane	0.50	Not Detected
Nitrobenzene	0.50	Not Detected
Isophorone	0.50	Not Detected
2-Nitrophenol	0.50	Not Detected
2,4-Dimethylphenol	0.50	Not Detected
Benzoic Acid	0.50	Not Detected
bis(2-Chloroethoxy) Methane	0.50	Not Detected
2,4-Dichlorophenol	0.50	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected
Naphthalene	0.50	Not Detected
4-Chloroaniline	0.50	Not Detected
Hexachlorobutadiene	0.50	Not Detected
4-Chloro-3-Methylphenol	0.50	Not Detected
2-Methylnaphthalene	0.50	Not Detected
Hexachlorocyclopentadiene	0.50	Not Detected
2,4,6-Trichlorophenol	0.50	Not Detected
2,4,5-Trichlorophenol	0.50	Not Detected
2-Chloronaphthalene	0.50	Not Detected
2-Nitroaniline	0.50	Not Detected
Dimethylphthalate	0.50	Not Detected
Acenaphthylene	0.50	Not Detected
2,6-Dinitrotoluene	0.50	Not Detected
3-Nitroaniline	0.50	Not Detected
Acenaphthene	0.50	Not Detected
2,4-Dinitrophenol	0.50	Not Detected
4-Nitrophenol	0.50	Not Detected
2,4-Dinitrotoluene	0.50	Not Detected
Dibenzofuran	0.50	Not Detected
Diethylphthalate	0.50	Not Detected
Fluorene	0.50	Not Detected
4-Chlorophenyl-Phenyl Ether	0.50	Not Detected
4-Nitroaniline	0.50	Not Detected
4,6-Dinitro-2-Methylphenol	0.50	Not Detected
N-Nitrosodiphenylamine	0.50	Not Detected

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: DB-SW-blank

ID#: 9309158-07A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092205	Date of Collection:	9/16/93
Dil. Factor:	1.0	Date of Extraction:	9/22/93
		Date of Analysis:	9/22/93

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	0.50	Not Detected
Hexachlorobenzene	0.50	Not Detected
Pentachlorophenol	0.50	Not Detected
Phenanthrene	0.50	Not Detected
Anthracene	0.50	Not Detected
di-n-Butylphthalate	0.50	Not Detected
Fluoranthene	0.50	Not Detected
Pyrene	0.50	Not Detected
Butylbenzylphthalate	0.50	Not Detected
3,3'-Dichlorobenzidine	0.50	Not Detected
Chrysene	0.50	Not Detected
Benzo(a)anthracene	0.50	Not Detected
bis(2-Ethylhexyl)phthalate	0.50	Not Detected
Di-n-Octylphthalate	0.50	Not Detected
Benzo(b)fluoranthene	0.50	Not Detected
Benzo(k)fluoranthene	0.50	Not Detected
Benzo(a)pyrene	0.50	Not Detected
Indeno(1,2,3-cd)pyrene	0.50	Not Detected
Dibenz(a,h)anthracene	0.50	Not Detected
Benzo(g,h,i)perylene	0.50	Not Detected
Biphenyl	0.50	Not Detected
Quinoline	0.50	Not Detected
Xylenes	0.50	Not Detected
Cresols	0.50	Not Detected

Q = Exceeds Quality Control limits of 70% to 130%.

***Comment: Sample went to dryness during extraction.**

Surrogates	% Recovery	Method Limits
2-Fluorophenol	17 Q	25-121
Phenol-d5	16 Q	24-113
Nitrobenzene-d5	19 Q	23-120
2-Fluorobiphenyl	20 Q	30-115
2,4,6-Tribromophenol	39	19-122
Terphenyl-d14	94	18-137

Appendix C

Scrubber Water Analysis Laboratory Results

...FAX

Celcote Air Pollution Control

Sender: Chuck Ritzrow

Air-Cure Technologies, Inc.

Date: September 7, 1994
Time: 11:43 AM EST

Total number of pages, including this cover sheet • 3

If you do not receive all pages of this transmission, please call (216) 243-0700 immediately.

To:	Wayne K.
Company:	Burke, Parsons, Bowlby
Regarding:	Fax of Sept. 7, 1994
Subject:	Performance Testing of EVS-16 Scrubber System
FAX Number:	(814) 375-0946

MESSAGE

I have reviewed the fax you sent me. Based on that review, my comments are as follows:

1) Airflow Measurements: The air flow measurements appear to be in error. The DSCFM into the unit MUST be equal to the DSCFM out of the unit. However, without reviewing the actual field data it is impossible to determine which set of data is in error.

2) Scrubber Performance: Since the airflow measurement data appears to be in error, then the scrubber performance data would also be in error. Furthermore, if the airflow into the scrubber is equal to the airflow out of the scrubber and if the air temperature into and out of the unit does not change significantly, then the calculation of the scrubber removal efficiency for THC is equal to the inlet THC minus the outlet THC divided by the inlet THC. Proceeding on that basis I have recalculated the performance of the scrubbers (i.e., the results presented in Tables 3-3 and 3-4). Based on those calculations, the scrubber is obtaining a removal efficiency of 58 to 60%. Attached are the efficiencies based on the method described previously.

We trust the you find the information in this fax useful. Please contact us if you have any questions or require and further information and/or clarification regarding this fax.

Signed
Chuck Ritzrow
Sr. Project Engineer

09/07/94

CLIENT	EPA/EMB I-2
LOCATION	DuBOIS, PA.
PROJECT #	LOWER DETECTION LIMIT
RUN#	RUN1AND 2 SOURCE A
DATE	9/16/93
TRAIN ID	1A
DIAMETER OF NOZZLE (INCHES)	
GAS METER READING BEGINNING	477.254
GAS METER READING ENDING(CORR.IF NEC)	507.397
STATIC PRESSURE AVG. PT(IN.H2O)	-2.300
Y=GAS METER CALIB. FACTOR	0.988
WEIGHT OF FRONT HALF PARTICULATE (MG)	
WEIGHT OF BACK HALF PARTICULATE (MG)	
WEIGHT OF TOTAL PARTICULATE (MG)	0.50
AVG. BAROMETRIC PRESSURE (in. Hg)	30.20
WEIGHT OF CONDENSED H2O (GM)	22.0
DIAMETER OF STACK (INCHES)	6.0
DIMENSION OF STACK-ENTER __*__(")	
TOTAL TIME OF TEST(MINUTES)	34.50
PITOT TUBE COEFFICIENT	0.990

AVG ARITHMETIC DELTA P	0.014
AVG CALC. DELTA P	0.014
CO2 PERCENT	0.010
O2 PERCENT	20.900

AIR TOXICS LTD.

