AP42 Section: 11.1

Reference Number: 83

Title: Results Of The August 24, 1994 NSPS Particulate And Opacity Compliance Tests On The Stationary Asphalt Plant At The Tower Asphalt Lakeland Facility,

Interpoll Laboratories, Inc., Circle Pines, MN,

September 22, 1994.

Interpoll Laboratories, Inc.
4500 Ball Road N.E.
Circle Pines, Minnesota 55014-1819

TEL: (612) 786-6020
FAX: (612) 786-7854

RESULTS OF THE AUGUST 24, 1994 NSPS PARTICULATE AND OPACITY COMPLIANCE TEST ON THE STATIONARY ASPHALT PLANT AT THE TOWER ASPHALT LAKELAND FACILITY

Submitted to:

Tower Asphalt, Inc.
Box 15001
Lakeland, Minnesota 55043

Attention: Ron Hockin

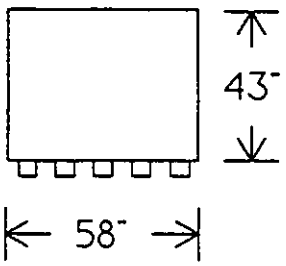
Approved by:

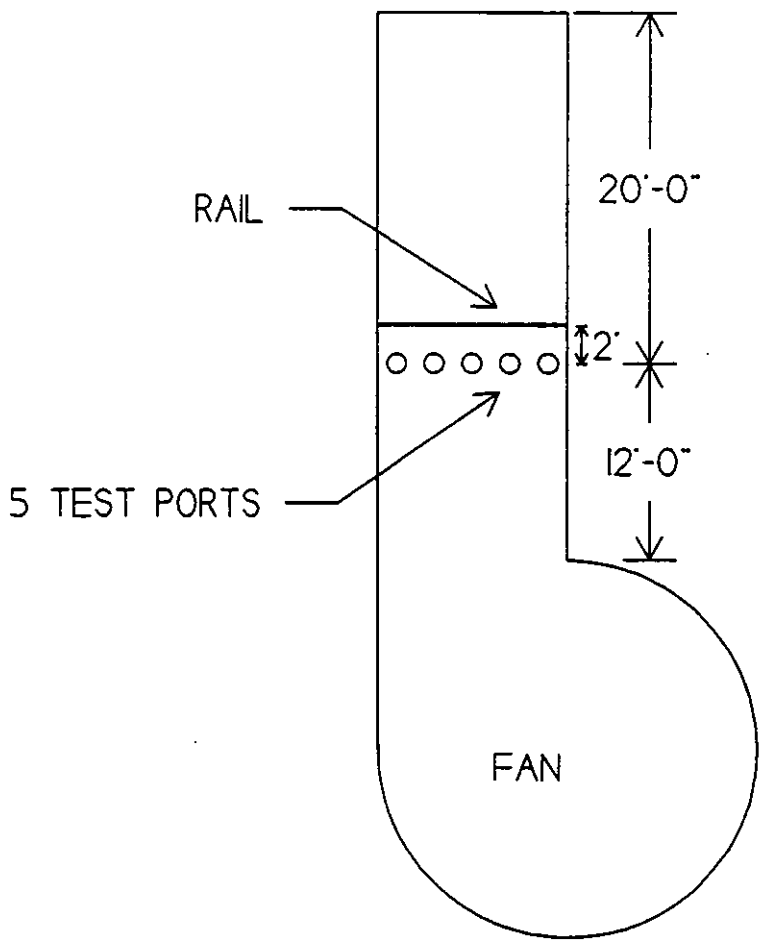
Daniel J. Despen
Manager
Stationary Source Testing Department

Report Number 4-3687
September 22, 1994
SB/sab

Interpoll Laboratories
(612) 786-6020

TOWER ASPHALT. INC.
LAKELAND. MN





NOT TO SCALE
6/94 BAS

Test No. 1
Asphalt Plant Stack

Results of Volumetric Flow Rate Determination-------Method 2

Date of Determination.....	08-24-94
Time of Determination.....(HRS)	820
Barometric pressure.....(IN.HG)	29.14
Pitot tube coefficient.....	.84
Number of sampling ports.....	5
Total number of points.....	25
Shape of duct.....	Rectangular
Duct width.....(IN)	43
Duct length.....(IN)	58
Duct area.....(SQ.FT)	17.32
Direction of flow.....	UP
Static pressure.....(IN.WC)	-.64
Avg. gas temp.....(DEG-F)	224
Moisture content.....(% V/V)	31.01
Avg. linear velocity.....(FT/SEC)	45.2
Gas density.....(LB/ACF)	.05056
Molecular weight.....(LB/LBMOLE)	29.50
Mass flow of gas.....(LB/HR)	142356
Volumetric flow rate.....	
actual.....(ACFM)	46930
dry standard.....(DSCFM)	24303

APPENDIX B

LOCATION OF TEST PORTS

TABLE OF CONTENTS

APPENDICES:

ABBREVIATIONS

ACFM	actual cubic feet per minute
cc (ml)	cubic centimeter (milliliter)
DSCFM	dry standard cubic foot of dry gas per minute
DSML	dry standard milliliter
DEG-F (°F)	degrees Fahrenheit
DIA.	diameter
FP	finished product for plant
FT/SEC	feet per second
g	gram
GPM	gallons per minute
GR/ACF	grains per actual cubic foot
GR/DSCF	grains per dry standard cubic foot
g/dscm	grams per dry standard cubic meter
HP	horsepower
HRS	hours
IN.	inches
IN.HG.	inches of mercury
IN.WC.	inches of water
LB	pound
LB/DSCF	pounds per dry standard cubic foot
LB/HR	pounds per hour
LB/10^6BTU	pounds per million British Thermal Units heat input
LB/MMBTU	pounds per million British Thermal Units heat input
LTPD	long tons per day
MW	megawatt
mg/Nm^3	milligrams per dry standard cubic meter
ug/Nm^3	micrograms per dry standard cubic meter
microns (um)	micrometer
MIN.	minutes
ng	nanograms
ohm-cm	ohm-centimeter
PM	particulate matter
PPH	pounds per hour
PPM	parts per million
ppmC	parts per million carbon
ppm,d	parts per million, dry
ppm,w	parts per million, wet
ppt	parts per trillion
PSI	pounds per square inch
SQ.FT.	square feet
TPD	tons per day
ug	micrograms
v/v	percent by volume
w/w	percent by weight
<	≤ (when following a number)

Standard conditions are defined as 68°F (20°C) and 29.92 IN. of mercury pressure.

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INTERPOLL LABORATORIES, INC.
(612) 786-6020

Certifications Required For Performance Test Reports

Note: All performance test reports must contain a certification by the responsible parties that the test results have been reported accurately, that the field data is a true representation of the sampling procedures, and that the process data is a true indicator of the operating parameters of the emissions unit at the time of the performance test. (Ref. Minn. Rules pt. 7017.2040). Performance test results will not be accepted without certification of the report.

1. **Certification of sampling procedures by the team leader of the personnel conducting the sampling procedures:**

"I certify under penalty of law that the sampling procedures were performed in accordance with the approved test plan and that the data presented in this test report are, to the best of my knowledge and belief, true, accurate, and complete. All exceptions are listed and explained below."

Signature: _____ Printed Name of Person Signing: E. TROWBRIDGE
Title: Field Eng Date: 8-24-94

2. **Certification of analytical procedures by the person responsible for the laboratory analysis of field samples:**

"I certify under penalty of law that the analytical procedures were performed in accordance with the requirements of the test methods and that the data presented for use in the test report were, to the best of my knowledge and belief, true, accurate, and complete. All exceptions are listed and explained below."

Signature: _____ Printed Name of Person Signing: David Schneider
Title: QA Officer Date: 9/1/94

3. **Certification of test report by the senior staff person at the testing company who is responsible for compiling and checking the test report:**

"I certify under penalty of law that this test report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the test information submitted. Based on my inquiry of the person or persons who performed sampling and analysis relating to the performance test, the information submitted in this test report is, to the best of my knowledge and belief, true, accurate, and complete. All exceptions are listed and explained below."

Signature: _____ Printed Name of Person Signing: Daniel J. Despo
Title: Mgr Stationary Source Date: 9/27/94

4. **Certification of test report by owner or operator of the emission facility:**

"I certify under penalty of law that the information submitted in this test report accurately reflects the operating conditions at the emission facility during this performance test and describes the date and nature of all operational and maintenance activities that were performed on process and control equipment during the month prior to the performance test. Based on my inquiry of the person or persons who performed the operational and maintenance activities, the information submitted in this test report is, to the best of my knowledge and belief, true, accurate, and complete. All exceptions are listed and explained below."

Signature: _____ Printed Name of Person Signing: Kenneth L. Hockett
Title: President Date: Sept 28, 1994

1-5-94-G:\STACK\WP\FORMS\S-480

1 INTRODUCTION

On August 24, 1994 Interpoll Laboratories personnel conducted a NSPS Particulate and Visible Emission Compliance Test on the Tower Asphalt, Inc. Stationary Asphalt Plant located in Lakeland, Minnesota. A Visibile Emission Compliance Test was also performed on the generator. On-site testing was performed by E. Trowbridge, K. Nuessmeier, and S. Bergeron. Coordination between testing activities and plant operation was provided by LLoyd O'Keefe of Tower Asphalt. The test was not witnessed by a member of the Minnesota Pollution Control Agency.

The plant tested is a Barber Greene Model BE 65 stationary batch plant. The rated capacity of this plant is 300 TONS/HR at an aggregate moisture content of 4%. Particulate emissions from the plant are controlled by a baghouse. During the test the plant was fired with waste oil and operated under normal conditions.

Evaluations were performed in accordance with EPA Methods 1-5 and 9, CFR Title 40, Part 60, Appendix A (revised July 1, 1993). A preliminary determination of the gas linear velocity profile was made before the first particulate determination to allow selection of the appropriate nozzle diameter required for isokinetic sample withdrawal. An Interpoll Labs sampling train which meets or exceeds specifications in the above-cited reference was used to extract particulate samples by means of a heated glass-lined probe. Wet catch samples were collected in the back half of the Method 5 sampling train and analyzed as per Minnesota Rules, Part 7011.0725.

An integrated flue gas sample was extracted simultaneously with each particulate sample using a specially designed gas sampling system. Integrated flue gas samples were collected in 44-liter Tedlar bags housed in a protective aluminum container. After sampling was complete, the bags were sealed and returned to the laboratory for Orsat analysis. Prior to sampling, the Tedlar bags are leak checked at 15 IN.HG. vacuum with an in-line rotameter. Bags with any detectable inleakage are discarded.

Testing was conducted from a horizontal row of five test ports on the rectangular stack. These ports are 2.9 equivalent duct diameters downstream of the damper (which was

fully open during the test) and 4.9 diameters upstream of the stack exit. A 25-point traverse was used to collect representative particulate samples. Each traverse point was sampled 2.5 minutes to give a total sampling time of 62.5 minutes per run. Visible emission determinations were performed by S. Bergeron, an EPA-certified observer.

The important results of the test are summarized in Section 2. Air emission results are presented in Section 3. Fuel analysis results are presented in Section 4. Field data and all other supporting information are presented in the appendices.

2 SUMMARY AND DISCUSSION

The results of the particulate emission compliance test are summarized in Tables 1a and 1b. The particulate concentration averaged 0.0055 GR/DSCF (Dry Catch Only) and 0.015 GR/DSCF (Dry + Organic Wet Catch). NSPS performance standard limit emissions from asphaltic concrete plants to 0.04 GR/DSCF (CFR Title 40 Part 60 Subpart I). Opacity was 0% for both the Asphalt Plant and the Generator.

No difficulties were encountered in the field or in the laboratory evaluation of the samples. On the basis of this fact and a complete review of the entire data and results, it is our opinion that the results reported herein are accurate and closely reflect the actual values which existed at the time the test was performed.

Table 1a. Summary of the Results of the August 24, 1994 Particulate Emission Compliance Test on the Stationary Asphalt Plant Stack at the Tower Asphalt, Inc. Plant Located in Lakeland, Minnesota.

ITEM	Run 1	Run 2	Run 3
Date of test	08-24-94	08-24-94	08-24-94
Time runs were done (HRS)	940/1100	1125/1234	1315/1427
Process rate (TON/HR)			
recycle	38.7	38.7	38.7
aggregate	219.4	219.4	219.4
asphalt	11.9	11.9	11.9
total	270.0	270.0	270.0
Volumetric flow			
actual (ACFM)	43029	44111	44619
standard (DSCFM)	21917	22211	22513
Gas temperature (DEG-F)	235	236	236
Moisture content (%V/V)	31.01	31.71	31.63
Gas composition (%V/V,dry)			
carbon dioxide	6.40	6.40	6.20
oxygen	12.00	11.90	12.00
nitrogen	81.60	81.70	81.80
Isokinetic variation (%)	104.6	98.9	98.7
Part. emission rate (LB/HR)	2.86	3.09	2.57
Particulate concentration			
actual (GR/ACF)	.00776	.00817	.00673
standard (GR/DSCF)	.0152	.0162	.0133

Note: Dry + Organic Wet Catch

* Federal regulations restrict particulate emissions from portable asphalt plants to .04 GR/DSCF, CFR Title 40, Part 60, Subpart I.

Table 1b. Summary of the Results of the August 24, 1994 Particulate Emission Compliance Test on the Stationary Asphalt Plant Stack at the Tower Asphalt, Inc. Plant Located in Lakeland, Minnesota.

