AP42 Section: 11.1

Reference Number: 55

Title: Results Of The September 8, 1993 Particulate And Visual Emission Compliance Test On The Baghouse Outlet At The Commercial Asphalt Company Facility Located In Ramsey, Minnesota,

Pace, Inc., Golden Valley, MN,

September 21, 1993.

# RESULTS OF THE SEPTEMBER 8, 1993 FARTICULATE AND VISUAL EMISSION COMPLIANCE TEST ON THE BAGHOUSE OUTLET AT THE COMMERCIAL ASPHALT COMPANY FACILITY LOCATED IN RAMSEY, MINNESOTA

Prepared For: Mr. Brent Schlueter
Commercial Asphalt Company

Prepared By: PACE, Incorporated
1710 Douglas Drive North
Golden Valley, Minnesota 55422

PACE Project No.: 930831.402
Report Date: September 21, 1993

Field sampling was performed by me and personnel under my direct supervision.

Thomas A. Kuchinski
Project Field Supervisor

All sampling, analysis and data reduction were performed by PACE, Incorporated under my supervision.

Curtis H. Stock
Supervisor, Air Sampling Section

Table of Contents

## EXECUTIVE SUMMARY

PACE Incorporated was contracted by Commercial Asphalt Company to perform particulate and visual emissions testing on the Baghouse Outlet at the Commercial Asphalt Company facility located in Ramsey, Minnesota. This series of tests was performed on September 8, 1993. The results are summarized with pertinent process data in the following table:

Test Results Summary

| | Run 1 | Run 3 | Run 4 | Average |
|---|---|---|---|---|
| Stack Temperature | 222 | 241 | 242 | 235 |
| Moist Content Flue Gas | 34.3 | 33.6 | 34.9 | 34.3 |
| Airflows | | | | |
| ACFM | 86600 | 82800 | 82200 | 84200 |
| DSFM | 42900 | 40300 | 39800 | 41000 |
| Particulate Concentration | | | | |
| GR/DSCF Dry Catch | 0.018 | 0.016 | 0.016 | 0.017 |
| GR/DSCF Dry & Wet Catch | 0.021 | 0.020 | 0.019 | 0.020 |
| Particulate Emission Rate | | | | |
| LB/HR | 7.7 | 6.9 | 6.4 | 7.0 |
| Opacity % | 0 | | | |
| Aggregate Mix Moisture % | 3.0 | 5.1 | 5.6 | 4.6 |
| Plant Reduction Rate | | | | |
| TPH | 592.5 | 575.8 | 571.8 | 580.0 |

## INTRODUCTION

PACE, Incorporated personnel conducted particulate and visual emission compliance testing on the Baghouse Outlet at the Commercial Asphalt Company located in Ramsey, Minnesota. On-site testing was performed by a three member team consisting of T. Kuchinski, M. Loftus and M. Wilson. Coordination between plant operations and testing activities was provided by Tyler Nelson and Mike Mahoney of Commercial Asphalt Company through direct contact with the test team leader. Testing was not witnessed by a representative of the Minnesota Pollution Control Agency. The test consisted of three independent one-hour samplings for particulate with concurrent integrated gas sampling for Orsat analyses. Aggregate and fuel samples were collected during each run and visible emissions were evaluated by a certified observer.

The objectives of this project were to quantify particulate emissions and compare them to applicable air emissions regulations stipulated by Minnesota Rules. Special provisions for this test program include operating at maximum capacity and firing with waste oil.

Results are summarized in the next section followed by descriptions of the process under investigation and test methods. All supporting data are included in subsequent appendices.

## RESULTS SUMMARY

Results of particulate determinations and gas composition are summarized in Table 1. The particulate emission rate averaged 7.0 LB/HR at an average particulate concentration of .017 GR/DSCF Dry Catch and .020 GR/DSCF Dry & Wet Catch. Minnesota Pollution Control Agency emissions regulations limit sources of this type to 0.04 GR/DSCF.

Opacity observations were recorded every 15 seconds for a one-hour period during the first run. These results are shown in Table 4. All of the 240 observations are zero percent. Within the one-hour observation period, the highest average opacity for a consecutive six-minute time span was zero percent. The average opacity for the one-hour period was zero percent.

During Run 2, problems were encountered with the firing unit to the drum dryer and testing had to be stopped. Run 2 was terminated and a fourth run was conducted. On this and after complete review of the test results, we believe that the values reported herein are an accurate representation of the source conditions at the time of the test.

Commercial Asphalt Company
Ramsey, Minnesota
PACE Project No. 930831.401

PACE Incorporated
September 15, 1993

**TABLE 1**
SUMMARY OF THE RESULTS
TEST 1

Baghouse Outlet

| **Parameter** | **Run 1** | **Run 3** | **Run 4** | **Average** |
|---|---|---|---|---|
| Date of Run | 9/8/93 | 9/8/93 | 9/8/93 | |
| Time of Run | 715-824 | 1251-1402 | 1501-1610 | |
| Asphalt Production TPH | 592.5 | 575.8 | 571.8 | 580.0 |
| Recycle Usage (Percent) | 37.0 | 29.4 | 29.5 | 32.0 |
| Fuel Input (GPH) | 780.0 | 760.0 | 780.0 | 773.3 |
| Volumetric Flow Rate | | | | |
| ACFM | 86600 | 82800 | 83200 | 84200 |
| DSCFM | 42900 | 40300 | 39800 | 41000 |
| Gas Temperature (°F) | 222 | 241 | 242 | 235 |
| Gas Moisture Content (%v/v) | 34.3 | 33.6 | 34.9 | 34.3 |
| Gas Composition (%v/v,Dry) | | | | |
| CO2 | 6.5 | 7.8 | 7.7 | 7.3 |
| O2 | 12.4 | 10.8 | 10.7 | 11.3 |
| N2 | 81.1 | 81.5 | 81.6 | 81.4 |
| Isokinetic Variation (%) | 100.5 | 97.6 | 101.7 | |
| Particulate Emission Rate (LB/HR) | 7.7 | 6.9 | 6.4 | 7.0 |
| Particulate Concentration | | | | |
| GR/ACF, Total | 0.010 | 0.010 | 0.009 | 0.010 |
| GR/DSCF, Total | 0.021 | 0.020 | 0.019 | 0.020 |
| GR/DSCF, Dry Catch Only | 0.018 | 0.016 | 0.016 | 0.017 |

# RESULTS OF ORSAT AND MOISTURE DETERMINATIONS

Commercial Asphalt Company
Ramsey, Minnesota
PACE Project No. 930831.401

PACE Incorporated
September 15, 1993

**TABLE 2**
RESULTS OF ORSAT AND MOISTURE DETERMINATIONS
TEST 1

Baghouse Outlet

| **Parameter** | **Run 1** | **Run 3** | **Run 4** |
|---|---|---|---|
| Date of Run | 9/8/93 | 9/8/93 | 9/8/93 |
| Time of Run | 715-824 | 1251-1402 | 1501-1610 |
| ORSAT (%v/v) | | | |
| Dry Basis | | | |
| Carbon Dioxide | 6.50 | 7.75 | 7.70 |
| Oxygen | 12.40 | 10.80 | 10.70 |
| Carbon Monoxide* | * | * | * |
| Nitrogen | 81.10 | 81.45 | 81.60 |
| WetBasis | | | |
| Carbon Dioxide | 4.27 | 5.15 | 5.02 |
| Oxygen | 8.15 | 7.17 | 6.97 |
| Carbon Monoxide* | * | * | * |
| Nitrogen | 53.28 | 54.09 | 53.15 |
| Portable Oxygen Monitor Result | | | |
| Time Weighted Average (%O2) | ** | ** | ** |
| Moisture Collected (ml) | 520.0 | 460.0 | 500.0 |
| Moisture Content (%v/v) | 34.30 | 33.59 | 34.86 |
| Molecular Weight of Flue Gas (lb/lb-mole) | | | |
| Dry | 29.54 | 29.67 | 29.66 |
| Wet | 25.58 | 25.75 | 25.60 |
| Fo | 1.308 | 1.303 | 1.325 |

*Carbon monoxide was not measured, assumed concentrations less than 0.01%.
** Did not use Portable Oxygen Analyzer because it was not working correctly.

# RESULTS OF PARTICULATE LOADING DETERMINATIONS

Commercial Asphalt Company
Ramsey, Minnesota
PACE Project No. 930831.401

PACE Incorporated
September 15, 1993

**TABLE 3**
RESULTS OF PARTICULATE LOADING DETERMINATIONS
TEST 1

Baghouse Outlet

| **Parameter** | **Run 1** | **Run 3** | **Run 4** |
|---|---|---|---|
| Date of Run | 9/8/93 | 9/8/93 | 9/8/93 |
| Time of Run | 715-824 | 1251-1402 | 1501-1610 |
| Sample Duration (Min.) | 60.0 | 60.0 | 60.0 |
| Average Flue Gas Temperature (°F) | 222.4 | 241.4 | 242.3 |
| Moisture Content of Flue Gas (%v/v) | 34.30 | 33.59 | 34.86 |
| Particulate Collected (Mg) | | | |
| Wet Catch | 7.3 | 10.7 | 9.0 |
| Dry Catch | 56.1 | 44.7 | 44.8 |
| Total | 63.4 | 55.4 | 53.8 |
| Volumetric Flow Rate | | | |
| ACFM | 86590 | 82760 | 83250 |
| SCFM | 65340 | 60750 | 61030 |
| DSCFM | 42920 | 40350 | 39760 |
| Sample Volume (Cubic Feet) | | | |
| Meter Conditions | 48.19 | 45.90 | 47.06 |
| Dry Standard | 46.88 | 42.81 | 43.98 |
| Isokinetic Variation (%) | 100.5 | 97.6 | 101.7 |
| Particulate Concentration | | | |
| Wet Catch, GR/DSCF | 0.002 | 0.004 | 0.003 |
| Dry Catch, GR/DSCF | 0.018 | 0.016 | 0.016 |
| Total, GR/DSCF | 0.021 | 0.020 | 0.019 |
| Particulate Emission Rate* | | | |
| Total, LB/HR | 7.67 | 6.91 | 6.44 |

*Dry catch plus organic/residual wet catch

Commercial Asphalt Company
Ramsey, Minnesota
PACE Project No. 930831.401

PACE Incorporated
September 15, 1993

**TABLE 4**
RESULTS OF OPACITY OBSERVATIONS
TEST 1

Baghouse Outlet

| Percent Opacity | Optical Density | Relative Frequency |
|---|---|---|
| 0 | 0.000 | 100.00 |
| 5 | 0.022 | 0.00 |
| 10 | 0.046 | 0.00 |
| 15 | 0.071 | 0.00 |
| 20 | 0.097 | 0.00 |
| 25 | 0.125 | 0.00 |
| 30 | 0.155 | 0.00 |
| 35 | 0.187 | 0.00 |
| 40 | 0.222 | 0.00 |
| 45 | 0.260 | 0.00 |
| 50 | 0.301 | 0.00 |
| 55 | 0.347 | 0.00 |
| 60 | 0.398 | 0.00 |
| 65 | 0.456 | 0.00 |
| 70 | 0.523 | 0.00 |
| 75 | 0.602 | 0.00 |
| 80 | 0.699 | 0.00 |
| 85 | 0.824 | 0.00 |
| 90 | 1.000 | 0.00 |
| 95 | 1.301 | 0.00 |
| 99 | 2.000 | 0.00 |
| **Average >** 0.0 | 0.000 | **Total >** 100 |

Average Opacity Per Six Minute Period:

| Period | Opacity | Period | Opacity |
|---|---|---|---|
| 1 | 0.0 | 6 | 0.0 |
| 2 | 0.0 | 7 | 0.0 |
| 3 | 0.0 | 8 | 0.0 |
| 4 | 0.0 | 9 | 0.0 |
| 5 | 0.0 | 10 | 0.0 |

High Six Minute Average: 0.0
Maximum reading: 0.0
Minumum reading: 0.0

Observer: M. Loftus
Date of test: 9/8/93
Time of test: 715-815

NOTE: The high six minute average opacity might not coincide with any of the 10 reported six minute periods. The high value is the maximum consecutive period possible and may overlap two of the ten consecutive six-minute periods.

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THE ASSURANCE OF QUALITY

November 5,1993

Mr. Brent Schlueter
Commercial Asphalt Company
P.O. Box 1480
10633 89th Avenue North
Maple Grove, MN 55311-6480

RE: PACE Project No. 930831.402
Fuel Analysis Report

Dear Mr. Schlueter,

At the request of PACE, Inc., Minnesota Valley Testing Laboratories is currently conducting a second Total Halogen analysis on the fuel samples collected on September 8, 1993 at the Hox Mix Asphalt Plant located in Ramsey, Minnesota. This analysis is to verify the results analyzed on October 10, 1993.

The results should be provided to me by November 11, 1993.

I'm sorry for the delay and hope this causes no inconviences for you.

If you have any questions or comments, please feel free to contact me at (612) 525-3364.

Respectfully,

Michael Loftus

Michael Loftus
Project Manager, Air Sampling Department

CHS/cjn

Enclosures

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THE ASSURANCE OF QUALITY

November 16, 1993

Mr. Brent Schlueter
Commercial Asphalt Company
P.O. Box 1480
10633 89th Avenue North
Maple Grove, MN 55311-6480

RE: PACE Project No. 930831.402
Fuel Analysis Report

Dear Mr. Schlueter,

Please find enclosed four copies of our fuel analysis report the September 8, 1993 Particulate and Visual Emission Compliance Test on the Baghouse Outlet at the Commercial Asphalt Company Facility Located in Ramsey, Minnesota."

A duplicate analysis was performed on the Halogen content along with a Volatile Organic Compound summary.

If you have any questions or comments, please feel free to contact me or our Client Services Department at (612) 525-3364.

Respectfully,

Michael S. Loftus
Project Manager, Air Sampling Department

1710 Douglas Drive North
Minneapolis, MN 55422
TEL: 612-544-5543
FAX: 612-525-3377

Commercial Asphalt, Co.
Ramsey Hot Mix Facility
Ramsey, Minnesota
930831.401

PACE Incorporated
November 16, 1993

**TABLE 5**
RESULTS OF FUEL ANALYSIS
TEST 1

Baghouse Stack

| Analyte: | **RUN 1** | **RUN 3** | **RUN 4** | **Average** |
|---|---|---|---|---|
| pH | 6.6 | 6.6 | 6.5 | 6.6 |
| Lead (mg/kg) | 44.8 | 53.7 | 54.5 | 51.0 |
| PCB (ppm) | <1 | <1 | <1 | <1 |
| Sulfated Ash (wt. %) | 0.40 | 0.35 | 0.39 | 0.38 |
| Ash (wt. %) | 0.90 | 0.84 | 0.81 | 0.85 |
| Calorific Value (cal/g) | 8070 | 10291 | 10420 | 9594 |
| Calorific Value (BTU/lb) | 14526 | 18524 | 18756 | 17269 |
| Total Sulfur (wt. % ) | 0.26 | 0.41 | 0.51 | 0.39 |
| Flash Point (°F) | 221 | 225 | 248 | 231 |
| Total Halogens (ug/g): | | | | |
| Analysis on 10/27/93 | 1120 | 987 | 965 | 1024 |
| Analysis on 11/15/93 | 870 | 1043 | 835 | 916 |

# RESULTS OF PRELIMINARY SOURCE DETERMINATIONS

**TABLE 6**
RESULTS OF AIR FLOW DETERMINATIONS
TEST 1

Baghouse Outlet

| | |
|---|---|
| Date of Run | 9/1/93 |
| Time of Measurement | 1216 |
| Number of Sampling Ports | 5 |
| Number of Points Sampled | 20 |
| Barometric Pressure (In. Hg) | 29.50 |
| Static Pressure (In. WC) | 0.33 |
| Absolute Flue Gas Pressure (In. Hg) | 29.52 |
| Average Flue Gas Temperature (F) | 204 |
| Average Moisture Content (%v/v) | 36 |
| Flue Gas Average Velocity (Feet/Second) | 40.35 |
| Duct Dimension (Inches) | 69.5x52 |
| Duct Cross-sectional Area (Square Feet) | 25.10 |
| Volumetric Flow Rate | |
| ACFM | 60760 |
| SCFM | 47680 |
| DSCFM | 30510 |

## PROCESS DESCRIPTION

The Commercial Asphalt Company facility located in Ramsey, Minnesota uses a Drum Mix Hauck Furnace capable of producing asphalt paving material. It fires waste oil or natural gas as dryer fuel. The burner rating, at a setting of 100 percent, is 175 MMBTU/HR. Pollution control is facilitated by a CMI SVM-12 Baghouse which was last serviced on August 30, 1993 by having a blacklight inspection and changing the filter dust blower. The normal pressure drop across the control equipment is 5.2 inches of water. A relational flow diagram is represented by Figure 1.

For this series of tests, the average asphalt production rate was 580 TPH while burning waste oil as dryer fuel at an average rate of 773.3 GPH. The Aggregate mix moisture content averaged 4.6 percent and recycled asphalt averaged 32 percent over the three runs. The baghouse was operated at an average of 5.3 inches of water pressure drop and the average operating temperature of the drum mixer was 269°F.