SAMPLE NAME: BD-C-4a

ID#: 9309158-02A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092409	Date of Collection:	9/16/93
Dil. Factor:	1100	Date of Extraction:	NA
		Date of Analysis:	9/24/93

Compound	Det. Limit (uG)	Amount (uG)
Phenol	550	Not Detected
bis(2-Chloroethyl) Ether	550	Not Detected
2-Chlorophenol	550	Not Detected
1,3-Dichlorobenzene	550	Not Detected
1,4-Dichlorobenzene	550	Not Detected
1,2-Dichlorobenzene	550	Not Detected
bis(2-Chloroisopropyl) Ether	550	Not Detected
N-Nitroso-di-n-Propylamine	550	Not Detected
Hexachloroethane	550	Not Detected
Nitrobenzene	550	Not Detected
Isophorone	550	Not Detected
2-Nitrophenol	550	Not Detected
2,4-Dimethylphenol	550	Not Detected
Benzoic Acid	550	Not Detected
bis(2-Chloroethoxy) Methane	550	Not Detected
2,4-Dichlorophenol	550	Not Detected
1,2,4-Trichlorobenzene	550	Not Detected
Naphthalene	550	75000
4-Chloroaniline	550	Not Detected
Hexachlorobutadiene	550	Not Detected
4-Chloro-3-Methylphenol	550	Not Detected
2-Methylnaphthalene	550	49000
Hexachlorocyclopentadiene	550	Not Detected
2,4,6-Trichlorophenol	550	Not Detected
2,4,5-Trichlorophenol	550	Not Detected
2-Chloronaphthalene	550	Not Detected
2-Nitroaniline	550	Not Detected
Dimethylphthalate	550	Not Detected
Acenaphthylene	550	Not Detected
2,6-Dinitrotoluene	550	Not Detected
3-Nitroaniline	550	Not Detected
Acenaphthene	550	57000
2,4-Dinitrophenol	550	Not Detected
4-Nitrophenol	550	Not Detected
2,4-Dinitrotoluene	550	Not Detected
Dibenzofuran	550	25000
Diethylphthalate	550	Not Detected
Fluorene	550	24000
4-Chlorophenyl-Phenyl Ether	550	Not Detected
4-Nitroaniline	550	Not Detected
4,6-Dinitro-2-Methylphenol	550	Not Detected
N-Nitrosodiphenylamine	550	Not Detected

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: BD-C-4a

ID#: 9309158-02A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092409	Date of Collection:	9/16/93
Dil. Factor:	1.00	Date of Extraction:	NA
		Date of Analysis:	9/24/93

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	550	Not Detected
Hexachlorobenzene	550	Not Detected
Pentachlorophenol	550	Not Detected
Phenanthrene	550	91000
Anthracene	550	12000
di-n-Butylphthalate	550	Not Detected
Fluoranthene	550	50000
Pyrene	550	38000
Butylbenzylphthalate	550	Not Detected
3,3'-Dichlorobenzidine	550	Not Detected
Chrysene	550	9700
Benzo(a)anthracene	550	11000
bis(2-Ethylhexyl)phthalate	550	Not Detected
Di-n-Octylphthalate	550	Not Detected
Benzo(b)fluoranthene	550	Not Detected
Benzo(k)fluoranthene	550	5200
Benzo(a)pyrene	550	2400
Indeno(1,2,3-cd)pyrene	550	3800
Dibenz(a,h)anthracene	550	Not Detected
Benzo(g,h,i)perylene	550	Not Detected
Biphenyl	550	11000
Quinoline	550	14000
Xylenes	550	Not Detected
Cresols	550	Not Detected

*Surrogates added after dilution.

Surrogates	% Recovery	Method Limits
2-Fluorophenol	94	25-121
Phenol-d5	67	24-113
Nitrobenzene-d5	112	23-120
2-Fluorobiphenyl	99	30-115
2,4,6-Tribromophenol	86	19-122
Terphenyl-d14	98	18-137

AIR TOXICS LTD.

SAMPLE NAME: BD-C-4b*

ID#: 9309158-02B

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	NA	Date of Collection:	9/16/93
Dil. Factor:	1.0	Date of Extraction:	NA
		Date of Analysis:	NA

Compound	Det. Limit (uG)	Amount (uG)
Phenol	0.50	Not Analyzed
bis(2-Chloroethyl) Ether	0.50	Not Analyzed
2-Chlorophenol	0.50	Not Analyzed
1,3-Dichlorobenzene	0.50	Not Analyzed
1,4-Dichlorobenzene	0.50	Not Analyzed
1,2-Dichlorobenzene	0.50	Not Analyzed
bis(2-Chloroisopropyl) Ether	0.50	Not Analyzed
N-Nitroso-di-n-Propylamine	0.50	Not Analyzed
Hexachloroethane	0.50	Not Analyzed
Nitrobenzene	0.50	Not Analyzed
Isophorone	0.50	Not Analyzed
2-Nitrophenol	0.50	Not Analyzed
2,4-Dimethylphenol	0.50	Not Analyzed
Benzoic Acid	0.50	Not Analyzed
bis(2-Chloroethoxy) Methane	0.50	Not Analyzed
2,4-Dichlorophenol	0.50	Not Analyzed
1,2,4-Trichlorobenzene	0.50	Not Analyzed
Naphthalene	0.50	Not Analyzed
4-Chloroaniline	0.50	Not Analyzed
Hexachlorobutadiene	0.50	Not Analyzed
4-Chloro-3-Methylphenol	0.50	Not Analyzed
2-Methylnaphthalene	0.50	Not Analyzed
Hexachlorocyclopentadiene	0.50	Not Analyzed
2,4,6-Trichlorophenol	0.50	Not Analyzed
2,4,5-Trichlorophenol	0.50	Not Analyzed
2-Chloronaphthalene	0.50	Not Analyzed
2-Nitroaniline	0.50	Not Analyzed
Dimethylphthalate	0.50	Not Analyzed
Acenaphthylene	0.50	Not Analyzed
2,6-Dinitrotoluene	0.50	Not Analyzed
3-Nitroaniline	0.50	Not Analyzed
Acenaphthene	0.50	Not Analyzed
2,4-Dinitrophenol	0.50	Not Analyzed
4-Nitrophenol	0.50	Not Analyzed
2,4-Dinitrotoluene	0.50	Not Analyzed
Dibenzofuran	0.50	Not Analyzed
Diethylphthalate	0.50	Not Analyzed
Fluorene	0.50	Not Analyzed
4-Chlorophenyl-Phenyl Ether	0.50	Not Analyzed
4-Nitroaniline	0.50	Not Analyzed
4,6-Dinitro-2-Methylphenol	0.50	Not Analyzed
N-Nitrosodiphenylamine	0.50	Not Analyzed

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: BD-C-4b*

ID#: 9309158-02B

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	NA	Date of Collection: 9/16/93
Dil. Factor:	1.0	Date of Extraction: NA
		Date of Analysis: NA

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	0.50	Not Analyzed
Hexachlorobenzene	0.50	Not Analyzed
Pentachlorophenol	0.50	Not Analyzed
Phenanthrene	0.50	Not Analyzed
Anthracene	0.50	Not Analyzed
di-n-Butylphthalate	0.50	Not Analyzed
Fluoranthene	0.50	Not Analyzed
Pyrene	0.50	Not Analyzed
Butylbenzylphthalate	0.50	Not Analyzed
3,3'-Dichlorobenzidine	0.50	Not Analyzed
Chrysene	0.50	Not Analyzed
Benzo(a)anthracene	0.50	Not Analyzed
bis(2-Ethylhexyl)phthalate	0.50	Not Analyzed
Di-n-Octylphthalate	0.50	Not Analyzed
Benzo(b)fluoranthene	0.50	Not Analyzed
Benzo(k)fluoranthene	0.50	Not Analyzed
Benzo(a)pyrene	0.50	Not Analyzed
Indeno(1,2,3-cd)pyrene	0.50	Not Analyzed
Dibenz(a,h)anthracene	0.50	Not Analyzed
Benzo(g,h,i)perylene	0.50	Not Analyzed
Biphenyl	0.50	Not Analyzed
Quinoline	0.50	Not Analyzed
Xylenes	0.50	Not Analyzed
Cresols	0.50	Not Analyzed

*Not analyzed per client's request.

