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W. Studzinski

AP-42 Section 12.2
Reference
Report Sect. 4
Reference 153

Clean Air Engineering

207 Woodwork Ln. • Palatine, IL 60067 • 708/991-3300

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.

REPORT ON COMPLIANCE TESTING

Performed at:
KOPPERS INDUSTRIES, INC.
DOLOMITE, ALABAMA

CAE Project No: 5238
December 13, 1990

KOPPERS INDUSTRIES, INC.
CAE Project No: 5238

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SUMMARY

INTRODUCTION

Clean Air Engineering contracted by Koppers Industries, Inc. to determine the levels of particulate emissions and opacity at their Dolomite, Alabama facility for compliance purposes.

The testing took place at the North and South Stacks on November 15 and 16, 1990. Coordinating the field testing were:

D. Hall - Koppers Industries, Inc
D. Lloyd - Clean Air Engineering

SUMMARY OF TEST RESULTS

Particulate

The particulate concentration at the South Stack averaged 0.0004 gr/dscf or 0.0003 gr/acf over three runs on November 15, 1990. This corresponds to an average emission rate of 0.509 lb/hr.

The particulate concentration at the North Stack averaged 0.0005 gr/dscf or 0.0005 gr/acf over three runs on November 16, 1990. This corresponds to an average emission rate of 0.659 lb/hr.

Opacity

The opacity at the South Stack averaged 0 percent over three runs on November 15, 1990.

The opacity at the North Stack averaged 0 percent over three runs on November 16, 1990.

The test conditions and results of analysis are presented in Tables 1 and 2 on pages 1-3 and 1-4, respectively.

SUMMARY (Continued)

To the best of our knowledge, the data presented in this report are accurate and complete.

Respectfully submitted,

CLEAN AIR ENGINEERING

Michael Pierce
Project Manager

Kimberly Kempf
Manager, Technical Communications

KOPPERS INDUSTRIES, INC.
CAE Project No: 5238

TABLE 1 - Summary of Results

EPA Methods 5 and 9
South Stack
November 15, 1990

RUN NO.	1	2	3
Start Time (approx.)	8:28 AM	10:40 AM	1:32 PM
Stop Time (approx.)	9:31 AM	11:55 AM	2:48 PM
Process Data			
Number of Pushes	6	8	8
Tons of Coal	72	96	96
Allowable Emissions			
gr/acf	0.02	0.02	0.02
lb/ton coal	0.03	0.03	0.03
Gas Conditions			
Temperature (°F)	105	105	104
Moisture (volume %)	1.9	1.8	1.3
O_2(dry volume %)	20.5	20.7	20.5
CO_2 (dry volume %)	0.0	0.0	0.0
Volumetric Flow Rate			
acfm	175,400	175,300	178,500
dscfm	160,000	160,400	164,100
Particulate			
gr/dscf	0.0005	0.0003	0.0003
gr/acf	0.0005	0.0002	0.0003
lb/hr	0.741	0.373	0.413
lb/ton coal	0.0103	0.0047	0.0052 → & 0.0067
Opacity			
percent	0	0	0

TABLE 2 - Summary of Results

EPA Methods 5 and 9
North Stack
November 16, 1990

RUN NO.	1	2	3
Start Time (approx.)	8:07 AM	10:15 AM	12:17 PM
Stop Time (approx.)	9:23 AM	11:33 AM	1:33 PM
Process Data			
Number of Pushes	8	8	8
Tons of Coal	96	96	96
Allowable Emissions			
gr/acf	0.02	0.02	0.02
lb/ton coal	0.03	0.03	0.03
Gas Conditions			
Temperature (°F)	97	107	108
Moisture (volume %)	1.7	1.6	1.7
O_2(dry volume %)	20.6	20.6	20.6
CO_2 (dry volume %)	0.0	0.0	0.0
Volumetric Flow Rate			
acfm	174,800	178,300	182,500
dscfm	161,500	161,600	164,800
Particulate			
gr/dscf	0.0005	0.0004	0.0005
gr/acf	0.0005	0.0004	0.0005
lb/hr	0.679	0.582	0.716
lb/ton coal	0.0085	0.0073	0.0090
Opacity			
percent	0	0	0

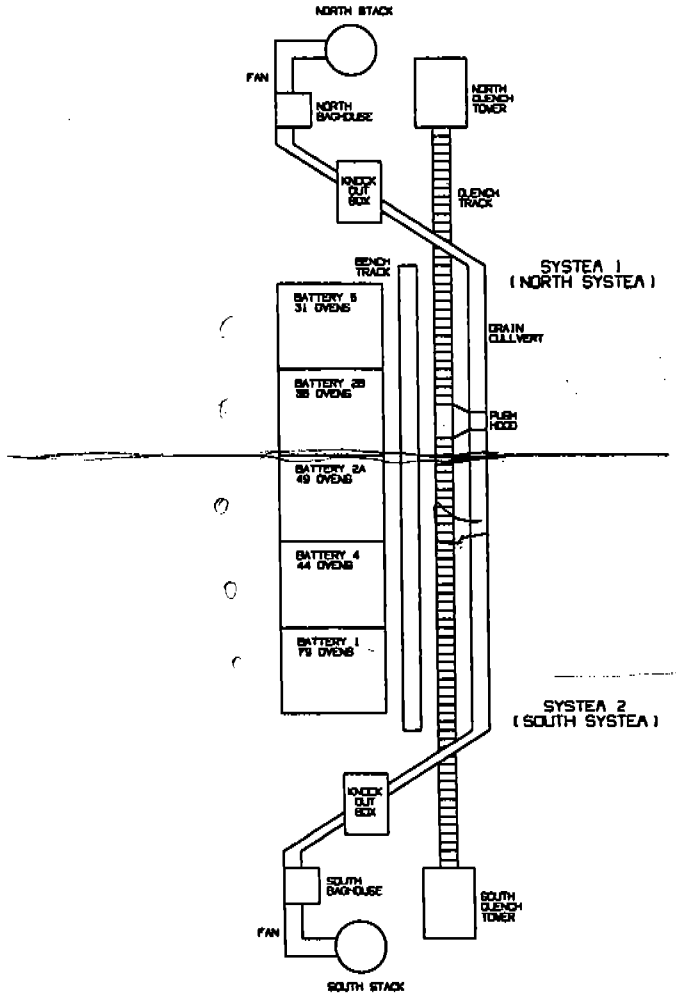
≈ 0.0083 lb/T

DESCRIPTION OF INSTALLATION

The Koppers Industries, Inc. plant in Dolomite, Alabama manufactures coke from coal. In this process coal is heated in an oxygen starved atmosphere to drive off impurities. At completion the hot coke is pushed into a brain car and transported to the quench towers. The emissions from the push are collected by a traveling hood. The particulate emissions are controlled by a Flackt baghouse. The process is separated into a north and a south line.

The testing reported in this document was performed at the North and South Stacks.

A schematic of the process is shown below.



SUMMARY OF PROCEDURES

SAMPLING PROCEDURES

The sampling followed procedures as detailed in U.S. Environmental Protection Agency (EPA) Methods 1, 2, 3, 4, 5 and 9. These methods are titled:

- Method 1 -- "Sample and Velocity Traverses for Stationary Sources;"
- Method 2 -- "Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube);"
- Method 3 -- "Gas Analysis for Carbon Dioxide, Oxygen, Excess Air and Dry Molecular Weight;"
- Method 4 -- "Determination of Moisture Content in Stack Gases;"
- Method 5 -- "Determination of Particulate Emissions from Stationary Sources;"
- Method 9 -- "Visual Determination of the Opacity of Emissions from Stationary Sources."

These methods appear in detail in Title 40 of the Code of Federal Regulations (CFR), Part 60, Appendix A.

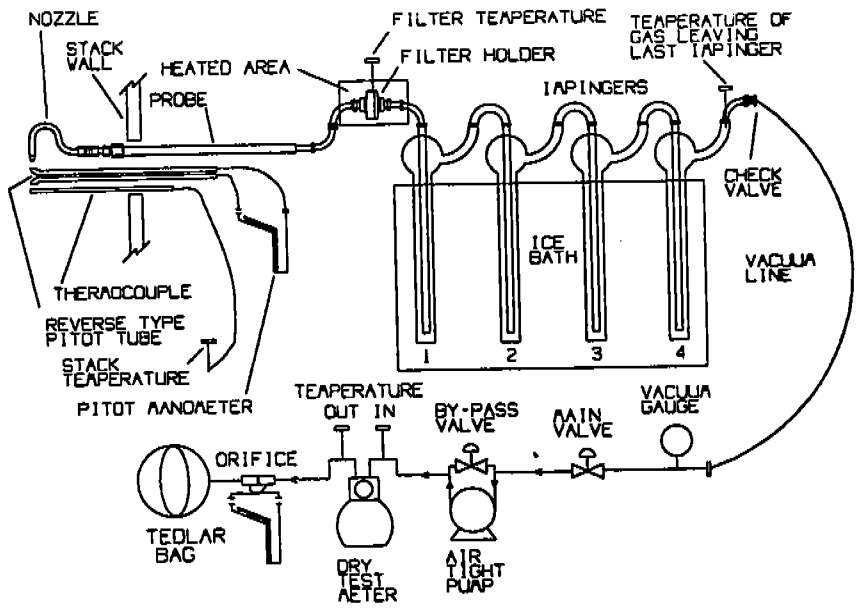
The sampling apparatus is shown in Fig 1 on page 3-2. The sampling equipment was designed and manufactured by the Research Appliance Co. and Clean Air Engineering to meet U.S. EPA standards. All equipment was calibrated at the Clean Air Engineering laboratory prior to shipment to the job site.

Sampling Locations

The North and South Stacks each have two ports. Twelve points were sampled per port. For Run 1 at the South Stack, the sampling time per point was 2.5 minutes for a total sampling time of 60 min. For the remaining runs, the sampling time per point was three minutes for a total sampling time of 72 minutes. The sampling locations are shown in Fig 2 on page 3-3.

FIGURE 1

The EPA Method 5 sampling apparatus is shown.

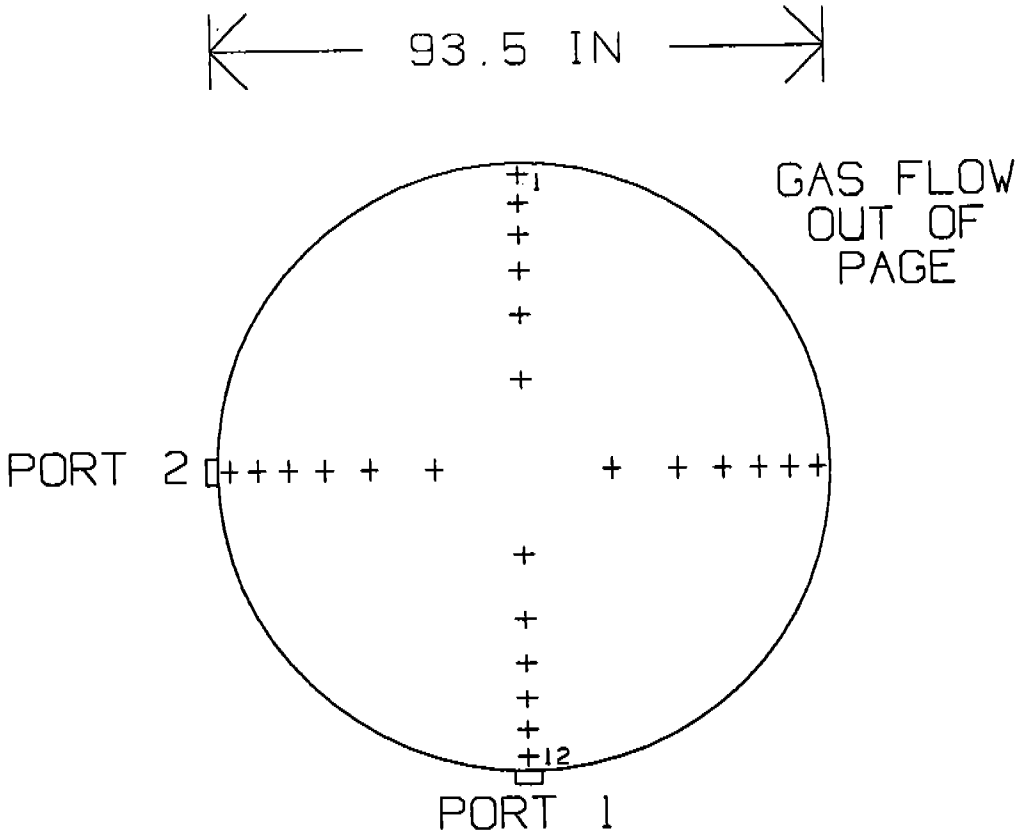


Impinger Contents

1) 100 ml distilled water
2) 100 ml distilled water
3) Empty
4) 300 g silica gel

FIGURE 2

The cross section of the North and South Stacks shows traverse point locations. One of two identical locations.



