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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Entrophy Environmentals, Inc.

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Planning and Standards
Research Triangle Park NC 27711

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Air

Oriented Strand Board Emission Test Report

Georgia Pacific Skippers, Virginia

EPA

TEST REPORT

VOLUME I.

METHOD DEVELOPMENT AND TESTING FOR ORIENTED STRAND BOARD PLANT EMISSIONS

GEORGIA-PACIFIC ORIENTED STRAND BOARD PLANT SKIPPERS, VIRGINIA

EPA Project No. 91-WAF-01

EPA Contract No. 68-D9-0055
Work Assignment No. 1-85

Prepared for:

Dennis P. Holzschuh
Emission Measurement Branch
Technical Support Division
U.S. Environmental Protection Agency
Research Triangle Park, North Carolina 27711

Prepared by:

William K. Kirk
Roger T. Shigehara
Lisa Grosshandler
Research and Analysis Division
Entropy Environmentalists, Inc.
Post Office Box 12291
Research Triangle Park, North Carolina 27709

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DISCLAIMER

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1.0 INTRODUCTION

1.1 SUMMARY OF TEST PROGRAM

The U.S. Environmental Protection Agency (EPA), Office of Air Quality Planning and Standards (OAQPS), Emission Inventory Branch (EIB) is responsible for developing and maintaining air pollution emission factors for industrial processes. EIB, in collaboration with the National Council for Air and Stream Improvement (NCASI), is presently studying the wood products industry. The purpose of this study is to develop emission factors for oriented strand board (OSB) production facilities. The Emission Measurement Branch (EMB) of OAQPS coordinated the emission measurement activities at this plant. Entropy Environmentalists, Inc. (Entropy) and NCASI conducted the emission measurements.

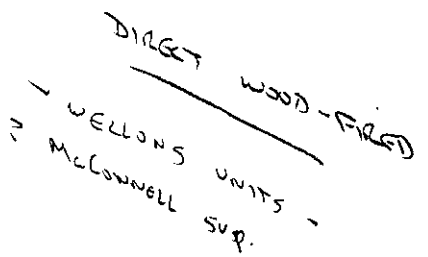
EPA/EIB, EPA/EMB, and NCASI considered the Georgia-Pacific facility in Skippers, Virginia to be one of four facilities that represent the diversity in wood species and dryer control devices. This test, the first of the four, was conducted on June 25-26, 1991. Simultaneous measurements were conducted at the inlet and outlet of the wet electrostatic precipitator (ESP) for the wood flake dryer exhaust. Pollutants measured were: particulate matter (PM), condensible particulate matter (CPM), carbon monoxide (CO), nitrogen oxides (NO_x), hydrocarbons (THC), formaldehyde, other aldehydes, and ketones, and semivolatile organic compounds (SVOC).

Current data for wood flake dryer exhausts for particulate and VOC emissions have been obtained using various test methods and often lack sufficient documentation for developing emission factors. Therefore, one objective of this test was to standardize the test methods. This test also served as a compliance test to the State of Virginia under consent order.

1.2 KEY PERSONNEL

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

- Mr. Dallas Safriet
  Technical Coordinator, EIB — 919/541-5371
- Mr. Dennis Holzschuh
  Field Test Coordinator, EMB — 919/541-5239
- Mr. Bill Kirk
  Field Test Director, Entropy — 919/781-3551
- Mr. Chuck Vaught
  Process Engineer, MRI — 919/677-0249
- Mr. Larson Harsey
  Georgia-Pacific Representative — 404/527-0220
- David Rovell-Rixx
  NCASI Representative — 904/377-4708



2.0 PLANT AND SAMPLING LOCATION DESCRIPTIONS

2.1 PROCESS DESCRIPTION AND OPERATION

The basic processing steps for OSB production are:

- Logs are cut into shorter lengths, debarked, slashed into blocks, and sliced into thin wood flakes.
- The wood flakes are dried, classified on a rotary screen, blended and mixed with resin, oriented, and formed into a mat.
- The formed mats are separated into desired lengths, heated, and pressed to activate the resin and bond the wood flakes into a solid sheet.
- Sheets are trimmed, edge treated, and packaged for shipping.

The wood mix for the Georgia-Pacific plant at Skippers, Virginia is about 40 percent pine and 60 percent soft hardwoods. About 17-20 tons/hr of wet wood flakes are sent to each of four dryers with an inlet temperature of about 1000-1200°F to maintain an exit temperature of about 250°F. At this point in the process, the moisture content of the wood flakes ranges from 3 to 6 percent, wet basis. Figure 2-1 presents a generalized OSB process flow diagram; the figure does not reflect exactly all the activities at the Skippers plant.

2.2 WET ELECTROSTATIC PRECIPITATOR DESCRIPTION

Particulate matter from the wood flake dryers are controlled by cyclones and a wet ESP manufactured by United-McGill. An ESP relies on three basic process steps for particulate removal: (1) electrical charging of the particles, (2) particle collection on the electrodes, and (3) removal of the collected particulate. The United-McGill wet ESP has an intermittent travelling header system equipped with multiple high-pressure spray nozzles to remove the collected particulate. The Skippers plant also has a prequencher to cool and condense the gas stream before it enters the ESP. The prequencher cools the gas by spraying water into the incoming gas stream. The cooling and condensation increases the capture of the sticky resins released from the wood flake drying process.

2.3 FLUE GAS SAMPLING LOCATIONS

Emission samples were collected at the wet ESP outlet stack and two separate inlet locations. Figures 2-2 and 2-3 are

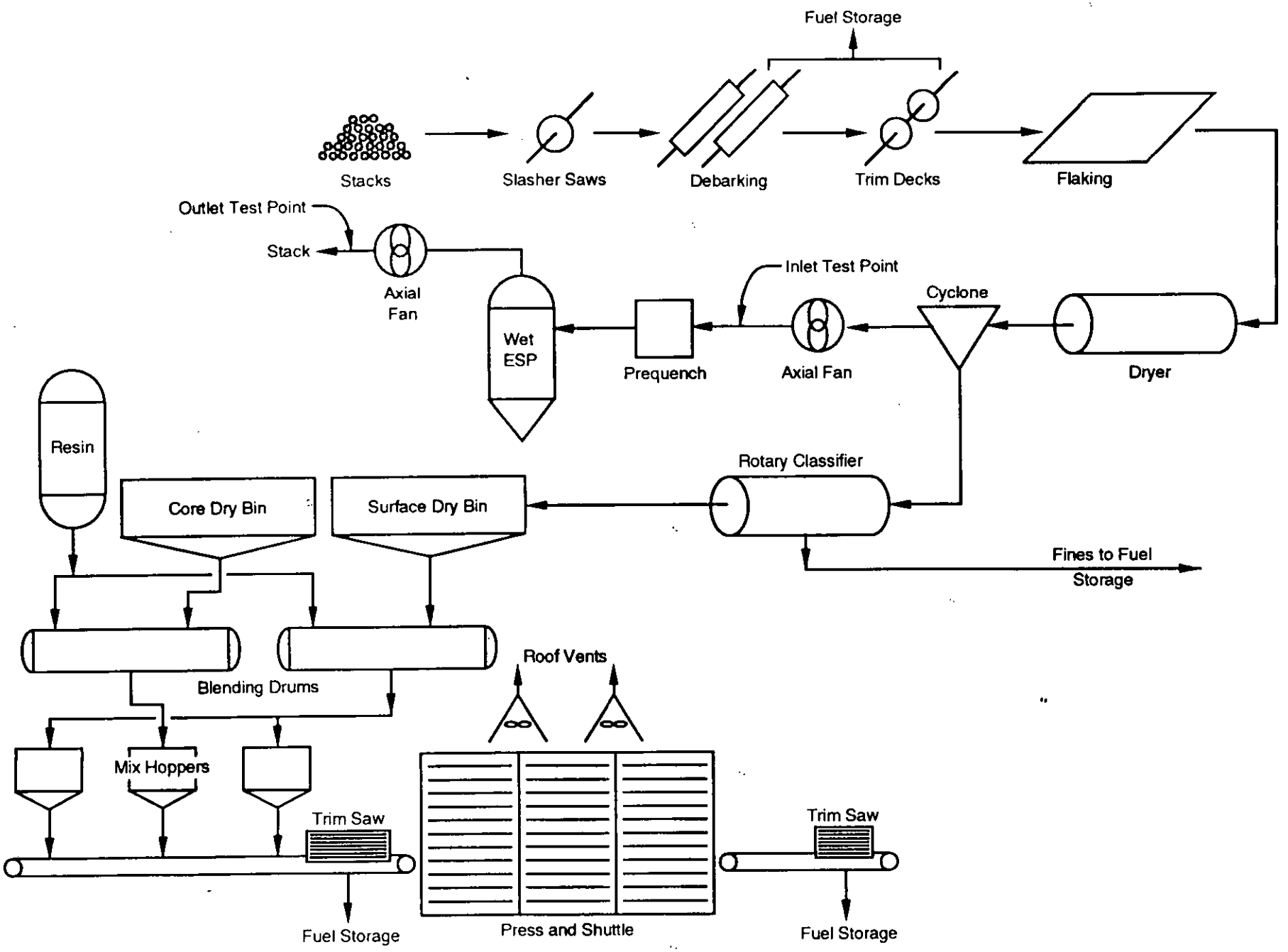
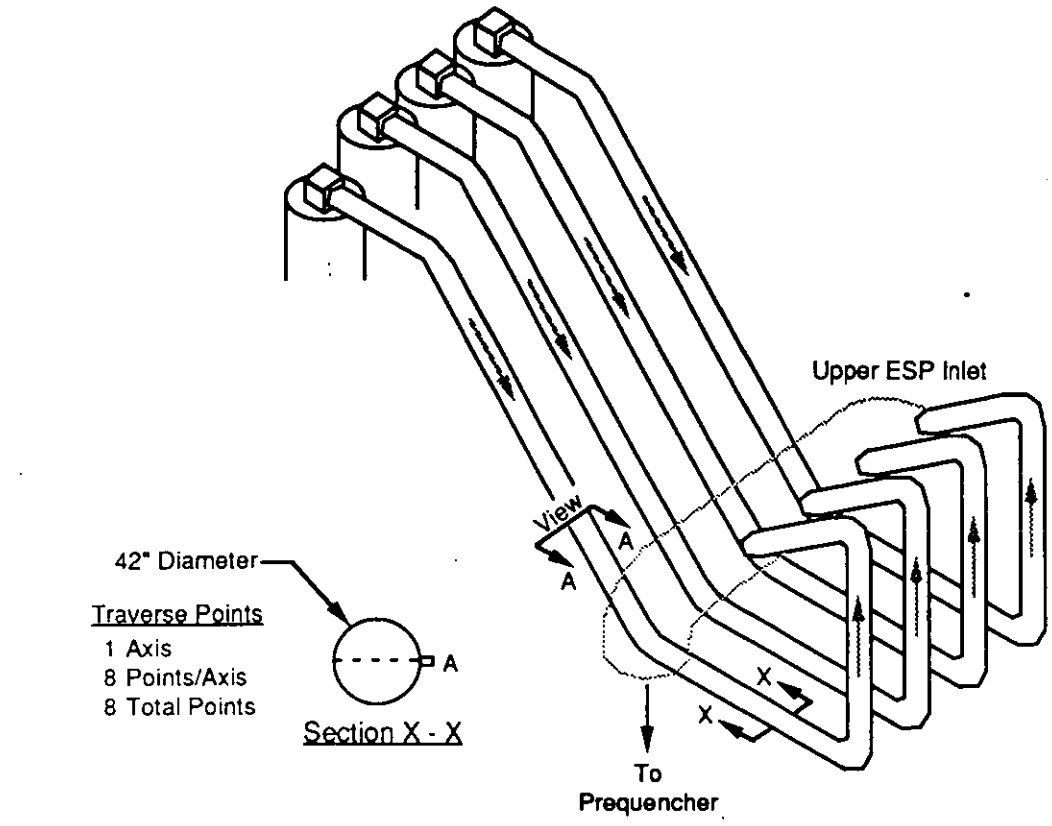
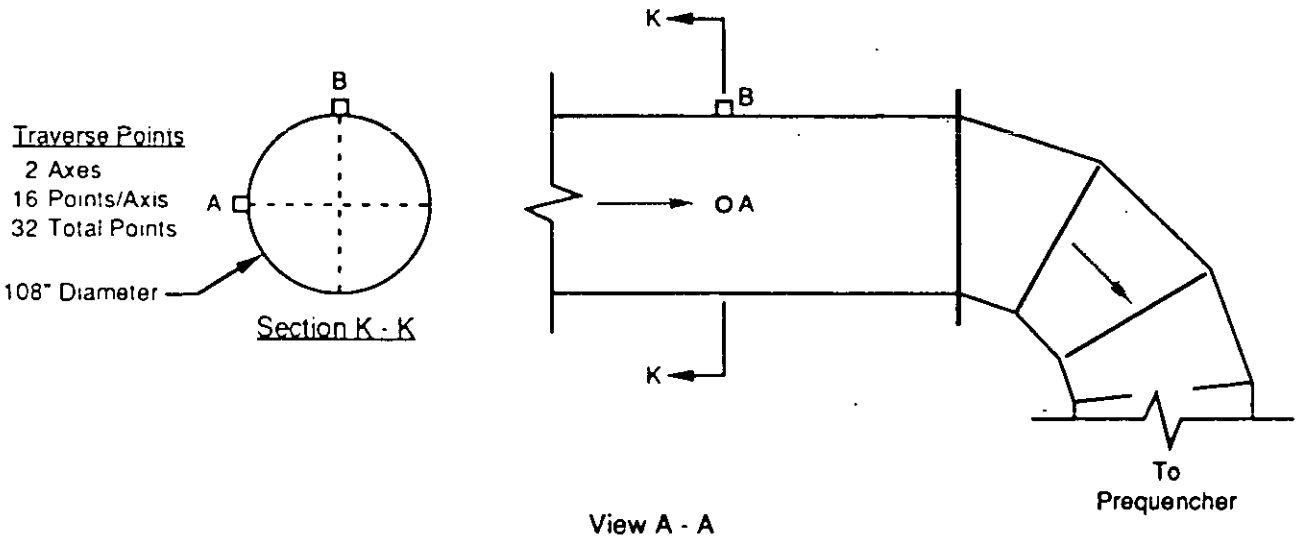


Figure 2-1. Generalized Oriented Strand Board (OSB) process flow diagram.



Lower wet ESP inlets



View A - A
Upper wet ESP inlet

Figure 2-2. Lower and upper wet ESP sampling locations.

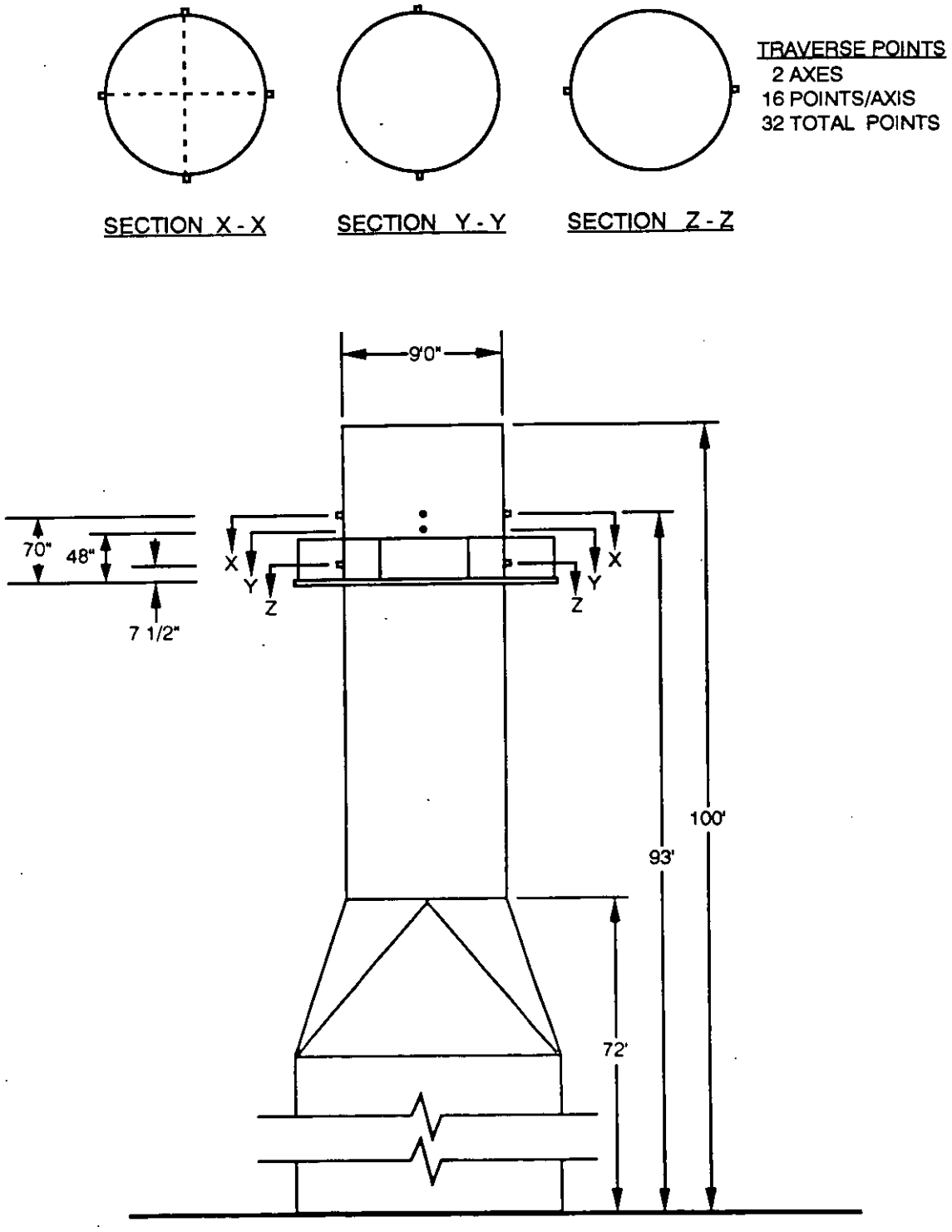


Figure 2-3. ESP outlet sampling locations.

schematics of the sampling locations. The exhausts from four dryers are combined upstream of the prequencher that leads to the wet ESP.

2.3.1 Lower Wet ESP Inlet Sampling Location

The lower wet ESP inlet consists of four identical 42-inch diameter horizontal ducts upstream of four fans and bypass stacks. A manual damper is located approximately one duct diameter upstream from the 4-inch sampling port, and a square access door is located 32 inches (0.75 duct diameters) downstream from the sampling port in each of the ducts. This access would be considered a minor disturbance. The distance between the damper and the fans is 178 inches (4.2 diameters). The plant installed additional ports approximately two diameters downstream from the original locations. Since the flow profiles at both locations were similar and because of the cramped conditions at the additional locations, the original locations were chosen for the test.

Each of the four ducts had different flow profiles. The manual dampers were set independently to balance the system for production.

The sample traverse consisted of one axis only with 8 traverse points per duct (32 total) at 2 1/2 minutes per point, for a total sampling time of 80 minutes. Method 5/202 for PM and CPM and SW-846 Method 0011 for formaldehyde, aldehydes, and ketones were performed at this location.

2.3.2 Upper Wet ESP Inlet Sampling Location

The upper wet ESP inlet sampling location, at which the four dryer exhaust ducts are combined, is downstream of the lower inlet location. This location in the 108-inch horizontal duct has two 4-inch ports. One port is on the horizontal axis and the other is on the vertical axis. The distance from the sampling ports downstream to the 90-degree elbow leading to the prequencher is less than a duct diameter. The horizontal sampling port is located directly across from one of the four (54-inch) ducts that tangentially tie into the 108-inch duct. Methods 25 and 25A were performed at this location.

2.3.3 Wet ESP Stack Outlet Sampling Location

The outlet stack for the wet ESP had a total of eight sampling ports located on three different planes in the 108-inch diameter vertical duct. Figure 2-3 shows the stack sampling locations. The ports are 0.78 duct diameter upstream from the stack exit and 2.3 duct diameters downstream from a disturbance.

2.4 ESP CLEANING CYCLE

The wet ESP goes through an automatically controlled 16-minute wash cycle to purge the collection plates of accumulated particulate matter. Within each of the 80-minute test runs, one of the four (20-minute) isokinetic sampling traverses conducted at one of the lower four inlet ducts was timed to take place during the wash cycle. Simultaneous measurements were taken at the ESP outlet to include the effect (if any) of the wash cycle on the outlet emissions.

3.0 SUMMARY OF TEST RESULTS AND DISCUSSION

3.1 OBJECTIVES AND TEST MATRIX

The purpose of the test program was to develop emission factors for OSB production facilities from the wood products industry.

Table 3-1 presents the sampling and analytical matrix and summarizes all the measurements being made at each test location.

The specific objectives were:

- Measure the emissions of PM, CPM, CO, NO_x, THC, formaldehyde, other aldehydes, and ketones at the wood flake dryer wet ESP inlet and outlet locations, and semi-volatile organics at the outlet.

- Determine the relationship between Method 25 and Method 25A for THC, and between Method 5/202 and the Oregon Department of Environmental Quality (ODEQ) Method 7 for particulates (PM and CPM).

- Assess the suitability of deriving a correction factor for Method 25A.

- Obtain dryer production rates, feed inlet and outlet moisture content, inlet and outlet dryer temperatures, inlet and outlet ESP temperatures, ESP field voltages and currents, and wash cycle time, ESP water rate, and wood mix.

3.2 VOLUMETRIC FLOW RATES

To determine mass emission rates and wet ESP collection efficiency, flow rate is an important component. During this test program, three separate trains provided simultaneous measurements of velocities, temperatures, and moisture contents. M5/202 and M0011 were run simultaneously at the ESP inlet (lower); M5/202, M0011, and MM5 were run simultaneously at the ESP outlet and concurrently with M5/202 and M0011 at the ESP inlet. Table 3-2 summarizes the flow rate data. Method 3 data for O_2 and CO_2 are added to this table.

The following observations are made:

- The temperature measurements of the ESP inlet were within ±6°F and at the outlet, the temperatures were within ±2°F. The ±6°F is a variation of less than ±1 percent in volume measurements.

TABLE 3-1. SAMPLING MATRIX - GEORGIA PACIFIC

RUN NO. DATE	SAMPLE TYPE	TEST METHOD	LOCATION/CLOCK TIME[1]		
			ESP INLET (Lower)	ESP INLET (Upper)	ESP OUTLET
1	PM/CPM	M5/202	1015-1340		1014-1342
6/25/91	O_2/CO_2	M3		1014-1404	1014-1404
	F/A/K	M0011	1014-1340		1014-1342
	SVOC	MM5			1014-1342
	TGNMO	M25		1019-1340	1010-1340
	THC	M25A		1014-1404	1014-1404
	NO_x	M7E		1014-1404	1014-1404
	CO	M10		1014-1404	1014-1404
2	PM/CPM	M5/202	1753-2007		1753-2005
6/25/91	O_2/CO_2	M3		1754-2005	1754-2005
	F/A/K	M0011	1715-2015		1753-2005
	SVOC	MM5			1753-2005
	TGNMO	M25		1754-2006	1753-2005
	THC	M25A		1754-2005	1754-2005
	NO_x	M7E		1754-2005	1754-2005
	CO	M10		1754-2005	1754-2005
3	PM/CPM	M5/202	0930-1141		0930-1141
6/26/91	O_2/CO_2	M3		0930-1141	0930-1141
	F/A/K	M0011	0930-1141		0930-1143
	SVOC	MM5			0930-1143
	TGNMO	M25		0930-1144	0930-1144
	THC	M25A		0930-1141	0930-1141
	NO_x	M7E		0930-1141	0930-1141
	CO	M10		0930-1141	0930-1141

[1] All sampling times were 80 minutes in length.

Note: Mercury Labs analyzed M0011 samples for F/A/K.
Triangle Labs analyzed MM5 samples for semivolatiles.
NCASI collected and analyzed the M25 samples.
Entropy collected and analyzed all other samples.

TABLE 3-2. VOLUMETRIC FLOW RATE DATA - GEORGIA PACIFIC

RUN NO.	FLOW RATE, dscmh				TEMPERATURE, °F			MOISTURE, $\%H_2O$			ORSAT	
	M5/202	M0011	MM5	Average	M5/202	M0011	MM5	M5/202	M0011	MM5	O_2	CO_2
I-1	189,250	203,546[a]		196,398	198	203		22.0	22.0[b]		17.1	3.6
I-2	193,739	193,785		193,762	188	200		23.0	22.1		18.3[c]	2.6[c]
I-3	192,821	187,712		190,767	200	208		23.6	21.3		16.8	3.9
Avg	192,270	195,014[a]			195	204		22.9	21.7[b]		17.0	3.7
S-1	182,515	200,225	182,094	188,278	143	144	144	22.4	21.4	22.0	17.2	3.5
S-2	191,038	191,916	186,164	189,706	144	146	147	21.8	22.3	23.2	16.9	3.6
S-3	199,861	194,423	183,328	192,537	145	148	147	22.4	22.8	23.8	17.2	3.5
Avg	191,138	195,521	183,862		144	146	146	22.2	22.2	23.0	17.1	3.5

[a]This volumetric flow rate is based on 22% moisture. See notation (b). Originally, the value was 215,499 dscmh.
[b]Actual value was 16.5% moisture. The value from M5/202 was substituted.
[c]These values indicate that the sample bag might have had a leak. Therefore, they were excluded from the average.

- Run I-1, M0011 had a moisture content of 16.5 percent. When this value was compared with the moisture contents of M5/202, Runs I-2 and I-3 of M0011, and the ESP outlet moisture contents of the M5/202, M0011, and MM5 trains, 16.5 percent was obviously an outlier. Therefore, 16.5 percent was replaced with the moisture content from the M5/202 train, which was run simultaneously with the M0011 train. When this was done, moisture contents at the inlet were within ±1.2 percent of each other. At the outlet of the ESP, the moisture contents were within ±0.7 percent of each other.

- The O_2/CO_2 data for Run I-2 appear to be out of line when compared to the rest of the data, especially the outlet. The higher O_2 and lower CO_2 values than the rest of the data indicate probable leakage into the sample bag. Therefore, these data should be discarded.

- All flow rates were within ±6.3 percent of the respective averages. Considering that the flow rates at the inlet were summations of the four individual ducts, the agreement was well within the experimental error.

Based on these observations, the moisture content of 16.5 percent from M0011 Run I-1 was discarded and replaced with 22.0 percent. The emission concentrations and flow rates were recalculated and are presented in Table 3-2. These average flow rates were considered to provide the best data, and therefore, were used to calculate the mass emission rates.

3.3 EMISSIONS AND PROCESS DATA

Tables 3-3, 3-4, and 3-5 summarize the emissions, ESP collection efficiencies, and process data, respectively. The aldehyde/ketone data from M0011 are not included in the tables, but are found in Appendix A. The data, however, should not be used since subsequent tests at other plants indicated a problem with collection efficiencies. If sampling problems are resolved later, EPA plans to return to the plant to determine the emissions of aldehydes and ketones.

3.4 EMISSION FACTORS

Table 3-6 presents the emission factors in terms of tons of dry wood flakes processed by the dryer.

TABLE 3-3. SUMMARY OF WET ESP EMISSIONS - GEORGIA PACIFIC

METHOD/ COMPONENT	UNITS	WET ESP INLET				WET ESP OUTLET			
		RUN 1	RUN 2	RUN 3	AVG	RUN 1	RUN 2	RUN 3	AVG
M202: Filterable PM	mg/dscm	248	333	366	316	20.2	36.6	30.0	28.9
Inorganic CPM	mg/dscm	51	70	87	69	13.2	20.1	20.0	17.8
Organic CPM	mg/dscm	14	23	36	24	10.2	16.1	12.4	12.9
Total	mg/dscm	313	426	489	409	43.6	72.8	62.4	59.6
Filterable PM	lb/hr*	107.4	142.3	153.9	134.5	8.4	15.3	12.7	12.1
Inorganic CPM	lb/hr	22.1	29.9	36.6	29.5	5.5	8.4	8.5	7.5
Organic CPM	lb/hr	6.1	9.8	15.1	10.3	4.2	6.7	5.3	5.4
Total	lb/hr	135.5	182.0	205.7	174.4	18.1	30.4	26.5	25.0
25A THC	ppm C	396	1013	445	618	346	836	403	528
	mg/dscm	198	506	222	309	173	418	201	264
THC as Carbon	lb/hr*	85.7	216.2	93.5	131.8	71.8	174.7	85.5	110.6
M25: TGNMO	ppm C	343	1296	538	726	373	1189	413	658
Condensible Organics	ppm C	343	1296	538	726	373	1189	413	658
NMO (Noncondensibles)	ppm C	0	0	0	0	0	0	0	0
TGMNO as Carbon	mg/dscm	171	648	269	363	186	594	206	329
	lb/hr*	74.2	276.6	113.1	154.6	77.4	248.5	87.6	137.8
M10 CO	ppm					95.6	139.8	199.4	145
	lb/hr*					46.2	68.1	98.6	70.9
M7E NO_x	ppm					32	20	21	24
As NO_2	lb/hr*					25.4	16.0	17.0	19.5

* Emission rates are based on average flow rates determined from the simultaneous runs.

TABLE 3-4. WET ESP COLLECTION EFFICIENCIES

METHOD/COMPONENT	RUN NO. 1	RUN NO. 2	RUN NO. 3	AVERAGE
Method 5/202				
Filterable PM	92.2	89.2	91.7	91.0
CPM	65.5	61.9	73.4	67.7
Inorganic	75.2	71.9	76.8	74.7
Organic	30.2	31.5	65.2	47.7
Total	86.7	83.3	87.1	85.7
Method 25 TGNMO	-4.3[1]	10.2	22.5	10.9
Method 25A THC	16.3	19.2	8.6	16.1

Low 83%

[1]Negative efficiencies result primarily from the almost equal inlet and outlet concentrations and the precision of the test methods.

TABLE 3-5. SUMMARY OF PROCESS AND CONTROL EQUIPMENT OPERATING CONDITIONS

PARAMETERS	UNITS	RUN 1	RUN 2	RUN 3	AVG
Dryer Production Rate	Ton/hr*	35.4	38.8	38.7	37.6
Feed Moisture	%	46.8	47.7	47.1	47.2
Exit Moisture	%	2.9	3.7	2.5	3.0
Dryer Entrance Temp	°F	1084	1134	1137	1118
Dryer Exit Temp	°F	248	236	246	243
ESP Temp, Inlet	°F	214	208	220	214
ESP Temp, Outlet	°F	143	146	146	145
ESP Field 1 Voltage,	Kv	26.2	28.2	27.7	27.4
ESP Field 1 Amperage,	mA	42	35	30	36
ESP Field 2 Voltage,	Kv	38.5	42.5	42.0	41.0
ESP Field 2 Amperage,	mA	221	297	274	264
ESP Field 3 Voltage,	Kv	41.0	40.2	42.1	41.1
ESP Field 3 Amperage,	mA	316	300	316	311
Wash Cycle - Start,	Time	1016	1755	1016	
Wash Cycle - Stop,	Time	1033	1812	1033	
Cycle Time	min	17	17	17	
Average Wood Mix - Hardwood	%	58	58	58	58
South Pine	%	42	42	42	42
ESP Water	gpm	362	361	361	361

* Based on dry tons/hr, 0% moisture content

TABLE 3-6. SUMMARY OF EMISSION FACTORS BASED ON PRODUCTION OF DRY WOOD FLAKES

METHOD/ COMPONENT	UNITS	WET ESP INLET				WET ESP OUTLET			
		RUN 1	RUN 2	RUN 3	AVG	RUN 1	RUN 2	RUN 3	AVG
M202									
Filterable PM	lb/ton	3.03	3.67	3.98	3.56	0.24	0.39	0.33	0.32
CPM	lb/ton	0.80	1.02	1.34	1.05	0.27	0.39	0.36	0.34
Inorganic CPM	lb/ton	0.62	0.77	0.95	0.78	0.15	0.22	0.22	0.20
Organic CPM	lb/ton	0.17	0.25	0.39	0.27	0.12	0.17	0.14	0.14
Total	lb/ton	3.83	4.69	5.31	4.61	0.51	0.78	0.68	0.66
M25A THC	lb/ton	2.42	5.57	2.42	3.47	2.03	4.50	2.21	2.91
Method 25 TGNMO	lb/ton	2.10	7.13	2.92	4.05	2.19	6.40	2.26	3.62
CO	lb/ton					1.31	1.75	2.55	1.87
NO_x as NO_2	lb/ton					0.72	0.41	0.44	0.52

3.5 RELATIONSHIP BETWEEN METHODS 25 AND 25A

The data for the relationship between Methods 25 and 25A are shown in Table 3-7.

The Method 25A concentrations are the averages over the entire elapsed time of the test, while the Method 25 sample was stopped and started to correspond with the particulate matter sample. Therefore, the Method 25A concentrations were recalculated to correspond to the times that Method 25 was obtaining samples. The data show some consistencybetween the two methods at both the inlet and outlet of the ESP. Before any conclusions are made, data from all other tests should be evaluated.

3.6 ODEQ METHOD 7 VERSUS M202

NCASI analyzed the back-up filter and verbally reported that the back-up filters had no particulate mass weights. Therefore, it was concluded that the two methods were equivalent.

3.7 SEMI-VOLATILE DATA

Table 3-8 presents the data for the semi-volatile organic compounds. A table showing detection limits is included in Appendix C. This test was conducted basically for screening purposes. Further discussion of these data will be done under a separate report.

TABLE 3-7. METHOD 25 VERSUS METHOD 25A

RUN	THC lb/hr	TGNMO lb/hr	RATIO TGNMO/THC
I-1	85.8	74.2	0.86
I-2	209.7	276.6	1.32
I-3	94.7	113.1	1.19
Avg			1.13
S-1	70.2	77.4	1.10
S-2	174.4	248.5	1.42
S-3	86.7	87.6	1.01
Avg			1.18

TABLE 3-8. SEMIVOLATILE ORGANIC COMPOUNDS

NAME	MM5-1 $\mu g/m^3$	MM5-2 $\mu g/m^3$	MM5-3 $\mu g/m^3$	AVG. $\mu g/m^3$
Naphthalene	---	---	524	175
Diethylphthalate	14.1	4.5	6.1	8.2
Di-n-butylphthalate	6.6	7.5	5.7	6.6
Butylbenzylphthalate	4.8	4.8	20.2	9.9
bis(2-Ethylhexyl)phthalate	55	54	58	56
Di-n-octylphthalate	5.1	8.2	41	18
Total	85.6	79.0	655.0	273.7
lb/hr	0.036	0.033	0.278	0.115

4.0 SAMPLING AND ANALYTICAL PROCEDURES

4.1 TEST METHODS

Table 4-1 summarizes the analytes and test methods used for sampling and analysis. The schematics of all sampling trains, flow diagrams of sample recovery and sample analysis, and descriptions of any modifications to the test methods are also included in this section.

4.2 PARTICULATE MATTER/CONDENSIBLE PARTICULATE MATTER

Method 5/202 was used at the inlet and outlet of the wet ESP to measure PM/CPM. NCASI desired to compare Method 202 with ODEQ Method 7, which is identical to Method 202 except for the following:

- A second filter is placed just before the silica gel impinger.
- Acetone rather than methylene chloride is used in the final rinse of the impingers and connecting glassware.
- An optional out-of-stack filter is used before the impingers.

Because of space limitations, NCASI decided to make this comparison by inserting a second filter in the Method 202 train in the same position as that in the ODEQ Method 7 and using the out-of-stack filter. The back-up filter was transmitted to NCASI, which analyzed the filter gravimetrically according to ODEQ Method 7.

Figures 4-1 and 4-2 illustrate the modifications to the Method 202 sampling train. Figures 4-3 and 4-4 illustrate the sample recovery procedure and analysis schemes, respectively.

4.3 MODIFIED METHOD 5

The standard MM5 sampling train of SW-846 Method 0010 shown in Figure 4-5 was used to collect the semivolatile organic screening samples at the outlet location.

Standard MM5 pre-cleanup requirements included several unique preparation steps to ensure the sampling train components were not contaminated with organics that could have interfered with the analysis. The glassware, glass fiber filters, and XAD adsorbing resin were precleaned using strict protocols. For this particular study, the impinger water fraction was analyzed for oxygenated organics as well as the semivolatile organics. Therefore, the acetone pre-rinse of the train was detected.

TABLE 4-1. SAMPLING AND ANALYTICAL METHODS FOR GEORGIA-PACIFIC

Analyte	Sampling Method	Analytical Method
Particulate Matter (PM)	EPA Method 202 w/ Method 5 filter	EPA Method 5 (Gravimetric)
	ODEQ Method 7	ODEQ Method 7 (Gravimetric)
Condensible Particulate Matter (CPM)	EPA Method 202 w/ Method 5 filter	EPA Method 202 (Extraction/ Gravimetric)
	ODEQ Method 7	ODEQ Method 7 (Extraction/ Gravimetric)
Carbon Monoxide (CO)	EPA Method 10	EPA Method 10 (NDIR)
Nitrogen Oxides (NO_x)	EPA Method 7E	EPA Method 7E (Chemiluminescence)
Oxygen (O_2), Carbon Dioxide (CO_2)	EPA Method 3	EPA Method 3 (Orsat)
Formaldehyde, Aldehydes, Ketones	SW-846 Method 0011	SW-846 Method 0011 (HPLC)
VOC as propane	EPA Method 25A	EPA Method 25A (FID)
VOC as carbon	EPA Method 25	EPA Method 25 (Catalysis, GC/FID)
Organics Screening	SW-846 Method 0010 (MM5)	SW-846 Method 8270 (HPLC)

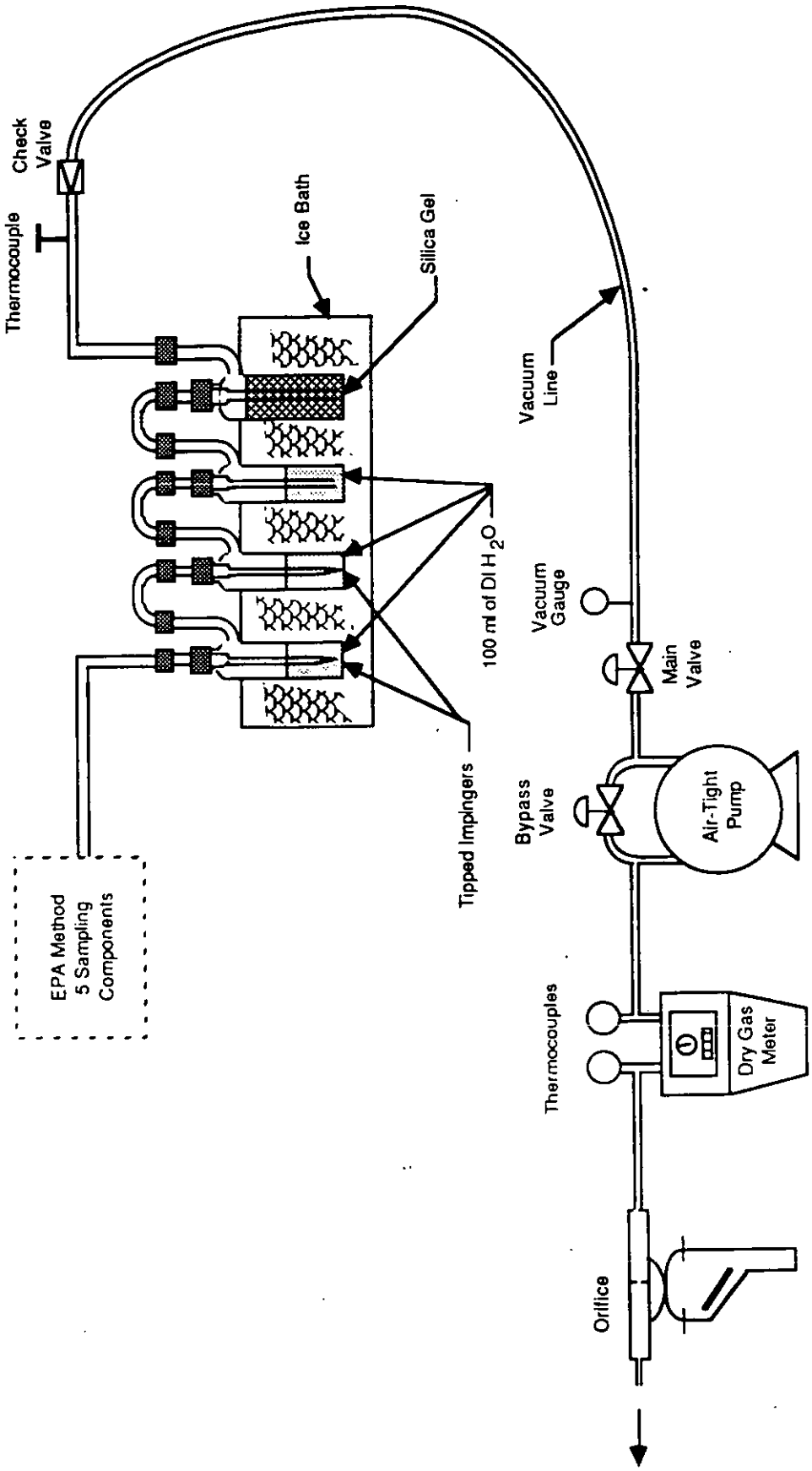


Figure 4-1. Method 202 sampling train with out-of-stack filter.

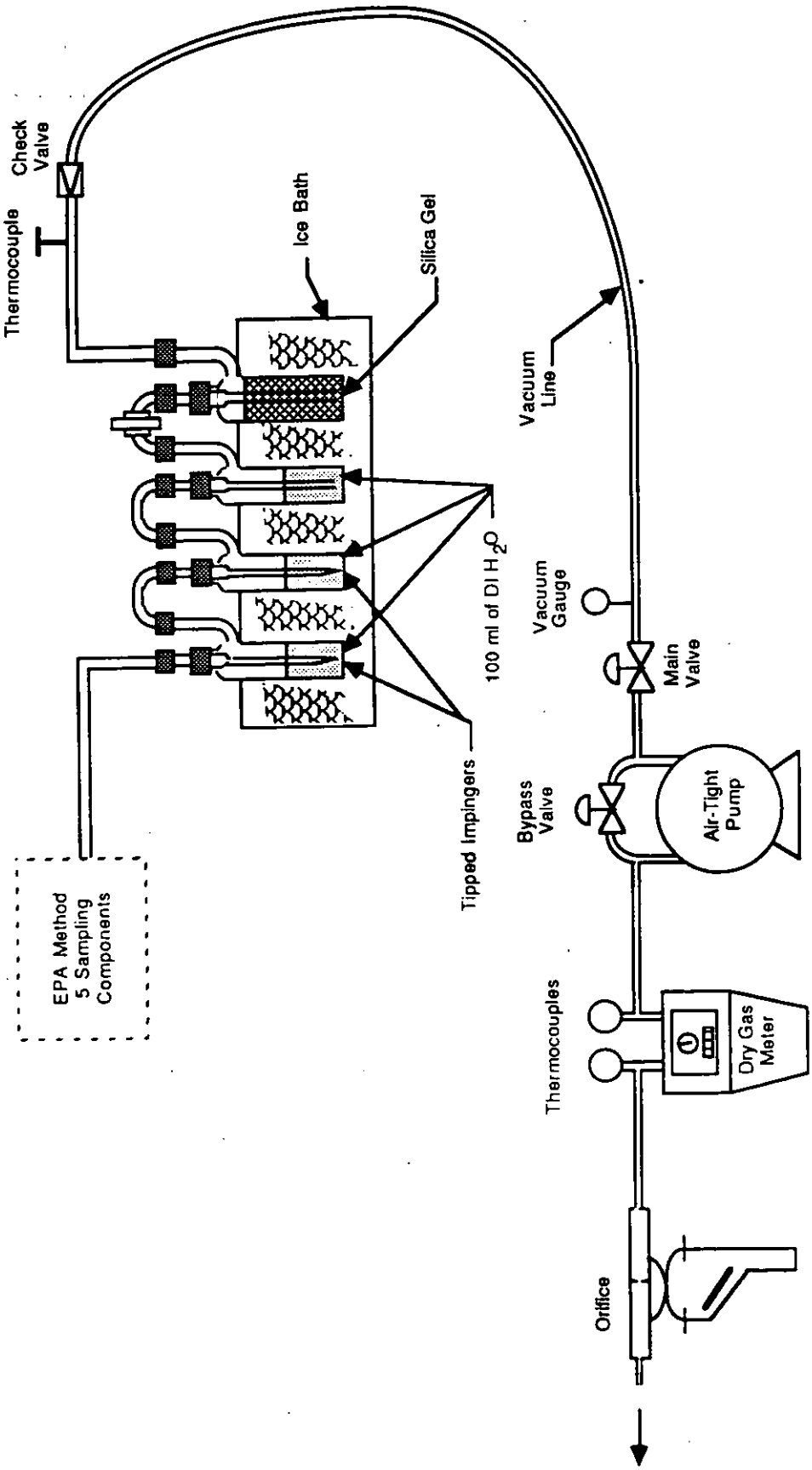
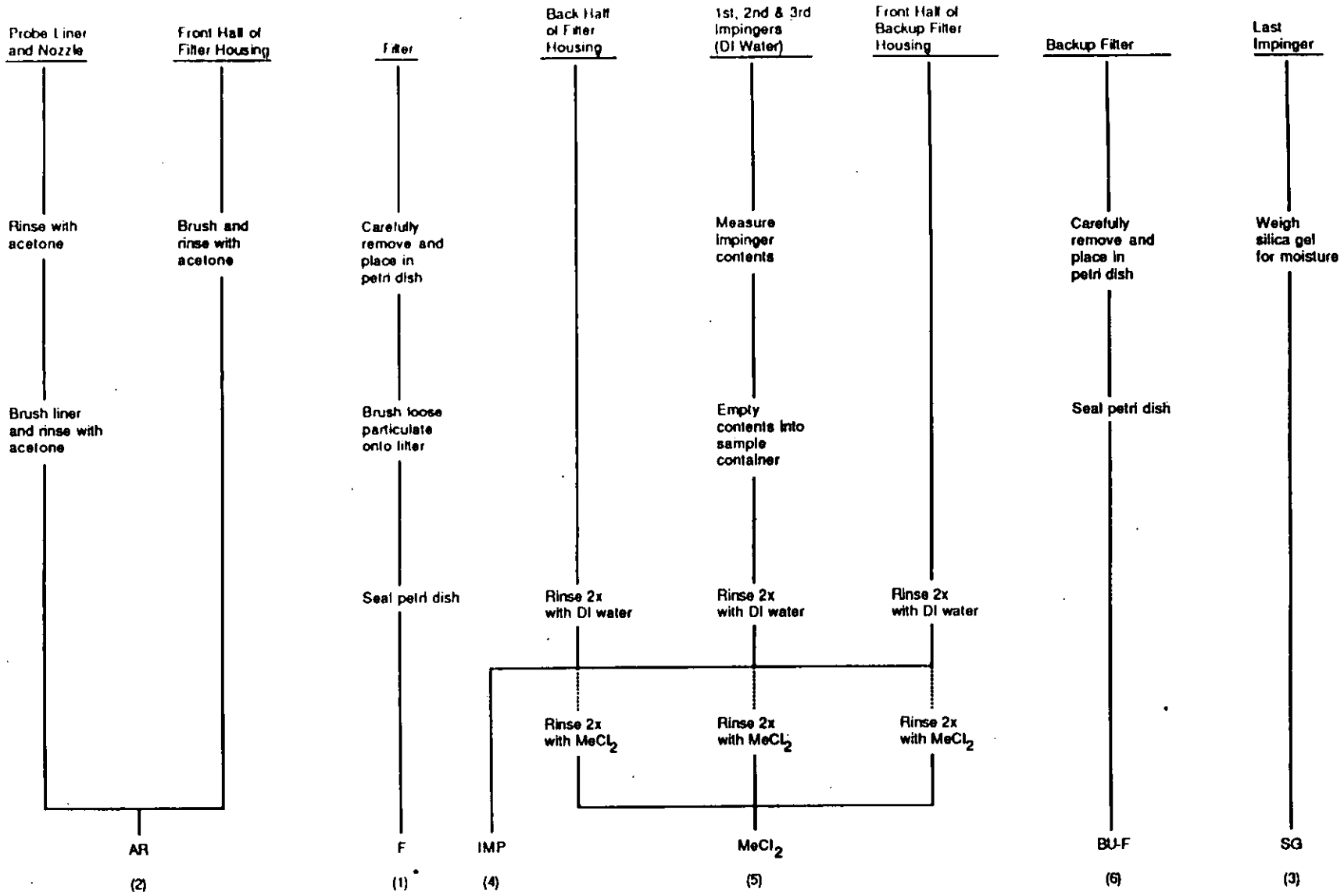


Figure 4-2. Method 202 sampling train with Method 5 filter and backup filter.



Sample container number.

Figure 4-3. Sample recovery scheme for particulate/condensibles samples.