Surrogates	% Recovery	Method Limits
2-Fluorophenol	NA	25-121
Phenol-d5	NA	24-113
Nitrobenzene-d5	NA	23-120
2-Fluorobiphenyl	NA	30-115
2,4,6-Tribromophenol	NA	19-122
Terphenyl-d14	NA	18-137

AIR TOXICS LTD.

SAMPLE NAME: H2O BLANK

ID#: 9309158-03A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092507	Date of Collection: 9/16/93
Dil. Factor:	1.0	Date of Extraction: 9/24/93
		Date of Analysis: 9/25/93

Compound	Det. Limit (uG)	Amount (uG)
Phenol	0.50	Not Detected
bis(2-Chloroethyl) Ether	0.50	Not Detected
2-Chlorophenol	0.50	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected
bis(2-Chloroisopropyl) Ether	0.50	Not Detected
N-Nitroso-di-n-Propylamine	0.50	Not Detected
Hexachloroethane	0.50	Not Detected
Nitrobenzene	0.50	Not Detected
Isophorone	0.50	Not Detected
2-Nitrophenol	0.50	Not Detected
2,4-Dimethylphenol	0.50	Not Detected
Benzoic Acid	0.50	Not Detected
bis(2-Chloroethoxy) Methane	0.50	Not Detected
2,4-Dichlorophenol	0.50	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected
Naphthalene	0.50	Not Detected
4-Chloroaniline	0.50	Not Detected
Hexachlorobutadiene	0.50	Not Detected
4-Chloro-3-Methylphenol	0.50	Not Detected
2-Methylnaphthalene	0.50	Not Detected
Hexachlorocyclopentadiene	0.50	Not Detected
2,4,6-Trichlorophenol	0.50	Not Detected
2,4,5-Trichlorophenol	0.50	Not Detected
2-Chloronaphthalene	0.50	Not Detected
2-Nitroaniline	0.50	Not Detected
Dimethylphthalate	0.50	Not Detected
Acenaphthylene	0.50	Not Detected
2,6-Dinitrotoluene	0.50	Not Detected
3-Nitroaniline	0.50	Not Detected
Acenaphthene	0.50	Not Detected
2,4-Dinitrophenol	0.50	Not Detected
4-Nitrophenol	0.50	Not Detected
2,4-Dinitrotoluene	0.50	Not Detected
Dibenzofuran	0.50	Not Detected
Diethylphthalate	0.50	Not Detected
Fluorene	0.50	Not Detected
4-Chlorophenyl-Phenyl Ether	0.50	Not Detected
4-Nitroaniline	0.50	Not Detected
4,6-Dinitro-2-Methylphenol	0.50	Not Detected
N-Nitrosodiphenylamine	0.50	Not Detected

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: H2O BLANK

ID#: 9309158-03A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092507	Date of Collection:	9/16/93
Dil. Factor:	1.0	Date of Extraction:	9/24/93
		Date of Analysis:	9/25/93

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	0.50	Not Detected
Hexachlorobenzene	0.50	Not Detected
Pentachlorophenol	0.50	Not Detected
Phenanthrene	0.50	Not Detected
Anthracene	0.50	Not Detected
di-n-Butylphthalate	0.50	Not Detected
Fluoranthene	0.50	Not Detected
Pyrene	0.50	Not Detected
Butylbenzylphthalate	0.50	Not Detected
3,3'-Dichlorobenzidine	0.50	Not Detected
Chrysene	0.50	Not Detected
Benzo(a)anthracene	0.50	Not Detected
bis(2-Ethylhexyl)phthalate	0.50	Not Detected
Di-n-Octylphthalate	0.50	Not Detected
Benzo(b)fluoranthene	0.50	Not Detected
Benzo(k)fluoranthene	0.50	Not Detected
Benzo(a)pyrene	0.50	Not Detected
Indeno(1,2,3-cd)pyrene	0.50	Not Detected
Dibenz(a,h)anthracene	0.50	Not Detected
Benzo(g,h,i)perylene	0.50	Not Detected
Biphenyl	0.50	Not Detected
Quinoline	0.50	Not Detected
Xylenes	0.50	Not Detected
Cresols	0.50	Not Detected

Surrogates	% Recovery	Method Limits
2-Fluorophenol	74	25-121
Phenol-d5	51	24-113
Nitrobenzene-d5	83	23-120
2-Fluorobiphenyl	58	30-115
2,4,6-Tribromophenol	56	19-122
Terphenyl-d14	94	18-137

AIR TOXICS LTD.

SAMPLE NAME: DB-SW-1a

ID#: 9309158-04A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092305	Date of Collection:	9/16/93
Dil. Factor:	100	Date of Extraction:	9/22/93
		Date of Analysis:	9/23/93

Compound	Det. Limit (uG)	Amount (uG)
Phenol	50	Not Detected
bis(2-Chloroethyl) Ether	50	Not Detected
2-Chlorophenol	50	Not Detected
1,3-Dichlorobenzene	50	Not Detected
1,4-Dichlorobenzene	50	Not Detected
1,2-Dichlorobenzene	50	Not Detected
bis(2-Chloroisopropyl) Ether	50	Not Detected
N-Nitroso-di-n-Propylamine	50	Not Detected
Hexachloroethane	50	Not Detected
Nitrobenzene	50	Not Detected
Isophorone	50	Not Detected
2-Nitrophenol	50	Not Detected
2,4-Dimethylphenol	50	Not Detected
Benzoic Acid	50	Not Detected
bis(2-Chloroethoxy) Methane	50	Not Detected
2,4-Dichlorophenol	50	Not Detected
1,2,4-Trichlorobenzene	50	Not Detected
Naphthalene	50	4600
4-Chloroaniline	50	Not Detected
Hexachlorobutadiene	50	Not Detected
4-Chloro-3-Methylphenol	50	Not Detected
2-Methylnaphthalene	50	840
Hexachlorocyclopentadiene	50	Not Detected
2,4,6-Trichlorophenol	50	Not Detected
2,4,5-Trichlorophenol	50	Not Detected
2-Chloronaphthalene	50	Not Detected
2-Nitroaniline	50	Not Detected
Dimethylphthalate	50	Not Detected
Acenaphthylene	50	Not Detected
2,6-Dinitrotoluene	50	Not Detected
3-Nitroaniline	50	Not Detected
Acenaphthene	50	74
2,4-Dinitrophenol	50	Not Detected
4-Nitrophenol	50	Not Detected
2,4-Dinitrotoluene	50	Not Detected
Dibenzofuran	50	Not Detected
Diethylphthalate	50	Not Detected
Fluorene	50	Not Detected
4-Chlorophenyl-Phenyl Ether	50	Not Detected
4-Nitroaniline	50	Not Detected
4,6-Dinitro-2-Methylphenol	50	Not Detected
N-Nitrosodiphenylamine	50	Not Detected

(cont.)

AIR TOXICS LTD.

