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

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

APPENDIX K

OEPA STACK TEST REVIEW SUMMARY FORM

PREMISE NO. 1707090112

SOURCE NO. P901

SOURCE DESCRIPTION ADECO MODEL 5426 DRYER DRUM HOT MIX ASPHALT PLANT

CONTROL EQUIPMENT SPRAY CHAMBER / VENTURI SCRUBBER

MONITORING EQUIPMENT (CEM) NONE

DATE(s) OF TEST JULY 1, AND 3 - 1987

FINAL TEST REPORT RECEIVED ON AUGUST 6, 1987

POLLUTANT(s) TESTED PARTICULATES

TEST FIRM TRADET LABORATORIES, INC.

EMISSION RATES*:

ACTUAL** .0319 grs/DSCF

ALLOWABLE** .04 gr/DSCF

OPERATING RATES*:

MAXIMUM** 60T/HR. (FROM TEST REPORT)

DURING TEST PERIOD** 51.93T/HR

COMMENTS: VISIBLE EMISSIONS READ DURING TEST. TERM AND CONDITION WILL BE ADDED TO SPECIFY MAX PROCESS RATE IN THE PERMIT TO OPERATE (APPENDIX PROVIDES 50 T/HR)

** ASPHALT MIX

I HEREBY VERIFY THAT THE INFORMATION CONTAINED WITHIN THE STACK TEST REPORT HAS BEEN REVIEWED AND IT HAS BEEN DETERMINED THAT THE TEST PROCEDURES, ANALYSES, AND CALCULATIONS ARE;

[X] AN ACCEPTABLE DEMONSTRATION OF CONFORMANCE WITH THE APPROVED TESTING METHODOLOGY.

[ ] AN UNACCEPTABLE DEMONSTRATION OF CONFORMANCE WITH THE APPROVED TESTING METHODOLOGY.

8/12/87
Date of Review

HAROLD STRAHMEYER.
Reviewed By

* Based on 3 run average
** specify applicable units

TRA-DET INC.
COAL TECHNICAL SERVICES

P.O. BOX 2019
WHEELING, WV 26003
(304) 547-9094

SHIPPING ADDRESS
BATTLE RUN ROAD
RD 2, BOX 227A
TRIADELPHIA, WV 26059

August 4, 1987

Mr. Harold Strohmeyer
Northern Ohio Valley Air Authority
814 Adams Street
Steubenville, Ohio 43952

Dear Mr. Strohmeyer:

Enclosed is the report on the Particulate Emission Test conducted at the Wilson Blacktop Company hot-mix asphalt plant.

Should you have any questions please contact this office.

Sincerely,

Richard P. Whitt

RPW:rd
Enclosure

RECEIVED
AUG 6 1987
N.O.V.A.A.
STEUBENVILLE, OH.

# PARTICULATE EMISSION TEST

# WILSON BLACKTOP COMPANY

# MARTINS FERRY, OHIO

by

TraDet Laboratories, Inc.

P. O. Box 2019

Wheeling, West Virginia 26003

(304) 547-9094

July 1987

TABLE 1. Stack Gas Particulate Sampling Summary

| Sampling Data | Symbol | Run 1 | Run 2 | Run 3 |
|---|---|---|---|---|
| Volume of Dry Gas Sampled at Standard Conditions,[a] DSCF[b] | $V_{m,std}$ | 42.857 | 43.870 | 44.016 |
| @ Percent Isokinetic | %I | 94.337 | 92.998 | 89.884 |
| **Stack Gas Composition and Flow** | | | | |
| Molecular Weight of Stack Gas, Dry Basis | $MW_d$ | 29.212 | 29.300 | 29.273 |
| Molecular Weight of Stack Gas, Wet Basis | MW | 25.195 | 24.949 | 25.158 |
| Mole Fraction of Dry Gas | $M_d$ | 0.642 | 0.615 | 0.635 |
| Percent Moisture in Stack Gas, by Volume | %M | 35.828 | 38.503 | 36.505 |
| Average Stack Gas Temperature, °F | $T_s$ | 187.8 | 190.7 | 188.9 |
| Stack Gas Velocity at Stack Conditions, fpm | $V_a$ | 3438 | 3508 | 3505 |
| Stack Gas Volumetric Flow Rate at Stack Conditions, ACFM[c] | $Q_a$ | 6272 | 6400 | 6395 |
| Dry Stack Gas Volumetric Flow Rate at Standard Conditions, DSCFM[d] | $Q_s$ | 3232 | 3142 | 3250 |
| **Total Particulate Emissions** | | | | |
| Concentration of Particulates in Stack Gas, gr./DSCF | $C_s'$ | 0.0336 | 0.0320 | 0.0325 |
| Total Particulate Emission Rate, lb/hr. | $P_{tr}$ | 0.93 | 0.86 | 0.91 |

[a]Standard Conditions are 70°F and 29.92 in. Hg. [b]Dry Standard Cubic Feet. [c]Actual Cubic Feet per Minute (stack conditions). [d]Dry Standard Cubic Feet per Minute.

TABLE 2.

PROCESS MONITORING SUMMARY

WILSON BLACKTOP COMPANY

| | Dry Aggregate Avg. Feed Rate TPH | AC-20 Avg. Feed Rate TPH | Burner Avg. Firing Rate % | Scrubber Inlet Avg. in. W.C. | Scrubber Outlet Avg. in. W.C. | Scrubber Pressure Drop Avg. in. W.C. |
|---|---|---|---|---|---|---|
| Run 1 | 48.4 | 3.34 | 47.1 | -0.7 | -6.7 | 6.0 |
| Run 2 | 48.7 | 3.33 | 48.1 | -0.7 | -6.9 | 6.2 |
| Run 3 | 48.6 | 3.32 | 47.2 | -0.7 | -7.2 | 6.5 |
| Average | 48.6 | 3.33 | 47.5 | -0.7 | -6.9 | 6.2 |

TABLE 3. SCRUBBER WATER ANALYSIS

WILSON BLACKTOP COMPANY

| | | pH | Total Suspended Solids | |
|---|---|---|---|---|
| | | S.U. | mg/l. | lbs./hr.* |
| Run 1 | Feed | 7.39 | 1.9 | |
| | Discharge | 7.79 | 8090 | |
| | Difference | | 8098 | 203 |
| Run 2 | Feed | 7.36 | 4.8 | |
| | Discharge | 7.40 | 6820 | |
| | Difference | | 6815 | 171 |
| Run 3 | Feed | 7.50 | 21.2 | |
| | Discharge | 7.50 | 7220 | |
| | Difference | | 7199 | 180 |

* Based on a scrubber flow rate of 50 gpm

# APPENDIX I

# CALIBRATIONS

Staksamplr Calibration

Date 6/29/87

Console No. S1340

Barometric Pressure, $P_b$ = 35.66 in. Hg

Dry Gas Meter No. 3017861

Operator(s) KLEMM

| Orfice Manometer Setting | Volume | | | | | | Temperature | | | | Elapsed Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Wet Test Meter | | | Dry Gas Meter | | | Wet Test | Dry Gas Meter | | | |
| | Start | Stop | Volume | Start | Stop | Volume | Meter | Inlet | Outlet | Average | |
| ΔH | | | $V_w$ | | | $V_d$ | $T_w$ | +4.4 | +4.7 | $T_d$ | θ |
| in. $H_2O$ | $ft^3$ | $ft^3$ | $ft^3$ | $ft^3$ | $ft^3$ | $ft^3$ | °F | °F | °F | ~~°F~~ °R | min. |
| 0.5 (5) | 938.970 | 943.652 | 4.682 | 415.001 | 420.001 | 5.000 | 60° | 99, 106, 108 | 82, 84, 86 | 558.7 | 12:02.54<br>12.04 |
| 1.0 (5) | 948.779 | 953.419 | 4.640 | 425.506 | 430.518 | 5.012 | ↓ | 110, 116, 117 | 90, 91, 91 | 567.1 | 8:37.03<br>8.62 |
| 2.0 (10) | 953.85 | 962.999 | 9.154 | 431.006 | 441.002 | 9.996 | | 118, 124 | 92, 97, 96 | 574.7 | 12:06.87<br>12.11 |
| 4.0 (10) | 964.468 | 973.754 | 9.286 | 442.508 | 452.606 | 10.098 | | 124, 133, 136 | 96, 99, 100 | 579.2 | 8:56.19<br>8.94 |
| 6.0 (10) | 974.587 | 984.710 | 10.123 | 453.508 | 464.512 | 11.004 | | 130, 141, 143 | 100, 102, 104 | 584.6 | 8:00.59<br>8.01 |
| 8.0 (10) | 985.160 | 994.413 | 9.253 | 465.010 | 475.091 | 10.081 | ↓ | 138, 146, 150 | 103, 105, 106 | 589.2 | 6:27.34<br>6.46 |

LEAK CHECK @ 8.1" (w.c.)