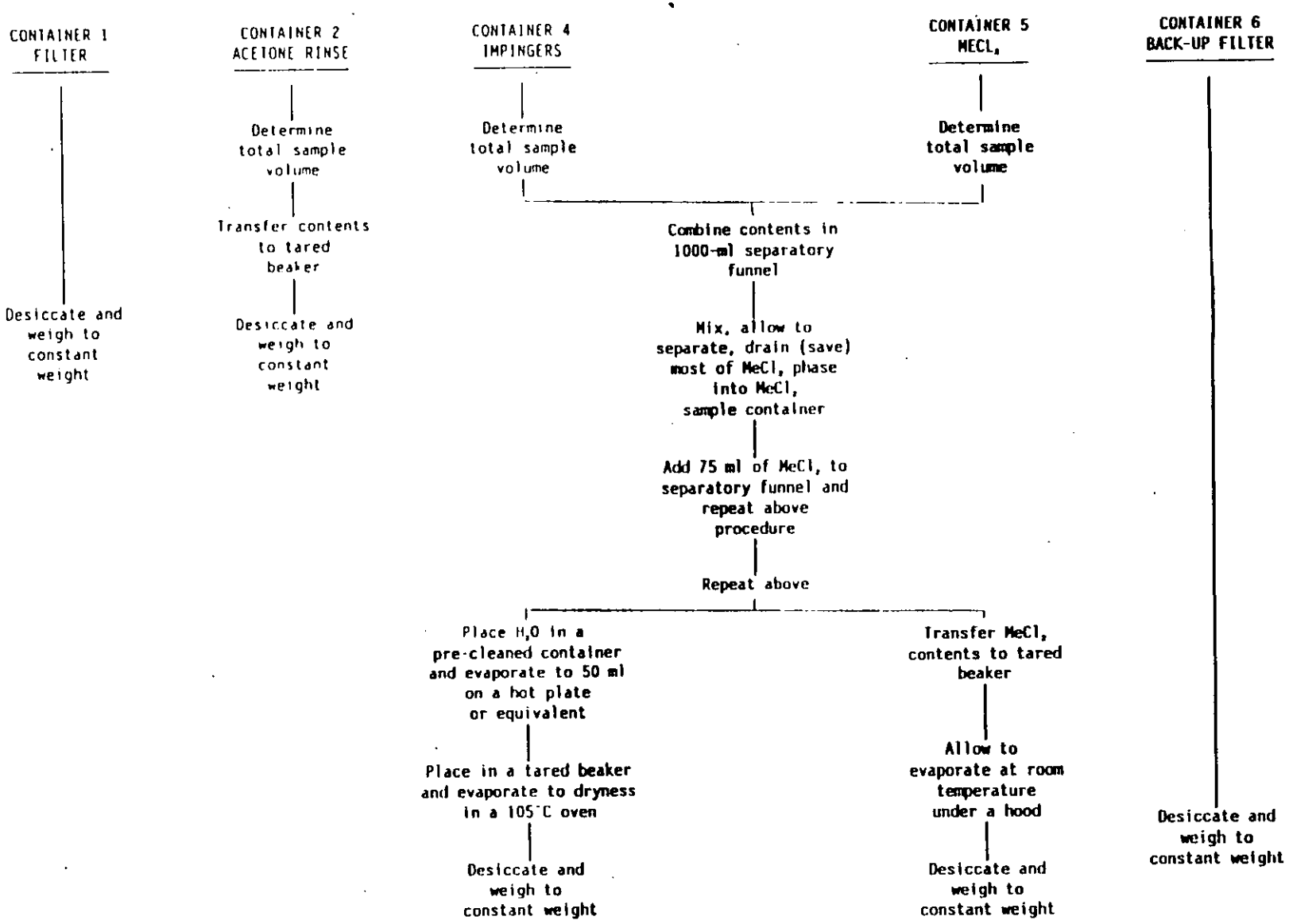


Figure 4-4. Analytical scheme for particulate/condensibles samples.

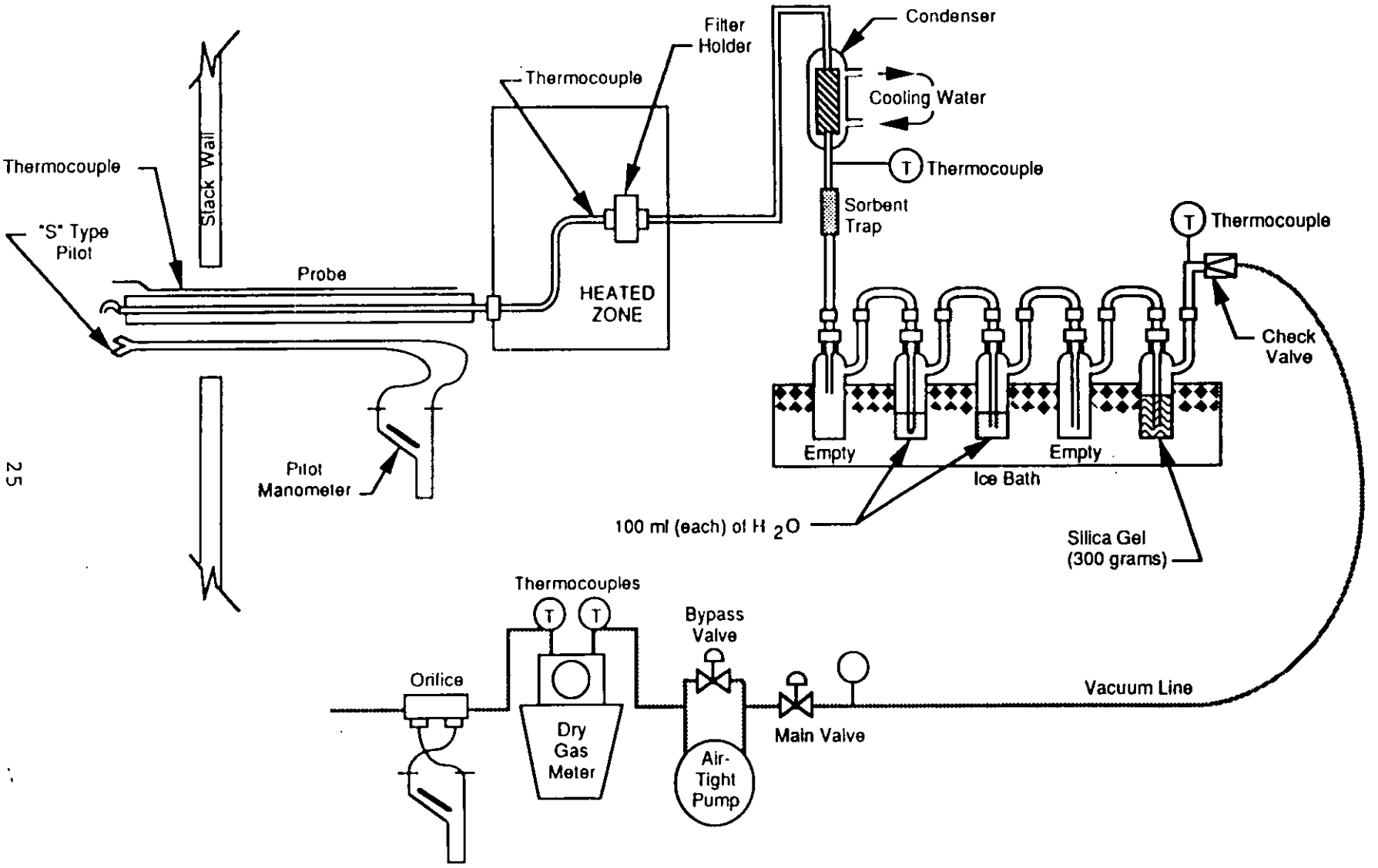
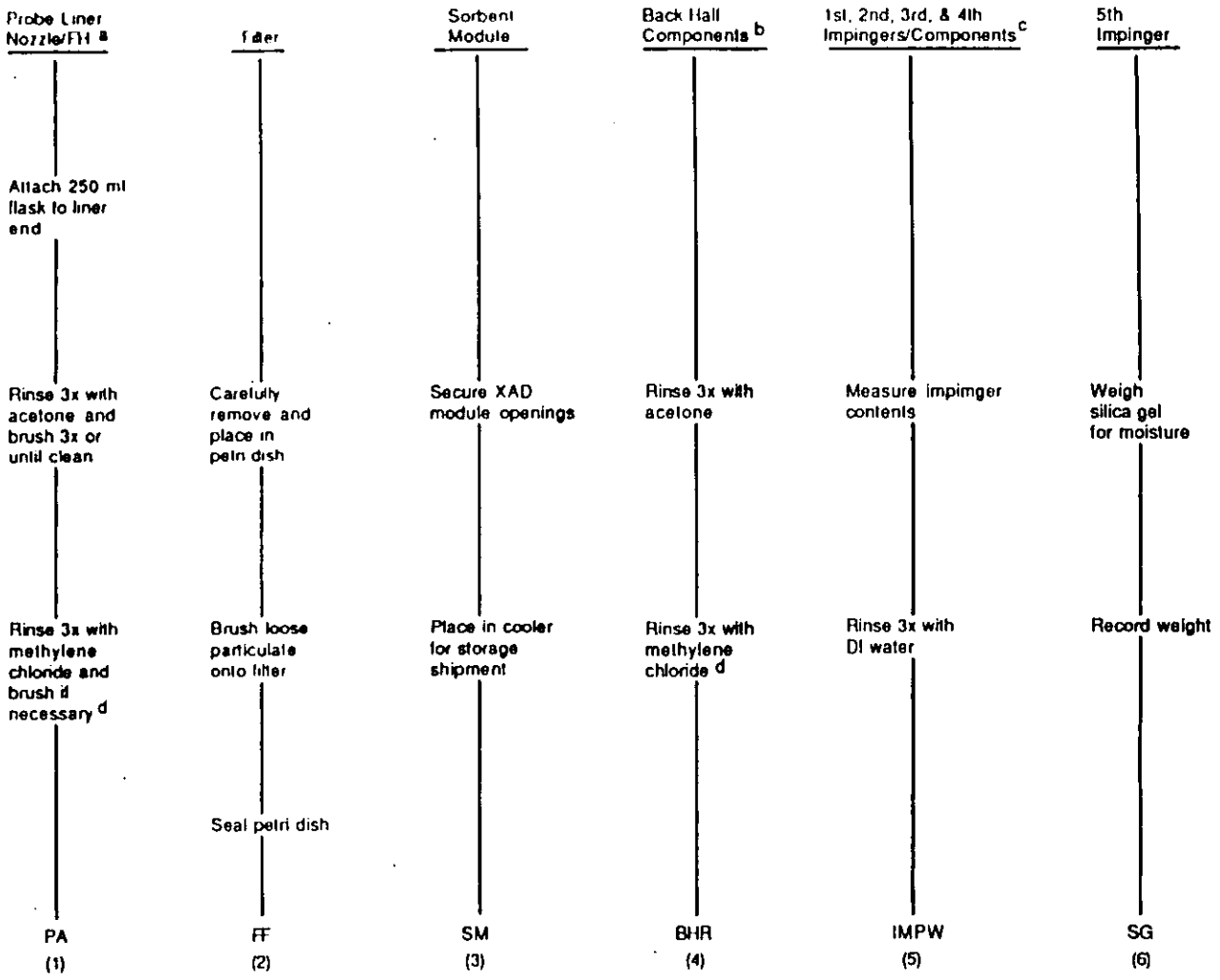


Figure 4-5. Modified Method 5 sampling train.

Figures 4-6 and 4-7 show the sample recovery and analysis schemes.

4.4 OTHER TEST METHODS

Figures 4-8 through 4-14 show the sampling train schematic and sample recovery and analysis schemes for the rest of the test methods used in this test program.



[a] FH = Front half includes connecting glassware from probe to filter housing and front half filter housing.

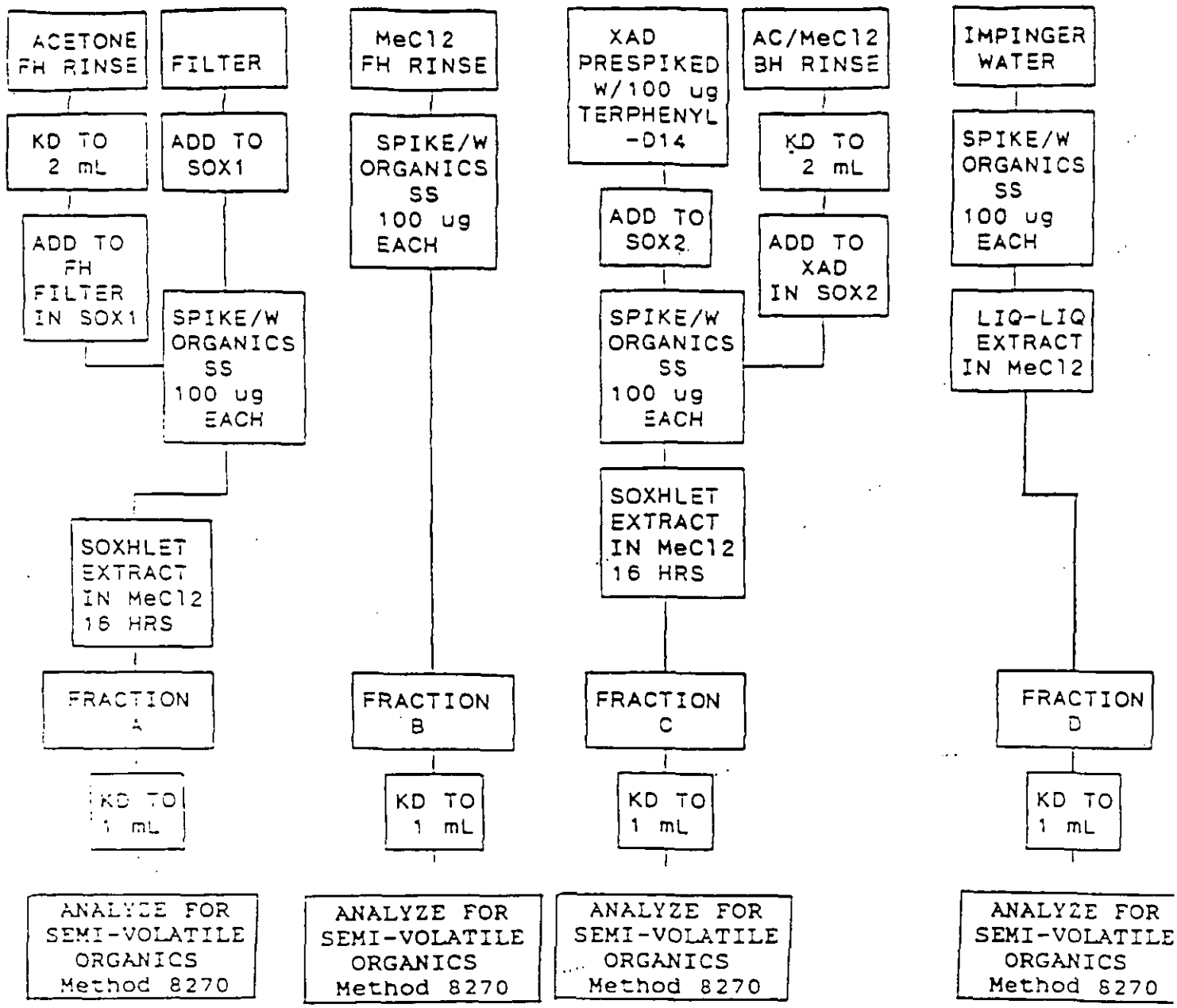
[b] BHR = Back half components - includes connecting glassware from front filter housing through condenser coil, front filter support, back half of front filter housing, condenser coil, impingers and connecting glassware.

[c] 1st, 2nd, 3rd, and 4th Impinger Components - includes impingers and connecting glassware

[d] Methylene chloride rinse will only be used if results from first OSB test indicate that it is necessary.

Figure 4-6. Modified Method 5 sample recovery scheme.

Figure 4-7. Organic field blank analysis flow scheme.



ORGANICS SS SPIKE:

D5-PHENOL	100 ug
1,4-DIBROMOBENZENE	100 ug
D5-NITROBENZENE	100 ug
2-FLUOROBIPHENYL	100 ug
1,3,5-TRICHLOROBENZENE-D3	100 ug
2,4,6-TRIBROMOPHENOL	100 ug
ANTHRACENE-D10	100 ug
PYRENE-D10	100 ug

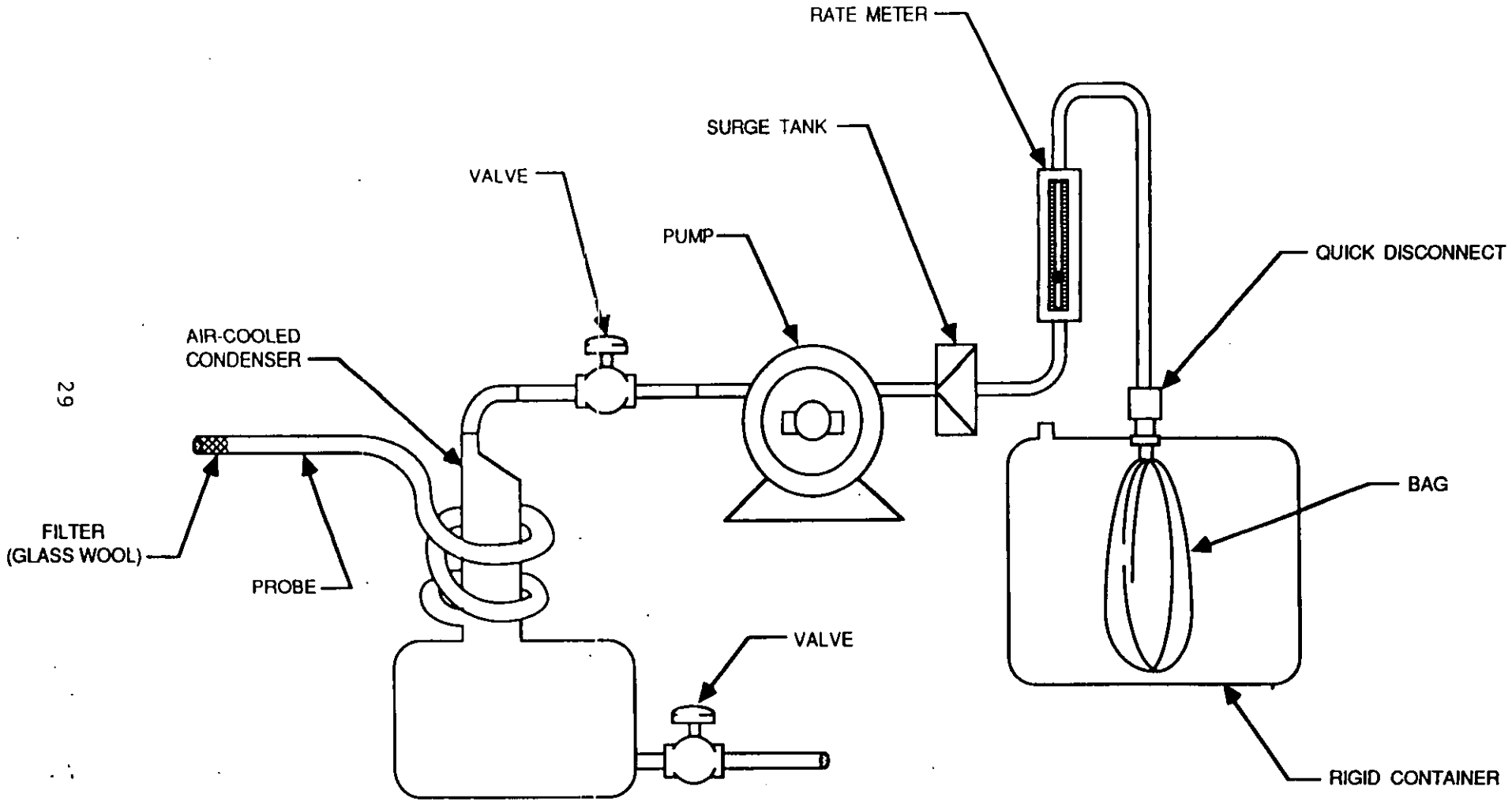


Figure 4-8. Integrated gas sampling train for Method 3.

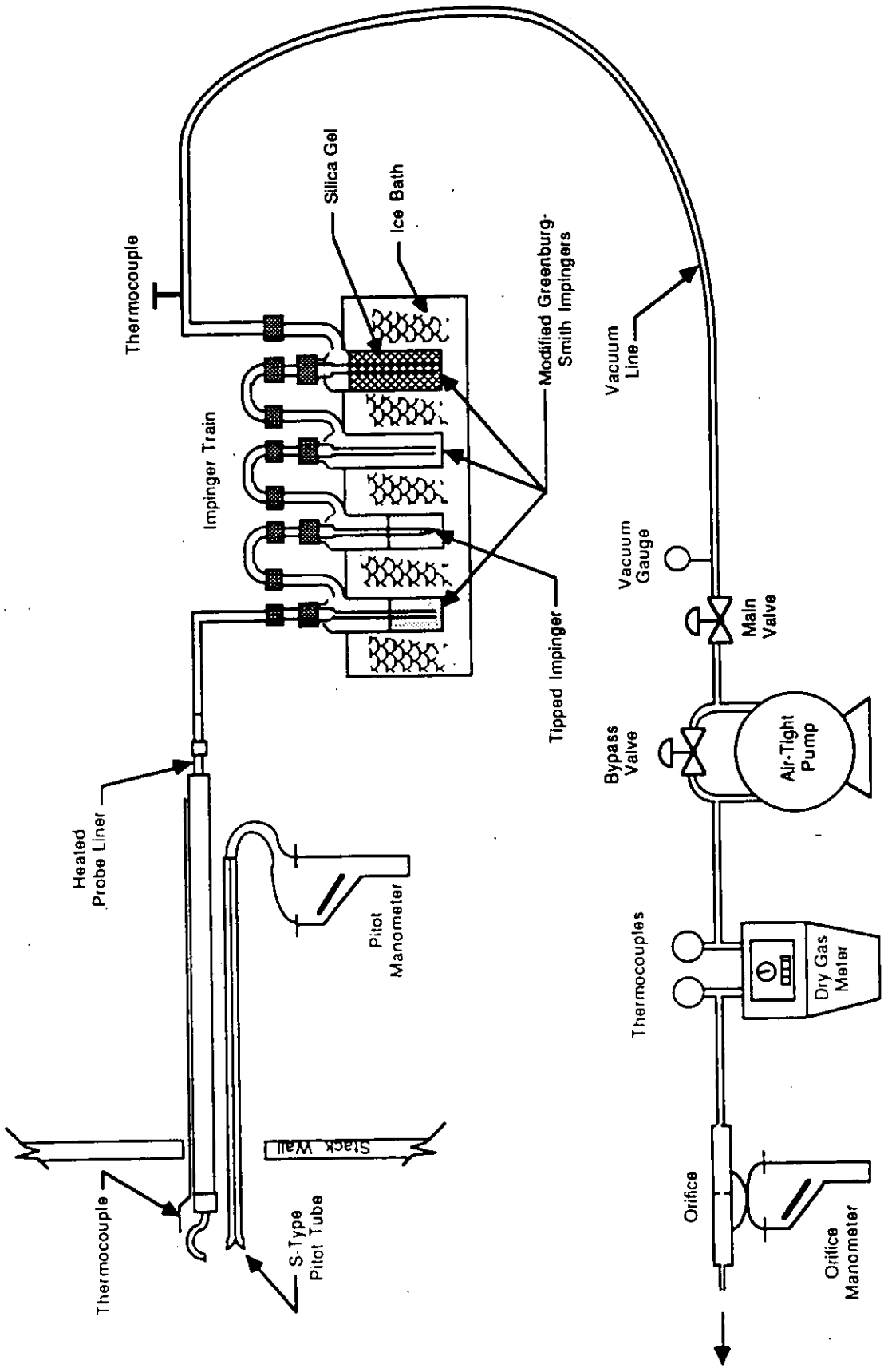


Figure 4-9. Formaldehyde (Method 0011) sampling train.

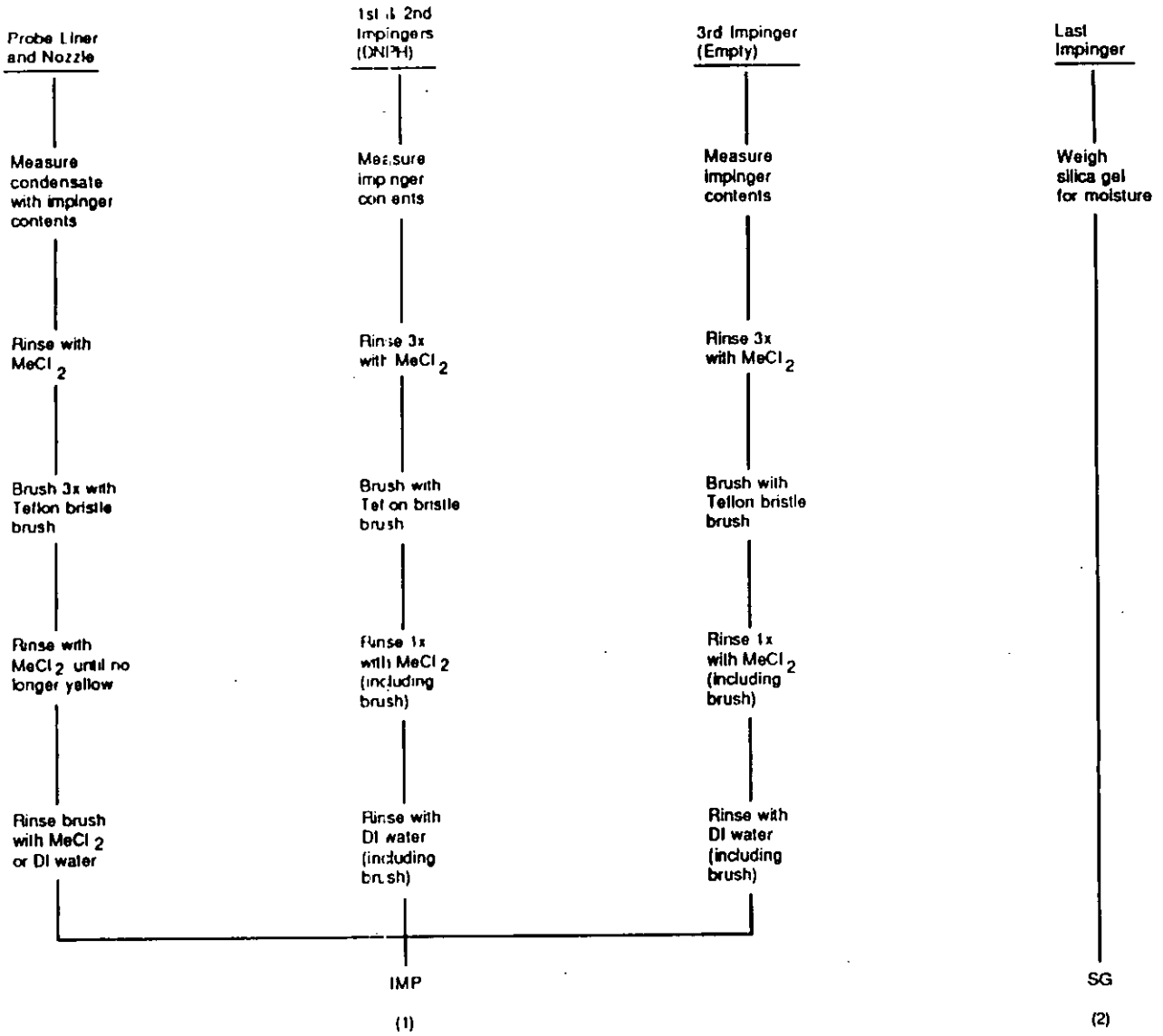


Figure 4-10. Sample recovery scheme for Method 0011 samples.

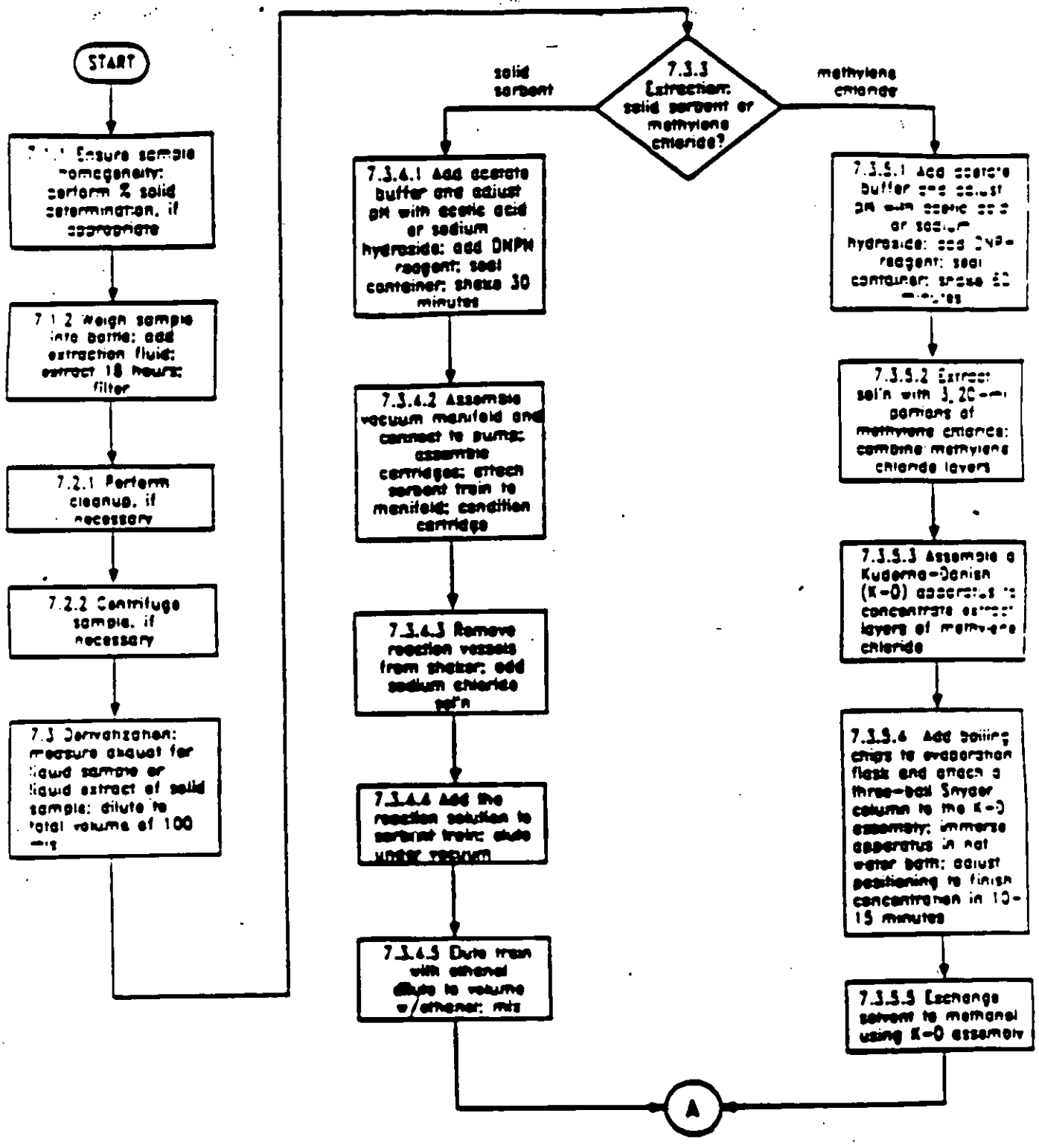


Figure 4-11. Method 0011A. Formaldehyde by high performance liquid chromatography (HPLC).

(continued)

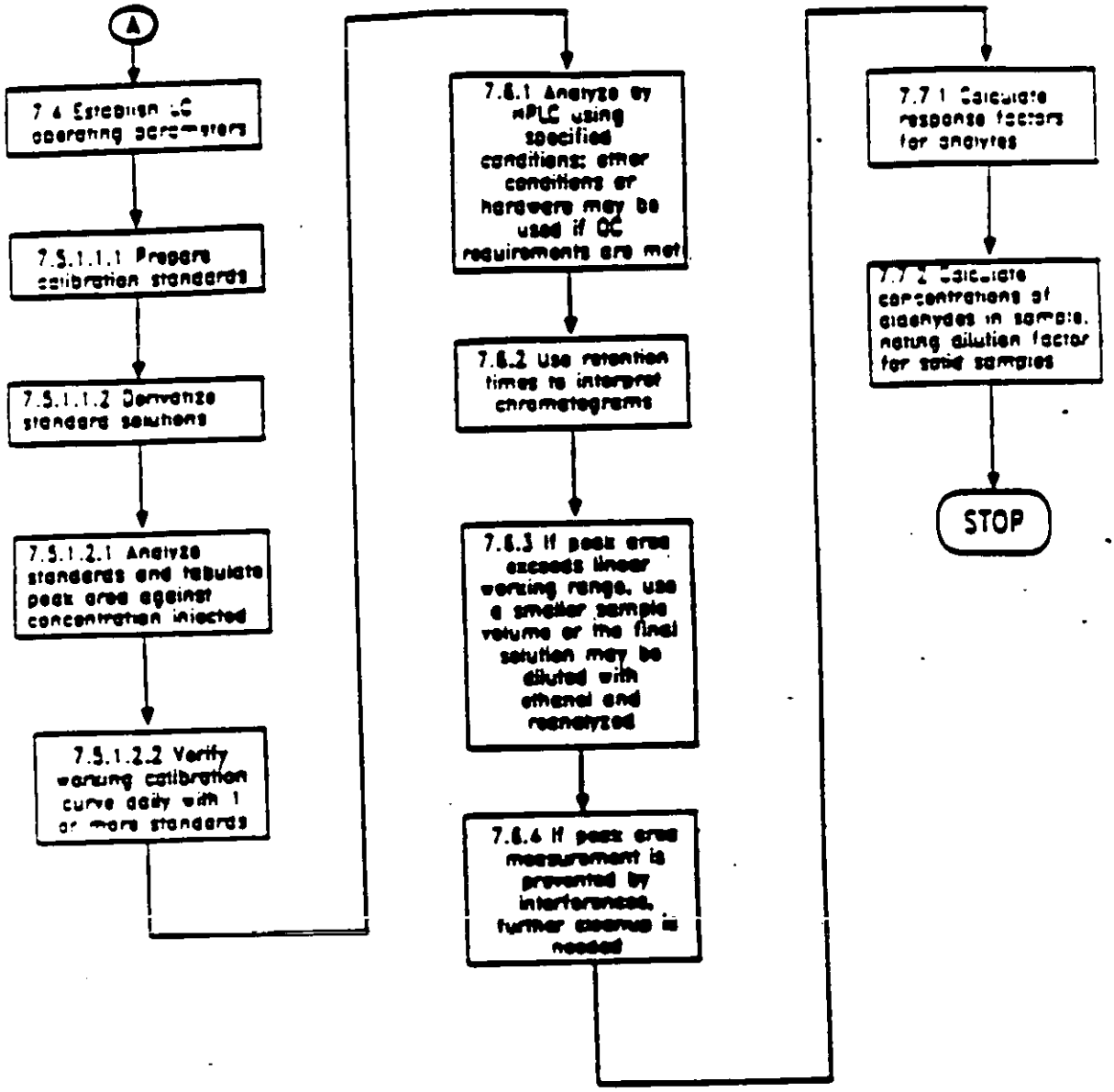


Figure 4-11 (continued)

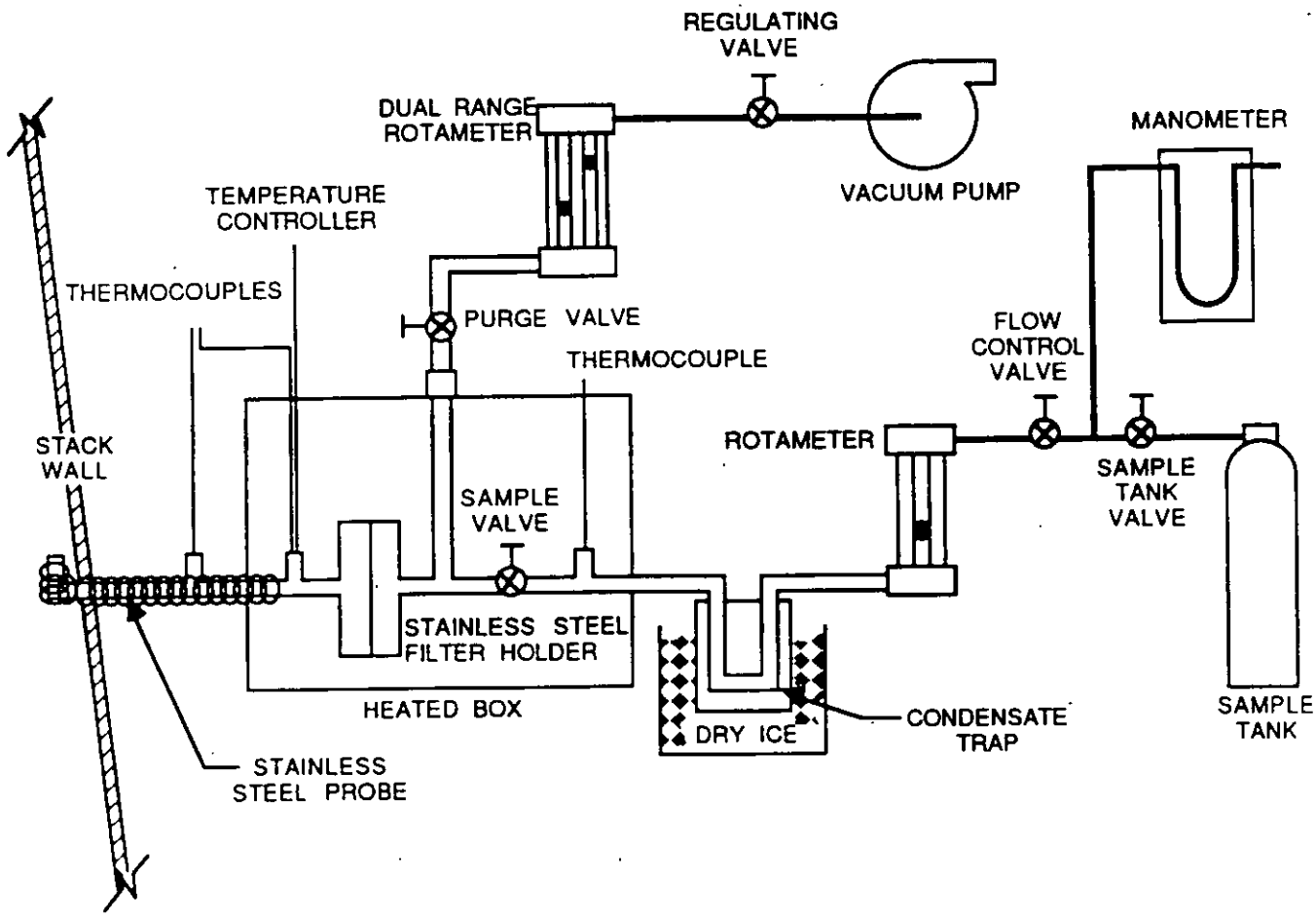


Figure 4-12. Method 25 sampling train.

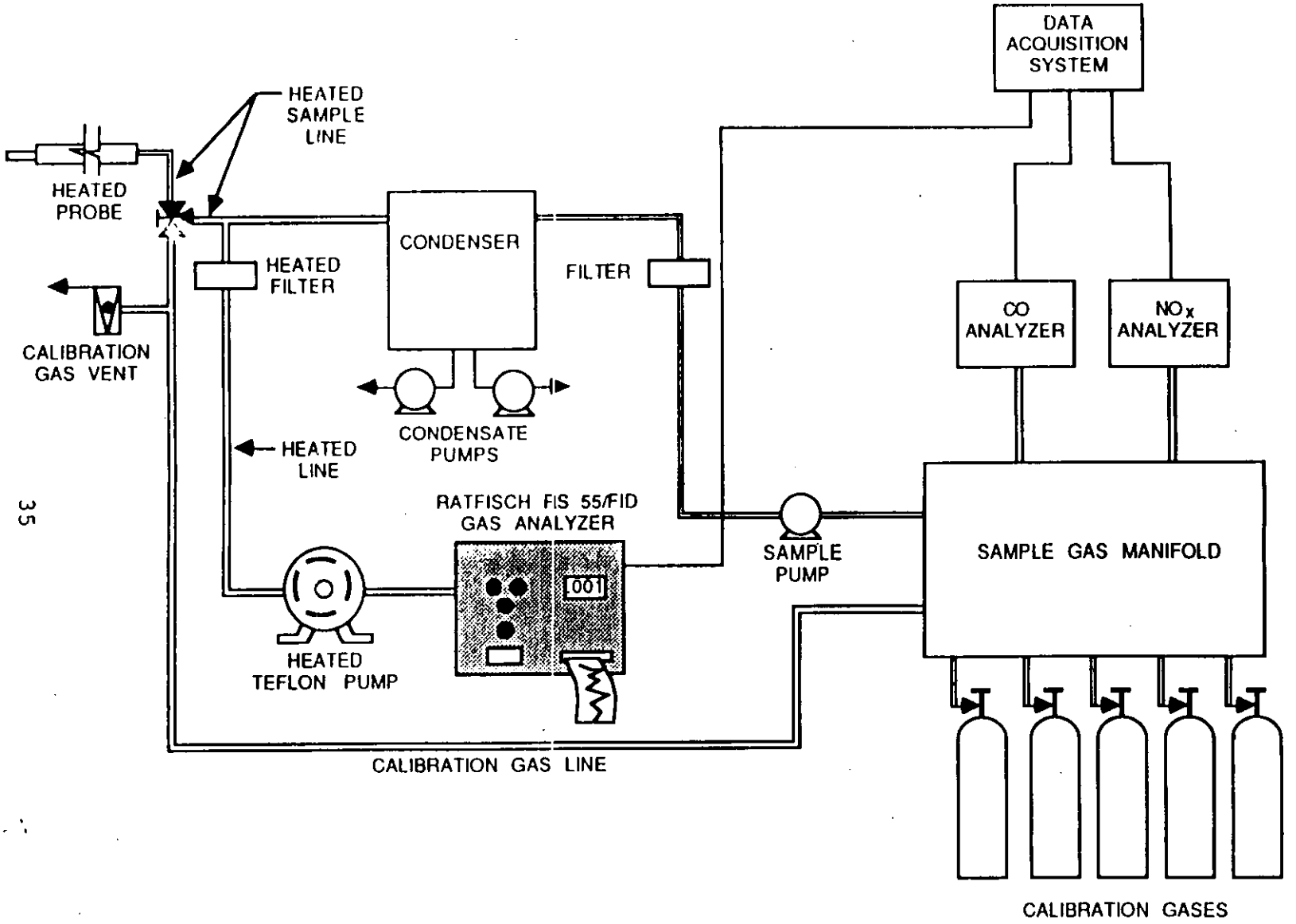


Figure 4-13. Instrumental measurement system for outlet stack location.

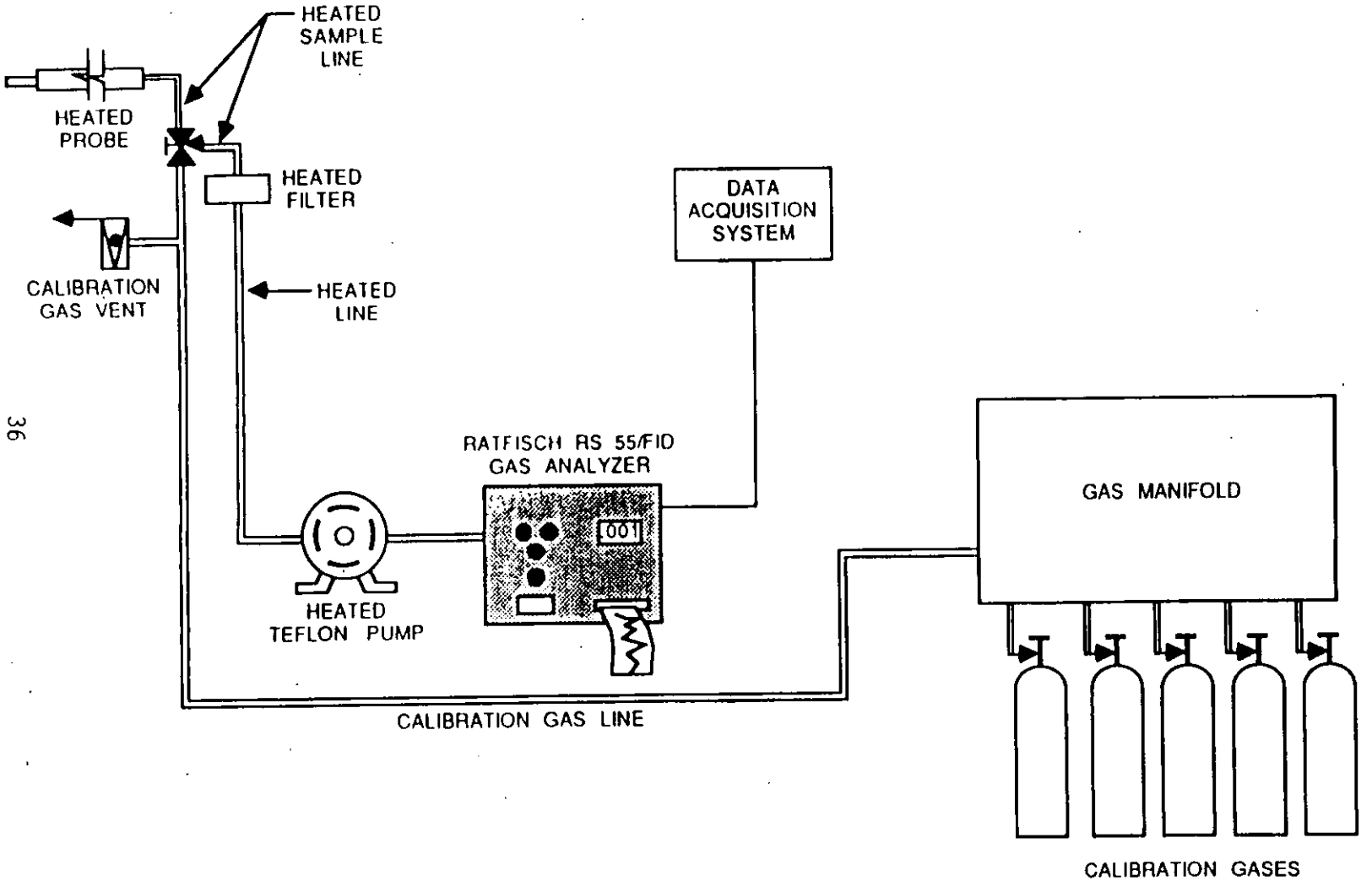


Figure 4-14. Instrumental measurement system for inlet location.

5.0 QA/QC ACTIVITIES

5.1 QC PROCEDURES

One field spike was performed at the EFB outlet location as a check of field handling and recovery procedures. The field spike consisted of introducing 200 µl of the Field Spike Standard into an impinger containing 200 ml of the DNPH solution and following normal recovery procedures.

The Field Spike Standard was prepared in the field according to the method. Exactly 0.5 ml of 37% by weight of formaldehyde (401 mg/ml) was added to a 50-ml volumetric flask containing approximately 40 ml of methanol and then volumed to 50 ml.

The method specifies a 500-µl syringe to transfer both the formaldehyde and the field spike solution. A 500-µl syringe was not available; therefore, a 100-µl syringe was used.

The results of the field spikes are shown below:

Train	HCOH	
	Added	Analyzed
LI-Train	0.80 mg	0.83 mg
S-Train	0.80 mg	0.20 mg

No explanation or reasons could be found for the great difference in the S-train spike.