SAMPLE NAME: DB-SW-1a

ID#: 9309158-04A

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	9092305	Date of Collection:	9/16/93
Dil. Factor:	100x	Date of Extraction:	9/22/93
		Date of Analysis:	9/23/93

Compound	Det. Limit (uG)	Amount (uG)
4-Bromophenyl-Phenyl Ether	50	Not Detected
Hexachlorobenzene	50	Not Detected
Pentachlorophenol	50	Not Detected
Phenanthrene	50	Not Detected
Anthracene	50	Not Detected
di-n-Butylphthalate	50	Not Detected
Fluoranthene	50	Not Detected
Pyrene	50	Not Detected
Butylbenzylphthalate	50	Not Detected
3,3'-Dichlorobenzidine	50	Not Detected
Chrysene	50	Not Detected
Benzo(a)anthracene	50	Not Detected
bis(2-Ethylhexyl)phthalate	50	Not Detected
Di-n-Octylphthalate	50	Not Detected
Benzo(b)fluoranthene	50	Not Detected
Benzo(k)fluoranthene	50	Not Detected
Benzo(a)pyrene	50	Not Detected
Indeno(1,2,3-cd)pyrene	50	Not Detected
Dibenz(a,h)anthracene	50	Not Detected
Benzo(g,h,i)perylene	50	Not Detected
Biphenyl	50	Not Detected
Quinoline	50	360
Xylenes	50	340
Cresols	50	Not Detected

*Surrogates diluted out.

Surrogates	% Recovery	Method Limits
2-Fluorophenol	*	25-121
Phenol-d5	*	24-113
Nitrobenzene-d5	*	23-120
2-Fluorobiphenyl	*	30-115
2,4,6-Tribromophenol	*	19-122
Terphenyl-d14	*	18-137

AIR TOXICS LTD.

SAMPLE NAME: DB-SW-1b*

ID#: 9309158-04B

Semi-Volatiles By EPA METHOD TO-13 GC/MS Full Scan

File Name:	NA	Date of Collection: 9/16/93
Dil. Factor:	1.0	Date of Extraction: NA
		Date of Analysis: NA

Compound	Det. Limit (uG)	Amount (uG)
Phenol	0.50	Not Analyzed
bis(2-Chloroethyl) Ether	0.50	Not Analyzed
2-Chlorophenol	0.50	Not Analyzed
1,3-Dichlorobenzene	0.50	Not Analyzed
1,4-Dichlorobenzene	0.50	Not Analyzed
1,2-Dichlorobenzene	0.50	Not Analyzed
bis(2-Chloroisopropyl) Ether	0.50	Not Analyzed
N-Nitroso-di-n-Propylamine	0.50	Not Analyzed
Hexachloroethane	0.50	Not Analyzed
Nitrobenzene	0.50	Not Analyzed
Isophorone	0.50	Not Analyzed
2-Nitrophenol	0.50	Not Analyzed
2,4-Dimethylphenol	0.50	Not Analyzed
Benzoic Acid	0.50	Not Analyzed
bis(2-Chloroethoxy) Methane	0.50	Not Analyzed
2,4-Dichlorophenol	0.50	Not Analyzed
1,2,4-Trichlorobenzene	0.50	Not Analyzed
Naphthalene	0.50	Not Analyzed
4-Chloroaniline	0.50	Not Analyzed
Hexachlorobutadiene	0.50	Not Analyzed
4-Chloro-3-Methylphenol	0.50	Not Analyzed
2-Methylnaphthalene	0.50	Not Analyzed
Hexachlorocyclopentadiene	0.50	Not Analyzed
2,4,6-Trichlorophenol	0.50	Not Analyzed
2,4,5-Trichlorophenol	0.50	Not Analyzed
2-Chloronaphthalene	0.50	Not Analyzed
2-Nitroaniline	0.50	Not Analyzed
Dimethylphthalate	0.50	Not Analyzed
Acenaphthylene	0.50	Not Analyzed
2,6-Dinitrotoluene	0.50	Not Analyzed
3-Nitroaniline	0.50	Not Analyzed
Acenaphthene	0.50	Not Analyzed
2,4-Dinitrophenol	0.50	Not Analyzed
4-Nitrophenol	0.50	Not Analyzed
2,4-Dinitrotoluene	0.50	Not Analyzed
Dibenzofuran	0.50	Not Analyzed
Diethylphthalate	0.50	Not Analyzed
Fluorene	0.50	Not Analyzed
4-Chlorophenyl-Phenyl Ether	0.50	Not Analyzed
4-Nitroaniline	0.50	Not Analyzed
4,6-Dinitro-2-Methylphenol	0.50	Not Analyzed
N-Nitrosodiphenylamine	0.50	Not Analyzed

(cont.)

Appendix D

Preservative Analysis Laboratory Results

Appendix E

Calibration Gas Certifications

Scott Specialty Gases, Inc.

Shipped From: 1290 COMBERMERE STREET
TROY MI 48083
Phone: 313-589-2950 Fax: 313-589-2134

CERTIFICATE OF ANALYSIS

C A E INSTRUMENT RENTAL

246 WOODWORK LANE

PALATINE IL 60067

PROJECT #: 05-52393-002
PO#: 8673-71500
ITEM #: 05023451 2AL
DATE: 6/18/93

CYLINDER #: AAL9218 ANALYTICAL ACCURACY: +-1%

BLEND TYPE : ACUBLEND MASTER GAS

COMPONENT	REQUESTED GAS CONC MOLES		ANALYSIS (MOLES)	
PROPANE	850.	PPM	851.6	PPM
NITROGEN		BAL		BAL

ACUBLEND MASTER GAS
ALM030711 ALM008587

ANALYTICAL METHOD: AMG

ANALYST: [illegible] APPROVED BY: S. C. Shapiro

2 1992

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET TROY, MI 48083 PHONE: (313) 589-2950 FAX NO: (313) 589-2134

C A E INSTRUEMNT RENTAL
246 WOODWORK LANE
PALATINE, IL. 60067

Date: 02/27/92

Our Project No.: 0534012

Your P.O. No.: 4559-71500

Gentlemen:

Thank you for choosing Scott for your Specialty gas needs. The analyses for the gases ordered, as reported by our laboratory, are listed below. Results are in volume percent, unless otherwise indicated.

ANALYTICAL REPORT

Cyl. No. _____ Analytical Accuracy ±1%ACMG

Component	Concentration
PROPANE	54.50PPM
NITROGEN	BALANCE
ACUBLEND MASTER GAS	
ALM-004703,ALM-004944,AAL-9952	

Cyl. No. _____ Analytical Accuracy ±1%ACMG

Component	Concentration
PROPANE	2495PPM
NITROGEN	BALANCE
ACUBLEND MASTER GAS	
ALM-008679,ALM-010619,ALM-010140	

Cyl. No. _____ Analytical Accuracy ±1%ACMG

Component	Concentration
PROPANE	5496PPM
NITROGEN	BALANCE
ACUBLEND MASTER GAS	
ALM-010293,ALM-010029,ALM-011352	

Cyl. No. _____ Analytical Accuracy ±1%ACMG

Component	Concentration
PROPANE	8423PPM
NITROGEN	BALANCE
ACUBLEND MASTER GAS	
ALM-003391,ALM-004786,ALM-004952	

Analyst David S Bond

Approved J Shapiro

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

CERTIFIED REFERENCE MATERIALS EPA PROTOCOL GASES
ACUBLEND® CALIBRATION & SPECIALTY GAS MIXTURES PURE GAS
ACCESSORY PRODUCTS CUSTOM ANALYTICAL SERVICES
PLUMBSTEADVILLE, PENNSYLVANIA / SAN BERNARDINO, CALIFORNIA / HOUSTON, TEXAS / WHEELING, ILLINOIS

Scott Specialty Gases, Inc.