# Commercial Asphalt Company
## Ramsey, Minnesota
## Asphalt Plant Flow Diagram

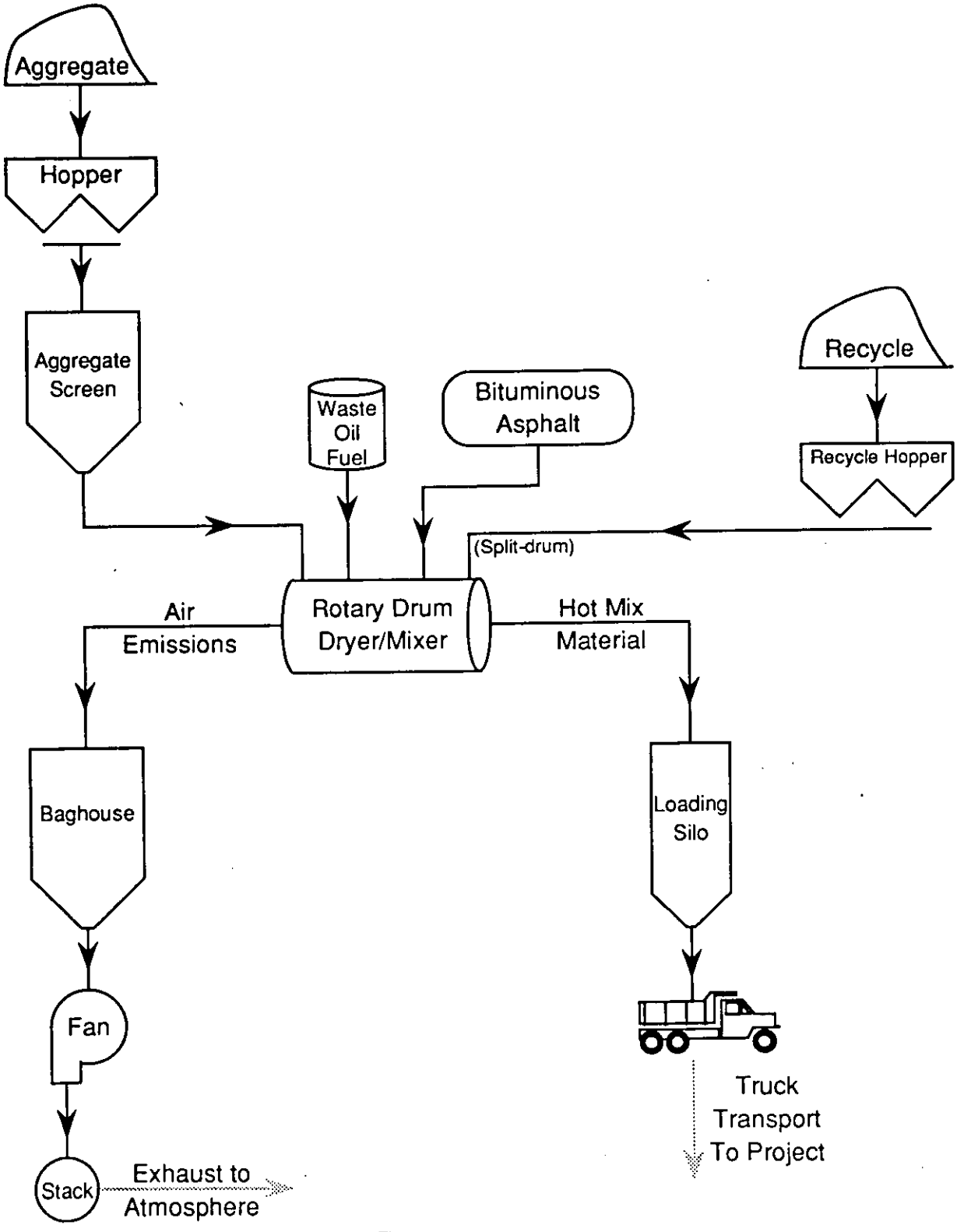



Figure 1

## TEST PROCEDURES SUMMARY

Testing on the Baghouse Outlet was performed from five test ports oriented horizontally on a vertical stack, approximately 5.1 duct diameters downstream of the nearest flow disturbance and 1.3 duct diameters upstream of the stack outlet. The duct dimension at this point was verified on-site and measures 69.5" x 52". A 20 point traverse was used to extract representative flue gas samples. Each point was sampled 3 minutes for a run duration of 60 minutes. Test port and traverse point locations are displayed in Figures 2 and 3.

Particulate testing was performed in accordance with EPA Methods 1 - 5, 40 CFR 60, Appendix A. A preliminary velocity traverse and moisture estimation were conducted so that an appropriate sampling nozzle required for isokinetic sample withdrawal could be selected. A PACE sampling train that meets or exceeds the specifications outlined in the above reference was used to collect particulate samples. A temperature controlled glass-lined sampling probe was used to extract flue gas samples and transport them to an all glass filter and cyclone assembly in a temperature controlled oven. The back half of the particulate sampling train consisted of a series of three glass impingers, each of the first two prepared with 100 mls of deionized water, followed by a desiccant packed drying column. In addition, integrated gas samples were collected concurrently with the three particulate runs so that gas composition (Orsat) could be determined. Gas samples were verified in the field with a portable oxygen analyzer to ensure that no leakage occurred between the site and the laboratory. The portable oxygen analyzer was also used to monitor the oxygen content of the flue gas throughout the test.

Opacity evaluations were performed in accordance with EPA Method 9, 40 CFR 60, Appendix A. After positioning himself with respect to the sun, the source and plume (wind) direction, the certified observer proceeds to record opacity readings at 15 second intervals for one hour. A total of 240 observations is recorded in 60 minutes. The readings are integrated to calculate a one-hour average opacity and ten successive six-minute averages. In addition, computer spreadsheets are used to search the data set to find a group of 24 consecutive

readings anywhere within the one-hour evaluation for the highest possible six-minute average.

Air flow determinations were performed in accordance with EPA Method 2 using traverse point protocols specified by EPA Method 1, 40 CFR 60, Appendix A. Point velocity measurements were conducted using a S-Type pitot tube and a Neotronics Model EDM-1 Electronic Digital Manometer. Source gas moisture content was estimated using wet bulb/dry bulb temperature measurements.

# Commercial Asphalt Company

Ramsey, Minnesota

Drum Dryer Baghouse Stack

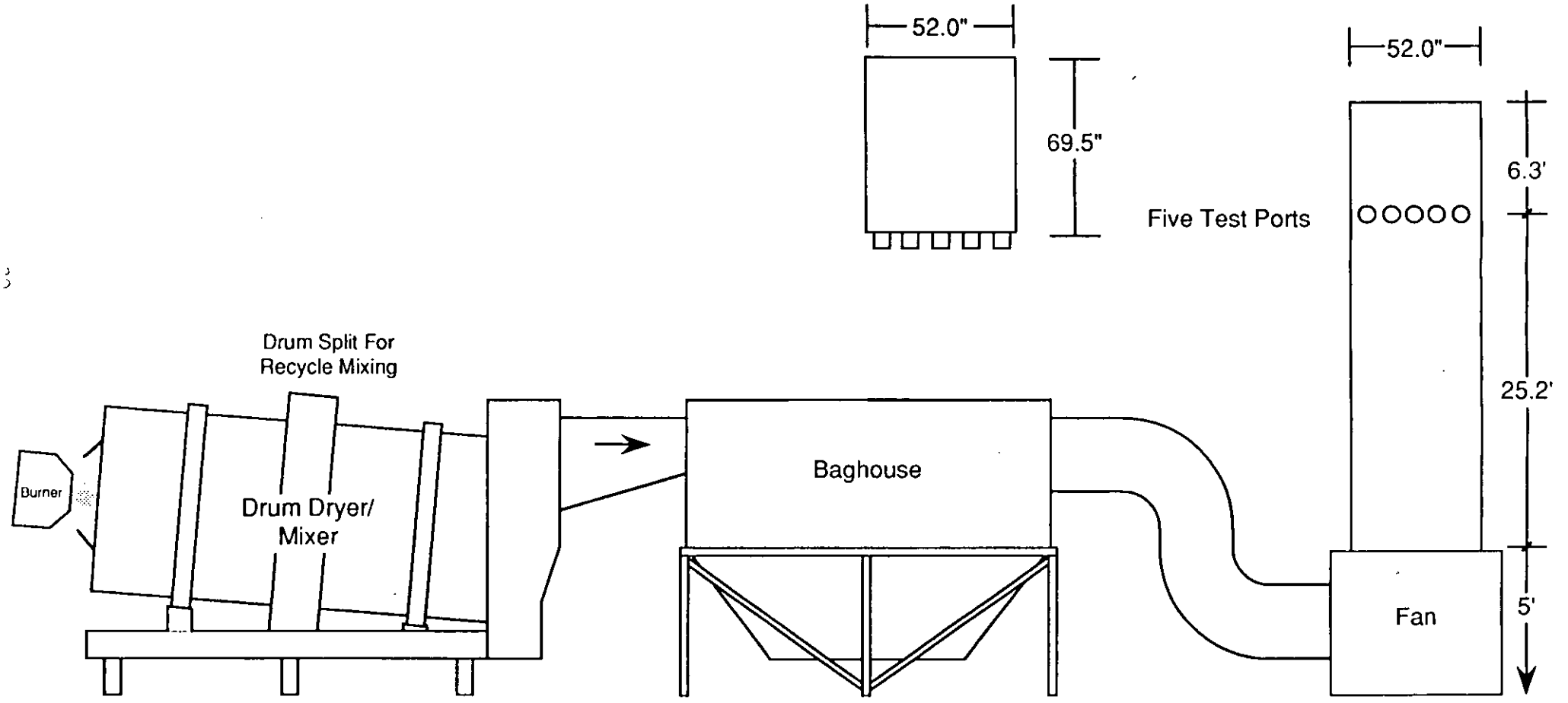
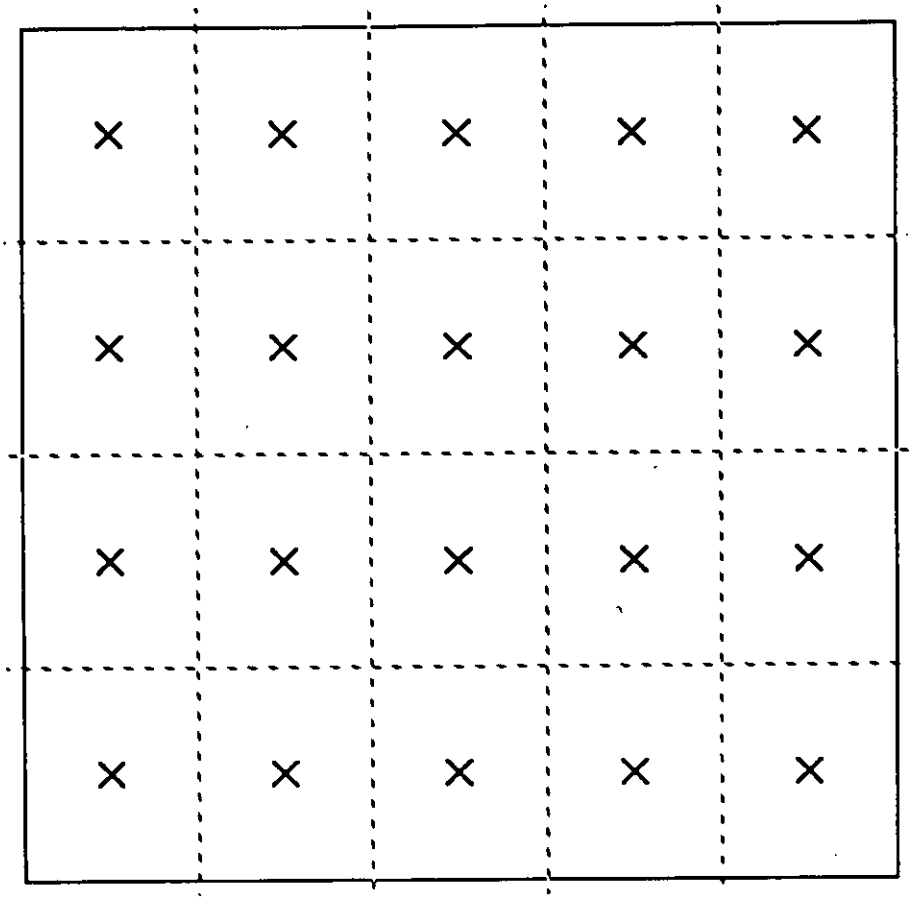



Figure 2

# Commercial Asphalt Company

Ramsey, Minnesota
Baghouse Stack

## Location of Traverse Points



| | |
|---|---|
| Duct Dimensions (Inches) | 69.5 x 52.0 |
| Number of Sampling Ports | 5 |
| Number of Traverse Points | 20 |

Figure 3

## APPENDIX A

Field Data Sheets and Notes

# EPA METHODS 2-5 FIELD DATA SHEETS

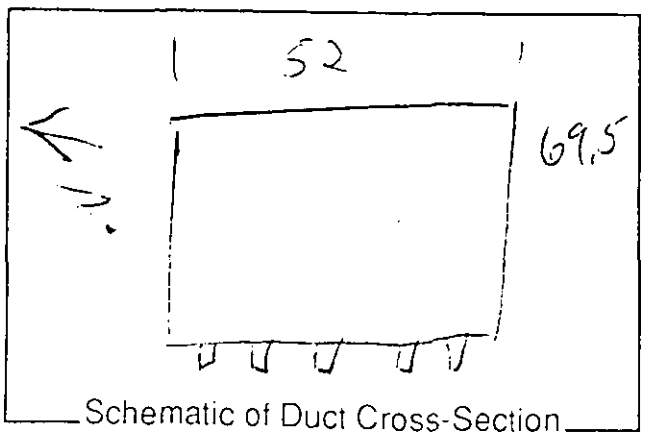
# EPA Method 2 Field Data Sheet

Project CA Ranch SCV
Test Location Baghouse Outlet
Date 9-1-93 Test 1 Run 1
Operators Tom Kuchinski Mark Olson
Barometric Pressure 29.52 Inches Hg
Static Pressure -1.20 Inches $H_2O$
Pitot Leak Check - Positive OK Negative OK

Pitot Tube No. 10 $C_p$ .840
Pressure Measurement Device oil manometer
Duct Dimensions 69.5 x 52 Inches
Port Length 2.0 Inches
Temp. - Dry Bulb ~~204~~ °F, Wet Bulb 167 °F
Moisture Content ~~36~~ 36% %
320P Oxygen Concentration 13.2 %
Time of Measurement 1216 (24 Hr. Clock)

| Traverse Point Identification | | | | Cyclonic Flow Yaw Angle | Velocity Head ΔP Inches $H_2O$ | Stack Temperature °F |
|---|---|---|---|---|---|---|
| Point Number | % Of Diameter | Inches From: Wall | Inches From: Port | | | |
| EX 1 | | 8.69 | 10.69 | ° | .20 | |
| 2 | | 26.06 | 28.06 | ° | .32 | |
| 3 | | 43.44 | 45.44 | ° | .34 | |
| 4 | | 60.81 | 62.81 | ° | .37 | |
| D ~~X~~ 1 | | | | ° | .26 | |
| 2 | | | | ° | .30 | |
| 3 | | | | ° | .40 | Avg ΔP = .34 |
| 4 | | | | ° | 2.64 .41 | |
| C ~~X~~ 1 | | | | ° | .29 | |
| 2 | | | | ° | .36 | |
| 3 | | | | ° | .47 | |
| 4 | | | | ° | .53 | |
| D ~~X~~ 1 | | | | ° | .28 | |
| 2 | | | | ° | .30 | |
| 3 | | | | ° | .36 | |
| 4 | | | | ° | .44 | |
| A ~~X~~ 1 | | | | ° | .33 | |
| 2 | | | | ° | .36 | |
| 3 | | | | ° | .28 | |
| 4 | | | | ° | .42 | |
| | | | | ° | | |
| | | | | ° | | |
| | | | | ° | | |
| | | | | ° | | |

Opt ~~.20~~ use Opt = .33



Schematic of Duct Cross-Section

Computer Data Summary:

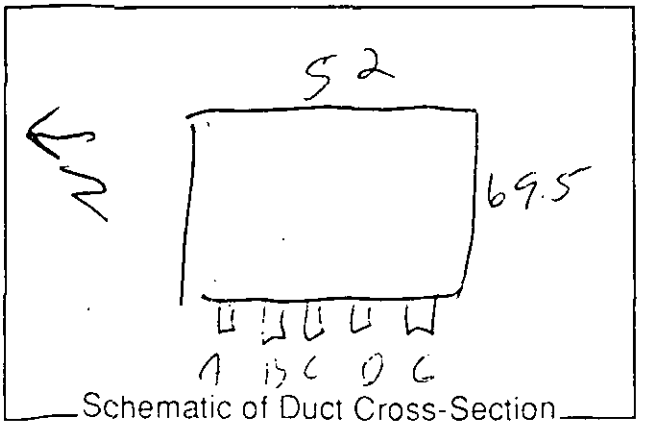
Stack Pressure 29.52 Inches Hg
Duct Area 25.047 Square Feet
Molecular Weight - $M_d$ 29.91
Molecular Weight - $M_s$ 25.62
Avg. Duct Temperature 225 °F
Average $\sqrt{\Delta P}$ .5796
Flue Gas Velocity 40.93 Feet/Sec.
Volumetric Flow Rate:
ACFM 61324
DSCFM 29354