ITEM	Run 1	Run 2	Run 3
Date of test	08-24-94	08-24-94	08-24-94
Time runs were done (HRS)	940/1100	1125/1234	1315/1427
Process rate (TON/HR)			
recycle	38.7	38.7	38.7
aggregate	219.4	219.4	219.4
asphalt	11.9	11.9	11.9
total	270.0	270.0	270.0
Volumetric flow			
actual (ACFM)	43029	44111	44619
standard (DSCFM)	21917	22211	22513
Gas temperature (DEG-F)	235	236	236
Moisture content (%V/V)	31.01	31.71	31.63
Gas composition (%V/V,dry)			
carbon dioxide	6.40	6.40	6.20
oxygen	12.00	11.90	12.00
nitrogen	81.60	81.70	81.80
Isokinetic variation (%)	104.6	98.9	98.7
Part. emission rate (LB/HR)	0.896	1.20	1.03
Particulate concentration			
actual (GR/ACF)	.00243	.00318	.00269
standard (GR/DSCF)	.00477	.00632	.00533

Note: Dry Catch Only

* Federal regulations restrict particulate emissions from portable asphalt plants to .04 GR/DSCF, CFR Title 40, Part 60, Subpart I.

3 AIR EMISSION RESULTS

The results of all air emission tests are presented in this section. Gas composition (Orsat and moisture) are presented first followed by the computer printout of the particulate and opacity tests. Preliminary measurements including test port locations are given in the appendices.

The results have been calculated on a personal computer using programs written in Extended BASIC specifically for source testing calculations. EPA-published equations have been used as the basis of the calculation techniques in these programs.

The particulate emission rate has been calculated using the product of the concentration times flow method.

3.1 Results of Orsat & Moisture Determinations

Test No. 1
Asphalt Plant Stack

Results of Orsat & Moisture Analyses-----Methods 3 & 4(%v/v)

	Run 1	Run 2	Run 3
Date of run	08-24-94	08-24-94	08-24-94
Dry basis (orsat)			
carbon dioxide.....	6.40	6.40	6.20
oxygen.....	12.00	11.90	12.00
nitrogen.....	81.60	81.70	81.80
Wet basis (orsat)			
carbon dioxide.....	4.42	4.37	4.24
oxygen.....	8.28	8.13	8.20
nitrogen.....	56.30	55.79	55.93
water vapor.....	31.01	31.71	31.63
Dry molecular weight.....	29.50	29.50	29.47
Wet molecular weight.....	25.94	25.85	25.84
Specific gravity.....	0.896	0.893	0.893
Water mass flow.....(LB/HR)	27627	28932	29211
FO	1.391	1.406	1.435

3.2 Results of Particulate Loading Determinations

Test No. 1
Asphalt Plant Stack

Results of Particulate Loading Determinations-------Method 5

	Run 1	Run 2	Run 3
Date of run	08-24-94	08-24-94	08-24-94
Time run start/end.....(HRS)	940/1100	1125/1234	1315/1427
Static pressure.....(IN.WC)	-0.64	-0.64	-0.64
Cross sectional area (SQ.FT)	17.32	17.32	17.32
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	393.0	394.0	385.0
desiccant.....(GRAMS)	20.0	15.0	27.0
total.....(GRAMS)	413.0	409.0	412.0
Total particulate material..			
.....collected(grams)	0.0428	0.0437	0.0363
Gas meter coefficient.....	0.9941	0.9941	0.9941
Barometric pressure..(IN.HG)	29.14	29.14	29.14
Avg. orif.pres.drop..(IN.WC)	1.74	1.63	1.71
Avg. gas meter temp..(DEF-F)	87.2	98.5	105.2
Volume through gas meter....			
at meter conditions...(CF)	46.20	45.20	46.25
standard conditions.(DSCF)	43.33	41.53	42.00
Total sampling time....(MIN)	62.50	62.50	62.50
Nozzle diameter.....(IN)	.310	.310	.310
Avg.stack gas temp ..(DEG-F)	235	236	236
Volumetric flow rate.....			
actual.....(ACFM)	43029	44111	44619
dry standard.....(DSCFM)	21917	22211	22513
Isokinetic variation.....(%)	104.6	98.9	98.7
Particulate concentration...			
actual.....(GR/ACF)	0.00776	0.00817	0.00673
dry standard.....(GR/DSCF)	0.01524	0.01624	0.01334
Particle mass rate...(LB/HR)	2.863	3.091	2.574

3.3 Results of Opacity Observations

Test No. 1
Asphalt Plant Stack

Results of Opacity Observations ---------- EPA Method 9

PERCENT OPACITY	OPTICAL DENSITY	RELATIVE FREQUENCY (%)
0	0.0000	100.00
5	0.0223	0.00
10	0.0458	0.00
15	0.0706	0.00
20	0.0969	0.00
25	0.1249	0.00
30	0.1549	0.00
35	0.1871	0.00
40	0.2219	0.00
45	0.2596	0.00
50	0.3010	0.00
55	0.3468	0.00
60	0.3979	0.00
65	0.4559	0.00
70	0.5229	0.00
75	0.6021	0.00
80	0.6690	0.00
85	0.8239	0.00
90	1.0000	0.00
95	1.3010	0.00
99	2.0000	0.00
Avg Opac 0.00	Avg OD 0.0000	Time average

Observer: Sheryl A. Bergeron
Cert. Date: 04-07-94
Date of Observation: 08-24-94
Time of Observation: 0940/1100

Test No. 1-1
Generator

Results of Opacity Observations ---------- EPA Method 9

PERCENT OPACITY	OPTICAL DENSITY	RELATIVE FREQUENCY (%)
0	0.0000	100.00
5	0.0223	0.00
10	0.0458	0.00
15	0.0706	0.00
20	0.0969	0.00
25	0.1249	0.00
30	0.1549	0.00
35	0.1871	0.00
40	0.2219	0.00
45	0.2596	0.00
50	0.3010	0.00
55	0.3468	0.00
60	0.3979	0.00
65	0.4559	0.00
70	0.5229	0.00
75	0.6021	0.00
80	0.6690	0.00
85	0.8239	0.00
90	1.0000	0.00
95	1.3010	0.00
99	2.0000	0.00
Avg Opac 0.00	Avg OD 0.0000	Time average

Observer: Sheryl A. Bergeron
Cert. Date: 04-07-94
Date of Observation: 08-24-94
Time of Observation: 0940/1100

Test No. 1-2
Generator

Results of Opacity Observations ---------- EPA Method 9

PERCENT OPACITY	OPTICAL DENSITY	RELATIVE FREQUENCY (%)
0	0.0000	100.00
5	0.0223	0.00
10	0.0458	0.00
15	0.0706	0.00
20	0.0969	0.00
25	0.1249	0.00
30	0.1549	0.00
35	0.1871	0.00
40	0.2219	0.00
45	0.2596	0.00
50	0.3010	0.00
55	0.3468	0.00
60	0.3979	0.00
65	0.4559	0.00
70	0.5229	0.00
75	0.6021	0.00
80	0.6690	0.00
85	0.8239	0.00
90	1.0000	0.00
95	1.3010	0.00
99	2.0000	0.00
Avg Opac 0.00	Avg OD 0.0000	Time average

Observer: Sheryl A. Bergeron
Cert. Date: 04-07-94
Date of Observation: 08-24-94
Time of Observation: 1125/1225

Test No. 1-3
Generator

Results of Opacity Observations ---------- EPA Method 9

PERCENT OPACITY	OPTICAL DENSITY	RELATIVE FREQUENCY (%)
0	0.0000	100.00
5	0.0223	0.00
10	0.0458	0.00
15	0.0706	0.00
20	0.0969	0.00
25	0.1249	0.00
30	0.1549	0.00
35	0.1871	0.00
40	0.2219	0.00
45	0.2596	0.00
50	0.3010	0.00
55	0.3468	0.00
60	0.3979	0.00
65	0.4559	0.00
70	0.5229	0.00
75	0.6021	0.00
80	0.6690	0.00
85	0.8239	0.00
90	1.0000	0.00
95	1.3010	0.00
99	2.0000	0.00

Avg Opac 0.00 Avg OD 0.0000 Time average

Observer: Sheryl A. Bergeron
Cert. Date: 04-07-94
Date of Observation: 08-24-94
Time of Observation: 1315/1415

4 FUEL AND AGGREGATE ANALYSIS RESULTS

INTERPOLL LABORATORIES, INC.
(612)786-6020

Tower Asphalt
Sample Log No. 3687-17

Results of Waste Oil Profile

Sample Description: Test 1, Runs 1 - 3
Sample Type: Waste Oil Composite

Parameter	Units	Method	As Received
Gross heating value	BTU/LB	ASTM D240	18786
Sulfur	%	ASTM D3177[1]	0.62
Ash	%	ASTM D482	0.96
Flashpoint	°F	ASTM D93	147
Specific gravity	60/60°F	ASTM D1298	0.8957
Acidity		ASTM D1093	7.0
Total chlorine	% w/w	EPA 300.0	0.073
Total fluorine	% w/w	EPA 300.0	0.018
Total bromine	% w/w	EPA 300.0	< 0.0003
Total lead	mg/Kg	EPA SW-846, 6010	65
Total PCB	mg/Kg	EPA SW-846, 8080	< 11

Respectfully submitted,

Gregg W. Holman,
Laboratory Director

GWH/cg

[1]Modified ASTM method.

INTERPOLL LABORATORIES, INC.
(612)786-6020

Tower Asphalt
Laboratory Log No. 3687

Results of Moisture Analysis

Sample Log No.	Test/Run	Sample Type	% Moisture
3687-08	Test 1 Run 1	Virgin Aggregate	4.52
3687-09	Test 1 Run 2	Virgin Aggregate	4.70
3687-10	Test 1 Run 3	Virgin Aggregate	4.24

Respectfully submitted,

Gregg W. Holman,
Laboratory Director

GWH/cg

INTERPOLL LABORATORIES, INC.
(612)786-6020

Tower Asphalt
Laboratory Log No. 3687

Results of Moisture Analysis

Sample Log No.	Test/Run	Sample Type	% Moisture
3687-11	Test 1 Run 1	Recycled Aggregate	6.70
3687-12	Test 1 Run 2	Recycled Aggregate	6.36
3687-13	Test 1 Run 3	Recycled Aggregate	6.55

Respectfully submitted,

Gregg W. Holman,
Laboratory Director

GWH/cg

APPENDIX A

PRELIMINARY VOLUMETRIC FLOW RATE DETERMINATION

APPENDIX C

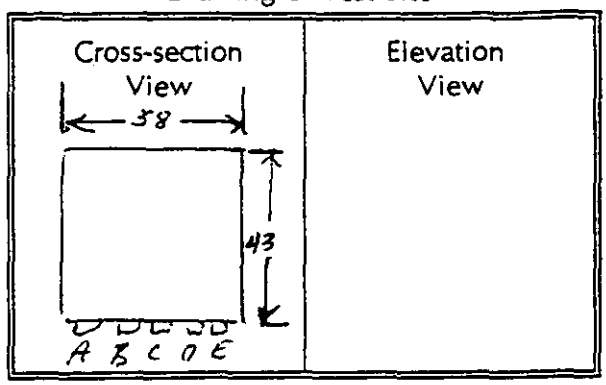
FIELD DATA SHEETS

INTERPOLL LABORATORIES, INC.
(612) 786-6020

EPA Method 2 Field Data Sheet

Job: TOMOR ASPHALT INC
Source: ASPHALT PLANT STACK
Test: 1 Run C Date 8-24-94
Stack Dimen.: 43 X 58 IN.
Dry Bulb: 224 °F Wet bulb: 154 °F
Manometer: ☒ Reg. ☐ Exp ☐ Elec.
Barometric Pressure: 29.14 IN.HG
Static Pressure: -.64 IN.WC
Operators: E. FLOWERS - K. NUSSMEIER
Pitot No.: 294 C_p .840

Drawing of Test Site



Traverse Point No.	Fraction of Diameter	Distance From Stack Wall (IN.)	Distance From End of Port (IN.)	Velocity	Temp. of Gas (°F)
		Port Length:	12 IN. +3 coupling	Time Start: 0820	HRS
A 1		4.30	9.30	.35	
2		12.90	17.90	.30	
3		21.50	26.50	.30	224
4		30.10	35.10	.28	
5		38.70	43.70	.32	
B 1				.44	
2				.35	
3				.28	225
4				.28	
5				.40	
C 1				.55	
2				.30	
3				.25	224
4				.43	
5				.58	
D 1				.48	
2				.35	
3				.35	224
4				.52	
5				.75	
E 1				.80	
2				.75	224
3				.60	
4				.65	
5				.40	
Temp. Meas. Device & S/N: PDT-34				Time End: 0835	HRS

R or nothing = reg. manometer; S = expanded; E = electronic

INTERPOLL LABORATORIES, INC.
(612) 786-6020

Interpoll Laboratories EPA Method 5/17 Sample Log Sheet

Job TUNER ASPHALT
Source ASPHALT PLANT STACK
Method 5 Filter holder: 4"IG GLASS

Date 8-24-94 Test 1 Run 1
No. of traverse points 25
Filter type: 4" GLASS FIBER

Sample Train Leak Check:
Pretest: ≤ 0.02 cfm at 15 IN.HG (vac) ☒
Post test: 0 cfm at _____ IN. HG (vac) ☒

Particulate Catch Data:
No. of filters used: 6363

Recovery solvent(s)
☒ acetone
☐ other(s)

No. of probe wash bottles: 1
Sample recovered by: ET

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1		100	
Impinger No. 2	593	100	393
Impinger No. 3		0	
Condenser			
Desiccant	1462	1442	20
Total			413

Integrated Gas Sampling Data:

Bag Pump No. 298
Box No. 18 Bag No. 1
Bag Material: 5-layer Aluminized Tedlar
Size: 44 L
Pretest leak check: 0
cc/min at 15 IN.HG
Time start: 0941
(HRS) Time end: 1059 (HRS)
Sampling rate: 400
cc/min Operator: ET

S/N of O_2 Analyzer used to monitor train outlet: 29A

052394-G:\STACK\WP\FORMS\S-0046RR

INTERPOLL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job: Tower Oxyhalt Plant — Operators: ET-KN — Pitot No. 29V-4 — Cp .84
Source: Oxyhalt Plant — Meter Box No. 16 ΔH@ 1.87 IN WC — Bar. Press: 29.14 in Hg — H2O ___ %
Date: 8-24-94 Test 1 Run 1 — Counter coeff. 1.0041 — Nozzle No. S-5 — Nozzle Dia .310 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (in WC)	Orifice Meter (in WC)	Dec. Vol. (cf)	VAC. (in Hg)	Temperatures (°F) Stack	Probe	Oven	Impg.	Gas/In	Gas/Out	Oxygen (%v/v)
	0940	785.30											
A 5	2.5	787.00	.33	1.53	7.04	3	235	234	242	36	76	73	11.6
4	5	789.66	.28	1.29	9.64	3	234				80	73	11.4
3	7.5	790.20	.25	1.15	0.15	3	234	238	244	36	84	73	11.8
2	10	791.75	.28	1.30	1.76	3	235				85	73	12.1
1	12.5	793.36	.28	1.30	3.37	3	233	239	244	38	88	74	14.0
B 5	15	795.25	.37	1.72	5.22	3	235				91	75	11.8
4	17.5	796.70	.22	1.03	6.65	3	235	242	246	38	91	75	12.8
3	20	798.20	.23	1.07	8.12	3	237				92	76	11.7
2	22.5	799.82	.32	1.49	9.85	3	237	245	250	42	95	76	11.7
1	25	801.72	.36	1.68	1.69	3.5	237				96	77	12.4
C 5	27.5	803.55	.38	1.78	3.58	3.5	237	247	249	42	96	78	12.6
4	30	805.25	.28	1.31	5.21	5	237				98	78	11.8
3	32.5	806.85	.28	1.31	6.84	3	237	246	248	44	99	79	11.6
2	35	808.76	.40	1.88	8.80	4	236				100	80	12.2
1	37.5	811.10	.51	2.69	1.13	5	236	244	245	46	102	80	11.7
D 5	40	813.01	.35	1.65	2.96	4	236				97	82	11.6
4	42.5	814.71	.30	1.42	4.66	5	234	246	251	47	98	83	11.9
3	45	816.33	.28	1.33	6.30	3	234				98	83	11.6
2	47.5	818.02	.30	1.42	8.00	3	234	247	249	50	100	83	11.7
1	50	819.94	.40	1.90	9.96	4	234				101	84	11.9
E 5	52.5	822.10	.41	2.25	2.09	5	236	248	245	50	101	84	11.7
4	55	824.25	.48	2.27	4.24	5	236				101	85	11.5
3	57.5	826.43	.50	2.37	6.44	5.5	236	247	245	50	103	86	11.7
2	60	828.80	.60	2.85	8.85	7	236				105	86	12.0
1	62.5	831.50	.74	3.51	1.52	7	235	242	244	50	103	86	12.2
	θ = 62.5	Vs = 46.20		ΔH = 1.74							Avg. = 87.2		

(1100)

C-3

S-00378

INTERPOLL LABORATORIES, INC.
(612) 786-6020

Interpoll Laboratories EPA Method 5/17 Sample Log Sheet

Job TROOP ASPHALT — Date 8-24-94 Test 1 Run 2
Source ASPHALT PLANT STACK — No. of traverse points 25
Method √ Filter holder: 4" GLASS — Filter type: 4" GLASS FIBER

Sample Train Leak Check:
Pretest: ≤ 0.02 cfm at 15 IN.HG (vac) ☒
Post test: 0 cfm at 8 IN. HG (vac) ☒

Particulate Catch Data:
No. of filters used: 6364

Recovery solvent(s)
☒ acetone
☐ other(s)

No. of probe wash bottles: 1
Sample recovered by: ET

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1		100	
Impinger No. 2	√94	100	394
Impinger No. 3		0	
Condenser			
Desiccant	1470	1455	15
Total			409

Integrated Gas Sampling Data:

Bag Pump No. 295 — Box No. 18 Bag No. 2
Bag Material: 5-layer Aluminized Tedlar — Size: 44 L
Pretest leak check: 0 — cc/min at 15 IN.HG
Time start: 1126 (HRS) — Time end: 1235 (HRS)
Sampling rate: 400 cc/min — Operator: ET

S/N of O_2 Analyzer used to monitor train outlet: 294

052394-G:\STACK\WP\FORMS\S-0046RR

INTERPULL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job: TOWER ASPHALT
Source: ASPHALT PLANT STACK
Date: 8-24-94 Test: 1 Run: 2

Operators: ET-KN
Meter Box No.: 16 Y: 1.187 ΔH@: 1.82 in H2O
Console coeff.: .9941

Pitot No.: 24V-4 Cp: .840
Bar. Press.: 29.74 in Hg H2O: X
Nozzle No.: 8-5 Nozzle Dia: .310 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (in H2O)	Orifice Meter (in H2O)	Dry Gas Vol. (cf)	VAC. in Hg	Temperatures (°F) Stack	Probe	Oven	Impg.	Gas In	Gas Out	Oxygen (%v/v)
	1125	834.00											
E 5	2.5	836.03	.48	1.99	6.01	4.5	237	238	242	41	91	87	11.7
4	5	838.05	.50	2.06	8.05	4.5	238				95	88	11.8
3	7.5	840.22	.58	2.40	2.26	5	238	243	247	41	98	88	11.9
2	10	842.68	.72	2.99	2.72	7	238				100	88	11.8
1	12.5	845.10	.69	2.87	5.14	7	238	244	245	42	101	88	11.7
D 5	15	847.08	.45	1.88	7.10	5	237				101	88	12.1
4	17.5	848.72	.30	1.25	8.70	3	238	246	242	42	104	89	11.9
3	20	850.40	.35	1.47	0.44	4	234				105	89	11.8
2	22.5	852.50	.50	2.10	2.52	5	234	245	247	46	106	89	11.8
1	25	854.60	.52	2.18	4.63	5	238				108	91	11.5
C 5	27.5	856.48	.40	1.68	6.50	4	238	246	250	40	108	91	11.6
4	30	858.07	.28	1.16	8.06	3.5	238				108	90	11.5
3	32.5	859.56	.27	1.13	9.59	3.5	238	244	251	40	108	90	11.6
2	35	861.40	.40	1.69	1.45	4.5	235				109	90	11.7
1	37.5	863.40	.44	1.85	3.41	5	237	247	251	41	110	91	11.7
B 5	40	865.07	.32	1.35	5.08	4	237				110	91	11.7
4	42.5	866.55	.24	1.02	6.53	3	234	244	250	42	109	91	11.9
3	45	868.14	.28	1.18	8.10	3	235				110	93	11.8
2	47.5	869.94	.39	1.65	9.95	4	235	242	248	42	111	94	11.7
1	50	871.60	.30	1.28	1.58	4	234				111	94	11.9
A 5	52.5	873.25	.30	1.27	3.21	4	235	244	247	40	110	94	12.2
4	55	874.80	.28	1.19	4.78	4	235				111	94	12.3
3	57.5	876.30	.25	1.06	6.26	4	236	242	244	40	111	94	12.1
2	60	877.70	.20	.93	7.66	3	235				112	94	12.0
1	62.5	879.20	.25	1.06	9.15	3	235	240	244	40	112	94	11.8
	Θ = 62.5	V_m = 45.20		$\bar{Y}$ = 1.03							Avg. = 98.5		

(1.234)

C-5

INTERPOLL LABORATORIES, INC.
(612) 786-6020

Interpoll Laboratories EPA Method 5/17 Sample Log Sheet

Job TOWER ASPHALT
Source ASPHALT PLANT STACK
Method 5 Filter holder: 4"GLASS

Date 8-24-94 Test 1 Run 3
No. of traverse points 25
Filter type: 4" GLASS FIBER

Sample Train Leak Check:
Pretest: ≤ 0.02 cfm at 15 IN.HG (vac) ☒
Post test: 0 cfm at 0 IN. HG (vac) ☒

Particulate Catch Data:
No. of filters used:

6365

Recovery solvent(s)

☒ acetone
☐ other(s)

No. of probe wash bottles: 1
Sample recovered by: ET

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1		100	
Impinger No. 2	√ 885	100	385
Impinger No. 3		0	
Condenser			
Desiccant	1537	1510	27
Total			412

Integrated Gas Sampling Data:

Bag Pump No. 29B
Bag Material: 5-layer Aluminized Tedlar
Pretest leak check: 0
Time start: 1316
Sampling rate: 400 cc/min

Box No. 18 Bag No. 3
Size: 44 L
15 cc/min at IN.HG
(HRS) Time end: 1426 (HRS)
Operator: ET

S/N of O_2 Analyzer used to monitor train outlet: 294

052394-G:\STACK\WP\FORMS\S-0046RR

INTERPULL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job: TONIK ASPHALT — Operator: ET-KN — Pitot No.: 29/-4 — Cp: .840
Source: ASPHALT PLANT STACK — Meter Box No.: 16 ΔH: 1.87 THETA: — Bar. Press.: 29.14 in Hg — H2O: Y
Date: 8-30-94 — Test: 1 — Run: 3 — Calculated coeff.: .9941 — Nozzle No.: 8-5 — Nozzle Dia.: .370 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (in H2O)	Orifice Meter (in H2O)	Dry Vol. (cf)	VAC. in Hg	Temperatures (°F) Stack	Probe	Oven	Impg.	Gas/In	Gas/Out	Oxygen (%v/v)
	1315	879.50											
A 5	7.5	881.15	.30	1.27	1.11	3.0	234	248	245	50	99	97	11.9
4	5	882.54	.22	.93	2.50	3.0	234				101	97	11.7
3	7.5	883.92	.22	.93	3.88	3.0	234	251	246	50	103	97	11.9
2	10	885.40	.24	1.01	5.34	3.0	235				105	97	11.7
1	12.5	886.80	.24	1.02	6.79	3.0	235	250	249	50	107	97	11.8
B 5	15	888.63	.40	1.70	8.66	4	235				107	97	11.7
4	17.5	890.25	.28	1.19	0.23	5	236	247	251	49	110	97	12.1
3	20	891.65	.22	.93	1.63	3	236				110	97	12.0
2	22.5	893.42	.37	1.57	3.44	4	236	245	249	49	111	97	11.8
1	25	895.38	.44	1.87	5.41	4.2	235				112	97	12.1
C 5	27.5	897.18	.36	1.53	7.20	4	235	250	252	51	112	97	11.9
4	30	898.75	.28	1.19	8.78	5	236				113	97	11.7
3	32.5	900.28	.25	1.06	0.27	5	238	253	250	52	113	97	11.8
2	35	902.01	.35	1.49	2.03	4	238				114	98	11.8
1	37.5	904.14	.52	2.21	4.18	5	238	250	248	53	116	99	11.8
D 5	40	905.92	.35	1.50	5.95	4	237				116	99	11.8
4	42.5	907.64	.32	1.37	7.64	4	237	252	246	54	116	99	11.7
3	45	909.30	.30	1.28	9.28	5	236				116	100	11.7
2	47.5	911.50	.47	2.01	1.33	5	236	250	247	55	116	100	11.7
1	50	913.60	.48	2.57	3.65	7	236				116	99	11.8
E 5	52.5	916.01	.65	2.78	6.05	8	236	248	245	55	116	100	12.2
4	55	918.28	.57	2.44	8.31	7	235				116	100	12.2
3	57.5	920.70	.67	2.87	0.76	8	235	245	246	55	118	102	12.1
2	60	923.30	.74	3.18	3.34	9	235				118	102	11.7
1	62.5	925.75	.68	2.92	5.81		235	242	244	55	119	102	11.7
	θ = 62.5	Vm = 46.25		ΔH = 1.71							Avg. = 105.2		

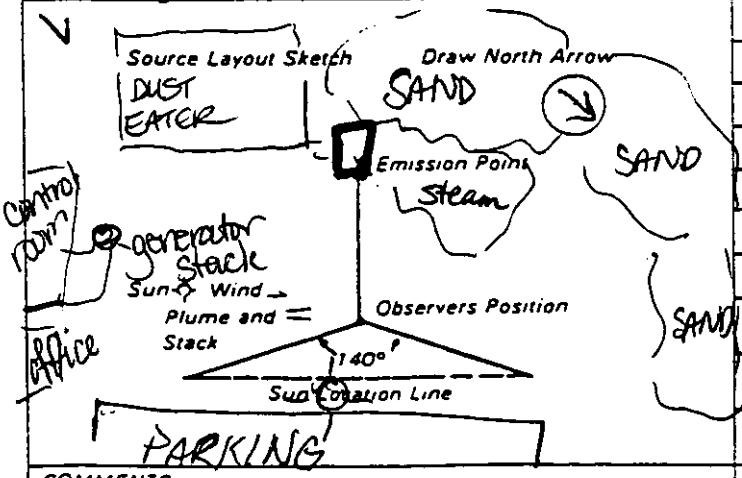
(1.27)