5.2 SAMPLE VOLUMES AND PERCENT ISOKINETICS

All sampling rates were within ±10 percent of isokinetic. The sample volume and percent isokinetics are shown below:

RUN	SAMPLE VOLUME			PERCENT ISOKINETIC		
	M5/202	M0011	MM5	M5/202	M0011	MM5
I-1	61.0	49.8		97.2	100.5	
I-2	45.1	47.7		102.0	101.1	
I-3	44.1	46.2		103.5	101.0	
S-1	49.0	47.1	48.2	103.1	94.8	91.3
S-2	49.8	45.5	49.1	100.2	95.5	95.9
S-3	54.4	46.2	60.0	99.0	95.7	96.3

APPENDIX A. Method M0011 Data Summary

FIELD DATA AND RESULTS TABULATION
(Revised Data for LI-1)

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Lower Prequench Inlet

		LI-M0011-1	LI-M0011-2	LI-M0011-3
	Test Date	6/25/91	6/25/91	6/26/91
	Run Start Time	1014	1715	930
	Run Finish Time	1340	2015	1141
	Net Traversing Points	32	32	32
Theta	Net Run Time, Minutes	80.00	80.00	80.00
Dia	Nozzle Diameter, Inches	0.191	0.191	0.191
Cp	Pitot Tube Coefficient	0.84	0.84	0.84
Y	Dry Gas Meter Calibration Factor	1.0050	1.0050	1.0050
Pbar	Barometric Pressure, Inches Hg	29.90	29.90	29.90
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H2O	1.49	1.33	1.24
Vm	Volume Of Metered Gas Sample, Dry ACF	51.947	49.592	47.933
tm	Dry Gas Meter Temperature, Degrees F	95	93	92
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	49.796	47.691	46.169
Vlc	Total Liquid Collected In Impingers & Silica Gel, grams	NA	287.0	265.0
Vwstd	Volume of Water Vapor, SCF*	NA	13.509	12.474
%H2O	Moisture Content, Percent by Volume	22.0	22.1	21.3
Mfd	Dry Mole Fraction	0.780	0.779	0.787
%CO2	Carbon Dioxide, Percent By Volume, Dry	3.6	2.6	3.9
%O2	Oxygen, Percent By Volume, Dry	17.1	18.3	16.8
%CO+N2	CO + N2, Percent By Volume, Dry	79.3	79.1	79.3
Md	Gas Molecular Weight, Lb/Lb-Mole, Dry	29.26	29.15	29.30
Ms	Gas Molecular Weight, Lb/Lb-Mole, Wet	26.78	26.69	26.89
Pg	Flue Gas Static Pressure, Inches H2O	-15.50	-15.00	-16.00
Ps	Absolute Flue Gas Pressure, Inches Hg	28.76	28.80	28.72
ts	Flue Gas Temperature, Degrees F	203	200	208
Delta-p	Average Velocity Head, Inches H2O	1.7005	1.5298	1.4380
vs	Flue Gas Velocity, Feet/Second	86.88	82.31	80.08
A	Stack/Duct Area, Square Inches	5,542	5,542	5,542
Qsd	Volumetric Air Flow Rate, Dry SCFM*	119,789	114,045	110,471
Qmsd	Volumetric Air Flow Rate, Dry SCMH*	203,546	193,785	187,712
Qaw	Volumetric Air Flow Rate, Wet ACFM	200,618	190,070	184,917
Qmaw	Volumetric Air Flow Rate, Wet ACMH	340,890	322,967	314,211
%I	Isokinetic Sampling Rate, Percent	100.5	101.1	101.0
ton/hr	Average Process Feed Rate, ton/hr	35.4	38.8	38.7

* 68° F (20°C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

(Revised Data for LI-1)

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Lower Prequench Inlet

		LI-M0011-1	LI-M0011-2	LI-M0011-3
	Acetaldehyde Results			
fwt	Formula Weight, lb/lb-mole	44.00	44.00	44.00
mg	Catch Weight, milligrams	8.5	28.0	11.9
mg/DSCM	Concentration, mg/DSCM*	6.03	20.7	9.10
ppmvd	Concentration, ppmvd	3.30	11.3	4.98
ppm@12%CO2	Concentration, ppmvd at 12% CO2	11.0	52.3	15.3
ppm@7%O2	Concentration, ppmvd at 7% O2	11.8	58.8	16.6
lb/hr	Emission Rate, lb/hr	2.70	8.86	3.77
lb/ton	Emission Rate, lb/ton	0.0764	0.228	0.0973
	Acetone Results			
fwt	Formula Weight, lb/lb-mole	58.00	58.00	58.00
mg	Catch Weight, milligrams	2.3	11.4	3.1
mg/DSCM	Concentration, mg/DSCM*	1.63	8.44	2.37
ppmvd	Concentration, ppmvd	0.68	3.50	0.98
ppm@12%CO2	Concentration, ppmvd at 12% CO2	2.25	16.2	3.03
ppm@7%O2	Concentration, ppmvd at 7% O2	2.43	18.2	3.28
lb/hr	Emission Rate, lb/hr	0.732	3.61	0.981
lb/ton	Emission Rate, lb/ton	0.0207	0.0929	0.0254
	Acrolein Results			
fwt	Formula Weight, lb/lb-mole	56.00	56.00	56.00
mg	Catch Weight, milligrams	1.9	7.9	2.7
mg/DSCM	Concentration, mg/DSCM*	1.35	5.85	2.07
ppmvd	Concentration, ppmvd	0.579	2.51	0.887
ppm@12%CO2	Concentration, ppmvd at 12% CO2	1.93	11.6	2.73
ppm@7%O2	Concentration, ppmvd at 7% O2	2.08	13.0	2.96
lb/hr	Emission Rate, lb/hr	0.605	2.50	0.855
lb/ton	Emission Rate, lb/ton	0.0171	0.0644	0.0221

* 68° F (20°C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

(Revised Data for LI-1)

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Lower Prequench Inlet

		LI-M0011-1	LI-M0011-2	LI-M0011-3
	Benzaldehyde Results			
fwt	Formula Weight, lb/lb-mole	106.00	106.00	106.00
mg	Catch Weight, milligrams	< 0.1	< 0.1	< 0.1
mg/DSCM	Concentration, mg/DSCM*	< 0.0709	< 0.0740	< 0.0765
ppmvd	Concentration, ppmvd	< 0.0161	< 0.0168	< 0.0174
ppm@12%CO2	Concentration, ppmvd at 12% CO2	< 0.0536	< 0.0776	< 0.0534
ppm@7%O2	Concentration, ppmvd at 7% O2	< 0.0578	< 0.0871	< 0.0579
lb/hr	Emission Rate, lb/hr	< 0.0318	< 0.0316	< 0.0317
lb/ton	Emission Rate, lb/ton	< 0.000899	< 0.000815	< 0.000818
	Butylaldehyde Results			
fwt	Formula Weight, lb/lb-mole	72.00	72.00	72.00
mg	Catch Weight, milligrams	0.37	1.23	0.14
mg/DSCM	Concentration, mg/DSCM*	0.262	0.911	0.107
ppmvd	Concentration, ppmvd	0.0877	0.304	0.0358
ppm@12%CO2	Concentration, ppmvd at 12% CO2	0.292	1.40	0.110
ppm@7%O2	Concentration, ppmvd at 7% O2	0.315	1.58	0.119
lb/hr	Emission Rate, lb/hr	0.118	0.389	0.0443
lb/ton	Emission Rate, lb/ton	0.00333	0.0100	0.00114
	Crotonaldehyde Results			
fwt	Formula Weight, lb/lb-mole	70.00	70.00	70.00
mg	Catch Weight, milligrams	0.66	2.58	0.42
mg/DSCM	Concentration, mg/DSCM*	0.468	1.91	0.321
ppmvd	Concentration, ppmvd	0.161	0.656	0.110
ppm@12%CO2	Concentration, ppmvd at 12% CO2	0.536	3.03	0.340
ppm@7%O2	Concentration, ppmvd at 7% O2	0.577	3.40	0.368
lb/hr	Emission Rate, lb/hr	0.210	0.816	0.133
lb/ton	Emission Rate, lb/ton	0.00593	0.0210	0.00343

* 68° F (20°C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

(Revised Data for LI-1)

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Lower Prequench Inlet

		LI-M0011-1	LI-M0011-2	LI-M0011-3
	Dimethylbenzaldehyde Results			
fwt	Formula Weight, lb/lb-mole	134.00	134.00	134.00
mg	Catch Weight, milligrams	0.65	0.04 <	0.1
mg/DSCM	Concentration, mg/DSCM*	0.461	0.0296 <	0.0765
ppmvd	Concentration, ppmvd	0.0827	0.00532 <	0.0137
ppm@12%CO2	Concentration, ppmvd at 12% CO2	0.276	0.0245 <	0.0422
ppm@7%O2	Concentration, ppmvd at 7% O2	0.297	0.0276 <	0.0458
lb/hr	Emission Rate, lb/hr	0.207	0.0127 <	0.0317
lb/ton	Emission Rate, lb/ton	0.00584	0.000326 <	0.000818
	Formaldehyde Results			
fwt	Formula Weight, lb/lb-mole	30.00	30.00	30.00
mg	Catch Weight, milligrams	27.4	78.0	41.2
mg/DSCM	Concentration, mg/DSCM*	19.4	57.8	31.5
ppmvd	Concentration, ppmvd	15.6	46.3	25.3
ppm@12%CO2	Concentration, ppmvd at 12% CO2	51.9	214	77.7
ppm@7%O2	Concentration, ppmvd at 7% O2	55.9	240	84.2
lb/hr	Emission Rate, lb/hr	8.72	24.7	13.0
lb/ton	Emission Rate, lb/ton	0.246	0.636	0.337
	Hexaldehyde Results			
fwt	Formula Weight, lb/lb-mole	100.00	100.00	100.00
mg	Catch Weight, milligrams	< 0.1	< 0.1	< 0.1
mg/DSCM	Concentration, mg/DSCM*	< 0.0709	< 0.0740	< 0.0765
ppmvd	Concentration, ppmvd	< 0.0171	< 0.0178	< 0.0184
ppm@12%CO2	Concentration, ppmvd at 12% CO2	< 0.0569	< 0.0822	< 0.0566
ppm@7%O2	Concentration, ppmvd at 7% O2	< 0.0612	< 0.0924	< 0.0613
lb/hr	Emission Rate, lb/hr	< 0.0318	< 0.0316	< 0.0317
lb/ton	Emission Rate, lb/ton	< 0.000899	< 0.000815	< 0.000818

* 68° F (20°C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

(Revised Data for LI-1)

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Lower Prequench Inlet

		LI-M0011-1	LI-M0011-2	LI-M0011-3
	Propionaldehyde Results			
fwt	Formula Weight, lb/lb-mole	58.00	58.00	58.00
mg	Catch Weight, milligrams	0.45	1.7	1.6
mg/DSCM	Concentration, mg/DSCM*	0.319	1.26	1.22
ppmvd	Concentration, ppmvd	0.132	0.522	0.508
ppm@12%CO2	Concentration, ppmvd at 12% CO2	0.441	2.41	1.56
ppm@7%O2	Concentration, ppmvd at 7% O2	0.475	2.71	1.69
lb/hr	Emission Rate, lb/hr	0.143	0.538	0.506
lb/ton	Emission Rate, lb/ton	0.00405	0.0139	0.0131
	Tolualdehyde Results			
fwt	Formula Weight, lb/lb-mole	120.00	120.00	120.00
mg	Catch Weight, milligrams	< 0.1	< 0.1	< 0.1
mg/DSCM	Concentration, mg/DSCM*	< 0.0709	< 0.0740	< 0.0765
ppmvd	Concentration, ppmvd	< 0.0142	< 0.0148	< 0.0153
ppm@12%CO2	Concentration, ppmvd at 12% CO2	< 0.0474	< 0.0685	< 0.0472
ppm@7%O2	Concentration, ppmvd at 7% O2	< 0.0510	< 0.0770	< 0.0511
lb/hr	Emission Rate, lb/hr	< 0.0318	< 0.0316	< 0.0317
lb/ton	Emission Rate, lb/ton	< 0.000899	< 0.000815	< 0.000818
	Valeraldehyde Results			
fwt	Formula Weight, lb/lb-mole	86.00	86.00	86.00
mg	Catch Weight, milligrams	< 0.1	< 0.1	< 0.1
mg/DSCM	Concentration, mg/DSCM*	< 0.0709	< 0.0740	< 0.0765
ppmvd	Concentration, ppmvd	< 0.0198	< 0.0207	< 0.0214
ppm@12%CO2	Concentration, ppmvd at 12% CO2	< 0.0661	< 0.0956	< 0.0658
ppm@7%O2	Concentration, ppmvd at 7% O2	< 0.0712	< 0.1074	< 0.0713
lb/hr	Emission Rate, lb/hr	< 0.0318	< 0.0316	< 0.0317
lb/ton	Emission Rate, lb/ton	< 0.000899	< 0.000815	< 0.000818

* 68° F (20°C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Lower Prequench Inlet

		LI-M0011-1	LI-M0011-2	LI-M0011-3
	Test Date	6/25/91	6/25/91	6/26/91
	Run Start Time	1014	1715	930
	Run Finish Time	1340	2015	1141
	Net Traversing Points	32	32	32
Theta	Net Run Time, Minutes	80.00.	80.00	80.00
Dia	Nozzle Diameter, Inches	0.191	0.191	0.191
Cp	Pitot Tube Coefficient	0.84	0.84	0.84
Y	Dry Gas Meter Calibration Factor	1.0050	1.0050	1.0050
Pbar	Barometric Pressure, Inches Hg	29.90	29.90	29.90
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H2O	1.49	1.33	1.24
Vm	Volume Of Metered Gas Sample, Dry ACF	51.947	49.592	47.933
tm	Dry Gas Meter Temperature, Degrees F	95	93	92
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	49.796	47.691	46.169
Vlc	Total Liquid Collected In Impingers & Silica Gel, grams	208.5	287.0	265.0
Vwstd	Volume of Water Vapor, SCF*	9.814	13.509	12.474
%H2O	Moisture Content, Percent by Volume	16.5	22.1	21.3
Mfd	Dry Mole Fraction	0.835	0.779	0.787
%CO2	Carbon Dioxide, Percent By Volume, Dry	3.6	2.6	3.9
%O2	Oxygen, Percent By Volume, Dry	17.1	18.3	16.8
%CO+N2	CO + N2, Percent By Volume, Dry	79.3	79.1	79.3
Md	Gas Molecular Weight, Lb/Lb-Mole, Dry	29.26	29.15	29.30
Ms	Gas Molecular Weight, Lb/Lb-Mole, Wet	27.41	26.69	26.89
Pg	Flue Gas Static Pressure, Inches H2O	-15.50	-15.00	-16.00
Ps	Absolute Flue Gas Pressure, Inches Hg	28.76	28.80	28.72
ts	Flue Gas Temperature, Degrees F	203	200	208
Delta-p	Average Velocity Head, Inches H2O	1.7005	1.5298	1.4380
vs	Flue Gas Velocity, Feet/Second	85.89	82.31	80.08
A	Stack/Duct Area, Square Inches	5,542	5,542	5,542
Qsd	Volumetric Air Flow Rate, Dry SCFM*	126,824	114,045	110,471
Qmsd	Volumetric Air Flow Rate, Dry SCMH*	215,499	193,785	187,712
Qaw	Volumetric Air Flow Rate, Wet ACFM	198,323	190,070	184,917
Qmaw	Volumetric Air Flow Rate, Wet ACMH	336,991	322,967	314,211
%I	Isokinetic Sampling Rate, Percent	94.9	101.1	101.0
ton/hr	Average Process Feed Rate, ton/hr	35.4	38.8	38.7

* 68° F (20°C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Lower Prequench Inlet

		LI-M0011-1	LI-M0011-2	LI-M0011-3
	Acetaldehyde Results			
fwt	Formula Weight, lb/lb-mole	44.00	44.00	44.00
mg	Catch Weight, milligrams	8.5	28.0	11.9
mg/DSCM	Concentration, mg/DSCM*	6.03	20.7	9.10
ppmvd	Concentration, ppmvd	3.30	11.3	4.98
ppm@12%CO2	Concentration, ppmvd at 12% CO2	11.0	52.3	15.3
ppm@7%O2	Concentration, ppmvd at 7% O2	11.8	58.8	16.6
lb/hr	Emission Rate, lb/hr	2.86	8.86	3.77
lb/ton	Emission Rate, lb/ton	0.0809	0.228	0.0973
	Acetone Results			
fwt	Formula Weight, lb/lb-mole	58.00	58.00	58.00
mg	Catch Weight, milligrams	2.3	11.4	3.1
mg/DSCM	Concentration, mg/DSCM*	1.63	8.44	2.37
ppmvd	Concentration, ppmvd	0.68	3.50	0.98
ppm@12%CO2	Concentration, ppmvd at 12% CO2	2.25	16.2	3.03
ppm@7%O2	Concentration, ppmvd at 7% O2	2.43	18.2	3.28
lb/hr	Emission Rate, lb/hr	0.775	3.61	0.981
lb/ton	Emission Rate, lb/ton	0.0219	0.0929	0.0254
	Acrolein Results			
fwt	Formula Weight, lb/lb-mole	56.00	56.00	56.00
mg	Catch Weight, milligrams	1.9	7.9	2.7
mg/DSCM	Concentration, mg/DSCM*	1.35	5.85	2.07
ppmvd	Concentration, ppmvd	0.579	2.51	0.887
ppm@12%CO2	Concentration, ppmvd at 12% CO2	1.93	11.6	2.73
ppm@7%O2	Concentration, ppmvd at 7% O2	2.08	13.0	2.96
lb/hr	Emission Rate, lb/hr	0.640	2.50	0.855
lb/ton	Emission Rate, lb/ton	0.0181	0.0644	0.0221

* 68° F (20°C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Lower Prequench Inlet

			LI-M0011-1		LI-M0011-2		LI-M0011-3
	Benzaldehyde Results						
fwt	Formula Weight, lb/lb-mole		106.00		106.00		106.00
mg	Catch Weight, milligrams	<	0.1	<	0.1	<	0.1
mg/DSCM	Concentration, mg/DSCM*	<	0.0709	<	0.0740	<	0.0765
ppmvd	Concentration, ppmvd	<	0.0161	<	0.0168	<	0.0174
ppm@12%CO2	Concentration, ppmvd at 12% CO2	<	0.0536	<	0.0776	<	0.0534
ppm@7%O2	Concentration, ppmvd at 7% O2	<	0.0578	<	0.0871	<	0.0579
lb/hr	Emission Rate, lb/hr	<	0.0337	<	0.0316	<	0.0317
lb/ton	Emission Rate, lb/ton	<	0.000952	<	0.000815	<	0.000818
	Butylaldehyde Results						
fwt	Formula Weight, lb/lb-mole		72.00		72.00		72.00
mg	Catch Weight, milligrams		0.37		1.23		0.14
mg/DSCM	Concentration, mg/DSCM*		0.262		0.911		0.107
ppmvd	Concentration, ppmvd		0.0877		0.304		0.0358
ppm@12%CO2	Concentration, ppmvd at 12% CO2		0.292		1.40		0.110
ppm@7%O2	Concentration, ppmvd at 7% O2		0.315		1.58		0.119
lb/hr	Emission Rate, lb/hr		0.125		0.389		0.0443
lb/ton	Emission Rate, lb/ton		0.00352		0.0100		0.00114
	Crotonaldehyde Results						
fwt	Formula Weight, lb/lb-mole		70.00		70.00		70.00
mg	Catch Weight, milligrams		0.66		2.58		0.42
mg/DSCM	Concentration, mg/DSCM*		0.468		1.91		0.321
ppmvd	Concentration, ppmvd		0.161		0.656		0.110
ppm@12%CO2	Concentration, ppmvd at 12% CO2		0.536		3.03		0.340
ppm@7%O2	Concentration, ppmvd at 7% O2		0.577		3.40		0.368
lb/hr	Emission Rate, lb/hr		0.222		0.816		0.133
lb/ton	Emission Rate, lb/ton		0.00628		0.0210		0.00343

* 68° F (20°C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Lower Prequench Inlet

		LI-M0011-1	LI-M0011-2	LI-M0011-3
	Dimethylbenzaldehyde Results			
fwt	Formula Weight, lb/lb-mole	134.00	134.00	134.00
mg	Catch Weight, milligrams	0.65	< 0.04	0.1
mg/DSCM	Concentration, mg/DSCM*	0.461	< 0.0296	0.0765
ppmvd	Concentration, ppmvd	0.0827	< 0.00532	0.0137
ppm@12%CO2	Concentration, ppmvd at 12% CO2	0.276	< 0.0245	0.0422
ppm@7%O2	Concentration, ppmvd at 7% O2	0.297	< 0.0276	0.0458
lb/hr	Emission Rate, lb/hr	0.219	< 0.0127	0.0317
lb/ton	Emission Rate, lb/ton	0.00619	< 0.000326	0.000818
	Formaldehyde Results			
fwt	Formula Weight, lb/lb-mole	30.00	30.00	30.00
mg	Catch Weight, milligrams	27.4	78.0	41.2
mg/DSCM	Concentration, mg/DSCM*	19.4	57.8	31.5
ppmvd	Concentration, ppmvd	15.6	46.3	25.3
ppm@12%CO2	Concentration, ppmvd at 12% CO2	51.9	214	77.7
ppm@7%O2	Concentration, ppmvd at 7% O2	55.9	240	84.2
lb/hr	Emission Rate, lb/hr	9.23	24.7	13.0
lb/ton	Emission Rate, lb/ton	0.261	0.636	0.337
	Hexaldehyde Results			
fwt	Formula Weight, lb/lb-mole	100.00	100.00	100.00
mg	Catch Weight, milligrams	< 0.1	< 0.1	< 0.1
mg/DSCM	Concentration, mg/DSCM*	< 0.0709	< 0.0740	< 0.0765
ppmvd	Concentration, ppmvd	< 0.0171	< 0.0178	< 0.0184
ppm@12%CO2	Concentration, ppmvd at 12% CO2	< 0.0569	< 0.0822	< 0.0566
ppm@7%O2	Concentration, ppmvd at 7% O2	< 0.0612	< 0.0924	< 0.0613
lb/hr	Emission Rate, lb/hr	< 0.0337	< 0.0316	< 0.0317
lb/ton	Emission Rate, lb/ton	< 0.000952	< 0.000815	< 0.000818

* 68° F (20°C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Lower Prequench Inlet

		LI-M0011-1	LI-M0011-2	LI-M0011-3
	Propionaldehyde Results			
fwt	Formula Weight, lb/lb-mole	58.00	58.00	58.00
mg	Catch Weight, milligrams	0.45	1.7	1.6
mg/DSCM	Concentration, mg/DSCM*	0.319	1.26	1.22
ppmvd	Concentration, ppmvd	0.132	0.522	0.508
ppm@12%CO2	Concentration, ppmvd at 12% CO2	0.441	2.41	1.56
ppm@7%O2	Concentration, ppmvd at 7% O2	0.475	2.71	1.69
lb/hr	Emission Rate, lb/hr	0.152	0.538	0.506
lb/ton	Emission Rate, lb/ton	0.00428	0.0139	0.0131
	Tolualdehyde Results			
fwt	Formula Weight, lb/lb-mole	120.00	120.00	120.00
mg	Catch Weight, milligrams	< 0.1	< 0.1	< 0.1
mg/DSCM	Concentration, mg/DSCM*	< 0.0709	< 0.0740	< 0.0765
ppmvd	Concentration, ppmvd	< 0.0142	< 0.0148	< 0.0153
ppm@12%CO2	Concentration, ppmvd at 12% CO2	< 0.0474	< 0.0685	< 0.0472
ppm@7%O2	Concentration, ppmvd at 7% O2	< 0.0510	< 0.0770	< 0.0511
lb/hr	Emission Rate, lb/hr	< 0.0337	< 0.0316	< 0.0317
lb/ton	Emission Rate, lb/ton	< 0.000952	< 0.000815	< 0.000818
	Valeraldehyde Results			
fwt	Formula Weight, lb/lb-mole	86.00	86.00	86.00
mg	Catch Weight, milligrams	< 0.1	< 0.1	< 0.1
mg/DSCM	Concentration, mg/DSCM*	< 0.0709	< 0.0740	< 0.0765
ppmvd	Concentration, ppmvd	< 0.0198	< 0.0207	< 0.0214
ppm@12%CO2	Concentration, ppmvd at 12% CO2	< 0.0661	< 0.0956	< 0.0658
ppm@7%O2	Concentration, ppmvd at 7% O2	< 0.0712	< 0.1074	< 0.0713
lb/hr	Emission Rate, lb/hr	< 0.0337	< 0.0316	< 0.0317
lb/ton	Emission Rate, lb/ton	< 0.000952	< 0.000815	< 0.000818

* 68° F (20°C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Stack

		S-M0011-1	S-M0011-2	S-M0011-3
	Test Date	6/25/91	6/25/91	6/26/91
	Run Start Time	1014	1753	930
	Run Finish Time	1342	2005	1143
	Net Traversing Points	32	32	32
Theta	Net Run Time, Minutes	80.00	80.00	80.00
Dia	Nozzle Diameter, Inches	0.248	0.248	0.248
Cp	Pitot Tube Coefficient	0.84	0.84	0.84
Y	Dry Gas Meter Calibration Factor	1.0055	1.0055	1.0055
Pbar	Barometric Pressure, Inches Hg	29.80	29.80	29.80
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H2O	1.33	1.18	1.25
Vm	Volume Of Metered Gas Sample, Dry ACF	50.395	47.620	49.150
tm	Dry Gas Meter Temperature, Degrees F	107	95	104
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	47.133	45.484	46.204
Vlc	Total Liquid Collected In Impingers & Silica Gel, grams	273.0	277.5	290.5
Vwstd	Volume of Water Vapor, SCF*	12.850	13.062	13.674
%H2O	Moisture Content, Percent by Volume	21.4	22.3	22.8
Mfd	Dry Mole Fraction	0.786	0.777	0.772
%CO2	Carbon Dioxide, Percent By Volume, Dry	3.5	3.6	3.5
%O2	Oxygen, Percent By Volume, Dry	17.2	16.9	17.2
%CO+N2	CO + N2, Percent By Volume, Dry	79.3	79.5	79.3
Md	Gas Molecular Weight, Lb/Lb-Mole, Dry	29.25	29.25	29.25
Ms	Gas Molecular Weight, Lb/Lb-Mole, Wet	26.84	26.74	26.68
Pg	Flue Gas Static Pressure, Inches H2O	0.00	0.00	0.00
Ps	Absolute Flue Gas Pressure, Inches Hg	29.80	29.80	29.80
ts	Flue Gas Temperature, Degrees F	144	146	148
Delta-p	Average Velocity Head, Inches H2O	0.5228	0.4912	0.5115
vs	Flue Gas Velocity, Feet/Second	45.12	43.89	44.91
A	Stack/Duct Area, Square Inches	9,161	9,161	9,161
Qsd	Volumetric Air Flow Rate, Dry SCFM*	117,835	112,945	114,420
Qmsd	Volumetric Air Flow Rate, Dry SCMH*	200,225	191,916	194,423
Qaw	Volumetric Air Flow Rate, Wet ACFM	172,237	167,529	171,437
Qmaw	Volumetric Air Flow Rate, Wet ACMH	292,665	284,665	291,306
%I	Isokinetic Sampling Rate, Percent	94.8	95.5	95.7
ton/hr	Process Feed Rate, ton/hr	35.4	38.8	38.7

* 68° F (20°C) -- 29.92 Inches of Mercury (Hg)

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Stack

		S-M0011-1	S-M0011-2	S-M0011-3
	Acetaldehyde Results			
fwt	Formula Weight, lb/lb-mole	44.00	44.00	44.00
mg	Catch Weight, milligrams	8.1	12.2	10.7
mg/DSCM	Concentration, mg/DSCM*	6.07	9.47	8.18
ppmvd	Concentration, ppmvd	3.32	5.18	4.47
ppm@12%CO2	Concentration, ppmvd at 12% CO2	11.4	17.3	15.3
ppm@7%O2	Concentration, ppmvd at 7% O2	12.2	17.7	16.5
lb/hr	Emission Rate, lb/hr	2.68	4.01	3.51
lb/ton	Emission Rate, lb/ton	0.0757	0.103	0.0906
	Acetone Results			
fwt	Formula Weight, lb/lb-mole	58.00	58.00	58.00
mg	Catch Weight, milligrams	2.8	4.4	3.7
mg/DSCM	Concentration, mg/DSCM*	2.10	3.42	2.83
ppmvd	Concentration, ppmvd	0.870	1.42	1.17
ppm@12%CO2	Concentration, ppmvd at 12% CO2	2.98	4.72	4.02
ppm@7%O2	Concentration, ppmvd at 7% O2	3.21	4.84	4.32
lb/hr	Emission Rate, lb/hr	0.926	1.45	1.212
lb/ton	Emission Rate, lb/ton	0.0262	0.0372	0.0313
	Acrolein Results			
fwt	Formula Weight, lb/lb-mole	56.00	56.00	56.00
mg	Catch Weight, milligrams	2.9	4.0	4.0
mg/DSCM	Concentration, mg/DSCM*	2.17	3.11	3.06
ppmvd	Concentration, ppmvd	0.933	1.33	1.31
ppm@12%CO2	Concentration, ppmvd at 12% CO2	3.20	4.45	4.50
ppm@7%O2	Concentration, ppmvd at 7% O2	3.44	4.56	4.84
lb/hr	Emission Rate, lb/hr	0.959	1.31	1.31
lb/ton	Emission Rate, lb/ton	0.0271	0.0339	0.0339

* 68° F (20°C) -- 29.92 Inches of Mercury (Hg)

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Stack

		S-M0011-1	S-M0011-2	S-M0011-3
	Benzaldehyde Results			
fwt	Formula Weight, lb/lb-mole	106.00	106.00	106.00
mg	Catch Weight, milligrams	< 0.1	< 0.1	< 0.1
mg/DSCM	Concentration, mg/DSCM*	< 0.0749	< 0.0776	< 0.0764
ppmvd	Concentration, ppmvd	< 0.0170	< 0.0176	< 0.0173
ppm@12%CO2	Concentration, ppmvd at 12% CO2	< 0.0583	< 0.0587	< 0.0595
ppm@7%O2	Concentration, ppmvd at 7% O2	< 0.0626	< 0.0602	< 0.0639
lb/hr	Emission Rate, lb/hr	< 0.0331	< 0.0328	< 0.0328
lb/ton	Emission Rate, lb/ton	< 0.000934	< 0.000847	< 0.000846
	Butylaldehyde Results			
fwt	Formula Weight, lb/lb-mole	72.00	72.00	72.00
mg	Catch Weight, milligrams	0.39	1.83	0.46
mg/DSCM	Concentration, mg/DSCM*	0.292	1.42	0.352
ppmvd	Concentration, ppmvd	0.0976	0.475	0.117
ppm@12%CO2	Concentration, ppmvd at 12% CO2	0.335	1.58	0.403
ppm@7%O2	Concentration, ppmvd at 7% O2	0.360	1.62	0.433
lb/hr	Emission Rate, lb/hr	0.129	0.601	0.151
lb/ton	Emission Rate, lb/ton	0.00364	0.0155	0.00389
	Crotonaldehyde Results			
fwt	Formula Weight, lb/lb-mole	70.00	70.00	70.00
mg	Catch Weight, milligrams	1.38	0.86	1.68
mg/DSCM	Concentration, mg/DSCM*	1.03	0.668	1.28
ppmvd	Concentration, ppmvd	0.355	0.229	0.441
ppm@12%CO2	Concentration, ppmvd at 12% CO2	1.22	0.765	1.51
ppm@7%O2	Concentration, ppmvd at 7% O2	1.31	0.783	1.63
lb/hr	Emission Rate, lb/hr	0.456	0.282	0.550
lb/ton	Emission Rate, lb/ton	0.0129	0.00728	0.0142

* 68° F (20°C) -- 29.92 Inches of Mercury (Hg)

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Stack

		S-M0011-1	S-M0011-2	S-M0011-3
	Dimethylbenzaldehyde Results			
fwt	Formula Weight, lb/lb-mole	134.00	134.00	134.00
mg	Catch Weight, milligrams	< 0.1	< 0.1	< 0.1
mg/DSCM	Concentration, mg/DSCM*	< 0.0749	< 0.0776	< 0.0764
ppmvd	Concentration, ppmvd	< 0.0134	< 0.0139	< 0.0137
ppm@12%CO2	Concentration, ppmvd at 12% CO2	< 0.0461	< 0.0465	< 0.0470
ppm@7%O2	Concentration, ppmvd at 7% O2	< 0.0496	< 0.0476	< 0.0505
lb/hr	Emission Rate, lb/hr	< 0.0331	< 0.0328	< 0.0328
lb/ton	Emission Rate, lb/ton	< 0.000934	< 0.000847	< 0.000846
	Formaldehyde Results			
fwt	Formula Weight, lb/lb-mole	30.00	30.00	30.00
mg	Catch Weight, milligrams	32.3	41.4	19.7
mg/DSCM	Concentration, mg/DSCM*	24.2	32.1	15.1
ppmvd	Concentration, ppmvd	19.4	25.8	12.1
ppm@12%CO2	Concentration, ppmvd at 12% CO2	66.5	85.9	41.4
ppm@7%O2	Concentration, ppmvd at 7% O2	71.5	88.0	44.5
lb/hr	Emission Rate, lb/hr	10.7	13.6	6.45
lb/ton	Emission Rate, lb/ton	0.302	0.350	0.167
	Hexaldehyde Results			
fwt	Formula Weight, lb/lb-mole	100.00	100.00	100.00
mg	Catch Weight, milligrams	< 0.1	< 0.1	< 0.1
mg/DSCM	Concentration, mg/DSCM*	< 0.0749	< 0.0776	< 0.0764
ppmvd	Concentration, ppmvd	< 0.0180	< 0.0187	< 0.0184
ppm@12%CO2	Concentration, ppmvd at 12% CO2	< 0.0618	< 0.0623	< 0.0630
ppm@7%O2	Concentration, ppmvd at 7% O2	< 0.0664	< 0.0638	< 0.0677
lb/hr	Emission Rate, lb/hr	< 0.0331	< 0.0328	< 0.0328
lb/ton	Emission Rate, lb/ton	< 0.000934	< 0.000847	< 0.000846

* 68° F (20°C) -- 29.92 Inches of Mercury (Hg)

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Stack

		S-M0011-1	S-M0011-2	S-M0011-3
	Propionaldehyde Results			
fwt	Formula Weight, lb/lb-mole	58.00	58.00	58.00
mg	Catch Weight, milligrams	1.1	0.78	1.28
mg/DSCM	Concentration, mg/DSCM*	0.824	0.606	0.978
ppmvd	Concentration, ppmvd	0.342	0.251	0.406
ppm@12%CO2	Concentration, ppmvd at 12% CO2	1.17	0.837	1.39
ppm@7%O2	Concentration, ppmvd at 7% O2	1.26	0.858	1.49
lb/hr	Emission Rate, lb/hr	0.364	0.256	0.419
lb/ton	Emission Rate, lb/ton	0.0103	0.00660	0.0108
	Tolualdehyde Results			
fwt	Formula Weight, lb/lb-mole	120.00	120.00	120.00
mg	Catch Weight, milligrams	< 0.1	< 0.1	< 0.1
mg/DSCM	Concentration, mg/DSCM*	< 0.0749	< 0.0776	< 0.0764
ppmvd	Concentration, ppmvd	< 0.0150	< 0.0156	< 0.0153
ppm@12%CO2	Concentration, ppmvd at 12% CO2	< 0.0515	< 0.0519	< 0.0525
ppm@7%O2	Concentration, ppmvd at 7% O2	< 0.0553	< 0.0531	< 0.0564
lb/hr	Emission Rate, lb/hr	< 0.0331	< 0.0328	< 0.0328
lb/ton	Emission Rate, lb/ton	< 0.000934	< 0.000847	< 0.000846
	Valeraldehyde Results			
fwt	Formula Weight, lb/lb-mole	86.00	86.00	86.00
mg	Catch Weight, milligrams	1.13	0.15	1.26
mg/DSCM	Concentration, mg/DSCM*	0.847	0.116	0.963
ppmvd	Concentration, ppmvd	0.237	0.033	0.269
ppm@12%CO2	Concentration, ppmvd at 12% CO2	0.812	0.109	0.924
ppm@7%O2	Concentration, ppmvd at 7% O2	0.872	0.111	0.992
lb/hr	Emission Rate, lb/hr	0.374	0.0493	0.413
lb/ton	Emission Rate, lb/ton	0.0106	0.00127	0.0107

* 68° F (20°C) -- 29.92 Inches of Mercury (Hg)

APPENDIX B. Method 5/202 Data Summary

FIELD DATA AND RESULTS TABULATION

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Lower Prequench Inlet

		LI-M5/202-1	LI-M5/202-2	LI-M5/202-3
	Test Date	6/25/91	6/25/91	6/26/91
	Run Start Time	1015	1753	930
	Run Finish Time	1340	2007	1141
	Net Traversing Points	32	32	32
Theta	Net Run Time, Minutes	80.00	80.00	80.00
Dia	Nozzle Diameter, Inches	0.223	0.185	0,182
Cp	Pitot Tube Coefficient	0.84	0.84	0.84
Y	Dry Gas Meter Calibration Factor	1.0026	1.0026	1.0026
Pbar	Barometric Pressure, Inches Hg	29.90	29.90	29.90
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H2O	2.12	1.06	1.03
Vm	Volume Of Metered Gas Sample, Dry ACF	63.918	47.198	46.231
tm	Dry Gas Meter Temperature, Degrees F	97	95	96
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	61.024	45.106	44.099
Vlc	Total Liquid Collected In Impingers & Silica Gel, grams	365.5	286.5	289.5
Vwstd	Volume of Water Vapor, SCF*	17.204	13.486	13.627
%H2O	Moisture Content, Percent by Volume	22.0	23.0	23.6
Mfd	Dry Mole Fraction	0.780	0.770	0.764
%CO2	Carbon Dioxide, Percent By Volume, Dry	3.6	2.6	3.9
%O2	Oxygen, Percent By Volume, Dry	17.1	18.3	16.8
%CO+N2	CO + N2, Percent By Volume, Dry	79.3	79.1	79.3
Md	Gas Molecular Weight, Lb/Lb-Mole, Dry	29.26	29.15	29.30
Ms	Gas Molecular Weight, Lb/Lb-Mole, Wet	26.78	26.59	26.63
Pg	Flue Gas Static Pressure, Inches H2O	-15.50	-15.50	-15.50
Ps	Absolute Flue Gas Pressure, Inches Hg	28.76	28.76	28.76
ts	Flue Gas Temperature, Degrees F	198	188	200
Delta-p	Average Velocity Head, Inches H2O	1.4588	1.534	1.5744
vs	Flue Gas Velocity, Feet/Second	80.17	81.87	83.65
A	Stack/Duct Area, Square Inches	5,542	5,542	5,542
Qsd	Volumetric Air Flow Rate, Dry SCFM*	111,376	114,018	113,478
Qmsd	Volumetric Air Flow Rate, Dry SCMH*	189,250	193,739	192,821
Qaw	Volumetric Air Flow Rate, Wet ACFM*	185,123	189,059	193,152
Qmaw	Volumetric Air Flow Rate, Wet ACMH*	314,561	321,249	328,204
%I	Isokinetic Sampling Rate, Percent	97.2	102.0	103.5
ton/hr	Process feed rate, ton/hr	35.4	38.8	38.7

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Lower Prequench Inlet

		LI-M5/202-1	LI-M5/202-2	LI-M5/202-3
	Particulate Results			
	Filterable			
mg	Catch Weight, milligrams	427.8	425.8	457.0
mg/DSCM	Concentration, mg/DSCM	248	333	366
gr/DSCF	Concentration, grains/DSCF*	0.108	0.146	0.160
gr@12%CO2	Concentration, gr/DSCF at 12% CO2	0.361	0.672	0.492
gr@7%O2	Concentration, gr/DSCF at 7% O2	0.388	0.755	0.533
lb/hr	Emission Rate, lb/hr	103	142	156
lb/ton	Emission Rate, lb/ton	2.92	3.67	4.02
	Condensable - Organic			
mg	Catch Weight, milligrams	23.7	29.4	44.5
mg/DSCM	Concentration, mg/DSCM*	14	23	36
gr/DSCF	Concentration, grains/DSCF*	0.00599	0.0101	0.0156
gr@12%CO2	Concentration, gr/DSCF at 12% CO2	0.0200	0.0464	0.0479
gr@7%O2	Concentration, gr/DSCF at 7% O2	0.0215	0.0522	0.0519
lb/hr	Emission Rate, lb/hr	5.72	9.83	15.1
lb/ton	Emission Rate, lb/ton	0.162	0.253	0.391
	Condensable - Inorganic			
mg	Catch Weight, milligrams	88.9	89.3	108.7
mg/DSCM	Concentration, mg/DSCM*	51	70	87
gr/DSCF	Concentration, grains/DSCF*	0.0225	0.0306	0.0380
gr@12%CO2	Concentration, gr/DSCF at 12% CO2	0.0749	0.1410	0.1170
gr@7%O2	Concentration, gr/DSCF at 7% O2	0.0807	0.1584	0.1268
lb/hr	Emission Rate, lb/hr	21.5	29.9	37.0
lb/ton	Emission Rate, lb/ton	0.606	0.770	0.956
	Backup Filter			
mg	Catch Weight, milligrams	0.0	0.0	0.0
mg/DSCM	Concentration, mg/DSCM*	0	0	0
gr/DSCF	Concentration, grains/DSCF*	0.0	0.0	0.0
gr@12%CO2	Concentration, gr/DSCF at 12% CO2	0.0	0.0	0.0
gr@7%O2	Concentration, gr/DSCF at 7% O2	0.0	0.0	0.0
lb/hr	Emission Rate, lb/hr	0.0	0.0	0.0
lb/ton	Emission Rate, lb/ton	0.0	0.0	0.0

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Lower Prequench Inlet

		LI-M5/202-1	LI-M5/202-2	LI-M5/202-3
	Total Particulate			
mg	Catch Weight, milligrams	540.4	544.5	610.2
mg/DSCM	Concentration, mg/DSCM*	313	426	489
gr/DSCF	Concentration, grains/DSCF*	0.137	0.186	0.214
gr@12%CO2	Concentration, gr/DSCF at 12% CO2	0.456	0.860	0.657
gr@7%O2	Concentration, gr/DSCF at 7% O2	0.491	0.966	0.712
lb/hr	Emission Rate, lb/hr	130	182	208
lb/ton	Emission Rate, lb/ton	3.69	4.69	5.37

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Stack

		S-M5/202-1	S-M5/202-2	S-M5/202-3
	Test Date	6/25/91	6/25/91	6/26/91
	Run Start Time	1014	1753	930
	Run Finish Time	1342	2005	1141
	Net Traversing Points	32	32	32
Theta	Net Run Time, Minutes	80.00	80.00	80.00
Dia	Nozzle Diameter, Inches	0.254	0.254	0.261
Cp	Pitot Tube Coefficient	0.84	0.84	0.84
Y	Dry Gas Meter Calibration Factor	1.0114	1.0114	1.0114
Pbar	Barometric Pressure, Inches Hg	29.80	29.80	29.80
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H2O	1.26	1.35	1.63
Vm	Volume Of Metered Gas Sample, Dry ACF	50.537	52.019	56.247
tm	Dry Gas Meter Temperature, Degrees F	90	97	92
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	49.024	49.838	54.415
Vlc	Total Liquid Collected In Impingers & Silica Gel, grams	283.5	307.5	347.0
Vwstd	Volume of Water Vapor, SCF*	13.344	14.474	16.333
%H2O	Moisture Content, Percent by Volume From Measured Water Catch	21.4	22.5	23.1
	Saturation at Flue Gas Temperature	22.4 **	21.8 **	22.4 **
Mfd	Dry Mole Fraction	0.776	0.782	0.776
%CO2	Carbon Dioxide, Percent By Volume, Dry	3.5	3.6	3.5
%O2	Oxygen, Percent By Volume, Dry	17.2	16.9	17.2
%CO+N2	CO + N2, Percent By Volume, Dry	79.3	79.5	79.3
Md	Gas Molecular Weight, Lb/Lb-Mole, Dry	29.25	29.25	29.25
Ms	Gas Molecular Weight, Lb/Lb-Mole, Wet	26.73	26.80	26.73
Pg	Flue Gas Static Pressure, Inches H2O	-20.00	0.00	0.00
Ps	Absolute Flue Gas Pressure, Inches Hg	28.33	29.80	29.80
ts	Flue Gas Temperature, Degrees F	143	144	145
Delta-p	Average Velocity Head, Inches H2O	0.4655	0.4799	0.5324
vs	Flue Gas Velocity, Feet/Second	43.72	43.26	45.66
A	Stack/Duct Area, Square Inches	9,161	9,161	9,161
Qsd	Volumetric Air Flow Rate, Dry SCFM*	107,413	112,428	117,621
Qmsd	Volumetric Air Flow Rate, Dry SCMH*	182,515	191,038	199,861
Qaw	Volumetric Air Flow Rate, Wet ACFM	166,881	165,143	174,300
Qmaw	Volumetric Air Flow Rate, Wet ACMH	283,565	280,610	296,170

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)
** Actual %H2O used in Calculations

FIELD DATA AND RESULTS TABULATION

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Stack

		S-M5/202-1	S-M5/202-2	S-M5/202-3
%I	Isokinetic Sampling Rate, Percent	103.1	100.2	99.0
ton/hr	Average Process Feed Rate, ton/hr	35.4	38.8	38.7
	Particulate Results			
	Filterable			
mg	Catch Weight, milligrams	28.1	51.7	46.3
mg/DSCM	Concentration, mg/DSCM*	20.2	36.6	30.0
gr/DSCF	Concentration, grains/DSCF*	0.00885	0.0160	0.0131
gr@12%CO2	Concentration, gr/DSCF at 12% CO2	0.0303	0.0534	0.0450
gr@7%O2	Concentration, gr/DSCF at 7% O2	0.0326	0.0547	0.0484
lb/hr	Emission Rate, lb/hr	8.14	15.4	13.2
lb/ton	Emission Rate, lb/ton	0.230	0.398	0.342
	Condensable - Organic			
mg	Catch Weight, milligrams	14.1	22.7	19.1
mg/DSCM	Concentration, mg/DSCM*	10.2	16.1	12.4
gr/DSCF	Concentration, grains/DSCF*	0.00444	0.00703	0.00542
gr@12%CO2	Concentration, gr/DSCF at 12% CO2	0.0152	0.0234	0.0186
gr@7%O2	Concentration, gr/DSCF at 7% O2	0.0164	0.0240	0.0200
lb/hr	Emission Rate, lb/hr	4.09	6.77	5.46
lb/ton	Emission Rate, lb/ton	0.115	0.175	0.141
	Condensable - Inorganic			
mg	Catch Weight, milligrams	18.3	28.3	30.8
mg/DSCM	Concentration, mg/DSCM*	13.2	20.1	20.0
gr/DSCF	Concentration, grains/DSCF*	0.00576	0.00876	0.00874
gr@12%CO2	Concentration, gr/DSCF at 12% CO2	0.0198	0.0292	0.0299
gr@7%O2	Concentration, gr/DSCF at 7% O2	0.0212	0.0299	0.0322
lb/hr	Emission Rate, lb/hr	5.30	8.44	8.81
lb/ton	Emission Rate, lb/ton	0.150	0.218	0.228
	Backup Filter			
mg	Catch Weight, milligrams	0.0	0.0	0.0
mg/DSCM	Concentration, mg/DSCM*	0.0	0.0	0.0
gr/DSCF	Concentration, grains/DSCF*	0.0	0.0	0.0
gr@12%CO2	Concentration, gr/DSCF at 12% CO2	0.0	0.0	0.0
gr@7%O2	Concentration, gr/DSCF at 7% O2	0.0	0.0	0.0
lb/hr	Emission Rate, lb/hr	0.0	0.0	0.0
lb/ton	Emission Rate, lb/ton	0.0	0.0	0.0

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Georgia-Pacific Corporation, Skippers, VA

SAMPLING LOCATION: Stack

		S-M5/202-1	S-M5/202-2	S-M5/202-3
	Total Particulate			
mg	Catch Weight, milligrams	60.5	102.7	96.2
mg/DSCM	Concentration, mg/DSCM*	43.6	72.8	62.4
gr/DSCF	Concentration, grains/DSCF*	0.0190	0.0318	0.0273
gr@12%CO2	Concentration, gr/DSCF at 12% CO2	0.0653	0.1060	0.0935
gr@7%O2	Concentration, gr/DSCF at 7% O2	0.0702	0.109	0.101
lb/hr	Emission Rate, lb/hr	17.5	30.6	27.5
lb/ton	Emission Rate, lb/ton	0.495	0.790	0.711

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

APPENDIX C. Modified Method 5 Data Summary

FIELD DATA AND RESULTS TABULATION

PLANT: Georgia-Pacific Corporation, Skippers, VA

LOCATION: Stack

RUN #	DATE	OPERATOR
S-MM5-1	6/25/91	Clyde E. Nack
S-MM5-2	6/25/91	Clyde E. Nack
S-MM5-3	6/26/91	Clyde E. Nack

		S-MM5-1	S-MM5-2	S-MM5-3
	Run Start Time	1014	1753	0930
	Run Finish Time	1342	2005	1143
	Net Traversing Points	32	32	32
Theta	Net Run Time, Minutes	80.00	80.00	80.00
Dia	Nozzle Diameter, Inches	0.268	0.261	0.290
Cp	Pitot Tube Coefficient	0.840	0.840	0.840
Y	Dry Gas Meter Calibration Factor	1.0004	0.9903	0.9903
Pbar	Barometric Pressure, Inches Hg	29.80	29.80	29.80
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	1.45	1.44	2.13
Vm	Volume Of Metered Gas Sample, Dry ACF	49.889	52.762	63.613
tm	Dry Gas Meter Temperature, Degrees F	87	102	96
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	48.179	49.104	59.951
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	293.5	315.0	413.5
Vwstd	Volume of Water Vapor, SCF*	13.815	14.827	19.463
$\%H_2O$	Moisture Content, Percent by Volume From Measured Water Catch	22.3	23.2**	24.5
	Saturation at Flue Gas Temperature	22.0**	23.7	23.8**
Mfd	Dry Mole Fraction	0.780	0.768	0.762
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	3.5	3.6	3.5
$\%O_2$	Oxygen, Percent By Volume, Dry	17.2	16.9	17.2
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.25	29.25	29.25
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	26.77	26.64	26.58
Pg	Flue Gas Static Pressure, Inches H_2O	0.0	0.0	0.0
Ps	Absolute Flue Gas Pressure, Inches Hg	29.80	29.80	29.80
ts	Flue Gas Temperature, Degrees F	144	147	147
Delta-p	Average Velocity Head, Inches H_2O	0.4382	0.4721	0.4636
vs	Flue Gas Velocity, Feet/Second	41.37	43.15	42.82
A	Stack/Duct Area, Square Inches	9,161	9,161	9,161
Qsd	Volumetric Air Flow Rate, Dry SCFM*	107,165	109,560	107,891
Qaw	Volumetric Air Flow Rate, Wet ACFM	157,930	164,713	163,449
%I	Isokinetic Sampling Rate, Percent	91.3	95.9	96.3

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)
** ACTUAL $\%H_2O$ USED IN CALCULATIONS

(Continued next page)

TABLE _-_ SUMMARY OF MODIFIED METHOD 5 SAMPLING AND ANALYSIS FOR SEMIVOLATILE ORGANIC COMPOUND

	Total Analyte Mass, ug				Analyte Concentration and Mass Emission Rate							
				Reagent	MM-5 Run 1		MM-5 Run 2		MM-5 Run 3		3-Run Average	
Target Analytes	Run 1	Run 2	Run 3	Blanks	(ug/M3)	(lbs/hr)	(ug/M3)	(lbs/hr)	(ug/M3)	(lbs/hr)	(ug/M3)	(lbs/hr)
Phenol	< 15	< 9.5	< 13	< 3.2	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethyl)ether	< 14	< 8.9	< 12	< 2.9	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	< 16	< 10	< 13	< 3.4	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	< 29	< 18	< 26	< 6.8	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	< 16	< 10	< 14	< 3.5	ND	ND	ND	ND	ND	ND	ND	ND
Benzyl alcohol	< 47	< 30	< 40	< 10	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	< 19	< 12	< 17	< 4.3	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	< 30	< 19	< 26	< 6.7	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroisopropyl)ether	< 15	< 10	< 13	< 3.3	ND	ND	ND	ND	ND	ND	ND	ND
4-Methylphenol	< 30	< 19	< 26	< 6.7	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	< 40	< 26	< 33	< 8.3	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	< 57	< 36	< 51	< 13	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	< 15	< 11	< 13	< 3.9	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	< 11	< 8.0	< 9.3	< 2.9	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	< 48	< 35	< 36	< 11	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	< 24	< 18	< 21	< 6.7	ND	ND	ND	ND	ND	ND	ND	ND
Benzoic acid	< 49	< 36	< 38	< 11	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethoxy)methane	< 13	< 9.9	< 12	< 3.7	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	< 22	< 17	< 20	< 6.3	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	< 19	< 15	< 18	< 5.7	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	< 7.5	< 5.7	d 890	d 426	ND	ND	ND	ND	524	0.212	175	0.070
4-Chloroaniline	< 16	< 12	< 16	< 5.0	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	< 45	< 34	< 43	< 14	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	< 21	< 16	< 18	< 5.7	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	< 9.6	< 7.3	< 9.0	< 2.8	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	< 25	< 19	< 25	< 6.6	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	< 21	< 16	< 21	< 5.5	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	< 19	< 14	< 19	< 5.0	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	< 7.5	< 5.8	< 7.8	< 2.1	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	< 14	< 11	< 13	< 3.3	ND	ND	ND	ND	ND	ND	ND	ND
Dimethylphthalate	< 5.8	< 4.5	< 5.9	< 1.6	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	< 4.3	< 3.3	< 4.4	< 1.2	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	< 18	< 14	< 18	< 4.8	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	< 8.1	< 6.2	< 8.3	< 2.2	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	< 87	< 67	< 71	< 18	ND	ND	ND	ND	ND	ND	ND	ND

(continued)

TABLE _.. (Continued)

Target Analytes	Total Analyte Mass, ug				Analyte Concentration and Mass Emission Rate							
	Run 1	Run 2	Run 3	Reagent Blanks	MM-5 Run 1 (ug/M3)	(lbs/hr)	MM-5 Run 2 (ug/M3)	(lbs/hr)	MM-5 Run 3 (ug/M3)	(lbs/hr)	3-Run Average (ug/M3)	(lbs/hr)
4-Nitrophenol	< 49	< 38	< 46	< 12	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	< 4.3	< 3.3	< 4.4	< 1.2	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	< 16	< 12	< 15	< 4.0	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	< 31	< 24	< 30	< 7.9	ND	ND	ND	ND	ND	ND	ND	ND
Diethylphthalate	e 19	e 6	e 8	< 1.5	14.1	0.006	4.5	0.002	6.1	0.0025	8.2	0.003
4-Chlorophenyl-phenylether	< 9.6	< 7.4	< 9.8	< 2.6	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	< 5.7	< 4.4	< 5.9	< 1.6	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	< 25	< 19	< 26	< 7.1	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-2-methylphenol	< 34	< 26	< 24	< 6.3	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine(1)	< 6.5	< 4.8	< 6.3	< 1.7	ND	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl-phenylether	< 11	< 8.1	< 10	< 2.9	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	< 10	< 7.5	< 10	< 2.8	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	< 19	< 14	< 15	< 4.0	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	< 2.8	< 2.1	< 2.7	< 0.7	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	< 3.0	< 2.3	< 2.9	< 0.8	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-butylphthalate	e 8.9	e 10	e 9.7	d 13	6.6	0.003	7.5	0.003	5.7	0.002	6.6	0.003
Fluoranthene	< 1.7	< 1.3	< 1.6	< 0.4	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	< 1.4	< 1.0	< 1.5	< 0.4	ND	ND	ND	ND	ND	ND	ND	ND
Butylbenzylphthalate	e 6.6	e 6.6	d 34	< 0.6	4.8	0.002	4.8	0.002	20.2	0.008	9.9	0.004
3,3'-Dichlorobenzidine	< 3.0	< 2.2	< 2.9	< 0.7	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	< 1.2	< 0.9	< 1.2	< 0.3	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	< 1.4	< 1.0	< 1.4	< 0.3	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	d 76	d 76	d 79	d 15	55	0.022	54	0.022	58	0.023	56	0.022
Di-n-octylphthalate	e 6.9	e 11	d 56	< 0.3	5.1	0.002	8.2	0.003	41	0.017	18	0.007
Benzo(b)fluoranthene	< 1.0	< 0.7	< 1.1	< 0.3	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	< 1.1	< 0.8	< 1.2	< 0.3	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	< 1.0	< 0.7	< 1.0	< 0.2	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	< 1.2	< 0.8	< 1.2	< 0.3	ND	ND	ND	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	< 1.1	< 0.8	< 1.2	< 0.3	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	< 1.0	< 0.7	< 1.1	< 0.3	ND	ND	ND	ND	ND	ND	ND	ND

DATA QUALIFIER SYMBOLS

< = not detected at less than amount shown

ND= not detected and a value of zero used in averaging with any reported values

d = detected above quantifiable limit

e = estimated value for compound that was detected, but below quantifiable limit

APPENDIX D. Method 25 Data Summary

TABLE 2-4

TOTAL GASEOUS NONMETHANE ORGANICS TESTS SUMMARY

Upper Prequench Inlet

	UI-M25-1	UI-M25-2	UI-M25-3	Average
Test Date	6/25/91	6/25/91	6/26/91	
Run Start Time	1019	1754	930	
Run Finish Time	1340	2006	1144	
Flue Gas Parameters				
CO2, Percent By Volume, Dry	3.6	2.6	3.9	3.4
O2, Percent By Volume, Dry	17.1	18.3	16.8	17.4
Air Flow Rate, Dry SCFM*	119,126	114,014	112,005	115,048
Total Gaseous Nonmethane Organics as C				
Concentration, ppmvd	343	1,296	538	726
Emission Rate, lb/hr	76.4	276	113	155

* From the average of concurrent M0011 and M5/202 sampling performed at the lower prequench inlet.