# EPA Method 2 Field Data Sheet

Project CA / Ramsey
Test Location Dayhouse Oven
Date 4-2-93 Test 1 Run 1
Operators JAK MCW MAM
Barometric Pressure ~~29.16~~ Inches Hg
Static Pressure ~~0~~ +.22 Inches $H_2O$
Pitot Leak Check - Positive _____ Negative _____

Pitot Tube No. 10 $C_p$ .840
Pressure Measurement Device Oil Manometer
Duct Dimensions 52 X 69.5 Inches
Port Length 2.0 Inches
Temp. - Dry Bulb _____ °F, Wet Bulb _____ °F
Moisture Content _____ %
320P Oxygen Concentration _____ %
Time of Measurement ~~0703~~ (24 Hr. Clock)
cyclonic at 0635

| Traverse Point Identification | | | | Cyclonic Flow Yaw Angle | Velocity Head ΔP Inches $H_2O$ | Stack Temperature °F |
|---|---|---|---|---|---|---|
| Point Number | % Of Diameter | Inches From: Wall | Inches From: Port | | | |
| A 1 | | 9.69 | 10.69 | 3 ° | ~~.58~~ | |
| 2 | | 26.06 | 26.06 | 3 ° | | |
| 3 | | 43.44 | 45.44 | 3 ° | | |
| 4 | | 60.81 | 62.81 | -1 ° | | |
| B 1 | | | | 4 ° | | |
| 2 | | | | 2 ° | | |
| 3 | | | | -2 ° | | |
| 4 | | | | 0 ° | | |
| C 1 | | | | -13 ° | | |
| 2 | | | | -6 ° | | |
| 3 | | | | 5 ° | | |
| 4 | | | | 5 ° | | |
| D 1 | | | | 4 ° | | |
| 2 | | | | 4 ° | | |
| 3 | | | | 5 ° | | |
| 4 | | | | 3 ° | | |
| E 1 | | | | 0 ° | | |
| 2 | | | | 1 ° | | |
| 3 | | | | 2 ° | | |
| 4 | | | | 3 ° | | |
| | | | | ° | | |
| | | | | ° | | |
| | | | | ° | | |
| | | | | ° | | |



Schematic of Duct Cross-Section

Computer Data Summary:

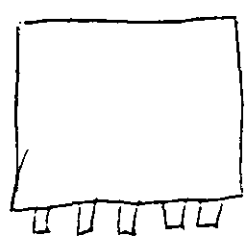
Stack Pressure _____ Inches Hg
Duct Area _____ Square Feet
Molecular Weight - $M_d$ _____
Molecular Weight - $M_s$ _____
Avg. Duct Temperature _____ °F
Average $\sqrt{\Delta P}$ _____
Flue Gas Velocity _____ Feet/Sec.
Volumetric Flow Rate:
ACFM _____
DSCFM _____

# EPA Method 2 Field Data Sheet

Project CA / Ramsey
Test Location Baghouse outlet
Date 9- -95 Test / Run 1
Operators TAK MGW
Barometric Pressure 29.16 Inches Hg
Static Pressure _____ Inches $H_2O$
Pitot Leak Check - Positive 0.0 Negative 0.0

Pitot Tube No. 8 $C_p$ .840
Pressure Measurement Device Oil Manometer
Duct Dimensions 52 X 69.5 Inches
Port Length 2.0 Inches
Temp. - Dry Bulb 234 °F, Wet Bulb 163 °F
Moisture Content 33.0 %
320P Oxygen Concentration _____ %
Time of Measurement 0703 (24 Hr. Clock)

| Traverse Point Identification | | | | Cyclonic Flow Yaw Angle | Velocity Head ΔP Inches $H_2O$ | Stack Temperature °F |
|---|---|---|---|---|---|---|
| Point Number | % Of Diameter | Inches From: Wall | Inches From: Port | | | |
| A 1 | | 8.69 | 10.69 | ° | .38 | |
| 2 | | 26.06 | 28.06 | ° | .44 .39 | |
| 3 | | 43.44 | 45.44 | ° | .47 | |
| 4 | | 60.81 | 62.81 | ° | .51 | |
| B 1 | | | | ° | . | |
| 2 | | | | ° | . | |
| 3 | | | | ° | . | |
| 4 | | | | ° | . | |
| C 1 | | | | ° | . | |
| 2 | | | | ° | . | |
| 3 | | | | ° | . | |
| 4 | | | | ° | . | |
| D 1 | | | | ° | . | |
| 2 | | | | ° | . | |
| 3 | | | | ° | . | |
| 4 | | | | ° | . | |
| E 1 | | | | ° | . | |
| 2 | | | | ° | . | |
| 3 | | | | ° | . | |
| 4 | | | | ° | . | |
| | | | | ° | . | |
| | | | | ° | . | |
| | | | | ° | . | |
| | | | | ° | . | |



Schematic of Duct Cross-Section

Computer Data Summary:

Stack Pressure _____ Inches Hg
Duct Area _____ Square Feet
Molecular Weight - $M_d$ _____
Molecular Weight - $M_s$ _____
Avg. Duct Temperature _____ °F
Average $\sqrt{\Delta P}$ _____
Flue Gas Velocity _____ Feet/Sec.
Volumetric Flow Rate:
ACFM _____
DSCFM _____

## Field Computer Summary

Project Name: CA / Ramsey
Sampling Location: Baghouse Outlet
Date of Test: 9-8-93
Test Number: 1

Operator: Tom Nakanishi

| Initialization Parameters | | Run Specific Input Parameters | | | | |
|---|---|---|---|---|---|---|
| | | | Run 1 | Run 2 | Run 3 | Run 4 |
| Meter Coef. - ∂ | = .9974 | V/O | 439.40 | 487.90 | 524.91 | 571.10 |
| Orif. Coef. - ΔH@ | = 2.118 | No. Of Points | 26 | 30 | 20 | 20 |
| Pitot Coef. - $C_p$ | = .840 | MC | 33.0 | 34.5 | 34.9 | 33.6 |
| Nozzle Dia. - $D_n$ | = .311 | V/F | 487.54 | 524.70 | 570.41 | 618.16 |
| Bar. Pres. - $P_b$ | = 29.16 | Grams $H_2O$ | 520 | 392 | 460 | 500 |
| Time/Point - ΔT | = 5 | Run Time | 60 | ~~60~~ 49.9 | 60 | 60 |
| Moisture Content | = 33.0 | 1-Rnd/2-Rect | 2 | 2 | 2 | 2 |
| % Oxygen | = 12.0 | Diameter(Ins.) | | | | |
| Meter Temp. - $t_m$ | = 61 | Length(Ins.) | 69.5 | 69.5 | 69.5 | 69.5 |
| Static Pres. - $P_g$ | = 1.22 | Width(Ins.) | 52 | 52 | 52 | 52 |

End Of Run Summary

| | Run 1 | Run 2 | Run 3 | Run 4 |
|---|---|---|---|---|
| Avg. √ΔP | .722 | .716 | .683 | 0.685 |
| Avg. ΔH | 2.363 | 2.337 | 2.056 | 2.159 |
| Avg. $t_s$ | 222.35 | 231.94 | 241.40 | 242.30 |
| Avg. $t_m$ | 70.78 | 90.38 | 93.18 | 92.23 |
| Standard Vol. | 36.88 | 34.52 | 42.81 | 43.98 |
| Moist. Content | 34.30 | 34.83 | 37.59 | 34.86 |
| Avg. Gas Vel. | 49.44 | 49.31 | 47.53 | 47.44 |
| % Isokinetic | 100.78 | 101.64 | 97.35 | 102.28 |
| ACFM | 74445 | 74251 | 71562 | 71430 |
| DSCFM | 36904 | 36005 | 34886 | 34112 |

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# EPA Method 5 Field Data Sheet

Project CA / Ramsey — Train No. m-6 P4-24-93 — Pitot Tube No. 8 $C_p$ .840 — Sampling Train Leak Checks:

Sample Location Baghouse Outlet — Meter Coef. ∂ .9974 — Bar. Pres. 24.16 Ins. Hg — Pretest 0.00 @ 15 Ins. Hg

Date 9-8-93 Test 1 Run 1 — Orifice Coef. ΔH@ 2.118 — Static Pres. +.22 Ins. $H_2O$ — Posttest 0.00 @ 8.5 Ins. Hg

Operators TAE MEW — Nozzle No 2-3 $D_n$ .311 — Estimated MC 33.0 % — Pitot - Positive 0.0 Negative 0.0

| Point No. | Time ΔT | Meter Vol. $V_m$ Cubic Feet | Velocity Head - ΔP Inches WC | Orifice Meter - ΔH Inches WC | Desired $\Delta V_m$ | Desired $V_m$ | Vacuum Inches Hg | Stack Temp. °F | Sampling Train Temperatures - °F: Filter | Probe | Impinger Outlet | Meter Inlet | Meter Outlet | 320 P Oxygen Percent | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (0715) | (439.40) | | | | | | | | | | | | | |
| 4 | 3 | 441.80 | .54 | 2.41 | 242 | 182 | 4.5 | 231 | 233 | 267 | 63 | 58 | 59 | | |
| 3 | 6 | 444.35 | .73 | 3.24 | 281 | 463 | 6.7 | 231 | 237 | 258 | 56 | 62 | 59 | | |
| 2 | 9 | 447.22 | .61 | 2.41 | 267 | 729 | 6.3 | 230 | 242 | 248 | 59 | 66 | 59 | | |
| 1 | 12 | 444.04 | .45 | 1.98 | 220 | 949 | 4.2 | 226 | 249 | 230 | 61 | 68 | 59 | | |
| 3 | 15 | 452.00 | .60 | 2.64 | 255 | 204 | 5.2 | 225 | 254 | 251 | 59 | 70 | 60 | | |
| 3 | 18 | 454.52 | .58 | 2.62 | 254 | 458 | 5.7 | 227 | 253 | 256 | 58 | 72 | 60 | | |
| 2 | 21 | 457.00 | .54 | 2.44 | 245 | 703 | 5.3 | 229 | 250 | 253 | 60 | 74 | 61 | | |
| 1 | 24 | 459.14 | .41 | 1.86 | 215 | 918 | 4.3 | 226 | 249 | 238 | 62 | 76 | 61 | | |
| 4 | 27 | 461.72 | .57 | 2.62 | 255 | 172 | 5.2 | 220 | 249 | 246 | 61 | 76 | 63 | | |
| 3 | 30 | 464.25 | .57 | 2.61 | 254 | 427 | 5.2 | 224 | 250 | 257 | 55 | 77 | 63 | | |
| 2 | 33 | 466.45 | .45 | 2.01 | 223 | 650 | 4.7 | 224 | 250 | 251 | 54 | 79 | 64 | | |
| 1 | 36 | 468.74 | .43 | 1.93 | 219 | 869 | 4.3 | 223 | 249 | 236 | 54 | 81 | 65 | | |
| 4 | 39 | 471.27 | .57 | 2.66 | 257 | 137 | 5.1 | 223 | 250 | 253 | 56 | 81 | 66 | | |
| 3 | 42 | 473.79 | .56 | 2.53 | 251 | 378 | 5.1 | 222 | 251 | 259 | 57 | 82 | 67 | | |
| 2 | 45 | 476.10 | .47 | 2.13 | 231 | 609 | 4.9 | 221 | 250 | 252 | 57 | 84 | 68 | | |
| 1 | 48 | 478.47 | .50 | 2.28 | 239 | 848 | 5.2 | 219 | 250 | 244 | 52 | 86 | 69 | | |
| 4 | 51 | 480.38 | .30 | 1.42 | 184 | 032 | 3.5 | 146 | 251 | 255 | 54 | 86 | 70 | | |
| 3 | 54 | 482.69 | .49 | 2.20 | 235 | 272 | 4.9 | 214 | 250 | 254 | 51 | 86 | 71 | | |
| 2 | 57 | 485.11 | .52 | 2.32 | 242 | 514 | 5.5 | 218 | 240 | 249 | 52 | 88 | 72 | | |
| 1 | 60 | 487.54 | .55 | 2.46 | 249 | 763 | 5.7 | 218 | 247 | 243 | 53 | 90 | 73 | | |
| | (0824) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | 0=60 | $V_m$ = 48.19 | .722 | $\overline{\Delta H}$ = 2.303 | | | | $\overline{T_s}$ = 222.35 | | | | | $\overline{T_m}$ = 70.18 | | |

Samples Recovered: Filter No. 2918 ; ☒ Probe Wash; ☒ Wet Catch; ☐ Other _____

Integrated Gas Sampling Data:

Box No. 4 — Bag Material Tedlar

Bag No. 1 — Leak Checks _____ cc/min. @ 25"Hg

Bag Vol. 40 Liters — Posttest $O_2$ Reading _____

320 P No. _____

Moisture Recovery Data:

| Impinger No. | 1 | 2 | 3 | 4 | Desiccant | Total |
|---|---|---|---|---|---|---|
| Final Volume | 361 | 343 | 3 | | 13 77 | |
| Initial Volume | 100 | 100 | 0 | | 13 57 | |
| Difference | 261 | 243 | 3 | | 13 | 520 |

AS 1:85

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# EPA Method 5 Field Data Sheet

Project CA / Ramsey | Train No. Cm-6 P484-34 | Pitot Tube No. 8 $C_p$ .840 | Sampling Train Leak Checks:
Sample Location Baghouse Outlet | Meter Coef. ∂ .9974 | Bar. Pres. 29.16 Ins. Hg | Pretest 0.00 @ 15 Ins. Hg
Date 9-6-93 | Test 1 | Run 2 | Orifice Coef. ΔH@ 2.118 | Static Pres. +.22 Ins. $H_2O$ | Posttest 0.00 @ 7.0 Ins. Hg
Operators TAK MEW | Nozzle No. 2-3 $D_n$ .311 | Estimated MC 34.5 % | Pitot - Positive ☐ Negative ☐

| Point No. | Time ΔT | Meter Vol. $V_m$ Cubic Feet | Velocity Head - ΔP Inches WC | Orifice Meter - ΔH Inches WC | Desired $\Delta V_m$ | Desired $V_m$ | Vacuum Inches Hg | Stack Temp. °F | Sampling Train Temperatures - °F: Filter | Probe | Impinger Outlet | Meter Inlet | Meter Outlet | 320 P Oxygen Percent | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1000) | (487.90) | | | | | | | | | | | | | |
| A 4 | 3 | 490.26 | .51 | 2.37 | 243 | 033 | 4.5 | 238 | 245 | 255 | 64 | 85 | 85 | | w=32 |
| 3 | 6 | 492.89 | .55 | 2.63 | 259 | 292 | 5.3 | 232 | 242 | 250 | 52 | 86 | 85 | | |
| 2 | 9 | 495.46 | .52 | 2.64 | 260 | 551 | 5.3 | 230 | 245 | 251 | 55 | 84 | 85 | | w=37 |
| 1 | 12 | 497.67 | .44 | 1.86 | 219 | 770 | 4.3 | 228 | 248 | 245 | 56 | 91 | 85 | | |
| B 4 | 15 | 500.25 | .63 | 2.69 | 263 | 032 | 5.6 | 225 | 226 | 258 | 60 | 92 | 85 | | |
| 3 | 18 | 502.78 | .61 | 2.56 | 256 | 289 | 5.5 | 236 | 249 | 263 | 56 | 93 | 86 | | w=34 |
| 2 | 21 | 505.20 | .50 | 2.27 | 242 | 531 | 5.1 | 237 | 250 | 252 | 57 | 96 | 86 | | |
| 1 | 24 | 507.46 | .39 | 1.78 | 214 | 745 | 4.4 | 236 | 249 | 242 | 58 | 97 | 87 | | |
| C 4 | 27 | 510.21 | .66 | 3.04 | 281 | 025 | 6.4 | 230 | 240 | 256 | 63 | 97 | 84 | | w=34 |
| 3 | 30 | 512.80 | .57 | 2.56 | 257 | 283 | 6.1 | 241 | 249 | 263 | 58 | 99 | 84 | | |
| 2 | 33 | 515.08 | .45 | 1.92 | 223 | 506 | 4.9 | 246 | 251 | 256 | 57 | 100 | 84 | | * |
| 1 | 36 | 517.24 | .41 | 1.94 | 224 | 730 | 4.2 | 208 | 249 | 243 | 66 | 93 | 91 | | w=34 |
| D 4 | 39 | 519.94 | .60 | 2.78 | 268 | 998 | 6.1 | 216 | 231 | 253 | 64 | 91 | 90 | | |
| 3 | 42 | 522.47 | .53 | 2.39 | 248 | 247 | 5.6 | 235 | 231 | 261 | 54 | 92 | 91 | | |
| 2 | 45 | 524.70 | .44 | 1.98 | 226 | 473 | 5.0 | 236 | 238 | 253 | 55 | 93 | 91 | | |
| 1 | 48 | 526.1 | .44 | 1.98 | 226 | 699 | | 238 | 247 | 248 | 56 | 95 | 90 | | |
| 1 | 51 | end | | | | | | | 2 | 2 | | 95 | 90 | | |
| 3 | 54 | out | | | | | | | 2 | 2 | | | | | |
| 2 | 57 | 448 | | | | | | | 2 | 2 | | | | | |
| 1 | 60 | (1135) | | | | | | | | | | | | | |
| | | * | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | O=444 | $V_m$=36.80 | .716 | ΔH=2.337 | | | | $T_s$=231.94 | | | | | $T_m$=90.38 | | |