TRAVERSE POINT	PORT TO POINT DISTANCE (IN)
1	91.5
2	87.2
3	82.5
4	77.0
5	70.1
6	60.2
7	33.3
8	23.4
9	16.5
10	11.0
11	6.3
12	2.0

SUMMARY OF PROCEDURES (Contined)

ANALYTICAL PROCEDURES

Particulate

The particulate emissions were determined following procedures detailed in EPA Method 5. Particulate samples collected on Whatman 934 AH glass fiber filters were analyzed gravimetrically. The probe and nozzles were washed with acetone. The wash was transferred to tared beakers and evaporated to dryness. These weight differentials were combined to determine total particulate matter.

Opacity

The visual opacity was determined following procedures detailed in EPA Method 9. In this procedure, a set of observations at 15 second intervals was averaged.

QUALITY CONTROL PROCEDURES

Quality control procedures for all aspects of field sampling; sample preservation and holding time; reagent quality; analytical method; analyst training and safety; and instrument cleaning, calibration and safety were followed. These procedures are generally consistent with EPA guidelines documented in "Quality Assurance Manuals for Air Pollution Measurement Systems," Vol 3, "Stationary Source Specific Methods" (EPA-600/4-77-027b).

COMMENTS

No deviations from standard U.S. EPA testing procedures were noted.

APPENDIX

5-0

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NOMENCLATURE

Nomenclature

A	-	absorbance
A_n	-	cross sectional area of nozzle (ft^2)
A_s	-	cross sectional area of stack (ft^2)
B_{wo}	-	proportion of water vapor in the gas stream by volume (%)
B_{ws}	-	proportion of water vapor in the gas stream by volume (%) at saturated conditions
C_p	-	pitot tube coefficient (dimensionless)
D_f	-	dilution factor
F_d	-	ratio of dry gas generated to gross calories (dscf/MBtu)
F_c	-	ratio of gas generated
GCV	-	gross calorific value of fuel (Btu/lb)
$\overline{DH}$	-	average pressure drop across meter box orifice (in. H_2O)
$\overline{\sqrt{DP}}$	-	average square roots of velocity heads of stack gas ($\sqrt{\text{in. } H_2O}$)
DH@	-	meter orifice calibration coefficient (in. H_2O)
%I	-	percent of isokinetic sampling (acceptable: $90 \leq \%I \leq 110\%$)
K_p	-	pitot tube constant: 85.49 (ft/sec) $\frac{\sqrt{(lb/lb\text{-}mole)(in.\ Hg)}}{\sqrt{(^\circ R)(in.\ H_2O)}}$
K_c	-	spectrophotometer calibration factor
M_d	-	dry molecular weight of stack gas (lb/lb-mole)
M_s	-	molecular weight of stack gas, wet basis (lb/lb-mole)
M_n	-	total amount of particulate matter collected (gm)
N	-	normality of titrant (meq/ml)
P_b	-	barometric pressure (in. Hg)
P_f	-	final absolute pressure of flask (in. Hg)
P_i	-	initial absolute pressure of flask (in. Hg)
P_s	-	absolute stack gas pressure (in. Hg)
Q_a	-	volumetric flow rate, actual conditions
Q_{std}	-	volumetric flow rate, standard conditions, dry basis
std	-	standard conditions, 29.92 in. Hg, 68 ° F
T_f	-	final absolute temperature of flask (° R)
T_i	-	initial temperature of flask (° R)
T_m	-	average dry gas meter temperature (° F)

T_s	-	average stack temperature (° F)
T_{std}	-	absolute temperature, standard conditions (528 ° R)
Θ	-	total sampling time (min)
V_a	-	volume of aliquot (ml)
V_f	-	volume of flask (ml)
V_{lc}	-	total volume of liquid collected in impingers and silica gel (ml)
V_m	-	volume of gas sample through the dry gas meter at meter conditions (ft^3)
V_{mstd}	-	volume of gas sample through the dry gas meter, standard conditions (ft^3)
V_{sc}	-	volume of flask sample, standard conditions (ml)
V_{soln}	-	total volume of solution (ml)
V_t	-	volume of titrant used to titrate aliquot (ml)
V_{tb}	-	volume of titrant used to titrate blank (ml)
V_{wstd}	-	volume of water collected, standard conditions (ft^3)
V_s	-	stack gas velocity (ft/sec)
Y_d	-	gas meter correction factor (dimensionless)

SAMPLE CALCULATIONS

KOPPERS INDUSTRIES, INC.
CAE Project No : 5238

SAMPLE CALCULATIONS - RUN 1, North Stack

(Note : results are taken from computer analysis)

1. Volume of water collected

V_{wstd} = (0.04707) (Vlc)
= (0.04707) (17)
= 0.80 wscf

2. Volume of gas metered, standard conditions

$$V_{mstd} = \frac{(17.64)(V_m)\left[P_b + \frac{\overline{DH}}{13.6}\right]}{(460 + T_m)}(Y_d)$$

$$= \frac{(17.64)(49.62)\left[29.68 + \frac{1.57}{13.6}\right]}{(460+93)}(1.0002)$$

= 47.16 dscf

3. Moisture content

$$B_{wo} = \frac{V_{wstd}}{V_{mstd} + V_{wstd}}$$

$$= \frac{0.80}{47.16 + 0.80}$$

= 0.0167
= 1.7 %

4. Molecular weight of dry gas stream

M_d = $0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%CO + \%N_2)$
= 0.44(0.0) + 0.32(20.6) + 0.28(79.4)
= 28.82

SAMPLE CALCULATIONS (Continued)

5. Molecular weight of stack gas

$$M_s = M_d\,(1 - B_{wo}) + 18(B_{wo})$$
$$= 28.82\,(1 - 0.0167) + 18\,(0.0167)$$
$$= 28.64$$

6. Stack pressure (in. Hg)

$$P_s = P_b + \left(\frac{\text{STATIC P}}{13.6}\right)$$
$$= 29.68 + \left(\frac{-0.10}{13.6}\right)$$
$$= 29.67$$

7. Velocity of stack gas

$$V_s = K_p\,C_p\,\overline{(DP)^{\frac{1}{2}}}\,\frac{[\overline{T_s} + 460]^{\frac{1}{2}}}{[(M_s)\,(P_s)]^{\frac{1}{2}}}$$
$$= 85.49\,(0.840)\,(1.051)\,\frac{[97 + 460]^{\frac{1}{2}}}{[(28.64)\,(29.67)]^{\frac{1}{2}}}$$
$$= 61.1 \text{ ft/sec}$$

8. Total flow of stack gas

$$Q_a = (60)\,(A_s)\,(V_s)$$
$$= (60)\,(47.68)\,(61.1)$$
$$= 174{,}800 \text{ acfm}$$

$$Q_{std} = \frac{Q_a\,P_s\,(17.64)\,(1 - B_{wo})}{\overline{T_s} + 460}$$
$$= \frac{(174{,}800)\,(29.67)\,(17.64)\,(1 - 0.0167)}{97 + 460}$$
$$= 161{,}500 \text{ dscfm}$$

SAMPLE CALCULATIONS (Continued)

9. Percent isokinetic

$$\%I = \frac{(0.09450)\,(\overline{T_s} + 460)\,V_{mstd}}{P_s\,V_s\,A_n\,\Theta(1 - B_{wo})}$$

$$= \frac{(0.09450)\,(97 + 460)\,(47.16)}{(29.67)\,(61.1)\,(0.000193)\,(72)\,(1 - 0.0167)}$$

$$= 100.3\ \%$$

10. Particulate

$$\text{gr/dscf} = \frac{(15.43)\,(M_n)}{V_{mstd}}$$

$$= \frac{(15.43)\,(0.0015)}{47.16}$$

$$= 0.0005$$

$$\text{gr/acf} = \frac{(\text{gr/dscf})\,(\text{dscfm})}{\text{acfm}}$$

$$= \frac{(0.0005)\,(161{,}500)}{174{,}800}$$

$$= 0.0005$$

$$\text{lb/hr} = \frac{(\text{gr/dscf})\,(Q_{std})\,(60)}{7000}$$

$$= \frac{(0.0005)\,(161{,}500)\,(60)}{7000}$$

$$= 0.6795$$

$$\text{tons of coal} = (\#\ \text{of pushes})\ (12\ \text{tons/push})$$

$$= (8)\ (12)$$

$$= 96\ \text{tons}$$

$$\text{lb/ton coal} = \frac{(\text{lb/hr})\,(\frac{1\text{hr}}{60\ \text{min}})\,(\Theta)}{(\text{tons of coal})}$$

$$= \frac{(0.6795)\,(\frac{1}{60})\,(72)}{(96)}$$

$$= 0.0085$$

PARAMETERS

KOPPERS INDUSTRIES, INC.
CAE Project No: 5238

PARAMETERS
SOUTH STACK

Run No.	1	2	3
A_n	.000193	.000193	.000193
A_s	47.68	47.68	47.68
B_{wo}	.0187	.0183	.0128
$\%CO_2$	.0	.0	.0
C_p	.840	.840	.840
$\overline{DH}$	1.41	1.44	1.55
DH@	1.791	1.791	1.791
$\overline{(DP)^{1/2}}$	1.049	1.050	1.069
%I	95.7	97.4	98.9
M_d	28.82	28.83	28.82
M_n	.0013	.0008	.0009
M_s	28.62	28.63	28.68
$\%O_2$	20.5	20.7	20.5
P_b	29.80	29.85	29.80
P_s	29.79	29.84	29.79
θ	60.0	72.0	72.0
$\overline{T_m}$	92	104	104
$\overline{T_s}$	105	105	104
V_{lc}	15	18	13
V_m	38.88	48.53	50.53
V_{mstd}	37.14	45.49	47.26
V_s	61.3	61.3	62.4
V_{wstd}	.71	.85	.61
Y_d	1.0002	1.0002	1.0002

KOPPERS INDUSTRIES, INC.
CAE Project No: 5238

PARAMETERS
NORTH STACK

Run No.	1	2	3
A_n	.000193	.000193	.000193
A_s	47.68	47.68	47.68
B_{wo}	.0167	.0165	.0171
$\%CO_2$	.0	.0	.0
C_p	.840	.840	.840
$\overline{DH}$	1.57	1.60	1.65
DH@	1.791	1.791	1.791
$\overline{(DP)^{1/2}}$	1.051	1.062	1.085
%I	100.3	101.6	101.5
M_d	28.82	28.82	28.82
M_n	.0015	.0013	.0016
M_s	28.64	28.65	28.64
$\%O_2$	20.6	20.6	20.6
P_b	29.68	29.62	29.59
P_s	29.67	29.61	29.58
θ	72.0	72.0	72.0
$\overline{T_m}$	93	88	91
$\overline{T_s}$	97	107	108
V_{lc}	17	17	18
V_m	49.62	49.90	51.11
V_{mstd}	47.16	47.79	48.66
V_s	61.1	62.3	63.8
V_{wstd}	.80	.80	.85
Y_d	1.0002	1.0002	1.0002

CALIBRATION DATA

METER BOX FULL TEST CALIBRATION

Operator: Matt Wickham

Date: 10-25-90 | Meter Box ΔH@: 1.791 | Meter Box Yd: 1.0002 | Barometric Pressure: 29.43

Meter Box No.: 11

Q	ΔH	ΔP	Yds	Standard Meter Gas Volume ft³ Initial	Final	Vds Net	Meter Box Gas Volume ft³ Initial	Final	Vd Net	Std. Meter Temperature °F In	Out	Tds Avg	Meter Box Temperature °F In	Out	Tds Avg	Time θ	Yd	ΔH@
.39	.5	-5.6	1.0000	0.000	5.506	5.506	254.881	260.564	5.683	68	68	68	107	91	99	14.04	1.0101	1.746
.38	.5	-5.6	1.0000	0.000	5.515	5.515	260.564	266.262	5.698	68	68	68	107	91	99	14.12	1.0091	1.761
.65	1.5	-5.6	1.0000	0.000	10.277	10.277	266.262	277.081	10.819	68	68	68	114	95	104.5	15.56	.9976	1.829
.65	1.5	-5.6	1.0000	0.000	10.259	10.259	277.081	287.876	10.795	68	68	68	114	95	104.5	15.42	.9981	1.802
	3.0	-6.5	1.0000	0.000	11.508	11.508	287.876	300.050	12.174	67	67	67	118	96	107	12.27	.9931	1.799
.92	3.0	-6.5	1.0000	0.000	11.515	11.515	300.050	312.233	12.183	67	67	67	118	96	107	12.31	.9930	1.804

Nomenclature

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

Calculations

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

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

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

Vacuum Gauge Calibration

Standard (Hg)	Vacuum Gauge
5.0	5.0
10.1	10.0
15.0	15.2
20.0	20.4
max	26.3

Thermometer Calibration

Standard	Inlet	Outlet
80	80	79
100	100	99
120	121	119
140	140	139

POST TEST CALIBRATION CHECK

Client/Owner: Koppers Ind.