TABLE 2-8

TOTAL GASEOUS NONMETHANE ORGANICS TESTS SUMMARY

Stack

	S-M25-1	S-M25-2	S-M25-3	Average
Test Date	6/25/91	6/25/91	6/26/91	
Run Start Time	1019	1753	930	
Run Finish Time	1340	2005	1144	
Flue Gas Parameters				
CO2, Percent By Volume, Dry	3.5	3.6	3.5	3.5
O2, Percent By Volume, Dry	17.2	16.9	17.2	17.1
Air Flow Rate, Dry SCFM*	117,605	112,518	115,868	115,330
Total Gaseous Nonmethane Organics as C				
Concentration, ppmvd	373	1,189	413	658
Emission Rate, lb/hr	82.0	250	89.5	141

* From the average of concurrent M0011 and M5/202 sampling.

SOUTHERN REGIONAL CENTER
P.O. Box 141020
Gainesville, FL 32614-1020
(904) 377-4708
FAX: (904) 371-6557

CERTIFICATION SHEET

Having supervised the Method 25 test program described in this report, I hereby certify the data, information and results in this report to be accurate and true according to the methods and procedures used.

Ashok K. Jain, P. E., Regional Manager

SAMPLE QA/QC

(1) Carrier Gas and System Air Blank (<5 ppm required)

$CO + CH_4 + CO_2 + NMO = 0$ ppm

(2) Catalyst Efficiency Check (±2%)

Methane standard	10150 ppm CH_4
Methane standard after catalyst	10150.5 ppm CO_2

% difference = 0.0%

(3) Analyzer Linearity Check

A full calibration was conducted on the analyzer before each day of analysis.

(4) System Leak Check

4 mbar/10 min

SAMPLE TANK LEAK CHECK

TANK NO.	INITIAL VACUUM (mbar)	FINAL VACUUM (mbar)	CHANGE (mbar)
1	1008.2	1006.7	-1.5
2	895.6	894.0	-1.6
3	1001.8	1000.3	-1.5
4	1017.0	1015.5	-1.5
5	1017.1	1015.7	-1.4
6	966.2	964.6	-1.6
7	1013.7	1012.2	-1.5
8	1015.8	1014.4	-1.4
9	1016.6	1015.1	-1.5
10	995.6	994.0	-1.6
11	1012.7	1011.1	-1.6
12	1004.3	1002.8	-1.5
13	1014.8	1013.6	-1.2
14	1015.1	1013.5	-1.6
15	1015.4	1014.0	-1.4
16	1003.4	1001.9	-1.5
17	1011.1	1009.7	-1.4
18	1005.3	1003.7	-1.6
19	1006.2	1004.6	-1.6
20	1013.4	1011.9	-1.5
21	1009.4	1008.6	-0.8
22	1011.2	1010.3	-0.9
23	1011.6	1010.8	-0.8
24	1012.9	1012.2	-0.7
25	1010.2	1009.5	-0.7
26	1009.4	1008.4	-1.0
27	1011.9	1011.0	-0.9
28	1014.7	1013.9	-0.8
29	1014.6	1013.6	-1.0
30	1010.0	1009.1	-0.9

EPA METHOD 25 VOC SYSTEM PERFORMANCE CHECK 7/8/91

SAMPLE	VOC (ppm CH4)	VOC (mg C)	SOLVENT (ul)	SOLVENT (mgC)	PERCENT RECOVERY	RSD (<5%)
HEXANE	1458	5.74	10	5.5	104.0%	4.1%
	1453	5.64	10	5.5	102.1%	
	1343	5.31	10	5.5	96.2%	
	6529	26.39	50	27.6	95.6%	2.2%
	6952	27.51	50	27.6	99.6%	
	7188	26.56	50	27.6	96.2%	
DECANE	1524	6.05	10	6.2	98.2%	2.6%
	1544	6.38	10	6.2	103.5%	
	1571	6.20	10	6.2	100.6%	
	7715	30.98	50	30.8	100.6%	1.3%
	8004	31.77	50	30.8	103.1%	
	7859	31.41	50	30.8	102.0%	
				AVERAGE	100.1%	

EPA METHOD 25 VOC DATA SHEET
GEORGIA PACIFIC CORP. OSB MILL SKIPPERS, VA

VENT	RUN#	TANK NO.	TRAP NO.	INITL VAC (mbar)	TANK TEMP (deg F)	BARO PRES (mm Hg)	FINAL VAC (mbar)	TANK TEMP (deg F)	BARO PRES (mm Hg)
INLET	1A	S 14	1	1010	77	766	243	94	765
	1A	B 7		1016	72	761			
	2A	S 18	17	1003	80	765	539	77	766
	2A	B 9B		1017	72	763			
	3A	S 15	10	1010	75	766	401	86	765
	3A	B 11		1017	72	762			
OUTLET	1A	S 8	22	1014	79	764	58	94	763
	1A	B 5		1017	72	762			
	2A	S 29	19	1001	80	764	157	77	764
	2A	B 9		1019	72	763			
	3A	S 25	14	1015	75	763	226	86	763
	3A	B 3B		1018	72	763			
BLANK		B 10		1010	72	766			

VENT	RUN#	TANK NO.	FLSH PRES (mbar)	TANK TEMP (deg F)	BARO PRES (mm Hg)	TANK VOL. (ml)	SAMPL VOL. (ml)	ANAL VOL. (ml)
INLET	1A	S 14	903	72	761	6148	4456	11564
	1A	B 7	797	72	761	4561		8105
	2A	S 18	784	72	763	6149	2801	10893
	2A	B 9B	822	72	763	4581		8286
	3A	S 15	776	72	762	6145	3587	10815
	3A	B 11	789	72	762	6146		10895
OUTLET	1A	S 8	773	72	762	6148	5543	10802
	1A	B 5	797	72	762	4575		8146
	2A	S 29	765	72	763	6700	5519	11744
	2A	B 9	802	72	763	4581		8196
	3A	S 25	747	72	764	6790	5134	11806
	3A	B 3B	805	72	763	4562		8176
BLANK		B 10	724	72	766	4588		7905

EPA METHOD 25 VOC DATA SHEET
GEORGIA PACIFIC CORP. OSB MILL SKIPPERS, VA

VENT	RUN#	TANK NO.	TRAP NO.	INITL VAC (mbar)	TANK TEMP (deg F)	BARO PRES (mm Hg)	FINAL VAC (mbar)	TANK TEMP (deg F)	BARO PRES (mm Hg)
INLET	1A	S 14	1	1010	77	766	243	94	765
	1A	B 7		1016	72	761			
	2A	S 18	17	1003	80	765	539	77	766
	2A	B 9B		1017	72	763			
	3A	S 15	10	1010	75	766	401	86	765
	3A	B 11		1017	72	762			
OUTLET	1A	S 8	22	1014	79	764	58	94	763
	1A	B 5		1017	72	762			
	2A	S 29	19	1001	80	764	157	77	764
	2A	B 9		1019	72	763			
	3A	S 25	14	1015	75	763	226	86	763
	3A	B 3B		1018	72	763			
BLANK		B 10		1010	72	766			

EPA METHOD 25 VOC DATA SHEET
GEORGIA PACIFIC CORP. OSB MILL SKIPPERS, VA

VENT	RUN#	ANALYSIS CONCENTRATION (ppm C) NM	CO	CH4	CO2	TOTAL	TOTAL VOC (mg C)	VOC-BLANK (mg C)	SAMPLE CONC. VOC (mg/DSCM)	VOC (ppm C)
INLET	1A	0	48. ~~0.0~~	0	14544	0	0.00	0.763	171	343
	1A		5.5		191	197	0.79			
	2A	0	39.4	3.7	9871	0	0.00	1.815	648	1296
	2A		5.2		442	447	1.85			
	3A	0	73.0	0	12718	0	0.00	0.965	269	538
	3A		4.3		179	183	0.99			
OUTLET	1A	0	52.0	0	18402	0	0.00	1.035	187	373
	1A		4.5		258	263	1.06			
	2A	0	66.0	0	16166	0	0.00	3.282	595	1189
	2A		5.5		806	812	3.31			
	3A	0	92.8	5.2	16555	0	0.00	1.060	206	413
	3A		6.7		261	268	1.09			
BLANK					,7	7	0.03			

APPENDIX E. CEMS Data Summary - O_2, CO_2, CO, NO_x, and THC

PLANT: Georgia-Pacific; Skippers, Virginia

SAMPLING LOCATION: Stack

		S-CEM-1	S-CEM-2	S-CEM-3
	Test Date	6/25/91	6/25/91	6/26/91
	Run Start Time	1014	1754	930
	Run Finish Time	1404	2005	1141
Theta	Net Sample Time, Minutes	230	131	131
Mfd	Dry Mole Fraction	0.78	0.78	0.78
%CO2	Carbon Dioxide, Percent By Volume, Dry	3.5	3.6	3.5
%O2	Oxygen, Percent By Volume, Dry	17.2	16.9	17.2
Qsd	Volumetric Air Flow Rate, Dry SCFM *	117,605	112,518	115,868
ton/hr	Process Feed Rate, ton/hr	35.4	38.8	38.7
	Carbon Monoxide			
Fwt	Formula Weight, Lb/Lb-Mole	28.01	28.01	28.01
ppmvd	Concentration, ppmvd	95.6	139.8	199
ppm@12%	Concentration, ppmvd @ 12% C	328	466	684
ppm@7%	Concentration, ppmvd @ 7% O2	352	477	735
mg/DSCM	Concentration, mg/DSCM	111	163	232
lb/hr	Emission Rate, lb/hr	49	69	101
lb/ton	Emission Rate, lb/ton	1.385	1.768	2.604
	Nitrogen Oxides as NO2			
Fwt	Formula Weight, Lb/Lb-Mole	46.01	46.01	46.01
ppmvd	Concentration, ppmvd	32.0	20.0	21.0
ppm@12%	Concentration, ppmvd @ 12% C	110	66.7	72.0

ppm@7%	Concentration, ppmvd @ 7% O2	118	68.3	77.4
mg/DSCM	Concentration, mg/DSCM	61.2	38.3	40.2
lb/hr	Emission Rate, lb/hr	26.96	16.12	17.43
lb/ton	Emission Rate, lb/ton	0.762	0.416	0.450
	Total Hydrocarbons, as Carbon			
Fwt	Formula Weight, Lb/Lb-Mole	12.01	12.01	12.01
ppmvw	Concentration, ppmvw	270	652	314
ppmvd	Concentration, ppmvd	346	836	403
ppm@12%	Concentration, ppmvd @ 12% C	1,187	2,786	1,380
ppm@7%	Concentration, ppmvd @ 7% O2	1,275	2,854	1,483
mg/DSCM	Concentration, mg/DSCM	173	417	201
lb/hr	Emission Rate, lb/hr	76	176	87
lb/ton	Emission Rate, lb/ton	2.151	4.533	2.254

* From the average of concurrent EPA M0011 and MM5 sampling.

PLANT: Georgia-Pacific; Skippers, Virginia

SAMPLING LOCATION: Upper Inlet

		I-CEM-1	I-CEM-2	I-CEM-3
	Test Date	6/25/91	6/25/91	6/26/91
	Run Start Time	1014	1754	930
	Run Finish Time	1404	2005	1141
Theta	Net Sample Time, Minutes	230	131	131
Mfd	Dry Mole Fraction	0.78	0.78	0.78
%CO2	Carbon Dioxide, Percent By Volume, Dry	3.5	3.6	3.5
%O2	Oxygen, Percent By Volume, Dry	17.2	16.9	17.2
Qsd	Volumetric Air Flow Rate, Dry SCFM *	117,605	112,518	115,868
ton/hr	Process Feed Rate, ton/hr	35.4	38.8	38.7
	Total Hydrocarbons, as Carbon			
Fwt	Formula Weight, Lb/Lb-Mole	12.01	12.01	12.01
ppmvw	Concentration, ppmvw	309	790	347
ppmvd	Concentration, ppmvd	396	1,013	445
ppm@12%	Concentration, ppmvd @ 12% C	1,358	3,376	1,525
ppm@7%	Concentration, ppmvd @ 7% O2	1,460	3,458	1,639
mg/DSCM	Concentration, mg/DSCM	198	506	222
lb/hr	Emission Rate, lb/hr	87	213	96
lb/ton	Emission Rate, lb/ton	2.467	5.493	2.491

* From the average of concurrent EPA M0011 and MM5 sampling.

06-25-1991 Time	Outlet NOx	Outlet ppmCO	Outlet %O2	Outlet %CO2	Outlet ppm THC	Inlet ppm THC
10:15	30.8	70	17.53	3.17	-247.7	295
10:16	30.9	66.2	17.54	3.16	249.3	299.2
10:17	31.9	68	17.46	3.22	252.9	304
10:18	32.4	68.2	17.4	3.28	261.2	315.9
10:19	33.2	72.1	17.28	3.4	265.8	320.6
10:20	32.1	77.7	17.13	3.53	269	329.3
10:21	30.9	79.9	17.28	3.39	270.5	331.6
10:22	31	86.7	17.19	3.45	271.9	334
10:23	32.9	92.7	17.16	3.52	265.8	332.1
10:24	37.5	95.9	16.99	3.68	261.1	326.9
10:25	34.9	105.1	16.93	3.71	249.1	332.8
10:26	33.5	105.8	16.82	3.81	261.8	332.8
10:27	32.3	110.6	16.84	3.77	268.2	339.5
10:28	32	110.9	16.82	3.82	271.1	340.9
10:29	32	119.7	16.86	3.76	273.2	342.7
10:30	31.7	111.4	17.04	3.6	272.4	340.5
10:31	31.8	107.6	17.05	3.6	268.9	331.2
10:32	31.8	123	16.85	3.79	258.4	342
10:33	31.7	141.5	16.73	3.89	279.2	354.3
10:34	30.8	143.3	16.85	3.79	281.9	355.9
10:35	30.5	135.3	17.03	3.6	279.9	349.8
10:36	31.3	124.8	17.01	3.68	279.9	344
10:37	32.5	130	16.9	3.76	283.1	333.8
10:38	32	139.7	16.89	3.75	286.8	344.3
10:39	32.3	134.8	16.99	3.68	285.2	345.5
10:40	30.9	121.1	17.43	3.17	265.4	360.4
10:41	32.2	111.7	17.42	3.05	245.5	345.1
10:42	28.5	89.4	18.29	2.37	213.5	301.6
10:43	29.7	82.8	18.25	2.37	209.4	242.4
10:44	28.5	74.1	18.58	2.07	189.5	220.5
10:45	27.5	65.7	18.87	1.84	170.9	203.1
10:46	27.6	58.4	19.02	1.72	160.1	207.9
10:47	27.5	53.5	18.89	2.01	159.8	247.2
10:48	29.3	120.8	16.91	3.81	263.7	333.5
10:49	32.8	160.8	16.53	4.08	299.7	350.9
10:50	32.6	170.9	16.7	3.91	308.3	359
10:51	32.9	159.5	16.71	3.94	315.7	368.6
10:52	33.2	154.9	16.78	3.87	312.9	368.4
10:53	33.1	147.9	16.79	3.87	306.5	362.1
10:54	33.2	150.6	16.77	3.86	302.1	365.5
10:55	32	140.6	17.01	3.64	294.6	357

10:56	33.6	121.7	17.12	3.56	287.3	353.4
10:57	34.4	116.3	16.94	3.75	286.6	353
10:58	35.5	128.9	16.59	4.06	297.3	364.2
10:59	35.3	136.1	16.51	4.04	304.3	367.9
11:00	34.6	128.4	16.75	3.87	303.3	367
11:01	34.6	121.5	16.83	3.81	296.1	359.9
11:02	34.5	110.9	16.79	3.84	284.2	358.4
11:03	34	100.6	16.94	3.69	292.8	367.4
11:04	34.2	98.8	16.94	3.71	296.9	375.6
11:05	33.8	108.2	16.88	3.76	295.5	373.2
11:06	33.8	102.8	16.93	3.7	304.4	373.3
11:07	33.7	99.9	16.95	3.7	308.2	376.3
11:08	34.5	102.2	16.91	3.72	308.4	371
11:09	33.8	96.4	17.02	3.62	305.7	364.7
11:10	34.3	94.1	17.01	3.63	304.8	364.1
11:11	34.4	90.7	17.03	3.65	299.2	349.9
11:12	35.6	97.7	16.75	3.9	302.6	345.6
11:13	34.7	107.3	16.73	3.89	301.4	342.4
11:14	34.5	112.7	16.76	3.86	297.9	327.5
11:15	34.6	113.9	16.78	3.85	293.1	329.8
11:16	34.4	113.5	16.78	3.86	291.4	323.5
11:17	34.7	116	16.79	3.86	293.9	311.4
11:18	35.1	120.4	16.74	3.91	298.9	323.7
11:19	36.1	127.7	16.7	3.95	306.5	337
11:20	35.3	135.8	16.49	4.13	311.5	335.1
11:21	33.4	146.5	16.64	3.92	308.5	333.6
11:22	34.5	138.3	16.75	3.91	289.5	332
11:23	33.6	123	16.86	3.81	297	327.8
11:24	32.8	123.8	16.84	3.86	308.2	334.5
11:25	34.3	131	16.61	4.08	318.5	340.7
11:26	35.2	136.1	16.43	4.22	324.8	343.6
11:27	33.7	142.4	16.58	4.08	325.5	343.8
11:28	33.1	128	16.84	3.88	315.6	333.4
11:29	33.9	125.1	16.76	3.97	315.2	333.3
11:30	33.6	128.6	16.78	3.96	319.5	333.3
11:31	33.3	129.8	16.93	3.83	325.4	344.2
11:32	33.2	128.4	16.92	3.88	330.1	348
11:33	34.5	133.4	16.67	4.1	342.6	361.6
11:34	33.3	137.8	16.69	4.05	350.3	373.8
11:35	32.7	128	16.93	3.86	347.6	364.1
11:36	33.2	126.4	16.86	3.95	348.7	361.9
11:37	34.3	133.1	16.79	3.99	345.9	364.6
11:38	33.1	130.9	16.98	3.83	329.6	364.2
11:39	32.4	117.6	17.07	3.74	325.5	351
11:40	32.6	115	17.12	3.72	323.4	343.6

11:41	32.5	119.6	17.15	3.68	313.1	345.3
11:42	32.8	127.5	16.94	3.92	309.6	338.3
11:43	33.4	131.6	16.87	3.97	319.1	340.6
11:44	32	131.5	16.89	3.96	318.1	331.4
11:45	31.8	131.8	16.89	3.96	319.3	338.9
11:46	31.7	129.1	16.92	3.96	314	324.3
11:47	31.4	133.2	16.84	4.01	312.9	322.2
11:48	31.4	148.3	16.9	3.98	320.4	333.7
11:49	31.7	142.2	16.95	3.94	315.9	336.2
11:50	32.9	121.4	16.94	3.95	308.7	334.4
11:51	34	121.2	16.94	3.95	313	344.7
11:52	34.2	147.9	16.98	3.9	311.8	339.9
11:53	35.5	115.5	17.11	3.79	301.7	330.8
11:54	35	92.2	17.26	3.64	295.8	322.9
11:55	35.8	86.4	17.22	3.71	290.3	310.1
11:56	35.7	84.2	17.26	3.66	286.9	311.7
11:57	36.7	84.8	17.18	3.74	280.8	307.2
11:58	37.4	85.2	17.18	3.73	274.6	299.9
11:59	37.2	86	17.28	3.64	271.1	311.5
12:00	37.8	75.4	17.32	3.61	267.3	300.6
12:01	37.7	69.4	17.53	3.39	270.7	303.1
12:02	39.4	81.6	17.65	3.29	264.3	309.4
12:03	41.4	44.4	17.74	3.2	262	298.5
12:04	41.3	36.3	17.86	3.07	260.4	300.8
12:05	42.2	32.6	17.91	3.03	255.2	294.1
12:06	40.9	28.6	18.07	2.86	250.1	287.2
12:07	40.1	26.4	18.12	2.81	246.5	285.3
12:08	40.5	25.9	18.02	2.93	242.9	279.2
12:09	39	28.2	17.93	3.02	249.4	278.6
12:10	40.4	50.3	17.92	3.02	253.6	282.9
12.11	40.1	46	18.12	2.83	242.6	290.7
12.12	39.4	30.1	18.13	2.84	245.8	280.5
12 13	39.1	32.3	18.13	2.83	248.8	270.7
12.14	39.7	35.4	18.13	2.86	249.3	273
12:15	40.5	39.9	17.98	3.02	247.5	275.7
12.16	40	43.4	17.89	3.1	246.9	276.1
12:17	39	49.7	17.9	3.11	244.3	278.2
12:18	38.2	60	17.71	3.29	243.4	273.2
12:19	37.3	70.6	17.72	3.27	245.8	272.6
12:20	36.6	70.3	17.74	3.24	246.2	279
12:21	37.1	69.1	17.7	3.28	239	277.8
12:22	38.2	64.1	17.76	3.21	236.2	271.3
12:23	39.7	56.6	17.88	3.09	234.8	271.1
12:24	37.2	55.2	18.05	2.91	231.7	258.3
12:25	33.6	51.9	18.35	2.58	225.1	242.7

12:26	31.8	42.9	18.51	2.45	216	222.4
12:27	32.8	32.3	18.51	2.44	207.4	219.5
12:28	32.8	25.9	18.62	2.35	203.3	211.4
12:29	33.3	24.6	18.64	2.36	200.7	212.5
12:30	33.6	25.5	18.68	2.33	196.1	218.1
12:31	34.2	30.1	18.62	2.39	196.4	221.8
12:32	35	34.3	18.55	2.45	198.6	223.1
12:33	35.7	34.8	18.56	2.45	202.4	231.1
12:34	37.2	35.9	18.42	2.61	204	243.8
12:35	38.6	35.8	18.19	2.83	206.6	248.6
12:36	38.8	36.9	18	3.02	210.9	256.6
12:37	37.7	39.2	17.83	3.14	214.6	262.8
12:38	36.4	40.6	17.96	3.01	214.7	269.9
12:39	36.8	40.7	18.05	2.94	211.8	274.6
12:40	36.5	36.2	17.95	3.05	227.9	277.8
12:41	36.4	34.7	17.88	3.1	233.6	277.2
12:42	35.1	35.9	17.89	3.08	235.3	275.2
12:43	34.3	38.8	17.97	3.01	233.1	266.6
12:44	34.3	43	17.91	3.1	232.8	265.2
12:45	34.7	47.7	17.73	3.26	238.2	269
12:46	33.6	53	17.56	3.41	244.1	273.6
12:47	32.4	57.7	17.55	3.41	250.6	282.9
12:48	31.8	62.8	17.53	3.42	253.3	286.1
12:49	31.3	70.2	17.32	3.65	261.5	292.3
12:50	30.3	76.6	17.51	3.41	258	296.6
12:51	29.8	76.6	17.85	3.16	246.4	290.7
12:52	30.7	85.2	17.76	3.25	247.6	279.5
12:53	31.7	84.2	17.58	3.33	244.1	281.3
12:54	31	90.3	17.53	3.45	236.3	280.8
12:55	31.8	90.8	17.62	3.37	247.5	282.8
12:56	34.7	113.5	17.31	3.66	259.3	283.1
12:57	37.2	120	17.3	3.63	261.6	292.3
12:58	37.2	109.3	17.54	3.4	260.7	287.5
12:59	38	74.8	17.69	3.27	253.5	282.7
13:00	39.2	44	17.78	3.19	249.9	287.6
13:01	39.2	26.6	17.92	3.06	246.6	273.8
13:02	37.4	21.2	18.12	2.85	242.5	268
13:03	35.3	20.2	18.3	2.69	238	262
13:04	36.3	22.9	18.31	2.69	237.8	265
13:05	38	19	18.3	2.69	235.3	267.6
13:06	38.6	16.5	18.4	2.6	232.4	263.2
13:07	38.4	18	18.43	2.57	231.6	263.2
13:08	39.9	18	18.36	2.66	228.7	262.6
13:09	39.9	16.5	18.32	2.7	221.6	259.2
13:10	39.6	17.3	18.26	2.76	217.7	260.9

13:11	39	19.4	18.26	2.75	214.1	246.2
13:12	39	19.9	18.25	2.77	212.2	235.9
13:13	37.9	20.9	18.3	2.71	209.4	229.1
13:14	37.1	22.9	18.32	2.7	208.7	226.9
13:15	35.3	26.4	18.44	2.54	205.5	217
13:16	35.4	31.5	18.47	2.57	205.6	208.7
13:17	35.3	35.2	18.31	2.7	207.6	211.5
13:18	34	37.4	18.49	2.51	209.3	212.5
13:19	35.1	37.6	18.44	2.59	214.3	217.2
13:20	34.8	42.6	18.4	2.61	220.8	223.9
13:21	34.8	51.6	18.37	2.66	227.2	228.3
13:22	36.7	60.1	18.17	2.87	233.9	240.4
13:23	36.8	63	18.12	2.89	239	250.6
13:24	36.7	84.5	18.08	2.94	237.3	254.4
13:25	36.4	142.5	17.84	3.19	240.4	258.1
13:26	36.5	116.4	17.6	3.43	248.3	263.9
13:27	36.1	121.9	17.52	3.46	257.5	279.2
13:28	36.7	135.6	17.51	3.52	261.4	284.6
13:29	39.7	144.1	16.91	4.05	276.3	294.9
13:30	38.6	135.4	16.85	4.05	284.9	312.1
13:31	36.2	127	17.19	3.74	283.8	314.3
13:32	36.7	114.1	17.15	3.84	286	311.8
13:33	37.3	130.3	16.93	3.99	292.6	321
13:34	36.7	134.7	16.99	3.94	303.8	323.7
13:35	35.9	131.3	17.08	3.87	309.4	340.5
13:36	35.8	130.9	17.11	3.83	309.5	343.1
13:37	35.5	126.1	17.24	3.73	310	342.2
13:38	36.2	129.4	17.14	3.83	308.8	334.9
13:39	36.1	137.8	17.14	3.81	306.5	336.6
13:40	35.2	132.6	17.28	3.69	302.2	336.5
13:41	35	124.7	17.34	3.65	293.1	327.6
13:42	34.4	122.5	17.29	3.69	290.1	312.7
13:43	33.6	130.7	17.24	3.74	288.9	313.4
13:44	33.3	136	17.26	3.7	286.5	311.5
13:45	33.5	127	17.36	3.62	285.9	309.3
13:46	33.2	114.8	17.53	3.46	285	314.9
13:47	33.3	112.4	17.41	3.61	288.3	314.3
13:48	33.8	122.1	17.27	3.73	288.8	314.8
13:49	33.5	122.5	17.31	3.7	288.4	502.6
13:50	38.8	125.8	17.23	3.75	287.2	316.2
13:51	34.2	122	17.18	3.8	289.5	319.4
13:52	33.7	121	17.24	3.73	294.1	325.5
13:53	33.4	103.9	17.38	3.62	288.4	323.2
13:54	34.2	93.5	17.46	3.55	287.9	321.9
13:55	36.4	90.9	17.3	3.7	298.3	330.8

13:56	37.2	90.8	17.18	3.81	310.7	345.8
13:57	35.8	89.8	17.12	3.85	314.6	351.3
13:58	33.9	86.4	17.11	3.85	314	381
13:59	31.6	88.6	17.18	3.81	319.1	368.9
14:00	31.8	96.3	17.02	3.94	333.5	373.5
14:01	33.4	105.5	17.07	3.89	328.9	389.6
14:02	31.6	104.9	17.05	3.9	323.6	400
14:03	31.2	107.5	17.24	3.74	322.3	399.9
14:04	32.5	102.4	17.16	3.88	319.9	397.7
Average	34.7	90.4	17.43	3.4	270.3	308.8

06-25-1991 Time	Outlet NOx	Outlet ppmCO	Outlet %O2	Outlet %CO2	Outlet ppm THC	Inlet ppm THC
17:11	14.5	146.9	17.05	3.8	517.2	533.1
17:12	14.3	149.4	17.12	3.72	508.1	541.9
17:55	18.2	84.3	17.77	3.2	539.6	743.1
17:56	16.8	165.5	17.77	3.2	589	755
17:57	17	216.3	17.81	3.16	582.5	749.7
17:58	17	205.5	17.78	3.2	574.5	745.9
17:59	16.5	223.7	17.71	3.25	584.9	750.6
18:00	16.5	211.9	17.76	3.21	585.8	749.2
18:01	16.4	165.4	17.77	3.19	581.6	742.8
18:02	16	183.2	17.67	3.29	597.2	727.3
18:03	18.7	140.4	17.53	3.42	588.8	731
18:04	18.1	89.8	17.57	3.37	586.9	735.3
18:05	19.3	92.3	17.48	3.46	613.3	746.4
18:06	21.3	99.2	17.49	3.44	545	751.3
18:07	19.6	102.6	17.46	3.47	575.8	747.9
18:08	18.9	114.2	17.42	3.51	591.8	752
18:09	19.2	124.3	17.19	3.72	605.3	769.7
18:10	19.4	133.7	17.21	3.67	608.2	765.9
18:11	18.7	127.4	17.31	3.6	629.5	758.8
18:12	26	129.9	17.29	3.61	554.1	756.6
18:13	21	132.2	17.26	3.65	609.5	755.4
18:14	20.3	138.4	17.24	3.65	624	753.6
18:15	19.9	134.7	17.3	3.61	612	756.7
18:16	22	137.3	17.27	3.62	620.6	723.2
18:17	22.5	140.9	17.14	3.75	645.8	722.4
18:18	21.7	149.1	17.11	3.78	645.7	768.7
18:19	20.5	161.3	17.02	3.86	649.5	777.1
18:20	20.4	166.3	17.05	3.81	651.2	779.3
18:21	19.5	154.4	17.25	3.66	652.4	783.7
18:22	19.5	151.8	17.23	3.67	673	784.9
18:23	19.6	155	17.18	3.73	674.3	788
18:24	19.7	162.9	17.09	3.8	713.6	821.1
18:25	19.3	163	17.15	3.74	722.6	841.1
18:26	19.2	154.2	17.19	3.71	725.9	840.4
18:27	19.9	155.5	17	3.89	741.2	857
18:28	20	166.6	16.94	3.91	736.3	836.9
18:29	19.5	157.8	17.17	3.72	727.9	812.8
18:30	19.6	145.8	17.23	3.67	711	798.1
18:31	19.3	138.9	17.49	3.43	738.3	794.2
18:32	20.5	135.6	17.25	3.69	738	811.4
18:33	21	160.6	17.06	3.82	727	822.2
18:34	20.5	162.1	17.24	3.67	722	800

18:35	23	152.1	17.4	3.53	716.9	777.8
18:36	19.9	138.6	17.39	3.55	703.2	783.5
18:37	19.7	146.2	17.3	3.63	750.7	799.9
18:38	19.9	162.2	17.19	3.7	780.1	814.1
18:39	19.3	160.7	17.3	3.6	807.1	831
18:40	19.2	157.2	17.29	3.6	820.4	860.8
18:41	19.2	155.4	17.32	3.57	823.6	858.8
18:42	19.6	147	17.29	3.6	808.1	872.6
18:43	19.8	149.1	17.26	3.62	813.8	902.4
18:44	20.6	156.1	17.09	3.78	796.9	901.2
18:45	20.6	158.7	17.17	3.69	737.1	890.5
18:46	20.8	148	17.23	3.67	752.8	873.9
18:47	21.2	143.1	17.32	3.55	753.9	846.9
18:48	22.3	131.8	17.55	3.36	713.2	843
18:49	21.5	116.3	17.54	3.39	705.8	846.8
18:50	22	128.7	17.27	3.63	712.6	883.6
18:51	21.7	132.3	17.39	3.5	719.2	891.2
18:52	21.5	121.2	17.45	3.46	743.8	903.3
18:53	21.2	123	17.46	3.43	795.5	965.6
18:54	20.9	114.4	17.52	3.4	815.3	983.6
18:55	21	116.7	17.54	3.34	704.3	978.6
18:56	13.9	101.4	19.22	1.63	273.2	963
18:57	8.1	12.2	20.4	0.94	338.4	966.8
18:58	22.4	88.1	17.62	3.32	784.8	946.5
18:59	19.3	115.3	17.59	3.35	826.5	920.7
19:00	20	112.2	17.53	3.39	811.1	952.5
19:01	21.2	126.5	17.31	3.61	803.2	944.9
19:02	20.7	136.4	17.29	3.62	776.1	940.5
19:03	20.3	147	17.27	3.63	757.6	915.8
19:04	19.9	151.2	17.29	3.6	712.4	920.2
19:05	20.1	149.5	17.29	3.61	749.3	942.8
19:06	20.6	156.3	17.17	3.71	751.3	937.6
19:07	20.1	156	17.36	3.52	730	972.3
19:08	20.7	143.5	17.34	3.56	722.2	948.6
19:09	21.1	159	17.15	3.72	731	952.6
19:10	21.3	171.3	17.07	3.79	730.7	951.8
19:11	21.4	175.3	17.07	3.78	687.8	958.5
19:12	20.7	167.9	17.17	3.69	657.4	948.8
19:13	20.4	162.4	17.27	3.61	651.6	943.1
19:14	22.8	160.2	17.19	3.69	681.9	957.2
19:15	20.5	166.2	17.09	3.78	693.3	968.1
19:16	20.3	173.1	17.16	3.71	707.4	962
19:17	20.2	156.8	17.26	3.63	717.6	988.3
19:18	20	149	17.33	3.58	732.3	982.4
19:19	20.1	154.7	17.22	3.7	744.6	994.8

19:20	20.7	171	17.05	3.83	749.7	1009.7
19:21	20.4	167.2	17.17	3.73	772.5	1037
19:22	20.9	156	17.15	3.76	759.5	1024.8
19:23	20.8	149.5	17.21	3.69	711.4	973.2
19:24	20.9	145.7	17.26	3.66	698.4	924.9
19:25	21	145.3	17.3	3.6	677.4	872.2
19:26	20.9	138.9	17.32	3.59	679.8	857.4
19:27	21	139.2	17.3	3.61	681.2	846.2
19:28	21.6	155.3	17.07	3.8	683.8	842.1
19:29	21.3	163.1	17.13	3.73	695.7	827.9
19:30	21.4	151.8	17.18	3.69	674.1	807.4
19:31	20.7	144.4	17.33	3.55	671.6	794.7
19:32	21.2	133.4	17.41	3.48	652.1	785.2
19:33	21.7	128.7	17.33	3.56	642.4	761.3
19:34	22.6	133.2	17.2	3.69	639.5	729.9
19:35	22.6	142.5	17.16	3.71	634.8	717.5
19:36	22.3	133.6	17.28	3.62	632	720
19:37	23	135.1	17.12	3.74	626.9	724.1
19:38	22.5	132.2	17.34	3.52	597.2	705
19:39	22.3	119.9	17.41	3.5	580.8	676.9
19:40	24.3	123.1	17.41	3.48	576.5	659.7
19:41	23.4	122.3	17.34	3.55	582.5	664.9
19:42	22.8	122.7	17.4	3.49	585.7	661.2
19:43	22.6	118.5	17.41	3.49	582.5	658.2
19:44	22.7	111.5	17.5	3.42	563	645.1
19:45	24	109.4	17.46	3.45	552.9	635.9
19:46	24.6	105.4	17.42	3.5	554.9	628
19:47	24.9	105	17.31	3.6	546.1	613.6
19:48	24.8	104.1	17.33	3.58	558.3	628.2
19:49	24.2	104.4	17.42	3.5	551.5	621.3
19:50	25	103.1	17.35	3.59	553.5	611
19:51	25.1	105.7	17.29	3.62	553.2	600.3
19:52	24.3	101.4	17.46	3.48	536.3	589.2
19:53	25.1	97.9	17.45	3.5	524.2	574.7
19:54	24.7	100.6	17.38	3.57	508.3	575.5
19:55	25.1	107	17.32	3.61	519.5	582.5
19:56	25.5	101.4	17.42	3.54	516.8	568.1
19:57	25.7	106.1	17.33	3.62	515.4	574.3
19:58	24.4	102.7	17.36	3.59	512.5	567.8
19:59	24.1	99.4	17.46	3.5	510.4	561.9
20:00	24.5	95	17.42	3.54	517.2	562.9
20:01	23.8	97.4	17.48	3.49	531.8	570.2
20:02	23.5	98.2	17.48	3.49	536.1	568.5
20:03	23.5	97.7	17.54	3.45	526.7	566.4
20:04	24.3	100.3	17.38	3.6	522.7	570.1

20:05	24.5	108.4	17.3	3.65	539.2	580.7
20:06	23.2	113.7	17.39	3.57	536.5	571.7
20:07	23.4	110.5	17.43	3.54	520.5	565.5
Average	20.9	136.6	17.4	3.5	651.6	789.5

06-25-1991 Time	Outlet NOx	Outlet ppmCO	Outlet %O2	Outlet %CO2	Outlet ppm THC	Inlet ppm THC
09:31	23.6	117.5	17.28	0.02	382.9	430.8
09:32	24.6	121.6	17.22	6.1	389.5	433.8
09:33	25.4	126	17.25	4.74	382.5	427.6
09:34	26.8	136.3	16.97	3.9	395.7	432
09:35	27.9	181.4	16.73	4.06	400.4	435.5
09:36	27	185.1	17.03	3.8	392.5	428.2
09:37	26.9	166.3	17.01	3.84	394.3	428.5
09:38	28.6	187.9	16.69	4.11	400.5	428.7
09:39	27.6	212.8	16.8	4	387.5	416.1
09:40	26.9	213.3	16.84	3.98	383.6	413.1
09:41	27	220.2	16.88	3.94	367.3	399.1
09:42	26	203.4	17.06	3.78	361.6	388.8
09:43	26.6	184.6	17.1	3.76	354.5	389.9
09:44	26.4	181.1	17.05	3.82	359	400.1
09:45	26.1	185.6	16.98	3.87	357.4	410.4
09:46	25.8	184.4	16.91	3.95	361.2	390.7
09:47	25.1	184.7	16.99	3.85	359.2	398.2
09:48	24.8	183.1	17.14	3.73	354.2	395.8
09:49	25	175.4	17.18	3.69	353.3	394.3
09:50	22.6	167.4	17.12	3.75	341.8	391.6
09:51	22.2	178.3	17.01	3.83	337	386
09:52	22.4	171.4	17.05	3.79	329.3	372.5
09:53	22.4	156.6	17.14	3.71	322.9	362.4
09:54	22.5	147.9	17.12	3.72	317	353.9
09:55	27.4	137.2	16.59	3.59	312	350
09:56	25.1	142.8	16.92	3.89	324	353.6
09:57	24.1	148.4	16.96	3.86	323.3	348.4
09:58	24.2	152.9	16.93	3.88	324.7	347.1
09:59	23.8	146.3	16.98	3.84	325.3	345
10:00	23	149.6	17.06	3.76	327.7	349
10:01	22.7	147.5	17.11	3.72	317.6	338.7
10:02	22.6	154.2	17.09	3.74	313.4	337.1
10:03	22.1	153.7	17.23	3.61	313.5	330.4
10:04	23.1	153.2	17.14	3.72	323.5	336.6
10:05	23.9	180.6	16.91	3.91	323.4	337.5
10:06	23.1	205.9	16.93	3.88	320	338.8
10:07	23.1	221.6	16.91	3.9	324.2	329.6
10:08	23.2	229.4	16.93	3.88	325.8	333.4
10:09	23.9	248	16.73	4.07	326.6	342.4
10:10	23.2	264.9	16.82	3.97	317.2	348.6
10:11	22.4	251.1	16.88	3.94	312.3	336.9
10:12	21.8	251.9	16.99	3.83	308.9	332.2

10:13	21.4	241.8	17.13	3.7	305.7	317.3
10:14	21.3	240.7	17.17	3.69	299.6	309.9
10:15	22.4	248.4	17.09	3.76	295.6	310.2
10:16	22.6	256.7	17.14	3.7	289.1	303.3
10:17	22.2	227.9	17.13	3.72	296.6	314.4
10:18	22.1	234.7	17.11	3.75	304.5	323.4
10:19	22.3	245.3	17.08	3.77	300	320.6
10:20	22.7	258.7	17	3.84	298.8	315.8
10:21	23	261.8	17.04	3.8	288.9	315.8
10:22	23.2	253.6	17.02	3.85	284.3	311.8
10:23	23.4	272.1	16.86	3.97	289.7	310.3
10:24	23.8	284	16.91	3.91	290.8	315.7
10:25	23.4	263.4	16.85	3.98	290	306.4
10:26	23.5	258.7	16.76	4.05	292.3	312.1
10:27	22.8	253.3	16.81	3.99	292.1	317
10:28	20.4	253.3	16.84	3.96	289.3	321.5
10:29	20	251.6	16.94	3.86	288.6	319
10:30	18.8	227.3	17.2	3.64	288.1	308.9
10:31	19	208.6	17.18	3.67	290.1	310.5
10:32	19.3	214.9	17.04	3.78	291.8	314.5
10:33	19.2	213.1	17.08	3.74	291.2	314.4
10:34	18.7	200.1	17.12	3.69	292.3	314.7
10:35	18.5	184.3	17.33	3.51	288.6	314.8
10:36	18.4	166.2	17.37	3.49	280.4	305.7
10:37	19.2	163.8	17.26	3.59	278.9	306
10:38	19.2	172.4	17.21	3.64	279.5	312.6
10:39	19.2	178.2	17.18	3.65	278.2	314.3
10:40	19.2	171.7	17.29	3.56	269.3	310.8
10:41	19.8	161.2	17.23	3.62	269.3	308
10:42	19.7	171.5	17.18	3.67	270.1	330.1
10:43	19.4	171	17.25	3.6	264.8	299.6
10:44	23.8	173.1	16.97	3.66	266.2	305.9
10:45	21.1	184	17.12	3.73	271.6	311.8
10:46	20.7	202.6	16.92	3.91	274	315.3
10:47	20.8	213.1	17.03	3.8	276.1	322
10:48	21	200.5	17.15	3.7	275.8	317.3
10:49	20.6	195.1	17.12	3.73	277.6	315.9
10:50	21.2	208.8	16.99	3.85	281	323.5
10:51	21.4	218.3	16.96	3.87	290.4	326.2
10:52	20.7	217.9	17.04	3.78	292.2	328.1
10:53	20.5	206.9	17.12	3.72	288.2	315.9
10:54	20.7	198.2	17.17	3.69	286.2	318
10:55	21.1	204.6	17.16	3.66	286.7	316.4
10:56	21.9	195.2	17.16	3.7	288.7	318.9
10:57	23.1	219.5	16.97	3.85	291.7	321.7

10:58	23.4	230.1	16.94	3.86	291.7	321.2
10:59	23.7	226.6	17.06	3.77	293.3	317.3
11:00	24.1	212.5	17.03	3.78	293.5	324.8
11:01	22.7	207.1	17.12	3.72	293.5	326.2
11:02	23	214.1	16.98	3.83	299.2	329
11:03	22.1	219.6	17.11	3.7	298.9	334.5
11:04	21.6	190.7	17.23	3.62	296.7	332.2
11:05	22.5	182.4	17.12	3.72	298.1	333.8
11:06	22.8	179.2	17.12	3.73	297.7	334.2
11:07	23.4	176.8	17.02	3.81	299.1	332.9
11:08	22.3	176	17.15	3.68	295.4	390.8
11:09	21.2	166	17.24	3.6	299	339.3
11:10	21	164.4	17.26	3.58	304.9	343.9
11:11	21.3	168.9	17.22	3.6	306.9	352.6
11:12	23.2	159.8	17.34	3.47	309.4	350.3
11:13	21.4	160.7	17.37	3.44	312.3	350.5
11:14	21.1	146.7	17.43	3.44	313.6	348.6
11:15	22.9	162.6	17.08	3.76	318.9	347.3
11:16	23.1	189.6	17	3.81	322	349.7
11:17	23.1	190	17.01	3.8	322.5	353.8
11:18	22.8	194.4	17.01	3.8	325	357.3
11:19	22.4	186	17.09	3.73	321.5	356.9
11:20	21.6	172.3	17.3	3.54	314.5	348.3
11:21	21.6	168.6	17.2	3.64	319.3	355.3
11:22	22.1	185.7	17.06	3.76	324.8	364.5
11:23	21.9	207.9	17.05	3.76	329.2	378.3
11:24	21.9	207.4	17.14	3.68	327	370
11:25	21.9	208.9	17.2	3.63	324.5	368.8
11:26	22.4	219.9	17.1	3.71	319.1	361.9
11:27	22.2	227.4	17.16	3.68	316.3	360.8
11:28	22.7	239	17.05	3.75	320.6	364.3
11:29	21.5	226.5	17.27	3.57	312.5	357.2
11:30	22.4	228.8	17.15	3.67	318.8	360.3
11:31	22.1	234.8	17.13	3.7	326.8	372.3
11:32	22.6	261.8	16.96	3.84	336.2	384.3
11:33	22.6	271.1	16.89	3.89	339	384.2
11:34	22.1	274	17.04	3.74	333.9	374.8
11:35	21.9	236.3	17.21	3.6	326.7	364.1
11:36	22	217.8	17.14	3.68	332.5	369.8
11:37	21.1	183.2	17.52	3.27	314.6	349.2
11:38	20.9	126.9	17.44	3.42	318.3	352.8
11:39	21.5	136.5	17.44	3.35	306.2	351.9
11:40	20.3	113	17.62	3.2	302.9	349.5
11:41	20	104.4	17.64	3.2	297.4	344.3
11:42	20.4	104.7	17.54	3.3	295	338.6

11:43	20.8	102.6	17.55	3.28	291.4	341.1
11:44	21	103.3	17.63	3.19	288.7	334
Average	22.5	195.0	17.1	3.7	314.0	347.3

United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Research Triangle Park NC 27711

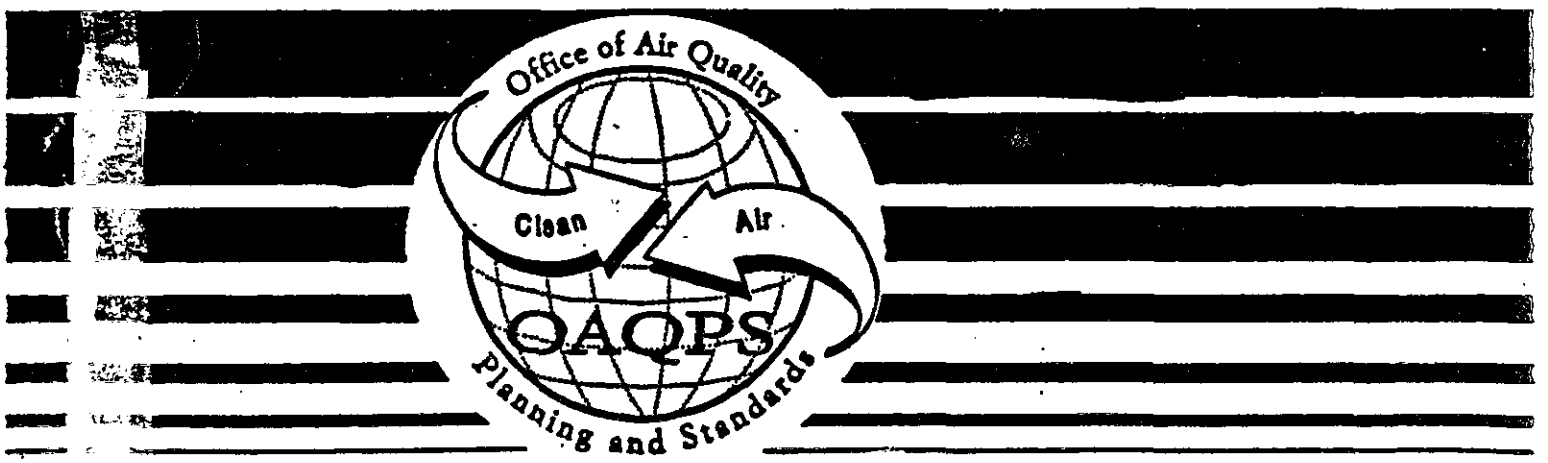
EMB Report 91-WAF-01
Volume II
April 1992

Air

Oriented Strand Board Emission Test Report

Georgia Pacific
Skippers, Virginia

EPA



VOLUME II.