Samples Recovered: Filter No. 2919 : ☒ Probe Wash; ☒ Wet Catch; ☐ Other _____

Integrated Gas Sampling Data:

Box No. 4 | Bag Material Tedlar Pulled to a Bulb
Bag No. 2 | Leak Checks 0.0 cc/min. @ 25"Hg
Bag Vol. 40 Liters | Posttest $O_2$ Reading _____
320 P No. _____

Moisture Recovery Data:

| Impinger No. | 1 | 2 | 3 | 4 | Desiccant | Total |
|---|---|---|---|---|---|---|
| Final Volume | 304 | 267 | 3 | | 1405 | |
| Initial Volume | 100 | 100 | 0 | | 1387 | |
| Difference | 204 | 167 | 3 | | 18 | 392 |

* 1038 Fine vent out in process
1105 Restart
1107 Fine out 35.7
1124 Restart

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# EPA Method 5 Field Data Sheet

Project CA Ramsey | Train No. Cm-6-PB345-1 | Pitot Tube No. 8 $C_p$ .840 | Sampling Train Leak Checks:

Sample Location Baghouse Outlet | Meter Coef. ∂ .9974 | Bar. Pres. 29.16 Ins. Hg | Pretest 0.00 @ 15 Ins. Hg

Date 9-8-93 | Test 1 | Run 3 | Orifice Coef. ΔH@ 2.118 | Static Pres. +.22 Ins. $H_2O$ | Posttest 0.00 @ 9.5 Ins. Hg

Operators TAK MCW | Nozzle No. 2-3 $D_n$ .311 | Estimated MC 34.9 % | Pitot - Positive 0.8 Negative 0.0

| | Point No. | Time ΔT | Meter Vol. $V_m$ Cubic Feet | Velocity Head - ΔP Inches WC | Orifice Meter - ΔH Inches WC | Desired $\Delta V_m$ | Desired $V_m$ | Vacuum Inches Hg | Stack Temp. °F | Sampling Train Temperatures - °F: Filter | Probe | Impinger Outlet | Meter Inlet | Meter Outlet | 320 P Oxygen Percent | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (1251) | (524.91) | | | | | | | | | | | | | |
| A | 4 | 3 | 527.26 | .50 | 2.21 | 238 | 724 | 4.3 | 243 | 249 | 260 | 66 | 88 | 88 | | W |
| | 3 | 6 | 529.64 | .52 | 2.25 | 241 | 970 | 4.5 | 252 | 246 | 261 | 64 | 89 | 88 | | |
| | 2 | 9 | 532.98 | .48 | 2.08 | 231 | 201 | 4.2 | 252 | 249 | 254 | 61 | 92 | 88 | | |
| | 1 | 12 | 534.01 | .34 | 1.49 | 196 | 397 | 3.5 | 247 | 242 | 241 | 63 | 94 | 88 | | W=37 |
| B | 4 | 15 | 536.51 | .54 | 2.48 | 253 | 650 | 4.9 | 237 | 246 | 252 | 66 | 94 | 88 | | |
| | 3 | 18 | 538.94 | .57 | 2.37 | 247 | 898 | 4.8 | 245 | 237 | 261 | 58 | 96 | 88 | | |
| | 2 | 21 | 541.24 | .49 | 2.04 | 230 | 127 | 4.5 | 246 | 249 | 258 | 58 | 97 | 88 | | |
| | 1 | 24 | 543.35 | .40 | 1.67 | 208 | 335 | 3.9 | 245 | 251 | 241 | 59 | 98 | 88 | | W=34 |
| C | 4 | 27 | 546.00 | .62 | 2.84 | 271 | 606 | 5.5 | 237 | 234 | 259 | 63 | 98 | 89 | | |
| | 3 | 30 | 548.54 | .53 | 2.44 | 254 | 860 | 5.3 | 245 | 251 | 263 | 58 | 99 | 89 | | W=55 |
| | 2 | 33 | 550.80 | .43 | 1.87 | 220 | 081 | 4.5 | 245 | 248 | 253 | 58 | 100 | 89 | | |
| | 1 | 36 | 552.90 | .39 | 1.70 | 210 | 291 | 4.1 | 245 | 249 | 247 | 58 | 101 | 89 | | |
| D | 4 | 39 | 555.47 | .57 | 2.54 | 257 | 548 | 5.2 | 232 | 230 | 261 | 62 | 99 | 90 | | |
| | 3 | 42 | 557.86 | .53 | 2.33 | 246 | 794 | 5.1 | 240 | 244 | 263 | 57 | 100 | 90 | | |
| | 2 | 45 | 560.14 | .44 | 1.93 | 224 | 017 | 4.5 | 242 | 246 | 254 | 58 | 101 | 90 | | |
| | 1 | 44 | 562.30 | .43 | 1.89 | 222 | 239 | 4.3 | 241 | 246 | 245 | 56 | 101 | 90 | | |
| E | 4 | 51 | 564.05 | .27 | 1.23 | 179 | 418 | 3.1 | 215 | 249 | 264 | 61 | 100 | 90 | | |
| | 3 | 54 | 566.03 | .33 | 1.46 | 195 | 613 | 3.9 | 234 | 250 | 262 | 56 | 99 | 90 | | W=36 |
| | 2 | 57 | 568.32 | .48 | 2.08 | 232 | 846 | 5.0 | 241 | 249 | 250 | 57 | 100 | 90 | | |
| | 1 | 60 | 570.81 | .58 | 2.16 | 237 | 083 | 5.2 | 242 | 248 | 259 | 58 | 101 | 90 | | |
| | | (1302) | | | | | | | | 2 | | | | | | |
| | | | | | | | | | | 2 | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | Θ=60 | $V_m$ = 45.42 | .683 | ΔH=2.056 | | | | $\overline{T_s}$=241.40 | | | | | $\overline{T_m}$=92.5 | | |

Samples Recovered: Filter No. _____ ; ☒ Probe Wash; ☒ Wet Catch; ☐ Other _____

Integrated Gas Sampling Data:

Box No. 4 | Bag Material Tedlar

Bag No. 3 | Leak Checks 0.0 cc/min. @ 25"Hg

Bag Vol. 70.0 Liters | Posttest $O_2$ Reading _____

320 P No. _____

Moisture Recovery Data:

| Impinger No. | 1 | 2 | 3 | 4 | Desiccant | Total |
|---|---|---|---|---|---|---|
| Final Volume | 310 | 332 | 4 | X | 1366 | |
| Initial Volume | 100 | 100 | 0 | | 1352 | |
| Difference | 210 | 232 | 4 | | 14 | 460 |

# EPA Method 5 Field Data Sheet

Project CA / Ramsey | Train No. CM6 | Pitot Tube No. S | $C_p$ .840

Sample Location Bighouse outlet | Meter Coef. ∂ .9974 | Bar. Pres. 29.16 Ins. Hg

Date 9-8-93 | Test 1 | Run 4 | Orifice Coef. ΔH@ 2.118 | Static Pres. +.02 Ins. $H_2O$

Operators TAK MEW | Nozzle No. 2-3 | $D_n$ .311 | Estimated MC 33.6 %

Sampling Train Leak Checks:
Pretest 0.00 @ 15 Ins. Hg
Posttest 0.00 @ 7.9 Ins. Hg
Pitot - Positive 0.0 Negative 0.0

| Point No. | Time ΔT | Meter Vol. $V_m$ Cubic Feet | Velocity Head - ΔP Inches WC | Orifice Meter - ΔH Inches WC | Desired ΔVm | Desired $V_m$ | Vacuum Inches Hg | Stack Temp. °F | Sampling Train Temperatures - °F: Filter | Probe | Impinger Outlet | Meter Inlet | Meter Outlet | 320 P Oxygen Percent | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1501) | (571.10) | | | | | | | | | | | | | |
| A 4 | 3 | 573.56 | .51 | 2.36 | 247 | 357 | 4.6 | 237 | 248 | 259 | 66 | 88 | 87 | | 164 |
| 3 | 6 | 575.96 | .49 | 2.22 | 239 | 546 | 4.5 | 244 | 246 | 259 | 61 | 88 | 87 | | w=33 164 |
| 2 | 9 | 578.29 | .47 | 2.12 | 233 | 829 | 4.2 | 247 | 247 | 252 | 59 | 90 | 87 | | |
| 1 | 12 | 580.32 | .35 | 1.59 | 202 | 031 | 3.5 | 244 | 247 | 244 | 57 | 92 | 87 | | |
| B 4 | 15 | 583.01 | .61 | 3.78 | 268 | 298 | 5.5 | 242 | 249 | 258 | 63 | 93 | 87 | | |
| 3 | 18 | 585.57 | .56 | 3.53 | 255 | 553 | 5.3 | 250 | 247 | 263 | 58 | 95 | 87 | | 164 |
| 2 | 21 | 587.93 | .45 | 3.04 | 229 | 783 | 4.7 | 248 | 247 | 260 | 59 | 97 | 87 | | |
| 1 | 24 | 589.97 | .38 | 1.73 | 212 | 995 | 3.9 | 245 | 243 | 245 | 60 | 98 | 87 | | |
| C 4 | 27 | 592.65 | .61 | 2.82 | 270 | 265 | 5.6 | 237 | 241 | 251 | 62 | 97 | 87 | | |
| 3 | 30 | 595.18 | .54 | 2.46 | 252 | 517 | 5.2 | 246 | 234 | 266 | 58 | 98 | 88 | | |
| 2 | 33 | 597.46 | .43 | 1.96 | 225 | 742 | 4.5 | 248 | 239 | 257 | 59 | 99 | 88 | | 164 |
| 1 | 36 | 599.65 | .39 | 1.78 | 215 | 957 | 4.2 | 247 | 243 | 245 | 60 | 100 | 88 | | |
| D 4 | 39 | 602.16 | .55 | 2.53 | 256 | 213 | 5.1 | 241 | 250 | 251 | 65 | 98 | 88 | | |
| 3 | 42 | 604.64 | .52 | 2.37 | 248 | 461 | 5.0 | 247 | 251 | 267 | 59 | 99 | 88 | | |
| 2 | 45 | 606.84 | .43 | 1.96 | 225 | 686 | 4.7 | 248 | 253 | 262 | 57 | 100 | 89 | | |
| 1 | 48 | 609.15 | .44 | 2.02 | 229 | 915 | 4.7 | 245 | 249 | 239 | 56 | 101 | 89 | | w=34 165 |
| E 4 | 51 | 611.06 | .29 | 1.36 | 149 | 104 | 3.5 | 213 | 241 | 252 | 62 | 99 | 89 | | |
| 3 | 54 | 613.25 | .44 | 2.02 | 229 | 333 | 4.7 | 236 | 247 | 262 | 57 | 99 | 89 | | |
| 2 | 57 | 615.64 | .47 | 2.15 | 236 | 569 | 5.0 | 240 | 246 | 257 | 57 | 100 | 89 | | |
| 1 | 60 | 618.16 | .52 | 2.37 | 248 | 817 | 5.5 | 241 | 247 | 242 | 57 | 101 | 89 | | |
| | (1610) | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | Θ=60 | $V_m$ = 47.06 | .685 | ΔH= 2.154 | | | | $T_s$ = 242.3 | | | | | $T_m$ = 92.3 | | |

Samples Recovered: Filter No. _____ ; ☒ Probe Wash; ☒ Wet Catch; ☐ Other _____

Integrated Gas Sampling Data:

Box No. B-4 | Bag Material Tedlar
Bag No. 3 | Leak Checks 0.0 cc/min. @ 25"Hg
Bag Vol. 90 Liters | Posttest $O_2$ Reading _____
320 P No. _____

Moisture Recovery Data:

| Impinger No. | 1 | 2 | 3 | 4 | Desiccant | Total |
|---|---|---|---|---|---|---|
| Final Volume | 324 | 248 | 12 | | i4168 | |
| Initial Volume | 100 | 100 | 0 | | 1446 | |
| Difference | 224 | 248 | 12 | | 16 | 500 |

Company: CA / Ramsey Date(s): 9-8-93

Project No.: 930831.401

**Significant Events & Notes**

1) Arrived at 0600
Ready to test at 0650

2) Start R1 at 0715
finish at 0824

3) waited for process for R2 to start
Start at 1000

4) Flame out on Burner stop at 1038 Restart at 1105 stop at 1108 run No good

5) Since run (2) will not be acceptable for compliance Oil from One and Two should be analyzed for Run 1 or a portion taken from it for Combined Sample I mixed them together Midway through R2 before Problems Process saved samples

6) waited for process until 1251 They had to mix something else for about 45 min Begin R3 at 1251

7) During the last port change of run #3 I accidentally scrapped the pitot tubes against the stack wall. I saw the pitot tubes come into contact with the stack through the port hole. I also noticed that the nozzle did not touch

8) the stack wall. Furthermore the nozzle could not of touched the stack wall because the port change that took place was the far left port and the pitot tubes were on that side of the probe. The pitot tubes

9) were between the stack wall and the nozzle during the time that the pitot tubes scrapped the stack wall. When I scrapped the stack I told Tom Kuchinski about the incident. Mark E Wilson 9/8/93

10) The client made a comment when the incident occured but after the run seemed to understand what happed.

11) Diagram of Incident.

# EPA METHOD 9 FIELD DATA SHEETS

pace

AIR SAMPLING DEPARTMENT

# EPA Method 9 Field Data Sheet

Project CIA Ramsey
Source No. 1 I.D. Baghouse stack
Source No. 2 I.D. —
Test No. 1

Evaluation Date 9-8-93
Observer M. Loftus
Certification Date 3-31-93

**Source No. 1**
Type of Source Asphalt MFG. Control Device Baghouse
Fuel Type Waste oil Load 600 TPH

**Source No. 2**
Type of Source — Control Device —
Fuel Type — Load —

Source Height(s) ≈ 50ft Outlet Dimensions 52"x69.5"

Plume Description:
Type ☐ Coning ☐ Fanning ☐ Looping ☒ Lofting ☐ Fumigating
Color Whitish Brown Length 150 - 175 ft
Steam Plume ☒ Attached ☐ Detached ☐ No Visible Steam

Background Description (Type, color) Blue sky

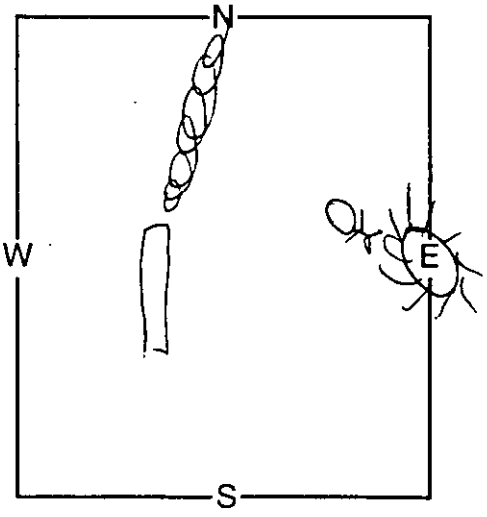
Meteorological Conditions (clear, % cloudy, etc.) clear

Wind Direction from SSW Speed 5-10 mph
Ambient Temp. 55 °F

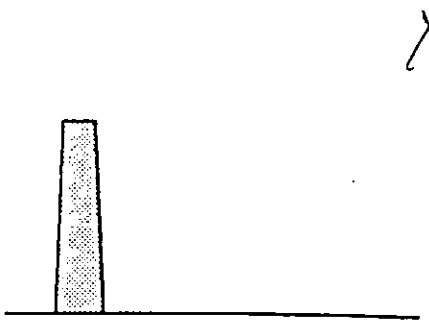
Location of Observer (direction and distance) EAST 400ft

Personnel Present During Observation NONE

Show Observer's Position In Relation to the Source, Plume and Lighting




Show Point Where Readings Were Evaluated In Relation to the Source Outlet and the Steam Plume



Comments (include any changes to the above during evaluation)