Project Number: 5328

Operator: Matt Wickham

Date: 11-20-90

Meter Box No.: U	Meter Box Vacuum: 6	Meter Box Yd: 1.0002	Barometric Press.: 29.49

				Standard Meter Gas Volume ft^3			Meter Box Gas Volume ft^3			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vd Net	In	Out	Tds Avg	In	Out	Td Avg	Time θ	Yd	ΔH@
.65	1.5	-5.7	1.0000	0.000	10.013	10.013	948.613	959.101	10.488	67	67	67	120	96	108	15.14	1.0106	1.802
.65	1.5	-5.7	1.0000	0.000	10.015	10.015	959.101	969.596	10.495	67	67	67	121	97	109	15.17	1.0119	1.806
.65	1.5	-5.7	1.0000	0.000	10.024	10.024	969.596	980.101	10.505	67	67	67	121	98	109.5	15.18	1.0127	1.803

Nomenclature

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

Calculations

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

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

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

Pyrometer Calibration Data Sheet

Pyrometer #: F89 Office: 66

Calibrated By: JR Date: 7/25/90

Recalibration Due: 7/25/91 Battery Replaced: Yes (No)

Calibration Reference Setting	Pyrometer Reading
50°F	50.8
100°F	100.0
150°F	149.8
200°F	200.2
250°F	249.8
300°F	300.0
350°F	350.4
400°F	400.0
450°F	449.4
500°F	499.6
550°F	550.2
600°F	600.2

Calibration Reference Information (from calibration seal on reference)

Reference Used: (Digimite)/Other: _____

Serial Number: ~~KS~~ 190599

Calibrated By: AB Date Calibrated: 2/28/90

Calibration Report Number: _____

DATE 8/30/90 PITOT NUMBER 8-30-90-C

TYPE S PITOT TUBE INSPECTION DATA

Pitot tube assembly level? ✓ yes ____ no

Pitot tube openings damaged? ____ yes (explain below) ✓ no

α_1 = 2° (<10°), α_2 = 3° (<10°), β_1 = 1° (<5°)

β_2 = 1° (<5°)

γ = 1°, θ = 2°; A = .675 cm (in.)

Z = A sin γ = .011 cm (in.); < 0.32 cm (< 1/8 in.),

W = A sin θ = .023 cm (in.); < 0.08 cm (< 1/32 in.)

P_a .363 cm (in.) P_b .312 cm (in.)

$P = \frac{(P_a + P_b)}{2}$ .337

D_t = .25 cm (in.)

$\frac{P}{D_t}$ = 1.348 (≥ 1.05 and ≤ 1.50)

COMMENTS: _____

Calibration required? ____ yes ✓ no

Calibrated by: [signature]

WEIGHT SHEETS

CAE Project # 52381

ALL WEIGHTS SORTED BY RDS

RDS	RUN	SH #	WT #	IDENTIFIER	FB T	WASH ML	CORR.	GROSS	TARE	NET
		1	1	BLANK	B	200	0.0000	98.9031	98.9029	0.0002
01	1	1	2	1	B	100	0.0001	97.8519	97.8509	0.0009
01	1	1	11	32717	F	----	------	3.8782	3.8778	0.0004
				RDS TOTAL						0.0013
02	2	1	3	2	B	125	0.0001	98.7948	98.7946	0.0001
02	2	1	12	32716	F	----	------	3.9136	3.9129	0.0007
				RDS TOTAL						0.0008
03	3	1	4	3	B	120	0.0001	106.8407	106.8404	0.0002
03	3	1	10	32715	F	----	------	3.9179	3.9172	0.0007
				RDS TOTAL						0.0009
04	1	1	5	4	B	125	0.0001	99.0125	99.0114	0.0010
04	1	1	9	32702	F	----	------	3.9055	3.9050	0.0005
				RDS TOTAL						0.0015
05	2	1	6	5	B	120	0.0001	111.6271	111.6262	0.0008
05	2	1	13	32703	F	----	------	3.9077	3.9072	0.0005
				RDS TOTAL						0.0013
06	3	1	7	6	B	100	0.0001	99.4522	99.4508	0.0013
06	3	1	8	32718	F	----	------	3.8986	3.8983	0.0003
				RDS TOTAL						0.0016
		1	14	END	-	----	------	0.0000	0.0000	0.0000

Particulate Testing
Weight Sheet

Client Koppers Ind	Project Number 5238	Analyst DL
Plant Dolomite, AL	Unit	Balance
Test Date 11/15/90		

Description	Wt. No.	I.D. and Sample Description[1]	Sample volume (ml)[2]	Date/ Time	Gross Weight (g)	Tare Weight (g)	Date/ Time	Net Weight (g)
Type Front 1/2	1	Clear w/some black particulate		11/17				
Run 1			100	7:15am	97.8519			
Location South		Beaker: #1	T F (B)	11/16 10:00am	97.8519	97.8509	11/15 3:45pm	.0010
Type Front 1/2	2	"		11/17				
Run 2			125	7:09am	98.7948			
Location South		: #2	T F (B)	11/16 10:01am	98.7948	98.7946	11/15 3:43pm	.0002
Type Front 1/2	3	"		11/17				
Run 3			120	7:12am	106.8407			
Location South		: #3	T F (B)	11/16 10:02am	106.8407	106.8404	11/15 3:40pm	.0003
Type Acetone Blank	4	Clear		11/17				
Run			200	7:10am	98.9031	98.9029	3:50pm	
Location South		Beaker: B	T F (B)	11/16 10:05am	98.9030	101.0389	11/16	.0002
Type Pretest probe wash	5	Clear		11/17			11/16	
Run			145	7:08am	101.0400	101.0400	2:50pm	
Location South		Beaker: PW	T F (B)	11/16 5:25pm	101.0401	101.0399	11/15 3:52pm	.0001
Type Front 1/2	6	Clear, some PM		11/17				
Run 1			125	7:07am	99.0125			
Location North		Beaker: #4	T F (B)	11/16 5:28pm	99.0125	99.0114	11/16 2:45pm	.0011
Type Front 1/2	7	Clear, some PM		11/17				
Run 2			120	7:11am	111.6271			
Location North		Beaker: #5	T F (B)	11/16 5:30pm	111.6271	111.6262	11/16 2:55pm	.0009
Type Front 1/2	8	Clear, some PM		11/17				
Run 3			100	7:10am	99.4522			
Location North		Beaker: #6	T F (B)	11/16 5:32pm	99.4522	99.4508	11/16 3:00pm	.0014
Type	9							
Run								
Location			T F B					
Type	10							
Run								
Location			T F B					

[1] Note appearance of particulate
[2] Two volumes (e.g. 500/100) indicate an aliquot was taken.
Indicate (T)himble, (F)ilter, or (B)eaker in box below.

Particulate Testing
Weight Sheet

Client Koppers Ind	Project Number 5238	Analyst DL
Plant Dolomite, AL	Unit	Balance
Test Date 11/15,16/90		

Description	Wt. No.	I.D. and Sample Description[1]	Sample volume (ml)[2]	Date/ Time	Gross Weight (g)	Tare Weight (g)	Date/ Time	Net Weight (g)
Type Filter	1	#32718	T (F) B	11/17 7:06am	3.8986	3.8983	11/14 4:47pm	
Run 3				11/16			11/15	
Location North				5:40pm	3.8985	3.8982	4:25pm	.0003
Type Filter	2	#32702	T (F) B	11/17 7:00am	3.9055	3.9049	11/14 4:49pm	
Run 1				11/16	3.9055	3.9050	11/15	
Location North				5:42pm	3.9054	3.9050	3:00pm	.0005
Type Filter	3	#32715	T (F) B	11/16 9:45am	3.9179	3.9172	11/14 4:50pm	
Run 3				11/16	3.9179	3.9172	11/15	
Location South				4:00pm	3.9179	3.9172	7:55am	.0007
Type Filter	4	#32717	T (F) B	11/16 9:40am	3.8781	3.8778	11/14 4:55pm	
Run 1				11/16	3.8782	3.8777	11/15	
Location South				4:02pm	3.8782	3.8778	7:20am	.0004
Type Filter	5	#32716	T (F) B	11/16 9:41am	3.9136	3.9129	11/14 4:56pm	
Run 2				11/16	3.9135	3.9129	11/15	
Location South				4:05pm	3.9134	3.9129	7:29am	.0007
Type Filter	6	#32703	T (F) B	11/17 7:05am	3.9077	3.9072	11/14 4:58pm	
Run 2				11/16	3.9077	3.9072	11/15	
Location North				5:45pm	3.9077	3.9072	4:30pm	.0005
Type	7	#32708	T (F) B			3.9230	11/15 4:35pm	
Run								
Location								
Type	8	#32707	T (F) B			3.9151	11/15 4:36pm	
Run								
Location								
Type	9		T F B					
Run								
Location								
Type	10		T F B					
Run								
Location								

[1] Note appearance of particulate
[2] Two volumes (e.g. 500/100) indicate an aliquot was taken.
Indicate (T)himble, (F)ilter, or (B)eaker in box below.

FIELD DATA

Orsat Readings

Client Koppers Industries	Project Number 5238
Plant Dolomite, AL	Unit
Date 11/15/90	Fuel Type
Orsat ID	Leak Check? Good

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

F_o = 1.083 to 1.230 (for bituminous coal)

Run Number	Location	Bag ID	Trial	Percent CO_2	Percent $CO_2 + O_2$	Percent O_2	F_o	Sample Time	Analysis Time	Analyst
1	South BH	# 1	1	0.0	20.5	20.5		9:30am	9:45am	DL
			2	0.1	20.5	20.4				
			3	0.0	20.5	20.5				
			Avg.	0.05		20.47		Avg		
2	~~South BH~~	~~2~~	1	CO_2+O_2+CO	20.5	20.5	20.5	20.5		
			2	CO	0.0	0.0	0.0	0.0		
			3							
			Avg.							
2	South BH	#2	1	0.0	20.6	20.6		11:55	12:30	DL
			2	0.0	20.6	20.6				
			3	0.0	20.7	20.7				
			Avg.	0.0	20.67	20.67		Avg		
			1	CO_2+O_2+CO	20.6	20.6	20.7	20.67		
			2	CO	0.0	0.0	0.0	0.0		
			3							
			Avg.							
3	South BH	#3	1	0.0	20.5	20.5				
			2	0.0	20.5	20.5				
			3	0.0	20.5	20.5				
			Avg.	0.0	20.5	20.5		Avg		
			1	CO_2+O_2+CO	20.5	20.5	20.5	20.5		
			2	CO	0.0	0.0	0.0	0.0		
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							

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Orsat Readings

Client Koppers Ind	Project Number 5238
Plant Dolomite, AL	Unit North Baghouse
Date 11/16/90	Fuel Type
Orsat ID	Leak Check? Good

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

F_o = 1.083 to 1.230 (for bituminous coal)

Run Number	Location	Bag ID	Trial	Percent CO_2	Percent $CO_2 + O_2$	Percent O_2	F_o	Sample Time	Analysis Time	Analyst
1	North	1N	1	0.0	20.5	20.5		9:00am	11:45	DL
			2	0.0	20.6	20.6				
			3	0.0	20.6	20.6				
			Avg.	0.0		20.57		Avg		
			1	CO_2+O_2+CO	20.5	20.6	20.6	11:00am	12:00	DL
			2	CO	0.0	0.0	0.0	0.0		
			3							
			Avg.							
2	North	2N	1	0.0	20.6	20.6				
			2	0.0	20.6	20.6				
			3	0.0	20.6	20.6				
			Avg.	0.0	20.6	20.6		Avg		
			1	CO_2+O_2+CO	20.6	20.6	20.6	20.6		
			2	CO	0.0	0.0	0.0	0.0		
			3							
			Avg.							
3	North	3N	1	0.0	20.6	20.6		1:00pm	1:45pm	DL
			2	0.0	20.6	20.6				
			3	0.0	20.5	20.5				
			Avg.	0.0	20.57	20.57		Avg		
			1	CO_2+O_2+CO	20.6	20.6	20.5			
			2	CO	0.0	0.0	0.0	0.0		
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							