$V_i$ = 403.354 $ft^3$
$V_f$ = 403.356 $ft^3$
Time = 2:09.10

} 0.001 $ft^3$/min

Staksamplr Calibration Calculations

| $\Delta H$ | $P_b + \frac{\Delta H}{13.6}$ | $T_w + 460$ | $T_d + 460$ | $\gamma$ | H@ |
|---|---|---|---|---|---|
| | | | | $\frac{V_w P_b (T_d + 460)}{V_d \left(P_b + \frac{\Delta H}{13.6}\right)\left(T_w + 460\right)}$ | $\frac{0.0317\,\Delta H}{P_b (T_d + 460)} \left[\frac{(T_w + 460)\,\theta}{V_w}\right]^2$ |
| 0.5 | 30.70 | 520 | 558.7 | 1.005 | 1.655 |
| 1.0 | 30.73 | | 567.1 | 1.007 | 1.700 |
| 2.0 | 30.81 | | 574.7 | 1.007 | 1.704 |
| 4.0 | 30.95 | | 579.2 | 1.015 | 1.788 |
| 6.0 | 31.10 | | 584.6 | 1.019 | 1.797 |
| 8.0 | 31.25 | | 589.2 | 1.020 | 1.848 |

✓ AVG. DIFF. ±0.0067

AVG. DIFF. ±0.062

CONSOLE CALIBRATION WORKSHEET

Date: 29 June 1987

Operator: R.B.Klemm Jr. Barometer: 30.66

| dH (in W.C.) | V(w) (ft^3) | V(d) (ft^3) | T(i) ('R) | T(o) ('R) | T(d) ('R) | Time (min) | Pb+dH (in Hg) | Gamma | H@ |
|---|---|---|---|---|---|---|---|---|---|
| 0.5 | 938.970 | 415.001 | 99.0 | 82.0 | | | | | |
| | 943.652 | 420.001 | 106.0 | 84.0 | | | | | |
| | 4.682 | 5.000 | 108.0 | 86.0 | 558.7 | 12.04 | 30.70 | 1.005 | 1.655 |
| 1.0 | 948.779 | 425.506 | 110.0 | 90.0 | | | | | |
| | 953.419 | 430.518 | 116.0 | 91.0 | | | | | |
| | 4.640 | 5.012 | 117.0 | 91.0 | 567.1 | 8.62 | 30.73 | 1.007 | 1.700 |
| 2.0 | 953.845 | 431.006 | 118.0 | 92.0 | | | | | |
| | 962.999 | 441.002 | 124.0 | 95.0 | | | | | |
| | 9.154 | 9.996 | 134.0 | 98.0 | 574.7 | 12.11 | 30.81 | 1.007 | 1.704 |
| 4.0 | 964.468 | 442.508 | 124.0 | 96.0 | | | | | |
| | 973.754 | 452.606 | 133.0 | 99.0 | | | | | |
| | 9.286 | 10.098 | 136.0 | 100.0 | 579.2 | 8.94 | 30.95 | 1.015 | 1.788 |
| 6.0 | 974.587 | 453.508 | 130.0 | 100.0 | | | | | |
| | 984.710 | 464.512 | 141.0 | 102.0 | | | | | |
| | 10.123 | 11.004 | 143.0 | 104.0 | 584.6 | 8.01 | 31.10 | 1.019 | 1.797 |
| 8.0 | 985.160 | 465.010 | 138.0 | 103.0 | | | | | |
| | 994.413 | 475.091 | 146.0 | 105.0 | | | | | |
| | 9.253 | 10.081 | 150.0 | 106.0 | 589.2 | 6.46 | 31.25 | 1.020 | 1.848 |

Staksamplr Calibration

Date 7 July 1987

Console No. S1340

Barometric Pressure, $P_b$ = 28.86 in. Hg

Dry Gas Meter No. 3017861

Operator(s) KLEMM

| Orfice Manometer Setting | Volume | | | | | | Temperature | | | | Elapsed Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Wet Test Meter | | | Dry Gas Meter | | | Wet Test | Dry Gas Meter | | | |
| | Start | Stop | Volume | Start | Stop | Volume | Meter | Inlet | Outlet | Average | |
| ΔH | | | $V_w$ | | | $V_d$ | $T_w$ | +4.4 | +4.7 | $T_d$ | θ |
| in. $H_2O$ | $ft^3$ | $ft^3$ | $ft^3$ | $ft^3$ | $ft^3$ | $ft^3$ | °F | °F | °F | °F | min. |
| 0.5 (5) | 018.375 | 023.121 | 4.746 | 632.002 | 637.006 | 5.004 | 60° | 100, 102, 106 } 107.4 | 76, 78, 80 } 82.4 | 94.9 | 12:01.75<br>12.029 |
| 1.0 (5) | 024.060 | 028.758 | 4.698 | 638.001 | 643.003 | 5.002 | 60 | 106, 111, 114 } 110.0 | 80, 82, 84 } 86.7 | 100.7 | 8:37.61<br>8.660 |
| 2.0 (10) | 029.717 | 039.158 | 9.441 | 644.004 | 654.106 | 10.102 | 60 | 114, 123, 124 } | 84, 87, 90 } | 108.2 | 12:31.39<br>12.52 |
| 4.0 (10) | 040.000 | 049.325 | 9.325 | 655.005 | 665.007 | 10.002 | 60 | 122, 130, 133 } | 90, 93, 94 } | 114.9 | 8:53.29<br>8.99 |
| 6.0 (10) | 050.251 | 059.583 | 9.332 | 666.006 | 676.044 | 10.038 | 60 | 130, 134, 135 } | 95, 96, 99 } | 119.2 | 7:21.90<br>7.37 |
| 8.0 (10) | 060.577 | 069.886 | 9.309 | 677.110 | 687.134 | 10.024 | 60 | 132, 136, 138 } | 99, 100, 101 } | 122.1 | 6:23.44<br>6.40 |

Staksamplr Calibration Calculations

| $\Delta H$ | $P_b + \frac{\Delta H}{13.6}$ | $T_w + 460$ | $T_d + 460$ | $\gamma$ $\frac{V_w P_b (T_d + 460)}{V_d \left(P_b + \frac{\Delta H}{13.6}\right)(T_w + 460)}$ | H@ $\frac{0.0317 \Delta H}{P_b (T_d + 460)} \left[\frac{(T_w + 460)\,\theta}{V_w}\right]^2$ |
|---|---|---|---|---|---|
| 0.5 | 28.90 | 520 | 554.9 | 1.010 | 1.719 |
| 1.0 | 28.93 | 520 | 560.9 | 1.010 | 1.800 |
| 2.0 | 29.01 | 520 | 568.2 | 1.016 | 1.839 |
| 4.0 | 29.15 | 520 | 574.9 | 1.020 | 1.877 |
| 6.0 | 29.30 | 520 | 579.2 | 1.020 | 1.916 |
| 8.0 | 29.45 | 520 | 582.1 | 1.019 | 1.929 |

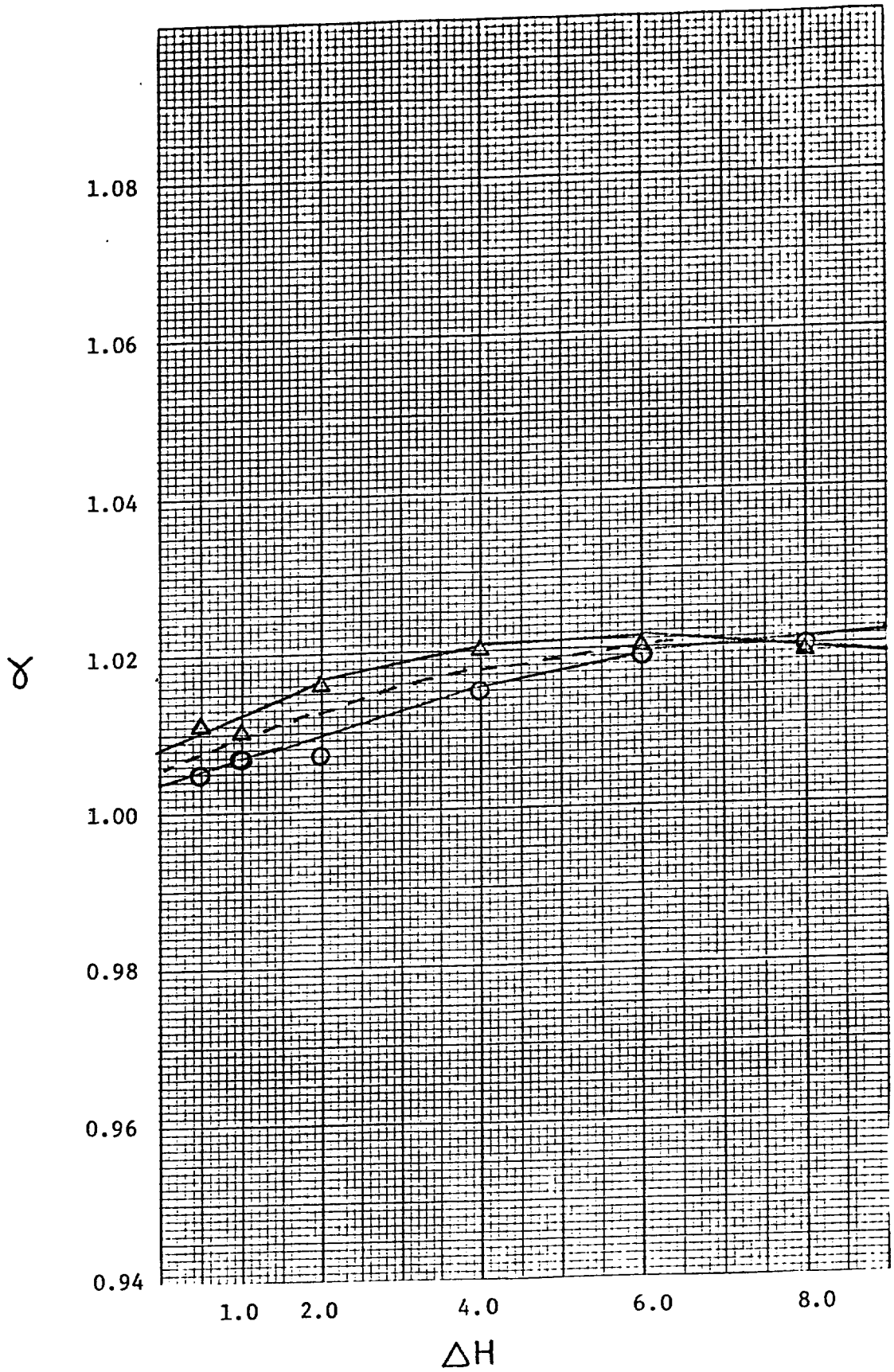
CONSOLE CALIBRATION WORKSHEET
Date: 7 July 1987
Operator: R.B.Klemm Jr.
Console # S-1340