# VISIBLE EMISSION EVALUATOR CERTIFICATION

# VISIBLE EMISSIONS EVALUATOR

*This is to certify that*

Mike Loftus

*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

238352
Certificate Number

Vice President

Minneapolis
Location

David B. Savage, Jr.
Program Manager

April 1, 1993
Date of Issue

## APPENDIX B

Laboratory Data and Reports

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AIR SAMPLING DEPARTMENT

# EPA Method 3 Laboratory Summary Sheet

Project C.L. Ramsey
Analyst M. Wilson
Sampling Location Baghouse Outlet
Analysis Date 9/9/93
Sampling Date 9/8/93
Apparatus Leak Check - Pos. 0.0 Neg. 0.0
Project Number 93C831.401
Apparatus Identification CB-C1
Sample Type ☑ Integrated ☑ Grab

| Test No. | Run No. | Orsat Analyzer Results | | | $F_o$ | $O_2$ Analyzer Results | | Sample Container |
|---|---|---|---|---|---|---|---|---|
| | | % $CO_2$ | % $O_2$ | % CO | | Field | Lab | |
| 1 | 0 | 0.00 | 20.90 | | — | — | — | ☐ Tedlar™ Bag ☐ Glass Bulb |
| 1 | 1 | 6.50 | 12.40 | | 1.308 | — | ~~13.2~~ 13.1 | ☑ Tedlar™ Bag ☐ Glass Bulb |
| 1 | 3 | 7.75 | 10.80 | | 1.303 | — | 10.3 | ☑ Tedlar™ Bag ☐ Glass Bulb |
| 1 | 4 | 7.70 | 10.70 | | 1.325 | — | 10.4 | ☑ Tedlar™ Bag ☐ Glass Bulb |
| 1 | 2 | 6.05 | 11.38 | | 1.574 | — | — | ☐ Tedlar™ Bag ☑ Glass Bulb |
| | | | | | | | | ☐ Tedlar™ Bag ☐ Glass Bulb |
| | | | | | | | | ☐ Tedlar™ Bag ☐ Glass Bulb |
| | | | | | | | | ☐ Tedlar™ Bag ☐ Glass Bulb |
| | | | | | | | | ☐ Tedlar™ Bag ☐ Glass Bulb |
| | | | | | | | | ☐ Tedlar™ Bag ☐ Glass Bulb |

Calculate $F_o$ before evacuating any samples. Compare $F_o$ to expected fuel values. If discrepancies exist, reanalyze samples. Calculate $F_o$ as follows:

$$F_o = \frac{20.9 - \%\,O_2}{\%\,CO_2}$$

Comments Field O2 readings could not be taken due to analyzer problems.

| $F_o$ Ranges For Common Fuels | |
|---|---|
| Anthracite Coal & Lignite | 1.016 - 1.130 |
| Bituminous Coal | 1.083 - 1.230 |
| Distillate Oil | 1.260 - 1.413 |
| Residual Oil | 1.210 - 1.370 |
| Wood | 1.000 - 1.120 |
| Wood Bark | 1.003 - 1.130 |
| Natural Gas | 1.600 - 1.836 |
| Propane | 1.434 - 1.586 |
| Butane | 1.405 - 1.553 |

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AIR SAMPLING DEPARTMENT

# EPA Method 3 Laboratory Data Sheet

Project C1 Remedy — Analyst M. Wilson

Sampling Location Baghouse Outlet — Analysis Date 9/9/93

Sampling Date 9/8/93 — Apparatus Leak Check - Pos. 0.0 Neg. 0.0

Project Number 93083.0101 — Apparatus Identification CB-01

| | Aliquot Volume | $CO_2$ | $O_2$ |
|---|---|---|---|
| Test 1 Run 0 | Zero Point 0.00 ml<br>Sample Volume 100.00 ml | Initial Reading 0.00 ml<br>Final Reading 0.00 ml<br>Volume $CO_2$ 0.00 ml<br>% $CO_2$ 0.00 % | Initial Reading 0.00 ml<br>Final Reading 20.90 ml<br>Volume $O_2$ 20.90 ml<br>% $O_2$ 20.90 % |
| Duplicate | Zero Point ____ ml<br>Sample Volume ____ ml | Initial Reading ____ ml<br>Final Reading ____ ml<br>Volume $CO_2$ ____ ml<br>% $CO_2$ ____ % | Initial Reading ____ ml<br>Final Reading ____ ml<br>Volume $O_2$ ____ ml<br>% $O_2$ ____ % |
| Average | | % $CO_2$ ____ % | % $O_2$ ____ % |
| Test 1 Run 1 | Zero Point 3.00 ml<br>Sample Volume 100.00 ml | Initial Reading 0.00 ml<br>Final Reading 6.40 ml<br>Volume $CO_2$ 6.40 ml<br>% $CO_2$ 6.40 % | Initial Reading 6.40 ml<br>Final Reading 18.90 ml<br>Volume $O_2$ 12.50 ml<br>% $O_2$ 12.50 % |
| Duplicate | Zero Point 0.00 ml<br>Sample Volume 100.00 ml | Initial Reading 0.00 ml<br>Final Reading 6.60 ml<br>Volume $CO_2$ 6.60 ml<br>% $CO_2$ 6.60 % | Initial Reading 6.60 ml<br>Final Reading 18.90 ml<br>Volume $O_2$ 12.30 ml<br>% $O_2$ 12.30 % |
| Average | | % $CO_2$ 6.50 % | % $O_2$ 12.40 % |

Comments: ____

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# EPA Method 3 Laboratory Data Sheet

Project CA Ramsey
Sampling Location Bughouse Outlet
Sampling Date 9/9/93
Project Number 930831.401

Analyst M. W. Ison
Analysis Date 9/9/93
Apparatus Leak Check - Pos. 0.0 Neg. 0.0
Apparatus Identification 06-01

| | Aliquot Volume | $CO_2$ | $O_2$ |
|---|---|---|---|
| Test 1 Run 2 | Zero Point 4.30 ml<br>Sample Volume 95.70 ml | Initial Reading 4.30 ml<br>Final Reading 10.50 ml<br>Volume $CO_2$ 6.20 ml<br>% $CO_2$ ~~6.20~~ 5.93 % | Initial Reading 10.50 ml<br>Final Reading 22.30 ml<br>Volume $O_2$ 11.40 ml<br>% $O_2$ 11.29 % |
| Duplicate | Zero Point 2.00 ml<br>Sample Volume 98.00 ml | Initial Reading 2.00 ml<br>Final Reading 8.30 ml<br>Volume $CO_2$ 6.30 ml<br>% $CO_2$ 6.17 % | Initial Reading 5.30 ml<br>Final Reading 20.00 ml<br>Volume $O_2$ 11.70 ml<br>% $O_2$ 11.47 % |
| Average | | % $CO_2$ 6.05 % | % $O_2$ 11.38 % |
| Test ____ Run ____ | Zero Point ____ ml<br>Sample Volume ____ ml | Initial Reading ____ ml<br>Final Reading ____ ml<br>Volume $CO_2$ ____ ml<br>% $CO_2$ ____ % | Initial Reading ____ ml<br>Final Reading ____ ml<br>Volume $O_2$ ____ ml<br>% $O_2$ ____ % |
| Duplicate | Zero Point ____ ml<br>Sample Volume ____ ml | Initial Reading ____ ml<br>Final Reading ____ ml<br>Volume $CO_2$ ____ ml<br>% $CO_2$ ____ % | Initial Reading ____ ml<br>Final Reading ____ ml<br>Volume $O_2$ ____ ml<br>% $O_2$ ____ % |
| Average | | % $CO_2$ ____ % | % $O_2$ ____ % |

Comments: _____

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AIR SAMPLING DEPARTMENT

# EPA Method 3 Laboratory Data Sheet

Project CA Ramsey — Analyst M. Wilson

Sampling Location Baghouse Outlet — Analysis Date 9/9/93

Sampling Date 9/5/93 — Apparatus Leak Check - Pos. 0.0 Neg. 0.0

Project Number 93083.401 — Apparatus Identification CB-01

| | Aliquot Volume | $CO_2$ | $O_2$ |
|---|---|---|---|
| Test 1 Run 3 | Zero Point 0.00 ml<br>Sample Volume 100.00 ml | Initial Reading 0.00 ml<br>Final Reading 7.70 ml<br>Volume $CO_2$ 7.70 ml<br>% $CO_2$ 7.70 % | Initial Reading 7.70 ml<br>Final Reading 18.60 ml<br>Volume $O_2$ 10.90 ml<br>% $O_2$ 10.90 % |
| Duplicate | Zero Point 0.00 ml<br>Sample Volume 100.00 ml | Initial Reading 0.00 ml<br>Final Reading 7.80 ml<br>Volume $CO_2$ 7.80 ml<br>% $CO_2$ 7.80 % | Initial Reading 7.80 ml<br>Final Reading 18.50 ml<br>Volume $O_2$ 10.70 ml<br>% $O_2$ 10.70 % |
| Average | | % $CO_2$ 7.75 % | % $O_2$ 10.80 % |
| Test 1 Run 4 | Zero Point 0.00 ml<br>Sample Volume 100.00 ml | Initial Reading 0.00 ml<br>Final Reading 7.60 ml<br>Volume $CO_2$ 7.60 ml<br>% $CO_2$ 7.60 % | Initial Reading 7.60 ml<br>Final Reading 18.40 ml<br>Volume $O_2$ 10.80 ml<br>% $O_2$ 10.80 % |
| Duplicate | Zero Point 0.00 ml<br>Sample Volume 100.00 ml | Initial Reading 0.00 ml<br>Final Reading 7.80 ml<br>Volume $CO_2$ 7.80 ml<br>% $CO_2$ 7.80 % | Initial Reading 7.80 ml<br>Final Reading 18.40 ml<br>Volume $O_2$ 10.60 ml<br>% $O_2$ 10.60 % |
| Average | | % $CO_2$ 7.70 % | % $O_2$ 10.70 % |

Comments:

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# PARTICULATE ANALYTICAL DATA

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# EPA Method 5 Particulate Gravimetric Sheet
## Organic Condensibles

Project Commercial Asphalt — Analyst BOL
Sampling Location Baghouse Outlet — Analysis Date(s) 9-14-93
Sampling Date 9-8-93 — Sampling Reagent OI
Test Number 1 — LDMS Entry _____ Initials _____
Project Number 930909.505 10 43417 — LDMS Validation 9-16-93 Initials jmc

| | | |
|---|---|---|
| Sample No. 22973.3 | Sample No. 22974.1 | Sample No. 22975.0 |
| Run Number 1 | Run Number 2 | Run Number 3 |
| Dish Number Z2 | Dish Number MACK | Dish Number CAROL |
| Vol 1 350 2 400 > 750 | Vol 1 250 2 300 > 550 | Vol 1 300 2 400 > 700 |
| Date/Time 9-16-93 0900 | Date/Time 9-16-93 0900 | Date/Time 9-16-93 0905 |
| Gross Weight 98.4895 g | Gross Weight 112.3277 g | Gross Weight 100.6262 g |
| Date/Time 9-16-93 1330 | Date/Time 9-16-93 1330 | Date/Time 9-16-93 1330 |
| Gross Weight 98.4899 g | Gross Weight 112.3281 g | Gross Weight 100.6266 g |
| Avg. Gross Wt. 98.4897 g | Avg. Gross Wt. 112.3279 g | Avg. Gross Wt. 100.6264 g |
| Dish Tare Wt. 98.4824 g | Dish Tare Wt. 112.3218 g | Dish Tare Wt. 100.6157 g |
| Difference 0.0073 g | Difference 0.0061 g | Difference 0.0107 g |
| Blank Weight -0.0017 g | Blank Weight -0.0017 g | Blank Weight -0.0017 g |
| Condensible Organic Wt. 0.0073 g | Condensible Organic Wt. 0.0061 g | Condensible Organic Wt. 0.0107 g |
| Transfer "Condensible Organic Wt." to Box Number 1. | Transfer "Condensible Organic Wt." to Box Number 2. | Transfer "Condensible Organic Wt." to Box Number 3. |
| WC 1 [0.0073] g | WC 2 [0.0061] g | WC 3 [0.0107] g |

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INORGANIC LABORATORY

# EPA Method 5 Particulate Gravimetric Sheet
## Organic Condensibles

Project Commercial Asphalt — Analyst BOL
Sampling Location Baghouse Outlet — Analysis Date(s) 9-14-93
Sampling Date 9-8-93 — Sampling Reagent DI
Test Number 1 — LDMS Entry _____ Initials _____
Project Number 930909.505 — LDMS Validation 9-16-93 Initials MC

| | | |
|---|---|---|
| Sample No. 22976.8 | Sample No. _____ | Sample No. _____ |
| Run Number 4 | Run Number _____ | Run Number _____ |
| Dish Number 617 | Dish Number _____ | Dish Number _____ |
| Vol 1 340 2 350 | | |
| Date/Time 9-16-93 0900 | Date/Time _____ | Date/Time _____ |
| Gross Weight 113.9066 g | Gross Weight _____ g | Gross Weight _____ g |
| Date/Time 9-16-93 1330 | Date/Time _____ | Date/Time _____ |
| Gross Weight 113.9065 g | Gross Weight _____ g | Gross Weight _____ g |
| Avg. Gross Wt. 113.9066 g | Avg. Gross Wt. _____ g | Avg. Gross Wt. _____ g |
| Dish Tare Wt. 113.8976 g | Dish Tare Wt. _____ g | Dish Tare Wt. _____ g |
| Difference ~~0.0106~~ 0.0090 g | Difference _____ g | Difference _____ g |
| Blank Weight -0.0017 g | Blank Weight _____ g | Blank Weight _____ g |
| Condensible Organic Wt. 0.0090 ~~0.0106~~ g | Condensible Organic Wt. _____ g | Condensible Organic Wt. _____ g |
| Transfer "Condensible Organic Wt." to Box Number 1. | Transfer "Condensible Organic Wt." to Box Number 2. | Transfer "Condensible Organic Wt." to Box Number 3. |
| WC 1 0.0090 ~~0.0106~~ g | WC 2 _____ g | WC 3 _____ g |

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# EPA Method 5 Particulate Gravimetric Sheet

## Particulate In Probe Wash

Project Commercial Asphalt
Sampling Location Baghouse Outlet
Sampling Date 9-8-93
Test Number 1
Project Number 930909.505

Analyst BDL
Analysis Date(s) 9-14-93
Cleanup Reagent(s) Acetone
LDMS Entry _____ Initials _____
LDMS Validation 9-16-93 Initials JMC

| | | |
|---|---|---|
| Sample No. 22973.3 | Sample No. 22974.1 | Sample No. 22975.0 |
| Run Number 1 | Run Number 2 | Run Number 3 |
| Dish Number DB3 | Dish Number Pux | Dish Number Boy |
| Reagent Vol. 135 ml | Reagent Vol. 140 ml | Reagent Vol. 155 ml |
| Date/Time 9-16-93 0900 | Date/Time 9-16-93 0900 | Date/Time 9-16-93 0906 |
| Gross Weight 103.5766 g | Gross Weight 98.4912 g | Gross Weight 106.5559 g |
| Date/Time 9-16-93 1330 | Date/Time 9-16-93 1330 | Date/Time 9-16-93 1330 |
| Gross Weight 103.5770 g | Gross Weight 98.4916 g | Gross Weight 106.5564 g |
| Avg. Gross Wt. 103.5768 g | Avg. Gross Wt. 98.4914 g | Avg. Gross Wt. 106.5562 g |
| Dish Tare Wt. 103.5339 g | Dish Tare Wt. 98.4573 g | Dish Tare Wt. 106.5233 g |
| Difference 0.0429 g | Difference 0.0341 g | Difference 0.0329 g |
| Blank Weight -0.0022 g | Blank Weight -0.0022 g | Blank Weight -0.0022 g |
| Particulate In Rinse Weight 0.0429 g | Particulate In Rinse Weight 0.0341 g | Particulate In Rinse Weight 0.0329 g |
| Transfer "Particulate In Rinse Weight" to Box Number 1. | Transfer "Particulate In Rinse Weight" to Box Number 2. | Transfer "Particulate In Rinse Weight" to Box Number 3. |
| PW 1 0.0429 g | PW 2 0.0341 g | PW 3 0.0329 g |

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# EPA Method 5 Particulate Gravimetric Sheet
## Particulate In Probe Wash

Project: Commercial Asphalt
Sampling Location: Baghouse
Sampling Date: 9-8-93
Test Number: 1
Project Number: 930909.505

Analyst: BDL
Analysis Date(s): 9-14-93
Cleanup Reagent(s): Acetone
LDMS Entry: _____ Initials: _____
LDMS Validation: 9-16-93 Initials: jme

| | | |
|---|---|---|
| Sample No. 22976.8 | Sample No. _____ | Sample No. _____ |
| Run Number 4 | Run Number _____ | Run Number _____ |
| Dish Number PR | Dish Number _____ | Dish Number _____ |
| Reagent Vol. ~~RR~~ 150 ml BDL 9-14-93 | Reagent Vol. _____ ml | Reagent Vol. _____ ml |
| Date/Time 9-16-93 0900 | Date/Time _____ | Date/Time _____ |
| Gross Weight 99.9192 g | Gross Weight _____ g | Gross Weight _____ g |
| Date/Time 9-16-93 1330 | Date/Time _____ | Date/Time _____ |
| Gross Weight 99.9196 g | Gross Weight _____ g | Gross Weight _____ g |
| Avg. Gross Wt. 99.9194 g | Avg. Gross Wt. _____ g | Avg. Gross Wt. _____ g |
| Dish Tare Wt. 99.8870 g | Dish Tare Wt. _____ g | Dish Tare Wt. _____ g |
| Difference 0.0324 g | Difference _____ g | Difference _____ g |
| Blank Weight -0.0002 g | Blank Weight _____ g | Blank Weight _____ g |
| Particulate In Rinse Weight 0.0324 g | Particulate In Rinse Weight _____ g | Particulate In Rinse Weight _____ g |
| Transfer "Particulate In Rinse Weight" to Box Number 1. | Transfer "Particulate In Rinse Weight" to Box Number 2. | Transfer "Particulate In Rinse Weight" to Box Number 3. |
| PW 1 0.0324 g | PW 2 _____ g | PW 3 _____ g |