Shipped From: 1290 COMBERMERE STREET
TROY MI 48083
Phone: 313-589-2950 Fax: 313-589-2134

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

C A E INSTRUMENT RENTAL

246 WOODWORK LANE

PALATINE IL 60067

PROJECT #: 05-50366-003
PO#: 8266-71500
ITEM #: 05023451 2K
DATE: 4/27/93

CYLINDER #: K000379 ANALYTICAL ACCURACY: +-1%

BLEND TYPE : ACUBLEND MASTER GAS

COMPONENT	REQUESTED GAS CONC MOLES		ANALYSIS (MOLES)	
PROPANE	500.	PPM	504.9	PPM
NITROGEN		BAL		BAL

ACUBLEND MASTER GAS
K011786 K000735

ANALYTICAL METHOD: AMG

ANALYST: [illegible] APPROVED BY: S. C. Shapiro

ANALYTICAL REPORT – cont'd

C A E INSTRUMENT RENTAL

Date: 11/22/91

Our Project No.: 0530468

Your P.O. No.: 3750-71500

COPIES

Cyl. No. _____ Analytical Accuracy ±1%AMG

Component	Concentration
PROPANE	851.3PPM
NITROGEN	BALANCE
ACUBLEND MASTER GAS	
ALM-008898,ALM-004772,ALM-015402	

Cyl. No. K-006450 Analytical Accuracy ±1%AMG

Component	Concentration
PROPANE	2479PPM
NITROGEN	BALANCE
ACUBLEND MASTER GAS	

Cyl. No. K-001820 Analytical Accuracy ±1%AMG

Component	Concentration
PROPANE	8490PPM
NITROGEN	BALANCE
ACUBLEND MASTER GAS	

Cyl. No. _____ Analytical Accuracy ±1%AMG

Component	Concentration
SULFUR DIOXIDE	25.40PPM
NITROGEN	BALANCE
ACUBLEND MASTER GAS	
AAL-8382,AAL-3001,AAL-989	

Cyl. No. _____ Analytical Accuracy ±1%AMG'

Component	Concentration
SULFUR DIOXIDE	224.7PPM
NITROGEN	BALANCE
ACUBLEND MASTER GAS	
AAL-13200,AAL-5250,AAL-2882	

Cyl. No. _____ Analytical Accuracy ±1%AMG

Component	Concentration
CARBON MONOXIDE	10.08PPM
NITROGEN	BALANCE
ACUBLEND MASTER GAS	
ALM-013733,ALM-010002,ALM-016272	

Analyst _____

Approved By _____

SCOTT ENVIRONMENTAL TECHNOLOGY, INC.

Scott Specialty Gases

CERTIFICATE OF ANALYSIS

SCIENCE APPLICATIONS

PO No. 5953735

CAS Reg. Component No.	Component	Certified Analysis
74-98-6	PROPANE	5.00 PCT/M
7727-37-9	NITROGEN	BAL

Analysis Date 08/31/93

Analyst WALTER SABITUS

Project No 01-58278

Cylinder No. A1883

Item No.01823453 4A

Analytical Accuracy +-2%

Grade CERTIFIED MASTER GAS

Reorder/Service Contact (215)766-8861 PLUMSTEADVILLE PA 18949

Scott Specialty Gases

CERTIFICATE OF ANALYSIS

SCIENCE APPLICATIONS

PO No. 5953735

CAS Reg. Component No.	Component	Certified Analysis
74-98-6	PROPANE	9.00 PCT/M
7727-37-9	NITROGEN	BAL

Analysis Date 08/31/93

Analyst WALTER SABITUS

Project No 01-58278

Cylinder No. X86648

Item No.01823453 4A

Analytical Accuracy +-2%

Grade CERTIFIED MASTER GAS

Reorder/Service Contact (215)766-8861 PLUMSTEADVILLE PA 18949

Appendix F

Modified Method 5 Control Box Calibrations

Critical Orifice Calibration Data Sheet
In-House Check

CAE Project # 71-002

Client Rentals

Date 08/20/93

METER 71-12

Full Test Cal. Date - - 02/11/93

Meter Yd 0.9882

Critical Orfice Cal. Date 09/03/92

Meter ΔH@ 1.9133

Pbar 29.39

Orifice Used ? 2 0.4240

Run #	Volume	Elapsed Time	Tmi	Tmo	Tamb	ΔH	Vacuum
	438.30		78	74	74		
1	441.15	5.0	78	74	74	1.05	23
2	443.98	10.0	79	75	74	1.05	23
3	446.81	15.0	79	76	74	10.50	23

Run #	Vmstd	Vcrstd	Diff
1	2.73	2.70	1.30%
2	2.71	2.70	0.49%
3	2.77	2.70	2.72%
avg	2.74	2.70	1.50%

(2)

TYPE S PITOT TUBE INSPECTION DATA

DATE 8-6-93 PITOT NUMBER 1-30-92-2

Pitot Tube Assembly Level YES

Pitot Tube openings damaged? NO (Yes(explain, see comments) or No)

α_1 = 5 deg. (<10), α_2 = 3 deg. (<10), β_1 = 2 deg. (<5), β_2 = 0 deg. (<5)

Y = 2 deg., θ = 1 deg., A = .738 in.

Z = A sin Y = .026 in.; <1/8 in.

W = A sin θ = .013 in.; <1/32 in.

Pa .369 in. Pb .369

P = (Pa +Pb)/2 .369 in.

Dt (tube dia.) = .25 in.

P/Dt = 1.48 (≥ 1.05 and ≤ 1.50)

COMMENTS: Pitot for M-5 6' PROBE
DEPT 71 COEFFIECENT .84

WIND TUNNEL CALIBRATION REQUIRED? NO (Yes or No)

CALIBRATION BY: R. LINDERLY

METER BOX FULL TEST CALIBRATION

Date: 5.11.93 Operator: M. KUBERA

Meter Box No.: 71-15	Meter Box ΔH@: 1.8292	Meter Box Yd: 1.0057	Barometric Pressure: 29.40

				Standard Meter Gas Volume ft^3			Meter Box Gas Volume ft^3			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vds Net	In	Out	Tds Avg	In	Out	Tds Avg	Time θ	Yd	ΔH@
0.91	3.0	-3.8	1.0000	0	10.004	10.004	242.418	252.465	10.047	78	78	78	98	82	90	10.57	1.0007	1.9003
0.91	3.0	-3.8	1.0000	0	12.504	12.504	252.465	265.100	12.635	78	78	78	100	84	92	13.20	0.9982	1.8902
0.38	0.5	-2.5	1.0000	0	5.002	5.002	276.516	281.528	5.012	78	78	78	91	87	89	12.42	1.0107	1.7523
0.38	0.5	-2.5	1.0000	0	5.003	5.003	281.528	286.548	5.02	78	78	78	91	87	89	12.48	1.0093	1.7686
0.65	1.5	-3.0	1.0000	0	10.004	10.004	294.120	304.229	10.109	76	76	76	96	88	92	14.70	1.0077	1.8175
0.65	1.5	-3.0	1.0000	0	10.003	10.003	304.229	314.356	10.127	76	76	76	98	89	93	14.83	1.0076	1.8468

Nomenclature

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

Calculations

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

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

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

Vacuum Gauge Calibration

Standard (Hg)	Vacuum Gauge
5	5
10	10
15	15
20.3	20
25.4	25
27.4	27.1

Thermometer Calibration

Standard	Inlet	Outlet

Appendix G

Operator Log Sheets

[illegible] GRAPHICS, INC. - 29990

THE BURKE-PARSONS-BOWLBY CORPORATION

1225 R 5/

TREATMENT REPORT
Creosote

3'