Interpoll Laboratories
(612)786-6020

Visible Emissions Form

1

SOURCE NAME: TOWER ASPHALT	OBSERVATION DATE: 8-24-94	START TIME: 0940
ADDRESS: BOX 15001		STOP TIME: 1100
CITY: LAKELAND	STATE: MN	ZIP: 55043
PHONE: (612)436-8444	SOURCE ID NUMBER: BARBER GREEN 7000 LB	
PROCESS EQUIPMENT: ASPHALT PLANT STACK	OPERATING MODE: 280 TPH	
CONTROL EQUIPMENT: BAGHOUSE	OPERATING MODE: —	
DESCRIBE EMISSION POINT: START WEST-most lt. gray rectangular stack	STOP same	
HEIGHT ABOVE GROUND LEVEL: START ~40' STOP SAME	HEIGHT RELATIVE TO OBSERVER: START ~36' STOP SAME	
DISTANCE FROM OBSERVER: START ~98' STOP	DIRECTION FROM OBSERVER: START W STOP SAME	
DESCRIBE EMISSIONS: START only steam	STOP SAME	
EMISSION COLOR: START N/A STOP N/A	PLUME TYPE: CONTINUOUS ☒ FUGITIVE ☐ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☐ YES ☒	IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☒	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED: START ~150' downwind	STOP SAME	
DESCRIBE BACKGROUND: START SKY	STOP SAME	
BACKGROUND COLOR: START blue STOP SAME	SKY CONDITIONS: START clear STOP clear	
WIND SPEED: START 1-3 mph STOP SAME	WIND DIRECTION: START SE STOP SAME	
AMBIENT TEMP: START 78 STOP 83	WET BULB TEMP: 60	RH percent: 35%



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5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0
30	0	0	0	0	60	0	0	0	0

AVERAGE OPACITY FOR HIGHEST PERIOD: 0	NUMBER OF READINGS ABOVE 0 % WERE 0
RANGE OF OPACITY READINGS: MINIMUM 0	MAXIMUM 0
OBSERVER'S NAME (PRINT): SHERYL A. BERGERON	
COMMENTS: Down time due to monorail problems - hooked up new one.	OBSERVER'S SIGNATURE: Sheryl A. Bergeron — DATE: 8-24-94
	ORGANIZATION: INTERPOLL LABS INC.
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE	CERTIFIED BY: ETA — DATE: 4-7-94
TITLE — DATE	VERIFIED BY — DATE

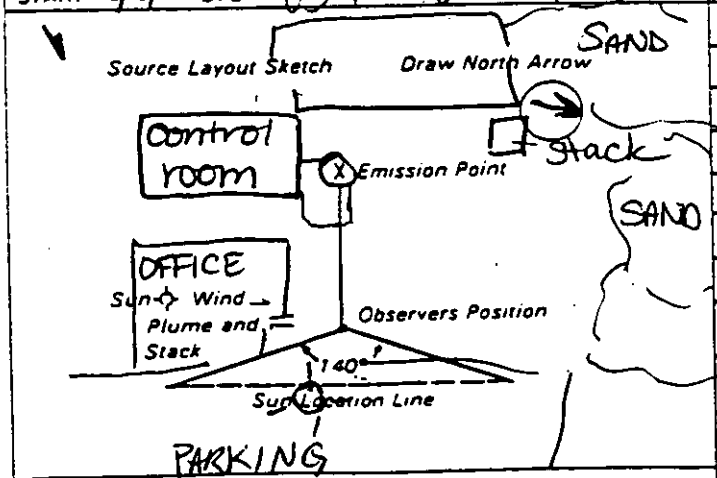
S-0079R

Interpoll Laboratories
(612)786-6020

Visible Emissions Form

1-1

SOURCE NAME: TOWER ASPHALT	OBSERVATION DATE: 8-24-94	START TIME: 0940
ADDRESS: BOX 1500 1		STOP TIME: 1100
CITY: LAKELAND	STATE: MN	ZIP: 55043
PHONE: (612) 436-8944	SOURCE ID NUMBER:	
PROCESS EQUIPMENT: GENERATOR	OPERATING MODE: 450 AMPS	
CONTROL EQUIPMENT: NONE	OPERATING MODE: NA	
DESCRIBE EMISSION POINT: START Smallest Black stack STOP SAME		
HEIGHT ABOVE GROUND LEVEL: START ~16-17' STOP SAME	HEIGHT RELATIVE TO OBSERVER: START 14' STOP SAME	
DISTANCE FROM OBSERVER: START 120' STOP SAME	DIRECTION FROM OBSERVER: START W STOP SAME	
DESCRIBE EMISSIONS: START NO VISIBLE EMISSIONS STOP SAME		
EMISSION COLOR: START none STOP	PLUME TYPE: CONTINUOUS ☒ FUGITIVE ☐ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☒ YES ☐	IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐ NA	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED: START 6-12 in above stack STOP SAME		
DESCRIBE BACKGROUND: START sky + part of bldg STOP SAME		
BACKGROUND COLOR: START blue + white STOP	SKY CONDITIONS: START [redacted] STOP Sunny	
WIND SPEED: START 1-3mph STOP SAME	WIND DIRECTION: START SE STOP SAME	
AMBIENT TEMP: START 77 STOP 83	WET BULB TEMP: 60	RH percent: 35%



SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
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2	0	0	0	0	32	0	0	0	0
3	0	0	0	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0
30	0	0	0	0	60	0	0	0	0

AVERAGE OPACITY FOR HIGHEST PERIOD: 0	NUMBER OF READINGS ABOVE: 0 % WERE 0
RANGE OF OPACITY READINGS: MINIMUM 0	MAXIMUM 0
OBSERVER'S NAME (PRINT): SHERYL A. BERGERON	
OBSERVER'S SIGNATURE: Sheryl A. Bergeron	DATE: 8-24-94
ORGANIZATION: INTERPOLL LABS, INC.	
CERTIFIED BY: ETA	DATE: 4-7-94
VERIFIED BY:	DATE:

COMMENTS: Down time due to problems with the monorail - hooked up new one

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE: | TITLE: | DATE:

S-0075

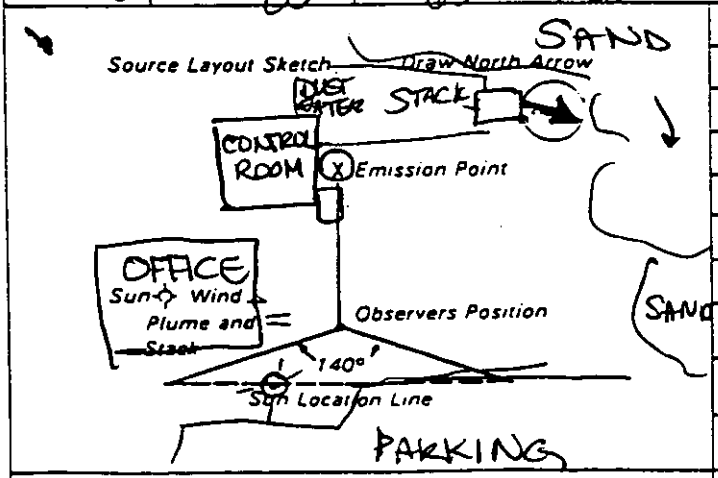
Interpoll Laboratories
(612)786-6020

Visible Emissions Form

1-2

SOURCE NAME: TOWER ASPHALT	OBSERVATION DATE: 8-24-94	START TIME: 1125
ADDRESS: Box 15001 HUDSON BOULEVARD		STOP TIME: 1225
CITY: LAKELAND	STATE: MN	ZIP: 55043
PHONE: (612) 436-8444	SOURCE ID NUMBER:	
PROCESS EQUIPMENT: GENERATOR	OPERATING MODE: ~500 AMPS	
CONTROL EQUIPMENT: NONE	OPERATING MODE: NA	
DESCRIBE EMISSION POINT: START SMALL BLACK RND STACK STOP SAME		
HEIGHT ABOVE GROUND LEVEL: START ~16-17' STOP SAME	HEIGHT RELATIVE TO OBSERVER: START ~14' STOP SAME	
DISTANCE FROM OBSERVER: START ~50' STOP	DIRECTION FROM OBSERVER: START W STOP SAME	
DESCRIBE EMISSIONS: START NONE STOP SAME		
EMISSION COLOR: START N/A STOP SAME	PLUME TYPE: CONTINUOUS ☒ FUGITIVE ☐ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☒ YES ☐	IF WATER DROPLET PLUME: NA ATTACHED ☐ DETACHED ☐	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED: START 6-12" above stack STOP SAME		
DESCRIBE BACKGROUND: START SKY STOP SAME		
BACKGROUND COLOR: START BLUE STOP SAME	SKY CONDITIONS: START CLEAR STOP SAME	
WIND SPEED: START 3-5mph STOP SAME	WIND DIRECTION: START SE STOP SAME	
AMBIENT TEMP: START 84 STOP 85	WET BULB TEMP: 65	RH, percent: 35%

SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	0	0	0	0	31	0	0	0	0
2	0	0	0	0	32	0	0	0	0
3	0	0	0	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0
30	0	0	0	0	60	0	0	0	0



AVERAGE OPACITY FOR HIGHEST PERIOD: 0	NUMBER OF READINGS ABOVE: 0 % WERE 0
RANGE OF OPACITY READINGS: 0 MINIMUM	0 MAXIMUM
OBSERVER'S NAME (PRINT): SHERYL A. BERGERON	
OBSERVER'S SIGNATURE: Sheryl A. Bergeron	DATE: 8-24-94
ORGANIZATION: INTERPOLL LABS, INC.	
CERTIFIED BY: ETA	DATE: 4-7-94
VERIFIED BY	DATE

COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE
TITLE
DATE

S-0079R

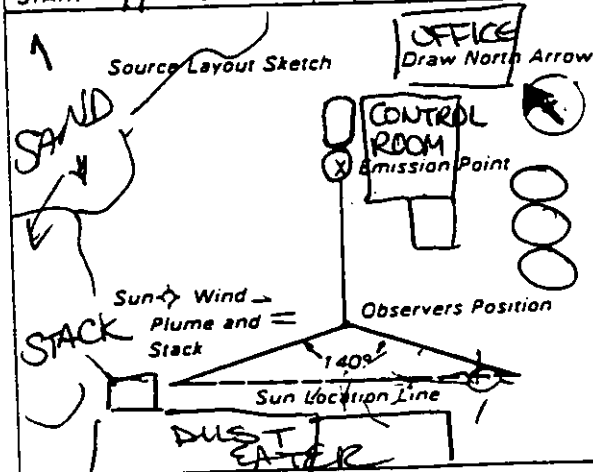
Interpoll Laboratories
(612)786-6020

1-3

Visible Emissions Form

SOURCE NAME	TOWER ASPHALT
ADDRESS	BOX 15001 HUDSON BOULEVARD
CITY	LAKELAND
STATE	MN
ZIP	55043
PHONE	(612) 436-8444
SOURCE ID NUMBER	
PROCESS EQUIPMENT	GENERATOR
OPERATING MODE	—
CONTROL EQUIPMENT	NONE
OPERATING MODE	N/A
DESCRIBE EMISSION POINT START	SMALL BLACK RND STACK
DESCRIBE EMISSION POINT STOP	SAME
HEIGHT ABOVE GROUND LEVEL START	~16-17'
HEIGHT ABOVE GROUND LEVEL STOP	SAME
HEIGHT RELATIVE TO OBSERVER START	~13'
HEIGHT RELATIVE TO OBSERVER STOP	SAME
DISTANCE FROM OBSERVER START	20'
DISTANCE FROM OBSERVER STOP	•
DIRECTION FROM OBSERVER START	E
DIRECTION FROM OBSERVER STOP	SAME
DESCRIBE EMISSIONS START	NONE
DESCRIBE EMISSIONS STOP	SAME
EMISSION COLOR START	NONE
EMISSION COLOR STOP	SAME
PLUME TYPE: CONTINUOUS	X
FUGITIVE	☐
INTERMITTENT	☐
WATER DROPLETS PRESENT: NO	X
WATER DROPLETS PRESENT: YES	☐
IF WATER DROPLET PLUME: ATTACHED	☐
IF WATER DROPLET PLUME: DETACHED	☐
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START	~6-12" above stack
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED STOP	SAME
DESCRIBE BACKGROUND START	SKY
DESCRIBE BACKGROUND STOP	SAME
BACKGROUND COLOR START	blue
BACKGROUND COLOR STOP	SAME
SKY CONDITIONS START	CLEAR
SKY CONDITIONS STOP	SAME
WIND SPEED START	35 mph
WIND SPEED STOP	SAME
WIND DIRECTION START	SE
WIND DIRECTION STOP	SAME
AMBIENT TEMP. START	91
AMBIENT TEMP. STOP	94
WET BULB TEMP	72
RH percent	35%

Source Layout Sketch



OBSERVATION DATE	START TIME	STOP TIME
8-24-94	1315	1415

SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	0	0	0	0	31	0	0	0	0
2	0	0	0	0	32	0	0	0	0
3	0	0	0	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0
30	0	0	0	0	60	0	0	0	0

AVERAGE OPACITY FOR HIGHEST PERIOD	NUMBER OF READINGS ABOVE 0 % WERE
RANGE OF OPACITY READINGS MINIMUM	MAXIMUM
OBSERVER'S NAME (PRINT)	SHERYL A. BERGERON
OBSERVER'S SIGNATURE	Sheryl A. Bergeron
DATE	8-24-94
ORGANIZATION	INTERPOLL LABS INC
CERTIFIED BY	ETA
DATE	4-7-94
VERIFIED BY	
DATE	
COMMENTS	
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE	
TITLE	DATE

S-0079R

VISIBLE EMISSIONS EVALUATOR

This is to certify that

Sheryl Bergeron

met the specifications of Federal Reference Method 9 and qualified as a visible emissions evaluator. Maximum deviation on white and black smoke did not exceed 7.5% opacity and no single error exceeding 15% opacity was incurred during the certification test conducted by Eastern Technical Associates of Raleigh, North Carolina. This certificate is valid for six months from date of issue.