RAW DATA

METHOD DEVELOPMENT AND TESTING FOR ORIENTED STRAND BOARD PLANT EMISSIONS

GEORGIA-PACIFIC ORIENTED STRAND BOARD PLANT SKIPPERS, VIRGINIA

EPA Project No. 91-WAF-01

EPA Contract No. 68-D9-0055
Work Assignment No. 1-85

Prepared for:

Dennis P. Holzschuh
Emission Measurement Branch
Technical Support Division
U.S. Environmental Protection Agency
Research Triangle Park, North Carolina 27711

Prepared by:

William K. Kirk
Roger T. Shigehara
Lisa Grosshandler
Research and Analysis Division
Entropy Environmentalists, Inc.
Post Office Box 12291
Research Triangle Park, North Carolina 27709

March 27, 1992

AIR FLOW RATE DETERMINATIONS

Plant Name EPA / GEORGIA PACIFIC Run No. PRE-1

City/State _____ Date 6-24-9?

Test Location LOWER INLETS Personnel GCB JR

Barometric Pres. (Pbar) 30.0 In. Hg Static Pres. (Pg) _____ In. H_2O

Pitot ID DP-60-3 Pitot Coeff. (Cp) .84 Pressure Gauge Set ID N-25

Thermocouple ID R-243 (10)

VELOCITY TRAVERSES Start-Finish Times: _____ - _____

Point No.	ΔP In. H_2O	Temp. °F
A-1	+1.45	191
2	-1.45	191
3	-1.52	193
4	-1.27	193
5	-1.75	194
6	-1.85	195
7	.155	195
8	+.41C	194
C-1	1.62	140
2	1.70	183
3	1.35	187
4	1.50	189
5	1.50	191
6	1.25	192
7	1.60	192
8	.75	192
D 1	1.27	178
2	1.65	200
3	1.4	.27
4	1.55	213
5	1.4	213
6	.90	213
7	.95	212
8	.97	213
Avg.*	1.3307	194

ORSAT DATA

Sampling Time	Analysis Time	CO_2 (A) Reading	O_2 (B) Reading	$\%O_2$ (B-A)	$\%CO+N_2$ (100-B)
	Average				

Bag No. _____ Pump _____

FYRITE DATA, % CO_2				

MOISTURE DATA (WET BULB/DRY BULB)

Port	Time	Dry Bulb °F	Wet Bulb °F	Diff.	% H_2O
C	1230	210	150	60	23

MOISTURE DATA (STOICHIOMETRIC)

Free Water in Fuel, %		
Water from Fuel Combustion, %		
Ambient Water, %		
Relative Humidity, %		
Ambient Temperature, °F		
Total %		

VOLUMETRIC AIR FLOW RATES

Dry at Standard Conditions, Qsd =		SCFM
Wet at Stack Conditions, Qaw =		ACFM

ADDITIONAL DATA

* ΔP average is square of average square root.

F-1023 rev. 9-90

ENTROPY

AIR FLOW RATE DETERMINATIONS

Plant Name EPA / GEORGIA PACIFIC Run No. PRE-2

City/State _____ Date 6-24-91

Test Location LOW INLETS Personnel GCB TR

Barometric Pres. (Pbar) 30.0 In. Hg Static Pres. (Pg) _____ In. H_2O

Pitot ID DP-60-3 Pitot Coeff. (Cp) .84 Pressure Gauge Set ID U-2

Thermocouple ID R 243

VELOCITY TRAVERSES Start-Finish Times: _____ - _____		
Point No.	Δ P In. H_2O	Temp. °F
2 A-1	1.1	188
2	1.2	189
3	1.27	190
4	1.20	189
5	1.30	189
6	1.35	189
7	1.1	188
8	.85	188
2 C-1	1.7	204
2	1.75	208
3	1.77	209
4	1.7	210
5	1.6	210
6	1.7	210
7	1.4	209
8	1.2	204
2 D-1	1.30	141
2	1.42	202
3	1.5	208
4	1.42	208
5	1.30	209
6	1.42	208
7	1.1	208
8	1.0	207
Avg.*	1.3535	200

11.7 BACK WALL

ORSAT DATA					
Sampling Time	Analysis Time	CO_2 (A) Reading	O_2 (B) Reading	%O_2 (B-A)	%$CO+N_2$ (100-B)
	Average				

Bag No. _____ Pump _____

FYRITE DATA, % CO_2				

MOISTURE DATA (WET BULB/DRY BULB)					
Port	Time	Dry Bulb °F	Wet Bulb °F	Diff.	% H_2O
C	1230	210	150	60	23

MOISTURE DATA (STOICHIOMETRIC)		
Free Water in Fuel, %		
Water from Fuel Combustion, %		
Ambient Water, %		
Relative Humidity, %		
Ambient Temperature, °F		
Total %		

VOLUMETRIC AIR FLOW RATES		
Dry at Standard Conditions, Qsd =		SCFM
Wet at Stack Conditions, Qaw =		ACFM

ADDITIONAL DATA

* Δ P average is square of average square root.

F-1023 rev. 9-90

(Fig 6)

ENTROPY

AIR FLOW RATE DETERMINATIONS

Plant Name EPA/Georgia Pacific Run No. PRE-3

City/State _____ Date 6-25-91

Test Location LOWER INLET Personnel GCB JR GW

Barometric Pres. (Pbar) 30.0 In. Hg Static Pres. (Pg) _____ In. H_2O

Pitot ID DP-60-3 Pitot Coeff. (Cp) .84 Pressure Gauge Set ID N-25

Thermocouple ID DP-60-3

VELOCITY TRAVERSES Start-Finish Times: _____ - _____

Point No.	Δ P In. H_2O	Temp. °F
A1	.97	114
2	1.25	189
3	1.35	204
4	1.30	207
5	1.42	206
6	1.417	209
7	1.30	208
8	1.20	208
B1	1.17	142
2	1.37	183
3	1.45	213
4	1.85	217
5	1.60	219
6	1.30	218
7	1.27	218
8	.80	215
C1	1.65	149
2	1.52	196
3	1.55	217
4	2.1	218
5	1.87	218
6	1.23	218
7	1.40	218
8	1.1	218
Avg.*	1.3258	195

ORSAT DATA

Sampling Time	Analysis Time	CO_2 (A) Reading	O_2 (B) Reading	%O_2 (B-A)	%$CO+N_2$ (100-B)
	Average				

Bag No. _____ Pump _____

FYRITE DATA, % CO_2				

MOISTURE DATA (WET BULB/DRY BULB)

Port	Time	Dry Bulb °F	Wet Bulb °F	Diff.	% H_2O
C	0830	208	142	56	18.8

MOISTURE DATA (STOICHIOMETRIC)

Free Water in Fuel, %		
Water from Fuel Combustion, %		
Ambient Water, %		
Relative Humidity, %		
Ambient Temperature, °F		
Total %		

VOLUMETRIC AIR FLOW RATES

Dry at Standard Conditions, Qsd =		SCFM
Wet at Stack Conditions, Qaw =		ACFM

ADDITIONAL DATA

* Δ P average is square of average square root.

F-1023 rev. 9-90

(Fig 6)

ENTROPY

AIR FLOW RATE DETERMINATIONS

Plant Name _____ Run No. PRE-3 (cont)

City/State _____ Date _____

Test Location _____ Personnel _____

Barometric Pres. (Pbar) _____ In. Hg Static Pres. (Pg) _____ In. H_2O

Pitot ID _____ Pitot Coeff. (Cp) _____ Pressure Gauge Set ID _____

Thermocouple ID _____

VELOCITY TRAVERSES
Start-Finish Times: _____ - _____

Point No.	Δ P In. H_2O	Temp. °F
01	.75	120
2	1.05	161
3	1.1	183
4	1.70	192
5	1.50	192
6	1.15	192
7	1.1	192
8	1.1	192
Avg.*	1.3258	195

ORSAT DATA

Sampling Time	Analysis Time	CO_2 (A) Reading	O_2 (B) Reading	$\%O_2$ (B-A)	$\%CO+N_2$ (100-B)
	Average				

Bag No. _____ Pump _____

FYRITE DATA, % CO_2				

MOISTURE DATA (WET BULB/DRY BULB)

Port	Time	Dry Bulb °F	Wet Bulb °F	Diff.	% H_2O

MOISTURE DATA (STOICHIOMETRIC)

Free Water in Fuel, %		
Water from Fuel Combustion, %		
Ambient Water, %		
Relative Humidity, %		
Ambient Temperature, °F		
Total %		

VOLUMETRIC AIR FLOW RATES

Dry at Standard Conditions, Qsd =		SCFM
Wet at Stack Conditions, Qaw =		ACFM

ADDITIONAL DATA

* Δ P average is square of average square root.

F-1023 rev. 9-90

(Fig 6)

ENTROPY

Georgia-Pacific

CALCULATION SHEET | FILE NO. | SHEET 5 OF 5

LOCATION: G-P OSB - Skippers, VA | PROJECT: Low Temp. Drying - #1 Dryer

DISCIPLINE: Environmental | PREPARED BY/DATE: LH/6-27-91 | CHECKED BY/DATE:

SUBJECT: Low Flow/Temp. #1 Dryer - Normal Flow/Temp. #2 Dryer (Run #2)

ESP Volts/Amps

Time	#1	#2	#3
1103	26,789/.036	42,662/.284	41,709/.339
1106	27,790/.038	42,442/.284	41,661/.336
1108	27,695/.042	42,650/.281	41,770/.332
1112	29,292/.041	42,552/.291	41,832/.341
1115	29,486/.043	42,381/.290	41,722/.342
1118	28,315/.060	42,418/.286	41,685/.337
1123	29,060/.050	42,405/.299	41,783/.345
1125	21,503/.033	42,540/.294	41,978/.342
1130	27,729/.040	42,308/.305	41,819/.351
1134	0/0	1,221/.475	42,466/.308
1136	0/0	24,078/.055	42,332/.316
1139	0/0	24,177/.014	42,247/.326
1142	0/0	31,245/.062	41,917/.331
1147	0/0	22,979/.077	42,222/.314
	27,518/.042	34,718/.236	41,939/.333

Georgia-Pacific | CALCULATION SHEET | FILE NO. | SHEET 4 OF 5

LOCATION: G-P OSB - Skippers, VA | PROJECT: Low Temps. Drying - #1 Dryer

DISCIPLINE: Environmental | PREPARED BY/DATE: LH/6-27-91 | CHECKED BY/DATE:

SUBJECT: Low Flow/Temp. #1 Dryer - Normal Flow/Temp. #2 Dryer (Run #2)

ESP Temps. (°F) + Water Flow (GPM)

Time	Inlet Duct	Inlet Trans.	ESP	Outlet Trans.	Mist Flow	TH.	BD
1102	204	146	142	142	361	0	23.7
1105	204	141	141	141	361	0	23.8
1107	204	141	141	141	360	0	23.8
1111	204	140	141	140	359	0	23.7
1114	203	139	139	139	359	0	23.5
1118	202	139	139	139	360	0	23.7
1121	200	139	139	139	359	0	15.6
1125	199	139	139	139	359	0	15.7
1129	198	137	137	137	361	0	15.7
1133	197	136	136	136	360	282	15.6
1135	197	136	136	136	360	282	15.6
1139	196	136	136	136	359	284	15.7
1146	195	135	135	135	359	284	15.8
	198	139	139	139	360	283	19.1

Georgia-Pacific

CALCULATION SHEET

FILE NO.

SHEET 3 OF 5

LOCATION: G-P OSB - Skippers, VA

PROJECT: Low Temp. Drying - #1 Dryer

DISCIPLINE: Environmental

PREPARED BY/DATE: LH/6-27-91

CHECKED BY/DATE:

SUBJECT: Low Flow/Temp. #1 Dryer - Normal Flow/Temp. #2 Dryer (RUN #2)

Dryer Temps (°F)

	#1		#2		#3		#4	
	Time	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
1.	1102	937	239	1,148	246	N/A		N/A	
2.	1105	838	230	1,134	249	"		"	
3.	1107	827	222	1,119	249	"		"	
4.	1110	834	213	1,126	251	"		"	
5.	1114	837	207	1,106	246	"		"	
6.	1118	825	200	1,134	237	"		"	
7.	1121	814	195	1,107	233	"		"	
8.	1124	804	190	1,107	233	"		"	
9.	1129	827	190	1,100	235	"		"	
10.	1133	828	190	1106	233	"		"	
11.	1135	834	190	1117	231	"		"	
12.	1138	834	190	1105	230	"		"	
13.	1142	854	197	1112	232	"		"	
14.	1145	882	204	1108	234				
		841	204	1116	238				

Georgia-Pacific

CALCULATION SHEET | FILE NO. | SHEET 2 OF 5

LOCATION: G-P OSB - Skippers, VA | PROJECT: Low Temp. Drying - #1 Dryer

DISCIPLINE: Environmental | PREPARED BY/DATE: LH/6-27-91 | CHECKED BY/DATE:

SUBJECT: Low Flow/Temp. #1 Dryer - Normal Flow/Temp. Dryer #2 (Run #2)

Dryer Green Flake Infeed (Lbs./Hr.)

Time	#1 (Set 18,000) Dryer	#2 (Set 38000) Dryer	#3 Dryer	#4 Dryer
1101	25,705	32,559	N/A	N/A
1105	23,014	35,229	"	"
1107	20,791	36,396	"	"
1110	20,771	38,857	"	"
1114	21,779	40,556	"	"
1117	22,552	40,322	"	"
1121	21,535	35,845	"	"
1124	21,559	37,896	"	"
1128	19,622	38,271	"	"
1132	21,497	36,864	"	"
1135	22,670	39,549	"	"
1138	22,522	36,724	"	"
1141	21,767	35,014	"	"
1145	15,754	41,506	"	"
	21,538	37,542		

Georgia-Pacific

CALCULATION SHEET | FILE NO. | SHEET 1 OF 5

LOCATION: G-P OSB-Skippers, VA | PROJECT: Low Temp. Drying #1/Dry

DISCIPLINE: Environmental | PREPARED BY/DATE: LH/6-27-91 | CHECKED BY/DATE:

SUBJECT: Low Flow/Temp. #1 Dryer – Normal Flow Dryer #2 (Run #2)

Dryer Green Flake Infeed (Tons)

	Time	#1	#2	#3	#4
Stop	1145	89,955.2	55,706.6	N/A	N/A
Start	1100	89,946.9	55,692.6	"	"
	(45 min)	8.3	14.0		

Dryer #1

$$\frac{8.3 \text{ Tons}}{45 \text{ Min.}} \times \frac{60 \text{ Min}}{\text{Hr}} \times \frac{2000 \text{ Lbs}}{\text{Ton}} = 22{,}133 \text{ Lbs/Hr} \quad (11.1 \text{ Tons/Hr})$$

Dryer #2

$$\frac{14.0 \text{ Tons}}{45 \text{ min}} \times \frac{60 \text{ min}}{\text{Hr}} \times \frac{2000 \text{ Lbs}}{\text{Ton}} = 37{,}333 \text{ Lbs./Hr.} \quad (18.7 \text{ Tons/Hr.})$$

Press Load Number

	Time	#
Stop	1145	46
Start	1100	36
		10

Shift Total

142 (12 Hr. Shift)

GP-9335 (12-86)

Georgia-Pacific

CALCULATION SHEET

FILE NO.

SHEET 5 OF 5

LOCATION: G-P OSB - Skippers, VA

PROJECT: Low Temp. Drying #1 Dryer

DISCIPLINE: Environmental

PREPARED BY/DATE: LH / 6-26-91

CHECKED BY/DATE:

SUBJECT: Dryer #1 Wood / Temp. Reduced - Dryer #2 Normal Wood / Temp - Flow

ESP Volts / Amps

Time	#1	#2	#3
1651	29,255 / .052	34,541 / .125	0 / 0 (Wash End Ips 5, W95H
1655	28,474 / .043	39,451 / .223	24,750 / .044
1702	28,608 / .054	42,821 / .285	36,215 / .190
1706	28,803 / .056	42,772 / .296	40,940 / .298
1710	28,987 / .001	42,776 / .295	42,320 / .329
1714	28,998 / .060	42,625 / .309	42,381 / .347
	28,854 / .044	40,831 / .256	37,321 / .242

Georgia-Pacific

CALCULATION SHEET | FILE NO. | SHEET 4 OF 5

LOCATION: G-P OSB - Strippers | PROJECT: Low Temp. Drying #1 Dryer

DISCIPLINE: Environmental | PREPARED BY/DATE: LH / 6-26-91 | CHECKED BY/DATE:

SUBJECT: Dryer #1 Wood/Temp. Reduced – Dryer #2 Normal Wood/Temp. Flow

ESP Temps (°F) + Water Flow (GPM)

Time	Inlet Duct	Inlet Trans.	ESP	Outlet Trans.	Mist Flow	TT	BD
1649	204	139	139	~~360~~ 139	360 ~~262~~	262	15.6
1655	202	136	137	137	360	261	15.6
1701	202	132	132	133	359	0	23.6
1705	206	131	132	132	360	0	23.6
1710	210	130	130	130	360	0	23.6
1714	213	127	128	128	360	0	15.6
	206	132	133	133	360	262	19.6

GP-9335 (12-86)

Georgia-Pacific

CALCULATION SHEET | FILE NO. — | SHEET 3 OF 5

LOCATION: G-P OSB - Skippers, VA | PROJECT: Low Temp. Drying #1 Dryer

DISCIPLINE: Environmental | PREPARED BY/DATE: LH/6-26-91 | CHECKED BY/DATE: —

SUBJECT: Dryer #1 Wood/Temp. Reduced - Dryer #2 Normal Wood/Temp. Flow

Dryer Temps. (°F)

	#1		#2		#3		#4	
Time	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
1648	778	218	1041	225	N/A		N/A	
1654	801	223	1061	228	"		"	
1700	867	242	1106	239	"		"	
1705	875	263	1090	277	"		"	
1709	870	271	938	316	"		"	
1713	874	277	909	299				
	844	249	1,032	264				

Georgia-Pacific | CALCULATION SHEET | FILE NO. | SHEET 2 OF 5

LOCATION: GP OSB - Skippers, VA | PROJECT: Low Temp. Drying #1 Dryer

DISCIPLINE: Environmental | PREPARED BY/DATE: LH/6-26-91 | CHECKED BY/DATE:

SUBJECT: Dryer #1 Wood Flow / Temp. Reduced - Dryer #2 Normal Wood / Temp Fl

Dryer Green Flake Infeed (Lbs/Hr.)

	Time	#1 Dryer	#2 Dryer	#3 Dryer	#4 Dryer
1	1647	14578	42667	N/A	N/A
2	1654	15191	28249	"	"
3	1700	13937	24486	"	"
4	1705	13445	21785	"	"
5	1708	14042	24210	"	"
6	1713	12659	26749		
		13,975	28,024		

Press down

Georgia-Pacific

CALCULATION SHEET | FILE NO. | SHEET 1 of 5

LOCATION: G-P OSB - Skippers, VA | PROJECT: Low Temp. Drying #1 Dryer

DISCIPLINE: Environmental | PREPARED BY/DATE: 24/6-26-91 | CHECKED BY/DATE:

SUBJECT: Dryer #1 Flow Reduced - #2 Dryer Normal Wood Flow (Run #1)

Dryer Green Flake Infeed (Tons)

Time	#1	#2	#3	#4
Stop 1715	89676.4	55428.5	N/A	N/A
Start 1645	89672.5	55421.2		
(30 min)	3.9	7.3		

Dryer #1

$\frac{3.9 \text{ Tons}}{30 \text{ Min.}} \times \frac{60 \text{ min}}{\text{Hr.}} \times \frac{2000 \text{ Lbs}}{\text{Ton}} = 15,600 \text{ Lbs/Hr.}$ (7.8 Tons/Hr.)

Dryer #2

$\frac{7.3 \text{ Tons}}{30 \text{ Min.}} \times \frac{60 \text{ min}}{\text{Hr.}} \times \frac{2000 \text{ Lbs}}{\text{Ton}} = 29,200 \text{ Lbs/Hr.}$ (14.6 Tons/Hr.)

Press Load Number

Time	#
Stop 1715	113
Start 1646	113
	0

Shift Total

142 (12 Hr Shift)

Note: Press went down 1652 - Dry Bins 60% Full

GP-9335 (12-86)

Georgia-Pacific

CALCULATION SHEET | FILE NO. — | SHEET 5 OF 5

LOCATION: G-P/OSB - Skippers, VA | PROJECT: NCASI - Dryer Inlet Test

DISCIPLINE: Environmental | PREPARED BY/DATE: LH/6-24-91 | CHECKED BY/DATE: —

SUBJECT: M25 - NCASI Dryer #1 Inlet Gas Test for TG-NMO

ESP Volts / Amps

Time	#1	#2	#3
1218	23,297 / .020	43,407 / .274	42,747 / .323
1229	27,510 / .039	42,784 / .294	42,776 / .336
1238	29,963 / 0.50	42,857 / .293	42,430 / .328
1246	28,669 / .039	43,053 / .284	42,198 / .323
1304	27,534 / .036	(Wash) 0 / 0	35,702 / .133
1308	28,242 / .039	(Wash) 0 / 0	31,758 / .026
1321	34,420 / .111	41,770 / .237	41,574 / .346
Average →	28,579 / .112	42,774 / .276	39,875 / .259

Georgia-Pacific

CALCULATION SHEET | FILE NO. — | SHEET 4 OF 5

LOCATION: G-P/OSB - Skippers, VA | PROJECT: NCASI - Dryer Inlet Tes

DISCIPLINE: Environmental | PREPARED BY/DATE: LH/6-24-91 | CHECKED BY/DATE: —

SUBJECT: M25 - NCASI Dryer #1 Inlet Gas Test for TGNMO

ESP Temps. °F + Water Flow GPM

Time	Inlet Duct	Inlet Trans.	ESP	Out. Trans.	Mist Flow	T.H. Flow	BD
1222	213	143	143	143	365	0	16.9
1229	217	140	140	140	365	0	16.9
1237	213	141	141	141	366	0	16.9
1246	211	144	144	144	365	0	16.8
1301	211	140	140	140	366	276	16.8
1309	212	140	140	140	366	276	16.4
1320	212	142	142	141	366	0	16.8
Average →	213	141	141	141	366	276	16.8

Georgia-Pacific

CALCULATION SHEET | FILE NO. — | SHEET 3 OF 5

LOCATION: GP/OSB – Skippers, VA | PROJECT: NCASI - Dryer Inlet Tes

DISCIPLINE: Environmental | PREPARED BY/DATE: LH/6-24-91 | CHECKED BY/DATE: —

SUBJECT: M25 – NCASI Dryer #1 Inlet Gas Test for TGNMO

Dryer Temps. °F

Time	#1		#2		#3		#4	
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
1217	1,178	229	1,073	307	1,161	257	1,091	214
1228	1,201	233	641	283	1,186	276	915	283
1237	1,201	244	945	247	1,101	272	810	239
1248	1,177	263	1,131	241	1,141	264	1,052	222
1301	1,157	243	641	291	1,158	261	927	230
1310	1,147	246	727	252	1,140	258	1,060	215
1319	1,139	246	224	198	1,130	261	1050	243
Average →	1,171	243	769	260	1,145	264	986	235

Georgia-Pacific

CALCULATION SHEET | FILE NO. — | SHEET 2 OF 5

LOCATION: G-P/OSB - Skippers, VA | PROJECT: NCASI - Dryer Inlet Tes

DISCIPLINE: Environmental | PREPARED BY/DATE: LH / 6-24-91 | CHECKED BY/DATE: —

SUBJECT: M25 - NCASI Dryer #1 Inlet Gas Test For TGNMO

Dryer Green Flake Infeed (Lbs./Hr)

Time	#1	#2	#3	#4
1216	35012	19,067	34,450	28859
1227	33829	16,645	31,965	29,562
1236	32,184	23,865	30,922	29,820
1248	37,427	29,116	32,777	29034
1300	28,448	16,070	29,570	30,735
1312	32,002	13,351	28,679	35,954
1318	31,121	3200	31,742	30,125
Average →	32,860	17,330	31,444	30,584

Georgia-Pacific

CALCULATION SHEET | FILE NO. — | SHEET 1 OF 5

LOCATION: GP/OSB - Skipper, VA | PROJECT: NCASI - Dryer Inlet Tes

DISCIPLINE: Environmental | PREPARED BY/DATE: LH/6-24-91 | CHECKED BY/DATE: —

SUBJECT: M25 - NCASI Dryer #1 Inlet Gas Test for TGNMO

Dryer Green Flake Infeed (Total Tons)

	Time	#1	#2	#3	#4
Stop	1323	88,918.8	54,778.2	30,468.7	15,555.7
Start	1216	88,900.2	54,767.3	30,450.4	15,534.4
	67 min.	18.6'	10.9'	18.3'	17.3"

16.275 (Average)

Dryer #1

$\frac{18.6 \text{ Tons}}{67 \text{ min.}} \times \frac{60 \text{ min}}{\text{Hr}} \times \frac{2000 \text{ Lbs}}{\text{ton}} = 33,313 \text{ Lbs/Hr.}$ (16.6 Tons/Hr.)

All Dryers (Average)

$\frac{16.275 \text{ Tons}}{67 \text{ min}} \times \frac{60 \text{ min}}{\text{Hr.}} \times \frac{2000 \text{ Lbs}}{\text{Ton}} = 29,149 \text{ Lbs/Hr}$

Press Load Number

	Time	#
Stop	1324	72
Start	1219	58

Shift Total

123 (12 Hr. Shift)

PROCESS AND PRECIPITATOR FIELD DATA

GEORGIA-PACIFIC CORPORATION

SKIPPERS, VIRGINIA OSB PLANT

FLAKE AND FUEL MOISTURE CONTENT (MC)

(WET BASIS)

June 24, 26, & 27, 1991

	GREEN WT. (g)	DRY WT. (g)	MC(WET) BASIS)
June 24th Dryer #1 Gas Inlet Duct			
Fuel	50.6	33.5	33.8
Wet #1	41.2	21.5	47.8
Dry #1	20.8	20.0	3.8
June 26th Low Dryer Inlet Temperature Testing Run #1			
Fuel	30.4	20.4	32.9
Wet #1	40.6	21.6	46.8
Wet #2	40.5	22.5	44.4
Dry #1	20.2	19.9	1.5
Dry #2	20.2	19.8	2.0
June 27th Low Dryer Inlet Temperature Testing Run #2			
Fuel	35.5	24.4	31.3
Wet #1	40.6	21.1	48.0
Wet #2	40.1	21.6	46.1
Dry #1	20.8	20.0	3.8
Dry #2	20.7	19.7	4.8

FORMULA: $\frac{\text{Green Wt. - Dry Wt.}}{\text{Green Wt.}} \times 100 = \text{Moisture Content (WB)}$

GEORGIA-PACIFIC CORPORATION

SKIPPERS, VIRGINIA OSB PLANT

DRYER PROCESS DATA

June 24, 26, & 27, 1991

	Avg. Woodflow Green Tons/Hr. (Based On Integrator Readings)	Avg. Dryer Inlet Temp. (°F)	Avg. Dryer Outlet Temp. (°F)	Avg. Inlet Wood Moist. % (Wet Basis)	Avg. Outlet Wood Moist. % (Wet Basis)
June 24th Dryer #1 Gas Inlet Duct					
Dryer #1	16.6	1,171	243	47.8	3.8
June 25th Low Dryer Inlet Temperature Testing Run #1					
Dryer #1	7.8	844	249	46.8	1.5
Dryer #2	14.6	1,032	264	44.4	2.0
June 27th Low Dryer Inlet Tempeature Testing Run #2					
Dryer #1	11.1	841	204	48.0	3.8
Dryer #2	18.7	1,116	238	46.1	4.8

NOTE: Wood Mixture Approximately
57% Hardwood (Mostly Poplar & Gum)
43% Southern Pine

GEORGIA-PACIFIC CORPOATION

SKIPPERS, VIRGINIA OSB PLANT

ADDITIONAL DRYER TESTING EPA/NCASI

JUNE 24, 26, & 27, 1991

DRYER PROCESS DATA

- SUMMARY TABLES -

File 3667

Georgia-Pacific Corporation
133 Peachtree Street, N.E. (30303)
P.O. Box 105605
Atlanta, Georgia 30348-5605
Telephone (404) 521-4000

August 6, 1991

Ms. Robin R. Segall
Entropy Environmentalist, Inc.
8724 Glenwood Avenue
Raleigh, North Carolina 27612

OVERNIGHT MAIL

RE: Compliance Test Process Data
Georgia-Pacific Corporation
Skippers OSB Facility
Skippers, Virginia

Dear Ms. Segall:

Enclosed are copies of process summary tables which represent the operation of the woodflake dryers and wet ESP at the Skippers OSB facility. These summary tables cover the testing performed for compliance and also additional testing conducted by EPA and NCASI.

Please enclose only those tables and data sheets which are dated June 25 & 26, 1991 in the report to be submitted to the State of Virginia that is required for our compliance testing. The additional summary tables are provided for the EPA/NCASI comprehensive test report.

Give me a call if you or any of your staff have any questions concerning these tables at 404/527-0220.

Sincerely,

F. Larson Harsey
Environmental Engineer
Eastern Area
Building Products

FLH/jhd
Enclosure

cc: Mr. G. W. Tice
Mr. L. P. E. Otwell
Mr. D. Rovell-Rixx (NCASI) w/enclosure

MM5 TYPE FIELD DATA SHEET

COMPANY NAME _____ RUN NUMBER 5-MM5-3
ADDRESS _____ TIME START _____
SAMPLING LOCATION _____ TIME FINISH _____
DATE _____ TEAM LEADER _____ TECHNICIANS _____
BAROMETRIC PRESSURE. IN. HG _____ STATIC PRESSURE IN. H_2O _____
TRAIN LEAK CHECK VACUUM IN. HG ___ ___ ___ ___ ___ ___ ___
TRAIN LEAK RATE, CU.FT/MIN ___ ___ ___ ___ ___ ___ ___

EQUIPMENT CHECKS

___ PITOTS, PRETEST
___ PITOTS, POSTTEST
___ M3 SAMPLING SYS/TED BAG
___ THERMOCOUPLE @_____ PRE
___ THERMOCOUPLE @_____ POST

IDENTIFICATION NUMBERS

REAGENT BOX ____ NOZZLE____ DIAMETER _____
METER BOX ____ Y _____ T/C READOUT _____
UMBILICAL _____ T/C PROBE _____
SAMPLE BOX _____ ORSAT PUMP _____
PROBE _____ PITOT _____ TEDLAR BAG _____

LEAK CHECK READINGS

B 1 E	
B 2 E	
B 3 E	
B 4 E	
B 5 E	
B 6 E	

XAD #	TARE

DELTA $H_@$					
METER TEMP					
EST. $\%H_2O$					
C FACTOR					
STACK TEMP					
REF DELTA P					
K-FACTOR					

FYRITE
___
___
___
___
C_p ___

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES CONDEN. EXIT °F	GAS TEMPERATURES IMPING. EXIT °F	STACK TEMP. °F	LK CHK #
1	D-2	2.5	286.84	.41	1.89	1.84	104	9	250	50	~~48~~	144	
2	3	5	288.45	.45	2.07	2.07	104	9	250	50	~~48~~	~~144~~	
3	4	7.5	290 60	.46	2.12	2.12	104	9	250	46	46	148	
4	5	10	292.68	.50	2.30	2.30	104	10	250	46	46	149	
5	6	12.5	294.73	.54	2.35	2.35	104	10	250	46	46	149	
6	7	15	296.58	.52	2.40	2.40	104	10	250	46	46	148	
7	8	17.5	298.91	.55	2.54	2.54	104	10	250	46	46	147	
8	END	80	301.020										
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													

80	63.613	0.4636	2.13	96	147
minutes	Vm	$(\sqrt{\Delta p})^2$	ΔH	tm	ts

F1008
12/89
p1

MM5 TYPE FIELD DATA SHEET

COMPANY NAME Georgia Pacific — RUN NUMBER 3-MM5-3
ADDRESS Skippers VA. — TIME START 930
SAMPLING LOCATION ESP STACK — TIME FINISH 1151
DATE 6-26-91 — TEAM LEADER CEN — TECHNICIANS TM, MH
BAROMETRIC PRESSURE. IN. HG 29.8 — STATIC PRESSURE IN. H_2O 0

TRAIN LEAK CHECK VACUUM IN. HG	15	15	15	13			
TRAIN LEAK RATE, CU.FT/MIN	.010	.008	.008	.010			

EQUIPMENT CHECKS

- ✓ PITOTS, PRETEST
- ✓ PITOTS, POSTTEST
- NA M3 SAMPLING SYS/TED BAG
- ✓ THERMOCOUPLE @ 80 PRE
- ✓ THERMOCOUPLE @ 84 POST

IDENTIFICATION NUMBERS

REAGENT BOX 112 — NOZZLE S-9 — DIAMETER .290
METER BOX N18-Y 9903 — T/C READOUT E38
UMBILICAL U52 — T/C PROBE R241
SAMPLE BOX 12 — ORSAT PUMP NA
PROBE S-12 — PITOT S-12 — TEDLAR BAG NA

LEAK CHECK READINGS

B	1	253.126
E	1	253.257
B	2	267.207
E	2	269.340
B	3	284.951
E	3	285.059
B	4	
E	4	
B	5	
E	5	
B	6	
E	6	

XAD #	TARE
GP-4	344.1

DELTA $H_@$	1.881			
METER TEMP	90			
EST. $\%H_2O$	25			
C FACTOR	.704			
STACK TEMP	150			
REF DELTA P	.410			
K-FACTOR	4.473			

PYRITE — C_p .84

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES CONDEN. EXIT °F	GAS TEMPERATURES IMPING. EXIT °F	STACK TEMP. °F	LR CHK #
1	A-1	0	237.035	0.35	1.55	1.55	76	5	250	67	69	144	
2	2	2.5	238.64	.44	1.95	1.98	76	7	250	60	60	144	
3	3	5	240.60	.43	1.89	1.82	76	7	250	62	58	147	
4	4	7.5	242.37	.50	2.21	2.21	80	10	245	60	58	147	
5	5	10	244.43	.60	267	267	82	12	245	58	52	147	
6	6	12.5	246.40	.56	250	250	86	11	245	50	48	147	
7	7	15	248.81	.55	247	247	88	11	245	50	45	147	
8	8	17.5	251.14	.54	242	242	88	11	245	50	48	148	9
9	B 1	20/0	253.126	.28	1.27	1.27	90	5	245	50	48	140	✓ 10
10	2	2.5	254.80	.44	1.94	199	92	9	250	50	48	147	
11	3	7.5	256.65	.40	1.81	1.81	94	9	250	48	48	148	
12	4	10	258.54	.46	209	209	94	9	250	48	48	148	
13	5	12.5	260.49	.50	2.27	2.27	96	11	250	49	48	149	
14	6	15	262.62	.55	2.50	250	96	12	250	48	48	148	
15	7	17.5	264.76	.60	273	273	96	12	250	46	46	148	
16	8	40/0	267.03	.58	266	266	100	12	250	46	48	148	10
17	C 1	2.5	269.207	.23	1.06	1.06	100	5	250	46	46	140	✓ 10
18	2	5	270.66	.47	1.98	198	100	8	250	46	44	148	
19	3	7.5	272.58	.47	215	215	104	8	250	44	40	149	
20	4	10	274.72	.50	229	229	100	8	25	44	40	148	
21	5	12.5	276.72	.47	216	216	102	8	250	44	40	149	
22	6	15	278.75	.46	212	2.12	104	8	250	44	40	149	
23	7	17.5	280.67	.43	198	198	104	8	250	44	40	149	
24	8	60/0	282.94	.55	254	254	104	9	250	44	40	149	
25	D 1	2.5	284.951	.29	1.24	1.24	104	8	250	46	40	148	1 11

F1008
12/89
pi

minutes — Vm — $(\sqrt{\Delta p})^2$ — ΔH — tm — ts

MM5 TYPE FIELD DATA SHEET (continued)

COMPANY NAME GEORGIA PACIFIC — RUN NUMBER S-MM5-2
SAMPLING LOCATION ESP STACK — DATE 6-25-91

LINE NR	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H_2O IDEAL	ORIFICE SETTING IN. H_2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES CONDEN. EXIT °F	GAS TEMPERATURES IMPING. EXIT °F	STACK TEMP. °F	LK CHK #
26	2	2.5	224.82	.34	114	119	110	7	255	46	48	148	
27	3	5	226.22	.45	137	137	110	7	255	46	48	149	
28	4	7.5	227.84	.50	152	152	110	7	255	46	48	148	
29	5	10	229.55	.52	152	158	110	7	255	46	48	149	
30	6	12.5	231.30	.50	152	152	110	7	255	46	46	149	
31	7	15	233.29	.53	161	161	116	7	255	46	46	148	
32	8	17.5	234.78	.30	152	152	110	7	255	46	46	148	
33	END	80	236.565										
34													
35													
36													
37													
38													
39													
40													
41													
42													
43													
44													
45													
46													
47													
48													
49													
50													
51													
52													
53													
54													
55													
56													
57													
58													
59													
60													
61													
62													
63													
64													
65													

80	52.762	0.4721	1.44	102	147
minutes	Vm	$(\sqrt{\Delta p})^2$	ΔH	tm	ts

F1008
9/89
p2

ENTROPY

MM5 TYPE FIELD DATA SHEET

COMPANY NAME Georgia Pacific RUN NUMBER S-MM5-2
ADDRESS Skippers VA. TIME START 1753
SAMPLING LOCATION ESP Stack TIME FINISH 2005
DATE 6-25-91 TEAM LEADER CGN TECHNICIANS DLS, NMH
BAROMETRIC PRESSURE. IN. HG 29.8 STATIC PRESSURE IN. H_2O 0
TRAIN LEAK CHECK VACUUM IN. HG 15 15 15 12
TRAIN LEAK RATE, CU.FT/MIN .009 .009 .005 .002

EQUIPMENT CHECKS	IDENTIFICATION NUMBERS	LEAK CHECK READINGS
✓ PITOTS, PRETEST	REAGENT BOX 117 NOZZLE 204 DIAMETER .261	B1 196.889
___ PITOTS, POSTTEST	METER BOX ~~N20~~ N18 Y ~~[illegible]~~ T/C READOUT F38	E1 197.004
NA M3 SAMPLING SYS/TED BAG	UMBILICAL US2 9903 T/C PROBE TC 208	B2 210.109
✓ THERMOCOUPLE @ 86 PRE	SAMPLE BOX 77 ORSAT PUMP NA	E2 210.239
___ THERMOCOUPLE @ ___ POST	PROBE 5- PITOT ___ TEDLAR BAG NA	B3 223.370
		E3 223.507
		B4
		E4
		B5
		E5
		B6
		E6

XAD #	TARE
6P-3	407.3

					FYRITE
DELTA $H_@$	~~1.591~~	1.881			
METER TEMP	~~90~~	90			
EST. %H_2O	~~25~~	25			
C FACTOR	~~[illegible]~~	.700			
STACK TEMP	~~145~~	150			
REF DELTA P	~~.628~~	.628			
K-FACTOR	~~2.9[illegible]~~	2.732			C_p .84

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	CONDEN. EXIT °F	IMPING. EXIT °F	STACK TEMP. °F	LK CHK #
1	A 1	0	183.421	.32	.94	.94	84	5	250	68	68	146	
2	2	2.5	184.69	.44	129	129	84	4	250	55	55	140	
3	3	5	186.35	.45	132	132	86	7	250	55	55	145	
4	4	7.5	187.94	.49	145	145	90	7	250	50	50	145	
5	5	10	189.56	.55	162	1.62	90	7	250	50	50	146	
6	6	12.5	191.30	.62	1.84	1.84	94	10	255	50	50	147	
7	7	15	193.24	.60	1.78	178	94	10	255	50	50	147	
8	8	17.5	195.08	.62	184	184	94	10	255	50	48	147	
9	B 1	20/0	196.889	.24	.71	.71	96	5	250	50	48	147	
10	2	2.5	198.18	.40	1.19	1.19	96	6	255	50	48	147	
11	3	5	199.64	.55	164	164	96	6	255	50	48	147	
12	4	7.5	201.33	.49	146	1.46	98	6	255	50	48	147	
13	5	10	203.02	.50	150	150	98	8	255	48	40	140	
14	6	12.5	204.80	.55	166	166	104	10	250	48	40	146	
15	7	15	206.57	.52	1.57	157	104	10	250	48	40	148	
16	8	17.5	208.26	.60	181	1.81	104	10	255	48	40	147	
17	C 1	40/0	210.109	.27	.81	.81	104	5	255	48	48	147	
18	2	2.5	211.54	.41	124	124	104	8	255	48	48	148	
19	3	5	213.08	.50	152	152	108	9	256	48	48	148	
20	4	7.5	214.71	.52	158	158	108	9	255	48	48	148	
21	5	10	216.42	.50	152	152	108	9	255	48	48	149	
22	6	12.5	218.17	.49	149	149	108	7	255	48	48	148	
23	7	15	219.91	.48	1.46	1.46	108	9	256	48	48	148	
24	8	17.5	221.64	.51	156	156	100	9	250	48	46	147	
25	D 1	60/0	223.370	27	.82	.82	110	8	258	48	46	146	

F1008
12/89
p1

minutes ___ Vm ___ $(\sqrt{\Delta p})^2$ ___ ΔH ___ tm ___ ts ___

MM5 TYPE FIELD DATA SHEET (continued)

COMPANY NAME GEORGIA PACIFIC RUN NUMBER S-MM5-1

SAMPLING LOCATION ESD STACK DATE 6-25-91

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES CONDEN. EXIT °F	GAS TEMPERATURES IMPING. EXIT °F	STACK TEMP. °F	LR CHK #
26	2	2.5	171.04	.38	1.26	1.26	96	15	250	50	50	141	
27	3	5	172.77	.45	1.48	1.48	98	15	252	50	50	143	
28	4	7.5	174.42	.45	1.48	1.48	98	15	255	50	50	145	
29	5	10	176.10	.46	1.51	1.51	90	14	255	48	50	146	
30	6	12.5	177.82	.47	1.55	1.55	92	14	255	48	50	146	
31	7	15	179.56	.45	1.44	1.45	94	14	255	48	50	146	
32	8	17.5	181.41	.52	1.72	1.72	94	15	255	48	50	145	
33	END	80	182.991										
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64													
65													

N18

L780

80	49.889	0.4382	1.45	87	144
minutes	Vm	$(\sqrt{\Delta p})^2$	ΔH	tm	ts

F1008
9/89
p2

ENTROPY

MM5 TYPE FIELD DATA SHEET

COMPANY NAME Georgia Pacific — RUN NUMBER 5-MM5-1
ADDRESS Skippen 1/4. — TIME START 1014
SAMPLING LOCATION ESP STACK — TIME FINISH 1342
DATE 10-25-91 — TEAM LEADER CEW — TECHNICIANS DLS
BAROMETRIC PRESSURE. IN. HG 29.8 — STATIC PRESSURE IN. H_2O 0

TRAIN LEAK CHECK VACUUM IN. HG	15	15	15	15	15	—	—
TRAIN LEAK RATE, CU.FT/MIN	.010	.009	.009	.009	.004	—	—

EQUIPMENT CHECKS

- ✓ PITOTS, PRETEST
- ✓ PITOTS, POSTTEST
- ✓ M3 SAMPLING SYS/TED BAG
- ✓ THERMOCOUPLE @ 86 PRE
- ✓ THERMOCOUPLE @ 86 POST

IDENTIFICATION NUMBERS

REAGENT BOX DF 112 — NOZZLE 640 — DIAMETER .268
METER BOX N20-Y 1.0036 — T/C READOUT F38
UMBILICAL N18 052 .9903 — T/C PROBE R-241
SAMPLE BOX 12 — ORSAT PUMP —
PROBE 5-12 — PITOT 5-12 — TEDLAR BAG —

LEAK CHECK READINGS

B1	267.957
E1	268.031
B2	280.481
E2	290.610
B3	292.981
E3	~~171.986~~
E4	172.351 (CEW)
B5	
E5	
B6	
E6	

XAD #	TARE
CP-1	.4238

	U20	N18			FYRITE
DELTA $H_@$	1.891	1.881			
METER TEMP	90	90			
EST. $\%H_2O$	25	25			
C FACTOR	.704	.700			
STACK TEMP	150	150			
REF DELTA P	.562	.565			
K-FACTOR	3.277	3.259			C_p .84

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES CONDEN. EXIT °F	GAS TEMPERATURES IMPING. EXIT °F	STACK TEMP. °F	LK CHK #
1	A 1	0	254.834	.31	1.02	1.02	84	6	250	60	60	140	
2	2	2.5	256.12	.40	1.31	1.31	84	10	250	56	58	144	
3	3	5	257.600	.41	1.38	1.34	84	10	250	50	56	145	
4	4	7.5	259.243	.46	1.50	1.5	84	12	250	50	50	146	
5	5	10	260.73	.50	1.63	1.63	86	14	250	50	50	147	
6	6	12.5	262.47	.61	1.99	1.99	84	14	250	50	50	146	195
7	7	15	264.24	.60	195	195	84	14	245	50	50	147	115
8	8	17.5	2660.11	.163	205	205	84	14	245	50	50	147	
9	B 1	40/0	267.951	.25	.82	.82	85	10	245	56	56	144	
10	2	2.5	269.24	.37	1.21	124	85	10	245	50	50	145	
11	3	5	270.65	.41	134	134	85	10	245	50	50	147	
12	4	7.5	272.18	.41	134	134	86	10	250	50	50	148	18
13	5	10	273.69	.44	144	144	80	12	250	50	50	147	185
14	6	12.5	275.32	.51	1.66	166	86	13	250	52	55	148	
15	7	15	276.98	.49	160	160	82	13	250	50	54	148	
16	8	17.5	278.81	.56	1.83	1.83	86	13	250	50	50	148	18
17	C 1	40/0	280.481	.30	.99	.99	86	8	250	50	50	142	114
18	9	2.5	281.71	.40	132	132	86	8	250	50	50	142	
19	3	5	283.34	.41	135	135	86	8	250	50	50	142	
20	4	7.5	284.85	.44	1.45	1.45	86	10	250	50	50	142	
21	5	10	286.44	.43	1.42	142	86	10	250	50	50	142	
22	6	12.5	288.07	.44	145	145	86	12	250	50	50	142	12
23	7	15	289.69	.44	145	145	86	12	250	50	50	143	12
24	8	17.5	291.29	.81	1.69	169	86	12	250	50	50	138	
25	D 1	60/0	292.981	.26	.86	.86	84	1	250	50	55	136	

N20

F1008
12/89
pi

minutes — Vm — $(\sqrt{\Delta p})^2$ — ΔH — tm — ts

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address GEORGIA PACIFIC / SKIPPERS, VA. Job No. 10221-1

Sampling Location LOWER WET ESP INLET Fuel Type _____

Run/Sample No. LI-M3-1 Leak ✓ Date 6-25-91 Operator MH

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
1014	1810	3.6	20.7	—	17.1	—	
TO		3.6	20.7		17.1		
1340		3.6	20.8		17.2		
Orsat I.D. 9	Avg.	3.6		Avg.	17.1		79.3

Run/Sample No. LI-M3-2 Leak ✓ ✓ Date 6-25 Operator MH

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
1753	2110	2.7	21.0	—	18.3	—	
TO		2.6	20.9		18.3		
2007		2.6	20.9		18.3		
Orsat I.D. 9	Avg.	2.6		Avg.	18.3		79.1

Run/Sample No. LI-M3-3 Leak ✓ ✓ Date 6-26 Operator MH

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
0930	1230	3.9	20.7	—	16.8	—	
TO		3.9	20.7		16.8		
1141		3.9	20.8		16.9		
Orsat I.D. 9	Avg.	3.9		Avg.	16.8		79.3

(For field check of fuel type, refer to page 2)

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address GEORGIA-PACIFIC / SKIPPERS, VA. Job No. 10221-1

Sampling Location WET ESP STACK Fuel Type _____

Run/Sample No. S-M3-1 Leak √ ✓ Date 6-25-91 Operator MH

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
1014	1740	3.5	20.7	—	17.2	—	
TO		3.5	20.7		17.2		
1342		3.6	20.7		17.1		
Orsat I.D. 9	Avg.	3.5		Avg.	17.2		79.3

Run/Sample No. S-M3-2 Leak √ ✓ Date 6-25 Operator MH

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
1753	2040	3.5	20.5	—	17.0	—	
TO		3.7	20.5		16.8		
2005		3.7	20.5		16.8		
Orsat I.D. 9	Avg.	3.6		Avg.	16.9		79.5

Run/Sample No. S-M3-3 Leak √ ✓ Date 6-26 Operator MH

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
0930	1200	3.5	20.8	—	17.3	—	
TO		3.5	20.7		17.2		
1143		3.5	20.7		17.2		
Orsat I.D. 9	Avg.	3.5		Avg.	17.2		79.3

(For field check of fuel type, refer to page 2)

MM5 TYPE FIELD DATA SHEET

COMPANY NAME _____ RUN NUMBER 5-MM5-3
ADDRESS _____ TIME START _____
SAMPLING LOCATION _____ TIME FINISH _____
DATE _____ TEAM LEADER _____ TECHNICIANS _____
BAROMETRIC PRESSURE. IN. HG _____ STATIC PRESSURE IN. H_2O _____
TRAIN LEAK CHECK VACUUM IN. HG ___ ___ ___ ___ ___ ___ ___
TRAIN LEAK RATE, CU.FT/MIN ___ ___ ___ ___ ___ ___ ___

EQUIPMENT CHECKS

___ PITOTS, PRETEST
___ PITOTS, POSTTEST
___ M3 SAMPLING SYS/TED BAG
___ THERMOCOUPLE @_____ PRE
___ THERMOCOUPLE @_____ POST

IDENTIFICATION NUMBERS

REAGENT BOX ____ NOZZLE____ DIAMETER _____
METER BOX ____ Y _____ T/C READOUT _____
UMBILICAL _____ T/C PROBE _____
SAMPLE BOX _____ ORSAT PUMP _____
PROBE _____ PITOT _____ TEDLAR BAG _____