Barometer: 28.86
Dry Gas Meter # 3017861 ( T=60'F )

| dH (in W.C.) | V(w) (ft^3) | V(d) (ft^3) | T(i) ('F) | T(o) ('F) | T(d) ('R) | Time (min) | Pb+dH (in Hg) | Gamma | H@ |
|---|---|---|---|---|---|---|---|---|---|
| 0.5 | 18.375 | 632.002 | 100.0 | 76.0 | | | | | |
| | 23.121 | 637.006 | 102.0 | 78.0 | | | | | |
| | 4.746 | 5.004 | 106.0 | 80.0 | 554.9 | 12.03 | 28.90 | 1.011 | 1.719 |
| 1.0 | 24.060 | 638.001 | 106.0 | 80.0 | | | | | |
| | 28.758 | 643.003 | 111.0 | 82.0 | | | | | |
| | 4.698 | 5.002 | 114.0 | 84.0 | 560.7 | 8.66 | 28.93 | 1.010 | 1.800 |
| 2.0 | 29.717 | 644.004 | 114.0 | 84.0 | | | | | |
| | 39.158 | 654.106 | 123.0 | 87.0 | | | | | |
| | 9.441 | 10.102 | 124.0 | 90.0 | 568.2 | 12.52 | 29.01 | 1.016 | 1.839 |
| 4.0 | 40.000 | 655.005 | 122.0 | 90.0 | | | | | |
| | 49.325 | 665.007 | 130.0 | 93.0 | | | | | |
| | 9.325 | 10.002 | 133.0 | 94.0 | 574.9 | 8.89 | 29.15 | 1.020 | 1.877 |
| 6.0 | 50.251 | 666.006 | 130.0 | 95.0 | | | | | |
| | 59.583 | 676.044 | 134.0 | 96.0 | | | | | |
| | 9.332 | 10.038 | 135.0 | 98.0 | 579.2 | 7.37 | 29.30 | 1.020 | 1.916 |
| 8.0 | 60.577 | 677.110 | 132.0 | 98.0 | | | | | |
| | 69.886 | 687.134 | 136.0 | 100.0 | | | | | |
| | 9.309 | 10.024 | 138.0 | 101.0 | 582.1 | 6.40 | 29.45 | 1.019 | 1.929 |

CONSOLE CALIBRATION

WILSON BLACKTOP




○ Before 6/29/87

△ After 7/7/87

# S-Type Pitot Tube Calibration Data

Date June 30, 1987 Calibrated by Klemm / Witt

S-Type Pitot Tube Identification 3 Ft. Stainless Steel $C_p$ = 0.7785 Normal

$C_p$ = 0.8134 Reversed

Calibration Setup:

Wind Tunnel @ TraDet, Inc

Normal: Pitot Leads Down

Reversed: Pitot Leads Up

| Test No. | Pitot Tube Readings (in. $H_2O$) | | | | |
|---|---|---|---|---|---|
| | Standard | S-Type | | | |
| | | Normal | $C_p$ | Reversed | $C_p$ |
| 1 | 0.27 | 0.43 | 0.7845 | 0.40 | 0.8134 |
| 2 | 0.27 | 0.44 | 0.7755 | 0.40 | 0.8134 |
| 3 | 0.27 | 0.44 | 0.7755 | 0.40 | 0.8134 |
| | | Average | 0.7785 | Average | 0.8134 |

# APPENDIX II

# PARTICULATE ANALYTICAL DATA

TRADET LABORATORIES
930 Kinnear Road, Columbus, Ohio
Mailing Address: P.O. Box 12069, Columbus, Ohio 43212
Phone: 614-299-9229
Wheeling-Ohio County Airport, Wheeling, W.Va. 26003 Phone: 304-277-4350

# PARTICULATE ANALYTICAL DATA

Plant Wilson Blacktop Run 1

Location Martins Ferry, OH. Date 1 July 1987

MOISTURE:

| Impinger | 1 | 2 & 3 | 4 |
|---|---|---|---|
| Final Volume | 250 + 107 ml | 250 + 70 ml + 9 ml | 212.8 + 50.8 |
| Initial Volume | 100.0 ml | 100.0 ml | 244.8 gms |
| Net Volume | 257 ml | 229 ml | 18.8 g |

Total Weight of Water Collected 504.8 grams

| PARTICULATES: | Filter | Probe Wash | Wet Catch |
|---|---|---|---|
| Designation Number | 164 | 358 | — |
| Final Weight (1) | 0.8300 | 124.2625 | |
| Final Weight (2) | 0.8297 | 124.2623 | |
| Final Weight (3) | 0.8288 | 124.2626 | |
| Final Weight (4) | 0.8289 | | |
| Initial Weight (1) | 0.7600 | 124.2375 | |
| Initial Weight (2) | 0.7600 | | |
| Net Weight | 0.0688 | 0.0248 | |
| Blank Correction | negligible | negligible | |
| Corrected Net Weight | 0.0688 | 0.0248 | |

Total Weight Without Wet Catch 0.0936 grams

Total Weight With Wet Catch _____ grams

TRADET LABORATORIES

930 Kinnear Road, Columbus, Ohio
Mailing Address: P.O. Box 12069, Columbus, Ohio 43212
Phone: 614-299-9229

Wheeling-Ohio County Airport, Wheeling, W.Va. 26003 Phone: 304-277-4350

# PARTICULATE ANALYTICAL DATA

Plant Wilson Blacktop Run 2

Location Martins Ferry, Ohio. Date 3 July 1987

MOISTURE:

| Impinger | 1 | 2 & 3 | 4 |
|---|---|---|---|
| Final Volume | 250+115 ml | 250+75+[41] | 269.2g |
| Initial Volume | 100 ml | 100 ml | 247.7 |
| Net Volume | 265 ml | 266 ml | 21.5 |

Total Weight of Water Collected 542.5 grams

| PARTICULATES: | Filter | Probe Wash | Wet Catch |
|---|---|---|---|
| Designation Number | 165 | 358 ml | — |
| Final Weight (1) | 0.8270 | 124.2625 | |
| Final Weight (2) | 0.8261 | 124.2623 | |
| Final Weight (3) | 0.8263 | 124.2626 | |
| Final Weight (4) | 0.8259 | | |
| Initial Weight (1) | 0.7600 | 124.2375 | |
| Initial Weight (2) | 0.7600 | | |
| Net Weight | 0.0659 | 0.0254 | |
| Blank Correction | negligible | negligible | |
| Corrected Net Weight | 0.0659 | 0.0254 | |

Total Weight Without Wet Catch 0.0913 grams

Total Weight With Wet Catch _____ grams

TRADET LABORATORIES

930 Kinnear Road, Columbus, Ohio Phone: 614-299-9229
Mailing Address: P.O. Box 12069, Columbus, Ohio 43212

Wheeling-Ohio County Airport, Wheeling, W.Va. 26003 Phone: 304-277-4350

# PARTICULATE ANALYTICAL DATA

Plant Wilson Blacktop Run 3

Location Martins Ferry, OH. Date 3 July 1987

MOISTURE:

| Impinger | 1 | 2 & 3 | 4 |
|---|---|---|---|
| Final Volume | 250+114 ml | 250+28+[25] | 284.5 |
| Initial Volume | 100 ml | 100 ml | 253.5 gms |
| Net Volume | 264 ml | 203 | 31.0 |

Total Weight of Water Collected 498 grams

| PARTICULATES: | Filter | Probe Wash | Wet Catch |
|---|---|---|---|
| Designation Number | 168 | 423 ml | — |
| Final Weight (1) | 0.8289 | 149.1276 | |
| Final Weight (2) | 0.8282 | 149.1539 | |
| Final Weight (3) | 0.8283 | 149.1542 | |
| Final Weight (4) | 0.8281 | | |
| Initial Weight (1) | 0.7613 | 149.1278 | |
| Initial Weight (2) | 0.7612 | | |
| Net Weight | 0.0669 | 0.0261 | |
| Blank Correction | negligible | negligible | |
| Corrected Net Weight | 0.0669 | 0.0261 | |