Particulate Testing Field Data Sheet

Location: South Baghouse Run: 1

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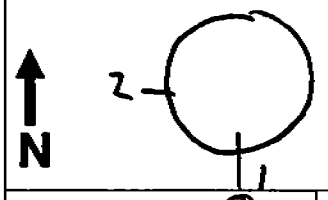
Client	Koppers	Project Number	5238
Plant	Dolomite, Al	Unit	
Date	11/15/90	Inlet/outlet	(stack)
Meter Operator	K. Sandberg		
Probe Operator	K. Sandberg		

Sample Box Number	Misco	Pyrometer Number	F-89
Meter Box Number	U		
Meter ΔH@	1.791	Meter Yd	1.0002
K Factor	1.28	Pitot C_p	.84
Pitot Leak Check:	Before Good	After	
Leak Rate Before	.003	CFM @ 15	"Hg
Leak Rate After		CFM @	"Hg
Static Pressure (inches H_2O) (+/-)	-.1		

Schematic of Testing Location



First point all the way (IN) OUT Method 5

Area (ft^2)	Port Len. (in.)	Gas Flow IN (OUT)
47.68	5¼	

Filter Number	32717	
Thimble Number	N/A	
Beaker Number		

Ambient Temp. (°F)	70	Bar. Press. (in. Hg)	29.80
Assumed Moisture (%)	1		

Heater Box Setting	250	Probe Heater Setting	250
Probe Length	12'	Probe Number	
Probe Material	S.S.	Acetone Number	
Nozzle Diameter (in.)	.188	Nozzle Number	

IGS Bag ID Number			
% O_2	20.47	% CO_2	0.0
H_2O (ml)	8	Silica Gel (gm)	7
Total V_{lc}	15		

Start Time 8:28 (AM) / PM Stop Time 9:31 (AM) / PM

Traverse Point Number	Min/pt 5 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume ~~57~~ 574.00 Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1-1	~~5~~ 2.5	3	104	1.10	1.41	575.65	86	70	50	237	265	B_{WO} = .0186
2	~~10~~ 5.0	3	98	.98	1.25	577.17	92	72	50	242	266	V_s = 61.304
3	~~15~~ 7.5	3	95	.98	1.25	578.78	96	74	46	249	266	ACFM = ~~235738~~ 1753
4	~~20~~ 10.0	3	106	.98	1.22	580.21	98	74	46	252	266	DSCFM = ~~215186~~ 16008
5	~~25~~ 12.5	3	95	.98	1.25	581.65	102	76	52	258	260	%I = 95.7
6	~~30~~ 15.0	3	104	.94	1.20	583.27	102	76	52	259	253	
7	~~35~~ 17.5	4	99	1.20	1.54	584.95	104	78	52	252	250	
8	~~40~~ 20.0	4	108	1.20	1.54	586.64	106	78	54	249	253	
9	~~45~~ 22.5	4	114	1.20	1.54	588.33	106	80	52	258	256	
10	~~50~~ 25.0	4	99	1.40	1.79	590.15	106	80	50	261	252	
11	~~55~~ 27.5	4	105	1.30	1.66	591.93	108	80	50	265	252	
12	~~6~~ 30.0	3	92	.94	1.20	593.47	106	82	50	261	252	
Total												
Average			105	1.049	1.41	38.88	92					

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Particulate Testing Field Data Sheet

Location: South Baghouse Run: 1

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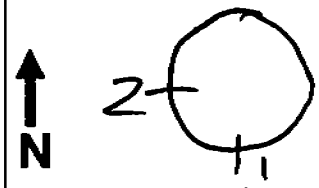
Client	Koppers	Project Number	5238
Plant	Dolomite, AL	Unit	
Date	11/15/90	Inlet/outlet/stack	
Meter Operator	K. Sandberg		
Probe Operator	D. Lloyd		

Sample Box Number	MISC	Pyrometer Number	F-89
Meter Box Number	U		
Meter ΔH@	1.791	Meter Yd	1.0002
K Factor	1.28	Pitot Cp	.84
Pitot Leak Check:	Before Good	After	
Leak Rate Before	.003	CFM @ 15	"Hg
Leak Rate After		CFM @	"Hg
Static Pressure (inches H_2O) (+/-)	-.1		

Schematic of Testing Location



First point all the way (IN) OUT	Method 5	
Area (ft^2) 47.68	Port Len. (in.) 5¼	Gas Flow IN (OUT)

Filter Number	32717	
Thimble Number	N/A	
Beaker Number		

Ambient Temp. (°F)	70	Bar. Press. (in. Hg)	29.80
Assumed Moisture (%)	1		

Heater Box Setting	250	Probe Heater Setting	250
Probe Length	12'	Probe Number	
Probe Material	S.S.	Acetone Number	
Nozzle Diameter (in.)	.188	Nozzle Number	

IGS Bag ID Number			
% O_2		% CO_2	
H_2O (ml)		Silica Gel (gm)	
Total V_{lc}			

Start Time	8:26 (AM) PM	Stop Time	9:31 AM / PM

Traverse Point Number	Min/pt 2.5 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet $T_{m\,in}$ (°F)	Gas Sample Temperature at Dry Gas Meter Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
2-1	2.5	3	105	1.10	1.41	595.13	102	82	50	270	254	
2	5.0	4	100	1.20	1.54	596.83	104	84	54	270	257	
3	7.5	4	100	1.20	1.54	598.55	106	84	56	266	260	
4	10.0	3	116	1.00	1.28	600.12	106	84	58	256	261	
5	12.5	3	104	1.05	1.34	601.72	106	84	60	259	254	
6	15.0	3	107	1.05	1.34	603.34	108	84	60	256	257	
7	17.5	3	115	1.05	1.34	604.52	108	84	60	260	256	
8	20.0	3	119	1.05	1.34	606.14	108	86	60	255	264	
9	22.5	3	111	1.00	1.28	607.72	108	86	58	254	259	
10	25.0	4	100	1.20	1.54	609.42	108	86	58	250	258	
11	27.5	4	108	1.20	1.54	611.14	110	86	58	249	257	
12	30.0	4	115	1.20	1.54	612.88	110	86	58	250	261	
Total												
Average						38.88						

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Particulate Testing Field Data Sheet

Location: South Baghouse Run: 2

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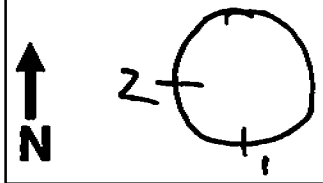
Client Kappers	Project Number 5238
Plant Dolomite, Al	Unit
Date 11/15/90	Inlet/outlet (stack)
Meter Operator K. Sandberg	
Probe Operator D. Lloyd	

Sample Box Number Misco	Pyrometer Number F-99
Meter Box Number U	
Meter ΔH@ 1.791	Meter Yd 1.0002
K Factor 1.30	Pitot Cp .84
Pitot Leak Check: Before Good	After
Leak Rate Before .005	CFM @ 15 "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-) -.10	

Schematic of Testing Location



First point all the way (IN) OUT	Method 5	
Area (ft^2) 47.68	Port Len. (in.) 5¼	Gas Flow IN (OUT)

Filter Number	32716	
Thimble Number	N/A	
Beaker Number		

Ambient Temp. (°F) 70	Bar. Press. (in. Hg) 29.85
Assumed Moisture (%) 1.9	

Heater Box Setting 250	Probe Heater Setting 250
Probe Length 12	Probe Number
Probe Material S.S.	Acetone Number
Nozzle Diameter (in.) .188	Nozzle Number

IGS Bag ID Number	
% O_2 20.67	% CO_2 0.0
H_2O (ml) 10	Silica Gel (gm) 8
Total Vlc 18	

Start Time 10:40 (AM) PM Stop Time 11:55 (AM) / PM

Traverse Point Number	Min/pt 2.5 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume 614.90 Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1-1	~~2.5~~ 3	3	100	1.00	1.30	616.82	96	86	42	250	252	B_{wo} = .0183
2	~~5.0~~ 6	4	93	1.25	1.63	618.91	108	86	44	262	270	V_s = 61.308
3	~~7.5~~ 9	3	104	1.05	1.37	620.90	110	88	40	263	260	ACFM = 175391
4	~~10.0~~ 12	3	102	.98	1.27	622.78	112	90	54	267	250	DSCFM = 160427
5	~~12.5~~ 15	3	100	.95	1.24	624.65	112	90	56	262	244	% I = 97.4
6	~~15.0~~ 18	3	100	1.00	1.30	626.58	114	90	58	267	246	
7	~~17.5~~ 21	4	104	1.20	1.56	628.65	114	92	58	270	250	
8	~~20.0~~ 24	4	102	1.20	1.56	630.77	116	92	58	269	254	
9	~~22.5~~ 27	4	100	1.40	1.82	633.03	116	92	58	262	256	
10	~~25.0~~ 30	4	111	1.30	1.69	635.22	118	94	58	268	258	
11	~~27.5~~ 33	4	101	1.40	1.82	637.48	118	94	58	259	258	
12	~~30.0~~ 34	3	100	1.10	1.43	639.54	118	94	58	255	251	
Total												
Average			105	1.050	1.44	48.53	104					

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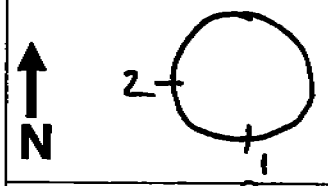
Particulate Testing Field Data Sheet

Location: South Baghouse Run: 2

Client	Koppers	Project Number	5238
Plant	Dolomite, AL	Unit	
Date	11/15/90	Inlet/outlet/stack	
Meter Operator	K. Sandberg		
Probe Operator	D. Lloyd		

Sample Box Number	Misc	Pyrometer Number	F-89
Meter Box Number	U		
Meter ΔH@	1.791	Meter Yd	1.0002
K Factor	1.30	Pitot Cp	.84
Pitot Leak Check:	Before Good	After	
Leak Rate Before	.005	CFM @ 15	"Hg
Leak Rate After		CFM @	"Hg
Static Pressure (inches H_2O) (+/-)	-.10		

Schematic of Testing Location



First point all the way (IN) OUT Method 5

Area (ft^2)	Port Len. (in.)	Gas Flow IN (OUT)
47.68	5 1/4	

Filter Number	32716	
Thimble Number	N/A	
Beaker Number		

Ambient Temp. (°F)	70	Bar. Press. (in. Hg)	29.85
Assumed Moisture (%)	1.9		

Heater Box Setting	250	Probe Heater Setting	250
Probe Length	12'	Probe Number	
Probe Material	S.S.	Acetone Number	
Nozzle Diameter (in.)	.188	Nozzle Number	

IGS Bag ID Number			
% O_2		% CO_2	
H_2O (ml)		Silica Gel (gm)	
Total Vlc			

Start Time 10:40 (AM) / PM Stop Time 11:55 (AM) / PM

Traverse Point Number	Min/pt 2.5 Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H_2O)	Initial Volume Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
2-1	2.5 3	3	106	1.20	1.56	641.65	114	94	52	260	252	
2	5.0 6	4	103	1.25	1.63	643.80	116	96	56	258	251	
3	7.5 9	3	103	1.10	1.43	645.84	116	96	58	255	250	
4	10.0 12	3	109	1.00	1.30	647.79	116	96	58	252	248	
5	12.5 15	3	106	1.30	1.69	649.92	118	96	60	250	253	
6	15.0 18	3	109	1.00	1.30	651.88	116	96	58	244	253	
7	17.5 21	3	106	1.00	1.30	653.82	116	96	58	245	255	
8	20.0 24	3	104	.95	1.24	655.73	116	96	58	242	258	
9	22.5 27	3	114	.98	1.27	657.65	116	96	58	241	258	
10	25.0 30	3	111	.98	1.27	659.57	116	96	60	245	256	
11	27.5 33	3	122	.98	1.27	661.49	116	96	60	248	264	
12	30.0 36	3	105	.98	1.27	663.43	116	96	58	253	260	
Total												
Average												