LEAK CHECK READINGS

B	
1	
R	
B	
2	
R	
B	
3	
R	
B	
4	
R	
B	
5	
R	
B	
6	
R	

XAD #	TARE

DELTA $H_@$					
METER TEMP					
EST. $\%H_2O$					
C FACTOR					
STACK TEMP					
REF DELTA P					
K-FACTOR					

FYRITE
_____
_____
_____
_____
C_p ___

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES CONDEN. EXIT °F	GAS TEMPERATURES IMPING. EXIT °F	STACK TEMP. °F	LK CHK #
1	D-2	2.5	286.84	.41	1.89	1.89	104	9	250	50	46	149	
2	3	5	288.45	.45	2.07	207	104	9	250	50	46	148	
3	4	7.5	290.60	.46	212	212	104	9	250	46	46	148	
4	5	10	292.68	.50	230	230	104	10	250	46	46	149	
5	6	12.5	294.73	.51	235	235	104	10	250	46	46	149	
6	7	15	296.58	.52	240	240	104	10	250	46	46	148	
7	8	17.5	298.91	.55	2.54	254	104	10	250	46	46	147	
8	END	80	301.020										
9													
10													
11													
12													
13													
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15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													

minutes _____ Vm _____ $(\sqrt{\Delta p})^2$ _____ $/\Delta H$ _____ tm. _____ ts

MM5 TYPE FIELD DATA SHEET

COMPANY NAME Georgia Pacific — RUN NUMBER J-MM5-3
ADDRESS Skippers VA. — TIME START 930
SAMPLING LOCATION ESP STACK — TIME FINISH 1151
DATE 6-26-91 — TEAM LEADER CEN — TECHNICIANS TM, NMH
BAROMETRIC PRESSURE. IN. HG 29.8 — STATIC PRESSURE IN. H_2O 0
TRAIN LEAK CHECK VACUUM IN. HG 15 | 15 | 15 | 13
TRAIN LEAK RATE, CU.FT/MIN .010 | .008 | .008 | .010

EQUIPMENT CHECKS

- ✓ PITOTS, PRETEST
- ✓ PITOTS, POSTTEST
- NA M3 SAMPLING SYS/TED BAG
- ✓ THERMOCOUPLE @ 90 PRE
- ✓ THERMOCOUPLE @ 94 POST

IDENTIFICATION NUMBERS

REAGENT BOX 112 — NOZZLE S-9 — DIAMETER .290
METER BOX N18-Y 9903 — T/C READOUT E38
UMBILICAL U52 — T/C PROBE R241
SAMPLE BOX 12 — ORSAT PUMP NA
PROBE S-12 — PITOT S-12 — TEDLAR BAG NA

LEAK CHECK READINGS

1	253.126
1	253.257
2	267.207
2	269.370
3	284.951
3	295.059

XAD #	TARE
6P-4	444.1

DELTA $H_@$	1.881			
METER TEMP	90			
EST. $\%H_2O$	25			
C FACTOR	.704			
STACK TEMP	150			
REF DELTA P	.410			
K-FACTOR	4.493			

FYRITE — C_p .84

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES CONDEN. EXIT °F	GAS TEMPERATURES IMPING. EXIT °F	STACK TEMP. °F	LK CHK #
1	A-1	0	237.035	0.35	1.55	1.55	76	5	250	67	69	144	
2	2	2.5	238.64	.44	1.95	1.98	76	7	250	60	60	144	
3	3	5	240.60	.43	1.89	1.82	76	7	250	62	58	147	
4	4	7.5	242.37	.50	2.21	2.21	80	10	245	60	58	147	
5	5	10	244.43	.60	2.67	2.67	82	12	245	58	52	147	
6	6	12.5	246.40	.56	2.50	2.50	86	11	245	50	48	147	
7	7	15	248.81	.55	2.47	2.47	88	11	245	50	48	147	
8	8	17.5	251.14	.54	2.42	2.42	88	11	245	50	48	148	95 / 101
9	B 1	20/0	253.126	.28	1.27	1.27	90	5	245	50	48	140	✓
10	2	2.5	254.80	.44	1.94	1.99	92	9	250	50	48	147	
11	3	7.5	256.65	.40	1.81	1.81	94	9	250	48	48	148	
12	4	10	258.54	.46	2.09	2.09	94	9	250	48	48	148	
13	5	12.5	260.49	.50	2.27	2.27	96	11	250	48	48	149	
14	6	15	262.62	.58	2.50	2.50	96	12	250	48	48	148	
15	7	17.5	264.76	.60	2.73	2.72	96	12	250	46	46	148	
16	8	40/0	267.03	.58	2.66	2.66	100	12	250	46	46	148	103 / 107
17	C 1	2.5	269.207	.23	1.06	1.06	100	5	250	46	45	140	✓
18	2	5	270.66	.43	1.98	1.98	100	8	250	46	46	148	
19	3	7.5	272.58	.47	2.15	2.15	104	8	250	44	40	149	
20	4	10	274.72	.50	2.29	2.29	100	8	250	44	40	148	
21	5	12.5	276.72	.47	2.16	2.16	102	8	250	44	40	149	
22	6	15	278.75	.46	2.12	2.12	104	8	250	44	40	149	
23	7	17.5	280.62	.43	1.98	1.98	104	8	250	44	40	149	
24	8	60/0	282.94	.55	2.54	2.54	104	9	250	44	40	149	
25	D 1	2.5	284.951	.27	1.24	1.24	104	8	250	46	40	148	112 / 112

F1008
12/89
pl

minutes | Vm | $(\sqrt{\Delta p})^2$ | ΔH | tm | ts

MM5 TYPE FIELD DATA SHEET (continued)

COMPANY NAME GEORGIA PACIFIC — RUN NUMBER S-MM5-2
SAMPLING LOCATION ESD STACK — DATE 6-25-91

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H_2O IDEAL	ORIFICE SETTING IN. H_2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES CONDEN. EXIT °F	GAS TEMPERATURES IMPING. EXIT °F	STACK TEMP. °F	LK CHK ✓
26	2	2.5	224.82	.34	114	119	110	7	255	46	48	148	
27	3	5	226.22	.45	137	137	110	7	255	46	48	149	
28	4	7.5	227.84	.50	152	153	110	7	255	46	48	148	
29	5	10	229.55	.52	156	158	110	7	255	46	48	149	
30	6	12.5	231.30	.53	162	162	110	7	255	46	46	149	
31	7	15	233.29	.53	161	161	116	7	255	46	46	148	
32	8	17.5	234.78	.50	152	152	110	7	255	46	46	148	
33	END	80	236.565										
34													
35													
36													
37													
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64													
65													

F1008
9/89
p2

minutes — V_m — $(\sqrt{\Delta p})^2$ — ΔH — t_m — t_s

MM5 TYPE FIELD DATA SHEET

COMPANY NAME Georgia Pacific — RUN NUMBER S-MM5-2
ADDRESS Skippers VA — TIME START 1753
SAMPLING LOCATION ESP STACK — TIME FINISH 2005
DATE 6-25-91 — TEAM LEADER CGN — TECHNICIANS DLS, NMH
BAROMETRIC PRESSURE. IN. HG 29.8 — STATIC PRESSURE IN. H_2O 0
TRAIN LEAK CHECK VACUUM IN. HG 15 | 15 | 15 | 12
TRAIN LEAK RATE, CU.FT/MIN .009 | .009 | .005 | .002

EQUIPMENT CHECKS
- ✓ PITOTS, PRETEST
- ___ PITOTS, POSTTEST
- NA M3 SAMPLING SYS/TED BAG
- ✓ THERMOCOUPLE @ 86 PRE
- ___ THERMOCOUPLE @ ___ POST

IDENTIFICATION NUMBERS
REAGENT BOX 117 — NOZZLE 204 — DIAMETER .264
METER BOX N20 Y ~~[illegible]~~ — T/C READOUT F38
UMBILICAL 052 9903 — T/C PROBE TC 208
SAMPLE BOX 77 — ORSAT PUMP NA
PROBE 5 — PITOT ___ — TEDLAR BAG NA

LEAK CHECK READINGS

1	196.889	
2	197.006	
3	210.109	210.639
4	223.370	223.507
5		
6		

XAD #	TARE
6P-3	407.3

DELTA $H_@$	~~1.591~~	1.881		
METER TEMP	80	90		
EST. $\%H_2O$	~~28~~	25		
C FACTOR	~~.984~~	.700		
STACK TEMP	145	150		
REF DELTA P	~~.684~~	.620		
K-FACTOR	~~2.040~~	2.732		

FYRITE
C_p .84

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H_2O IDEAL	ORIFICE SETTING IN. H_2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES CONDEN. EXIT °F	GAS TEMPERATURES IMPING. EXIT °F	STACK TEMP. °F	LK CHK #
1	A /	0	183.421	.32	.94	.94	84	5	250	68	68	146	
2	2	2.5	184.69	.44	129	129	84	7	250	55	55	160	
3	3	5	186.35	.45	132	132	86	7	250	55	55	145	
4	4	7.5	187.94	.49	145	145	90	7	250	50	50	145	
5	5	10	189.56	.55	162	162	90	7	250	50	50	146	
6	6	12.5	191.30	.62	184	184	94	10	255	50	50	147	
7	7	15	193.24	.60	178	178	94	10	255	50	50	147	
8	8	17.5	195.08	.62	184	184	94	10	255	50	48	147	
9	B /	20/0	196.889	24	.71	.71	96	5	255	50	48	147	
10	2	2.5	199.18	40	1.14	1.14	96	6	255	50	48	147	
11	3	5	199.64	5	164	164	96	6	255	50	48	147	
12	4	7.5	201.33	.49	146	146	98	6	255	50	48	147	
13	5	10	203.02	.50	150	150	98	8	255	48	40	146	
14	6	12.5	204.80	.55	166	166	104	10	250	48	40	146	
15	7	15	206.51	.52	157	157	104	10	250	48	40	148	
16	8	17.5	208.26	.60	181	1.81	104	10	255	48	40	147	
17	C /	40/0	210.109	.27	.81	.81	104	5	255	48	48	147	
18	2	2.5	211.54	.41	124	124	104	8	255	48	48	149	
19	3	5	213.08	.50	152	152	108	9	255	48	48	148	
20	4	7.5	214.71	.52	158	158	108	9	255	48	48	149	
21	5	10	216.42	.50	152	152	106	9	255	48	48	149	
22	6	12.5	218.17	.49	149	149	108	7	255	48	48	148	
23	7	15	219.91	.48	1.46	1.46	108	9	255	48	48	149	
24	8	17.5	221.64	.51	156	156	100	9	250	48	46	147	
25	D /	60/0	223.370	27	.82	.82	110	5	255	48	46	146	

F100S
12/89
pl

minutes | Vm | $(\sqrt{\Delta p})^2$ | ΔH | tm | ts

FIELD TEST LOG

Plant Name GEORGIA PACIFIC – Job No. 10121

Sampling Location ESP STACK

Start	Stop	Comments/Problems*	Run No. S-MM5-1
1014	1032	PLUGGED FILTER INLET	Date 6-25-91
1156	1116	PLUGGED NOZZLE RUN	
1135	1139	PORT CHANGE	
1145	1230	PORT CHANGE CHANGED OUT N-20 ON STACK	
1380	1342	END OF RUN.	

Sampling Team Initials CGW (Team Leader) DLS (Others)

Posttest Leak Rate 004 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. S-MM5-2
1753	1813	CHG PORT	Date 6-25-91
1824	1832	INLET FILTER	
1834	1852	PORT CHG	
1900	1910	INLET FILTER	
1924	1925	PORT CHG	
1945	2005	END OF RUN	

Sampling Team Initials ____ (Team Leader) ____ (Others)

Posttest Leak Rate ____ Sample Appearance

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. S-MM5-3
930	950	PORT CHANGE	Date 6-26-91
1014	1034	WAITING FOR PROCESS	
1047	1107	PORT CHG	
1121	1151	END OF RUN	

Sampling Team Initials CGW (Team Leader) DLS, FM (Others)

Posttest Leak Rate 010 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

ENTROPY

MM5 TYPE FIELD DATA SHEET (continued)

COMPANY NAME GEORGIA PACIFIC — RUN NUMBER S-MM5-1
SAMPLING LOCATION E50 STACK — DATE 6-25-91

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES CONDEN. EXIT °F	GAS TEMPERATURES IMPING. EXIT °F	STACK TEMP. °F	LK CHK
26	2	2.5	171.04	.38	1.26	1.26	94	15	250	50	50	141	
27	3	5	172.77	.45	1.48	1.48	95	15	252	50	50	143	
28	4	7.5	174.42	.45	1.48	1.48	93	15	255	50	50	145	
29	5	10	176.10	.46	1.51	1.51	90	14	255	48	50	146	
30	6	12.5	177.82	.47	1.58	1.58	92	14	255	48	50	146	
31	7	15	179.56	.45	1.44	1.45	94	14	255	48	50	146	
32	8	17.5	181.41	.52	1.72	1.72	94	15	255	48	50	145	
33	END	20	182.991										
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N18

L350

F1006
9/89
p2

minutes | Vm | $(\sqrt{\Delta p})^2$ | ΔH | tm | ts

MM5 TYPE FIELD DATA SHEET

COMPANY NAME Georgia Pacific — RUN NUMBER S-MM5-1
ADDRESS Skippen VA. — TIME START 1014
SAMPLING LOCATION ESP STACK — TIME FINISH 1342
DATE 10-25-91 TEAM LEADER CEN — TECHNICIANS DLS
BAROMETRIC PRESSURE. IN. HG 29.8 — STATIC PRESSURE IN. H_2O 0
TRAIN LEAK CHECK VACUUM IN. HG 15 15 15 15 15 — —
TRAIN LEAK RATE, CU.FT/MIN .010 .009 009 009 .004 — —

EQUIPMENT CHECKS

- ✓ PITOTS, PRETEST
- ✓ PITOTS, POSTTEST
- N/A M3 SAMPLING SYS/TED BAG
- ✓ THERMOCOUPLE @ 86 PRE
- ✓ THERMOCOUPLE @ 86 POST

IDENTIFICATION NUMBERS

REAGENT BOX DF 112 — NOZZLE 640 — DIAMETER .268
METER BOX N20-Y 1.0036 — T/C READOUT FJ8
UMBILICAL N18 U52 .9903 — T/C PROBE R-241
SAMPLE BOX 12 — ORSAT PUMP —
PROBE S-12 — PITOT S-12 — TEDLAR BAG —

LEAK CHECK READINGS

B 1	267.951
2	268.031
B 2	280.481
2	280.640
B 3	271.981
3	271.986
B 4	
4	
B 5	
5	
B 6	
6	

XAD #	TARE
GP-1	.4238

	U20	U18			FYRITE
DELTA $H_@$	1.891	1.881			
METER TEMP	90	90			
EST. $\%H_2O$	25	25			
C FACTOR	.704	.700			
STACK TEMP	150	150			
REF DELTA P	.562	.565			
K-FACTOR	3.277	3.259			C_p .84

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES CONDEN. EXIT °F	GAS TEMPERATURES IMPING. EXIT °F	STACK TEMP. °F	LK CHK #	
1	A 1	0	254.834	.31	1.02	1.02	84	6	250	60	60	140		
2	2	2.5	256.12	.40	1.31	1.31	84	10	250	56	58	144		
3	3	5	257.600	.41	1.30	1.34	84	10	250	50	56	145		
4	4	7.5	259.243	.46	1.50	1.5	84	12	250	60	50	146		
5	5	10	260.73	.50	1.63	1.63	86	14	250	50	50	147		
6	6	12.5	262.47	.61	1.99	1.99	84	14	250	50	50	146		195
7	7	15	264.24	.60	195	195	86	14	245	50	50	147		110
8	8	17.5	266.11	.63	205	205	84	14	245	50	50	147		
9	B 1	20/0	267.951	.25	.82	.82	85	10	245	56	55	144		
10	2	2.5	269.24	.37	1.21	124	85	10	245	50	50	146		
11	3	5	270.68	.41	134	134	85	10	245	50	50	147		
12	4	7.5	272.18	.41	134	134	86	10	250	50	50	148		14
13	5	10	273.69	.44	144	144	86	12	250	50	50	145		13
14	6	12.5	275.32	.51	1.66	166	86	13	250	52	55	148		
15	7	15	276.98	.49	160	160	86	13	250	50	54	144		
16	8	17.5	278.81	.56	1.83	1.83	86	13	250	50	50	148		14
17	C 1	40/0	280.481	.30	.99	.99	86	8	250	50	50	142		114
18	2	2.5	281.71	.40	132	132	86	8	250	50	50	143		
19	3	5	283.34	.41	135	135	86	9	250	50	50	142		
20	4	7.5	284.85	.44	1.45	1.45	86	10	250	50	50	142		
21	5	10	286.44	.43	1.42	142	86	10	250	52	52	142		
22	6	12.5	288.07	.44	145	1.45	86	12	250	50	50	142		12
23	7	15	289.69	.44	145	145	86	12	250	50	55	143		12
24	8	17.5	291.29	.51	1.69	169	86	12	250	50	55	138		
25	D 1	60/0	292.981	.26	.86	.86	84	1	250	50	55	136		

NOZ

F1008
12/89
p1

minutes — Vm — $(\sqrt{\Delta p})^2$ — $\sqrt{\Delta H}$ — tm — ts

ISOKINETIC TYPE FIELD DATA SHEET (continued)

COMPANY NAME Georgia-Park Waterboard RUN NUMBER S-mooit-3

SAMPLING LOCATION Stack - ESP DATE 6-26-91

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK ✓
26	2	2.5	252.31	.27	.88	.90	94	2			148	
27	3	5	253.62	.45	1.071	1.05	98	2			148	
28	4	7.5	255.04	.55	1.304	1.30	96	3	260	68	149	
29	5	10	256.64	.55	1.304	1.30	96	3			148	
30	6	12.5	258.25	.59	1.375	1.35	96	3			148	
31	7	15	259.84	.65	1.543	1.55	95	3	250	68	147	4
32	1	17.5	261.59	.68	1.613	1.60	95	3			147	
33		50/0	263.35									
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F1010 9/89 p2 minutes Vm $(\sqrt{\Delta p})^2$ ΔH tm ts

ISOKINETIC TYPE FIELD DATA SHEET

COMPANY NAME Georgia-Pacific Waterboard RUN NUMBER S-MU011-3
ADDRESS Skippers, VA TIME START 9:30
SAMPLING LOCATION Stack - ESP Cyclone Outlet TIME FINISH 11:43
DATE 6-26-91 TEAM LEADER Ed Potts TECHNICIANS Ed Potts, Ted Mussher, Dan Speer
BAROMETRIC PRESSURE. IN. HG 29.8 STATIC PRESSURE IN. H_2O 0
TRAIN LEAK CHECK VACUUM IN. HG 14 11 10 10 10 — —
TRAIN LEAK RATE, CU.FT/MIN <.001 <.001 <.001 <.001 <.001 — —

Ed Potts

EQUIPMENT CHECKS

- ✓ PITOTS, PRETEST
- ✓ PITOTS, POSTTEST
- ✓ M3 SAMPLING SYS/TED BAG
- ✓ THERMOCOUPLE @ 90 PRE
- ✓ THERMOCOUPLE @ 77 POST

IDENTIFICATION NUMBERS

REAGENT BOX 0507 NOZZLE T-2 DIAMETER .248
METER BOX N15 Y 1.0055 T/C READOUT E34
UMBILICAL N44 T/C PROBE R-161
SAMPLE BOX N6, 76 ORSAT PUMP NA
PROBE S-22 PITOT S-22 TEDLAR BAG NA

LEAK CHECK READINGS

225.75	225.83
237.99	238.13
251.10	251.23
263.35	263.48

FILTER #	TARE

DELTA $H_@$	1.834					
METER TEMP	90					
EST. $\%H_2O$	25					
C FACTOR	.682					
STACK TEMP	150					
REF DELTA P	.790					
K-FACTOR	2.330					

PYRITE 3.0%

C_p .84

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H_2O IDEAL	ORIFICE SETTING IN. H_2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
1	C 1	0	213.72	.25	.593	.60	92	2	260		144	
2	2	2.5	215.08	.40	.951	.95	94	2			145	
3	3	5	216.38	.49	1.162	1.15	97	2		65	146	
4	4	7.5	217.85	.57	1.356	1.35	96	2	250	65	146	
5	5	10	219.46	.57	1.358	1.35	98	2			147	
6	6	12.5	221.05	.55	1.315	1.30	100	2	250	68	147	
7	1	15	222.62	.53	1.322	1.30	102	2			146	
8	2	17.5	224.19	.55	1.324	1.30	104	2	250	68	147	1
9	D 1	20	225.75	.25	.602	.6	104	2			147	
10	2	2.5	226.87	.40	.971	.95	106	2			148	
11	3	5	228.19	.47	1.161	1.10	108	2			149	
12	4	7.5	229.70	.57	1.332	1.35	110	2	250	65	150	
13	5	10	231.26	.57	1.378	1.40	110	2			151	
14	6	12.5	232.91	.57	1.382	1.40	112	2			150	
15	1	15	234.56	.61	1.54	1.55	112	2	250	65	150	
16	2	17.5	236.24	.63	1.538	1.55	112	2			149	2
17	3	20/0	237.44	.32	.774	.75	110	2			148	
18	C 1	2.5	234.32	.43	1.052	1.05	112	2			147	
19	2	5	240.72	.46	1.122	1.10	112	2	270	68	148	
20	3	7.5	242.17	.54	1.419	1.40	112	2			148	
21	4	10	243.30	.54	1.655	1.65	112	3			149	
22	5	12.5	245.51	.72	1.757	1.75	114	3	250	65	149	
23	6	15	247.41	.72	1.757	1.75	114	3			149	
24	1	17.5	249.27	.70	1.714	1.70	116	3	250	68	149	3
25	3	60/0	251.10	.25	.600	.60	104	2			148	

F1010
12/89
p1

minutes Vm $(\sqrt{\Delta p})^2$ ΔH tm ts

ISOKINETIC TYPE FIELD DATA SHEET (continued)

COMPANY NAME Georgia - Pacific — RUN NUMBER S-M0011-2
SAMPLING LOCATION Stack - ESP — DATE 6-25-91

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
26	B 2	2.5	202.08	.70	.956	.95	98	5			146	
27	3	5	203.37	.48	1.151	1.15	100	6			146	
28	4	7.5	204.85	.53	1.270	1.25	100	7			146	
29	5	10	206.47	.55	1.317	1.30	100	7			146	
30	6	12.5	207.94	.54	1.389	1.40	100	7			146	
31	7	15	209.62	.57	1.370	1.40	102	7			146	
32	8	17.5	211.27	.65	1.562	1.55	102	8	260	65	146	4
33		80/end	T 21300									
34												
35												
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STOP 20:05

F1010 9/89 p2

minutes | Vm | $(\sqrt{\Delta p})^2$ | ΔH | tm | ts

ISOKINETIC TYPE FIELD DATA SHEET

COMPANY NAME Georgia Pacific - Waterboard RUN NUMBER S-M0011-2
ADDRESS Skippers VA Ed Potts TIME START 17:53
SAMPLING LOCATION Stack - ESP Clyde Mack TIME FINISH 20:05
DATE 6-25-91 TEAM LEADER ~~Jeff Phillips~~ TECHNICIANS Todd Messner, Dan Speer
BAROMETRIC PRESSURE. IN. HG 29.8 STATIC PRESSURE IN. H_2O 0

TRAIN LEAK CHECK VACUUM IN. HG	15	11	12	13	13		
TRAIN LEAK RATE, CU.FT/MIN	.001	<.001	<.001	<.001	<.001		

EQUIPMENT CHECKS
- ✓ PITOTS, PRETEST
- ✓ PITOTS, POSTTEST
- ✓ M3 SAMPLING SYS/TED BAG
- ✓ THERMOCOUPLE @ 70 PRE
- ✓ THERMOCOUPLE @ 71 POST

IDENTIFICATION NUMBERS
REAGENT BOX 0214 NOZZLE T2 DIAMETER .248
METER BOX N15 Y 1.0055 T/C READOUT F34
UMBILICAL 2144 T/C PROBE R161
SAMPLE BOX 78 ORSAT PUMP NA
PROBE S-22 PITOT S-22 TEDLAR BAG NA

LEAK CHECK READINGS

1	176.36
2	176.44
3	188.48
4	188.60
5	200.74
6	200.90
7	213.00
8	213.10

FILTER #	TARE
Back NA	

DELTA $H_@$	1.834	=	1.834			FYRITE
METER TEMP	100	=	100			
EST. $\%H_2O$	25	=	25			
C FACTOR	.695	=	.695			
STACK TEMP	150	=	150			
REF DELTA P	.775	=	.775			
K-FACTOR	2.373	=	2.373			C_p .84

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H_2O IDEAL	ORIFICE SETTING IN. H_2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
1	C 1	0	164.92	.30	.705	.7	88	3	270		145	
2	2	2.5	166.14	.37	.815	.85	85	3			145	
3	3	5	167.38	.46	1.075	1.10	85	5			145	
4	4	7.5	168.78	.50	1.168	1.15	86	5	240	60	146	
5	5	10	170.25	.55	1.287	1.3	87	6			146	
6	1	12.5	171.74	.50	1.172	1.15	88	6			146	
7	1	15	173.30	.50	1.175	1.15	90	6	260	60	147	
8	8	17.5	174.80	.55	1.292	1.30	90	6			147	1
9	D 1	20	176.36	.30	.707	.7	92	4	250		147	
10	2	22.5	177.92	.44	1.042	1.05	94	5			147	
11	3	25	179.54	.44	1.034	1.05	94	5	250	60	147	
12	4	27.5	180.74	.52	1.232	1.25	96	5			147	
13	5	30	182.15	.55	1.306	1.30	96	6			147	
14	6	32.5	183.67	.53	1.257	1.20	97	6	250	68	147	
15	7	35	185.44	.55	1.310	1.30	96	7			147	4
16	8	37.5	186.92	.50	1.172	1.15	99	7			146	2
17	1	40	188.48	.32	.715	.70	96	3			144	
18	2	42.5	189.78	.41	.973	.95	96	5			145	
19	3	45	191.09	.43	1.023	1.00	96	5	260	65	146	
20	4	47.5	192.48	.47	1.114	1.10	96	6			146	
21	5	50	193.94	.60	1.425	1.40	96	7	250	65	147	
22	6	52.5	195.57	.55	1.554	1.55	98	7			147	
23	7	55	197.03	.65	1.550	1.55	99	7			147	
24	8	57.5	198.90	.65	1.55	1.55	100	7	250	65	147	3
25	B	60	200.74	.29	.693	.7	98	3			145	

F1010
12/89
p1

minutes Vs $(\sqrt{\Delta p})^2$ ΔE ts ts

FIELD TEST LOG

Plant Name Georgia-Pacific-Waferboard Job No. 10221

Sampling Location Stack-ESP

Start	Stop	Comments/Problems*	
			Run No. S-M0011-1
10:14	10:25	Problems Elsewhere	Date 6-25-91
		No Problem w/ my Train	
	11:22	Problems Elsewhere No Problem My Train	
11:30	11:45		
	12:15		

Sampling Team Initials Ed (Team Leader) Clide Nack Ted Meissner Dan Speer (Others)

Posttest Leak Rate < .001 Dead stop Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	
			Run No. S-M0011-2
17:53		No Problems w/	Date 6-25-91
		My Train	
		Stopped Run when There were	
		Problems Elsewhere	
20:05	20:05		

Sampling Team Initials Ed Pitts (Team Leader) Clide Nack Ted Meissner Dan Speer (Others)

Posttest Leak Rate < .001 Dead stop Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	
			Run No. S-M0011-3
			Date
		[illegible]	
	[illegible]		

Sampling Team Initials Ed Pitts (Team Leader) Clide Nack Ted Meissner Dan Speer (Others)

Posttest Leak Rate < .001 Dead stop Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

F-0006 rev. 9-90

ENTROPY

ISOKINETIC TYPE FIELD DATA SHEET (continued)

COMPANY NAME Georgia-Pacific RUN NUMBER S-M00 1H-1

SAMPLING LOCATION Stack-ESP DATE 6-25-91

LINE #	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
26	2	2.5	153.30	.42	1.031	1.00	102	5			140	
27	3	5	154.66	.50	1.31	1.20	102	5			142	
28	4	7.5	156.17	.55	1.329	1.35	102	5			143	
29	5	10	157.77	.57	1.377	1.40	104	5			145	
30	6	12.5	159.40	.62	1.496	1.50	104	6			145	
31	7	15	161.10	.65	1.575	1.60	106	7	/	v	145	
32	4	17.5	162.84	.65	1.57[illegible]	1.60	106	7	250	70	144	4
33		50/out	164.60									
34												
35												
36												
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64												
65												

Stop 1:42 pm

F1010 9/89 p2

minutes | Vm | $(\sqrt{\Delta p})^2$ | ΔH | tm | ts

ISOKINETIC TYPE FIELD DATA SHEET

COMPANY NAME Georgia Pacific - Waterboard
ADDRESS Skippers VA
SAMPLING LOCATION Stack - ESP
DATE 6-25-91 TEAM LEADER Ed Potts
BAROMETRIC PRESSURE. IN. HG 29.8
TRAIN LEAK CHECK VACUUM IN. HG 15 9 9 10 10 12 — —
TRAIN LEAK RATE, CU.FT/MIN Orsat ≤.001 ≤.001 ≤.001 ≤.001 ≤.001 ≤.001 — —

RUN NUMBER S-M0011-1
TIME START 10:14
TIME FINISH 13:42
TECHNICIANS Ed Potts, Todd Meissner
STATIC PRESSURE IN. H_2O 0

EQUIPMENT CHECKS

- ✓ PITOTS, PRETEST
- ✓ PITOTS, POSTTEST
- NA M3 SAMPLING SYS/TED BAG
- ✓ THERMOCOUPLE @ 78°F PRE
- ✓ THERMOCOUPLE @ 75 POST

IDENTIFICATION NUMBERS

REAGENT BOX 0219 NOZZLE T2 DIAMETER .248 ~~.246~~
METER BOX N15 Y 1.0055 T/C READOUT F34
UMBILICAL 71 44 T/C PROBE R161
SAMPLE BOX 76 ORSAT PUMP N/A
PROBE S-22 PITOT S-22 TEDLAR BAG NA

LEAK CHECK READINGS

0	126.89
1	127.07
2	139.435
2	139.54
3	152.06
3	152.15
4	164.60
4	164.70
5	
6	

FILTER #	TARE
NA	

DELTA $H_@$	1.834					FYRITE
METER TEMP	90					
EST. $\%H_2O$	25					
C FACTOR	.682					
STACK TEMP	150					
REF DELTA P	.740					C_p .84
K-FACTOR	2.330					

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H_2O IDEAL	ORIFICE SETTING IN. H_2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
1	C-1	0	113.73	.23	.612	1.75	110	2	250	68	144	
2	2	2.5	115.50	.40	.976	.975	110	4			145	
3	3	5	117.10	.55	1.342	1.35	110	5			146	
4	4	7.5	118.73	.65	1.553	1.55	110	5			147	
5	5	10	120.23	.60	1.459	1.45	110	5			147	
6	6	12.5	121.92	.60	1.554	1.55	112	5			146	
7	7	15	123.64	.55	1.347	1.35	112	5			146	
8	C-2	17.5	125.36	.60	1.462	1.45	110	5			146	1
9	B-1	20/0	126.84	.30	.732	.75	110	5			145	
10	2	2.5	128.19	.55	1.34	1.35	110	5			147	
11	3	5	129.7	.55	1.34	1.35	110	5			147	
12	4	7.5	131.33	.55	1.336	1.35	110	5			148	
13	5	10	132.95	.55	1.336	1.35	110	5			148	
14	6	12.5	134.45	.60	1.46	1.45	110	5			147	
15	7	15	136.04	.55	1.336	1.35	110	5			148	
16	1	17.5	137.73	.55	1.574	1.60	110	5			148	2
17	A-1	140/0	139.435	.30	.734	.75	106	5	250	70	139	
18	2	2.5	141.02	.45	1.102	1.10	106	5			140	
19	3	5	142.35	.45	1.101	1.10	100	5			140	
20	4	7.5	143.92	.48	1.174	1.150	106	5	250	70	140	
21	5	10	145.32	.60	1.467	1.45	105	5	250	70	140	
22	6	12.5	146.95	.65	1.584	1.60	105	5			141	
23	7	15	148.575	.65	1.599	1.60	106	5			196	
24	1	17.5	150.300	.65	1.599	1.60	106	5	245	70	137	3
25	B-1	20/0	152.06	.28	.679	.700	102	5			140	

F1010
12/89
p1

minutes Vm $(\sqrt{\Delta p})^2$ ΔH tm ts

FIELD TEST LOG

Plant Name GEORGIA PACIFIC Job No. 10221

Sampling Location ESP STACK

Start	Stop	Comments/Problems*	Run No. 5-MS/202-3
0930	0950	PORT CHANGE, GOOD LK ✓ WAITED ON PLANT	Date 6-26-91
1015	1035	PORT CHANGE, GOOD LK ✓	
1047	1107	PORT CHANGE, GOOD LK ✓	
1121	1141	GOOD RUN	

Sampling Team Initials DLS (Team Leader) TCM (Others)

Posttest Leak Rate .004 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No.
			Date

Sampling Team Initials ____ (Team Leader) ____ (Others)

Posttest Leak Rate ____ Sample Appearance

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No.
			Date

Sampling Team Initials ____ (Team Leader) ____ (Others)

Posttest Leak Rate ____ Sample Appearance

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

ENTROPY

FIELD TEST LOG

Plant Name GEORGIA PACIFIC Job No. 10221

Sampling Location ESP STACK

Start	Stop	Comments/Problems*	Run No. 5-MS/202-3
0930	0950	PORT CHANGE, GOOD LK ✓ WAITED ON PLANT	Date 6-26-91
1015	1035	PORT CHANGE, GOOD LK ✓	
1047	1107	PORT CHANGE, GOOD LK ✓	
1121	1141	GOOD RUN	

Sampling Team Initials DLS (Team Leader) TCM (Others)

Posttest Leak Rate .004 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No.
			Date

Sampling Team Initials ___ (Team Leader) ___ (Others)

Posttest Leak Rate ___ Sample Appearance

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No.
			Date

Sampling Team Initials ___ (Team Leader) ___ (Others)

Posttest Leak Rate ___ Sample Appearance

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

ENTROPY

ISOKINETIC TYPE FIELD DATA SHEET (continued)

COMPANY NAME GEORGIA PACIFIC — RUN NUMBER S-MS/202-3
SAMPLING LOCATION ESP STACK — DATE 6-26-91

LINES	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK
26	2	2.5	1002.88	.42	1.27	1.27	94	5	248	57	145	
27	3	5	1004.46	.48	1.45	1.45	94	6	248	57	145	
28	4	7.5	1006.14	.63	1.90	1.90	94	7	248	57	145	
29	5	10	1008.06	.72	2.17	2.17	95	8	248	57	145	
30	6	12.5	1010.19	.75	2.26	2.26	96	10	248	57	145	
31	7	15	1012.17	.75	2.27	2.27	97	10	248	57	144	
32	8	17.5	1014.31	.71	2.15	2.15	99	10	248	57	144	
33	END	80/ 0	1016.437									
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F1010 9/89 p2 — minutes — Vm — $(\sqrt{\Delta p})^2$ — ΔH — tm — ts

ISOKINETIC TYPE FIELD DATA SHEET

COMPANY NAME: GEORGIA PACIFIC — RUN NUMBER: S-M5/202-3
ADDRESS: SKIPPERS, VA. — TIME START: 930
SAMPLING LOCATION: ESP STACK — TIME FINISH: 1141
DATE: 6-26-91 — TEAM LEADER: DLS — TECHNICIANS: TCM
BAROMETRIC PRESSURE. IN. HG: 29.8 — STATIC PRESSURE IN. H_2O: 0
TRAIN LEAK CHECK VACUUM IN. HG: 15, 10, 10, 10
TRAIN LEAK RATE, CU.FT/MIN: .001, .004, .004, .004

EQUIPMENT CHECKS	
✓	PITOTS, PRETEST
	PITOTS, POSTTEST
✓	M3 SAMPLING SYS/TED BAG
✓	THERMOCOUPLE @ 74 PRE
	THERMOCOUPLE @ ___ POST

IDENTIFICATION NUMBERS

REAGENT BOX 235 — NOZZLE 204 — DIAMETER 0.261
METER BOX N8 — Y 1.0114 — T/C READOUT F28
UMBILICAL U78 — T/C PROBE K198
SAMPLE BOX 62 — ORSAT PUMP 30
PROBE 6-6 — PITOT 6-6 — TEDLAR BAG 16

LEAK CHECK READINGS	
B1	973.112
E1	973.224
B2	986.915
E2	987.035
B3	1001.342
E3	1001.449
B4	
E4	
B5	
E5	
B6	
E6	

	FILTER #	TARE
Back 1/2	EN11	
Frt 1/2	E8191	0.5049

DELTA H@	~~1.776~~	1.776			
METER TEMP	~~85~~	85			
EST. %H_2O	~~23~~	22			
C FACTOR	~~0.659~~	0.699			
STACK TEMP	~~145~~	145			
REF DELTA P	~~0.661~~	0.623			
K-FACTOR	~~2.784~~	2.954			

FYRITE: 3.0%
C_p .84

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H_2O IDEAL	ORIFICE SETTING IN. H_2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	FILTER BOX °F	IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
1	B 1	0	959.851	.28	.82	.82	71	4	241	58	140	
2	2	2.5	961.12	.32	.93	.93	72	4	241	58	143	
3	3	5	962.48	.44	1.28	1.28	74	5	241	58	145	
4	4	7.5	964.01	.56	1.63	1.63	77	5	243	58	145	
5	5	10	965.74	.49	1.43	1.43	79	6	244	58	145	
6	6	12.5	967.39	.59	1.73	1.73	80	6	244	57	145	
7	7	15	969.18	.66	1.94	1.94	82	7	244	57	145	
8	8	17.5	971.11	.74	2.18	2.18	84	7	244	57	145	
9	C 1	20/0	973.112	.28	.83	.83	86	4	244	57	145	✓
10	2	2.5	974.53	.38	1.14	1.14	92	5	245	57	145	
11	3	5	976.00	.46	1.38	1.38	92	5	245	57	146	
12	4	7.5	977.64	.59	1.77	1.77	93	6	245	57	146	
13	5	10	979.43	.59	1.78	1.78	96	6	245	57	146	
14	6	12.5	981.27	.59	1.78	1.78	97	6	245	57	146	
15	7	15	983.19	.61	1.84	1.84	98	7	245	57	146	
16	8	17.5	984.98	.62	1.88	1.88	99	7	245	57	146	✓
17	D 1	40/0	986.915	.36	1.09	1.09	99	5	245	57	146	
18	2	2.5	988.56	.40	1.21	1.21	99	5	245	56	147	
19	3	5	990.14	.48	1.45	1.45	99	5	244	56	147	
20	4	7.5	991.79	.56	1.69	1.69	99	6	244	56	147	
21	5	10	993.62	.62	1.88	1.88	100	7	244	56	147	
22	6	12.5	995.45	.63	1.91	1.91	101	7	244	56	147	
23	7	15	997.41	.61	1.85	1.85	102	7	244	56	147	
24	8	17.5	999.34	.70	2.13	2.13	102	8	244	56	147	
25	1	60/0	1001.342	.33	.99	.99	94	5	246	55	145	✓

Margin notes: st 930, end 950 wait filter, st 1015, 1047, 1121

minutes — Vm — $(\sqrt{\Delta p})^2$ — ΔH — tm — ts

F1010
12/89
p1

ISOKINETIC TYPE FIELD DATA SHEET (continued)

COMPANY NAME GEORIA PACIFIC — RUN NUMBER 5-M5202-2

SAMPLING LOCATION ESP STACK — DATE 6-25-91

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H_2O IDEAL	ORIFICE SETTING IN. H_2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK
26	2	2.5	947.26	.43	1.21	1.21	106	5	247	58	144	
27	3	5	948.82	.45	1.27	1.27	106	5	247	58	144	
28	4	7.5	950.41	.49	1.38	1.38	106	6	247	58	144	
29	5	10	952.05	.62	1.75	1.75	106	6	247	58	144	
30	6	12.5	953.87	.67	1.89	1.89	106	7	248	58	144	
31	7	15	955.80	.66	1.86	1.86	106	7	248	58	144	
32	8	17.5	957.72	.64	1.81	1.81	107	7	247	58	144	
33	END	80	959.612									
34												
35												
36												
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F1010
9/89
p2

minutes — Vm — $(\sqrt{\Delta p})^2$ — ΔH — tm — ts

ISOKINETIC TYPE FIELD DATA SHEET

COMPANY NAME GEORGIA PACIFIC — RUN NUMBER 5-M5202-2
ADDRESS SKIPPERS VA — TIME START 1753
SAMPLING LOCATION ESP STACK — TIME FINISH 2005
DATE 6-25-91 — TEAM LEADER DLS — TECHNICIANS JCM
BAROMETRIC PRESSURE. IN. HG 29.8 — STATIC PRESSURE IN. H_2O 0
TRAIN LEAK CHECK VACUUM IN. HG 15 | 10 | 10 | 10 | 8 | — | —
TRAIN LEAK RATE, CU.FT/MIN .002 | .004 | .004 | .003 | .008 | — | —

EQUIPMENT CHECKS
- ✓ PITOTS, PRETEST
- ✓ PITOTS, POSTTEST
- ✓ M3 SAMPLING SYS/TED BAG
- ✓ THERMOCOUPLE @ 86 PRE
- ✓ THERMOCOUPLE @ 82 POST

IDENTIFICATION NUMBERS
REAGENT BOX 210 — NOZZLE 605 — DIAMETER 0.254
METER BOX N8 Y 1.0114 — T/C READOUT F28
UMBILICAL U78 — T/C PROBE K182
SAMPLE BOX 17 — ORSAT PUMP 30
PROBE 6-17 — PITOT 6-17 — TEDLAR BAG 2

LEAK CHECK READINGS

B 0	920.031
L 1	920.148
B 0	932.754
L 2	932.885
B 0	945.726
L 3	945.843
B 0	
L 4	
B 0	
L 5	
B 0	
L 6	

FILTER #	TARE
FRT E1055	0.4910
BACK EN18	0.5130

DELTA $H_@$	1.776			
METER TEMP	85			
EST. $\%H_2O$	21			
C FACTOR	0.715			
STACK TEMP	145			
REF DELTA P	0.68			
K-FACTOR	2.707			

FYRITE 2%

C_p .84

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H_2O IDEAL	ORIFICE SETTING IN. H_2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
STP 1813												
ST 1624												
STP 1832												
ST 1839												
STP 1852												
ST 1900												
STP 1910												
ST 1924												
1	1	0	907.228	.29	.79	.79	79	4	249	63	140	
2	2	2.5	908.57	.36	.97	.97	79	4	249	62	142	
3	3	5	910.02	.42	1.13	1.13	80	5	249	62	143	
4	4	7.5	911.51	.41	1.11	1.11	80	5	248	62	143	
5	5	10	913.02	.53	1.43	1.43	81	5	248	61	144	
6	6	12.5	914.65	.56	1.51	1.51	82	6	248	61	145	
7	7	15	916.35	.63	1.71	1.71	85	6	248	61	145	
8	8	17.5	918.17	.66	1.80	1.80	88	7	248	61	145	
9	1	20/0	920.031	.22	.60	.60	89	4	248	60	145	✓
10	2	2.5	921.24	.41	1.13	1.13	90	5	248	60	144	
11	3	5	922.74	.49	1.35	1.35	92	5	247	60	145	
12	4	7.5	924.36	.47	1.30	1.30	95	6	247	60	144	
13	5	10	925.97	.54	1.50	1.50	98	6	249	61	144	
14	6	12.5	927.65	.51	1.42	1.42	99	6	249	60	145	
15	7	15	929.32	.50	1.40	1.40	00	6	248	60	145	
16	8	17.5	930.98	.57	1.59	1.59	101	6	248	60	144	
17	1	80/0	932.754	.26	.73	.73	101	4	247	60	145	✓
18	2	2.5	934.15	.41	1.15	1.15	103	5	247	59	145	
19	3	5	935.65	.46	1.29	1.29	104	5	247	59	146	
20	4	7.5	937.26	.48	1.35	1.35	106	5	246	59	146	
21	5	10	938.91	.48	1.35	1.35	106	5	246	59	146	
22	6	12.5	940.53	.49	1.38	1.38	106	6	246	59	146	
23	7	15	942.19	.53	1.49	1.49	106	6	246	59	146	
24	8	17.5	943.90	.60	1.69	1.69	106	6	246	59	146	
25	1	60/0	945.726	.35	.99	.99	106	4	247	61	145	✓

F1010 12/89 p1 — minutes — Vm — $(\sqrt{\Delta p})^2$ — ΔH — tm — ts

FIELD TEST LOG

Plant Name GEORGIA-PACIFIC Job No. 10221-1

Sampling Location ~~STACK~~ WET ESP STACK

Start	Stop	Comments/Problems*	Run No. S-MS/202-1
1015			Date 6-25-91
		FYRITE WAS 0 BECAUSE SQUEEZE BULB WAS HOOKED UP BACKWARDS.	