Date 9-16-93 Charge No. 6791		# Retention Required	8#	Our Order No.	7" SI GN 7'
Kind of Material	OAK	Gallons Required	778	Type of Treatment	60/40
BFM	10710	# Required	7144	Cubic Ft.	893

BOULTON STEAM	Started	Hour	8:15 Am
	Maximum Pressure (or Vacuum)	Pounds	22°
	Maximum Temperature	Degrees F.	186°
	Ended	Hour	8:35 Pm
INITIAL VACUUM	Started	Hour	
	Maximum	Inches	
	Ended	Hour	
AIR PRESSURE	Started	Hour	8:50 Pm
	Maximum Pressure	Pounds	30#
	Ended	Hour	9:00 Pm
PRESERVATIVE	Introduction Started	Hour	9:00 Pm
	Temperature in Working Tank	Degrees F.	—
	Introduction Ended	Hour	10:30 Pm
	Temperature in Cylinder	Degrees F.	191°
	Forcing Back Started	Hour	10:30 Pm
	Forcing Back Ended	Hour	10:55 Pm
	Temperature in Working Tank	Degrees F.	—
	Maximum Pressure in Cylinder	Pounds	169#
	Maximum Temperature in Cylinder	Degrees F.	191°
FINAL VACUUM	Started	Hour	10:55 Pm
	Maximum	Inches	20
	Ended	Hour	12:15 Am

TANK READINGS		Temp.	Inches	Reduced to 100°
	Before Introduction		134,300	
	After Introduction			
	Before Blow-Back			
	After Blow-Back		127,100	
	Net Retention in Gallons @ 100° F.			7200
	Number Pounds Retained			
	Number Pounds Per Cu. Ft. of Wood			8.06

TOTAL TREATING TIME 16 Hrs.

MATERIAL:

INVENTORY#	# PIECES	SIZE	BD. FT.	CU. FT.	SPECIES	CONDITIO
102010	192	7x9x8½	8568	714	104001-131	SI or GN
102010	48	7x9x8½	2142	179	104001-123	100% GN

16

(3)

TYPE S PITOT TUBE INSPECTION DATA

DATE 8-20-93 PITOT NUMBER 1-30-92-3

Pitot Tube Assembly Level YES

Pitot Tube openings damaged? NO (Yes{explain, see comments} or No)

α_1 = 2 deg. (<10), α_2 = 2 deg. (<10), β_1 = 1 deg. (<5), β_2 = 1 deg. (<5)

Y = 1 deg., θ = 2 deg., A = .738 in.

Z = A sin Y = .013 in.; <1/8 in.

W = A sin θ = .026 in.; <1/32 in.

Pa .369 in. Pb .369

P = (Pa +Pb)/2 .369 in.

Dt (tube dia.) = .25 in.

P/Dt = 1.476 (≥ 1.05 and ≤ 1.50)

COMMENTS: Pitots for M-5 6' PROBE
DEPT 41
COEFFICIENT .841

WIND TUNNEL CALIBRATION REQUIRED? NO (Yes or No)

CALIBRATION BY: R. Lusby

Pyrometer Calibration Sheet

Pyrometer No.: 71-15

Calibrated by: RON LINDBERG

Date: 8-17-93

Office: RENTALS

Client: S.R.I

Job or Ref No.:

Temperature Scale Used: ☑ Fahrenheit ☐ Celsius

Pre-Test ☑ Post-Test ☐

Calibration Reference Settings for Fahrenheit Scale	Pyrometer Reading	Calibration Reference Settings for Celsius Scale
50 °F	50°	25 °C
100 °F	100°	50 °C
150 °F	151°	75 °C
200 °F	202°	100 °C
250 °F	251°	125 °C
300 °F	301°	150 °C
350 °F	351°	175 °C
400 °F	400°	200 °C
450 °F	449°	225 °C
500 °F	499°	250 °C
550 °F	550°	275 °C
600 °F	601°	300 °C

Calibration Reference Information

Reference Used: TEGAM 840 Digimite/Other

Serial No.: T-87859

Calibrated By: N. WILBERT

Date Calibrated: 5-25-93

Calibration Report No.: R022976

Pyrometer Calibration Sheet

Pyrometer No.: 71-12

Calibrated by: R. LINBERG

Date: 8-20-93

Office: RENTALS

Client: IN HOUSE

Job or Ref No.:

Temperature Scale Used: ☒ Fahrenheit ☐ Celsius

Pre-Test ☒ Post-Test ☐

Calibration Reference Settings for Fahrenheit Scale	Pyrometer Reading	Calibration Reference Settings for Celsius Scale
50 °F	50°	25 °C
100 °F	100°	50 °C
150 °F	151°	75 °C
200 °F	201°	100 °C
250 °F	251°	125 °C
300 °F	301°	150 °C
350 °F	350°	175 °C
400 °F	399°	200 °C
450 °F	449°	225 °C
500 °F	499°	250 °C
550 °F	548°	275 °C
600 °F	600°	300 °C

Calibration Reference Information

Reference Used: TEGAM 840 Digimite/Other

Serial No.: T-87859

Calibrated By: N. WILPERT

Date Calibrated: 5-25-93

Calibration Report No.: R022976

METER BOX ORIFICE CALIBRATION

Date: 2·11·93 Operator: M. KUBERA

Meter Box No.: 71-12	Meter Box ΔH@: 1.9133	Meter Box Yd: .9882	Barometric Pressure: 29.50

				Standard Meter Gas Volume ft³			Meter Box Gas Volume ft³			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vds Net	In	Out	Tds Avg	In	Out	Tds Avg	Time 0	Yd	ΔH@
2.90	3.0	-2.9	1.0000	0	12.752	12.752	704.035	717.296	13.261	62	62	62	86	76	81	14.12	.9803	1.9407
2.89	3.0	-2.9	1.0000	0	12.252	12.252	717.296	730.116	12.820	62	62	62	89	79	84	13.60	.9789	1.9895
2.38	0.5	-2.7	1.0000	0	6.001	6.001	738.519	744.719	6.200	62	62	62	85	81	83	15.63	.9988	1.8290
2.38	0.5	-2.7	1.0000	0	5.502	5.502	744.719	750.418	5.699	62	62	62	85	81	83	14.34	.9962	1.8314
3.64	1.5	-3.0	1.0000	0	10.253	10.253	763.713	774.420	10.707	63	63	63	88	82	85	15.82	.9867	1.9259
3.64	1.5	-3.0	1.0000	0	10.501	10.501	774.420	785.404	10.984	63	63	63	90	84	87	16.18	.9887	1.9135

Nomenclature

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

Calculations

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

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

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

Vacuum Gauge Calibration

Standard (Hg)	Vacuum Gauge
5.2	5
10.3	10
15.1	15
19.9	20
24.7	25
27.9	MAX

Thermometer Calibration

Standard	Inlet	Outlet
40	40	40
60	60	60
90	90	90
110	110	110
130	130	130

Critical Orifice Calibration Data Sheet
In-House Check

CAE Project # 71-002

Client Rentals

Date 08/17/93

METER 71-15

Meter Yd 1.0057

Meter ΔH@ 1.8292

Full Test Cal. Date - - 05/11/93

Critical Orfice Cal. Date 09/03/92

Pbar 29.42

Orifice Used ? 2 0.4240

Run #	Volume	Elapsed Time	Tmi	Tmo	Tamb	ΔH	Vacuum
	625.00		71	70	70		
1	627.78	5.0	71	70	71	1.15	21
2	630.58	10.0	71	70	71	1.15	21
3	633.37	15.0	72	70	72	1.15	21