Thomas Lore
President

243005
Certificate Number

Vice President

Minneapolis
Location

David B. Savage, Jr.
Program Manager

April 7, 1994
Date of Issue

APPENDIX D

INTERPOLL LABORATORIES ANALYTICAL DATA

Interpoll Laboratories
(612) 786-6020

EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job: Tower Asphalt
Team Leader: ET
Date Submitted: 8/25/94
Test No.: 1
Date of Analysis: 8/24/94

Source: Asphalt Plant
Test Site: Stack
Date of Test: 8/24/94
No. of Runs Completed: 3
Technician: [illegible signature]

Test/Run	Sample Log Number and Type	No. of An.	Buret Readings (ml) Zero Pt.	After CO_2	After O_2	Conc. CO_2 %v/v Dry	Conc. O_2 %v/v Dry	F_o
1/1	3687-05	1	0.00	6.40	18.40	6.40	12.00	
		2	0.00	6.40	18.40	6.40	12.00	
	☑ B ☐ F	Avg				6.40	12.00	
1/2	-06	1	0.00	6.40	18.30	6.40	11.90	
		2	0.00	6.40	18.30	6.40	11.90	
	☑ B ☐ F	Avg				6.40	11.90	
1/3	-07	1	0.00	6.20	18.20	6.20	12.00	
		2	0.00	6.20	18.20	6.20	12.00	
	☑ B ☐ F	Avg				6.20	12.00	
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						

☑ Ambient Air QA Check
☐ Orsat Analyzer System Leak Check
☐ F_o Within EPA M-3 Guidelines for fuel type.

Where $F_o = \frac{20.9 - O_2}{CO_2}$

EPA Method 3 Guidelines

Fuel Type	F0 Range
Coal:	
Anthracite/Lignite	1.016-1.130
Bituminous	1.083-1.230
Oil:	
Distillate	1.260-1.413
Residual	1.210-1.370
Gas:	
Natural	1.600-1.836
Propane	1.434-1.586
Butane	1.405-1.553
Wood/Wood Bark	1.000-1.130

F=Flask (250 cc all glass)
B=Tedlar Bag (5-layer)

Interpoll Laboratories
(612) 786-6020

EPA Method 5 Data Reporting Sheet
Impinger Catch/Minnesota Protocol

Job Tower Asphalt — Source Asphalt plant
Team Leader ET — Test Site Stack
Date Submitted 8-25-94 — Date of Test 8-24-94
Test No. 1 — No. of Runs Completed 3
Date of Analysis 8-29-94 — Technician J. Lowe

0	Test ____ Run 0 Field Blank Log Number 3687 - 01 I Comments	Dish No. 45 Dish Tare Wt. 48.1511 g Dish+Sample Wt. 48.1512 g Sample Wt. .0001 g
1	Test ____ Run ____ Log Number - 02 I Comments	Dish No. 56 Dish Tare Wt. 47.7555 g Dish+Sample Wt. 47.7850 g Sample Wt. .0295 g
2	Test ____ Run ____ Log Number - 03 I Comments	Dish No. 98 Dish Tare Wt. 47.2115 g Dish+Sample Wt. 47.2383 g Sample Wt. .0268 g
3	Test ____ Run ____ Log Number - 04 I Comments	Dish No. 100 Dish Tare Wt. 45.9700 g Dish+Sample Wt. 45.9919 g Sample Wt. .0219 g
4	Test ____ Run ____ Log Number Comments	Dish No. Dish Tare Wt. g Dish+Sample Wt. g Sample Wt. g
5	Test ____ Run ____ Log Number Comments	Dish No. Dish Tare Wt. g Dish+Sample Wt. g Sample Wt. g

Blank Solvent Wt. .0000 g

Results:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
.0001	.0294	.0267	.0218	D-2	

LSC-03.GR

Interpoll Laboratories
(612) 786-6020

EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job Tower Asphalt
Team Leader EI
Date Submitted 8/25/94
Test No. 1
Date of Analysis 8/25/94
Transport Leakage [X] None [ ] ____ ml

Source Asphalt Plant
Test Site Static
Date of Test 8/24/94
No. of Runs Completed 3
Technician V. Tollefson
Solvent Acetone

0
Test 1 Run 0
Field Blank
Log Number 3687-01P
Vol. of Solvent 130 ml
*Solvent Residue ____ ug/ml

Dish No. 35
Dish Tare Wt. 51.0909 g
Dish+Sample Wt. 51.0957 g
Sample Wt. .0048 g

1
Test 1 Run 1
Vol. of Solvent 90 ml
Log Number ____
Comments ____

Dish No. 40
Dish Tare Wt. 47.6418 g
Dish+Sample Wt. 47.6519 g
Sample Wt. .0101 g

2
Test 1 Run 2
Vol. of Solvent 70 ml
Log Number ____
Comments ____

Dish No. 50
Dish Tare Wt. 45.4662 g
Dish+Sample Wt. 45.4792 g
Sample Wt. .0130 g

3
Test 1 Run 3
Vol. of Solvent 100 ml
Log Number ____
Comments ____

Dish No. 69
Dish Tare Wt. 47.9897 g
Dish+Sample Wt. 48.0025 g
Sample Wt. .0128 g

4
Test ____ Run ____
Vol. of Solvent ____ ml
Log Number ____
Comments ____

Dish No. ____
Dish Tare Wt. ____ g
Dish+Sample Wt. ____ g
Sample Wt. ____ g

5
Test ____ Run ____
Vol. of Solvent ____ ml
Log Number ____
Comments ____

Dish No. ____
Dish Tare Wt. ____ g
Dish+Sample Wt. ____ g
Sample Wt. ____ g

*Solvent Residue ___ ug/ml = [(Sample Wt. ____ g)(10^6)]/Vol. of Sol. ____ ml
EPA-MS Acetone Residue Blank Spec. (7.8 ug/ml

Results:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.0068	0.0104	0.0091	D-3	

LSC-01YR

Interpoll Laboratories
(612) 786-6020

EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

Job: Tower Asphalt
Team Leader: ET
Date Submitted: 8/25/94
Test No.: 1
Date of Analysis: 8/25/94

Source: Asphalt Plant
Test Site: Stack
Date of Test: 8/24/94
No. of Runs Completed: 3
Technician: K Tollefson

0	Test 1 Run 0 Field Blank Log Number 3687-01F Comments	Filter No. 6925 Filter Type 4" GF Filter Tare Wt. .9515 g Filter+Sample Wt. .9519 g Sample Wt. .0004 g
1	Test 1 Run 1 Log Number -02F Comments	Filter No. 6363 Filter Type 4" GF Filter Tare Wt. .9431 g Filter+Sample Wt. .9497 g Sample Wt. .0066 g
2	Test 1 Run 2 Log Number -03F Comments	Filter No. 6364 Filter Type 4" GF Filter Tare Wt. .9544 g Filter+Sample Wt. .9610 g Sample Wt. .0066 g
3	Test 1 Run 3 Log Number -04F Comments	Filter No. 6365 Filter Type 4" GF Filter Tare Wt. .9446 g Filter+Sample Wt. .9500 g Sample Wt. .0054 g
4	Test Run Log Number Comments	Filter No. Filter Type Filter Tare Wt. g Filter+Sample Wt. g Sample Wt. g
5	Test Run Log Number Comments	Filter No. Filter Type Filter Tare Wt. g Filter+Sample Wt. g Sample Wt. g

Results:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.0066	0.0066	0.0054		

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5

LSC-02PR

INTERPOLL LABORATORIES, INC.
(612) 786-6020

Sample Chain of Custody

Job Source Site Log No. 3687
Field Engineer Date of Test 8-24-94 Test No. 1 No. of Runs 3

No. Items	Sample Type		Analysis		Sequence No.	Comments
4	Probe Wash: ☒ Acetone ☐ MeCl,	☐DI Water ☐_____	☒EPA M-5 ☐EPA M-29	☐EPA M-201A ☐_____		
4	Filter: ☒ 4" Glass ☐ SS Thimble	☐Pallflex ☐2.5" Glass	☒EPA M-5 ☐EPA M-29 ☐EPA M-201A	☐EPA M-17		
7	Impingers: ☒DI Water ☐3%H_2O_2 ☐1N NaOH ☐2,4-DNPH	☐H_2SO_4 ☐HNO_3/H_2O_2 ☐$KMnO_4/H_2SO_4$ ☐_____	☒MN Protocol ☐WI Protocol ☐EPA M-202 ☐EPA M6,8 ☐Acid Gases	☐IA Protocol ☐Formaldehyde ☐EPA M-29 ☐EPA M-26 ☐_____		
3	Integrated Gas: ☒Tedlar Bag	☐_____	☒EPA M-3 ☐_____	☐EPA M-10		
	Oxides of Nitrogen:		☐EPA M-7A ☐_____			
1	Fuel Lab: ☒Fuel Sample	☒Recycle ☐Aggregate	☐Per S-0163			
	Particle Sizing:		☐X-Ray Sdgraph ☐_____	☐Cascade Imp		
	Miscellaneous:	☐_____	☐_____			

Fuel Type: Coal: ☐Bituminous ☐Anthracite ☐Lignite Wood: ☐Wood Waste ☐Dust ☐Bark Oil: ☒Waste Oil ☐No. 2 ☐No. 6 Misc: ☐Natural Gas ☐RDF ☐_____

Relinquished by/Affiliation	Accepted by/Affiliation	Date
	Carl / Interpoll	8/25/94 0800

033094-G:\STACK\WP\FORMS\S-270.2

D-5

APPENDIX E

ASPHALT PLANT INFORMATION SHEET

Interpoll Laboratories
(612)786-6020

Asphalt Plant Information Sheet

Manufacturer and Model No. of the Plant Barber Greene

Owner and Operator of the Plant

Location of Plant at time of Test (State, County and Address) Lakeland MN
15001 Hudson Blvd
Washington CNTY

Estimated Total Time of the Plant at this Site (from when to when) 1962 – Present

Type of Pollution Control Equipment (wet scrubber, mechanical collector, etc. Baghouse

Model No. of Pollution Control Equipment Custom Welding "Dustbuster" 70,000 CFM

If wet scrubber, provide the following information:

Percent recycle of scrubber water N/A %

Flow of water to scrubber N/A GPM

Manufacturer recommended pressure drop across venturi N/A IN.WC.

Rated Capacity of Asphalt Plant 300 TONS/HR
at an aggregate moisture content of 4.0 %

Type of Fuel Used to Fire Plant:

- ☐ Natural Gas
- ☐ No. 2 Fuel Oil
- ☐ No. 5 Fuel Oil
- ☐ Propane
- ☒ Waste Oil

Normal Production Rate of Plant 280 TONS/HR
at an aggregate moisture content of 4.0 %

NOTE: Attach drawings of plant and pollution control equipment.

Name of Individual Supplying Information Lloyd O'Kelly

Date 8-24-94

S-0150R(2)

APPENDIX F

ASPHALT PLANT OPERATING DATA

MPCA

Asphalt Plant

Records of Operating Conditions During Compliance Tests

Plant Manufacturer and Model Baker Greene Plant type Batch Plant

Date of first installation 1962

Test date 8-24-94 Location _____ Time: start _____ stop _____

Fuel burned Waste Oil Dust collector () Venturi scrubber, () Other wet scrubber
() Cyclone/multiclone (X) Baghouse

Number of burners 1 Burner (X) rating 85 MBTU/ MMBTUH = 100% setting

If wet scrubbing, percent water recycle N/A %

Time	Burner setting %	Aggregate TPH	Recycle TPH	Asphalt TPH	Mix Temperature °F	Pressure drop across dust collector(s) in H_2O	Water Flow rate through wet collectors gpm
~~8:15~~	~~65%~~		30.1				
8:15	65%	210	[illegible]	9.20	300°	4.5	—
8:30	65%	217				4.3	—
8:45	60%						
9:00							
9:15							

Moisture content in the aggregates

	Run No. 1	Run No. 2	Run No. 3	Average
Virgin				
Recycle				

Average Measured or calculated* 363 gal fuel usage:
cf/ton product
1.35 gal/ton product

Fuel 363 gals 358 gals 320 gals

Responsible Signature and Date: Lloyd O Keefe 8-24-94

* if calculated, applicant should attach a schedule showing the bases, assumptions, sources of colligative data, and the computation.
Include fuel analysis as required

CES:pmw9.4

S-319R

Tower Asphalt, Inc 8-24-94

Time in 15 min. intervals	Burner Setting %	Aggregate Material TPH	Recycle Material TPH	Asphalt Material TPH	Total Material TPH (Aggregate +Recycle+Asphalt)	Temperature of Gases Exiting Dryer deg F	Dust Collector Pressure Drop inches water	Scrubber Water Flow Rate GPM	Water Supply Pressure psi	Other (list) Stack	Other (list) temp
Run # 1 3638											
9:40	58	219.4	38.7	11.88	270	261	4.2	—	—	243	—
9:55	70	219.4	38.7	11.88	270	263	4.1	—	—	242	—
10:10	62	219.4	38.7	11.88	270	264	4.3	—	—	244	—
10:25	52	219.4	38.7	11.88	270	253	4.3	—	—	238	—
10:40	55	219.4	38.7	11.88	270	254	4.4	—	—	239	
10:55	62	219.4	38.7	11.88	270	250	4.0	—	—	236	—
Run #2											
11:25	60	219.4	38.7	11.88	270	257	4.2	—	—	244	—
11:40	64	219.4	38.7	11.88	270	260	4.4	—	—	243	—
11:55	58	219.4	38.7	11.88	270	252	4.3	—	—	240	—
12:10	60	219.4	38.7	11.88	270	249	4.4	—	—	236	—
12:25	58	219.4	38.7	11.88	270	244	4.3	—	—	234	—
12:40	55	219.4	38.7	11.88	270	237	3.6	—	—	231	—
Run 3											
1:15	52	219.4	38.7	11.88	270	247	4.3	—	—	234	—
1:30	56	219.4	38.7	11.88	270	239	3.5	—	—	233	—
1:45	50	219.4	38.7	11.88	270	246	4.3	—	—	235	—
2:00	50	219.4	38.7	11.88	270	251	4.2	—	—	235	—
2:15	55	219.4	38.7	11.88	270	239	4.1	—	—	231	—
2:30	54	219.4	38.7	11.88	270	239	4.4	—	—	228	—

F-2

Plant Operator's Certification: I certify that the information submitted herein is accurate and correct and that no information requested was withheld from the Division Manager.