Particulate Testing Field Data Sheet

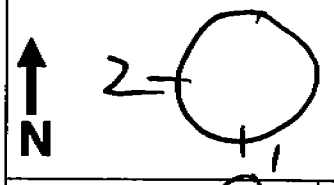
Location: South Baghouse Run: 3

Page 1 of 2

Client	Koppers	Project Number	5328
Plant	Dolomite, Al	Unit	
Date	11/15/90	Inlet/outlet/stack	
Meter Operator	K. Sandberg		
Probe Operator	D. Lloyd		

Sample Box Number	Misco	Pyrometer Number	F-88
Meter Box Number	U		
Meter ΔH@	1.791	Meter Yd	1.0002
K Factor	1.35	Pitot Cp	.84
Pitot Leak Check:	Before Good	After	
Leak Rate Before	.003	CFM @ 10	"Hg
Leak Rate After		CFM @	"Hg
Static Pressure (inches H_2O) (+/-)	-.10		

Schematic of Testing Location



First point all the way IN (OUT)	Method 5	
Area (ft^2) 4768	Port Len. (in.) 5¼	Gas Flow IN (OUT)

Filter Number	32715	
Thimble Number	N/A	
Beaker Number		

Ambient Temp. (°F)	75	Bar. Press. (in. Hg)	29.80
Assumed Moisture (%)	2		

Heater Box Setting	250	Probe Heater Setting	250
Probe Length	12'	Probe Number	
Probe Material	S.S.	Acetone Number	
Nozzle Diameter (in.)	.188	Nozzle Number	

IGS Bag ID Number			
% O_2	20.5	% CO_2	0.0
H_2O (ml)	4	Silica Gel (gm)	9
Total V_{lc}	13		

Start Time 1:32 AM (PM) Stop Time 2:49 AM (PM)

Traverse Point Number	Min/pt 3 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume 664.30 / Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1-1	3	3	99	1.00	1.35	666.25	90	82	48	252	243	Bwo = 1.278%
2	6	3	103	1.02	1.38	668.20	96	82	44	253	256	N_s = 62.367
3	9	4	102	1.15	1.55	670.27	102	84	50	254	265	ACFM = 178,419
4	12	3	100	1.00	1.35	672.22	106	84	52	262	268	DSCFM = 164,128
5	15	3	114	.95	1.28	674.10	110	86	54	259	266	% I = 98.99%
6	18	3	102	.98	1.32	676.03	112	88	54	264	264	
7	21	4	104	1.20	1.62	678.15	114	88	56	256	261	
8	24	4	112	1.20	1.62	680.30	114	90	54	260	256	
9	27	4	103	1.30	1.76	682.51	116	90	54	259	250	
10	30	5	101	1.40	1.89	684.80	118	92	52	260	250	
11	33	5	99	1.45	1.96	687.14	120	92	54	261	255	
12	36	4	110	1.15	1.55	689.28	120	94	54	257	256	
Total			2499	25.659		50.53						
Average			104	1.069	1.55		104					

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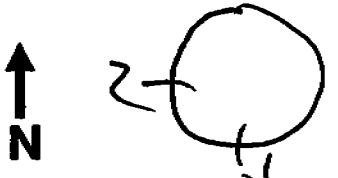
Particulate Testing Field Data Sheet

Location: South Baghouse Run: 3

Client	Koppers	Project Number	5328
Plant	Dolomite, AL	Unit	
Date	11/15/90	Inlet/outlet/stack	
Meter Operator	K. Sandberg		
Probe Operator	D. Lloyd		

Sample Box Number	Misc	Pyrometer Number	F-89
Meter Box Number	U		
Meter ΔH@	1.791	Meter Yd	1.0002
K Factor	1.35	Pitot Cp	.84
Pitot Leak Check:	Before Good	After	
Leak Rate Before	.003	CFM @ 10	"Hg
Leak Rate After	.002	CFM @ 10	"Hg
Static Pressure (inches H_2O) (+/-)	-.16		

Schematic of Testing Location



First point all the way IN OUT	Method 5	
Area (ft^2) 47.68	Port Len. (in.) 5¼	Gas Flow IN OUT

Filter Number	32715	
Thimble Number	N/A	
Beaker Number		

Ambient Temp. (°F)	75	Bar. Press. (in. Hg)	29.80
Assumed Moisture (%)	2		

Heater Box Setting	250	Probe Heater Setting	250
Probe Length	12'	Probe Number	
Probe Material	S.S.	Acetone Number	
Nozzle Diameter (in.)	.188	Nozzle Number	

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total Vlc	

Start Time 1:32 AM (PM) Stop Time 2:48 AM (PM)

Traverse Point Number	Min/pt 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
2-1	3	4	102	1.20	1.62	691.90	116	94	50	257	260	
2	6	4	107	1.20	1.62	693.60	118	96	50	256	258	
3	9	3	104	1.10	1.49	695.71	120	96	52	256	261	
4	12	3	106	1.10	1.49	697.80	122	96	54	254	255	
5	15	3	110	1.00	1.35	699.79	120	98	56	253	253	
6	18	3	115	1.00	1.35	701.80	122	98	56	255	256	
7	21	4	102	1.20	1.62	703.95	122	98	56	252	258	
8	24	4	100	1.25	1.69	706.17	124	100	56	251	258	
9	27	4	98	1.30	1.76	708.42	124	100	56	250	262	
10	30	3	102	1.10	1.49	710.53	122	100	56	248	251	
11	33	4	103	1.30	1.76	712.78	124	100	56	250	247	
12	36	3	101	.98	1.32	714.83	124	100	56	251	248	
Total												
Average												

Particulate Testing Field Data Sheet

Location: North Baghouse Run: 1

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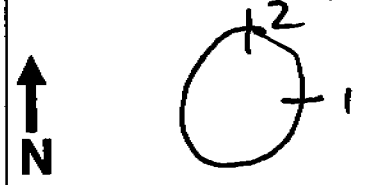
Client	Koppers	Project Number	5328
Plant	Dolomite, Al	Unit	
Date	11/16/90	Inlet/outlet/stack	
Meter Operator	K. Sandberg		
Probe Operator	D. Lloyd		

Sample Box Number	Missio	Pyrometer Number	F-89
Meter Box Number	U		
Meter ΔH@	1.791	Meter Yd	1.0002
K Factor	1.40	Pitot Cp	.84
Pitot Leak Check:	Before Good	After	
Leak Rate Before	.004	CFM @ 15	"Hg
Leak Rate After	.004	CFM @ 10	"Hg
Static Pressure (inches H2O) (+/-)	-.10		

Schematic of Testing Location



First point all the way IN / OUT	Method 5	
Area (ft²) 47.68	Port Lep. (in.) 5 1/4	Gas Flow IN / OUT

Filter Number	32702	
Thimble Number	N/A	
Beaker Number		

Ambient Temp. (°F)	70	Bar. Press. (in. Hg)	29.68
Assumed Moisture (%)	2		

Heater Box Setting	250	Probe Heater Setting	250
Probe Length	12'	Probe Number	
Probe Material	S.S.	Acetone Number	
Nozzle Diameter (in.)	.188	Nozzle Number	

IGS Bag ID Number			
% O2	20.57	% CO2	0.0
H2O (ml)	8	Silica Gel (gm)	7
Total Vlc	17		

Start Time 8:07 AM / PM Stop Time 9:23 AM / PM

Traverse Point Number	Min/pt 3 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H2O)	Initial Volume 717.40 / Gas Sample Volume Vm (ft³)	Gas Sample Temperature at Dry Gas Meter: Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
1-1	3	3	80	1.00	1.40	719.33	84	68	50	270	259	Bwa = .0167
2	6	4	82	1.20	1.68	721.42	92	68	48	271	263	Vs = 61.086
3	9	3	83	.97	1.36	723.35	94	70	50	271	262	ACFM = 174756
4	12	3	89	1.00	1.40	725.29	98	72	52	268	259	DSCFM = 161482
5	15	3	87	1.00	1.40	727.23	100	74	54	266	257	%I = 100.4
6	18	4	87	1.10	1.54	729.27	104	74	54	263	254	
7	21	4	91	1.30	1.82	731.47	106	76	54	262	256	
8	24	5	88	1.45	2.03	733.79	106	78	56	259	247	
9	27	5	96	1.45	2.03	736.13	108	78	56	257	251	
10	30	4	92	1.30	1.82	738.36	108	80	56	254	252	
11	33	4	94	1.30	1.82	740.61	110	80	56	252	253	
12	36	3	91	1.05	1.47	742.64	110	82	56	248	256	
Total												
Average			97	1.051	1.57	49.62	93					

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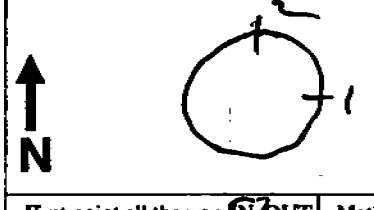
Particulate Testing Field Data Sheet

Location: North Baghouse Run: 1

Client Koppers	Project Number 5328
Plant Dolomite, Al	Unit
Date 11/16/90	Inlet/outlet/stack
Meter Operator K. Sandberg	
Probe Operator D. Lloyd	

Sample Box Number Misc		Pyrometer Number F-89	
Meter Box Number U			
Meter ΔH@ 1.791		Meter Yd 1.0002	
K Factor 1.		Pitot Cp .84	
Pitot Leak Check:	Before Good	After	
Leak Rate Before .004	CFM @ 15	"Hg	
Leak Rate After .004	CFM @ 10	"Hg	
Static Pressure (inches H_2O) (+/-)	-.10		

Schematic of Testing Location



First point all the way (IN) OUT	Method 5	
Area (ft^2) 47.68	Port Len. (in.) 5 1/4	Gas Flow IN (OUT)

Filter Number	32702	
Thimble Number	N/a	
Beaker Number		

Ambient Temp. (°F) 70	Bar. Press. (in. Hg) 29.68
Assumed Moisture (%) 2.0	

Heater Box Setting 250	Probe Heater Setting 250
Probe Length 12'	Probe Number
Probe Material S.S.	Acetone Number
Nozzle Diameter (in.) .188	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml) 8	Silica Gel (gm) 9
Total Vlc 17	

Start Time 8:07 (AM) PM Stop Time 9:23 (AM) / PM

Traverse Point Number	Min/pt 3 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume: Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
2-1	3	4	99	1.35	1.89	744.90	104	84	50	246	260	
2	6	5	99	1.40	1.96	747.20	108	84	54	246	256	
3	9	4	110	1.30	1.82	749.45	110	84	56	248	252	
4	12	5	104	1.40	1.96	751.76	112	86	58	250	249	
5	15	4	103	1.30	1.82	753.99	112	86	58	251	246	
6	18	5	112	1.40	1.96	756.31	114	88	58	251	249	
7	21	3	105	.92	1.29	758.27	112	88	58	252	251	
8	24	3	109	.80	1.12	760.09	110	88	60	251	254	
9	27	2	108	.68	.95	761.79	108	88	58	252	257	
10	30	2	104	.75	1.05	763.55	108	88	58	253	253	
11	33	3	102	.82	1.15	765.36	106	88	58	254	254	
12	36	2	112	.64	.90	767.02	106	88	58	254	254	
Total												
Average												

CAE

Particulate Testing Field Data Sheet

Location: North Baghouse Run: 2

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Client Koppers	Project Number 5328
Plant Dolomite, AL	Unit
Date 11/16/90	Inlet/outlet/stack
Meter Operator K. Sundberg	
Probe Operator D. Lloyd	

Sample Box Number MISCO	Pyrometer Number F-89
Meter Box Number U	
Meter ΔH@ 1.791	Meter Yd 1.0002
K Factor 1.40	Pitot Cp .84
Pitot Leak Check: Before Good	After
Leak Rate Before .002	CFM @ 10 "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-)	-.10

Schematic of Testing Location

First point all the way IN/OUT	Method 5	
Area (ft^2) 47.68	Port Len. (in.) 5 1/4	Gas Flow IN OUT

Filter Number	32703	
Thimble Number	N/A	
Beaker Number		

Ambient Temp. (°F) 70	Bar. Press. (in. Hg) 29.62
Assumed Moisture (%) 1.7	

Heater Box Setting 250	Probe Heater Setting 250
Probe Length 12'	Probe Number
Probe Material S.S.	Acetone Number
Nozzle Diameter (in.) .188	Nozzle Number

IGS Bag ID Number	
% O_2 20.6	% CO_2 0.0
H_2O (ml) 9	Silica Gel (gm) 8
Total Vlc 17	