Total Weight Without Wet Catch 0.0930 grams

Total Weight With Wet Catch _____ grams

TRADET LABORATORIES

930 Kinnear Road, Columbus, Ohio Phone: 614-299-9229
Mailing Address: P.O. Box 12069, Columbus, Ohio 43212

Wheeling-Ohio County Airport, Wheeling, W.Va. 26003 Phone: 304-277-4350

# PARTICULATE ANALYTICAL DATA

Plant Wilson Blacktop Run Blanks

Location Martins Ferry, Ohio Date 7/1987

MOISTURE:

| Impinger | 1 | 2 | 4 |
|---|---|---|---|
| Final Volume | | | |
| Initial Volume | | | |
| Net Volume | | | |

Total Weight of Water Collected _____ grams

| PARTICULATES: | Filter | ~~Probe Wash~~ Filter | ~~Wet Catch~~ Acetone Blank |
|---|---|---|---|
| Designation Number | 169 | 170 | 100 ml |
| Final Weight (1) | 0.7568 | 0.7450 | 82.4009 |
| Final Weight (2) | 0.7565 | 0.7449 | 82.4010 |
| Final Weight (3) | 0.7565 | 0.7450 | |
| Final Weight (4) | | | |
| Initial Weight (1) | 0.7569 | 0.7450 | 82.4011 |
| Initial Weight (2) | 0.7567 | 0.7450 | |
| Net Weight | 0.0002 | 0.0000 | 0.0001 |
| Blank Correction | Avg = Negligible | | |
| Corrected Net Weight | | | |

Total Weight Without Wet Catch _____ grams

Total Weight With Wet Catch _____ grams

TRADET LABORATORIES

930 Kinnear Road, Columbus, Ohio Phone: 614-299-9229
Mailing Address: P.O. Box 12069, Columbus, Ohio 43212

Wheeling-Ohio County Airport, Wheeling, W.Va. 26003 Phone: 304-277-4350

# PARTICULATE ANALYTICAL DATA

Plant Wilson Blacktop Run Blanks

Location Martins Ferry Ohio Date 7/1987

MOISTURE:

| Impinger | 1 | 2 | 4 |
|---|---|---|---|
| Final Volume | | | |
| Initial Volume | | | |
| Net Volume | | | |

Total Weight of Water Collected _____ grams

| PARTICULATES: | ~~Filter~~ Acetone Blank | Probe Wash | Wet Catch |
|---|---|---|---|
| Designation Number | 100 mls | — | — |
| Final Weight (1) | 76.3631 | | |
| Final Weight (2) | 76.3633 | | |
| Final Weight (3) | | | |
| Final Weight (4) | | | |
| Initial Weight (1) | 76.3631 | | |
| Initial Weight (2) | | | |
| Net Weight | 0.0000 | | |
| Blank Correction | Avg: negligible | | |
| Corrected Net Weight | | | |

Total Weight Without Wet Catch _____ grams

Total Weight With Wet Catch _____ grams

Concentration of Particulate Matter in Stack, grs./DSCF

$$C_s' = 0.0154 \frac{M_p}{V_{m,std}}$$

Where $M_p$ = Milligrams of particulate collected

RUN 1

$$C_s' = 0.0154 \frac{93.6}{45.221} = 0.0319 \text{ grs./DSCF}$$

RUN 2

$$C_s' = 0.0154 \frac{91.3}{43.870} = 0.0320 \text{ grs./DSCF}$$

RUN 3

$$C_s' = 0.0154 \frac{93.0}{44.016} = 0.0325 \text{ grs./DSCF}$$

Average = 0.0321 grs./DSCF

Total Particulate Emission Rate, lb./hr:

$$P_{tr} = 0.008571(C_s')(Q_s)$$

Run 1

$$P_{TR} = 0.008571(0.0319)(3232) = 0.88 \text{ lbs/hr}$$

Run 2

$$P_{TR} = 0.008571(0.0320)(3142) = 0.86 \text{ lbs/hr}$$

Run 3

$$P_{TR} = 0.008571(0.0325)(3250) = 0.91 \text{ lbs/hr}$$

Average = 0.88 lbs/hr

# APPENDIX III

# FIELD DATA

# FIELD DATA

PLANT Wilson Blacktop
DATE 1 July 1987
SAMPLING LOCATION
SAMPLE TYPE
RUN NUMBER 1
OPERATOR Klemm / White
AMBIENT TEMPERATURE 70°F
BAROMETRIC PRESSURE 29.37
STATIC PRESSURE, ($P_s$) 0
FILTER NUMBER (s) 164

PROBE LENGTH AND TYPE 3' SS
NOZZLE I.D. 0.25
ASSUMED MOISTURE, % 30%
SAMPLE BOX NUMBER
METER BOX NUMBER
METER $\Delta H_@$ 1.700
~~C FACTOR~~
PROBE HEATER SETTING 80
HEATER BOX SETTING 250
K REFERENCE ~~Δp~~ 1.50

Plant Start 0824

SCHEMATIC OF TRAVERSE POINT LAYOUT

READ AND RECORD ALL DATA EVERY 3 MINUTES

| TRAVERSE POINT NUMBER | SAMPLING TIME, min | CLOCK TIME (24-hr CLOCK) | GAS METER READING ($V_m$), $ft^3$ | VELOCITY HEAD ($\Delta p_s$), in. $H_2O$ | ORIFICE PRESSURE DIFFERENTIAL ($\Delta H$), in. $H_2O$ DESIRED | ORIFICE PRESSURE DIFFERENTIAL ($\Delta H$), in. $H_2O$ ACTUAL | STACK TEMPERATURE ($T_s$), °F | DRY GAS METER TEMPERATURE INLET ($T_{m\ in}$), °F | DRY GAS METER TEMPERATURE OUTLET ($T_{m\ out}$), °F | PUMP VACUUM, in. Hg | ~~SAMPLE BOX TEMPERATURE~~ $\sqrt{\Delta p_s}$ | IMPINGER TEMPERATURE, °F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A 1 | 0 | 840 | 475.289 | 0.55 | 0.82 | 0.82 | 174 | 68 | 68 | 4 | 0.7416 | 56 |
| A 2 | 3 | 843 | 476.501 | 0.57 | 0.83 | 0.83 | 171 | 72 | 68 | 5 | 0.7550 | 54 |
| A 3 | 6 | 846 | 477.762 | 0.92 | 1.35 | 1.35 | 185 | 81 | 68 | 8 | 0.9592 | 54 |
| A 4 | 9 | 849 | 479.064 | 1.1 | 1.60 | 1.60 | 185 | 88 | 70 | 8 | 1.0488 | 54 |
| A 5 | 12 | 852 | 481.879 | 1.2 | 1.70 | 1.70 | 190 | 96 | 70 | 10(?) | 1.0954 | 54 |
| Snap | 15 | 855 | 484.292 | 1.1 | 1.6 | 1.60 | 191 | 99 | 70 | 9(?) | 1.0488 | 54 |
| B 5 | | 856 | " | ↓ | ↓ | | | | | | | |
| B 4 | | 859 | 486.41 | 1.0 | 1.40 | 1.40 | 193 | 102 | 72 | 8 | 1.0000 | 54 |
| B 3 | | 902 | 488.445 | 0.99 | 1.32 | 1.32 | 194 | 106 | 74 | 7 | 0.9950 | 65 |
| B 2 | | 905 | 490.40 | 0.83 | 1.13 | 1.13 | 192 | 109 | 76 | 7 | 0.9110 | 70 |
| B 1 | | 908 | 492.310 | 0.70 | 0.94 | 0.94 | 190 | 110 | 78 | 6 | 0.8367 | 70 |
| | | 911 | 493.935 | | | | | | | | | |
| C 1 | | 912 | " " | 0.69 | 0.92 | 0.92 | 189 | 108 | 80 | 5 | 0.8307 | 67 |
| C 2 | | 915 | 495.642 | 0.85 | 1.10 | 1.10 | 189 | 106 | 81 | 6 | 0.9220 | 68 |
| C 3 | | 918 | 497.480 | 0.89 | 1.19 | 1.19 | 191 | 106 | 81 | 6 | 0.9434 | 65 |
| C 4 | | 921 | 498.678 | 0.92 | 1.23 | 1.23 | 192 | 108 | 81 | 7 | 0.9592 | 62 |
| C 5 | | 924 | 500.650 | 1.00 | 1.35 | 1.35 | 190 | 108 | 82 | 7 | 1.0000 | 62 |
| | | 927 | 502.464 | | | | | | | | | |
| D 5 | | 928 | " " | 0.95 | 1.25 | 1.25 | 189 | 110 | 82 | 7 | 0.9747 | 61 |
| D 4 | | 931 | 504.372 | 0.87 | 1.17 | 1.17 | 188 | 110 | 82 | 7 | 0.9327 | 60 |
| D 3 | | 934 | 506.218 | 0.83 | 1.11 | 1.11 | 186 | 110 | 82 | 7 | 0.9110 | 59 |
| D 2 | | 937 | 508.025 | 0.80 | 1.09 | 1.09 | 187 | 109 | 82 | 6 | 0.8944 | 59 |
| D 1 | | 940 | 509.781 | 0.84 | 1.12 | 1.12 | 189 | 109 | 83 | 6 | 0.9165 | 58 |