By Lloyd Ockelle Position Plant Operator Phone (614) 426-5411

Interpoll Laboratories
(612)786-6020

MPCA Exhibit C for Process Emissions

JOB _____

SOURCE _____

DATE 8-24-94

C. Equipment & Operating Data

1. Process Equip. No./Ident. Barber Greene.
2. Process Equip. Description Hot Plant 300TPH
3. Process equipment operating under normal operating conditions:
   No ___. Yes ✓.

D. Instrument Data on Process Equipment

1. Include copy of production records or instrumentation which indicates rate of production or operation of the equipment, i.e. units per hour, lbs. per hour, pressure, air flow, etc.

E. Air Pollution Control Equipment

1. Type/model control equipment 70,000 CFM Baghouse
2. Air pressure drop across the control equipment 4.4.
3. Air flow through the control equipment _____.
4. Was the control equipment operating normally? Yes.
5. Data of last major maintenance/cleaning of control equipment See attached maintenance schedule.

F. Plant Manager's Certification

I certify that the information submitted herein is accurate and correct and that no information requested was withheld from MPCA, Division of Air Quality.

By Lloyd Okeefe, Position Plant Operator

S-349R

APPENDIX G

PROCEDURES

Particulate Loading and Emission Rates

The particulate emission rates were determined per EPA Methods 1 - 5, CFR Title 40, Part 60, Appendix A (revised July 1, 1992). In this procedure a preliminary velocity profile of the gases in the flue is obtained by means of a temperature and velocity traverse. On the basis of these values, sampling nozzles of appropriate diameter are selected to allow isokinetic sampling, a necessary prerequisite for obtaining a representative sample.

The sampling train consists of a heated glass-lined sampling probe equipped with a Type S pitot and a thermocouple. The probe is attached to a sampling module which houses the all-glass in line filter holder in a temperature controlled oven. The sampling module also houses the impinger case and a Drierite filled column. The sampling module is connected by means of an umbilical cord to the control module. The control module houses the dry test gas meter, the calibrated orifice, a leakless pump, two inclined manometers, and all controls required for operating the sampling train.

Particulate samples are collected as follows: The sample gas is drawn through the sampling probe isokinetically and passed through a 4-inch diameter Gelman Type A/E glass fiber filter where particulates are removed. The sample gas is then passed through an ice-cooled impinger train and a desiccant-packed column which absorbs remaining moisture. The sample gas then passes through a vacuum pump followed by a dry test gas meter. The gas meter integrates the sample gas flow throughout the course of the test. A calibrated orifice attached to the outlet of the gasmeter provides real time flow rate data.

A representative particulate sample was acquired by sampling for equal periods of time at the centroid of a number of equal area regions in the duct. The sampling rate is adjusted at each test point maintaining isokinetic sampling conditions. Nomographs are used for rapid determination of the sampling rate.

Particulate Loading and Emission Rates

After sampling is complete, the filter is removed and placed in a clean container. The nozzle and inlet side of the filter holder are quantitatively washed with acetone and the washings are stored in a second container. A brush is often used in the cleaning step to help dislodge deposits. The samples are returned to the laboratory where they are logged in and analyzed. The volume of the acetone rinse ("probe wash") is noted and then the rinse is quantitatively transferred to a tared 120 cc porcelain evaporating dish and the acetone evaporated off at 97-105 °F. This temperature is used to prevent condensation of atmospheric moisture due to the cooling effect induced by the evaporation of acetone. The acetone-free sample is then transferred to an oven and dried at 105 °C for 30 minutes, cooled in a desiccator over Drierite, and then weighed to the nearest .01 mg. The filter sample is quantitatively transferred to a 6-inch watch glass and dried in an oven at 105 °C for two hours. The filter and watch glass are then cooled in a desiccator and the filter weighed to the nearest .01 mg. All weighings are performed in a balance room where the relative humidity is hydrostatted to less than 50% relative humidity. Microscopic examination of the samples is performed if any unusual characteristics are observed. The weight of the acetone rinse is corrected for the acetone blank. The Drierite column is weighed on-site and the water collected by Drierite is added to the condensate so that the total amount of absorbed water may be ascertained.

Integrated flue gas samples for Orsat analysis were collected simultaneously with each pollutant sample. The samples were collected in 15-liter gas sampling bags at a constant flow rate throughout each particulate run. The bags were at a constant flow rate throughout each particulate run. The bags were then returned to the laboratory and analyzed by Orsat analysis. Standard commercially prepared solutions were used in the Orsat analyzer (sat. KOH for carbon dioxide and reduced methylene blue for oxygen).

Condensible Organic Compounds Analysis

(State of Minnesota - MPCA Exhibit C)

Method II-8672-MN

Equipment: Separatory funnel - 500 cc with Teflon stopcock

Powder funnel - 75 mm ID with a 17 mm stem

Evaporating dish(es) - 200 cc or 250 cc beaker

Reagents: Diethyl ether - reagent grade

Chloroform - reagent grade

Sodium sulfate - (ACS) granular anhydrous

Toluene - (if 3% hydrogen peroxide is used to collect the samples)

Glass wool (Pyrex microfiber)

PREPARATION

1. Place 1 kg of granular anhydrous sodium sulfate in a shallow tray and heat to 200°C for at least four hours. Store in a tightly sealed glass container.

2. Place a plug of clean glass wool in the stem of the powder funnel. The plug must be of sufficient size so that it is held snugly in place by its own pressure. Add a one-inch layer of dry sodium sulfate.

SAMPLING

An all-glass impinger assembly is used in the back half of the EPA Method 5 sampling train when an organic wet catch is to be collected. The impinger assembly consists of a modified impinger, a Greenburg Smith impinger followed by another modified impinger. The third impinger should have a temperature measuring device at the outlet upstream of a final impinger or desiccant column to monitor the temperature of the outlet gas stream. Prior to the start of the test, each of the first two impingers should be charged with 100 g of Class I water. The Method 5 train should be operated as provided for in EPA Method 5. Ice should be added to the impinger bath to keep the temperature of the gas at the outlet at or less than 68°F. After the post test leak check, the impinger train is removed and impinger contents poured into a tared all-glass sample bottle and closed with a Teflon-lined cap. The sample bottle is then weighed and the total condensate calculated by subtraction of the bottle tare weight and the weight of initial water added to the impingers (200 g). A label is affixed and the sample is returned to the laboratory for analysis. The sample should be stored at 4°C if the analysis is not conducted within 48 hours.

I. ORGANICS

Caution! Work in vented hood!!!

A. Organic Blank Determination

1. Pour 125 ml of ethyl ether and 125 ml of chloroform into a tared beaker.

2. Evaporate solvent in hood at 70°F or less until no solvent remains.

3. Desiccate the sample in dish for two hours.

4. Weigh the sample to nearest 0.1 mg, record and report on Form LSC-03G.

B. Organic Sample Determination

1. Test for peroxide in sample ether using KI strips. (If KI strip shows positive, contact your supervisor before proceeding.)

2. Transfer the sample solution quantitatively to a 500 ml separatory funnel. Use the first of three 25 ml chloroform aliquots to rinse the sample container.

3. Extract with three 25 ml portions of chloroform. (Shake and vent to release pressure about 4 to 5 times each.) Allow the phases to separate. (Bottom layer is chloroform.) Draw off the bottom layer, transferring the solvent with a funnel containing a plug of sodium sulfate into a tared beaker. (Do not draw off any of the aqueous layer.)

4. After the three chloroform extractions, use two 25 ml portions of chloroform to rinse the sodium sulfate, collecting the rinses in the same tared beaker as the extracts.

5. Next extract the sample three times with 25 ml aliquots of ethyl ether. (Shake and vent to release pressure about 4 to 5 times each.) Allow the phases to separate. (Top layer is ethyl ether.) Draw off the bottom layer (aqueous) into another separatory funnel taking less than 1 ml of the ethyl ether layer with. Decant the ethyl ether, passing it through sodium sulfate and collecting the ethyl ether in the same tared dish as the chloroform.

6. After the three ethyl ether extractions, take two 25 ml portions of ethyl ether and rinse the sodium sulfate collecting the rinses in the same tared beaker as the extracts.

7. Evaporate the solvents (chloroform and ethyl ether) in the tared beaker in the hood at 70°F or less until no solvent remains. (Use no heat and have no sources of ignition in the hood when doing this procedure.) Do not evaporate so quickly as to allow evaporative cooling to lower the temperature of the container below the dew point of water, otherwise, water will be condensed out in the container.

8. Desiccate to constant weight (two hours). Record and report the final weight to the nearest 0.1 mg on Form LSC-03C.

II. INORGANICS

If inorganic residue information is required, the following procedure should be conducted:

A. Inorganic Blank Determination

1. Vent the remaining aqueous phase from the organic extraction in the hood to remove residual organic solvents (usually overnight).

2. Decant the impinger catch into a tared evaporating dish.

3. Evaporate all of the water in the sample in an oven at 100°C. Take care not to boil to prevent bumping and loss of sample.

4. Cool the dried sample in the desiccator and desiccate until a constant weight is obtained.

5. Report the results to the nearest 0.1 mg on Form LSC-03G.

B. Inorganic Sample Determination

Follow steps 1-5 in Section A above.

NOTES

1. For the organics determination, in the rare event that the impinger catch resulted from a Modified Method 6 determination (SO_2), whereby the solution contains dilute hydrogen peroxide ($\geq$ 3%), do not use ether as an extraction solvent. Substitute toluene for ethyl ether in Section I. (Ether in the presence of peroxide forms explosive hydroperoxide.)

2. In the organics determination, more than three extractions may be required to extract all of the organics. Additional extractions should be performed if the aqueous phase is still cloudy.

3. Special state requirements:
   Michigan - Total sample evaporated in tared evaporating dish on steam bath.
   Iowa - Organics and inorganics separately, as required.
   Wisconsin - Use Method II-8672-WI.
   Rest of states - Organics only.

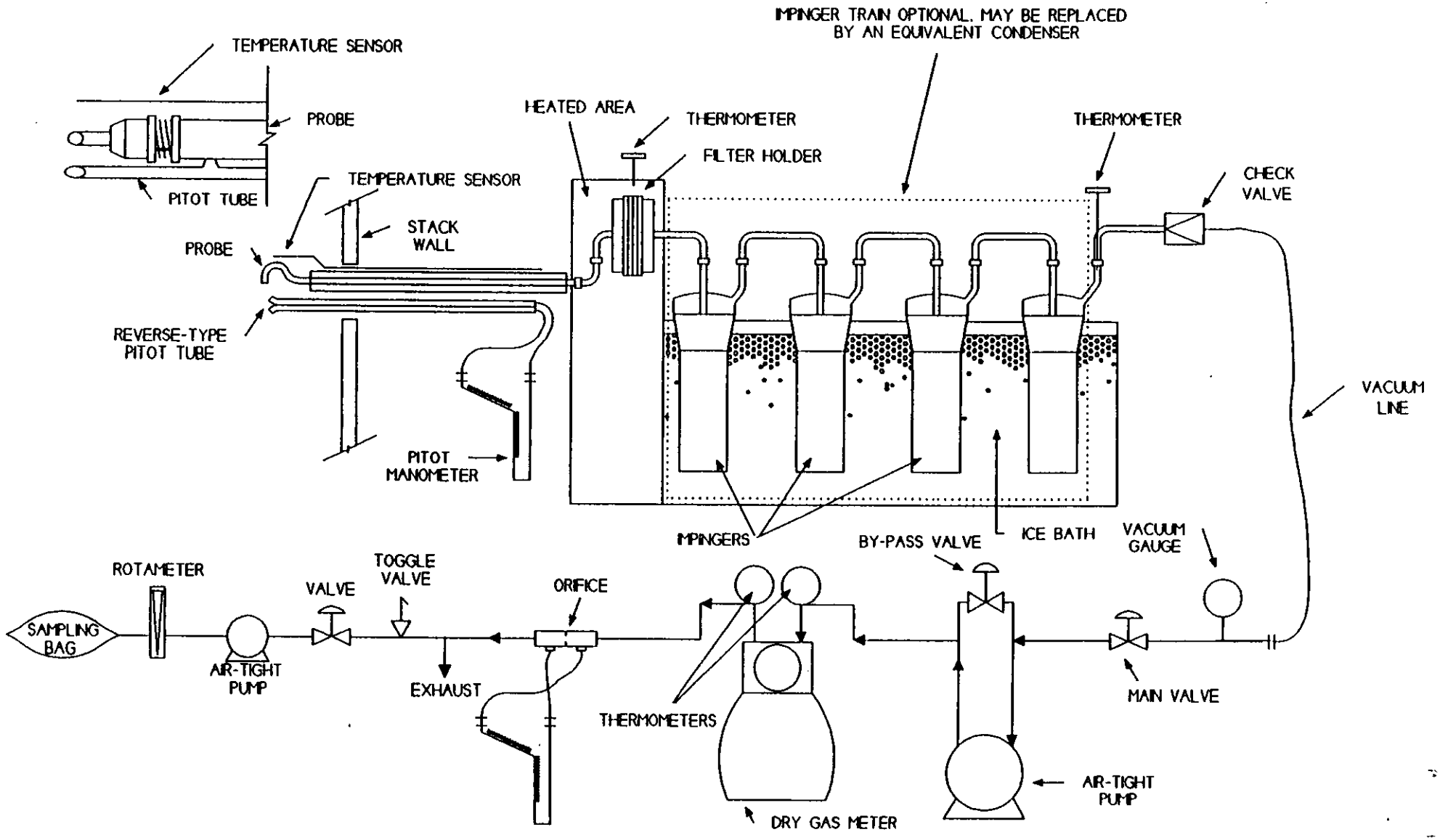
REFERENCES

Proposed standards of Performance for New Stationary Sources, Federal Register 36(159) Part II, August 1, 1979.