Run #	Vmstd	Vcrstd	Diff
1	2.74	2.71	1.34%
2	2.76	2.71	2.07%
3	2.75	2.70	1.75%
avg	2.75	2.71	1.72%

NEWBURG GRAPHICS, INC. · 29998

THE BURKE-PARSONS-BOWLBY CORPORATION

1225 R

TREATMENT REPORT
Creosote

#3

Date 9-14-93 Charge No. 6787		# Retention Required	7#	Our Order No.	7" TEST
Kind of Material	OAK	Gallons Required	662	Type of Treatment	60/40
BFM	10.412	# Required	6076	Cubic Ft.	865

BOULTON STEAM	Started	Hour	9:50 A
	Maximum Pressure (or Vacuum)	Pounds	22
	Maximum Temperature	Degrees F.	190
	Ended	Hour	10:0
INITIAL VACUUM	Started	Hour	
	Maximum	Inches	
	Ended	Hour	
AIR PRESSURE	Started	Hour	10:15
	Maximum Pressure	Pounds	30
	Ended	Hour	10:20
PRESERVATIVE	Introduction Started	Hour	10:20
	Temperature in Working Tank	Degrees F.	
	Introduction Ended	Hour	11:50
	Temperature in Cylinder	Degrees F.	182
	Forcing Back Started	Hour	11:50
	Forcing Back Ended	Hour	12:00
	Temperature in Working Tank	Degrees F.	
	Maximum Pressure in Cylinder	Pounds	178
	Maximum Temperature in Cylinder	Degrees F.	180
FINAL VACUUM	Started	Hour	12:00
	Maximum	Inches	21
	Ended	Hour	1:00

		Temp.	Inches	Reduced to 100°
TANK READINGS	Before Introduction		97,700	2700 = 3.1
	After Introduction	3.25# H_2O/Cu.Ft	95000	3500 = 4.0
	Before Blow-Back			= 7.
	After Blow-Back		91500	
	Net Retention in Gallons @ 100° F.			6200
	Number Pounds Retained			
	Number Pounds Per Cu. Ft. of Wood			7.14

TOTAL TREATING TIME 15 Hrs. 10 min

MATERIAL:

INVENTORY#	# PIECES	SIZE	BD. FT.	CU. FT.	SPECIES	CONDIT
102010	37	7x9x8 1/2	10412	868	104001-113	
102010	150	7x[illegible]			104005-113	
100020	53	7x9x8 1/2			104005-123	

CREOSOTE AND WATER LOG

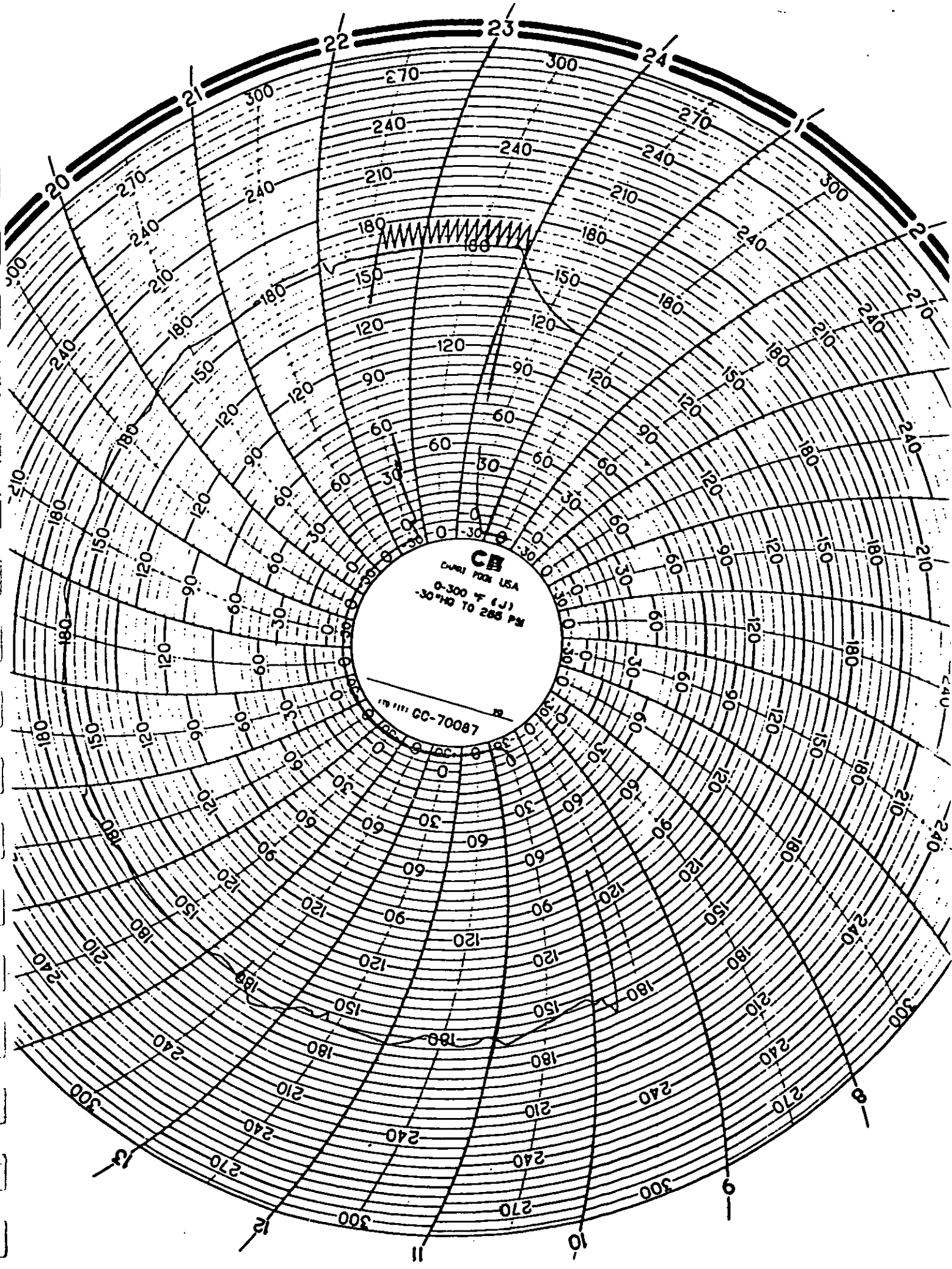
CYLINDER #3
SHIFTS
DATE 9-11-93

	CYLINDER TEMPERATURE	VACUUM	PRESSURE	INCHES WATER	INCHES CREOSOTE	GALLONS
12:00	Pm 185	22		0		0
12:30	182	22		10		137
1:00	178	20		11		116
1:30	[illegible]	2[illegible]		14		173
2:00	178	21		16		191
2:30	180	22		17		200
3:00	183	22		18		209
3:30	184	22		19		218
4:00	181	22		20		227
4:30	182	22		21		236
5:00	184	22		22		245
5:30	181	22		23		254
6:00	183	22		25		272
6:30	182	22		26		281
7:00	181	22		27		290
7:30	185	22		28		299
8:00	184	22		29		308
8:30	186	22		29		308
9:00	182	22		30		317
9:30	185	32		31		326
10:00	pm 186	22		32		335
10:20	182		30		[illegible]	[illegible]
11:00	180		168		82	795
11:30	180		174		68	659
11:50	180		168		57	569
12:30						
1:00						
1:30						
2:00						
2:30						
3:00						
3:30						
4:00						
4:30						
5:00						
5:30						
6:00						
6:30						
7:00						
7:30						
8:00						
8:30						
9:00						
9:50	Am 186	10		0		0
10:00	175	22		0		0
10:30	176	22		0		0
11:00	186	22		0		0
11:30	184	22		0		0