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___YES ___NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. S-MS/202-2
1753	1813	GOOD LEAK ✓ CHANGED PORTS	Date 6-25-91
1824	1832	PROBLEM ELSEWHERE	
1839	1852	GOOD LEAK ✓ CHANGED PORTS	
1900	1910	PROBLEM ELSEWHERE	
1924 1945	1935 2005	GOOD LEAK ✓ CHANGED PORTS	

Sampling Team Initials DLS (Team Leader) ~~TOE~~ TCM (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___YES ___NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. _____
			Date _____

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___YES ___NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

ENTROPY

ISOKINETIC TYPE FIELD DATA SHEET (continued)

COMPANY NAME GEORGIA PACIFIC — RUN NUMBER 5-MS202-1
SAMPLING LOCATION ESP STACK — DATE 6-25-91

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK
26	2	2.5	894.38	.49	1.39	1.39	89	6	239	61	136	
27	3	5	896.01	.44	1.24	1.24	89	6	239	61	138	
28	4	7.5	897.61	.54	1.52	1.52	91	7	239	60	140	
29	5	10	899.35	.61	1.72	1.72	93	8	239	60	142	
30	6	12.5	901.19	.69	1.95	1.95	94	8	239	60	142	
31	7	15	903.18	.62	1.75	1.75	96	8	239	60	143	
32	8	17.5	905.08	.64	1.82	1.82	96	8	239	60	142	
33	END	80	906.994									
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F1010
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Minutes | Vs | $(\sqrt{\Delta p})^2$ | ΔH | ts | ts

ISOKINETIC TYPE FIELD DATA SHEET

COMPANY NAME GEORGIA PACIFIC — RUN NUMBER S-M5202-1
ADDRESS SELMER TN — TIME START 1015
SAMPLING LOCATION ESP STACK — TIME FINISH 1342
DATE 6/25/91 — TEAM LEADER ____ — TECHNICIANS TCM
BAROMETRIC PRESSURE. IN. HG ____ — STATIC PRESSURE IN. H_2O -.20
TRAIN LEAK CHECK VACUUM IN. HG 15 | 10 | 10 | 10 | ____ | ____ | ____
TRAIN LEAK RATE, CU.FT/MIN 0.005 | 0.003 | 0.005 | 0.004 | ____ | ____ | ____

EQUIPMENT CHECKS

- ✓ PITOTS, PRETEST
- ✓ PITOTS, POSTTEST
- ✓ M3 SAMPLING SYS/TED BAG
- ✓ THERMOCOUPLE @ 78 PRE
- ✓ THERMOCOUPLE @ 81 POST

IDENTIFICATION NUMBERS

REAGENT BOX 0210 — NOZZLE 405 — DIAMETER 0.254
METER BOX NB Y 1.0114 — T/C READOUT F28
UMBILICAL U78 — T/C PROBE R182
SAMPLE BOX 62 — ORSAT PUMP 30
PROBE 6-17 — PITOT 6-17 — TEDLAR BAG 73

LEAK CHECK READINGS

1	868.192
	868.272
2	880.518
	880.592
3	892.754
	892.885

FILTER #	TARE
FRT ½ E8193	0.5036
BACK ½ EN13	0.5102

DELTA $H_@$ 1.776
METER TEMP 85
EST. $\%H_2O$ 25
C FACTOR
STACK TEMP 150
REF DELTA P
K-FACTOR

FYRITE 0% 0%

C_p .84

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H_2O IDEAL	ORIFICE SETTING IN. H_2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
1	B 1	0	856.172	2.19	0.47	0.47	82	4	250	60	148	
2	2	2.5	857.15	.38	.94	.94	81	5	250	60	144	
3	3	5	858.09	.44	1.09	1.09	81	5	250	60	144	
4	4	7.5	860.245	.46	1.14	1.14	83	6	250	60	145	
5	5	10	861.69	.58	1.24	1.24	84	7	245	62	145	
6	6	12.5	863.38	.54	1.35	1.35	86	7	245	62	145	
7	7	15	865.00	.55	1.37	1.37	86	7	240	62	145	
8	8	17.5	866.44	.59	1.49	1.49	89	7	245	63	145	
9	C 1	20	868.192	.30	.76	.76	92	5	245	63	144	
10	2	22.5	869.45	.40	1.01	1.01	92	6	245	63	145	
11	3	25	870.98	.45	1.14	1.14	92	7	240	63	145	
12	4	27.5	872.57	.45	1.13	1.13	92	7	240	63	146	
13	5	30	874.04	.48	1.21	1.21	92	7	240	63	146	
14	6	32.5	875.61	.48	1.29	1.29	92	7	240	63	146	
15	7	35	877.2	.52	1.40	1.40	93	7	240	63	146	
16	8	37.5	878.84	.55	1.48	1.48	93	7	240	63	146	
17	D 1	40	880.518	.24	.64	.64	88	4	240	62	145	
18	2	42.5	881.78	.26	.70	.70	88	5	240	62	145	
19	3	45	882.93	.43	1.15	1.15	88	5	240	62	145	
20	4	47.5	884.42	.51	1.38	1.38	89	7	240	62	140	
21	5	50	886.05	.52	1.41	1.41	90	7	240	62	140	
22	6	52.5	887.73	.49	1.32	1.32	90	7	239	62	140	
23	7	55	889.35	.49	1.33	1.33	91	7	239	62	140	
24	8	57.5	890.98	.53	1.51	1.51	94	7	239	62	136	
25	A 1	60/0	892.754	.36	1.02	1.02	89	6	240	61	136	

F1010 12/89 p1 — minutes — Vm — $(\sqrt{\Delta p})^2$ — ΔH — Tm — Ts

ISOKINETIC TYPE FIELD DATA SHEET (continued)

COMPANY NAME EPA / GEORGIA PACIFIC RUN NUMBER LI-MOD II-3
SAMPLING LOCATION LOWER WET ESP OUTLET DATE 6-X-91

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
26	2	2½	840.80	1.33	1.15	1.15	94	4	250	55	203	
27	3	5	840.24	1.48	1.26	1.26	96	4	250	55	215	
28	4	7½	830.72	1.33	1.13	1.13	97	4	245	56	218	
29	5	10	845.76	1.64	1.38	1.38	97	4	245	57	227	
30	6	12½	846.55	1.60	1.35	1.35	98	4	247	57	225	
31	7	15	848.18	1.52	1.29	1.28	98	5	247	57	227	
32	8	17½	859.69	1.74	1.21	1.21	98		247	57	226	
33		20 64	851.253									
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minutes Vm $(\sqrt{\Delta p})^2$ ΔH ts ts

ISOKINETIC TYPE FIELD DATA SHEET

COMPANY NAME EPA / GEORGIA PACIFIC — RUN NUMBER LI-MOO11-3
ADDRESS SKIPPERS VA — TIME START 0930
SAMPLING LOCATION LOWER WET ESP OUTLET — TIME FINISH 1141
DATE 6-26-91 TEAM LEADER LCM — TECHNICIANS
BAROMETRIC PRESSURE. IN. HG 29.9 — STATIC PRESSURE IN. H_2O -16.0
TRAIN LEAK CHECK VACUUM IN. HG 15"
TRAIN LEAK RATE, CU.FT/MIN .001

EQUIPMENT CHECKS

✓ PITOTS, PRETEST
✓ PITOTS, POSTTEST
NA M3 SAMPLING SYS/TED BAG
✓ THERMOCOUPLE @ 73 PRE
— THERMOCOUPLE @ ___ POST

IDENTIFICATION NUMBERS

REAGENT BOX 0214 NOZZLE ___ DIAMETER 0.181
METER BOX N14 Y 1.0050 T/C READOUT E29
UMBILICAL U69 T/C PROBE R113
SAMPLE BOX 101 ORSAT PUMP NA
PROBE 5-2 PITOT 5-2 TEDLAR BAG NA

LEAK CHECK READINGS

FILTER #	TARE
NA	

DELTA $H_@$	1.943			
METER TEMP	95			
EST. %H_2O	20			
C FACTOR	1.783			
STACK TEMP	205			
REF DELTA P	.2132			
K-FACTOR	.863			

FYRITE

C_p .84

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
1	B 1	0	803.366	1.38	1.20	1.20	88	2	245	60	192	
2	2	2½	804.79	1.25	1.07	1.07	84	2	250	58	202	
3	3	5	806.26	1.53	1.32	1.32	84	2	250	58	200	
4	4	7½	807.74	1.97	1.65	1.65	88	3	250	56	217	
5	5	10	809.42	1.78	1.52	1.52	85	3	250	55	202	
6	6	12½	811.16	1.44	1.23	1.21	90	3	253	53	221	
7	7	15	812.61	1.45	1.23	1.23	91	3	255	50	227	
8	8	17½	814.05	1.37	1.10	1.10	91	3	255	50	220	
9	C 1	20/0	815.570	1.20	1.03	1.03	88	3	250	50	205	
10	2	2½	816.94	1.69	1.46	1.46	85	3	250	48	159	
11	3	5	818.52	1.63	1.37	1.37	87	4	245	47	215	
12	4	7½	820.11	2.15	1.81	1.81	89	4	245	45	214	
13	5	10	821.89	1.95	1.64	1.64	90	4	247	45	215	
14	6	12½	823.63	1.33	1.12	1.12	91	4	247	48	215	
15	7	15	825.65	1.44	1.25	1.25	91	4	250	48	214	
16	8	17½	826.55	1.63	1.38	1.34	92	4	250	48	215	
17	D 1	20/0	828.053	.95	.83	.83	90	4	250	48	185	
18	2	2½	829.40	.93	.82	.82	91	4	250	48	152	
19	3	5	830.62	1.07	.94	.94	91	4	255	50	183	
20	4	7½	831.96	1.80	1.57	1.57	92	5	255	50	1.94	
21	5	10	833.56	1.23	1.04	1.04	92	5	253	50	193	
22	6	12½	835.00	1.05	.92	.92	92	5	250	52	193	
23	7	15	836.31	1.18	1.04	1.04	93	5	250	52	191	
24	8	17½	837.69	1.25	1.11	1.11	94	4	250	52	189	
25	A 1	20/0	839.138	1.43	1.26	1.26	93	3			180	

minutes — Vm — $(\sqrt{\Delta p})^2$ — ΔH — tm — ts

ISOKINETIC TYPE FIELD DATA SHEET (continued)

COMPANY NAME EPA / GEORGIA PACIFIC RUN NUMBER LI-M0011-2

SAMPLING LOCATION LOWER WET ESP OUTLET DATE 6-25-91

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
26	2	2½	776.55	.91	.87	.87	98	3	250	48	185	
27	3	5	777.85	1.05	.95	.98	95	3	248	50	175	
28	4	7½	779.22	1.24	1.57	1.57	95	3	248	53	178	
29	5	10	780.55	2.00	1.80	1.80	96	4	248	53	178	
30	6	12½	782.32	1.10	.99	.95	97	3	248	53	175	
31	7	15	783.69	1.33	1.21	1.21	98	4	250	53	178	
32	8	17½	785.18	1.42	1.28	1.28	98	4	250	55	175	
33		80/ 20	786.625									
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71010 9/89 22	minutes	Vm	$(\sqrt{\Delta p})^2$	ΔH	ts	ts

ISOKINETIC TYPE FIELD DATA SHEET

COMPANY NAME EPA / GEORGIA / PACIFIC RUN NUMBER LI-M0011-2
ADDRESS SKIPPERS VA TIME START 1715
SAMPLING LOCATION LOWER WET ESP OUTLET TIME FINISH 2015
DATE 5-25-91 TEAM LEADER LCM TECHNICIANS GW
BAROMETRIC PRESSURE. IN. HG 29.5 STATIC PRESSURE IN. H_2O -15
TRAIN LEAK CHECK VACUUM IN. HG 15 27 11 17
TRAIN LEAK RATE, CU.FT/MIN .001 0.010 0.003 0.002

EQUIPMENT CHECKS

✓ PITOTS, PRETEST
✓ PITOTS, POSTTEST
NA M3 SAMPLING SYS/TED BAG
✓ THERMOCOUPLE @ 80 PRE
✓ THERMOCOUPLE @ 77 POST

IDENTIFICATION NUMBERS

REAGENT BOX 0219 NOZZLE GL580 DIAMETER .191
METER BOX N-14 Y 1.0050 T/C READOUT C-29
UMBILICAL 467 T/C PROBE R113
SAMPLE BOX 40 ORSAT PUMP NA
PROBE 5-15 PITOT 5-15 TEDLAR BAG NA

LEAK CHECK READINGS

167.153
768.125

FILTER #	TARE
NA	

DELTA $H_@$	1.943			
METER TEMP	105			
EST. %H_2O	22			
C FACTOR	.197			
STACK TEMP	265			
REF DELTA P	2.694			
K-FACTOR	.875			

FYRITE

C_p .84

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
1	A 1	0	736.061	1.22	1.06	1.06	90	4	250	46	195	
2	2	2½	737.57	1.32	1.14	1.14	90	4	250	46	198	
3	3	5	738.98	1.48	1.27	1.27	87	5	255	46	205	
4	4	7½	740.50	1.53	1.30	1.30	87	5	250	46	211	
5	5	10	742.63	1.85	1.58	1.58	89	6	240	46	205	
6	6	12½	743.69	2.20	1.81	1.81	90	7	240	45	196	
7	7	15	745.85	1.94	1.70	1.70	91	7	240	45	192	
8	8	17½	747.28	1.75	1.53	1.53	92	7	245	48	184	
9	B 1	20/0	748.942	1.23	1.05	1.05	91	6	249	48	185	
10	2	2½	750.79	1.45	1.29	1.29	91	6	255	48	198	
11	3	5	752.31	1.55	1.31	1.31	91	7	255	46	213	
12	4	7½	753.55	1.95	1.63	1.63	91	8	255	46	222	
13	5	10	755.56	1.99	1.64	1.64	92	8	240	47	235	
14	6	12½	757.26	1.42	1.17	1.17	93	9	240	47	236	
15	7	15	758.75	1.35	1.12	1.12	94	9	265	45	235	
16	8	17½	760.16	1.37	1.14	1.14	94	9	265	45	232	
17	C 1	20/0	761.544	1.25	1.08	1.08	92	9	260	45	205	
18	2	2½	763.13	1.83	1.57	1.57	92	14	255	47	208	
19	3	5	764.74	1.45	1.27	1.27	92	15	255	50	195	
20	4	7½	766.19	2.20	1.91	1.91	92	17	255	50	155	
21	5	10	768.90	2.16	1.82	1.82	94	4	250	50	200	
22	6	12½	770.7	1.21	1.05	1.05	94	3	250	48	202	
23	7	15	772.34	1.43	1.25	1.25	95	3	255	48	199	
24	8	17½	773.65	1.25	1.17	1.17	94	3	255	46	198	
25	D 1	20/0	775.115	1.05	.93	.93	94	3	250	49	188	

F1010
12/89
p1

minutes Vm $(\sqrt{\Delta p})^2$ ΔH tm ts

FIELD TEST LOG

Plant Name EPA Georgia Pacific Job No. ____

Sampling Location Lower Wet ESP Outlet

Start	Stop	Comments/Problems*	Run No. LI-M0011-1
1014	1030	plug filter on M5 202 then All bypass ...	Date ____
1050	1054	port change	
1105	1116	plug filter	
1130	1139	port change	
1200	1215	plug filter	
1230 1328	1235 1340	Port Change END TEST	

Sampling Team Initials ken (Team Leader) G W (Others)

Posttest Leak Rate ____ Sample Appearance ____

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. LI-M0011-2
1753	1813	port change	Date 6-25-91
1824	1831	plug filter	
1839	1852	port change	
1910	1918	plug	
1924	1935	port change	
1945	2005	END TEST	

Sampling Team Initials ken (Team Leader) GW (Others)

Posttest Leak Rate ____ Sample Appearance ____

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. LI-M0011-3
0930	0950	Port change ①	Date 6-26-91
1014	1034	Port Change ①	
1047	1107	Port change ①	
1121	1141		

Sampling Team Initials ____ (Team Leader) ____ (Others)

Posttest Leak Rate ____ Sample Appearance ____

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

F-0006 rev. 9-90

ENTROPY

ISOKINETIC TYPE FIELD DATA SHEET (continued)

COMPANY NAME [redacted] Georgia Pacific RUN NUMBER LI-M0011-1
SAMPLING LOCATION [redacted] W - ESP Outlet DATE 6-25-94

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
26	2	2½	724.86	1.55	1.38	1.38	99	14	273	58	193	
27	3	5	726.43	1.55	1.33	1.33	99	14	270	58	205	
28	4	7½	727.98	1.46	1.27	1.27	100	14	260	55	207	
29	5	10	729.	1.39	1.21	1.21	101	14	260	55	208	
30	6	12½	730.55	1.53	1.33	1.33	101	15	255	55	208	
31	7	15	732.47	1.68	1.28	1.28	101	15	255	55	208	
32	8	17½	734.06	1.64	1.43	1.43	102	15	255	55	208	
33		20/20	735.558									
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P1010
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minutes Vm $(\sqrt{\Delta p})^2$ ΔH tm ts

ISOKINETIC TYPE FIELD DATA SHEET

COMPANY NAME EPA / GEORGIA PACIFIC — RUN NUMBER LI-M0011-1
ADDRESS SKIPPERS VA — TIME START 1084
SAMPLING LOCATION LOWER WET ESP Outlet — TIME FINISH 1340
DATE 6-25-91 — TEAM LEADER LCM — TECHNICIANS
BAROMETRIC PRESSURE. IN. HG 29.5 — STATIC PRESSURE IN. H_2O -15.5
TRAIN LEAK CHECK VACUUM IN. HG 17 | 18 | 18
TRAIN LEAK RATE, CU.FT/MIN 0.005 | 0.000 | 0003

EQUIPMENT CHECKS
- / PITOTS, PRETEST
- / PITOTS, POSTTEST
- NA M3 SAMPLING SYS/TED BAG
- / THERMOCOUPLE @ 76 PRE
- / THERMOCOUPLE @ 84 POST

IDENTIFICATION NUMBERS
REAGENT BOX 025 NOZZLE GL56 DIAMETER .191
METER BOX N-14 Y 1.0050 T/C READOUT E25
UMBILICAL 1163 T/C PROBE R07
SAMPLE BOX 61 ORSAT PUMP NA
PROBE 523 PITOT S-83 TEDLAR BAG NA

LEAK CHECK RREADINGS
1: 723.247
2: 723.521

FILTER #	TARE
NA	

DELTA $H_@$	1.943				FYRITE
METER TEMP	95				
EST. $\%H_2O$	20				
C FACTOR	.783				
STACK TEMP	200				
REF DELTA P	.216				
K-FACTOR	.870				C_p .85

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
1	B 1	0	683.438	1.55	1.41	1.41	87	4	250	60	165	
2	2	2½	685.05	1.85	1.71	1.71	88	4	245	60	155	
3	3	5	686.76	1.38	1.21	1.21	89	9	245	58	192	
4	4	7½	688.24	1.45	1.25	1.25	91	4	287	58	203	
5	5	10	689.72	1.73	1.45	1.45	91	4	247	53	200	
6	6	12½	691.33	2.20	1.85	1.85	92	5	250	53	204	
7	7	15	693.18	1.58	1.70	1.70	92	5	250	53	206	
8	E	17½	694.86	1.58	1.32	1.32	93	5	250	63	225	
9	C 1	20/0	696.913	1.91	1.66	1.66	94	5	255	60	202	
10	2	2½	698.12	1.71	1.48	1.48	90	5	245	55	206	
11	3	5	699.73	1.62	1.37	1.37	93	7	240	55	216	
12	4	7½	701.31	2.28	1.93	1.93	93	9	245	53	218	
13	5	10	703.16	3.20	2.71	2.71	94	11	245	53	217	
14	6	12½	705.20	3.02	2.53	2.53	94	12	250	55	218	
15	7	15	707.38	2.60	2.22	2.22	95	11	251	55	217	
16	E	17½	709.31	1.85	1.61	1.61	96	10	250	53	213	
17	D 1	20/0	711.017	1.70	1.45	1.45	92	10	250	55	210	
18	2	2½	712.75	1.00	.87	.87	93	8	245	55	198	
19	3	5	714.04	1.05	.88	.88	93	8	245	55	223	
20	4	7½	715.35	1.09	.90	.90	94	8	250	57	222	
21	5	10	716.64	1.65	1.40	1.40	94	18	243	58	218	
22	C	12½	718.25	2.15	1.84	1.84	95	14	243	50	212	
23	7	15	720.10	1.74	1.50	1.50	96	10	247	50	208	
24	8	17½	721.80	1.28	1.12	1.12	96	10	250	50	205	
25	A 1	20/0	723.248	1.25	1.10	1.10	94				190	1

P1010
12/89
p1

minutes | Vm | $(\sqrt{\Delta p})^2$ | ΔH | tm | ts

ISOKINETIC TYPE FIELD DATA SHEET (continued)

COMPANY NAME EPA/Georgia Pacific RUN NUMBER LI-M5/202-3
SAMPLING LOCATION LOWER INLET DATE 6-26-97

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H_2O IDEAL	ORIFICE SETTING IN. H_2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
26	D2	2.5	740.82	.95	.661	.65	96	5	250	52	150	
27	3	5	741.91	.97	.651	.65	97	4	250	52	174	
28	4	7.5	743.13	1.55	1.039	1.05	98	6	250	54	176	
29	5	10	744.67	2.4	1.604	1.6	98	8	250	54	177	
30	6	12.5	746.32	1.1	.736	.75	99	5	250	54	177	
31	7	15	747.63	1.4	.94	.95	99	6	250	54	176	
32	8	17.5	749.01	1.50	1.006	1.0	99	6	250	54	176	
33	~~Off~~	20.	750.434									
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minutes Vm $(\sqrt{\Delta p})^2$ ΔH tm ts

-2

ISOKINETIC TYPE FIELD DATA SHEET

COMPANY NAME EPA / Georgia Pacific RUN NUMBER LI-85-9623
ADDRESS Skippers VA. TIME START 0930
SAMPLING LOCATION Lower Inlet TIME FINISH 1141
DATE 6-26-91 TEAM LEADER GCB TECHNICIANS JR
BAROMETRIC PRESSURE. IN. HG 29.9 STATIC PRESSURE IN. H_2O -15.5 -16

TRAIN LEAK CHECK VACUUM IN. HG	16	7	15	7	15	8	15	9
TRAIN LEAK RATE, CU.FT/MIN	.001	.001	.002	.001	.002	.001	.002	.01

EQUIPMENT CHECKS

- ✓ PITOTS, PRETEST
- ✓ PITOTS, POSTTEST
- — M3 SAMPLING SYS/TED BAG
- ✓ THERMOCOUPLE @ 70 PRE
- ✓ THERMOCOUPLE @ 81 POST

IDENTIFICATION NUMBERS

REAGENT BOX 0235 NOZZLE 202 DIAMETER .182
METER BOX U-23 Y 1.0026 T/C READOUT F22
UMBILICAL U-14 T/C PROBE R315
SAMPLE BOX Ø ORSAT PUMP 7
PROBE 6- PITOT 6- TEDLAR BAG 64

LEAK CHECK READINGS

B1	715.744
R	715.367
B2	720.960
R	727.245
B3	739.33
R	739.57
B4	
R	
B5	
R	
B6	
R	

FILTER #	TARE
E1060	.4948
E1059	.4980
E1063	.4902
E1062	.4911

DELTA H@	1.738			
METER TEMP	80			
EST. % H_2O	20			
C FACTOR	.681			
STACK TEMP	195			
REF DELTA P	2.931			
K-FACTOR	.628			

FYRITE: 3 CO_2; 3 CO_2; 3 CO_2; 3 CO_2

C_p .84

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
1	A1	0	703.455	1.4	.899	.9	88	5	250	48	191	
2	2	2.5	704.85	1.7	1.068	1.1	88	5	250	48	206	
3	3	5	706.32	1.65	1.034	1.05	90	5	250	48	210	
4	4	7.5	707.77	1.62	1.014	1.0	91	5	250	48	212	
5	5	10	709.20	1.77	1.105	1.1	92	5	250	48	215	
6	6	12.5	710.67	2.1	1.305	1.3	92	6	250	48	218	
7	7	15	712.25	1.9	1.182	1.2	94	6	250	48	219	
8	8	17.5	713.80	1.3	.812	.8	95	5	250	50	218	
9	B1	20	715.144	1.35	.895	.9	92	5	250	50	176	
10	2	2.5	716.75	1.42	.991	1.	93	5	250	50	145	
11	3	5	718.18	1.45	.915	.9	94	5	250	50	210	
12	4	7.5	719.57	1.90	1.172	1.2	96	6	250	50	228	
13	5	10	721.13	2.2	1.347	1.35	96	6	250	50	233	
14	6	12.5	722.78	1.70	1.036	1.05	97	6	250	52	237	
15	7	15	724.27	1.7	1.037	1.05	98	6	250	52	238	
16	8	17.5	725.77	1.27	.774	.8	95	5	250	52	239	
17	C1	20	720.960	1.57	1.05	1.05	96	5	250	52	175	
18	2	2.5	728.70	1.60	1.037	1.05	96	5	250	52	195	
19	3	5	730.16	1.45	.927	.95	98	5	250	52	206	
20	4	7.5	731.60	1.75	1.1	1.1	98	5	250	52	213	
21	5	10	733.10	2.6	1.641	1.65	99	7	250	52	216	
22	6	12.5	734.92	1.95	1.227	1.25	99	6	250	52	217	
23	7	15	736.52	1.35	.854	.85	100	5	250	52	215	
24	8	17.5	737.91	1.45	.923	.95	100	5	250	52	212	
25	D1	20	739.33	1.05	.743	.75	96	5	250	52	190	

F1010
12/89
pi

minutes Vm $(\sqrt{\Delta p})^2$ $\overline{\Delta H}$ tm ts

ISOKINETIC TYPE FIELD DATA SHEET (continued)

COMPANY NAME FPA/ Georgia Pac. LLC RUN NUMBER LI-M5/202-2

SAMPLING LOCATION LOWER INLET DATE 6-25-91

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H_2O IDEAL	ORIFICE SETTING IN. H_2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
26	~~#2~~	2.5	675.72	1.5	1.059	1.05	92	8	255	52	150	
27	3	5	677.19	1.5	.997	1.0	94	8	255	52	190	
28	4	7.5	678.64	1.7	1.122	1.1	96	8	255	54	197	
29	5	10	680.14	2.4	1.589	1.6	96	12	250	54	195	
30	6	12.5	681.95	1.5	.990	1.0	96	8	250	54	196	
31	7	15	683.46	1.70	1.124	1.1	96	8	250	55	196	
32	8	17.5	684.95	1.80	1.18	1.2	96	8	250	55	197	
33	~~OFF~~	20	686.495									
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F1010
9/89
p2

minutes Vm $(\sqrt{\Delta p})^2$ ΔH tm ts

ISOKINETIC TYPE FIELD DATA SHEET

COMPANY NAME EPA/ Georgia Pacific — RUN NUMBER LI-M5/202-2
ADDRESS Skippers VA. — TIME START 1760
SAMPLING LOCATION Lower Inlet — TIME FINISH 2007
DATE 6-25-91 — TEAM LEADER GCB — TECHNICIANS JR
BAROMETRIC PRESSURE. IN. HG 29.9 — STATIC PRESSURE IN. H_2O -15.5

TRAIN LEAK CHECK VACUUM IN. HG	15	9	15	15	15	12	—
TRAIN LEAK RATE, CU.FT/MIN	.005	.009	.006	.01	.009	.009	—

EQUIPMENT CHECKS

- ✓ PITOTS, PRETEST
- ✓ PITOTS, POSTTEST
- ✓ M3 SAMPLING SYS/TED BAG
- ✓ THERMOCOUPLE @ 82 PRE
- ✓ THERMOCOUPLE @ 78 POST

IDENTIFICATION NUMBERS

REAGENT BOX 0210 NOZZLE 603 DIAMETER .185
METER BOX N-25 Y 1.0026 T/C READOUT F22
UMBILICAL U-14 T/C PROBE R160
SAMPLE BOX 33 ORSAT PUMP 7
PROBE 6- PITOT 6- TEDLAR BAG 45

LEAK CHECK READINGS

0	650.162
1	650.225
2	654.90
3	654.95
4	662.296
5	662.447
6	

FILTER #	TARE
E1054	.4894
E1090	.5033
E1057	.4953
E1058	.4930

DELTA $H_@$	1.738	1.738	—	—	—	—	—
METER TEMP	80	90	—	—	—	—	—
EST. $\%H_2O$	20	20	—	—	—	—	—
C FACTOR	.993	.992	—	—	—	—	—
STACK TEMP	195	195	—	—	—	—	—
REF DELTA P	1.444	2.740	—	—	—	—	—
K-FACTOR	.599	.671	—	—	—	—	—

FYRITE

0	3 CO_2
1	3 CO_2
2	3.5 CO_2
3	3 CO_2
4	
5	
6	

C_p .84

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
1	B 1	0	638.823	1.0	.577	.7	96	6	250	50	181	
2	2	2.5	640.22	1.1	.728	.7	96	6	250	50	196	
3	3	5	641.47	1.15	.769	.8	96	6	250	50	189	
4	4	7.5	642.76	1.75	1.149	1.15	96	8	250	50	201	
5	5	10	644.31	1.80	1.19	1.20	98	9	250	50	198	
6	6	12.5	645.89	1.22	.809	.8	98	7	250	50	196	
7	7	15	647.25	1.50	.999	1.0	98	8	250	50	194	
8	8	17.5	648.70	1.50	998	1.0	98	8	250	52	194	
9	B 1	20	650.152	1.38	.917	1.0	96	8	250	52	142	
10	2	2.5	651.76	1.60	1.06	1.07	96	9	250	52	195	
11	3	5	653.24	1.55	1.017	1.0	96	10	250	52	201	
12	—	7.5	654.88	1.55	1.209	1.0	94	8	250	54	204	
13	5	10	656.31	1.75	1.17	1.1	96	8	250	54	206	
14	6	12.5	657.85	2.1	1.36	1.4	96	10	250	55	207	
15	7	15	659.51	1.9	1.22	1.25	96	9	250	56	209	
16	8	17.5	661.11	1.0	.649	.65	96	6	250	56	208	
17	B 1	20	662.296	.6	.45	.45	92	4	250	54	114	
18	2	2.5	663.40	1.4	1.03	1.0	94	8	250	55	125	
19	3	5	664.85	1.4	.965	.95	94	7	250	55	167	
20	4	7.5	666.30	2.2	1.47	1.5	94	12	250	55	187	
21	5	10	668.04	2.3	1.577	1.5	92	11	250	55	210	
22	6	12.5	669.79	1.75	1.164	1.1	94	9	250	56	218	
23	7	15	671.31	1.75	1.112	1.1	94	9	250	54	220	
24	8	17.5	672.81	1.20	.763	.75	96	7	250	54	222	
25	C 1	20	674.114	1.040	1.035	1.04	92	7	250	54	123	

F1010 12/89 p1

minutes	Vm	$(\sqrt{\Delta p})^2$	ΔH	tm	ts

FIELD TEST LOG

Plant Name EPA / Georgia Pacific Job No. 3667

Sampling Location LOWER INLET

Start	Stop	Comments/Problems*
1015	1050	CLOGGED FILTER @ 1615 into Run (Port A)
1055	1100	BYPASS OPEN AFTER FILTER change, Closed FILTER 11 min 20 sec.
1107	1119	(Port B), Closed FILTER 15 a.m. into RUN (Port C)
1201	1215	
1230	1235	
1320	1340	

Run No. LI-M5/202-1

Date 6-25-91

Sampling Team Initials GCB (Team Leader) JR (Others)

Posttest Leak Rate -.001 Sample Appearance Clear

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*
1753	1816	Closed filter second point
1829	1831	(Port A) changed in middle of Run
	19	
1924	1938	Changed Filter between Port B & C
1945	2007	

Run No. LI-M5/202-2

Date 6-25-91

Sampling Team Initials GCB (Team Leader) JR (Others)

Posttest Leak Rate .002 Sample Appearance Clear

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*
09??	9:50	CHANGED FILTER Port A → B
1014	10?4	" " B → C
1047	1107	" " C → D
1121	1141	

Run No. LI-M5/202-3

Date 6-26-91

Sampling Team Initials GCB (Team Leader) JR (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

ENTROPY

ISOKINETIC TYPE FIELD DATA SHEET (continued)

COMPANY NAME EPA/Georgia Pacific RUN NUMBER LI-M5/202-1
SAMPLING LOCATION Lower Inlet DATE 6-25-91

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H_2O IDEAL	ORIFICE SETTING IN. H_2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK ✓
26	D2	2.5	624.46	1.0		1.55	98	8	250	50	152	
27	3	5	626.32	1.05		1.65	100	9	250	50	151	
28	4	7.5	628.11	1.5		2.3	100	11	250	50	176	
29	5	10	630.24	1.55		2.4	104	12	250	52	174	
30	6	12.5	632.42	1.1		1.7	104	10	250	52	168	
31	7	15	634.32	1.3		2.0	104	12	250	52	169	
32	8	17.5	636.32	1.5		2.3	106	13	250	52	172	
33	Off	20	638.427									
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F1010 9/89 p2	minutes	V_m	$(\sqrt{\Delta p})^2$	ΔH	t_m	t_s

ISOKINETIC TYPE FIELD DATA SHEET

1230

COMPANY NAME EPA/Georgia Pacific RUN NUMBER LI-MS/202-1
ADDRESS Skippers VA. TIME START 1015
SAMPLING LOCATION LOWER INLET TIME FINISH 1240
DATE 6-25-91 TEAM LEADER GCB TECHNICIANS JR
BAROMETRIC PRESSURE. IN. HG 29.9 STATIC PRESSURE IN. H_2O -15.5
TRAIN LEAK CHECK VACUUM IN. HG ~~20~~ 15 15 15 15 15 15
TRAIN LEAK RATE, CU.FT/MIN ~~.005~~ .001 .001 .001 .002 .003 .001

EQUIPMENT CHECKS

- ✓ PITOTS, PRETEST
- ✓ PITOTS, POSTTEST
- ✓ M3 SAMPLING SYS/TED BAG
- ✓ THERMOCOUPLE @ 225 PRE
- THERMOCOUPLE @ 225 POST

IDENTIFICATION NUMBERS

REAGENT BOX 0211 NOZZLE 616 DIAMETER .227
METER BOX N-25 Y 1.0026 T/C READOUT E22
UMBILICAL U14 T/C PROBE R208
SAMPLE BOX O ORSAT PUMP 7
PROBE L-9 PITOT L-9 TEDLAR BAG 64

LEAK CHECK READINGS

B	583.88
1	585.183
B	~~580.571~~
2	596.20
2	597.50
B	618.58
3	618.638
B	
4	
B	
5	
B	
6	
B	

FILTER #	TARE
E1456	.5148
E1457	.5160
E1412 (BH)	.5103
E8192	.5088
E1462	.5125

DELTA $H_@$	1.738			
METER TEMP	80			
EST. %H_2O	23			
C FACTOR	.681			
STACK TEMP	195			
REF DELTA P	1.289			
K-FACTOR	1.428			

FYRITE: 4 CO_2, 4 CO_2, 2 CO_2, 4 CO_2

C_p .84

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READINGS CUBIC FEET	PITOT READING IN. H_2O	ORIFICE SETTING IN. H2O IDEAL	ORIFICE SETTING IN. H2O ACTUAL	GAS METER TEMP. °F	VACUUM IN. HG GAUGE	GAS TEMPERATURES FILTER BOX °F	GAS TEMPERATURES IMPINGER EXIT °F	STACK TEMP. °F	LK CHK #
1	A1	0	571.888	1.2		1.7	86	8	250	48	70	
2	2	2.5	573.81	1.4		1.95	88	8	250	48	211	
3	3	5	575.712	1.35		1.85	88	8	250	48	222	
4	4	7.5	577.71	1.50		2.1	90	8	250	48	219	
5	5	10	579.69	1.55		2.2	92	8	255	48	217	
6	6	12.5	581.71	1.70		2.4	92	12	255	50	213	
7	7	15	583.88	1.55		2.2	94	12	260	52	211	1
8	8	17.5	586.21	1.0		1.4	90	7	250	52	217	
9	B1	20.0	587.985	1.35		1.85	90	8	250	52	231	
10	2	22.5	589.85	1.40		1.99	92	9	260	52	222	
11	3	25	591.84	1.55		2.2	94	10	260	52	206	
12	4	27.5	593.94	1.85		2.6	96	12	260	52	214	
13	5	30	596.20	1.75		2.5	98	13	260	54	210	
14	6	32.5	598.48	1.55		2.2	92	10	250	54	219	
15	7	35	600.62	1.52		2.1	96	10	250	54	220	
16	8	37.5	602.70	1.42		2	98	10	250	54	220	
17	1	40	604.757	1.65		2.6	94	11	250	54	140	
18	2	2.5	607.01	1.85		2.7	96	11	250	56	185	
19	3	5	609.32	1.37		2.0	100	10	250	56	206	
20	4	7.5	611.39	1.7		2.4	102	10	250	56	213	
21		10	613.55	2.2		3.2	102	14	250	56	205	
22	6	12.5	616.05	1.35		2.0	104	10	250	56	210	
23	7	15	618.08	1.87		2.7	104	10	250	56	209	
24	8	17.5	620.55	1.40		2.0	98	9	250	54	204	
25	D1	20.	622.639	1.05		1.6	98	7	250	50	168	

Filter Change (line 7)

F1010
12/89
p1

minutes Vm $(\sqrt{\Delta p})^2$ ΔH tm ts

SAMPLING EQUIPMENT CHECKLIST

Plant Name/Address Georgia Pacific - Skippers V/A. Job No. 10191

Sampling Location ESP STACK Team Leader CEN

BAROMETER CHECK

Date	Entropy In-House Reference Barometer	Field Barometer	Check OK?*
6-25-91	30.0	30.0	✓

* ± 0.1" Mercury

THERMOMETERS AND THERMOCOUPLE CHECK

Date 6-25-91 | Reference Thermometer Ambient Temperature, °F 80

	Ambient Temperature, °F	Acceptance Range, °F	Check OK?
Thermometers			
Impinger Exit		± 2.0	
Filter Box		± 5.4	
Dry Gas Meter	80	± 5.4	

Adjust thermometer until acceptable. If it cannot be adjusted, use as back-up. If no backup, record ambient temp. indicated by unadjusted thermometer.

Thermocouples		± 8.0* (± 2.0)**	

* ± 1.5% of Absolute Temperature.

** Acceptance range is ± 2.0°F if used in saturated or water droplet-laden gas stream.

PITOT AND NOZZLE CHECK

Pitot No.	Visual Check	Nozzle No.	Visual Check

SAMPLING EQUIPMENT CHECKLIST

Plant Name/Address _____ Job No. _____

Sampling Location _____ Team Leader _____

BAROMETER CHECK

Date	Entropy In-House Reference Barometer	Field Barometer	Check OK?*
6-25-91	30.0	30.0	✓

* ± 0.1" Mercury

THERMOMETERS AND THERMOCOUPLE CHECK

Date 6-26-91 | Reference Thermometer Ambient Temperature, °F 86

	Ambient Temperature, °F	Acceptance Range, °F	Check OK?
Thermometers			
Impinger Exit	86	± 2.0	✓
Filter Box	86	± 5.4	✓
Dry Gas Meter	88	± 5.4	✓
_____	_____	____	____
_____	_____	____	____

Adjust thermometer until acceptable. If it cannot be adjusted, use as back-up. If no backup, record ambient temp. indicated by unadjusted thermometer.

Thermocouples	R 241	± 8.0* (± 2.0)**	✓
	_____		____
	_____		____

* ± 1.5% of Absolute Temperature.
** Acceptance range is ± 2.0°F if used in saturated or water droplet-laden gas stream.

PITOT AND NOZZLE CHECK

Pitot No.	Visual Check	Nozzle No.	Visual Check
S-12	✓	640	✓
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

SAMPLING EQUIPMENT CHECKLIST

Plant Name/Address EPA / Georgia Pacific Job No. 3667

Sampling Location _____ Team Leader CGB

BAROMETER CHECK

Date	Entropy In-House Reference Barometer	Field Barometer	Check OK?*
6-24-91	29.45	29.5	✓

* ± 0.1" Mercury

THERMOMETERS AND THERMOCOUPLE CHECK

Date 6-24-91 | Reference Thermometer Ambient Temperature, °F 78

	Ambient Temperature, °F	Acceptance Range, °F	Check OK?
Thermometers			
Impinger Exit	75	± 2.0	✓
Filter Box	71	± 5.4	✓
Dry Gas Meter	80	± 5.4	✓

Adjust thermometer until acceptable. If it cannot be adjusted, use as back-up. If no backup, record ambient temp. indicated by unadjusted thermometer.

Thermocouple		± 8.0* (± 2.0)**	

* ± 1.5% of Absolute Temperature.

** Acceptance range is ± 2.0°F if used in saturated or water droplet-laden gas stream.

PITOT AND NOZZLE CHECK

Pitot No.	Visual Check	Nozzle No.	Visual Check

SAMPLING EQUIPMENT CHECKLIST

Plant Name/Address GEORGIA-PACIFIC - SKIPPERS, VA Job No. 10221-1

Sampling Location STACK Team Leader MH

BAROMETER CHECK

Date	Entropy In-House Reference Barometer	Field Barometer	Check OK?*
6-25-91	29.82	29.8	✓

* ± 0.1" Mercury

THERMOMETERS AND THERMOCOUPLE CHECK

Date 6-25-91 | Reference Thermometer Ambient Temperature, °F 75

	Ambient Temperature, °F	Acceptance Range, °F	Check OK?
Thermometers			
Impinger Exit	76	± 2.0	✓
Filter Box	75	± 5.4	✓
Dry Gas Meter	76	± 5.4	✓

Adjust thermometer until acceptable. If it cannot be adjusted, use as back-up. If no backup, record ambient temp. indicated by unadjusted thermometer.

Thermocouples	75	± 8.0* (± 2.0)**	✓

* ± 1.5% of Absolute Temperature.

** Acceptance range is ± 2.0°F if used in saturated or water droplet-laden gas stream.

PITOT AND NOZZLE CHECK

Pitot No.	Visual Check	Nozzle No.	Visual Check
6-17	✓	605	✓

ENTROPY

ON-SITE DRY GAS METER AUDIT

Plant Name EPA / GEORGIA PACIFIC Job Number 3667

Date 6-24-91 Meter Box Identification Number M-14

Time 11:25 Fulltest Gamma (Y) 1.0050 $H_@$ 1.943

Auditor GCD Barometric Pressure (P_{bar}) 30.00 In. Hg

As Applicable:

Zero Magnehelics? (check) ✓

Zero/Level Manometer? (check) ___

Dry Gas Meter Reading (ft^3)	Meter Temperature (°F)	Upper and Lower Limits for Audit Gamma
Initial 647.00	Initial 86	0.96 * Y = .9648
Final ~~647~~ 654.473	Final 91	1.04 * Y = 1.0452

Dry Gas Volume Metered (ft^3)	Average Meter Temperature (°F)	Run Time (Base = 10)	
		(Min.)	(Sec.)
Vm = 7.473	Tm = 88.5	10	0

$$Y_c = \frac{[\text{Min.} + (\text{Sec.} / 60)]}{Vm} * \left[\frac{0.0319\ (Tm + 460)}{P_{bar}}\right]^{0.5}$$

$$Y_c = \frac{[10 + (0 / 60)]}{7.473} * \left[\frac{0.0319\ (88.5 + 460)}{30.00}\right]^{0.5} = 1.021946$$

Calculated Audit Y

Audit Gamma Within Acceptable Limits? Yes ✓ No ___

F-1040 rev. 9-90

ENTROPY

ON-SITE DRY GAS METER AUDIT

Plant Name EPA / GEORGIA PACIFIC Job Number 3667

Date 6-24-91 Meter Box Identification Number N-25

Time 11:15 Fulltest Gamma (Y) 1.0026 $H_@$ 1.728

Auditor GCB Barometric Pressure (P_{bar}) 30.00 In. Hg

As Applicable:

Zero Magnehelics? (check) ✓

Zero/Level Manometer? (check) ___

Dry Gas Meter Reading (ft^3)	Meter Temperature (°F)	Upper and Lower Limits for Audit Gamma
Initial 536.05	Initial 90°	0.96 * Y = .9625
Final 543.60	Final 98	1.04 * Y = 1.0422

Dry Gas Volume Metered (ft^3)	Average Meter Temperature (°F)	Run Time (Base = 10)	
		(Min.)	(Sec.)
Vm = 7.55	Tm = 94	10	0

$$Y_c = \frac{[\text{Min.} + (\text{Sec.} / 60)]}{Vm} * \left[\frac{0.0319\ (Tm + 460)}{P_{bar}}\right]^{0.5}$$

$$Y_c = \frac{[10 + (0 / 60)]}{7.55} * \left[\frac{0.0319\ (94 + 460)}{30.00}\right]^{0.5} = 1.01658$$

Calculated Audit Y

Audit Gamma Within Acceptable Limits? Yes ✓ No ___

F-1040 rev. 9-90

ENTROPY

ON-SITE DRY GAS METER AUDIT

Plant Name Georgia Pacific Job Number _____

Date 6-24-91 Meterbox Identification Number N-20

Time 1349 Fulltest Gamma (Y) 1.0036 $\Delta H_@$ 1.891

Auditor CEN Barometric Pressure (P_{bar}) 30.0 In. Hg

As Applicable:

Zero Magnehelics? (check) ✓

Zero/Level Manometer? (check) ___

Dry Gas Meter Reading (ft^3)	Meter Temperature (°F)	Upper and Lower Limits for Audit Gamma
Final 253.121	Final 84	0.96 * Y = .963456
Initial 245.800	Initial 84	1.04 * Y = 1.043744

Dry Gas Volume Metered (ft^3)	Average Meter Temperature (°F)	Run Time (Base = 10)	
		(Minutes)	(Seconds)
Vm = 7.321	Tm = 84		

$$Y_c = \frac{[\text{Min.} + (\text{Sec.} / 60)]}{Vm} * \left[\frac{0.0319 \cdot (Tm + 460)}{P_{bar}}\right]^{0.5}$$

1.36593616

$$Y_c = \frac{[10 + (\_\_\_\_ / 60)]}{7.321} * \left[\frac{0.0319\ (84 + 460)}{30.0}\right]^{0.5} = \underset{\text{Calculated Audit Y}}{1.039830516}$$

Audit Gamma Within Acceptable Limits? Yes ✓ No ___

F-1040 rev. 5-91

ENTROPY

Sampling and Velocity Traverse Point Determination
EPA Method 1

PLANT NAME GEORGIA-PACIFIC

CITY, STATE SKIPPERS, VA.

SAMPLING LOCATION WET ESP STACK

NO. OF PORTS AVAILABLE 8

NO. OF PORTS USED 4

PORT INSIDE DIAMETER 4"

DISTANCE FROM FAR WALL TO OUTSIDE OF PORT 110"

NIPPLE LENGTH AND/OR WALL THICKNESS 2

DEPTH OF STACK OR DUCT 108

STACK OR DUCT WIDTH (IF RECTANGULAR) _____

EQUIVALENT DIAMETER:

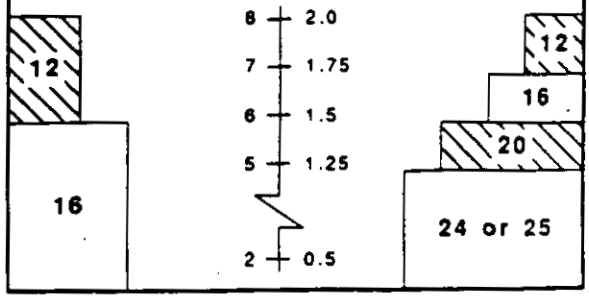
$D_E = \frac{2 \times \text{DEPTH} \times \text{WIDTH}}{\text{DEPTH} + \text{WIDTH}} = \frac{2 (\quad)(\quad)}{(\quad + \quad)} =$ _____

DISTANCE FROM PORTS TO FLOW DISTURBANCES	UPSTREAM	DOWNSTREAM
	21'	4'
DIAMETERS	_____	_____

STACK/DUCT AREA = $(54)^2 \times \pi$ = 9161 IN²

DRAW HORIZONTAL LINE THROUGH DIAMETERS

If more than 8 and 2 diameters and if duct dia. is less than 24", use 8 or 9 points.



LOCATION OF POINTS IN CIRCULAR STACKS OR DUCTS

	4	6	8	10	12	14	16	18	20	22	24
1	8.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.5	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.6
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.6	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.5	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.6
24											98.9

LOCATION OF POINTS IN RECTANGULAR STACKS OR DUCTS

	2	3	4	5	6	7	8	9	10	11	12
1	25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5				90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6					91.7	78.6	68.8	61.1	55.0	50.0	45.8
7						92.9	81.3	72.2	65.0	59.1	54.2
8							93.8	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

POINT	% OF DUCT DEPTH	DISTANCE FROM INSIDE WALL	DISTANCE FROM OUTSIDE OF PORT
1	1.6	$1\frac{3}{4}$"	$3\frac{3}{4}$"
2	4.9	$5\frac{1}{4}$	$7\frac{1}{4}$
3	8.5	$9\frac{1}{8}$	$11\frac{1}{8}$
4	12.5	$13\frac{1}{2}$	$15\frac{1}{2}$
5	16.9	$18\frac{1}{4}$	$20\frac{1}{4}$
6	22.0	$23\frac{3}{4}$	$25\frac{3}{4}$
7	28.3	$30\frac{1}{2}$	$32\frac{1}{2}$
8	37.5	$40\frac{1}{2}$	$42\frac{1}{2}$
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

SEE REVERSE FOR FIELD USE CHECKLIST

F-0016
10-90

ENTROPY

CHECKLIST

_____ 1. Are plant name, city/state, and sampling location names correct?

_____ 2. Are all dimensions recorded and do they match the dimensions recorded on the test location drawing?

_____ 3. Are the up and downstream diameters calculated properly and recorded in the right place (not reversed)?

_____ 4. Is the stack/duct area recorded?
Is it calculated properly? If rectangular: Width x Depth.
If Circular: $\left(\frac{\text{Diameter}}{2}\right)^2 \pi$

_____ 5. Are traverse/sampling points calculated properly?

DECIMAL TO FRACTION CONVERSION TABLE

DECIMAL INCHES	FRACTION INCHES
0.125	1/8
0.250	1/4
0.375	3/8
0.500	1/2
0.625	5/8
0.750	3/4
0.875	7/8

DECIMAL INCHES RANGE	USE THESE FRACTION INCHES
0.0000-0.0625	0
0.0625-0.1875	1/8
0.1875-0.3125	1/4
0.3125-0.4375	3/8
0.4375-0.5625	1/2
0.5625-0.6875	5/8
0.6875-0.8125	3/4
0.8125-0.9375	7/8
0.9375-1.0000	1

Sampling and Velocity Traverse Point Determination
EPA Method 1

PLANT NAME GEORGIA - PACIFIC

CITY, STATE SKIPPERS, VA.

SAMPLING LOCATION WET ESP UPPER INLET

NO. OF PORTS AVAILABLE 3

NO. OF PORTS USED 2

PORT INSIDE DIAMETER $4\frac{1}{2}$"

DISTANCE FROM FAR WALL TO OUTSIDE OF PORT 112

NIPPLE LENGTH AND/OR WALL THICKNESS 4

DEPTH OF STACK OR DUCT 108

STACK OR DUCT WIDTH (IF RECTANGULAR) ____

EQUIVALENT DIAMETER:

$D_E = \frac{2 \times \text{DEPTH} \times \text{WIDTH}}{\text{DEPTH} + \text{WIDTH}} = \frac{2 (\quad)(\quad)}{(\quad + \quad)} =$ ____

DISTANCE FROM PORTS TO FLOW DISTURBANCES	UPSTREAM	DOWNSTREAM
	0	0
DIAMETERS	0	0

STACK/DUCT AREA = $\pi(54)^2$ = 9161 IN²

LOCATION OF POINTS IN CIRCULAR STACKS OR DUCTS

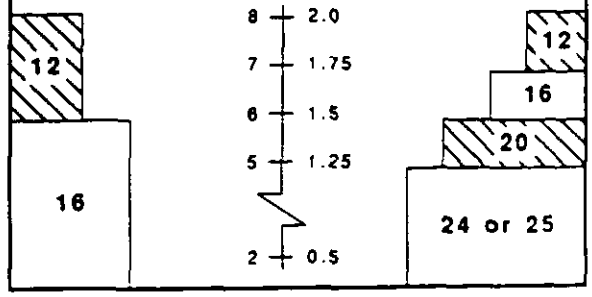
	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.5	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.8	12.9	11.6	10.6
6		95.6	80.6	65.8	35.6	26.9	22.0	18.6	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.5	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.8
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9

LOCATION OF POINTS IN RECTANGULAR STACKS OR DUCTS

	2	3	4	5	6	7	8	9	10	11	12
1	25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5				90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6					91.7	78.6	68.8	61.1	55.0	50.0	45.8
7						92.9	81.3	72.2	65.0	59.1	54.2
8							93.8	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

DRAW HORIZONTAL LINE THROUGH DIAMETERS

If more than 8 and 2 diameters and if duct dia. is less than 24", use 8 or 9 points.



POINT	% OF DUCT DEPTH	DISTANCE FROM INSIDE WALL	DISTANCE FROM OUTSIDE OF PORT
1	2.1	$2\frac{1}{4}$	$6\frac{1}{4}$
2		$7\frac{1}{4}$	$11\frac{1}{4}$
3		$12\frac{3}{4}$	$16\frac{3}{4}$
4		$19\frac{1}{8}$	$23\frac{1}{8}$
5		27	31
6		$38\frac{1}{2}$	$42\frac{1}{2}$
7		$69\frac{1}{2}$	$73\frac{1}{2}$
8		81	85
9		$88\frac{7}{8}$	$92\frac{7}{8}$
10		$95\frac{1}{4}$	$99\frac{1}{4}$
11		$100\frac{3}{4}$	$104\frac{3}{4}$
12	97.9	$105\frac{3}{4}$	$109\frac{3}{4}$
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

SEE REVERSE FOR FIELD USE CHECKLIST

F-0016
10-90

ENTROPY

CHECKLIST

_____ 1. Are plant name, city/state, and sampling location names correct?

_____ 2. Are all dimensions recorded and do they match the dimensions recorded on the test location drawing?

_____ 3. Are the up and downstream diameters calculated properly and recorded in the right place (not reversed)?

_____ 4. Is the stack/duct area recorded?
Is it calculated properly? If rectangular: Width x Depth.
If Circular: $\left(\frac{\text{Diameter}}{2}\right)^2 \pi$

_____ 5. Are traverse/sampling points calculated properly?

DECIMAL TO FRACTION CONVERSION TABLE

DECIMAL INCHES	FRACTION INCHES	DECIMAL INCHES RANGE	USE THESE FRACTION INCHES
0.125	1/8	0.0000-0.0625	0
0.250	1/4	0.0625-0.1875	1/8
0.375	3/8	0.1875-0.3125	1/4
0.500	1/2	0.3125-0.4375	3/8
0.625	5/8	0.4375-0.5625	1/2
0.750	3/4	0.5625-0.6875	5/8
0.875	7/8	0.6875-0.8125	3/4
		0.8125-0.9375	7/8
		0.9375-1.0000	1

Sampling and Velocity Traverse Point Determination
EPA Method 1

135 1/2
118 1/2

PLANT NAME EPA Georgia Pacific
CITY, STATE Skippers Va.
SAMPLING LOCATION Lower wet ESP, inlet

NO. OF PORTS AVAILABLE	47 1/2	1
NO. OF PORTS USED	5 1/2	1
PORT INSIDE DIAMETER	4 1/2	4"

DISTANCE FROM FAR WALL TO OUTSIDE OF PORT	47 1/2
NIPPLE LENGTH AND/OR WALL THICKNESS	5 1/2
DEPTH OF STACK OR DUCT	42
STACK OR DUCT WIDTH (IF RECTANGULAR)	

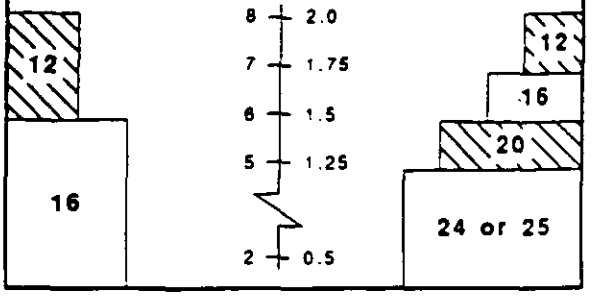
EQUIVALENT DIAMETER:
$D_E = \frac{2 \times \text{DEPTH} \times \text{WIDTH}}{\text{DEPTH} + \text{WIDTH}} = \frac{2(\quad)(\quad)}{(\quad + \quad)} =$ _____

DISTANCE FROM PORTS TO FLOW DISTURBANCES	UPSTREAM	DOWNSTREAM
	418"	118 1/2
DIAMETERS	1.14	2.82

STACK/DUCT AREA = _____ = _____ IN^2

DRAW HORIZONTAL LINE THROUGH DIAMETERS

If more than 8 and 2 diameters and if duct dia. is less than 24", use 8 or 9 points.