Minnesota Pollution Control Agency, Exhibit C.

Interpoll Laboratories
(612) 786-6020

PARTICULATE SAMPLING TRAIN



APPENDIX H

CALCULATION EQUATIONS

METHOD 2
CALCULATION EQUATIONS

$$\overline{V_s} = 85.49\ C_p\ (\sqrt{\Delta p})_{avg}\ \sqrt{\frac{T_{s(avg)}}{P_s\ M_s}}$$

$$Q_{s,\,d} = 60\ (1\ -B_{ws})\ \overline{V_s}\ A\ (\frac{528}{T_{s\ (avg)}})\ (\frac{P_s}{29.92})$$

$$Q_a = 60\ \overline{V_s}\ A$$

$$\dot{m}_g = \frac{4.995\ Q_{s,\,d}\ G_d}{1\ -\ B_{ws}}$$

$$RH^* = 100\ (vp_{twb}\ -\ 0.0003641\ P_s\ (T_{db}\ -\ T_{wb}))/vp_{tdb}$$

$$B^*_{ws} = RH(vp_{tdb})/P_s$$

$$\rho = \frac{4.585\ x\ 10^{-2}\ P_s M_s}{T_s\ (avg)}$$

*Alternate equations for calculating moisture content from wet bulb and dry bulb data.

SYMBOLS

A	=	Cross Sectional area of stack, SQ. FT.
A_n	=	Cross sectional area of nozzle, SQ. FT.
B_{ws}	=	Water vapor in gas stream, proportion by volume
C_p	=	Pitot tube coefficient, dimensionless
C_a	=	Concentration of particulate matter in stack gas, wet basis, GR/ACF
C_s	=	Concentration of particulate matter in stack gas, dry basis, corrected to standard conditions, GR/DSCF
EA	=	Excess air, percent by volume
γ	=	Dry test meter correction factor, dimensionless
G_d	=	Specific gravity (relative to air), dimensionless
I	=	Isokinetic variation, percent by volume
M_d	=	Molecular weight of stack gas, dry basis, g/g - mole.
$\dot{m}_g$	=	Mass flow of wet flue gas, LB/HR
$\dot{m}_p$	=	Particulate mass flow, LB/HR
M_s	=	Molecular weight of stack gas, wet basis, g/g mole.
M_p	=	Total amount of particulate matter collected, g
P_{bar}	=	Atmospheric pressure, IN. HG. (uncompensated)
P_g	=	Stack static gas pressure, IN. WC.
P_s	=	Absolute pressure of stack gas, IN. HG.
P_{std}	=	Standard absolute pressure, 29.92 IN. HG.
A_a	=	Actual volumetric stack gas flow rate, ACFM
$Q_{s,d}$	=	Dry volumetric stack gas flow rate corrected to standard conditions, DSCFM
RH	=	Relative humidity, %

T_{db}	=	Dry bulb temperature of stack gas, °F
T_{wb}	=	Wet bulb temperature of stack gas, °F
$T_{m(avg)}$	=	Absolute average dry gas meter temperature, °R
$T_{s(avg)}$	=	Absolute average stack temperature, °R
T_{std}	=	Standard absolute temperature, 528 °R (68 °F)
θ	=	Total sampling time, min.
V_{lc}	=	Total volume of liquid collected in impingers and silica gel, ml
V_m	=	Volume of gas sample as measured by dry gas meter, CF
$V_{m(std)}$	=	Volume of gas sample measured by the dry gas meter corrected to standard conditions, DSCF
$V_{w(std)}$	=	Volume of water vapor in the gas sample corrected to standard conditions, SCF
$\bar{V}_s$	=	Average actual stack gas velocity, FT/SEC
vp_{tdb}	=	Vapor pressure at T_{db}, IN. HG.
vp_{twb}	=	Vapor pressure at T_{wb}, IN. HG.
$\overline{\Delta H}$	=	Average pressure differential across the orifice meter, IN. WC.
ΔP	=	Velocity pressure of stack gas, IN. WC.
γ	=	Dry test meter correction coefficient, dimensionless
ρ	=	Actual gas density, LB/ACF

METHOD 3
CALCULATION EQUATIONS

$$\%EA = \frac{100(\%O_2 - 0.5\%\ CO)}{0.264\%\ N_2 - \%O_2 + 0.5\%\ CO}$$

$$M_d = 0.44(\%CO_2) + 0.32\ (\%O_2) + 0.28\ (\%N_2 + \%CO)$$

$$M_s = M_d\ (I - B_{ws}) + 0.18\ B_{ws}$$

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

METHOD 5
CALCULATION EQUATIONS

$$V_{m(std)} = 17.65\ V_m\ \gamma\ \left(\frac{P_{bar} + \overline{\Delta H}/13.6}{T_{m(avg)}}\right)$$

$$V_{w(std)} = 0.0472\ V_{lc}$$

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

$$I = 0.0944\ \left(\frac{T_{s(avg)}\ V_{m(std)}}{P_s\ V_s\ A_n\ \theta\ (I - B_{ws})}\right)$$

$$C_s = \frac{15.43\ M_p}{V_{m(std)}}$$

$$C_a = \frac{272.3\ M_p\ P_s}{T_{s(avg)}\ (V_{w(std)} + V_{m(std)})}$$

$$(\dot{m}_p)_1 = 8.5714\ x\ 10^{-3}\ C_s\ Q_{s,\,d}$$

$$(\dot{m}_p)_2 = \frac{1.3228 \times 10^{-1} \, M_p \, A}{\theta \, A_n}$$

$$\dot{m}_p = \frac{(\dot{m}_p)_1 + (\dot{m}_p)_2}{2}$$

APPENDIX I

SAMPLING TRAIN CALIBRATION DATA

INTERPOLL LABORATORIES
EPA Method 5 Gas Metering System
Quality Control Check Data Sheet

Job Tower asphalt Date 8-24-4

Operator E Trevino Module No. 16

Instructions: Operate the control module at a flow rate equal to ^H@ for 10 minutes before attaching the umbilical. Record the following data:

Bar press 29.14 in. Hg. $_T$ = .9941 ^H@ 0.87 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
[redacted]	(777.60)	[redacted]	
2.5	779.41	77	70
5.0	781.32	79	70
7.5	783.25	81	70
10	785.16	82	70
[redacted]	V_m= 7.66	Avg(t_m)= 74.9 °F	

Calculate Y_{cn} as follows:

$$Y_{cn} = \frac{1.786}{T\ V_m}\left[\frac{(t_m + 460)}{P_b}\right]^{0.5}$$

$$Y_{cn} = \frac{1.786}{(.9941)(\quad)}\left[\frac{(74.9) + 460}{(29.14)}\right]^{0.5} \quad 4.2844$$

Y_{cn} = 1.0048

If Y_{cn} is not within the range of 0.97 to 1.03, "the volume metering system should be investigated before beginning."

CFR Title 40, Part 60, Appendix A, Method 5, Section 4.4.1

S-432

Interpoll Laboratories, Inc.
(612) 786-6020

Meter Box Calibration and Usage Status

Date of Report: August 25, 1994

Meter Box No. : 16 (Rockwell Dry Test Meter Serial No. 1334115)

Date of Last Calibration: July 15, 1994
Calibration Technician: D. Van Hoever
Wet Test Meter No.: American Meter AL-20

Date of Use	Report No.	Initial Meter Reading	Final Meter Reading	Volume/Job (cu. ft.)	Total Volume* (cu. ft.)
August 11, 1994	4-3591	218.12	358.43	140.31	140.31
August 18, 1994	4-3647	358.70	499.80	141.10	281.41
August 23, 1994	4-3685	513.30	772.35	259.05	540.46
August 24, 1994	4-3687	785.30	925.75	140.45	680.91

* Total volume through meter since last calibration.

Date 7/15/94

Bar. Press. 29.09 in. Hg

INTERPOLL LABORATORIES, INC.
METER CALIBRATION SHEET
EPA METHOD 5

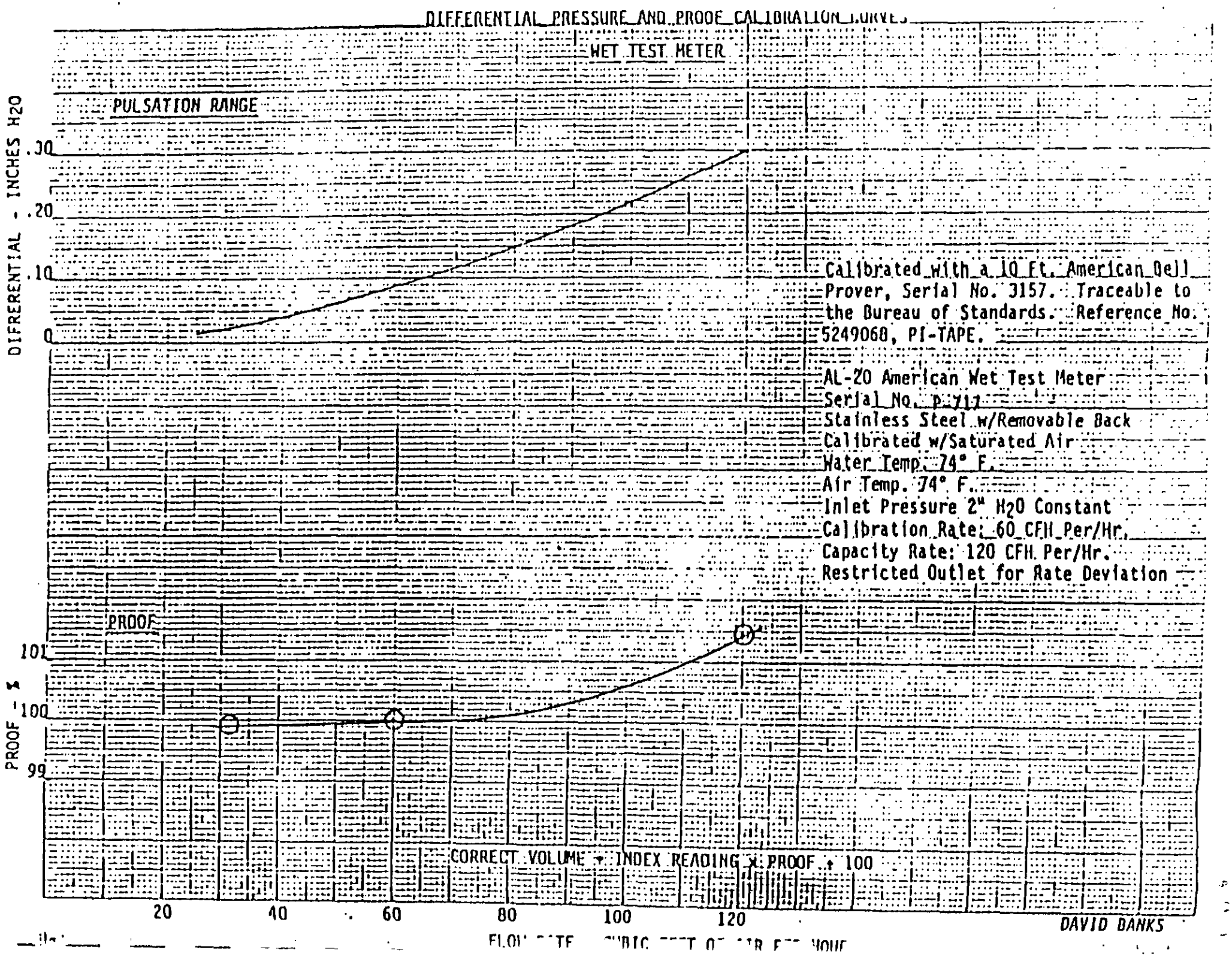
Control Module No. 16
Serial No. DIM 133415
Wet Test Meter No. AL-20
Technician D. Hoover

ΔH (in. WC)		Gas Volume Wet Test Meter (ft^3)	* Cal. Index θ (%)	* Diff. Wet Test Meter ΔP_w (in. WC)	Gas Volume Dry test meter (ft^3)		Gas temperatures			Time θ (min/sec)	Meter Coeff. Y	Orifice Const. ΔH@	C_f
							Wet Test	Dry Test					
nominal	actual				V_{d1}	V_{df}	t_w (°F)	t_{d1} (°F)	t_{do} (°F)				
0.5	.5	2	99.85	0.01	207.495	209.57	72.5	96	82	5:01.07	.9909	1.78	
1.2	1.2	3	99.91	0.025	203.860	206.96	72.5	99	82	5:00.13	.9964	1.88	
2.0	2.0	3	99.93	0.055	187.950	191.010	72.5	90	80	3:52.45	.9975	1.90	
3.3	3.3	5	100.00	0.09	192.030	197.15	72.5	94	80	5:03.31	.9946	1.90	
4.7	4.7	5	100.02	0.12	198.165	203.35	72.5	100	80	4:15.36	.9909	1.91	
											.9941	1.87	

Positive leak check performed by DH
Meter was in tolerance ☒
Meter was not in tolerance ☐; readjusted linkage
Meter was not in tolerance ☐; changed dry test meters

Approved by Daniel Rueter Date 7/18/94

* Based on AL-20 wet test meter calibration in Nov. 1991 against Bell Prover (NBS Traceable) - Carl Poe Co.