CREOSOTE AND WATER LOG

CYLINDER #3
SHIFTS Test
DATE 9-16-93

	CYLINDER TEMPERATURE	VACUUM	PRESSURE	INCHES WATER	INCHES CREOSOTE	GALLONS
12:00						
12:30						
1:00						
1:30						
2:00						
2:30						
3:00						
3:30						
4:00						
4:30						
5:00						
5:30						
6:00						
6:30						
7:00						
7:30						
8:15	Am 180	4		0		0
8:30	173	22		0		0
9:00	178	22		0		0
9:30	181	22		0		0
10:00	169	22		10		137
10:30	169	22		11		146
11:00	174	22		13		164
11:30	177	22		15		182
12:00	Pm 180	22		17		200
12:30	178	21		19		218
1:00	180	21		20		227
1:30	183	20		22		245
2:00	182	20		24		263
2:30	181	20		26		281
3:00	182	20		28		299
3:30	181	20		30		317
4:00	181	20		31		326
4:30	180	20		32		335
5:00	181	20		33		344
5:30	182	20		34		353
6:00	181	20		35		362
6:30	182	20		36		371
7:00	184	20		37		380
7:30	184	20		38		389
8:00	186	20		39		398
8:30	186	20		39		398
9:00	185		30#		104	983
9:30	185		169#		37	380
10:00	188		166#		26	281
10:30	191		169#		20	227
11:00						
11:30						


CB
CHART FOOD USA
0-300 °F (J)
-30"HG TO 285 PSI
CC-70087

CC-70087

Attachment 1

The Burke-Parsons-Bowlby Corporation Response to the Draft Emission Test Report

DuBOIS DIVISION
The BURKE-PARSONS-BOWLBY Corporation

P. O. BOX 287 • DuBOIS, PENNSYLVANIA 15801 • PHONE (814) 371-7331
FAX (814) 375-0946

PRESSURE TREATED
WOOD PRODUCTS

September 13, 1994

United States Environmental Protection Agency
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

Attention: Mr. Dennis Holzschuh
Chemicals and Petroleum Testing Section
Emission Measurement Branch

Dear Mr. Holzschuh,

In response to your letter of August 23, 1994 regarding the draft copy of the emission test conducted at our DuBois facility.

I have several comments and some corrections on data as noted in the following items:

1) Page 2-1 paragraph 2, our P2 solution is delivered to the plant by truck, not rail.
Page 2-1 paragraph 3, the boultonizing takes approximately 18 hours, not 6 to 18 hours.

2) Page 2-3 paragraph 1, the statement regarding a "low flow" blower is used to pull the vapors from the knock-out tank through the water scrubber is not correct. There is no blower. The vapors are pulled through the knock-out tank by the scrubber.

3) We feel the scrubber efficiencies reflected on page 3-16 are incorrect. We contacted the manufacturer of the scrubber and the project engineer from Ceilcote provided us with the enclosed response that back ups our concerns regarding the air flow measurements. (See enclosed letter). The concentrations (THCs) are similar to testing that had been done in the past, but the volumes seem to be incorrect. Since the sampling ports were so close to the scrubber (D&E) the cfm should be the same for the inlet and outlet. Due to this discrepancy, the total volumes are not correct and this would make the removal efficiency incorrect. If we assume the volume in and out are the same, the percent efficiency is

more realistic. It is not as high as previous tests, but we did have creosote with much higher levels of naphthalene content. Page 3-1, paragraph 3.2.1. states the problem of getting correct velocities at the vacuum pump sampling port. Page 3-4 paragraph 3.2.2. again states the problem of recording correct velocities.

During our own testing we have found that with any type of accumulation of naphthalene in the stack the velocity increased four times above normal.

We feel that the meter reading was correct, but the diameter of the stack pipe was restricted significantly and reduced the actual diameter due to deposits in the stack. This was physically noted some time after the tests were conducted by our supervisor during a visual check of the stack.

Using this assumption we recalculated the efficiency removal as indicated by the two enclosed charts we have recalculated.

These are our responses. If you have any further questions please give me a call at the above number.

Sincerely,

Harry Bressler

Harry Bressler
Division Manager

enclosures

cc: Allied Signal

BURKE PARSONS BOWLBY CORPORATION - DUBOIS DIVISION
Average THC Concentrations for Run 1

Average THC Concentrations

CYCLE	A	C	D	E	• REMOVAL EFFICIENCY
1st Hour Boulton				4,710	
2nd Hour Boulton				4,190	
3rd Hour Boulton				4,600	
4th Hour Boulton				7,860	
5th Hour Boulton				5,760	
6th Hour Boulton					
7th Hour Boulton				2,910	
8th Hour Boulton					
9th Hour Boulton					
10th Hour Boulton				1,390	
11th Hour Boulton				1,310	
12th Hour Boulton	380		4,460	1,640	63.2%
Average Boulton				3,820	
First Blowback	2,000	20	4,540	1,820	59.9%
Pressurization	940	40	4,940	2,200	55.5%
Second Blowback	2,380	40	3,660	1,480	59.6%
Final Vacuum		40	4,390	1,480	66.3%
Door Opening (1/2 hour)	2,560	1,300	3,840	1,300	66.1%

a. Water was drained from the naphthalene K/O tank to try to get a valid velocity reading during this hour.

• Based on inlet and outlet THC (i.e. D-E divided by D). Assumes inlet and outlet volumes at D and E are equal.

BURKE PARSONS BOWLBY CORPORATION - DUBOIS DIVISION
Average THC Concentrations for Run 2

Average THC Concentrations

CYCLE	A	C	D	E	* REMOVAL EFFICIENCY
1st Hour Boulton			7,900	820	89.6%
2nd Hour Boulton			4,390	1,460	66.7%
3rd Hour Boulton			3,180	1,260	60.4%
4th Hour Boulton			2,880	1,160	59.7%
5th Hour Boulton			2,780	1,160	58.3%
6th Hour Boulton			2,580	1,050	59.3%
7th Hour Boulton			2,470	950	61.5%
8th Hour Boulton		40	2,270	850	62.6%
9th Hour Boulton			2,170	850	60.8%
10th Hour Boulton			2,070	850	58.9%
11th Hour Boulton			1,870	750	59.9%
12th Hour Boulton			1,560	750	51.9%
Average Boulton			3,010	990	67.1%
First Blowback	1,380		1,880	770	59.0%
Pressurization			1,680	770	54.2%
Second Blowback	2,080		1,680	770	54.2%
Final Vacuum			2,490	970	61.0%
Door Opening (1/2 hour)		1,580	2,690	1,080	59.9%

a. Water was drained from the naphthalene K/O tank to try to get a valid velocity reading during this hour.

* Based on inlet and outlet THC (i.e. D-E divided by D). Assumes inlet and outlet volumes at D and E are equal.