Start Time 10:15 AM/PM Stop Time 11:33 AM/PM

Traverse Point Number	Min/pt 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume 768.30 Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1-1	3	4	103	1.05	1.47	770.33	86	80	52	257	251	B_{ws} = .0165
2	6	4	97	1.05	1.47	772.30	90	80	52	263	256	V_s = 62.338
3	9	4	98	1.00	1.40	774.33	92	80	54	263	258	ACFM = 178336
4	12	4	93	1.00	1.40	776.22	94	80	54	263	261	DSCFM = 161592
5	15	4	109	1.10	1.54	778.34	94	80	56	262	254	% I = 101.6
6	18	4	102	1.20	1.68	780.39	92	80	56	261	252	
7	21	5	121	1.40	1.96	782.67	96	80	58	260	248	
8	24	6	105	1.60	2.24	785.13	96	80	60	259	251	
9	27	5	102	1.45	2.03	787.48	98	80	62	259	253	
10	30	5	103	1.40	1.96	789.78	96	80	62	261	257	
11	33	4	103	1.20	1.68	791.92	98	80	60	263	261	
12	36	4	102	1.10	1.54	793.96	98	80	56	264	264	
Total												
Average			107	1.062	1.60	49.90	88					

Particulate Testing Field Data Sheet

Location: North Baghouse Run: 2

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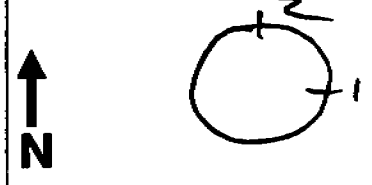
Client	Koppers	Project Number	5328
Plant	Dolomite, AL	Unit	
Date	11/16/90	Inlet/outlet/stack	
Meter Operator	K. Sandberg		
Probe Operator	D. Lloyd		

Sample Box Number	Misc	Pyrometer Number	F-89
Meter Box Number	U		
Meter ΔH@	1.791	Meter Yd	1.0002
K Factor	1.40	Pitot C_p	.84
Pitot Leak Check:	Before Good	After	
Leak Rate Before	.062	CFM @ 10	"Hg
Leak Rate After		CFM @	"Hg
Static Pressure (inches H_2O) (+/-)	-.10		

Schematic of Testing Location



First point all the way IN OUT	Method 5	
Area (ft^2) 47.68	Port Len. (in.) 5 1/4	Gas Flow IN OUT

Filter Number	32703	
Thimble Number	N/A	
Beaker Number		

Ambient Temp. (°F)	70	Bar. Press. (in. Hg)	29.62
Assumed Moisture (%)	1.7		

Heater Box Setting	250	Probe Heater Setting	250
Probe Length	12	Probe Number	
Probe Material	S.S.	Acetone Number	
Nozzle Diameter (in.)	.188	Nozzle Number	

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time 10:15 AM PM Stop Time 11:33 AM PM

Traverse Point Number	Min/pt 3 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume: Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Gas Sample Temperature at Dry Gas Meter: Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
2-1	3	5	102	1.35	1.89	796.22	92	80	56	260	255	
2	6	5	107	1.30	1.82	798.45	96	80	56	261	258	
3	9	5	105	1.40	1.96	800.72	98	80	60	262	262	
4	12	5	118	1.30	1.82	802.96	96	80	64	261	260	
5	15	5	110	1.45	2.03	805.28	98	82	64	260	256	
6	18	5	109	1.45	2.03	807.62	100	82	64	260	258	
7	21	3	116	1.00	1.40	809.60	100	82	64	260	260	
8	24	3	110	.83	1.16	811.41	96	82	60	259	256	
9	27	2	110	.70	.98	813.11	94	82	56	258	254	
10	30	3	114	.75	1.05	814.84	94	82	56	256	253	
11	33	3	113	.73	1.02	816.55	94	82	56	254	258	
12	36	3	112	.66	.92	818.20	94	82	54	254	256	
Total												
Average												

Particulate Testing Field Data Sheet

Location: North Baghouse Run: 3

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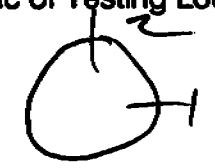
Client	Koppers	Project Number	5328
Plant	Dolomite, Al	Unit	
Date	11/16/90	Inlet/outlet/stack	
Meter Operator	K. Sandberg		
Probe Operator	D. Lloyd		

Sample Box Number	Misc	Pyrometer Number	F-89
Meter Box Number	U		
Meter ΔH@	1.791	Meter Yd	1.0002
K Factor	1.38	Pitot Cp	.84
Pitot Leak Check:	Before Good	After	
Leak Rate Before	.002	CFM @ 10	"Hg
Leak Rate After	.002	CFM @ 10	"Hg
Static Pressure (inches H_2O) (+/-)	-.1		

Schematic of Testing Location



First point all the way IN OUT	Method 5	
Area (ft^2) 47.68	Port Len. (in.) 5¼	Gas Flow IN OUT

Filter Number	32718	
Thimble Number	N/A	
Beaker Number		

Ambient Temp. (°F)	70	Bar. Press. (in. Hg)	29.59
Assumed Moisture (%)	1.7		

Heater Box Setting	250	Probe Heater Setting	250
Probe Length	12'	Probe Number	
Probe Material	S.S.	Acetone Number	
Nozzle Diameter (in.)	.188	Nozzle Number	

IGS Bag ID Number			
% O_2	20.51	% CO_2	0.0
H_2O (ml)	9	Silica Gel (gm)	9
Total Vlc	18		

Start Time 12:17 AM (PM) Stop Time 1:33 AM (PM)

Traverse Point Number	Min/pt 3 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume 820.10 / Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Gas Sample Temperature at Dry Gas Meter: Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1-1	3	3	98	1.10	1.58	822.15	86	82	44	256	252	
2	6	3	108	1.05	1.45	824.15	90	82	54	268	252	
3	9	3	102	1.05	1.45	826.17	92	82	54	259	255	
4	12	4	100	1.20	1.66	828.20	92	82	56	260	255	
5	15	3	100	1.05	1.45	830.32	92	82	54	254	254	
6	18	4	109	1.15	1.59	832.40	94	80	54	254	257	
7	21	4	103	1.25	1.73	834.58	96	80	54	255	257	
8	24	6	98	1.70	2.35	837.07	98	82	54	256	258	
9	27	6	109	1.60	2.21	839.55	100	82	54	250	256	
10	30	6	99	1.60	2.21	842.03	100	82	56	254	253	
11	33	5	99	1.55	2.14	844.47	100	82	56	256	255	
12	36	5	118	1.40	1.93	846.79	100	82	58	256	254	
Total			2597	26.036	39.68	51.11						
Average			108	1.085	1.65		91					

CAE P2 ver. 1.0
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Particulate Testing Field Data Sheet

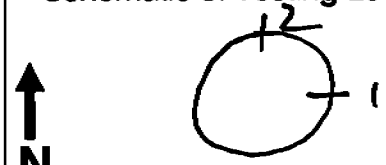
Location: North Baghouse Run: 3

Page 2 of 3

Client Koppers	Project Number 5328
Plant Dolomite, Al	Unit
Date 11/16/90	Inlet/outlet/stack
Meter Operator K. Sandberg	
Probe Operator D. Lloyd	

Sample Box Number Misc0	Pyrometer Number F-89
Meter Box Number U	
Meter ΔH@ 1.791	Meter Yd 1.0002
K Factor 1.38	Pitot Cp .84
Pitot Leak Check: Before Good	After
Leak Rate Before .002	CFM @ 10 "Hg
Leak Rate After .002	CFM @ 10 "Hg
Static Pressure (inches H_2O) (+/-)	-.10

Schematic of Testing Location



First point all the way IN OUT	Method 5	
Area (ft^2) 47.68	Port Len. (in.) 5 1/4	Gas Flow IN OUT

Filter Number	32718	
Thimble Number	N/A	
Beaker Number		

Ambient Temp. (°F) 70	Bar. Press. (in. Hg) 29.59
Assumed Moisture (%) 1.7	

Heater Box Setting 250	Probe Heater Setting 250
Probe Length 12'	Probe Number
Probe Material S.S.	Acetone Number
Nozzle Diameter (in.) .188	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml) 9	Silica Gel (gm) 9
Total Vlc 18	

Start Time 12:17 AM PM Stop Time 1:33 AM PM

Traverse Point Number	Min/pt 3 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet $T_{m\,in}$ (°F)	Gas Sample Temperature at Dry Gas Meter Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
2-1	3	5	105	1.50	2.07	849.18	96	84	56	259	252	
2	6	4	113	1.30	1.79	851.42	98	84	58	261	256	
3	9	5	109	1.40	1.93	853.73	100	84	58	258	258	
4	12	4	109	1.25	1.73	855.91	100	84	60	257	258	
5	15	5	120	1.35	1.86	858.17	104	84	64	256	260	
6	18	5	113	1.55	2.14	860.59	106	84	62	256	264	
7	21	4	113	1.00	1.38	862.58	104	86	60	256	250	
8	24	3	116	.80	1.10	864.37	102	86	58	255	241	
9	27	3	113	.80	1.10	866.14	100	86	58	254	244	
10	30	3	111	.74	1.02	867.88	106	86	56	253	246	
11	33	3	117	.70	.97	869.57	104	84	56	250	252	
12	36	2	115	.65	.90	871.21	92	84	54	249	258	
Total												
Average												

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D:\vpforms\m5data-1

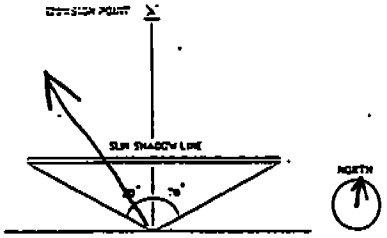
Run1

Visual Emissions Observation Form

Client/Owner: Koppers	Observer's name: Paul McGary	Project number: 5238
Plant: Dolmite Unit: Stack (South)	Certified by: Wisconsin DNR	Date Certified: 10/16/90
Observation date: 11/15/90	Start time: 8:28	Stop time: 9:30

Source/process	Coke Plant
Control equipment	Baghouse.
Operating mode	100%
Describe emission point	Blue stack after baghouse for quenching
Emission point height above ground level	40 Ft
Emission point height relative to observer	40 Ft
Distance to emission point	200 Ft.
Direction to emission point from observer	North East North
Describe emission	no visible emission
Color of emission	N/A
(Continuous) Fugitive Intermittent	
Water vapor present: (No) Yes	If yes, is plume attached detached
Point where opacity was determined	Exit of Stack
Describe background	Partly Cloudy blue sky
Color of background	White Clouds & Blue Sky
Sky condition	Partly Cloudy
Wind speed: 5-10 South	Wind dir.: From South
Ambient temperature	60
Relative humidity	
Comments	* Quenching Steam Obstructing View

Layout sketch of source



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

Range of opacity: 0 % to 0 %

# of readings above 0 % were 0

Observer's signature: Paul McGary

Date: 11/15/90

D:\vpforms\visualem

Run 2

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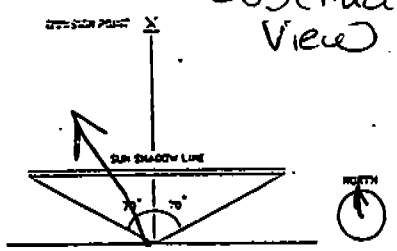
Visual Emissions Observation Form

Client/Owner Koppers	Observer's name Paul McGarry	Project number 5238
Plant Dolivite Unit Southstack	Certified by Wisconsin DNR	Date Certified 10/16/90
Observation date 11/15/90	Start time 10:41	Stop time 11:55
Source/process Coke Plant		
Control equipment Baghouse		
Operating mode Good		
Describe emission point Blue Stack after baghouse by quencher		
Emission point height above ground level 40ft		
Emission point height relative to observer 40ft		
Distance to emission point 225ft		
Direction to emission point from observer North		
Describe emission no visible Emission		
Color of emission N/A		
(Continuous) Fugitive Intermittent		
Water vapor present (No) Yes — If yes, is plume attached detached		
Point where opacity was determined End of Stack		
Describe background Blue Sky Partly cloudy		
Color of background Blue & White		
Sky condition Partly Cloudy		
Wind speed 10-15 Wind dir. from South		
Ambient temperature 66		
Relative humidity		
Comments * Quenching Steam		
Layout sketch of source Obstructing View		