WATER

WATER

WATER

$CO_2$: 5%
$O_2$: 19%

$O_2$: 11%
$CO_2$: 5%

COMMENTS:

Pre-Leak Check. 1 min

EPA (Dur) 235
4 72

Start 475.280

5-6" Hg vac. End 475.289 / 0.009 $ft^3$/min

Post-Leak Check

Start 520.240
End. 520.243
18" Hg 0.003 $ft^3$/min

$CO_{2,avg}$ = 5%

$O_{2,avg}$ = 10 1/3%

# FIE__ _ATA

PLANT Wilson Blacktop
DATE 1 July 1987
SAMPLING LOCATION
SAMPLE TYPE
RUN NUMBER 1
OPERATOR
AMBIENT TEMPERATURE
BAROMETRIC PRESSURE
STATIC PRESSURE, ($P_s$)
FILTER NUMBER (s)

PROBE LENGTH AND TYPE
NOZZLE I.D.
ASSUMED MOISTURE, %
SAMPLE BOX NUMBER
METER BOX NUMBER
METER $\Delta H_@$
C FACTOR
PROBE HEATER SETTING
HEATER BOX SETTING
REFERENCE $\Delta p$

K = 1.38

SCHEMATIC OF TRAVERSE POINT LAYOUT

READ AND RECORD ALL DATA EVERY _____ MINUTES

| TRAVERSE POINT NUMBER | SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK) | GAS METER READING ($V_m$), $ft^3$ | VELOCITY HEAD ($\Delta p_s$), in. $H_2O$ | ORIFICE PRESSURE DIFFERENTIAL ($\Delta H$), in. $H_2O$ DESIRED | ORIFICE PRESSURE DIFFERENTIAL ($\Delta H$), in. $H_2O$ ACTUAL | STACK TEMPERATURE ($T_s$), °F | DRY GAS METER TEMPERATURE INLET ($T_{m\ in}$), °F | DRY GAS METER TEMPERATURE OUTLET ($T_{m\ out}$), °F | PUMP VACUUM, in. Hg | SAMPLE BOX TEMPERATURE, °F | IMPINGER TEMPERATURE, °F |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | $\sqrt{\Delta P_s}$ | |
| $CO_2$: 5. $O_2$: 11 | | | | | | | | | | | |
| STOP | 943 | 511.512 | — | | | | | | | | |
| E1 | 944 | " " | 0.64 | 0.86 | 0.86 | 184 | 103 | 84 | 5 | 0.8000 | 58 |
| E2 | 947 | 513.174 | 0.7~~0~~2 | 0.98 | 0.98 | 186 | 104 | 85 | 6 | 0.8485 | 58 |
| E3 | 950 | 514.856 | 0.77 | 1.05 | 1.05 | 189 | 104 | 85 | 6 | 0.8775 | 58 |
| E4 | 953 | 516.625 | 0.79 | 1.09 | 1.09 | 190 | 106 | 86 | 7 | 0.8888 | 58 |
| E5 | 956 | 518.410 | 0.81 | 1.10 | 1.10 | 190 | 107 | 86 | 6 | 0.9000 | 60 |
| STOP | 959 | 520.196 | | | | | | | | | |
| | AVERAGE: | | 0.85 | 1.17 | 1.17 | 187.8 | 101.6 | 78.2 | 6.64 | 0.9196 | 59.9 |
| | TOTAL | 44.907 | | | | | | | | | |
| | CORR. | 45.221 | | | | | | | | | |

COMMENTS:

EPA (Dur) 235
4 72

— 2 —

# FIELD DATA

PLANT Wilson Blacktop
DATE 3 July
SAMPLING LOCATION
SAMPLE TYPE
RUN NUMBER 2
OPERATOR KLEMM / WHITT
AMBIENT TEMPERATURE 75°
BAROMETRIC PRESSURE 29.33
STATIC PRESSURE, ($P_s$)
FILTER NUMBER (s) 165

PROBE LENGTH AND TYPE 3' S.S.
NOZZLE I.D. 0.250 in
ASSUMED MOISTURE, % 35%
SAMPLE BOX NUMBER
METER BOX NUMBER
METER $\Delta H_@$ 1.700
C FACTOR
PROBE HEATER SETTING 80%
HEATER BOX SETTING 250
REFERENCE $\Delta p$

SCHEMATIC OF TRAVERSE POINT LAYOUT

READ AND RECORD ALL DATA EVERY 3 MINUTES

| | TRAVERSE POINT NUMBER | SAMPLING TIME, min | CLOCK TIME (24-hr CLOCK) | GAS METER READING ($V_m$), $ft^3$ | VELOCITY HEAD ($\Delta p_s$), in. $H_2O$ | ORIFICE PRESSURE DIFFERENTIAL ($\Delta H$), in. $H_2O$ DESIRED | ORIFICE PRESSURE DIFFERENTIAL ($\Delta H$), in. $H_2O$ ACTUAL | STACK TEMPERATURE ($T_s$), °F | DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F | DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F | PUMP VACUUM, in. Hg | SAMPLE BOX TEMPERATURE, °F | IMPINGER TEMPERATURE, °F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A1 | 0 | 742 | 520.390 | 0.59 | 0.78 | 0.78 | 177 | 70 | 70 | 5 | | 60 |
| | A2 | 3 | 745 | 521.850 | 0.71 | 0.92 | 0.92 | 184 | 72 | 70 | 6 | | 55 |
| | A3 | 6 | 748 | 523.172 | 1.00 | 1.30 | 1.30 | 189 | 80 | 70 | 7 | | 57 |
| | A4 | 9 | 751 | 524.964 | 1.10 | 1.40 | 1.40 | 192 | 86 | 70 | 10 | | 57 |
| | A5 | 12 | 754 | 526.916 | 1.30 | 1.70 | 1.70 | 194 | 92 | 72 | 12 | | 60 |
| | | 15 | 757 | 529.015 | | | | | | | | | |
| | B5 | 0 | 758 | " " | 1.20 | 1.55 | 1.55 | 195 | 96 | 73 | 11 | | 60 |
| WATER | B4 | 3 | 801 | 531.213 | 1.10 | 1.40 | 1.40 | 195 | 102 | 74 | 10 | | 76 |
| | B3 | 6 | 804 | 533.200 | 0.98 | 1.20 | 1.20 | 193 | 106 | 74 | 9 | | 73 |
| | B2 | 9 | 807 | 535.053 | 0.86 | 1.10 | 1.10 | 191 | 109 | 78 | 8 | | 70 |
| | B1 | 12 | 810 | 536.818 | 0.72 | 0.92 | 0.92 | 191 | 110 | 79 | 6 | | 66 |
| | | 15 | 813 | 538.429 | | | | | | | | | |
| | C1 | 0 | 814 | " " | 0.75 | 0.95 | 0.95 | 189 | 106 | 80 | 6 | | 62 |
| WATER | C2 | 3 | 817 | 540.056 | 0.85 | 1.10 | 1.10 | 189 | 109 | 80 | 7 | | 60 |
| | C3 | 6 | 820 | 541.780 | 0.90 | 1.15 | 1.15 | 193 | 110 | 81 | 7 | | 56 |
| | C4 | 9 | 823 | 543.542 | 0.95 | 1.20 | 1.20 | 194 | 110 | 81 | 7 | | 56 |
| | C5 | 12 | 826 | 545.359 | 1.05 | 1.45 | 1.45 | 193 | 110 | 82 | 7 | | 56 |
| | | 15 | 829 | 547.395 | | | | | | | | | |
| | D5 | 0 | 829 | " " | 0.97 | 1.25 | 1.25 | 193 | 110 | 83 | 6 | | 56 |
| ATER | D4 | 3 | 832 | 549.185 | 0.85 | 1.08 | 1.08 | 193 | 110 | 84 | 7 | | 54 |
| | D3 | 6 | 835 | 550.927 | 0.83 | 1.05 | 1.05 | 192 | 111 | 85 | 7 | | 54 |
| | D2 | 9 | 838 | 552.633 | 0.83 | 1.05 | 1.05 | 191 | 112 | 86 | 7 | | 54 |
| | D1 | 12 | 841 | 554.330 | 0.65 | 0.83 | 0.83 | 189 | 111 | 88 | 6 | | 54 |

$CO_2$: 5.5%
$O_2$: 11.5

$CO_2$: 5.0
$O_2$: 11.5%

COMMENTS:

EPA (Dur) 235
4 72

PRE-TEST LEAK CHECK
Vac. 10" (Hg) $V_0$ = 520.381
Time 1 min 12 sec $V_f$ = 520.390 → 0.008 $ft^3$/min.