DIFFERENTIAL PRESSURE AND PROOF CALIBRATION CURVES
WET TEST METER
PULSATION RANGE
DIFRERENTIAL - INCHES H2O
.30
.20
.10
0
Calibrated with a 10 Ft. American Dell Prover, Serial No. 3157. Traceable to the Bureau of Standards. Reference No. 5249068, PI-TAPE.
AL-20 American Wet Test Meter
Serial No. P 717
Stainless Steel w/Removable Back
Calibrated w/Saturated Air
Water Temp. 74° F.
Air Temp. 74° F.
Inlet Pressure 2" H2O Constant
Calibration Rate: 60 CFH Per/Hr.
Capacity Rate: 120 CFH Per/Hr.
Restricted Outlet for Rate Deviation
PROOF
101
100
99
PROOF - %
CORRECT VOLUME = INDEX READING x PROOF ÷ 100
20
40
60
80
100
120
DAVID BANKS
FLOW RATE - CUBIC FEET OF AIR PER HOUR

Interpoll Laboratories, Inc.
(612) 786-6020

Nozzle Calibration
Data Sheet

Date of Calibration: 08-24-94 Nozzle Number 8-5
Technician: Ed Trowbridge

The nozzle is rotated in 60 degree increments and the diameter at each point is measured to the nearest 0.001 inch. The observed readings and average are shown below.

Position	Diameter (inches)
1	.310
2	.312
3	.308
Average:	.310

Interpoll Laboratories, Inc.

Temperature Measurement Device Calibration Sheet

Unit under test:

Vendor OMEGA #34

Model HH81 Serial Number 744X0343

Range 0-2000. °F Thermocouple Type K

Date of Calibration 7-21-94 Technician E TRAUBRIDGE

Method of Calibration:

☐ Comparison against ASTM mercury in glass thermometer using a thermostatted and insulated aluminum block designed to provide uniform temperature. The temperature is adjusted by adjusting the voltage on the block heater cartridge.

☒ Omega Model CL-300 Type K Thermocouple Simulator which provides 22 precise temperature equivalent millivolt signals. The CL-300 is cold junction compensated. Calibration accuracy is ± 0.1% of span (2100 °F) ± 1 degree (for negative temperatures add ± 2 degrees. The CL-300 simulates exactly the millivoltage of a Type K thermocouple at the indicated temperature.

Desired Temp (°F) Nominal	Temperature of Standard or Simulated Temp (°F)	Response of Unit Under Test (°F)	Deviation Δt (°F)	Deviation (%)
0	0	1.0	1.0	.22
100	100	98.7	1.3	.32
200	200	200	0	0
300	300	298.2	1.8	.23
400	400	398	2	.23
500	500	499	1	.10
600	600	600	0	0
700	700	699	1	.07
800	800	802	2	.16
900	900	901	1	.07
1000	1000	1001	1	.07
1100	1100	1100	0	0
1200	1200	1202	2	.14
1300	1300	1300	0	0
1400	1400	1404	4	.22
1500	1500	1502	2	.10
1600	1600	1604	4	.22
1700	1700	1703	3	.14
1800	1800	1804	4	.17
1900	1900	1921	1	.04
2000	2000	2003	3	.12
2100	2100	2100	0	0
		Averages:	1.61	.101

OF = off scale response by unit under test (°F)

% dev = 100 Δt / (460 + t)

☒ Unit in tolerance

☐ Unit was not in tolerance; recalibrated - See new calibration sheet.

Interpoll Laboratories, Inc.
(612) 786-6020

S-Type Pitot Tube Inspection Sheet

Pitot Tube No. 79-4

Pitot tube dimensions:

1. External tubing diameter (D_t) .316 IN.
2. Base to Side A opening plane (P_A) .460 IN.
3. Base to Side B opening plane (P_B) .460 IN.

Alignment:

4. α_1 < 10° 0
5. α_2 < 10° 0

6. B_1 < 5° 0
7. B_2 < 5° 0

8. Z <.125" .02
9. W <.0625" .02

Distance from Pitot to Probe Components:

10. Pitot to 0.500 IN. nozzle .750 IN.
11. Pitot to probe sheath 3.0 IN.
12. Pitot to thermocouple (parallel to probe) 3.0 IN.
13. Pitot to thermocouple (perpendicular to probe) .760 IN.

☒ Meets all EPA design criteria thus C_p = 0.84
☐ Does not meet EPA design criteria - thus calibrate in wind tunnel.
C_p = _____

Date of Inspection:

4-7-94

Inspected by:

CFR Title 40 Part 60 Appenidix A Method 2

S-348

INTERPOLL LABORATORIES
(612)786-6020

Stack Sampling Department - QA
Aneroid Barometer Calibration Sheet

Date 8-3-54

Technician E Trowbridge

Mercury Column Barometer No. ULTIMETER MODEL 12

Aneroid Barometer No. SN -A1002005

Actual Mercury Barometer Read	Ambient Temp.	Temperature Correction Factor	Adjsted Mercury Barometer Read	Initial Aneriod Barometer Read	Difference (P_{ba}-P_{bm})
28.95	80	.111	28.94	28.93	.01

Has this barometer shown any consistent problems with calibration? Yes/No. If yes, explain. No

Has problem been alleviated? Yes/No. How?

*Note

Aneroid barometers will be calibrated periodically against a mercury column barometer. The aneroid barometer to be calibrated should be placed in close proximity to the mercury barometer and left to equilibrate for 20-30 minutes before calibrating. Aneriod barometer will be calibrated to the adjusted mercury barometer readings.

S-312

APPENDIX J

TEST PLAN

RECEIVED

AUG 2 2 1994

DRAFT TO BE FOLLOWED BY FORMAL RESPONSE

August 19, 1994

Post-it™ brand INTERPOL LABORATORIES 3

To	Kathys Ekstad	From	Ron Hockin
Co.	Interpol Lab	Co.	Tower Asphalt
Dept.		Phone #	
Fax #	786-7854	Fax #	436-6515

Mr. Ron Hockin
President
Tower Asphalt, Inc.
P.O. Box 15001
Lakeland, Minnesota 55043

RE: Test Plan Amendment to the August 3, 1994, Test Plan Submittal for the August 24, 1994, Performance Test on the Barber Green Drum Dryer with a Baghouse

Dear Mr. Hockin:

This is a supplemental letter to address the letter dated August 12, 1994 from Lisa Thorvig requiring opacity testing for Emission Point Number 2, the generator. This will conclude the pretest requirements for the Tower Asphalt, Inc. (Company) facility located in Lakeland, Minnesota, as discussed during our telephone conversation of August 19, 1994.

The Air Quality Division (AQD) staff of the Minnesota Pollution Control Agency (MPCA) has reviewed the submittal, and has amended the approved test plan to reflect the following provisions regarding the opacity testing:

1. Company must perform 3 hours of observations for visible emissions for emission point no. 2. As per telephone conversation, generator will run for entire particulate testing and readings taken during this time.

These provisions are modifications to the test plan, and are to be incorporated into the proposed test.

A copy of the test plan, including this letter, must be included as part of the performance test report. Remember, it is not the Testing Consultant's responsibility to submit the Company report or microfiche or to certify that the microfiche submitted is an exact copy of the original test report by the deadlines specified in the applicable compliance document (i.e., Permit, Stipulation Agreement, Administrative Penalty Order, etc.). The responsibility for these submittals lies solely with the Company.

If you have any questions or comments on the content of this letter, please contact me at (612)297-8301.

Sincerely,

TEST PLAN FOR ASPHALT PLANT PERFORMANCE TEST

PART 1. GENERAL INFORMATION

Name and address of permittee: TOWER ASPHALT, INC.
Box 15001
Lakeland, Minnesota 55043

Permittee contact person: Ron Hockin
(612)436-8444
FAX (612)436-6515

Permit File No.: 212-93-G-1

Reason for testing: Addition of baghouse

Sketch of stack source point to be tested showing test port location, stack diameter, and other pertinent information are included with this plan.

Physical location of the emission unit to be tested: Stationary hot mix asphalt facility and air pollution control equipment located at 15001 Hudson Boulevard, West Lakeland Township, Washington County, Minnesota.

Independent Testing Company: Interpoll Laboratories, Inc.
Contact: Kathy Eickstadt (612)786-6020

Test Plan Date: August 1, 1994
Test Date: August 24, 1994

PART II. TESTING REQUIREMENTS

EP#	Pollutant	Emission Limit	Applicable Rule	Method	Run Length
1	PM	.04 GR/DSCF	40 CFR 60, Subp I Minn Rules Pt. 7011.0910	5	60 min
1	Opacity	20%	Minn Rules Pt. 7011.0910	9	60 min

Fuel Sampling and Analysis (as per Exhibit D):

One tap sample per particulate test run will be taken as close as possible to the burner (somewhere in the feeding line) to be representative of the fuel burned at the time of the test. The samples will be taken in pint-size clean containers and according to the procedures listed in Exhibit D. The three samples will be composited and analyzed for:

Gross heating value, BTU/gal	ASTM-240
Sulfur, % by weight	ASTM D-1552
Ash, % by weight	ASTM D-874
Specific gravity	ASTM D-1298

Lead, % by weight	ASTM D-2788
PCB, ppm by weight	EPA-600/4-81-045
Halogens, % by weight	ASTM D-1317
Acidity, Ph	ASTM D-1093
Flash point, °F	ASTM D-93

Moisture Content in the Virgin and Recycle Aggregate:
Two samples of each (virgin and recycle aggregate) per test run of particulates. Samples must be taken as close as possible to the feeding conveyor and during the corresponding run. Mix samples of virgin aggregate with the samples of recycle material in the same proportion as they enter the dryer, this will give one composite recycle/virgin sample per test run.

One analysis of moisture content in each composite recycle/virgin aggregate sample as per ASTM or other recognized methodologies. A total of three analyses will be performed, one per test run for particulates.

PART III. OPERATING CONDITIONS

Rational for Worst Case: Burning waste oil for fuel and recycling at a rate of 15%.

Normal Range of Process or Operating Rate: 280 TON/HR at a stack temperature of 205 °F.

Description of Process Equipment: Barber Green 7000 LB batch plant with a 8' x 30' drum dryer.

Description of How Process Equipment will be Monitored During Testing: Process equipment maintains a minimum temperature of 400 °F.

Description of Air Pollution Control Equipment: 70,000 ACFM Baghouse with 12,930.12 square feet of cloth; 5.41 to 1 air to cloth ratio; bag specs 6" diameter x 168" long, 14 oz. Dupont Nomex Felt.

Description of How Air Pollution Control Equipment will be Monitored During Testing: Differential pressure of 4.7 between inlet of baghouse and outlet of baghouse.

PART IV. TEST METHODS

A. EPA Method 1 for location of sampling ports and points.

B. EPA Method 2 for velocity and volumetric flow rate. Three determinations: one measurement concurrently with each test run for every pollutant.

C. EPA Method 3 for gas analysis. One test run on an integrated sample taken concurrently with each test run for every pollutant.

D. EPA Method 4 for the determination of moisture in the flue gases. One test run concurrently with each test run for every pollutant.

E. EPA Method 5 as amended by Minn. Rules pt. 7005.2060 and 7011.0725 for the concentration of particulate matter including organic condensibles. The sampling time for each run must be at least 60 minutes, and the sampling rate must be at least 32 dscf (0.9 dscm). Three runs must be conducted. Results are to be reported both as total particulate matter containing condensibles where the limit includes organic condensibles and total particulate matter excluding condensibles where the limit does not include condensibles.

F. EPA Method 9 as amended by Minnesota Rules part 7017.2060 for visual determination of opacity. One hour of observations, concurrently with a test run for particulates.

PART V. CEMS RELATIVE ACCURACY

N/A

PART VI OTHER

1. Results to be presented in GR/DSCF and LB/HR for PM; percent for opacity.

2. One hard copy of the test report shall be submitted within 45 days after the date of the test.

3. A copy of the microfiche report shall be submitted within 105 days after the date of the test.

4. All submittals shall be addressed to:
Supervisor, Compliance Determination Unit
Compliance and Enforcement Section
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, Minnesota 55155-4194

5. **MPCA Warning:** Given the seriousness of exceeding an emission limit, the Company is hereby provided notice that enforcement action will be taken for a first performance test failure. This enforcement action will not be initiated until the results of the retest have been reviewed by MPCA staff and will require the Company to pay a civil penalty.

   Please be advised that upon receiving written notice of a second performance test failure, the Company will be required to either shut down the tested process unit(s) or to submit a compliance plan, subject to MPCA approval, which indicates specific measures to be taken which are expected to all the unit(s) to operate in compliance with the applicable emission limitations. the plan must also include specific measures the facility will take to minimize emissions until compliance is demonstrated. However, if the unit(s) continue to operate, they will be considered to be operating in violation of the applicable limits from the date of the performance test until a retest has been conducted that demonstrates compliance.

Please note that results of a performance test are not final until MPCA staff provides a written compliance determination.