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# EPA Method 5 Particulate Gravimetric Sheet

## Particulate On Filter

Project Commercial Asphalt
Sampling Location Baghouse Outlet
Sampling Date 9-8-93
Test Number 1
Project Number 930909.505

Analyst BDL
Analysis Date(s) 9-14-93
Filter Type Fiberglass
LDMS Entry _____ Initials ____
LDMS Validation 9-16-93 Initials JME

| | | |
|---|---|---|
| Sample No. 22973.3 | Sample No. 22974.1 | Sample No. 22975.0 |
| Run Number 1 | Run Number 2 | Run Number 3 |
| Filter Number 29812918 BDL 9-14-93 | Filter Number 2919 | Filter Number 2921 |
| Date/Time 9-14-93 0800 | Date/Time 9-15-93 1000 | Date/Time 9-14-93 0800 |
| Gross Weight 0.68678 g | Gross Weight 0.68586 g | Gross Weight 0.68766 g |
| Date/Time 9-14-93 1400 | Date/Time 9-15-93 1600 | Date/Time 9-15-93 1600 |
| Gross Weight 0.68674 g | Gross Weight 0.68582 g | Gross Weight 0.68763 g |
| Avg. Gross Wt. 0.68676 g | Avg. Gross Wt. 0.68584 g | Avg. Gross Wt. 0.68764 g |
| Filter Tare Wt. 0.6736 g | Filter Tare Wt. 0.6808 g | Filter Tare Wt. 0.6758 g |
| Difference 0.01316 g | Difference 0.00504 g | Difference 0.01184 g |
| Particulate On Filter Weight 0.01316 g | Particulate On Filter Weight 0.00504 g | Particulate On Filter Weight 0.01184 g |
| Transfer "Particulate On Filter Weight" to Box Number 1. | Transfer "Particulate On Filter Weight" to Box Number 2. | Particulate On Filter Weight" to Box Number 3. |
| Sum particulate weights from each box labeled "1" and record in box labeled "T1." | Sum particulate weights from each box labeled "2" and record in box labeled "T2." | Sum particulate weights from each box labeled "3" and record in box labeled "T3." |
| AF 1 0.01316 g | AF 2 0.00504 g | AF 3 0.01184 g |
| Total T1 0.06336 g | Total T2 0.04524 g | Total T3 0.05544 g |

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# EPA Method 5 Particulate Gravimetric Sheet

## Particulate On Filter

Project Commercial Asphalt
Sampling Location Baghouse Outlet
Sampling Date 9-8-93
Test Number 1
Project Number 930909.505

Analyst BDL
Analysis Date(s) 9-14-93
Filter Type Fiberglass
LDMS Entry _____ Initials ____
LDMS Validation 9-16-93 Initials

| | | |
|---|---|---|
| Sample No. 22976.8 | Sample No. 22977.6 | Sample No. _____ |
| Run Number 4 | Run Number 0 | Run Number _____ |
| Filter Number 2894 | Filter Number 2902 | Filter Number _____ |
| Date/Time 9-14-93 0800 | Date/Time 9-14-93 0800 | Date/Time _____ |
| Gross Weight 0.68779 g | Gross Weight 0.67095 g | Gross Weight _____ g |
| Date/Time 9-14-93 1400 | Date/Time 9-14-93 1400 | Date/Time _____ |
| Gross Weight 0.68775 g | Gross Weight 0.67100 g | Gross Weight _____ g |
| Avg. Gross Wt. 0.68777 g | Avg. Gross Wt. 0.67098 g | Avg. Gross Wt. _____ g |
| Filter Tare Wt. 0.67534 g | Filter Tare Wt. 0.67040 g | Filter Tare Wt. _____ g |
| Difference 0.01243 g | Difference 0.00058 g | Difference _____ g |
| Particulate On Filter Weight 0.01243 g | Particulate On Filter Weight 0.00058 g | Particulate On Filter Weight _____ g |
| Transfer "Particulate On Filter Weight" to Box Number 1. | Transfer "Particulate On Filter Weight" to Box Number 2. | Particulate On Filter Weight" to Box Number 3. |
| Sum particulate weights from each box labeled "1" and record in box labeled "T1." | Sum particulate weights from each box labeled "2" and record in box labeled "T2." | Sum particulate weights from each box labeled "3" and record in box labeled "T3." |
| AF 1 [0.01243] g | AF 2 [0.00058] g | AF 3 [ ] g |
| Total T1 [~~0.05543~~ 0.01243] g | Total T2 [0.00058] g | Total T3 [ ] g |

0.01323

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# EPA Method 5 Particulate Gravimetric Sheet

## Reagent Blanks

Project Commercial Asphalt
Sampling Location Baghouse Outlet
Sampling Date 9-8-93
Test Number 1
Project Number 930909.505

Analyst BDL
Analysis Date(s) 9-14-93

### Wet Catch

Type:
- ☐ Organic Condensibles (Extract.)
- ☐ Inorganic (Residual)
- ☐ Other
- ☐ Retain For Further Analyses

TPI

Reagent
Volume 700 ml

Date/Time 9-16-93 0900
Gross Weight 114.9352 g

Date/Time 9-16-93 1330
Gross Weight 114.9350 g

Avg. Gross Wt. 114.9354 g
Dish Tare Wt. 114.9371 g
Difference -0.0017 g

Blank Weight -0.0017 g

### Probe Wash

Type:
- ☒ Gravimetric
- ☐ Other
- ☐ Retain For Further Analyses

HI.

Reagent Dist H2O
Volume 100 ml

Date/Time 9-10-93 1200
Gross Weight 103.2001 g

Date/Time 9-16-93 1330
Gross Weight 103.2000 g

Avg. Gross Wt. 103.2001 g
Dish Tare Wt. 103.2136 g
Difference -0.1135 g

Blank Weight -0.0.02 g

# AGGREGATE ANALYTICAL DATA

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THE ASSURANCE OF QUALITY

# REPORT OF LABORATORY ANALYSIS

Commercial Asphalt Company
P.O. Box 1480
Maple Grove, MN 55311-6480

September 30, 1993
PACE Project Number: 930909505

Attn: Ms. Sue Turner

Client Reference: CA/Ramsey/Compliance

| PACE Sample Number: | | | 10 0229695 | 10 0229709 | 10 0229717 |
|---|---|---|---|---|---|
| Date Collected: | | | 09/08/93 | 09/08/93 | 09/08/93 |
| Time Collected: | | | 07:50 | 10:30 | 13:21 |
| Date Received: | | | 09/09/93 | 09/09/93 | 09/09/93 |
| Client Sample ID: | | | Baghouse Outlet | Baghouse Outlet | Baghouse Outlet |
| Parameter | Units | MDL | T1R1 mix | T1R2 mix | T1R3 mix |
| INORGANIC ANALYSIS | | | | | |
| INDIVIDUAL PARAMETERS | | | | | |
| Moisture content | % | 0.1 | 3.0 | 5.0 | 5.1 |

1710 Douglas Drive North
Minneapolis, MN 55422
TEL: 612-544-5543
FAX: 612-525-3377

# SUBCONTRACT LABORATORY REPORT

MVTL LABORATORIES, Inc.
P.O. BOX 1873, 1411 S. 12th STREET
BISMARCK, ND 58502
PHONE (701) 258-9720 WATS (800) 279-6885 FAX (701) 258-9724

***WE ARE AN EQUAL OPPORTUNITY EMPLOYER***

FINAL ANALYSIS REPORT

Sample Number: 93-079

Report Date: 10/ 1/93

Mary Jo Connelly
PACE, Incorporated
1710 Douglas Drive North
Minneapolis, MN 55422

Work Order #: 81-0558
PO #: Pace#930909.505

Date Received: 9/14/93

Sample Description: Oil Sample
Sample Site: #22978.4
Sample Location: Commercial Asphalt Company

Collection Date: 9/ 8/93

| Analyte | Results | Units |
|---|---|---|
| pH | 6.6 | units |
| Lead Waste Oil | 44.8 | mg/kg |
| PCB | < 1 | ppm |
| Sulfated Ash | 0.40 | wt % |
| Ash | 0.90 | wt. % |
| Calorific Value cal/g | 8070 | cal/gram |
| Calorific Value BTU/lb | 14526 | BTU/lb |
| Total Sulfur | 0.26 | wt. % |
| Flash Point | 221 | degrees F |
| Total Halogens (Chlorine) | 1120 | ug/g |

Approved by:

Craig Rost

MVTL LABORATORIES, Inc.
P.O. BOX 1873, 1411 S. 12th STREET
BISMARCK, ND 58502
PHONE (701) 258-9720 WATS (800) 279-6885 FAX (701) 258-9724

*WE ARE AN EQUAL OPPORTUNITY EMPLOYER*

FINAL ANALYSIS REPORT

Sample Number: 93-080

Report Date: 10/ 1/93

Mary Jo Connelly
PACE, Incorporated
1710 Douglas Drive North
Minneapolis, MN 55422

Work Order #: 81-0558
PO #: Pace#930909.505

Date Received: 9/14/93

Sample Description: Oil Sample
Sample Site: #22979.2
Sample Location: Commercial Asphalt Company

Collection Date: 9/ 8/93

| Analyte | Results | Units |
|---|---|---|
| pH | 6.6 | units |
| Lead Waste Oil | 53.7 | mg/kg |
| PCB | < 1 | ppm |
| Sulfated Ash | 0.35 | wt % |
| Ash | 0.84 | wt. % |
| Calorific Value cal/g | 10291 | cal/gram |
| Calorific Value BTU/lb | 18524 | BTU/lb |
| Total Sulfur | 0.41 | wt. % |
| Flash Point | 225 | degrees F |
| Total Halogens (Chlorine) | 987 | ug/g |

Approved by:

Craig Rook

MVTL LABORATORIES, Inc.
P.O. BOX 1873, 1411 S. 12th STREET
BISMARCK, ND 58502
PHONE (701) 258-9720 WATS (800) 279-6885 FAX (701) 258-9724

***WE ARE AN EQUAL OPPORTUNITY EMPLOYER***

FINAL ANALYSIS REPORT

Sample Number: 93-081

Report Date: 10/ 1/93

Mary Jo Connelly
PACE, Incorporated
1710 Douglas Drive North
Minneapolis, MN 55422

Work Order #: 81-0558
PO #: Pace#930909.505

Date Received: 9/14/93

Collection Date: 9/ 8/93

Sample Description: Oil Sample
Sample Site: #22980.6
Sample Location: Commercial Asphalt Company

| Analyte | Results | Units |
|---|---|---|
| pH | 6.5 | units |
| Lead Waste Oil | 54.5 | mg/kg |
| PCB | < 1 | ppm |
| Sulfated Ash | 0.39 | wt % |
| Ash | 0.81 | wt. % |
| Calorific Value cal/g | 10420 | cal/gram |
| Calorific Value BTU/lb | 18756 | BTU/lb |
| Total Sulfur | 0.51 | wt. % |
| Flash Point | 248 | degrees F |
| Total Halogens (Chlorine) | 965 | ug/g |

Approved by:

Craig Pool

MVTL LABORATO
P.O. BOX 249, 1126 N. FRON
NEW ULM, MN 56073-0249
PHONE (507) 354-8517 WAT

Post-it™ brand fax transmittal memo 7671 | # of pages ▸

| To | From |
|---|---|
| Co. | Co. |
| Dept. | Phone # |
| Fax # | Fax # |

*WE ARE AN EQUAL OP[illegible] EMPLOYER*

# LIQUID ANALYSIS REPORT

MARY JO CONNELLY
PACE LABORATORIES INC
1710 DOUGLAS DR N
MINNEAPOLIS MN 55422

Date Reported: 10/27/93
Work Order #: 81-0558
Client Account Number: 007054

Project Name: 930909.505

Kim D. Sjogren, Lab Manager

Jeff Olson, Chemist

NQ = Not Present, Qualitative Only
PQ = Present, Qualitative Only
BDL = Below Detection Limits
MDL = Method Detection Limits
ND = Not Determined

Test Methods

VOC's - EPA Method 8021, MDH 465C

MVTL LABORATORIES, Inc.
P.O. BOX 249, 1126 N. FRONT STREET
NEW ULM, MN 56073-0249
PHONE (507) 354-8517 WATS (800) 782-3557 FAX (507) 359-2890

*WE ARE AN EQUAL OPPORTUNITY EMPLOYER*

Lab Number: 93-R359

Work Order #: 81-0558
Client: PACE LABORATORIES INC

EPA Method 8021
Sample Description: 079 (22978.4)

Date Reported: 10/27/93

Date Sampled: 9/ 8/93
Date Received: 10/15/93
Temperature at Receipt: 5 C

VOC Date Analyzed: 10/25/93
VOC Dilution Factor: 2.5

| VOLATILE ORGANICS | Result | Units | MDL |
|---|---|---|---|
| Chloroethane | BDL | ppm | 5.0 |
| Chloromethane | BDL | ppm | 5.0 |
| Bromomethane | BDL | ppm | 5.0 |
| Dichlorodifluoromethane | BDL | ppm | 5.0 |
| Vinyl Chloride | BDL | ppm | 1.3 |
| Methylene Chloride | BDL | ppm | 3.5 |
| Trichlorofluoromethane | BDL | ppm | 4.8 |
| 1,1-Dichloroethylene | 8.3 | ppm | 3.3 |
| 1,1-Dichloroethane | BDL | ppm | 0.5 |
| trans-1,2-Dichloroethylene | BDL | ppm | 0.8 |
| Chloroform | BDL | ppm | 2.5 |
| 1,2-Dichloroethane | BDL | ppm | 1.5 |
| 1,1,1-Trichloroethane | 44.3 | ppm | 2.8 |
| Carbon Tetrachloride | BDL | ppm | 1.0 |
| Bromodichloromethane | BDL | ppm | 1.8 |
| 1,2-Dichloropropane | BDL | ppm | 1.0 |
| trans-1,3-Dichloropropene | BDL | ppm | 0.8 |
| 1,1,2-Trichloroethylene | 2.6 | ppm | 1.0 |
| Chlorodibromomethane | BDL | ppm | 1.0 |
| 1,1,2-Trichloroethane | BDL | ppm | 0.8 |
| cis-1,3-Dichloropropene | BDL | ppm | 1.3 |
| 2-Chloroethylvinyl Ether | NQ | ppm | ND |
| Bromoform | BDL | ppm | 1.3 |
| 1,1,2,2-Tetrachloroethane | BDL | ppm | 1.5 |
| Tetrachloroethylene | 24.9 | ppm | 1.0 |

MVTL LABORATORIES, Inc.
P.O. BOX 249, 1126 N. FRONT STREET
NEW ULM, MN 56073-0249
PHONE (507) 354-8517 WATS (800) 782-3557 FAX (507) 359-2890

*WE ARE AN EQUAL OPPORTUNITY EMPLOYER*

Lab Number: 93-R359

Work Order #: 81-0558
Client: PACE LABORATORIES INC

EPA Method 8021
Sample Description: 079 (22978.4)

Date Reported: 10/27/93

Date Sampled: 9/ 8/93
Date Received: 10/15/93
Temperature at Receipt: 5 C

VOC Date Analyzed: 10/25/93
VOC Dilution Factor: 2.5

| VOLATILE ORGANICS Halogens = | Result | Units | MDL |
|---|---|---|---|
| Chlorobenzene | BDL | ppm | 0.8 |
| Benzene | 27.7 | ppm | 5.0 |
| Toluene | 199.0 | ppm | 5.0 |
| Ethyl Benzene | 66.2 | ppm | 3.8 |
| 1,2-Dichlorobenzene | BDL | ppm | 1.5 |
| 1,3-Dichlorobenzene | BDL | ppm | 1.0 |
| 1,4-Dichlorobenzene | BDL | ppm | 0.5 |
| cis-1,2-Dichloroethylene | BDL | ppm | 2.0 |
| 1,3-Dichloropropane | BDL | ppm | 1.5 |
| 1,2,3-Trichloropropane | BDL | ppm | 1.8 |
| Allyl Chloride | BDL | ppm | 1.3 |
| 1,2-Dibromoethane | BDL | ppm | 2.5 |
| Methyl Ethyl Ketone | BDL | ppm | 50.0 |
| Methyl Isobutyl Ketone | BDL | ppm | 3.8 |
| Tetrahydrofuran | BDL | ppm | 38.0 |
| m-Xylene & p-Xylene | 248.0 | ppm | 5.0 |
| o-Xylene | 118.0 | ppm | 2.5 |
| Cumene | BDL | ppm | 3.8 |
| 1,1,1,2-Tetrachloroethane | BDL | ppm | 1.3 |
| 1,1-Dichloro-1-propene | BDL | ppm | 2.5 |
| 2,3-Dichloro-1-propene | BDL | ppm | 2.5 |
| Dichlorofluoromethane | NQ | ppm | ND |
| 1,1,2-Trichlorotrifluoroethane | 21.6 | ppm | 2.3 |
| Ethyl Ether | BDL | ppm | 7.5 |
| Acetone | BDL | ppm | 65.0 |
| Dibromomethane | BDL | ppm | 2.5 |
| Pentachloroethane | NQ | ppm | ND |
| Dichloroacetonitrile | NQ | ppm | ND |

MVTL LABORATORIES, Inc.
P.O. BOX 1873
1411 SOUTH 12TH STREET
BISMARCK, NORTH DAKOTA 58504
PHONE (701) 258-9720 FAX (701) 258-9724

November 15, 1993

Mary Jo Connelly
PACE, Incorporated
1710 Douglas Drive North
Minneapolis, MN 55422

RE: Total Halogens as Chlorine Results for Commercial Asphalt Company.

| Pace Sample ID# | MVTL Sample ID# | Initial Result | Rerun Result |
|---|---|---|---|
| #22978.4 | 93-079 | 1122 ug/g | 870 ug/g |
| #22979.2 | 93-080 | 987 ug/g | 1043 ug/g |
| #22980.6 | 93-081 | 965 ug/g | 690 ug/g |
| | 081 Duplicate | | 835 ug/g |

If you have any questions please call our office at 701/258-9720.