2 of 2

# FIELD DATA

PLANT Wilson Blacktop
DATE 3 July 1987
SAMPLING LOCATION
SAMPLE TYPE
RUN NUMBER 2
OPERATOR Klemm/White
AMBIENT TEMPERATURE 75°
BAROMETRIC PRESSURE 29.33
STATIC PRESSURE, ($P_s$)
FILTER NUMBER (s) 165

PROBE LENGTH AND TYPE 3' S.S.
NOZZLE I.D. 1/4"
ASSUMED MOISTURE, % 35%
SAMPLE BOX NUMBER
METER BOX NUMBER
METER $\Delta H_@$ 1.700
C FACTOR
PROBE HEATER SETTING
HEATER BOX SETTING
REFERENCE $\Delta p$

SCHEMATIC OF TRAVERSE POINT LAYOUT

READ AND RECORD ALL DATA EVERY _____ MINUTES

| TRAVERSE POINT NUMBER | SAMPLING TIME, min | CLOCK TIME (24-hr CLOCK) | GAS METER READING ($V_m$), $ft^3$ | VELOCITY HEAD ($\Delta p_s$), in. $H_2O$ | ORIFICE PRESSURE DIFFERENTIAL ($\Delta H$), in. $H_2O$ DESIRED | ORIFICE PRESSURE DIFFERENTIAL ($\Delta H$), in. $H_2O$ ACTUAL | STACK TEMPERATURE ($T_s$), °F | DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F | DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F | PUMP VACUUM, in. Hg | SAMPLE BOX TEMPERATURE, °F $\sqrt{\Delta P_s}$ | IMPINGER TEMPERATURE, °F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stop | | 844 | 555.901 | | | | | | | | | |
| E1 | 0 | 845 | 555.901 | 0.61 | 0.78 | 0.78 | 188 | 110 | 88 | 5 | | 56 |
| E2 | 3 | 848 | 557.386 | 0.70 | 0.89 | 0.89 | 189 | 110 | 89 | 6 | | 56 |
| E3 | 6 | 851 | 558.950 | 0.73 | 0.93 | 0.93 | 191 | 111 | 90 | 7 | | 58 |
| E4 | 9 | 854 | 560.565 | 0.76 | 0.97 | 0.97 | 191 | 112 | 90 | 7 | | 59 |
| E5 | 12 | 857 | 562.217 | 0.87 | 1.11 | 1.11 | 192 | 111 | 90 | 7 | | 60 |
| | 15 | 900 | 563.955 | | | | | | | | | |
| AVG. | | | 43.565 ft3 | 0.874 | 1.122 | 1.122 | 190.7 | 103.4 | 80.3 | 7.32 | 0.9303 | 59.4 |
| | | | | | | | | +4.7 | +4.4 | | | |
| | | | | | | | | 108.1 | 84.7 | | | |
| | | | | | | | | 96.4 | | | | |
| | | Corr | 43.870 | | | | | | | | | |

$CO_2$: 5.5
$O_2$: 10.5

COMMENTS:

Post Test Leak Check vac: 13"

$t_0$ 563.985
$t_{1\,min}$ 563.996
0.011 ft3/min

AVG: $CO_2 \equiv 5.33\%$
$O_2 = 11.17\%$

EPA (Dur) 235
4 72

# FIELD DATA

PLANT Wilson Blackstone
DATE 3 July 1987
SAMPLING LOCATION
SAMPLE TYPE
RUN NUMBER 3
OPERATOR Klemm / Watt
AMBIENT TEMPERATURE 80°
BAROMETRIC PRESSURE 29.32
STATIC PRESSURE, ($P_s$)
FILTER NUMBER (s) 168

PROBE LENGTH AND TYPE 3' S.S.
NOZZLE I.D. 1/4"
ASSUMED MOISTURE, % 35%
SAMPLE BOX NUMBER
METER BOX NUMBER
METER $\Delta H_@$ 1.700
C FACTOR
PROBE HEATER SETTING 65
HEATER BOX SETTING 250
REFERENCE $\Delta p$

SCHEMATIC OF TRAVERSE POINT LAYOUT

READ AND RECORD ALL DATA EVERY 3 MINUTES

| TRAVERSE POINT NUMBER | SAMPLING TIME, min | CLOCK TIME (24-hr CLOCK) | GAS METER READING ($V_m$), $ft^3$ | VELOCITY HEAD ($\Delta p_s$), in. $H_2O$ | ORIFICE PRESSURE DIFFERENTIAL ($\Delta H$), in. $H_2O$ DESIRED | ORIFICE PRESSURE DIFFERENTIAL ($\Delta H$), in. $H_2O$ ACTUAL | STACK TEMPERATURE ($T_s$), °F | DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F | DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F | PUMP VACUUM, in. Hg | SAMPLE BOX TEMPERATURE, °F | IMPINGER TEMPERATURE, °F | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | 0 | 1022 | 564.063 | 0.62 | 0.80 | 0.80 | 180 | 80 | 80 | 4 | | 65 | |
| A2 | 3 | 1025 | 565.518 | 0.75 | 0.94 | 0.94 | 185 | 82 | 80 | 4 | | 61 | $CO_2$: 5.0 |
| A3 | 6 | 1028 | 567.058 | 0.99 | 1.22 | 1.22 | 188 | 88 | 80 | 5 | | 60 | $O_2$: 11.5 |
| A4 | 9 | 1031 | 568.837 | 1.20 | 1.48 | 1.48 | 190 | 98 | 80 | 6 | | 68 | |
| A5 | 12 | 1034 | 570.845 | 1.30 | 1.61 | 1.61 | 191 | 101 | 80 | 7 | | 74 | |
| STOP | 15 | 1037 | 572.914 | | | | | | | | | | |
| B5 | 0 | 1038 | 572.914 | | | | | | | | | | |
| B4 | 3 | 1041 | 575.048 | 1.25 | 1.55 | 1.55 | 191 | 106 | 80 | 7 | | 82 | |
| B3 | 6 | 1044 | 577.032 | 1.13 | 1.41 | 1.41 | 190 | 110 | 81 | 6 | | 88 | |
| B2 | 9 | 1047 | 578.967 | 1.05 | 1.30 | 1.30 | 190 | 110 | 82 | 6 | | 88 | |
| B1 | 12 | 1050 | 580.722 | 0.87 | 1.08 | 1.08 | 191 | 113 | 84 | 6 | | 88 | |
| STOP | 15 | 1053 | 582.360 | 0.73 | 0.91 | 0.91 | 189 | 112 | 85 | 5 | | 90 | |
| C1 | 0 | 1053 | 582.360 | | | | | | | | | | |
| C2 | 3 | 1056 | 583.922 | 0.69 | 0.85 | 0.85 | 187 | 110 | 84 | 4 | | 64 | |
| C3 | 6 | 1059 | 585.634 | 0.84 | 1.05 | 1.05 | 188 | 112 | 88 | 5 | | 68 | |
| C4 | 9 | 1102 | 587.380 | 0.90 | 1.12 | 1.12 | 189 | 114 | 89 | 5 | | 66 | $CO_2$ 5.0 |
| C5 | 12 | 1105 | 589.200 | 0.96 | 1.18 | 1.18 | 190 | 114 | 90 | 5 | | 64 | $O_2$ 10.0 |
| STOP | 15 | 1108 | 591.154 | 1.10 | 1.38 | 1.38 | 191 | 115 | 91 | 5 | | 60 | |
| D5 | 0 | 1108 | 591.151 | | | | | | | | | | |
| D4 | 3 | 1111 | 592.988 | 0.99 | 1.21 | 1.21 | 191 | 114 | 90 | 5 | | 60 | |
| D3 | 6 | 1114 | 594.781 | 0.90 | 1.11 | 1.11 | 190 | 115 | 92 | 5 | | 59 | |
| D2 | 9 | 1117 | 596.493 | 0.83 | 1.03 | 1.03 | 190 | 114 | 92 | 5 | | 58 | |
| D1 | 12 | 1120 | 598.215 | 0.83 | 1.03 | 1.03 | 190 | 114 | 92 | 5 | | 58 | |
| | | | | 0.65 | 0.81 | 0.81 | 186 | 113 | 92 | 5 | | 58 | |

WATER

WATER

WATER

COMMENTS:

Pre-Test Leak Check Vac = 14" Hg.
$@t_0$ = 564.063 $ft^3$
$@t_1$ = 564.063 $ft^3$
Rate = 0.000 $ft^3$/min.

EPA (Dur) 235
4 72

# FIELD DATA

PLANT Wilson Brickyard
DATE 3 July 1987
SAMPLING LOCATION
SAMPLE TYPE
RUN NUMBER 3
OPERATOR Klemm/Whitt
AMBIENT TEMPERATURE 80°
BAROMETRIC PRESSURE 29.32
STATIC PRESSURE, ($P_s$)
FILTER NUMBER (s) 168

PROBE LENGTH AND TYPE 3' S.S.
NOZZLE I.D. 1/4"
ASSUMED MOISTURE, % 35%
SAMPLE BOX NUMBER
METER BOX NUMBER
METER $\Delta H_@$ 1.700
C FACTOR
PROBE HEATER SETTING 65
HEATER BOX SETTING 250
REFERENCE $\Delta p$