POINT	% OF DUCT DEPTH	DISTANCE FROM INSIDE WALL	DISTANCE FROM OUTSIDE OF PORT
1	3.2	1 3/8	6 7/8
2	10.5	4 3/8	9 7/8
3	19.4	8 1/8	13 5/8
4	32.3	13 1/2	19
5	67.7	28 1/2	34
6	80.6	33 7/8	39 3/8
7	89.5	37 5/8	43 1/8
8	96.8	40 5/8	46 1/8
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

LOCATION OF POINTS IN CIRCULAR STACKS OR DUCTS

	4	5	6	8	10	12	14	16	18	20	22	24
1	8.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1	
2	25.0	14.6	10.5	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2	
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5	
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9	
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5	
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2	
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1	
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4	
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0	
10				97.4	88.2	79.9	71.7	61.8	38.8	31.6	27.2	
11					93.3	85.4	76.0	70.4	61.2	39.3	32.3	
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8	
13						94.3	87.5	81.2	75.0	68.5	60.2	
14						98.2	91.5	85.4	79.6	73.8	67.7	
15							95.1	89.1	83.5	78.2	72.8	
16							98.4	92.5	87.1	82.0	77.0	
17								95.6	90.3	85.4	80.8	
18								98.6	93.3	88.4	83.9	
19									96.1	91.3	86.8	
20									98.7	94.0	89.5	
21										96.5	92.1	
22										98.9	94.5	
23											96.6	
24											98.9	

LOCATION OF POINTS IN RECTANGULAR STACKS OR DUCTS

	2	3	4	5	6	7	8	9	10	11	12
1	25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.8	12.5
3		83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5				90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5	
6					91.7	78.6	68.8	61.1	55.0	50.0	45.8	
7						92.9	81.3	72.2	65.0	59.1	54.2	
8							93.8	83.3	75.0	68.2	62.5	
9								94.4	85.0	77.3	70.8	
10									95.0	86.4	79.2	
11										95.5	87.5	
12											95.8	

F-0016
10-90

SEE REVERSE FOR FIELD USE CHECKLIST

ENTROPY

CHECKLIST

_____ 1. Are plant name, city/state, and sampling location names correct?

_____ 2. Are all dimensions recorded and do they match the dimensions recorded on the test location drawing?

_____ 3. Are the up and downstream diameters calculated properly and recorded *in the right place (not reversed)*?

_____ 4. Is the stack/duct area recorded?
Is it calculated properly? If rectangular: Width x Depth.
If Circular: $\left(\frac{\text{Diameter}}{2}\right)^2 \pi$

_____ 5. Are traverse/sampling points calculated *properly*?

DECIMAL TO FRACTION CONVERSION TABLE

DECIMAL INCHES	=	FRACTION INCHES
0.125		1/8
0.250		1/4
0.375		3/8
0.500		1/2
0.625		5/8
0.750		3/4
0.875		7/8

DECIMAL INCHES RANGE	=	USE THESE FRACTION INCHES
0.0000-0.0625		0
0.0625-0.1875		1/8
0.1875-0.3125		1/4
0.3125-0.4375		3/8
0.4375-0.5625		1/2
0.5625-0.6875		5/8
0.6875-0.8125		3/4
0.8125-0.9375		7/8
0.9375-1.0000		1

AIR FLOW RATE DETERMINATIONS

Plant Name _____ Run No. PRE-2 (cont)

City/State _____ Date _____

Test Location _____ Personnel _____

Barometric Pres. (Pbar) _____ In. Hg Static Pres. (Pg) _____ In. H_2O

Pitot ID _____ Pitot Coeff. (Cp) _____ Pressure Gauge Set ID _____

Thermocouple ID _____

VELOCITY TRAVERSES
Start-Finish Times:
_____ - _____

Point No.	Δ P In. H_2O	Temp. °F
01	.75	120
2	1.05	161
3	1.1	183
4	1.70	192
5	1.50	192
6	1.15	192
7	1.1	192
8	1.1	192
Avg.*	1.3258	195

ORSAT DATA

Sampling Time	Analysis Time	CO_2 (A) Reading	O_2 (B) Reading	%O_2 (B-A)	%$CO+N_2$ (100-B)
	Average				

Bag No. _____ Pump _____

FYRITE DATA, % CO_2				

MOISTURE DATA (WET BULB/DRY BULB)

Port	Time	Dry Bulb °F	Wet Bulb °F	Diff.	% H_2O

MOISTURE DATA (STOICHIOMETRIC)

Free Water in Fuel, %		
Water from Fuel Combustion, %		
Ambient Water, %		
Relative Humidity, %		
Ambient Temperature, °F		
Total %		

VOLUMETRIC AIR FLOW RATES

Dry at Standard Conditions, Qsd =		SCFM
Wet at Stack Conditions, Qaw =		ACFM

ADDITIONAL DATA

* Δ P average is square of average square root.

(Fig 6)

ENTROPY

FORM 3W - FIELD REPORT FORM **Initials**

Plant Name EPA Georgia Pacific Job# _____

Plant Location Stoppers VA Date 6-25-91

Sampling Location Lower Wet ESP @ Inlet

Set Up: Rails ___ or Trays ✓ or other (describe below). How far away was adequate power? 50' How high up was the location? Ground Pull or Walk?
Height from Platform to Center of Ports? 70" Nipple length 5½" ID? 4"
Any clearance problems? Any special equipment needed? Is there a better way?

PLANNING: Were there any surprises (i.e. were you well informed or misinformed)? Did you have enough manpower, appropriate equipment, etc.? Describe any problems and please make suggestions for next time.

EQUIPMENT: Did everything work? Did you have everything you needed? Should anything be done differently next time?

TRAVEL: Motel OK? _____ More convenient place? _____ Direction to plant OK? _____ If not, amplify or draw of map of the route on the back. Were there any notable attractions or restaurants?

AIR FLOW RATE DETERMINATIONS

Plant Name EPA/Georgia Pacific Run No. PRE-3

City/State _____ Date 6-25-91

Test Location LOWER INLET Personnel GCB JR GW

Barometric Pres. (Pbar) 30.0 In. Hg Static Pres. (Pg) _____ In. H_2O

Pitot ID DP-60-3 Pitot Coeff. (Cp) .84 Pressure Gauge Set ID N-25

Thermocouple ID DP-60-3

VELOCITY TRAVERSES
Start-Finish Times: _____ - _____

Point No.	Δ P In. H_2O	Temp. °F
A 1	.97	114
2	1.25	189
3	1.35	204
4	1.30	207
5	1.42	206
6	1.47	209
7	1.30	208
8	1.20	208
B 1	1.17	142
2	1.37	183
3	1.45	213
4	1.85	217
5	1.60	219
6	1.30	218
7	1.27	218
8	1.50	215
C 1	1.65	149
2	1.52	196
3	1.55	217
4	2.1	218
5	1.87	218
6	1.23	218
7	1.40	218
8	1.1	218
Avg.*	1.3258	195

ORSAT DATA

Sampling Time	Analysis Time	CO_2 (A) Reading	O_2 (B) Reading	%O_2 (B-A)	%$CO+N_2$ (100-B)
	Average				

Bag No. _____ Pump _____

FYRITE DATA, % CO_2				

MOISTURE DATA (WET BULB/DRY BULB)

Port	Time	Dry Bulb °F	Wet Bulb °F	Diff.	% H_2O
C	0830	208	142	56	18.9

MOISTURE DATA (STOICHIOMETRIC)

Free Water in Fuel, %		
Water from Fuel Combustion, %		
Ambient Water, %		
Relative Humidity, %		
Ambient Temperature, °F		
Total %		

VOLUMETRIC AIR FLOW RATES

Dry at Standard Conditions, Qsd =		SCFM
Wet at Stack Conditions, Qaw =		ACFM

ADDITIONAL DATA

* Δ P average is square of average square root.

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(Fig 6)

ENTROPY

AIR FLOW RATE DETERMINATIONS

Plant Name EPA / GEORGIA PACIFIC Run No. PRE-2

City/State _____ Date 6-24-91

Test Location LOW INLET S Personnel GCD TR

Barometric Pres. (Pbar) 30.0 In. Hg Static Pres. (Pg) _____ In. H_2O

Pitot ID DP-60-3 Pitot Coeff. (Cp) .84 Pressure Gauge Set ID U-2

Thermocouple ID R 243

VELOCITY TRAVERSES Start-Finish Times: _____ - _____

Point No.	Δ P In. H_2O	Temp. °F
A-1	1.1	188
2	1.2	189
3	1.27	190
4	1.20	189
5	1.30	189
6	1.35	189
7	1.1	188
8	.85	188
C-1	1.7	204
2	1.75	208
3	1.77	209
4	1.7	210
5	1.6	210
6	1.7	210
7	1.4	209
8	1.3	204
9	1.30	191
10	1.42	202
11	1.5	208
12	1.42	208
13	1.30	209
14	1.42	208
15	1.1	208
16	1.0	207
Avg.*	1.3535	200

ORSAT DATA

Sampling Time	Analysis Time	CO_2 (A) Reading	O_2 (B) Reading	%O_2 (B-A)	%$CO+N_2$ (100-B)
	Average				

Bag No. _____ Pump _____

FYRITE DATA, % CO_2				

MOISTURE DATA (WET BULB/DRY BULB)

Port	Time	Dry Bulb °F	Wet Bulb °F	Diff.	% H_2O
C	1230	210	150	60	23

MOISTURE DATA (STOICHIOMETRIC)

Free Water in Fuel, %		
Water from Fuel Combustion, %		
Ambient Water, %		
Relative Humidity, %		
Ambient Temperature, °F		
Total %		

VOLUMETRIC AIR FLOW RATES

Dry at Standard Conditions, Qsd =		SCFM
Wet at Stack Conditions, Qaw =		ACFM

ADDITIONAL DATA

• Δ P average is square of average square root.

F-1023 rev. 9-90

(Fig 6)

ENTROPY

AIR FLOW RATE DETERMINATIONS

Plant Name EPA / GEORGIA PACIFIC Run No. PRE-1

City/State _____ Date 6-24-91

Test Location LOWER ILLETS Personnel GCB JR

Barometric Pres. (Pbar) 30.0 In. Hg Static Pres. (Pg) _____ In. H_2O

Pitot ID DP-60-3 Pitot Coeff. (Cp) .84 Pressure Gauge Set ID N-25

Thermocouple ID R-243 (10)

VELOCITY TRAVERSES Start-Finish Times: _____ - _____

Point No.	ΔP In. H_2O	Temp. °F
1A-1	+1.4[illegible]	191
2	-1.41	191
3	-1.5	192
4	-1.[illegible]7	192
5	-1.75	194
6	-1.71	195
7	1.[illegible]	195
8	-.41[illegible]	194
1C-1	1.62	140
2	1.70	173
3	1.[illegible]	177
4	1.69	179
5	1.[illegible]3	171
6	1.35	172
7	1.[illegible]3	172
8	.75	172
1D-1	1.37	172
2	1.35	200
3	1.[illegible]	172
4	1.55	212
5	1.4	213
6	.90	212
7	.95	212
8	.97	213
Avg.*	1.3307	194

ORSAT DATA

Sampling Time	Analysis Time	CO_2 (A) Reading	O_2 (B) Reading	$\%O_2$ (B-A)	$\%CO+N_2$ (100-B)
	Average				

Bag No. _____ Pump _____

FYRITE DATA, % CO_2				

MOISTURE DATA (WET BULB/DRY BULB)

Port	Time	Dry Bulb °F	Wet Bulb °F	Diff.	% H_2O
C	1230	210	150	60	23

MOISTURE DATA (STOICHIOMETRIC)

Free Water in Fuel, %		
Water from Fuel Combustion, %		
Ambient Water, %		
Relative Humidity, %		
Ambient Temperature, °F		
Total %		

VOLUMETRIC AIR FLOW RATES

Dry at Standard Conditions, Qsd =		SCFM
Wet at Stack Conditions, Qaw =		ACFM

ADDITIONAL DATA

* ΔP average is square of average square root.

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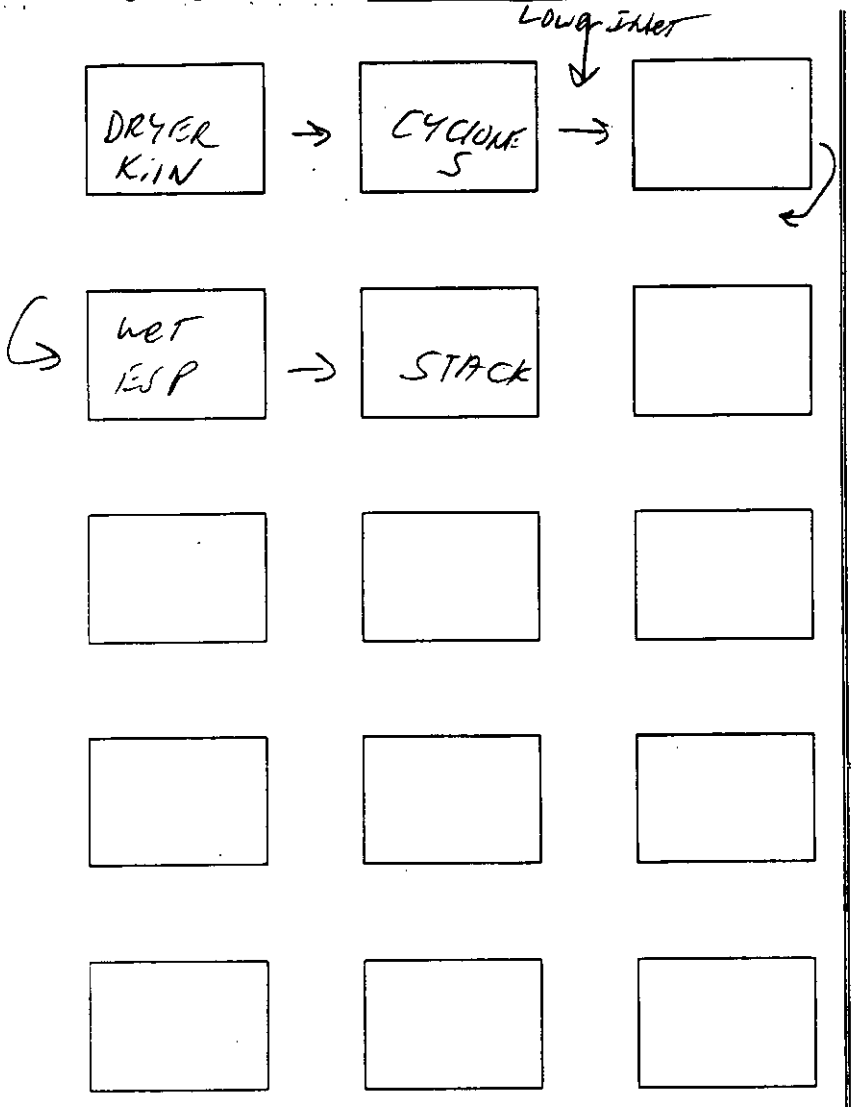
ENTROPY

PROCESS/AIR FLOW AND TEST LOCATION SCHEMATICS

Plant Name EPA / GEORGIA PACIFIC Job No. 3667

City/State _____ Date 6-24-91

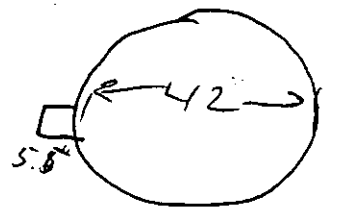
Sampling Location LOWER INLETS Initials GCB



PROCESS/AIR FLOW

Show all components including process. Show direction of air flow from process to atmosphere (when applicable). Show all test locations (TL). Check schematic with plant coordinator prior to leaving test site.

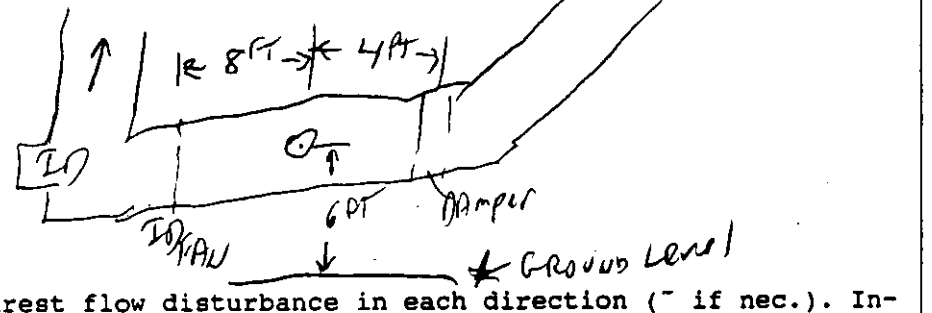
CROSS SECTION



Show/label all ports; indicate No. of points/port. Show dimensions (with and without insulation, etc.).

DIMENSIONS

Indicate view (top, etc.)



Show distance to nearest flow disturbance in each direction (~ if nec.). Indicate the nature of disturbances (direction/angle of bends, etc). Show direction of air flow. Indicate when separate traverse/sampling ports used.

NOTE: USE CHECK LIST PRINTED ON REVERSE SIDE

ENTROPY

CHECKLIST FOR DRAWINGS

Process/Air Flow Schematic

____ 1. Is the information legible?

____ 2. Are the test locations properly indicated?

____ 3. If there is any other ductwork entering up or downstream from your test location, is it shown and labeled as to what it is? Example: bypass duct, recirculation air duct, flue gas from another process or location. If you do not know what it is, ask someone from the plant.

____ 4. Show the schematic from process to atmosphere (typically); e.g., boiler to control equipment, to stack(s), to atmosphere. If testing a single-process, multi-stack job, talk to other location testers and ensure that the schematic reflects the true configuration--not a separate schematic for each stack.

Test Location Drawing(s)

____ 1. Each test location must have a separate drawing. Do not put the ports and dimensions for two stacks on one drawing. Note stack, duct, or pipe extension on the drawing.

____ 2. Is your drawing labelled as a top view or a side view?

____ 3. Are the disturbances shown? Any bends, expansions, or contractions have to be shown on the drawings that go in the report.

____ 4. Do you have the flow direction indicated?

____ 5. Are all ports shown and labeled? Do nipple lengths match the EPA Method 1/1A field data sheet? If a flange or nipple extension is used, it must be noted.

____ 6. Have you noted which ports you used and for what types of testing? For example: four ports are shown and labeled and you only tested two; note it on the sheet.

____ 7. Have you indicated the number of points/point and total points that were sampled/traversed?

____ 8. Are port locations/orientations the same in "cross section" and "dimensions" sketches? They must be properly labelled and oriented.

Job Name + No. Georgia Pacific 10221

METHOD 5 METERBOX CALIBRATION WORK SHEET

Meter Box # N-8

	"Standard" Meter		Meter Box	
VAC 10	Volume	Temp.	Volume	Temp.
ΔH 1.40	Finish 627.198	Start 76	Finish 613.858	Start 82
Date 7-29-91	Start 620.747	Finish 76	Start 607.129	Finish 86
P_{bar} 29.53	Diff 6.451	Average 76	Diff. 6.729	Average 84
Initials MC	Run Time min sec ___ decimal ___		Gama .9736	ΔH@ 1.892

	"Standard" Meter		Meter Box	
VAC	Volume	Temp.	Volume	Temp.
ΔH	Finish 633.643	Start 76	Finish 620.610	Start 86
Date	Start 627.198	Finish 76	Start 613.858	Finish 89
P_{bar}	Diff 6.445	Average 76	Diff 6.752	Average 88
Initials	Run Time min sec ___ decimal ___		Gama .9765	ΔH@ 1.881

	"Standard" Meter		Meter Box	
VAC	Volume	Temp.	Volume	Temp.
ΔH	Finish 640.093	Start 76	Finish 627.316	Start 89
Date	Start 633.643	Finish 76	Start 620.610	Finish 90
P_{bar}	Diff 6.450	Average 76	Diff 6.706	Average 90
Initials	Run Time min sec ___ decimal ___		Gama .9876	ΔH@ 1.872

	"Standard" Meter		Meter Box	
VAC	Volume	Temp.	Volume	Temp.
ΔH	Finish	Start	Finish	Start
Date	Start	Finish	Start	Finish
P_{bar}	Diff	Average	Diff	Average
Initials	Run Time min sec ___ decimal ___		Gama	ΔH@

	"Standard" Meter		Meter Box	
VAC	Volume	Temp.	Volume	Temp.
ΔH	Finish	Start	Finish	Start
Date	Start	Finish	Start	Finish
P_{bar}	Diff	Average	Diff	Average
Initials	Run Time min sec ___ decimal ___		Gama	ΔH@

	"Standard" Meter		Meter Box	
VAC	Volume	Temp.	Volume	Temp.
ΔH	Finish	Start	Finish	Start
Date	Start	Finish	Start	Finish
P_{bar}	Diff	Average	Diff	Average
Initials	Run Time min sec ___ decimal ___		Gama	ΔH@

	"Standard" Meter		Meter Box	
VAC	Volume	Temp.	Volume	Temp.
ΔH	Finish	Start	Finish	Start
Date	Start	Finish	Start	Finish
P_{bar}	Diff	Average	Diff	Average
Initials	Run Time min sec ___ decimal ___		Gama	ΔH@

ΔP (Magnehelic®)	ΔP (Manometer)
.24	.24
.50	.50
.75	.74

Standard Meter Yds = 1.0041

.9792 – 3.

1.882

5.7

.9751

3.6

ENTROPY

METERBOX VALIDATION DATA

Please attach to validation package in job folder. If validation has already been conducted, initial here _____ and return to calibration coordinator.

Meterbox No. N8 QA Date 7-29

Job No. 10221 Plant Name GA Pacific

	Gamma		Delta H@	Test Date
Fulltest	1.0114		1.216	2-13-91
Posttest	.9792	.9751	1.882	7-29
% Deviation	3.2	3.6	5.7	
% Allowed	±5% (EPA)		±10% (EEI)	

.9876 omitted (see att.)

Field Audit See folder

Shop Audit _____

Magnehelics / Manometer P/T Gas

Previous Problems? Yes ___ No ✓ Unknown ___ (if yes, see "comments")

Comments/Corrective Action Ran @ low ΔH in order to make ISO. Used on 1-2 subsequent jobs due to no other boxes. Soon as all P/Ts done, going to do scheduled semi annual full test.

R-0042 6-91

ENTROPY

10221

NOZZLES	PITOTS	T/Cs
~~616~~	(L-9)	~~R208~~
~~603~~	(6-)	~~R180~~
~~202~~	~~5-23~~	~~R315~~
GL560 SWS	(5-15)	~~R178~~
~~605~~	(5-2) detachable probe - need pitot #	~~R113~~
~~204~~	~~6-17~~	~~R102~~
(T2) ? FROM R&A	~~6-6~~	~~R198~~
(640)	~~5-22~~	~~R161~~
(5-9) ~~[illegible]~~	~~5-12~~	~~R241~~

(18 pitot, [illegible] [illegible])

THE ITEM CIRCLED ABOVE COULD NOT BE FOUND IN CALIBRATION FILES. REFER TO NEXT PAGE.

S-MMS-1

38.147

N2O 254.834 → 292.981

.08
267.951 - 268.031
280.481 - 280.610
0.129

] 37.938

N18 171.04 → 182.991] 11.951

$V_m = 49.889$

$Y_{20} = 1.0036$

$Y_{18} = .9903$

$$Y_{20/18} = \frac{37.938\, Y_{20} + 11.951\, Y_{18}}{49.889}$$

$Y = 1.0004$ Volume-weighted

254.834 + 49.889 = 304.723

133.683 I want 49.889
83.794 Leak ✓

Georgia-Pacific 10221

T/C

RUN NUMBER	Run Date	Start Time	Stop Time	Nozzle ID	Nozzle Diameter	Pitot ID	Dry Gas Meter Cp	Dry Gas Meter ID	Dry Gas Meter Gamma	Delta-H	Delta-p Low	Delta-p High	High Vacuum
LI-MS/202-1	6/25	1015	1340	616	.223 / .184	L-9	R208	N25	1.0026	2.12	1.0	1.85	14
LI-MS/202-2	6/25	1753	2007	603	.185	6-	R180	N25	1.0026	1.06	1.0	2.40	12
LI-MS/202-3	6/26	930	1141	202	.182	6-	R315	N23	1.0026	1.03	.95	2.60	8
LI-M0011-1	6/25	1014	1340	GL560	.191	5-23	R178	N14	1.0050	1.49	1.0	3.2	15
LI-M0011-2	6/25	1715	2015	"	"	5-15	R113	"	"	1.33	1.05	2.2	17
LI-M0011-3	6/26	930	1141		"	5-2	"	"	"	1.24	.93	2.15	5
S-MS/202-1	6/25	1015	1342	605	.254	6-17	R182	N8	1.0014	1.26	0.24	0.69	8
S-MS/202-2	6/25	1753	2005	"	"	"	"	"	"	1.35	0.26	0.67	7
S-MS/202-3	6/26	930	1141	204	.261	6-6	R198	N8	"	1.63	0.28	0.75	10
S-M0011-1	6/25	1014	1342	T2	.248	5-22	R161	N15	1.0055	1.33	0.23	0.65	7
S-M0011-2	6/25	1753	2005	"	"	"	"	"	"	1.18	0.29	0.65	8
S-M0011-3	6/26	930	1143	"	"	"	"	"	"	1.25	0.25	0.72	3
S-MM5-1	6/25	1014	1342	640	.268	5-12	R241	N20	1.0036	1.45	0.25	0.63	15
S-MM5-2	6/25	1753	2005	204	.261		TC208	N18	.9903	1.44	0.24	0.62	10
S-MM5-3	6/26	930	1151	5-9	0.290	5-12	R241	N18	.9903	2.13	0.23	0.60	12

NEED OLD CALIBRATION

Comments:

Job Name & No. Georgia Pacific

METHOD 5 METERBOX CALIBRATION WORK SHEET

Meter Box # N-14

Run 1

VAC	17
ΔH	1.40
Date	7-19-91
Pbar	29.63
Initials	M.C

"Standard" Meter	Volume	Temp		Meter Box	Volume	Temp	
Finish	132.706	Start	73	Finish	134.164	Start	80
Start	126.512	Finish	73	Start	127.936	Finish	86
Diff	6.194	Average	73	Diff	6.228	Average	83

Run Time min sec ______ decimal ______ Gama 1.0123 ΔH@ 2.032

Run 2

VAC	
ΔH	
Date	
Pbar	
Initials	

"Standard" Meter	Volume	Temp		Meter Box	Volume	Temp	
Finish	139.121	Start	73	Finish	140.479	Start	86
Start	132.706	Finish	73	Start	134.164	Finish	88
Diff	6.415	Average	73	Diff	6.315	Average	87

Run Time min sec ______ decimal ______ Gama .9970 ΔH@ 2.049

Run 3

VAC	
ΔH	
Date	
Pbar	
Initials	

"Standard" Meter	Volume	Temp		Meter Box	Volume	Temp	
Finish	146.094	Start	73	Finish	147.462	Start	88
Start	139.121	Finish	73	Start	140.479	Finish	89
Diff	6.973	Average	73	Diff	7.079	Average	89

Run Time min sec 0:11 decimal ______ Gama .9103 ΔH@ 1.919

Run 4

VAC	
ΔH	
Date	
Pbar	
Initials	

"Standard" Meter	Volume	Temp		Meter Box	Volume	Temp	
Finish	152.385	Start	74	Finish	153.777	Start	89
Start	146.094	Finish	74	Start	147.462	Finish	90
Diff	6.291	Average	74	Diff	6.315	Average	90

Run Time min sec ______ decimal ______ Gama 1.0252 ΔH@ 1.952

Run 5

VAC	
ΔH	
Date	
Pbar	
Initials	

"Standard" Meter	Volume	Temp		Meter Box	Volume	Temp	
Finish		Start		Finish		Start	
Start		Finish		Start		Finish	
Diff		Average		Diff		Average	

Run Time min sec ______ decimal ______ Gama ______ ΔH@ ______

Run 6

VAC	
ΔH	
Date	
Pbar	
Initials	

"Standard" Meter	Volume	Temp		Meter Box	Volume	Temp	
Finish		Start		Finish		Start	
Start		Finish		Start		Finish	
Diff		Average		Diff		Average	

Run Time min sec ______ decimal ______ Gama ______ ΔH@ ______

Run 7

VAC	
ΔH	
Date	
Pbar	
Initials	

"Standard" Meter	Volume	Temp		Meter Box	Volume	Temp	
Finish		Start		Finish		Start	
Start		Finish		Start		Finish	
Diff		Average		Diff		Average	

Run Time min sec ______ decimal ______ Gama ______ ΔH@ ______

ΔP (Magnehelic®) .93 ______ 3.20

ΔP (Manometer) ______ ______ ______

Standard Meter Yds = 1.0026

ENTROPY

METERBOX VALIDATION DATA

Please attach to validation package in job folder. If validation has already been conducted, initial here _____ and return to calibration coordinator.

Meterbox No. N14 QA Date 7-19

Job No. 10221 Plant Name GA Pacific

	Gamma	Delta H@	Test Date
Fulltest	1.0050	1.943	6-19
Posttest	See Attached	—	
% Deviation			
% Allowed	±5% (EPA)	±10% (EEI)	

Field Audit See folder

Shop Audit N. + done

(Magnehelics) / Manometer Will check on recal of box

Previous Problems? Yes ___ No X Unknown ___ (if yes, see "comments")

Comments/Corrective Action This box was used for hot orifice cals and apparently got screwed up. Lynn would not release the box for posttest until hot orifice experiment concluded.

Recommend qualifier: MS requires posttest based on field parameters --- box broken during transit back to LTI --- results OK based on ---

R-0042 6-91

ENTROPY

Georgia-Pacific 10221

.184 TK

RUN NUMBER	Run Date	Start Time	Stop Time	Nozzle ID	Nozzle Diameter	Pitot ID	Dry Gas Meter Cp	Dry Gas Meter ID	Dry Gas Meter Gamma	Delta-H	Delta-p Low	Delta-p High	High Vacuum
LI-MS/202-1	6/25	1015	1340	616	.223	L-9	R208	N25	1.0026	2.12	1.0	1.85	14
LI-MS/202-2	6/25	1753	2009	609	.185	6-	R180	N25	1.0026	1.06	1.0	2.40	12
LI-MS/202-3	6/26	930	1141	202	.182	6-	R315	N23	1.0026	1.03	.95	2.60	8
LI-M0011-1	6/25	1014	1340	GL560	.191	5-23	R178	N14	1.0050	1.49	1.0	3.2	15
LI-M0011-2	6/25	1715	2015	"	"	5-15	R113	"	"	1.33	1.05	2.2	17
LI-M0011-3	6/26	930	1141		"	5-2	"	"	"	1.24	.93	2.15	5
S-MS/202-1	6/25	1015	1342	605	.254	6-17	R182	N8	1.0014	1.26	0.24	0.69	8
S-MS/202-2	6/25	1753	2005	"	"	"	"	"	"	1.35	0.26	0.67	7
S-MS/202-3	6/26	930	1141	204	.261	6-6	R198	N8	"	1.63	0.28	0.75	10
S-M0011-1	6/25	1014	1342	72	.248	5-22	R161	N15	1.0055	1.33	0.23	0.65	7
S-M0011-2	6/25	1753	2005	"	"	"	"	"	"	1.18	0.29	0.65	8
S-M0011-3	6/26	930	1143	"	"	"	"	"	"	1.25	0.25	0.72	3
S-MMS-1	6/25	1014	1342	640	.268	5-12	R241	N20	1.0036	1.45	0.25	0.63	15
S-MMS-2	6/25	1753	2005	204	.261		R208	N18	.9903	1.44	0.24	0.62	10
S-MMS-3	6/26	930	1151	5-9	0.290	5-12	R241	N18	.9903	2.13	0.23	0.60	12

NEED OLD CALIBRATION

Comments:

NOZZLES	PITOTS	T/Cs
~~646~~	L-9	~~R208~~
~~605~~	6-	~~R180~~
~~20C~~	~~5-23~~	~~R315~~
GLS60 SWS	5-15	~~R178~~
~~605~~	5-2	~~R113~~
~~20F~~	~~6-17~~	~~R182~~
T2	~~6-6~~	~~R198~~
640	~~5-22~~	~~R161~~
5-9	~~5-12~~	~~R211~~

THE ITEM CIRCLED ABOVE COULD NOT BE FOUND IN CALIBRATION FILES. REFER TO NEXT PAGE.

POSTTEST CALIBRATION REQUEST

Job No. 10221 Plant Name GEORGIA-PACIFIC

Writer DAL Request Date 7/18/91 Report Due Date ??

ISOKINETIC SAMPLING METERBOXES (M5)

ON-SITE AUDIT POSTTEST

Meterbox Number	Average Delta-H*	High Vacuum	Delta-P Range (Lowest/Highest)	Test Date(s)/Comments
N25 ✓	1.40	14	.95 / 2.60	6/25-26
N14	1.35	17	.93 / 3.2	6/25-26
N8 ✓	1.41	10	.24 / .75	6/25-26
N15 ✓	1.25	8	.23 / .72	6/25-26
N20	1.45	15	.25 / .63	6/25
N18 ✓	1.79	12	.23 / .62	6/25-26
			/	
			/	

Standard Meter No. (optional) 1054682

* Enter separate line items if Delta-H averages are greater than 2.0 from low to high.

NONISOKINETIC SAMPLING METERBOXES (M6/VOST)

Meterbox Number	Test Date(s)/Comments	Meterbox Number	Test Date(s)/Comments

PRESSURE GAUGE SETS (M2)

Test Set Nos. _____ _____ _____ _____

Low/Hi Delta-P / / / /

OTHER DEVICES

✓ GL 560

R-0020 rev. 3-90

ENTROPY

VALIDATION DOCUMENTATION

JOB Name: Georgia-Pacific

JOB #: 3667

A Lower Prequench

TRAIN ID	Inlet M5/202	VALID?
M	Mol. Wt.	☐
W	Moisture	☐
O	Osd	☐
	Cmpnds/Params:	
1	Particulate	☐
2		☐
3		☐
4		☐
5		☐
6		☐
7		☐
8		☐
9		☐
10		☐

B

TRAIN ID	Stack M5/202	VALID?
M	Mol. Wt.	☐
W	Moisture	☐
O	Osd	☐
	Cmpnds/Params:	
1	Particulate	☐
2		☐
3		☐
4		☐
5		☐
6		☐
7		☐
8		☐
9		☐
10		☐

C Lower Prequench

TRAIN ID	Inlet M0011	VALID?
M	Mol. Wt.	☐
W	Moisture	☐
O	Osd	☐
	Cmpnds/Params:	
1	Aldehydes	☐
2	+ Ketones	✓
3		☐
4		☐
5		☐
6		☐
7		☐
8		☐
9		☐
10		☐

D

TRAIN ID	Stack M0011	VALID?
M	Mol. Wt.	☐
W	Moisture	☐
O	Osd	☐
	Cmpnds/Params:	
1	Aldehydes +	☐
2	Ketones	✓
3		☐
4		☐
5		☐
6		☐
7		☐
8		☐
9		☐
10		☐

E

TRAIN ID		VALID?
M	Mol. Wt.	☐
W	Moisture	☐
O	Osd	☐
	Cmpnds/Params:	
1		☐
2		☐
3		☐
4		☐
5		☐

F

TRAIN ID		VALID?
M	Mol. Wt.	☐
W	Moisture	☐
O	Osd	☐
	Cmpnds/Params:	
1		☐
2		☐
3		☐
4		☐
5		☐

G

TRAIN ID		VALID?
M	Mol. Wt.	☐
W	Moisture	☐
O	Osd	☐
	Cmpnds/Params:	
1		☐
2		☐
3		☐
4		☐
5		☐

H

TRAIN ID		VALID?
M	Mol. Wt.	☐
W	Moisture	☐
O	Osd	☐
	Cmpnds/Params:	
1		☐
2		☐
3		☐
4		☐
5		☐

Eric: these trains have already been validated for the Compliance report (10221) that Dennis wrote. They were originally in JAS. I transferred them to Symph. to add extra compounds & units.

Also, these are Draft printouts → Bill Kirk/Bill Dennis are going to review them before I worry about page formatting, etc! DO NOT edit these for formatting!

Oh yeah!

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: Georgia Pacific EEI Ref# 3667

Sampling Location: Stack

Date Received: 6/27 Date Analyzed: 6/27 Reagent Box(es): 001/DF 140

Run Number	S-M0011-1	S-M0011-2	S-M0011-3
Run Date	6/25/91	6/25/91	6/26/91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (DNPH)			
Final Weight, g.	862.0	861.5	873.0
Tared Weight, g.	602.5	596.5	596.8
Water Catch,g.	259.5	265.0	276.2
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch,g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch,g.			
CONDENSED WATER, g.	259.5	265.0	276.2
Silica Gel:			
Final Weight, g.	413.5	412.5	414.5
Tared Weight, g.	400.0	400.0	400.0
ADSORBED WATER, g.	13.5	12.5	14.5
TOTAL WATER COLLECTED, g.	273.0	277.5	290.7

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: Georgia Pacific EEI Ref# 3667

Sampling Location: Lower Wet Esp Inlet

Date Received: 6/27 Date Analyzed: 6/27 Reagent Box(es): 001/DF 140

Run Number	LI-M0011-1	LI-M0011-2	LI-M0011-3
Run Date	6/25/91	6/25/91	6/26/91
ANALYSIS OF MOISTURE CATCH			
Reagent 1 (DNPH)			
Final Weight, g.	795.0	873.0	854.0
Tared Weight, g.	599.0	597.0	600.0
Water Catch,g.	196.0	276.0	254.0
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch,g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch,g.			
CONDENSED WATER, g.	196.0	276.0	254.0
Silica Gel:			
Final Weight, g.	412.5	411.0	411.0
Tared Weight, g.	400.0	400.0	400.0
ADSORBED WATER, g.	12.5	11.0	11.0
TOTAL WATER COLLECTED, g.	208.5	287.0	265.0

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: Georgia Pacific EEI Ref# 3667

Sampling Location: Stack

Date Received: 6/27 Date Analyzed: 6/27 Reagent Box(es): DF 176

Run Number	S-MM5-1	S-MM5-2	S-MM5-3
Run Date	6/25/91	6/25/91	6/26/91
ANALYSIS OF MOISTURE CATCH			
Reagent 1 (H2O)			
Final Weight, g.	824.0	850.5	1056.0
Tared Weight, g.	548.0	551.0	669.0
Water Catch,g.	276.0	299.5	387.0
XAD			
Final Weight, g.			452.0
Tared Weight, g.			444.0
Water Catch,g.			8.0
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch,g.			
CONDENSED WATER, g.	276.0	299.5	395.0
Silica Gel:			
Final Weight, g.	417.5	415.5	418.5
Tared Weight, g.	400.0	400.0	400.0
ADSORBED WATER, g.	17.5	15.5	18.5
TOTAL WATER COLLECTED, g.	293.5	315.0	413.5

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: Georgia Pacific EEI Ref# 3667

Sampling Location: Lower Wet Esp Inlet

Date Received: 6/27 Date Analyzed: 6/27 Reagent Box(es): 0210/0211

Run Number	LI-M5/202-1	LI-M5/202-2	LI-M5/202-3
Run Date	6/25/91	6/25/91	6/26/91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)			
Final Weight, g.	1021.0	955.0	803.5
Tared Weight, g.	688.0	681.0	534.5
Water Catch,g.	333.0	274.0	269.0
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch,g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch,g.			
CONDENSED WATER, g.	333.0	274.0	269.0
Silica Gel:			
Final Weight, g.	432.5	412.5	420.5
Tared Weight, g.	400.0	400.0	400.0
ADSORBED WATER, g.	32.5	12.5	20.5
TOTAL WATER COLLECTED, g.	365.5	286.5	289.5

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: Georgia Pacific EEI Ref# 3667

Sampling Location: Stack

Date Received: 6/27 Date Analyzed: 6/27 Reagent Box(es): 0210/0211

Run Number	S-M5/202-1	S-M5/202-2	S-M5/202-3
Run Date	6/25/91	6/25/91	6/26/91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)			
Final Weight, g.	950.0	984.0	877.0
Tared Weight, g.	680.5	690.0	547.0
Water Catch,g.	269.5	294.0	330.0
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch,g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch,g.			
CONDENSED WATER, g.	269.5	294.0	330.0
Silica Gel:			
Final Weight, g.	414.0	413.5	417.0
Tared Weight, g.	400.0	400.0	400.0
ADSORBED WATER, g.	14.0	13.5	17.0
TOTAL WATER COLLECTED, g.	283.5	307.5	347.0

PARTICULATE SAMPLING LABORATORY RESULTS

Plant Name: Georgia Pacific EEI Ref# 3667

Sampling Location: Lower Wet Esp Inlet

Date Received: 6/27 Date Analyzed: 7/15 Reagent Box(es): 0210/0211

Run Number			LI-M5/202-1		LI-M5/202-2		LI-M5/202-3
Run Date			6/25/91		6/25/91		6/26/91
Sample ID/Container #			F / 564		F / 566		F / 568
	init.	date		date		date	
	TRR						
	TRR						
	JSC	7/2	✓6.3561				
	TRR	7/1	6.3564	7/2	✓5.7681	7/1	✓5.6709
	VP	6/30	6.3573	6/30	5.7683	6/30	5.6709
Tare Weight., g.			3.4884		3.4865		3.3988
SAMPLE WT., g.			2.8677		2.2816		2.2721

Sample ID/Container #			R / 565		R / 567		R / 569
	init.	date		date		date	
	TRR			7/5	✓3.6884	7/5	✓3.4958
	TRR	7/5	✓3.6199	7/3	3.6886	7/3	3.4960
	JSC	7/2	3.6200	7/2	3.6904	7/2	3.4979
	TRR	7/1	3.6329	7/1	3.6917	7/1	3.4999
Tare Wt., g.			3.4954		3.5628		3.3364
SAMPLE WT., g.			0.1245		0.1256		0.1594

Filter + Particulate., mg.	2992.2		2407.2		2431.5
Total Filter Tare, mg.	2564.1		1981.0		1974.1
Blank Residue, mg.	0.3 (160 ml)		0.4 (175 ml)		0.4 (175 ml)
TOTAL PARTICULATE CATCH, mg.	427.8		425.8		457.0

Blank Beaker # 2003
Final wt., mg. 99546.3
Tare wt., mg. 99545.9
Residue, mg. 0.4
Volume, ml. 200

Concentration, mg/ml 0.002

---Legend---
= Final Weight
F = Filter R = Rinse
---

1 = Light 2 = Medium
3 = Heavy or Dark

Sample Description		
Run #	Color	Loading
-1	1 2 (3)	(1) 2 3
-2	1 2 (3)	(1) 2 3
-3	1 2 (3)	(1) 2 3

Notes and comments:
Predominate color of samples is: chocolate
Date of full balance span 7/1

PARTICULATE SAMPLING LABORATORY RESULTS

Plant Name: Georgia Pacific EEI Ref# 3667

Sampling Location: Stack

Date Received: 6/27 Date Analyzed: 7/15 Reagent Box(es): 0210/0211

Run Number		S-M5/202-1		S-M5/202-2		S-M5/202-3
Run Date		6/25/91		6/25/91		6/26/91
Sample ID/Container #		F / 493		F / 560		F / 562
	init. date	==========	date	==========	date	==========
	TRR					
	TRR					
	TRR 7/1	3.9188	7/1	4.0117	7/1	4.0617
	VP 6/30	3.9186	6/30	4.0114	6/30	4.0618
Tare Weight., g.		3.3929		3.4746		3.5238
		==========		==========		==========
SAMPLE WT., g.		0.5257		0.5368		0.5379

Sample ID/Container #		R / 538		R / 561		R / 563
	init. date	==========	date	==========	date	==========
	TRR					
	TRR		7/5	3.5057		
	JSC		7/1	3.5054		
	TRR 7/1	3.5063	7/1	3.5062	7/1	3.3021
	VP 6/30	3.5062	7/1	3.5136	6/30	3.3020
Tare Wt., g.		3.5000		3.4993		3.2885
		==========		==========		==========
SAMPLE WT., g.		0.0062		0.0061		0.0135

Filter + Particulate., mg.		531.9		542.9		551.4
Total Filter Tare, mg.		503.6		491.0		504.9
Blank Residue, mg.	(100 ml)	0.2	(100 ml)	0.2	(75 ml)	0.2
		==========		==========		==========
TOTAL PARTICULATE CATCH, mg.		28.1		51.7		46.3

Blank Beaker #	2003
Final wt., mg.	99546.3
Tare wt., mg.	99545.9
Residue, mg.	0.4
Volume, ml.	200
Concentration, mg/ml	0.002

---Legend---
= Final Weight
F = Filter R = Rinse

1 = Light 2 = Medium
3 = Heavy or Dark

Sample Description		
Run #	Color	Loading
-1	1 2 (3)	(1) 2 3
-2	1 2 (3)	1 (2) 3
-3	1 2 (3)	(1) 2 3

Notes and comments:
Predominate color of samples is: chocolate
Date of full balance span 7/1

SUMMARY OF IMPINGERS' WATER ANALYSIS

Plant Name: GEORGIA PACIFIC EEI Ref# 3667

Run Number			LI-M5/202-1		LI-M5/202-2		LI-M5/202-3
Run Date			6/25		6/25		6/25
Sample ID/Container #			1 / 580		1 / 583		1 / 586
	init.	date	==========	date	==========	date	==========
	JSC						
	TRR	7/5	3.6483	7/5	3.6063	7/8	3.5939
	TRR	7/3	3.6480	7/3	3.6063	7/3	3.5940
	JSC	7/2	3.6599	7/2	3.6074	7/2	3.5969
Tare Weight., g.			3.6356		3.5880		3.5607
			==========		==========		==========
SAMPLE WT., g.			0.0124		0.0183		0.0332
Sample ID/Container #			2 / 581		2 / 584		2 / 587
	init.	date	==========		==========		==========
	ES					7/12	3.7313
	JVS	7/10	3.6661	7/10	3.8134	7/11	3.7315
	JVS	7/9	3.6665	7/9	3.8139	7/10	3.7327
	JSC	7/8	3.6681	7/8	3.8153	7/9	3.7334
Tare Wt., g.			3.5772		3.7241		3.6226
			==========		==========		==========
SAMPLE WT., g.			0.0889		0.0893		0.1087
Sample ID/Container #			4 / 582		4 / 585		4 / 588
	init.	date	==========		==========		==========
	TRR	7/3	3.5331	7/3	3.6526	7/3	3.6073
	TRR	7/2	3.5335	7/2	3.6527	7/2	3.6074
Tare Wt., g.			3.5223		3.6420		3.5963
			==========		==========		==========
SAMPLE WT., g.			0.0108		0.0106		0.0110
1 Organic Fraction Catch, mg.			12.4		18.3		33.2
2 Inorganic Fraction Catch, mg			88.9		89.3		108.7
4 Acetone Soluble Catch, mg.			10.8		10.6		11.0
Acetone Residue, mg.	(250 ml)		0.5	(250 ml)	0.5	(135 ml)	0.3
Water Residue, mg.	(200 ml)		0.0	(200 ml)	0.0	(200 ml)	0.0
TOTAL IMPINGERS' CATCH, mg.			111.6		117.7		152.6
TOTAL TRAIN CATCH, mg.			539.4		543.5		609.6

Procedure Explanation
1 - Extractable with Methylene Chloride
2 - Water catch after extraction and heating to 210 F
3 - Water catch after heating to _____ F
4 - Acetone rinsings of impingers and connecting glassware

Blank Bag # 1-236
Final wt.,mg. 4234.6
Tare wt., mg. 4234.6
Residue, mg. 0.0
Volume, ml. 200
Conc., mg/ml 0.0

Revised Pages rec'd -

SUMMARY OF IMPINGERS' WATER ANALYSIS

Plant Name: GEORGIA PACIFIC Location Names changed EE Ref# 3667

Run Number			S-M5/202-1		S-M5/202-2		S-M5/202-3
Run Date			6/25		6/25		6/25
Sample ID/Container #			1 / 571		1 / 574		1 / 575
	init.	date	==========	date	==========	date	==========
	JSC						
	TRR	7/5	3.5143	7/5	3.5705	7/8	3.5002
	TRR	7/3	3.5142	7/3	3.5710	7/5	3.5005
	JSC	7/2	3.5151	7/2	3.5722	7/2	3.5014
Tare Weight., g.			3.5036		3.5492		3.4846
			==========		==========		==========
SAMPLE WT., g.			0.0106		0.0213		0.0156

Meltz instead of acetone residue changed particulate results a little

Sample ID/Container #			2 / 572		2 / 573		2 / 576
	init.	date	==========		==========		==========
	JVS	7/10	3.4459	7/10	3.4969	7/10	3.5667
	JVS	7/9	3.4463	7/9	3.4969	7/9	3.5670
	JSC	7/8	3.4470	7/8	3.4984	7/8	3.5680
Tare Wt., g.			3.4276		3.4686		3.5359
			==========		==========		==========
SAMPLE WT., g.			0.0183		0.0283		0.0308

Sample ID/Container #			4 / 577		4 / 578		4 / 579
	init.	date	==========		==========		==========
	TRR			7/5	3.5326		
	TRR	7/3	3.5361	7/3	3.5321	7/3	3.5660
	JSC	7/2	3.5366	7/2	3.5328	7/2	3.5663
Tare Wt., g.			3.5329		3.5309		3.5628
			==========		==========		==========
SAMPLE WT., g.			0.0032		0.0012		0.0032

1	Organic Fraction Catch, mg.		10.6		21.3		15.6
2	Inorganic Fraction Catch, mg		18.3		28.3		30.8
4	Acetone Soluble Catch, mg.		3.2		1.2		3.2
	Acetone Residue, mg.	(125 ml)	0.3	(100 ml)	0.2	(150 ml)	0.3
	Water Residue, mg.	(200 ml)	0.0	(200 ml)	0.0	(200 ml)	0.0
	TOTAL IMPINGERS' CATCH, mg.		31.8		50.6		49.3
	TOTAL TRAIN CATCH, mg.		59.9		102.3		95.6

Procedure Explanation

✓ 1 - Extractable with Methylene chlorice
✓ 2 - Water catch after extraction and heating to 210 F
3 - Water catch after heating to _____ F
✓ 4 - Acetone rinsings of impingers and connecting glassware

Blank Bag # 1-236
Final wt.,mg. 4234.6
Tare wt., mg. 4234.6
Residue, mg. 0.0
Volume, ml. 200
Conc., mg/ml 0.0