Sincerely,

Rod Reetz
Laboratory Manager

# APPENDIX C

Calculation Equations and Report Nomenclature

# Calculation Equations

## EPA Method 3 Calculations

Dry Molecular Weight of Flue Gas

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

Wet Molecular Weight of Flue Gas

$$M_s = M_d \times (1 - B_{ws}) + (18 \times B_{ws})$$

Percent Excess Air

$$\%EA = 100 \times \left( \frac{\%O_2 - (0.05 \times \%CO)}{(0.264 \times \%N_2) - \%O_2 + (0.5 \times \%CO)} \right)$$

Fuel F-factor (for comparison)

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

Where:

| | | |
|---|---|---|
| $B_{ws}$ | = | Water vapor in gas stream (proportion by volume). |
| %CO | = | Carbon monoxide in gas stream (percent). |
| $\%CO_2$ | = | Carbon dioxide in gas stream (percent). |
| %EA | = | Excess air for combustion (percent). |
| $F_o$ | = | Fuel F-factor for results comparison. |
| $M_d$ | = | Molecular weight of dry flue gas (LB/LB-mole). |
| $M_s$ | = | Molecular weight of wet flue gas (LB/LB-mole). |
| $\%N_2$ | = | Nitrogen in gas stream (percent). |
| $\%O_2$ | = | Oxygen in gas stream (percent). |

# Calculation Equations

## EPA Method 3 Calculations

Dry Molecular Weight of Flue Gas

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

Wet Molecular Weight of Flue Gas

$$M_s = M_d \times (1 - B_{ws}) + (18 \times B_{ws})$$

Percent Excess Air

$$\%EA = 100 \times \left( \frac{\%O_2 - (0.05 \times \%CO)}{(0.264 \times \%N_2) - \%O_2 + (0.5 \times \%CO)} \right)$$

Fuel F-factor (for comparison)

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

Where:

| | | |
|---|---|---|
| $B_{ws}$ | = | Water vapor in gas stream (proportion by volume). |
| %CO | = | Carbon monoxide in gas stream (percent). |
| $\%CO_2$ | = | Carbon dioxide in gas stream (percent). |
| %EA | = | Excess air for combustion (percent). |
| $F_o$ | = | Fuel F-factor for results comparison. |
| $M_d$ | = | Molecular weight of dry flue gas (LB/LB-mole). |
| $M_s$ | = | Molecular weight of wet flue gas (LB/LB-mole). |
| $\%N_2$ | = | Nitrogen in gas stream (percent). |
| $\%O_2$ | = | Oxygen in gas stream (percent). |

# Calculation Equations

## EPA Method 5 Calculations

Sample Volume, Standard Conditions

$$V_{std} = 17.647 \times V_m \times Y \times \left( \frac{P_b + \frac{\overline{\Delta H}}{13.6}}{\overline{T_m}} \right)$$

Isokinetic Variation

$$I = 0.09450 \times \left( \frac{\overline{T_s} \times V_m}{P_s \times V_s \times A_n \times \theta \times (1 - B_{ws})} \right)$$

Particulate Concentration

$$C_s = 15.432 \times \left( \frac{m_n}{V_{std}} \right)$$

Particulate Mass Rate

$$m_p = 0.008571 \times C_s \times Q_{sd}$$

Where:

| | | |
|---|---|---|
| $A_n$ | = | Cross-sectional area of nozzle opening (square feet). |
| $B_{ws}$ | = | Water vapor in gas stream (proportion by volume). |
| $C_s$ | = | Particulate concentration of gas stream (GR/DSCF). |
| $\Delta H$ | = | Orifice meter differential pressure (Inches WC). |
| I | = | Isokinetic variation of sampling rate (percent). |
| $m_n$ | = | Total particulate collected in sampling train (grams). |
| $m_p$ | = | Particulate mass flow rate (LB/HR). |
| $P_b$ | = | Barometric pressure (Inches Hg). |
| $P_s$ | = | Absolute gas pressure of duct (Inches Hg). |
| $Q_{sd}$ | = | Dry standard volumetric gas flow rate (DSCFM). |
| $T_m$ | = | Sampling train meter temperature (°R). |
| $T_s$ | = | Flue gas temperature (°R). |
| $V_m$ | = | Volume of gas sample measured by gas meter (CF). |
| $V_{std}$ | = | Gas volume corrected to standard conditions (DSCF). |
| $V_s$ | = | Flue gas linear velocity (feet per second). |
| Y | = | Dry gas meter calibration coefficient. |
| $\theta$ | = | Total sampling time of run (minutes). |

## Calculation Equations

### Nomenclature

| | |
|---|---|
| $A$ | = Cross-sectional area of duct |
| $A_n$ | = Cross-sectional area of nozzle |
| $B_{ws}$ | = Water vapor in gas stream, proportion by volume |
| $C_a$ | = Particulate concentration, actual, wet basis - GR/ACF |
| $C_p$ | = Pitot tube calibration coefficient |
| $C_s$ | = Particulate concentration at dry standard conditions - GR/DSCF |
| %EA | = Excess air, percent by volume |
| $F_o$ | = Fuel factor |
| $G_d$ | = Specific gravity relative to air, dimensionless |
| $I$ | = Isokinetic variation, percent by volume |
| $M_d$ | = Molecular weight of flue gas, dry, lb/lb-mole |
| $m_g$ | = Mass flow of wet flue gas, LB/HR |
| $m_n$ | = Total particulate collected, grams |
| $m_p$ | = Particulate mass flow, LB/HR |
| $M_s$ | = Molecular weight of flue gas, wet, lb/lb-mole |
| $P_b$ | = Barometric pressure, uncompensated, inches of mercury |
| $P_g$ | = Static pressure of duct, inches of water |
| $P_s$ | = Absolute gas pressure of duct, inches of mercury |
| $Q$ | = Actual flue gas volumetric flow rate, ACFM |
| $Q_{sd}$ | = Dry flue gas volumetric flow rate corrected to standard conditions, DSCFM |
| $\overline{T_m}$ | = Average dry gas meter temperature, °R |
| $\overline{T_s}$ | = Average stack gas temperature, °R |
| $\emptyset$ | = Total sampling time, minutes |
| $V_{lc}$ | = Total volume of liquid collected in impingers and desiccant, ml |
| $V_m$ | = Volume of gas sample measured by gas meter, cubic feet |
| $V_{std}$ | = Volume of gas sample corrected to standard conditions, dry standard cubic feet |
| $V_w$ | = Volume of water vapor in gas sample, corrected to standard conditions |
| $V_s$ | = Linear velocity of flue gas, feet per second |
| $Y$ | = Dry gas meter calibration factor |
| $\Delta H$ | = Orifice meter differential pressure, inches of water |
| $\Delta P$ | = Velocity pressure of flue gas, inches of water |
| $\rho$ | = Actual gas density, pounds per cubic foot |

## APPENDIX D

Test Procedures

## OXYGEN AND CARBON DIOXIDE CONCENTRATION (ORSAT)

Integrated gas samples are collected in 40 liter Tedlar™ bags and ultimately transferred to an Orsat gas analyzer for oxygen and carbon dioxide analyses. A PACE sampling train which meets or exceeds the specifications of EPA Method 3, 40 CFR 60, Appendix A is used to collect gas samples. Normally, gas samples are collected at the exhaust of an EPA Method 4 or 5 sampling train since this gas stream is moisture conditioned. Method 4 and 5 sampling equipment is maintained and checked to assure no leaks occur between the flue and the integrated gas sampler.

Gas samples are collected by drawing a portion of the stream through a chemically resistant diaphragm pump and delivering it to the Tedlar™ bag at a constant, settable rate depending on expected sampling time. At the conclusion of sampling, the bag and associated hardware is sealed and labeled. When multiple tests are to be performed, gas samples are often transferred to glass gas collection tubes for storage. A portable oxygen analyzer is used for this to ensure sample integrity.

Samples are analyzed by chemical absorption using an Orsat gas analyzer. Following positive and negative leak checks of the gas analyzer, the system is purged with the gas to be analyzed. The burret is filled with approximately 100 mls of sample gas and the exact volume recorded. The sample line stopcock is closed and the stopcock for the first bubbler containing carbon dioxide absorbent is opened. Several passes are made, bubbling the sample gas through the reagent and the absorbent is returned to the initial mark. The new volume of the burret is recorded and an additional 1-2 passes are made to verify total absorption. Similar procedures are used to quantify oxygen with the same gas aliquot and oxygen absorbent.

## PARTICULATE LOADINGS AND EMISSION RATES

Particulate emission rates were determined in accordance with EPA Methods 1-5, 40 CFR 60, Appendix A. Using traverse points determined with EPA Method 1, a preliminary velocity profile was obtained with respect to the velocity traverse, gas temperature, gas pressure and estimated moisture content. From this data sampling nozzles of the appropriate diameter to ensure isokinetic sampling were selected.

The particulate sampling train consists of a temperature controlled glass-lined sampling probe equipped with a S-type pitot tube and Type K thermocouples to monitor stack temperature and probe liner temperature. The sampling probe is attached to a sample module which houses an all glass in-line filter and cyclone assembly in a temperature controlled oven. The back half of the sampling train consists of a series of three glass impingers followed by a tared desiccant-packed drying column. The sample train is connected by means of a control and sampling umbilical cord to the control module. The control module houses a temperature monitored dry test gas meter, a calibrated orifice, dual inclined manometers, temperature controllers, and necessary flow rate control devices.

Particulate samples are collected by isokinetically extracting a sample gas stream from the flue by means of the sampling probe and passing the stream through the cyclone which collects larger, heavier particles. The sample gas stream then passes through a 4 inch diameter Gelman Type A/E glass fiber filter to collect finer particulates. The filter is followed by an ice-cooled impinger train and a desiccant packed drying column which quantitatively collects all moisture from the sample gas stream. The gas then passes through a leak proof rotary vane sampling pump and a dry test gas meter which integrates the sample volume throughout the course of the test. A calibrated orifice is connected to the gas meter outlet to facilitate sample flow rate adjustment.

Representative particulate samples are collected by sampling the centroid of equal area sections of the duct for equal time periods. The sampling rate is adjusted at each traverse point to ensure isokinetic sampling. Pre-programmed

field computers are used to facilitate rapid determination of the correct sampling rate.

Integrated gas samples are collected concurrently with particulate samples to determine a representative gas composition of the flue gas. Gas samples are collected in Tedlar™ bags throughout the course of the particulate run and analyzed with an Orsat gas analyzer.

At the end of each particulate run, the sampling train is disassembled and the samples recovered. The sampling filter is transferred from the filter holder to its dedicated petri dish. The probe nozzle is acetone rinsed, brushed, rinsed again and the washings placed in a uniquely labeled polyethylene container. The probe is similarly cleaned; acetone rinsed, brushed several times, rinsed again and the washing transferred to the same polyethylene container. The filter holder and cyclone are wiped free of silicone grease, acetone rinsed, brushed, rinsed and these washings added to the probe wash container. The container is tightly capped and the liquid level marked for transport. The impinger catch volume is determined to the nearest milliliter using a graduated cylinder. If the impinger catch is to be analyzed it is transferred to a separate polyethylene container, capped, and the liquid level marked. The desiccant-packed drying column is weighed in the field to the nearest 0.5 g and the weight of absorbed moisture added to the condensate for moisture calculations.

Particulate samples are transported back to the laboratory, logged in, and prepared for analyses. Filters are desiccated for 24 hours and weighed to a constant weight and the results recorded to the nearest 0.1 mg. Probe wash samples are evaporated at ambient temperatures to dryness in tared evaporating dishes. They are then desiccated for 24 hours and weighed to a constant weight. Results are reported to the nearest 0.1 mg.

## WET CATCH ANALYSIS - ORGANIC CONDENSIBLES

Particulate concentrations reported in this document include gravimetric results of both the dry catch and the organic wet catch. Organic condensibles were collected in a series of three ice-cooled all-glass impingers in the back half of the Method 5 sampling train. The first two impingers were initially prepared with 100 mls of deionized water in each and the third impinger was dry. After sampling, the volume of condensate in the impingers was determined and the contents transferred to an air-tight polyethylene sample container.

The wet catch was analyzed for condensible organic particulate with the chloroform/diethyl ether extraction. Three 25 ml portions of chloroform and three 25 ml portions of diethyl ether were used to extract condensed organics from the impinger catches (wet catch). The extractions were evaporated at room temperature and desiccated to a constant weight. Gravimetric results were then added to dry catch results to calculate particulate concentrations.

# APPENDIX E

Quality Assurance Data

Commercial Asphalt Company
Ramsey, Minnesota
PACE Project No. 930831.401

PACE Incorporated
September 17, 1993

## Air Sampling Department Calibration Report

Sampling Nozzle Calibration Data

Nozzle Number : 2-3

Date of Calibration : 9/3/93

Calibration Technician: T. Kuchinski

| Measurement Position | Diameter Inches |
|---|---|
| 1 | 0.310 |
| 2 | 0.312 |
| 3 | 0.310 |
| 4 | 0.311 |
| 5 | 0.312 |
| **Average** | 0.311 |

The sampling nozzle is rotated and measured at 36 degree Increments. Diameters are measured to the nearest 0.001". All measurements must be within a range of 0.004".