SCHEMATIC OF TRAVERSE POINT LAYOUT

READ AND RECORD ALL DATA EVERY _____ MINUTES

| TRAVERSE POINT NUMBER | SAMPLING TIME, min | CLOCK TIME (24-hr CLOCK) | GAS METER READING ($V_m$), $ft^3$ | VELOCITY HEAD ($\Delta p_s$), in. $H_2O$ | ORIFICE PRESSURE DIFFERENTIAL ($\Delta H$), in. $H_2O$ DESIRED | ORIFICE PRESSURE DIFFERENTIAL ($\Delta H$), in. $H_2O$ ACTUAL | STACK TEMPERATURE ($T_s$), °F | DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F | DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F | PUMP VACUUM, in. Hg | SAMPLE BOX TEMPERATURE, °F | $\sqrt{\Delta P_s}$ | IMPINGER TEMPERATURE, °F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STOP | 15 | 1123 | 599.748 | | | | | | | | | | |
| E1 | 0 | 1124 | 599.748 | 0.55 | 0.68 | 0.68 | 185 | 110 | 94 | 4 | | | 59 |
| E2 | 3 | 1127 | 601.164 | 0.70 | 0.87 | 0.87 | 187 | 110 | 94 | 5 | | | 56 |
| E3 | 6 | 1130 | 602.785 | 0.72 | 0.90 | 0.90 | 190 | 110 | 94 | 4 | | | 57 |
| E4 | 9 | 1133 | 604.400 | 0.76 | 0.95 | 0.95 | 191 | 113 | 94 | 5 | | | 57 |
| E5 | 12 | 1136 | 606.046 | 0.85 | 1.04 | 1.04 | 192 | 114 | 94 | 5 | | | 57. |
| STOP | 15 | 1139 | 607.773. | | | | | | | | | | |
| AVG. | | | 43.710 $ft^3$ | 0.886 | 1.10 | 1.10 | 188.88 | 107.7 +4.7 | 84.0 +4.4 | 5.12 | 0.9368 | | 66.2 |
| | | Corr | 44.016 | | | | | 108.0 | 88.4 | | | | |
| | | | | | | | | 98.2 | | | | | |

$CO_2$ = 6.0
$O_2$ = 10.2

COMMENTS:

Post Test Leak Check
$V_i$ = 607.814 Vac. 12" Hg.
$V_f$ = 607.819 0.005 $ft^3$/min

Avg: $CO_2$ = 5.33%
$O_2$ = 10.50%

EPA (Dur) 235
4 72

# APPENDIX IV

# PROCESS MONITORING

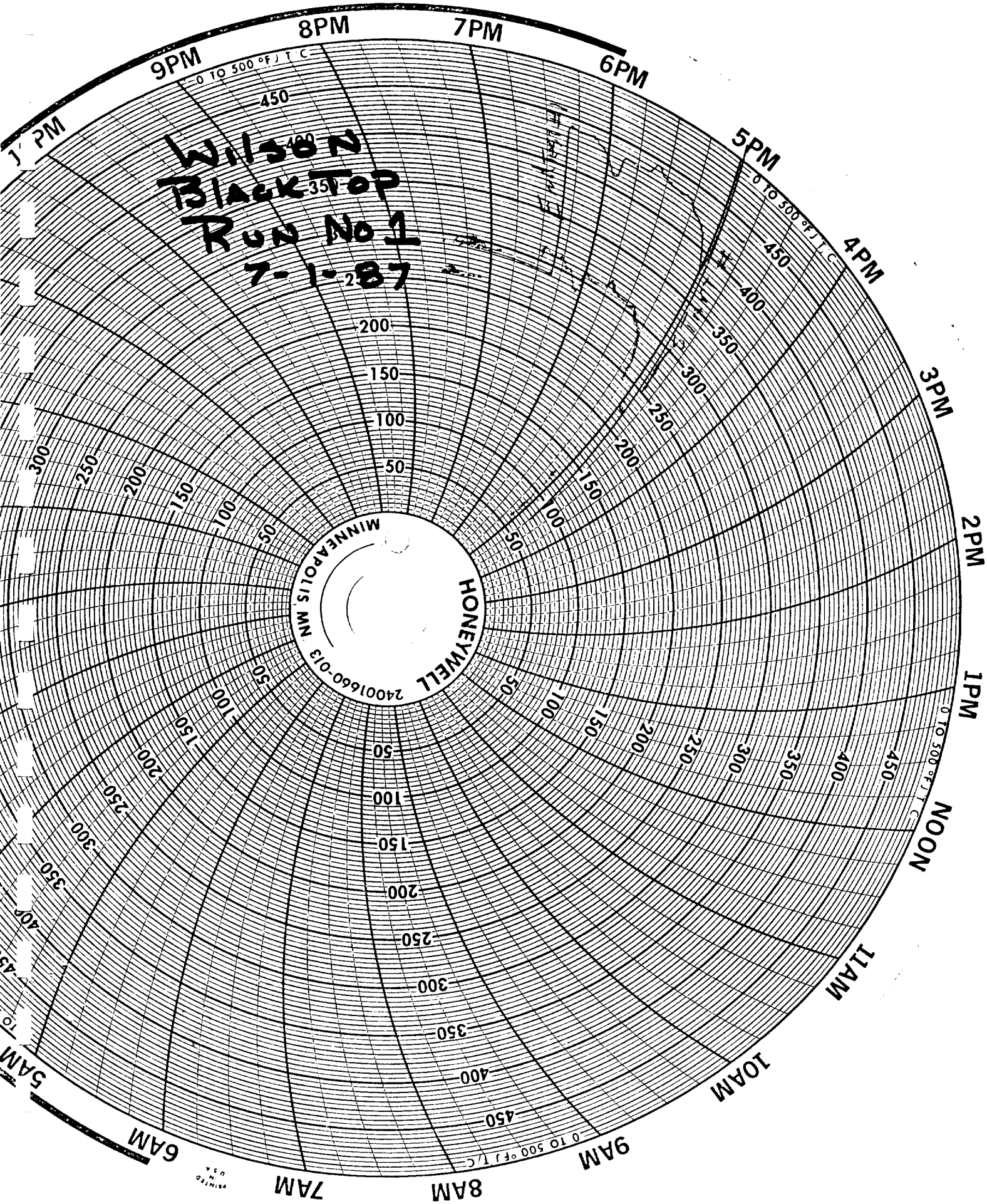
WILSON BLACKTOP

PROCESS MONITORING

* Record @ 5 Minute Intervals *

Test #1 7/1/87

| Time | Dry Aggregate TPH | AC-20 TPH | Burner Firing Rate % |
|---|---|---|---|
| 8:30 AM | 48 | 3.30 | 50 |
| 8:35 " | 49 | 3.35 | 48 |
| 8:40 " | 48 | 3.31 | 50 |
| 8:45 " | 48 | 3.33 | 50 |
| 8:50 " | 48 | 3.33 | 48 |
| 8:55 " | 49 | 3.37 | 48 |
| 9:00 " | 48 | 3.34 | 47 |
| 9:05 " | 48 | 3.36 | 46 |
| 9:10 " | 49 | 3.38 | 45 |
| 9:15 " | 48 | 3:31 | 45 |
| 9:20 " | 48 | 3:33 | 44 |
| 9:25 " | 49 | 3:35 | 45 |
| 9:30 | 49 | 3:34 | 47 |
| 9:35 | 48 | 3:32 | 48 |
| 9:40 | 49 | 3.35 | 46 |
| 9:45 | 48 | 3.35 | 46 |
| 9:50 | 48 | 3:32 | 47 |
| | | | |
| AVG. | 48.4 ✓ | 3.34 ✓ | 47.1 ✓ |
| | | | |
| | | | |
| | | | |
| | | | |


Wilson
Black Top
Run No 1
7-1-87
HONEYWELL
MINNEAPOLIS, MN
24001660-013
0 TO 500 °F J T C
1PM
2PM
3PM
4PM
5PM
6PM
7PM
8PM
9PM
NOON
11AM
10AM
9AM
8AM
7AM
6AM
5AM

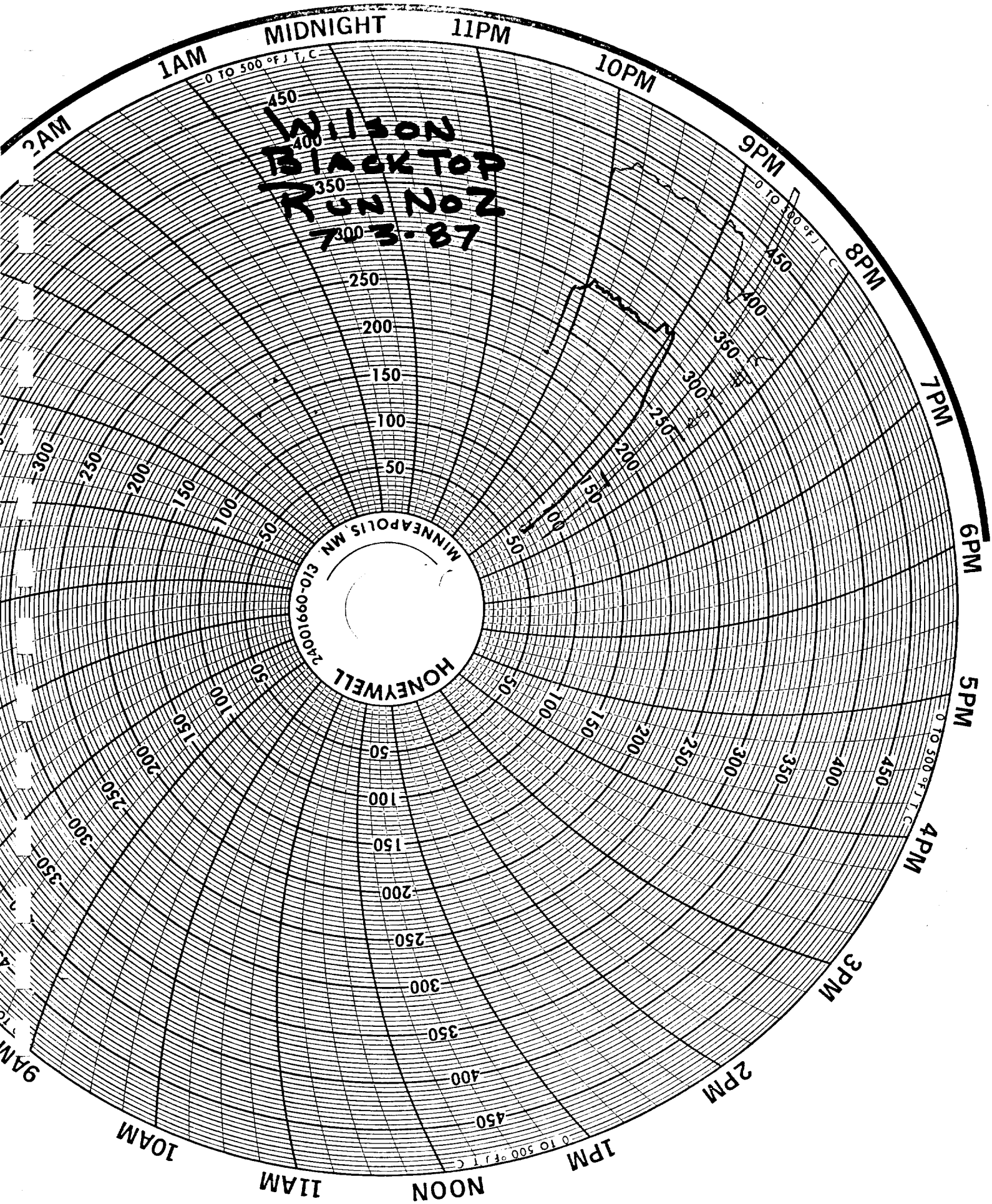
WILSON BLACKTOP

PROCESS MONITORING

* Record @ 5 Minute Intervals *

Test #2 7/3/87

| Time | Dry Aggregate TPH | AC-20 TPH | Burner Firing Rate % |
|---|---|---|---|
| 7:40 AM | 48.8 | 3.35 | 48 |
| 7:45 " | 49.3 | 3.35 | 52 |
| 7:50 " | 48.5 | 3.33 | 49 |
| 7:55 " | 48.2 | 3.32 | 48 |
| 8:00 | 49.1 | 3.36 | 49 |
| 8:05 | 49.5 | 3.40 | 49 |
| 8:10 | 48.8 | 3.34 | 48 |
| 8:15 | 48.6 | 3.33 | 48 |
| 8:20 | 48.2 | 3.32 | 47 |
| 8:25 | 48.6 | 3.34 | 47 |
| 8:30 | 48.0 | 3.29 | 48 |
| 8:35 | 48.2 | 3.31 | 46 |
| 8:40 | 48.4 | 3.30 | 47 |
| 8:45 | 48.0 | 3.28 | 46 |
| 8:50 | 48.8 | 3.35 | 48 |
| 8:55 | 49.9 | 3.38 | 49 |
| 9:00 | 48.5 | 3.31 | 48 |
| | | | |
| AVG. | 48.7 ✓ | 3.33 ✓ | 48.1 ✓ |
| | | | |
| | | | |
| | | | |
| | | | |


Wilson
Blacktop
Run No 2
7-3-87
MIDNIGHT
11PM
10PM
9PM
8PM
7PM
6PM
5PM
4PM
3PM
2PM
1PM
NOON
11AM
10AM
9AM
1AM
2AM
0 TO 500 °F
HONEYWELL
MINNEAPOLIS, MN
24001060-013

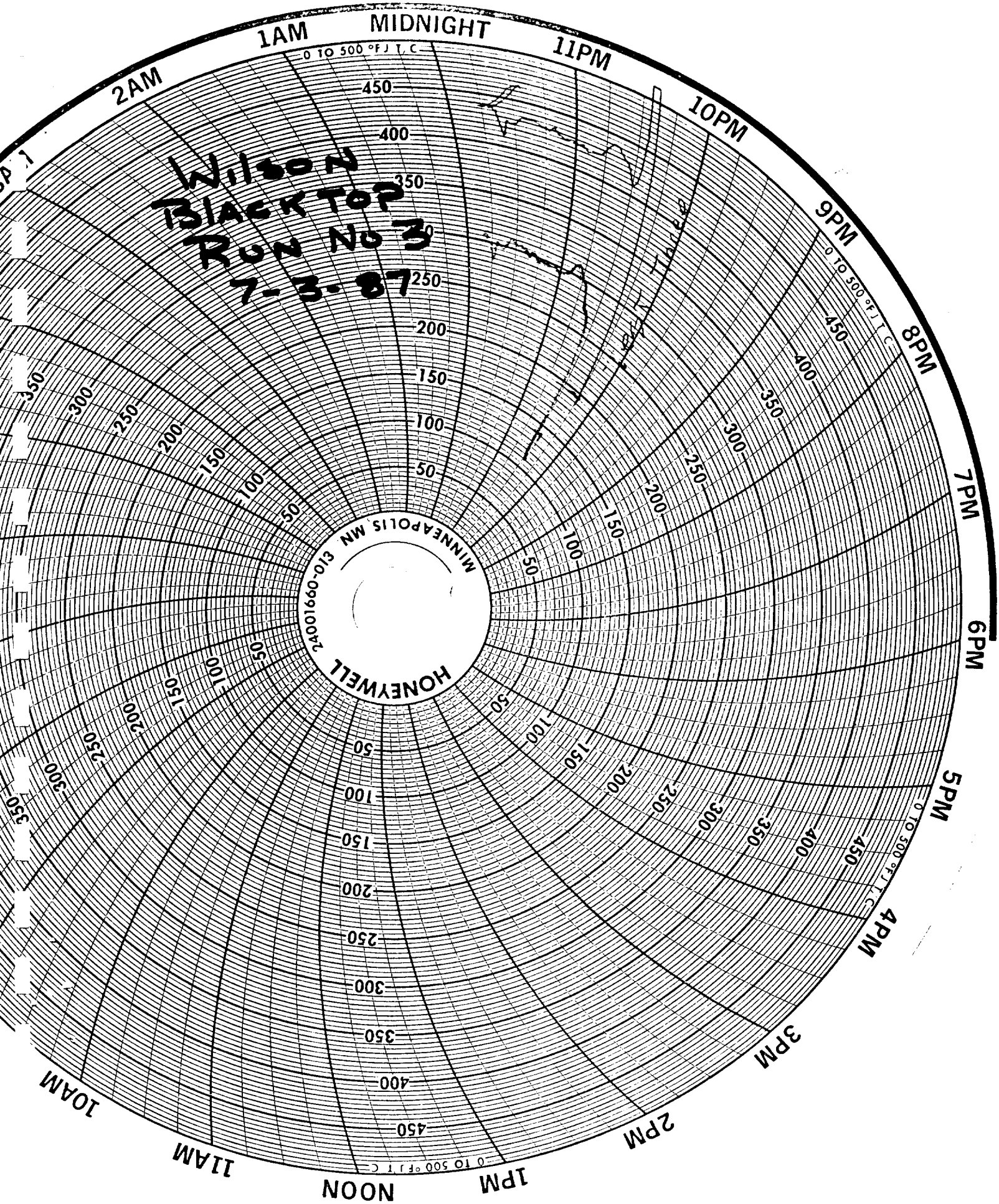
WILSON BLACKTOP

PROCESS MONITORING

* Record @ 5 Minute Intervals *

TEST #3 7/3/87

| Time | Dry Aggregate TPH | AC-20 TPH | Burner Firing Rate % |
|---|---|---|---|
| 10:20 AM | 48 | 3.28 | 46 |
| 10:25 | 48.5 | 3.31 | 45 |
| 10:30 | 48.6 | 3.32 | 46 |
| 10:35 | 49 | 3.35 | 47 |
| 10:40 | 48.5 | 3.30 | 47 |
| 10:45 | 48.2 | 3.32 | 46 |
| 10:50 | 49 | 3.36 | 47 |
| 10:55 | 48.6 | 3.31 | 47 |
| 11:00 | 48.8 | 3.34 | 48 |
| 11:05 | 49.2 | 3.36 | 48 |
| 11:10 | 48.7 | 3.32 | 47 |
| 11:15 | 49.0 | 3.35 | 48 |
| 11:20 | 48.8 | 3.33 | 47 |
| 11:25 | 48.5 | 3.30 | 47 |
| 11:30 | 48.4 | 3.30 | 48 |
| 11:35 | 48.1 | 3.28 | 50 |
| 11:40 | 49 | 3.31 | 48 |
| | | | |
| AVG | 48.6 ✓ | 3.32 ✓ | 47.2 ✓ |
| | | | |
| | | | |
| | | | |
| | | | |


Wilson
Blacktop
Run No 3
7-3-87
MIDNIGHT
1AM
2AM
11PM
10PM
9PM
8PM
7PM
6PM
5PM
4PM
3PM
2PM
1PM
NOON
11AM
10AM
0 TO 500 °F J T C
HONEYWELL
24001660-013
MINNEAPOLIS MN