Commercial Asphalt Company
Ramsey, Minnesota
PACE Project No. 930831.401

PACE Incorporated
September 17, 1993

## Air Sampling Department Calibration Report

Pitot Tube Calibration Data

Pitot Tube Number : 8

Date of Calibration : 6/7/93

Calibration Technician: K. Lattery

### A Side Calibration

| Calibration Trial No. | ΔP(standard) Inches WC | ΔP(S-type) Inches WC | Pitot Coefficient |
|---|---|---|---|
| 1 | 0.500 | 0.700 | 0.837 |
| 2 | 0.805 | 1.120 | 0.839 |
| 3 | 1.085 | 1.515 | 0.838 |
| 4 | 1.305 | 1.805 | 0.842 |
| | | **A Side Average** | 0.839 |

### B Side Calibration

| Calibration Trial No. | ΔP(standard) Inches WC | ΔP(S-type) Inches WC | Pitot Coefficient |
|---|---|---|---|
| 1 | 0.505 | 0.700 | 0.841 |
| 2 | 0.820 | 1.130 | 0.843 |
| 3 | 1.100 | 1.530 | 0.839 |
| 4 | 1.300 | 1.805 | 0.840 |
| | | **B Side Average** | 0.841 |
| | | **Pitot Tube Coefficient** | **0.840** |

Commercial Asphalt Company
Ramsey, Minnesota
PACE Project No. 930831.401

PACE Incorporated
September 17, 1993

## Air Sampling Section Calibration Report

Dry Test Meter and Orifice Calibration Data

Control Module Number : C-6

Calibration Technician: M.Wilson

Date of Calibration : 9/3/93

Barometric Pressure : 29.08

| Orifice Diff. Press., ΔH Inches WC | Dry Test Meter Vol. Cubic Ft. | Wet Test Meter Vol. Cubic Ft. | Dry Test Meter Temperatures, °F | | Wet Test Meter Temp., °F | Elapsed Time Minutes | Gas Meter Coefficient ∂ | Orifice Coefficient ΔH@ |
|---|---|---|---|---|---|---|---|---|
| | | | Inlet | Outlet | | | | |
| 0.50 | 5.090 | 5.000 | 88.0 | 78.0 | 73.0 | 13.343 | 0.9995 | 2.031 |
| 1.00 | 5.070 | 5.000 | 88.0 | 76.0 | 73.5 | 9.545 | 0.9994 | 2.086 |
| 1.75 | 5.050 | 5.000 | 83.5 | 73.5 | 73.5 | 7.276 | 0.9950 | 2.135 |
| 2.50 | 10.100 | 10.000 | 87.5 | 74.5 | 73.5 | 12.324 | 0.9977 | 2.178 |
| 3.50 | 10.160 | 10.000 | 89.5 | 79.0 | 73.5 | 10.403 | 0.9953 | 2.159 |

Average Meter Coefficient 0.9974

Average Orifice Coefficient 2.118

## APPENDIX F

Process/Source Information

**MPCA EXHIBIT C**

# SOURCE OPERATIONAL DATA

# Asphalt Plant Operating Conditions During Stack Testing

Rev/YH/93

Test Date(s) 9-8-93

Plant: Mfr. & Model CMI

Type (circle one): (Drum Mix) Conventional
Other (list): _____

Pollution Control Equipment: (Baghouse) Venturi Scrubber wet scrubber cyclone multiclone
(circle one)

If wet scrubbing: _____% scrubber water recycled

List model: CMI SVM-12

Normal pressure drop across control equipment: 5.2 inches water

Air flow through control equipment: 80,000 acfm at _____F

Was control equipment operating normally during testing? yes

Date & procedures of last maintenance/cleaning of control equipment 8-30-93
Blacklighted & Changed Filter Dust Blower

Fuel:

Itemize all fuels and materials added to the combustion process during the test period. List fuel type used during testing (if oil, specify grade) _____. If other units of measure are used, specify and calculate appropriate heat input.

| Test No.___ | Fuel Input (Gal/hr) | BTU/GAL (as received) | Heat Input (BTU/HR) | %Moisture (as received in aggregate) Virgin | recycle | combined |
|---|---|---|---|---|---|---|
| Run 1 | 780 | | | | | |
| Run 2 | 760 | | | | | |
| Run 3 | 780 | | | | | |

Is the above fuel substantially the highest sulfur containing fuel normally burned? yes

Production specific fuel usage: (circle one) measured or calculated: _____cubic foot/ ton hot mix
_____gal/ton hot mix

No. of Burners: ONE Burner(s) rating: 175 MMBTU/HR = 100% setting

Operation:

Add for total aggtpH.

| time 15 min. intervals | burner setting % | aggregate tons per hour | recycle tons per hour | asphalt tons per hour | Drum Mix temp. F | dust collector pressure drop inches water | scrubber water flow rate gpm | Other (list) Oil |
|---|---|---|---|---|---|---|---|---|
| 7:15 | 70 | 583 | 174 | 389 | 260 | 4.9 | — | 23.4 |
| 7:30 | 69 | 588 | 181 | 382 | 256 | 5.2 | — | 23.8 |
| 7:45 | 70 | 593 | 184 | 387 | 246 | 5.2 | — | 23.4 |
| 8:00 | 71 | 595 | 187 | 390 | 249 | 5.2 | | 23.5 |
| 8:15 | 70 | 602 | 187 | 387 | 242 | 5.2 | — | 23.3 |
| 8:24 | 70 | 584 | 183 | 393 | 245 | 5.2 | — | 23.3 |
| | | | | | 249.6 | 6.15 | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Mix PACE

586.4
586.8
594.4
600.5
597.3
594.3
542.45

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: Tyler Nelson, Phone: (___) 421-0852

Position: _____

Note: All information required must be completed and submitted as part of the performance test. Failure to submit the required information will result in an incomplete performance test report.

Page 2

Company: Commercial Asphalt

Operation: Test Date(s): 9-8-93

| time 15 min. intervals | burner setting % | aggregate tons per hour | recycle tons per hour | asphalt tons per hour | Drum Mix temp. F | dust collector pressure drop inches water | scrubber water flow rate gpm | Other (list) |
|---|---|---|---|---|---|---|---|---|
| 10:00 | 71 | 386 | 182 | 23.3 | 251 | 5.2 | | |
| 10:16 | 76 | 360 | 172 | 22.0 | 270 | 5.4 | | |
| 10:29 | 76 | 372 | 169 | 22.9 | 271 | 5.5 | | |
| 10:45 | 76 | 377 | 166 | 22.9 | 265 | 5.4 | | |
| 10:30 | 74 | 379 | 170 | 22.9 | 273 | 5.4 | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | Add Tocher | | | | | |
| 12:51 | 72 | 377 | 168 | 22.8 | 287 | 5.4 | | |
| 1:05 | 70 | 390 | 166 | 23.4 | 280 | 5.2 | | |
| 1:20 | 71 | 383 | 165 | 23.3 | 276 | 5.5 | | |
| 1:35 | 70 | 382 | 174 | 23.5 | 270 | 5.2 | | |
| 1:50 | 71 | 386 | 173 | 23.5 | 278 | 5.3 | | |
| 2:00 | 70 | 382 | 169 | 23.4 | 280 | 5.2 | | |
| | | | | | 278.5 | 5.3 | | |
| | | | | | | | | |
| | | | | | | | | |
| 15:01 | 73 | 380 | 167 | 23.0 | 283 | 5.4 | | |
| 15:16 | 70 | 383 | 169 | 22.7 | 287 | 5.3 | | |
| 15:31 | 71 | 380 | 170 | 22.8 | 282 | 5.2 | | |
| 15:46 | 70 | 386 | 167 | 23.2 | 283 | 5.4 | | |
| 16:01 | 71 | 372 | 171 | 22.8 | 274 | 5.1 | | |
| 16:10 | 70 | 379 | 169 | 23.1 | 270 | 5.3 | | |
| | | | | | 279.9 | 5.3 | | |
| | | | | | | | | |
| | | | | | 269 | 5.21 | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Mill Place
567.8
579.4
571.3
579.5
582.5
574.4
575.82

570
574.7
572.4
576.2
565.8
571.1
571.77

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: Tyler Nelson, Phone: (___) 421-0832

Position: _____

Note: All information required must be completed and submitted as part of the performance test. Failure to submit the required information will result in an incomplete performance test report.

#1

DATE 09/08/1993 TIME 07:35 MIX# 12 SILO 2 ***** AUTOMATIC *****

| ATERIAL | MIX PERCENT | TARGET | ACTUAL | TONS | PERCENT MOISTURE |
|---|---|---|---|---|---|
| GG 1 | 32.5 | 187.2 | 187.2 | 00192.08 | 5.5 |
| AGG 2 | 32.5 | 187.2 | 187.2 | 00192.08 | 5.0 |
| GG 3 | 5.0 | 28.8 | 28.8 | 00027.05 | 5.0 |
| GG 4 | 0.0 | 0.0 | 0.0 | 00000.00 | 5.0 |
| AGG 5 | 0.0 | 0.0 | 0.0 | 00005.11 | 5.0 |
| AGG 6 | 0.0 | 0.0 | 0.0 | 00000.00 | 5.0 |
| /C | 5.5 | 23.40 | 23.49 | 00022.690 | |
| ILLER | 0.0 | 0.00 | 0.00 | 00000.000 | |
| RECYCLE 1 | 30.0 | 172.8 | 172.8 | 000160.52 | 5.0 |
| ESIDUAL A/C | 5.0 | | | | |
| ECYCLE 2 | 0.0 | 0.0 | 0.0 | 000000.00 | 0.0 |
| ECYCLE SCALE | | | 186.3 | 000164.89 | 5.0 |
| GG SCALE | | | 385.6 | 000387.52 | 5.2 |

VERAGE A/C CONTENT 4.03 NEW 5.48 TOTAL
EALTIME A/C CONTENT 5.51

IX TEMP.= 254 F EXHAUST TEMP. = 244 F BURNER FUEL VALVE= 065 PERCENT
/C TEMP.= 256 F OUTLET= 235 F

#2

| DATE | TIME | MIX# | SILO | ***** AUTOMATIC ***** |
|---|---|---|---|---|
| 09/08/1993 | 13:07 | 12 | 2 | |

| MATERIAL | MIX PERCENT | TARGET | ACTUAL | TONS | PERCENT MOISTURE |
|---|---|---|---|---|---|
| AGG 1 | 32.5 | 186.9 | 186.9 | 00817.19 | 5.5 |
| AGG 2 | 32.5 | 186.9 | 186.9 | 00817.19 | 5.0 |
| AGG 3 | 5.0 | 28.8 | 28.8 | 00156.09 | 5.0 |
| AGG 4 | 0.0 | 0.0 | 0.0 | 00014.60 | 5.0 |
| AGG 5 | 0.0 | 0.0 | 0.0 | 00005.11 | 5.0 |
| AGG 6 | 0.0 | 0.0 | 0.0 | 00057.34 | 5.0 |
| A/C | 5.5 | 23.59 | 23.39 | 00106.513 | |
| FILLER | 0.0 | 0.00 | 0.00 | 00000.000 | |
| RECYCLE 1 | 30.0 | 172.5 | 172.5 | 000781.06 | 5.0 |
| RESIDUAL A/C | 5.0 | | | | |
| RECYCLE 2 | 0.0 | 0.0 | 0.0 | 000000.00 | 0.0 |
| | | | | | |
| RECYCLE SCALE | | | 167.4 | 000786.09 | 5.0 |
| AGG SCALE | | | 387.3 | 001755.08 | 5.2 |

AVERAGE A/C CONTENT 4.20 NEW 5.70 TOTAL
REALTIME A/C CONTENT 5.47

MIX TEMP.= 276 F EXHAUST TEMP. = 270 F BURNER FUEL VALVE= 070 PERCENT
A/C TEMP.= 263 F OUTLET= 250 F

#3

DATE 09/08/1993 TIME 16:07 MIX# 12 SILO 2 ***** AUTOMATIC *****

| MATERIAL | MIX PERCENT | TARGET | ACTUAL | TONS | PERCENT MOISTURE |
|---|---|---|---|---|---|
| AGG 1 | 32.5 | 187.2 | 187.2 | 01297.36 | 5.5 |
| AGG 2 | 32.5 | 187.2 | 187.2 | 01297.36 | 5.0 |
| AGG 3 | 5.0 | 28.8 | 28.8 | 00279.46 | 5.0 |
| AGG 4 | 0.0 | 0.0 | 0.0 | 00036.64 | 5.0 |
| AGG 5 | 0.0 | 0.0 | 0.0 | 00005.11 | 5.0 |
| AGG 6 | 0.0 | 0.0 | 0.0 | 00122.00 | 5.0 |
| A/C | 5.5 | 23.10 | 23.30 | 00175.670 | |
| FILLER | 0.0 | 0.00 | 0.00 | 00000.000 | |
| RECYCLE 1 | 30.0 | 172.8 | 172.8 | 001283.73 | 5.0 |
| RESIDUAL A/C | 5.0 | | | | |
| RECYCLE 2 | 0.0 | 0.0 | 0.0 | 000000.00 | 0.0 |
| | | | | | |
| RECYCLE SCALE | | | 172.5 | 001288.39 | 5.0 |
| AGG SCALE | | | 383.9 | 002862.67 | 5.2 |

AVERAGE A/C CONTENT 4.14 NEW 5.64 TOTAL
REALTIME A/C CONTENT 5.54

MIX TEMP.= 278 F EXHAUST TEMP. = 271 F BURNER FUEL VALVE= 070 PERCENT
A/C TEMP.= 272 F OUTLET= 250 F

Commercial Asphalt Company
Ramsey, Minnesota
PACE Project No. 930831.401

PACE Incorporated
September 15, 1993

**APPENDIX C**
METHOD 5 CALCULATION SUMMARY
TEST 1

Baghouse Outlet

| **Parameter** | **Run 1** | **Run 3** | **Run 4** |
|---|---|---|---|
| Date of Run | 9/8/93 | 9/8/93 | 9/8/93 |
| Sample Duration (Minutes) | 60 | 60 | 60 |
| | | | |
| Barometric Pressure (inches Hg) | 29.16 | 29.16 | 29.16 |
| Static Pressure Of Duct (Inches H2O) | 0.22 | 0.22 | 0.22 |
| Absolute Pressure Of Duct (Inches Hg) | 29.18 | 29.18 | 29.18 |
| | | | |
| Meter Coefficient | 0.9974 | 0.9974 | 0.9974 |
| Pitot Tube Coefficient | 0.84 | 0.84 | 0.84 |
| Nozzle Diameter (Inches) | 0.311 | 0.311 | 0.311 |
| Area Of Nozzle Opening (Square Feet) | 0.000528 | 0.000528 | 0.000528 |
| | | | |
| Average $\sqrt{\Delta P}$ | 0.7223 | 0.6833 | 0.6847 |
| Average $\Delta H$ | 2.36 | 2.06 | 2.16 |
| Average Stack Temperature (°R) | 682.35 | 701.40 | 702.30 |
| Average Meter Temperature (°R) | 530.78 | 553.18 | 552.23 |
| | | | |
| Meter Volume (Cubic Feet) | 48.19 | 45.9 | 47.06 |
| Dry Standard Sample Volume (Cubic Feet) | 46.88 | 42.81 | 43.98 |
| | | | |
| Collected Condensate Volume (mls) | 520.0 | 460.0 | 500.0 |
| Volume Of Water Vapor (Standard Cubic Feet) | 24.48 | 21.65 | 23.54 |
| Moisture Content Of Flue Gas (% v/v) | 34.30 | 33.59 | 34.86 |
| | | | |
| Weight Of Particulate (mg) | 63.4 | 55.4 | 53.8 |
| Particulate Concentration (GR/DSCF) | 0.02085847 | 0.01998584 | 0.01888968 |
| | | | |
| Source Gas Velocity (Feet Per Second) | 49.6 | 47.4 | 47.7 |
| | | | |
| Isokinetic Variation (%) | 100.5 | 97.6 | 101.7 |

REQUIRED DATA
for
COMBUSTION SOURCES

Company Name Commercial Asphalt

C. Fuel Input

1. Itemize all fuels and materials that are added to the combustion process during the test period. Attach ultimate analysis of the fuel.

| FUEL DESCRIPTION<br>Coal:State, City, Mine<br>Oil: Specify Grade | INPUT<br>(LBS/HR)<br>(GAL/HR) | &<br>MOISTURE<br>As Rec'd | As Rec'd<br>(BTU/LB)<br>(BTU/GAL) | HEAT INPUT<br>(BTU/HR) |
|---|---|---|---|---|
| No. 1 USED | 780 | | | |
| No. 2 Used | 760 | | | |
| No. 3 USED | 780 | | | |
| | | | TOTAL | |

2. Are the above fuels substantially the same as those normally burned? Yes. If not, explain _____.

3. Are the above fuels normally burned in the proportions shown above? Yes. If not, explain _____.

4. Describe any changes anticipated for procurement of fuels within the next twelve (12) months.

None.

D. Equipment & Operating Data

1. Furnace No. Plant #6.
2. Furnace Mfg. Hauck.
3. Type of Firing _____.
4. Furnace operating under normal operating conditions: No _____; Yes _____.

4. Submittal Schedule

Performance test reports shall be submitted no later than 45 days following completion of the performance test, or as required in compliance document (permit, stipulation agreement, Administrative Penalty Order, etc.), the Supervisor, CDU within 45 days of testing.

The Permittee is also responsible for providing a microfiche copy of the Performance test report within 105 days of testing. To microfiche a copy of a performance test report, contact the State Department of Administration-Micrographics Services Unit at (612)296-9708. The complete permit file number, complete facility name, and the exact date of testing must be provided.

5. Specify normal soot blowing frequency:

   a) source operating time blowing soot: _____ minutes/shift

   b) number of shifts per day _____

6. Specify soot blowing time during the test: start _____ end _____. When was the last time before the test that you blew soot: (date & time) _____.

7. Specify normal ash pulling frequency:

   a) source operating time pulling ashes: _____ minutes/shift

   b) number of shifts per day _____

8. Specify ash pulling time during the test: start _____ end _____. When was the last time before the test that you pulled ashes: (date & time) _____.

9. Date and procedures of last maintenance/cleaning of the boiler (please attach) _____.

E. Instrument Data

1. Include a copy of chart records during test for the combustion efficiency indices (CO, $O_2$, $CO_2$, combustibles, steam flow, air flow, etc.)

F. Air Pollution Control Equipment

1. Type/model control equipment Baghouse CMI SAF 720 ~~SUM-12~~

2. Air pressure drop across the control equipment 5.3.

3. Air flow through the control equipment 80 000 ACFM.

4. Was the control equipment operating normally? yes.

5. Date and procedures of last maintenance/cleaning of control equipment.
   8-30-93 Blacklighted & changed Dust Blower Filter.

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 _____, Position Plant Operator

**REQUIRED DATA**
**for**
**PROCESS EMISSIONS**

Company Name Commercial Asphalt

C. Equipment & Operating Data

1. Process Equipment No./Ident. _____.

2. Process Equipment Description Baghouse

_____.

3. Process equipment operating under normal operating conditions?

No _____. Yes _____. Process rate during the test 580.
(raw materials or finished product)

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 of control equipment CMI Baghouse SVM-12

2. Air pressure drop across the control equipment 5.2.

3. Air flow through the control equipment 80 000 ACFM

4. Was the control equipment operating normally? Yes.

5. Data of last major maintenance/cleaning of control equipment _____
8-30-93 Blacklighted & changed Dust Blower Filter

F. Plant Manager'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 _____, Position Plant Operator

lmb1770