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

Range of opacity: 0 % to 0 % | # of readings above 0 % were 0

Observer's signature Paul McGarry

Date 11/15/90

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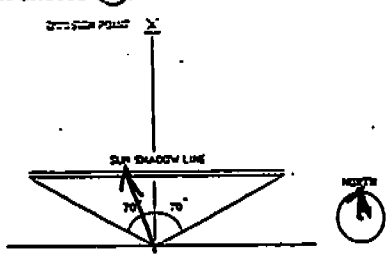
Run 2

1 of 1

Visual Emissions Observation Form

Client/Owner Koppers	Observer's name Paul McGarry	Project number 5238
Plant Koppers Unit South Stack	Certified by Wisconsin DOT	Date Certified 10/16/90
Observation date 11/15/90	Start time 10:41	Stop time 11:55
Source/process Coke Plant Baghouse		
Control equipment Baghouse		
Operating mode 100%		
Describe emission point Blue stack after baghouse		
Emission point height above ground level 40 ft		
Emission point height relative to observer 40 ft		
Distance to emission point 225 ft		
Direction to emission point from observer North		
Describe emission No Visible Emission		
Color of emission N/A		
Continuous Fugitive Intermittent		
Water vapor present: No Yes — If yes, is plume attached detached		
Point where opacity was determined End of Stack		
Describe background Blue and White Sky		
Color of background Blue and White		
Sky condition Partly Cloudy		
Wind speed 5-10 — Wind dir From South		
Ambient temperature 66		
Relative humidity		
Comments *Quenching Steam Obstructing View		
Layout sketch of source		

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



Range of opacity: 0 % to 0 %

# of readings above 0% were 0

Observer's signature Paul McGarry

Date 11/15/90

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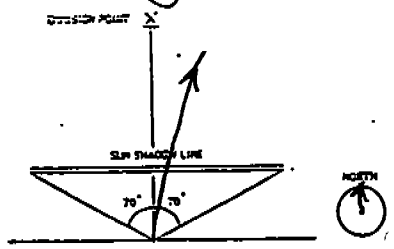
Run 3

Visual Emissions Observation Form

Client/Owner: Koppers	Observer's name: Paul McGary	Project number: 5238
Plant: Dolmite Unit: South Stack	Certified by: Wisconsin DOR	Date Certified: 10/16/90
Observation date: 11/15/90	Start time: 1:31	Stop time: 2:47
Source/process: Coke Plant		
Control equipment: Baghouse		
Operating mode: 100%		
Describe emission point: Blue Stack after baghouse next to the quencher		
Emission point height above ground level: 40 Ft		
Emission point height relative to observer: 40 Ft		
Distance to emission point: 225 Ft		
Direction to emission point from observer: North		
Describe emission: No visible Emission		
Color of emission: N/A		
(Continuous) Fugitive Intermittent		
Water vapor present (No) Yes — If yes, is plume attached detached		
Point where opacity was determined: End of Stack		
Describe background: Blue and White Sky		
Color of background: Blue And White		
Sky condition: Partly Cloudy		
Wind speed: 5-10 — Wind dir.: from South		
Ambient temperature: 68		
Relative humidity		
Comments: X Quenching Steam Obstructing View		

Layout sketch of source



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

Range of opacity: 0 % to 0 % | # of readings above 0 % were 0

Observer's signature: Paul McGary

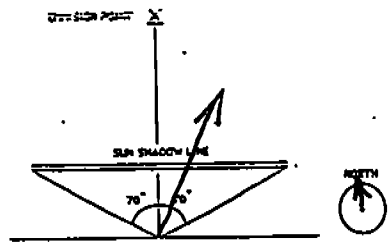
Date: 11/15/90

Run 3

1g 4 of 4

Visual Emissions Observation Form

Client/Owner Koppers	Observer's name Paul McGary	Project number 5238
Plant Toluene Unit South Stack	Certified by Wisconsin DNR	Date Certified 10/16/90
Observation date 11/15/90	Start time 1:31	Stop time 2:47
Source/process Coke Plant		
Control equipment Baghouse		
Operating mode 1000's		
Describe emission point Blue stack after baghouse next to quencher		
Emission point height above ground level 450 ft		
Emission point height relative to observer 450 ft		
Distance to emission point 225 ft		
Direction to emission point from observer North		
Describe emission No visible Emission		
Color of emission N/A		
(Continuous) Fugitive Intermittent		
Water vapor present (No) Yes / If yes, is plume attached detached		
Point where opacity was determined End of Stack		
Describe background Blue and white sky		
Color of background Blue & White		
Sky condition Partly Cloudy		
Wind speed 5-10 / Wind dir. from south		
Ambient temperature 68		
Relative humidity		
Comments (*) Smoke from behind; * Quenching Smoke Obstructing View		
Layout sketch of source		



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

Range of opacity: 0 % to 0 % | # of readings above 0 % were 0

Observer's signature Paul McGary

Date 11/15/90

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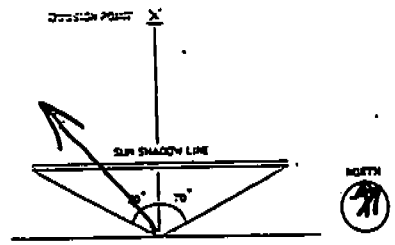
Run 4

Visual Emissions Observation Form

Client/Owner: Koppers	Observer's name: Paul McGary	Project number: 5328
Plant: Dolwite Unit: North Stack	Certified by: Wisconsin DNR	Date Certified: 10/16/90
Observation date: 11/16/90	Start time: 9:05	Stop time: 9:22
Source/process: Coke Plant		
Control equipment: Baghouse		
Operating mode: 100%		
Describe emission point: Blue Stack after baghouse next to quencher		
Emission point height above ground level: 40 ft		
Emission point height relative to observer: 35 ft		
Distance to emission point: 200 ft		
Direction to emission point from observer: N-W-N		
Describe emission: No Visible Emission		
Color of emission: N/A		
(Continuous) Fugitive Intermittent		
Water vapor present (No) Yes — If yes, is plume attached detached		
Point where opacity was determined: End of Stack		
Describe background: Blue and White Sky		
Color of background: Blue & White		
Sky condition: Partly Cloudy		
Wind speed: 5-10 — Wind dir.: from E		
Ambient temperature: 58		
Relative humidity		
Comments: *Quenching vapor blocks View		
Layout sketch of source		



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

Range of opacity: 0 % to 0 % | # of readings above 0 % were 0

Observer's signature: Paul McGary

Date: 11/16/90

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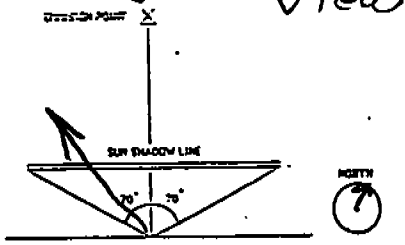
Run 1

2 of 2

Visual Emissions Observation Form

Client/Owner Koppers	Observer's name Paul McGary	Project number 5328
Plant Delmite Unit Northstack	Certified by Wisconsin DNR	Date Certified 10/16/90
Observation date 11/16/90	Start time 8:05	Stop time 9:22
Source/process Coke Plant		
Control equipment Baghouse		
Operating mode 100%		
Describe emission point Blue stick after baghouse next to quencher		
Emission point height above ground level 400 ft		
Emission point height relative to observer 35 ft		
Distance to emission point 200 ft		
Direction to emission point from observer ~~S~~ NW-W-N		
Describe emission No Visible Emission		
Color of emission N/A		
Continuous Fugitive Intermitten		
Water vapor present No Yes / If yes, is plume attached detached		
Point where opacity was determined End of Stack		
Describe background Blue and White Sky		
Color of background Blue and White		
Sky condition Partly Cloudy		
Wind speed 0-5 Wind dir. From N		
Ambient temperature 62		
Relative humidity		
Comments * Quenching Steam blocks View		
Layout sketch of source		



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

Range of opacity: 0 % to 0 % | # of readings above 0 % were 0

Observer's signature Paul McGary

Date 11/16/90

Runs

Page 1 of 2

Visual missions Observation Form

Client/Owner: Koppers	Observer's name: Paul McGary	Project number: 5328
Plant: Dolmite Unit: North Stack	Certified by: Wisconson DNR	Date Certified: 10/16/90
Observation date: 11/16/90	Start time: 10:14	Stop time: 11:31

Source/process: Coke Plant

Control equipment: Baghouse

Operating mode: 100%

Describe emission point: Blue stack after baghouse next to quencher

Emission point height above ground level: 40 ft

Emission point height relative to observer: 35 ft

Distance to emission point: 200 ft

Direction to emission point from observer: ~~200 ft~~ N-W-N

Describe emission: No Visible Emission

Color of emission: N/A

Continuous Fugitive Intermittent

Water vapor present: No Yes — If yes, is plume attached detached

Point where opacity was determined: End of stack

Describe background: Blue and white sky

Color of background: Blue and white

Sky condition: Partly Cloudy

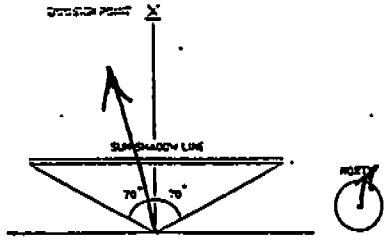
Wind speed: 0-5 Wind dir.: East

Ambient temperature: 70

Relative humidity:

Comments: *Quenching Vapor Blocking View

Layout sketch of source



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

Range of opacity: 0 % to % — # of readings above 0 % were

Observer's signature: Paul McGary

Date: 11/16/90

D:\vpforms\visualem

Runs

1 of 2

Visual Emissions Observation Form

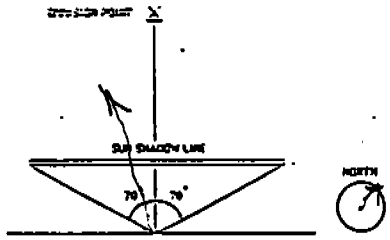
Client/Owner: Koppers	Observer's name: Paul McGrady	Project number: 5328	
Plant: Dolmite Unit: North Stack	Certified by: Wisconsin DNR	Date Certified: 10/16/90	
Observation date: 11/16/90	Start time: 10:14	Stop time: 11:31	
Source/process: Coke Plant			
Control equipment: Baghouse			
Operating mode: 100%			
Describe emission point: Blue stack after baghouse next to the Quencher			
Emission point height above ground level: 40 Ft			
Emission point height relative to observer: 35 ft			
Distance to emission point: 200 ft			
Direction to emission point from observer: N-W-N			
Describe emission: No Visible Emission			
Color of emission: N/A			
Continuous / Fugitive / Intermittent			
Water vapor present: No / Yes — If yes, is plume attached / detached			
Point where opacity was determined: End of Stack			
Describe background: Blue Sky			
Color of background: Blue			
Sky condition: clear			
Wind speed: 0-5 — Wind dir.: East			
Ambient temperature: 70			
Relative humidity			
Comments: *Quenching Vapor Blocks View			
Layout sketch of source			

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

Range of opacity: 0 % to % | # of readings above 0 % were

Observer's signature: Paul McGrady

Date: 11/16/90



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Run 6

Visual Emissions Observation Form

Client/Owner: Koppers	Observer's name: Paul McGary	Project number: 5328
Plant: Delmite Unit: North Stack	Certified by: Wisconsin DNR	Date Certified: 10/16/90
Observation date: 11/16/96	Start time: 12:16	Stop time: 1:32

Source/process: Coke Plant

Control equipment: Baghouse

Operating mode: 100%

Describe emission point: Blue stack after baghouse next to quencher

Emission point height above ground level: 40ft

Emission point height relative to observer: 35ft

Distance to emission point: 200ft

Direction to emission point from observer: N-W-N

Describe emission: No Visible Emission

Color of emission: N/A

Continuous Fugitive Intermittent

Water vapor present: No Yes — If yes, is plume attached detached

Point where opacity was determined: End of Stack

Describe background: Blue and White Sky

Color of background: Blue and White

Sky condition: Partly Cloudy

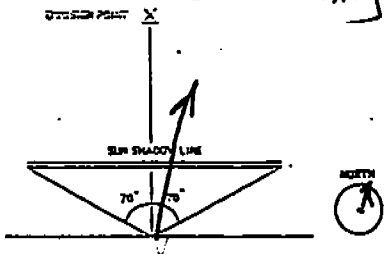
Wind speed: 5-10 Wind dir.: East

Ambient temperature: 72

Relative humidity:

Comments: * Quenching Vapor blocking View

Layout sketch of source:



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

Range of opacity: 0 % to % — # of readings above 0 % were

Observer's signature: Paul McGary

Date: 11/16/90

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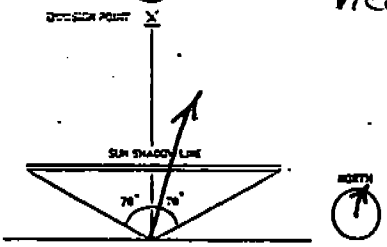
Run 6

Visual Emissions Observation Form

Client/Owner: Koppers	Observer's name: Paul McGrary	Project number: 5328
Plant: Gelmite Unit: North Stack	Certified by: Wisconsin DNR	Date Certified: 10/16/95
Observation date: 11/16/90	Start time: 12:16	Stop time: 1:32
Source/process: Coke Plant		
Control equipment: Baghouse		
Operating mode: 100 %		
Describe emission point: Blue Stack after Baghouse next to quencher		
Emission point height above ground level: 400 ft		
Emission point height relative to observer: 350 ft		
Distance to emission point: 200 ft		
Direction to emission point from observer: N-W-N		
Describe emission: No Visible Emission		
Color of emission: N/A		
Continuous / Fugitive / Intermittent		
Water vapor present: No / Yes — If yes, is plume attached / detached		
Point where opacity was determined: End of Stack		
Describe background: Blue and White Sky		
Color of background: Blue and White		
Sky condition: Partly Cloudy		
Wind speed: 5-10 — Wind dir.: East		
Ambient temperature: 72		
Relative humidity		
Comments: * Quenching Vapor Blocking View		

Layout sketch of source



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

Range of opacity: 0 % to % | # of readings above 0 % were

Observer's signature: Paul McGrary

Date: 11/16/90

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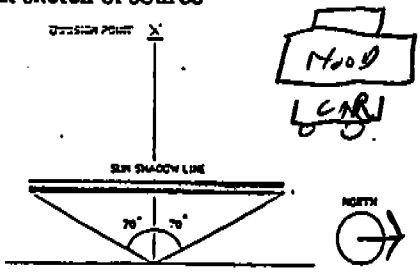
Run #2

Visual Emissions Observation Form

Client/Owner: Koppers Coke Plant	Observer's name: J. Burton	Project number: 5238
Plant: Dolmite, Ala. Unit: South Baghouse	Certified by: Wisc. DNR	Date Certified: 10/16/90
Observation date: 11/15/90	Start time: 10:40 Am	Stop time: 11:53 AM.
Source/process: Coke Plant		
Control equipment: Baghouse		
Operating mode: 100%		
Describe emission point: Push unit Hood		
Emission point height above ground level: 15'		
Emission point height relative to observer: 15'		
Distance to emission point: 30'		
Direction to emission point from observer: West		
Describe emission: Smoke		
Color of emission: Black		
Continuous / Fugitive / Intermittent		
Water vapor present: No / Yes	If yes, is plume attached / detached	
Point where opacity was determined: Outside of Hood		
Describe background: Sky		
Color of background: Blue		
Sky condition: Partly Cloudy		
Wind speed: 0-5mph	Wind dir.: NNW	
Ambient temperature: 68		
Relative humidity		
Comments: Watched area over Hood during push to get my readings. Push time 100 min		

0	15	30	45		0	15	30	45	
	#1 Furnace					Time		Readings	
0	Battery #5				30	10:43 Am		50	00
1	Battery #15				31	10:54 Am		00	00
2	Battery #25				32	11:04 Am		05	00
3	Battery #35				33	11:14 Am		00	00
4	Battery #45				34	11:23 Am		00	00
5	Battery #55				35	11:30 Am		00	00
6	Battery #65				36	11:37 Am		00	00
7	#4 & #6 Furnace				37				
8	~~Battery #7~~				38				
9					39				
10					40				
11					41				
12					42				
13					43				
14					44				
15					45				
16					46				
17					47				
18					48				
19					49				
20					50				
21					51				
22					52				
23					53				
24					54				
25					55				
26					56				
27					57				
28					58				
29					59				

Layout sketch of source



Range of opacity: % to % | # of readings above % were

Observer's signature: J. Burton

Date: 11/15/90

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JEFFERSON COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL HEALTH
AIR POLLUTION CONTROL PROGRAM

VISIBLE EMISSIONS OBSERVATION REPORT

Company Name Koppers Coke Plant V.E.E. No. [ ]

Source Baghouse #1 Battery Permit No. 000430

Start/Stop Time 10:40-11:52 Sky Condition Clear Date 111590

Observation Point W of Source Distance from Source 220'

Stack Height 50' Background Sky Plume Color +

Method of Evaluation 06.01.01 [1] Wind Direction S

Total Minutes Observed [75] Run #2

Highest 6 Minute Average [00]

Violation Observed [N] Source Test [Y]

Notice Number [ ]

Minutes Exceeding:

10% Opacity = [ ]

20% Opacity = [ ]

60% Opacity = [ ]

[ ] % Opacity = [ ]

Min.	Seconds 0	15	30	45	Min.	Seconds 0	15	30	45	Min.	Seconds 0	15	30	45	Min.	Seconds 0	15	30	45
0	0	0	0	0	15	0	0	0	0	30	0	0	0	0	45	0	0	0	0
1	0	0	0	0	16	0	0	0	0	31	0	0	0	0	46	0	0	0	0
2	0	0	0	0	17	0	0	0	0	32	0	0	0	0	47	0	0	0	0
3	0	0	0	0	18	0	0	0	0	33	0	0	0	0	48	0	0	0	0
4	0	0	0	0	19	0	0	0	0	34	0	0	0	0	49	0	0	0	0
5	0	0	0	0	20	0	0	0	0	35	0	0	0	0	50	0	0	0	0
6	0	0	0	0	21	0	0	0	0	36	0	0	0	0	51	0	0	0	0
7	0	0	0	0	22	0	0	0	0	37	0	0	0	0	52	0	0	0	0
8	0	0	0	0	23	0	0	0	0	38	0	0	0	0	53	0	0	0	0
9	0	0	0	0	24	0	0	0	0	39	0	0	0	0	54	0	0	0	0
10	0	0	0	0	25	0	0	0	0	40	0	0	0	0	55	0	0	0	0
11	0	0	0	0	26	0	0	0	0	41	0	0	0	0	56	0	0	0	0
12	0	0	0	0	27	0	0	0	0	42	0	0	0	0	57	0	0	0	0
13	0	0	0	0	28	0	0	0	0	43	0	0	0	0	58	0	0	0	0
14	0	0	0	0	29	0	0	0	0	44	0	0	0	0	59	0	0	0	0
										60	0	0	0	0	71	0	0	0	0
										61	0	0	0	0	72	0	0	0	0
										62	0	0	0	0	73	0	0	0	0
										63	0	0	0	0	74	0	0	0	0
										64	0	0	0	0					
										65	0	0	0	0					
										66	0	0	0	0					
										67	0	0	0	0					
										68	0	0	0	0					
										69	0	0	0	0					
										70	0	0	0	0					

Results and Recommendations:

Observer K Witherspoon [33]

Time Analysis [25]

ENV-AP-008-12/84 Revised

JEFFERSON COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL HEALTH
AIR POLLUTION CONTROL PROGRAM

VISIBLE EMISSIONS OBSERVATION REPORT

Company Name Koppers Coke Plant V.E.E. No. [ ]

Source Baghouse #1 Battery Permit No. 000430

Start/Stop Time 13:41-14:50 Sky Condition Clear Date 111590

Observation Point W of Source Distance from Source 220'

Stack Height 50' Background Sky Plume Color -

06.01.01
Method of Evaluation 1 Wind Direction S Minutes Exceeding:

Total Minutes Observed 75 Run #3 10% Opacity = [ ]

Highest 6 Minute Average 00 20% Opacity = [ ]

Violation Observed N Source Test Y 60% Opacity = [ ]

Notice Number [ ] % Opacity = [ ]

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

Results and Recommendations:

60	0	0	0	0	67	0	0	0	0	75				
61	0	0	0	0	68	0	0	0	0	76				
62	0	0	0	0	69	0	0	0	0	77				
63	0	0	0	0	70	0	0	0	0	78				
64	0	0	0	0	71	0	0	0	0	79				
65	0	0	0	0	72	0	0	0	0	80				
66	0	0	0	0	73	0	0	0	0	81				
					74	0	0	0	0	82				
										83				
										84				
										85				

Observer K Witherspoon 33 Time Analysis 1.25

ENV-AP-008-12/84 Revised

Runs

Page 1 of 2

Visual missions Observation Form

Client/Owner Koppers	Observer's name Paul McGary	Project number 5328
Plant Dolmite Unit North Stack	Certified by Wisconsin DNR	Date Certified 10/16/90
Observation date 11/16/90	Start time 10:14	Stop time 11:31

Source/process Coke Plant

Control equipment Baghouse

Operating mode 100%

Describe emission point Blue stack after baghouse next to quencher

Emission point height above ground level 40 ft

Emission point height relative to observer 35 ft

Distance to emission point 200 ft

Direction to emission point from observer ~~200 ft~~ N-W-N

Describe emission No Visible Emission

Color of emission N/A

Continuous Fugitive Intermittent

Water vapor present No Yes | If yes, is plume attached detached

Point where opacity was determined End of stack

Describe background Blue and white sky

Color of background Blue and white

Sky condition Partly Cloudy

Wind speed 0-5 | Wind dir. East

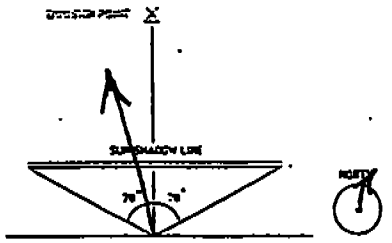
Ambient temperature 70

Relative humidity

Comments

*Quenching Vapor Blocking View

Layout sketch of source



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

Range of opacity: 0 % to % | # of readings above 0 % were

Observer's signature Paul McGary

Date 11/16/90

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Runs

1 of 2

Visual Emissions Observation Form

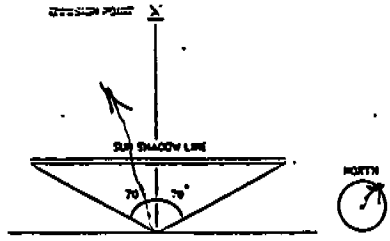
Client/Owner: Koppers	Observer's name: Paul McGray	Project number: 5328
Plant: Dolmite Unit: North Stack	Certified by: Wisconsin DNR	Date Certified: 10/16/90
Observation date: 11/16/90	Start time: 10:14	Stop time: 11:31
Source/process: Coke Plant		
Control equipment: Baghouse		
Operating mode: 100%		
Describe emission point: Blue stack after baghouse next to the quencher		
Emission point height above ground level: 40 Ft		
Emission point height relative to observer: 35 ft		
Distance to emission point: 200 ft		
Direction to emission point from observer: N-W-N		
Describe emission: No Visible Emission		
Color of emission: N/A		
(Continuous) Fugitive Intermittent		
Water vapor present: (No) Yes — If yes, is plume attached detached		
Point where opacity was determined: End of Stack		
Describe background: Blue Sky		
Color of background: Blue		
Sky condition: clear		
Wind speed: 0-5 — Wind dir.: East		
Ambient temperature: 40		
Relative humidity		
Comments: *Quenching Vapor Blocks View		
Layout sketch of source		

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

Range of opacity: 0 % to % | # of readings above 0 % were

Observer's signature: Paul McGray

Date: 11/16/90



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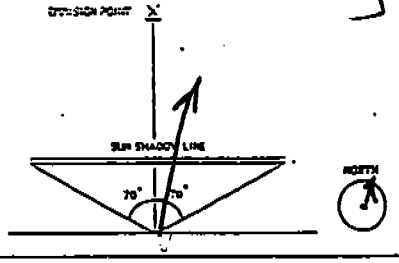
Kim E

Visual Emissions Observation Form

Client/Owner: Koppers	Observer's name: Paul McGary	Project number: 5338
Plant: Deltiste Unit: North Stack	Certified by: Wisconsin DNR	Date Certified: 10/16/96
Observation date: 11/16/96	Start time: 12:16	Stop time: 1:32
Source/process: Coke Plant		
Control equipment: Baghouse		
Operating mode: 100%		
Describe emission point: Blue stack after baghouse next to quencher		
Emission point height above ground level: 40ft		
Emission point height relative to observer: 35ft		
Distance to emission point: 200ft		
Direction to emission point from observer: N-W-N		
Describe emission: No Visible Emission		
Color of emission: N/A		
Continuous / Fugitive / Intermittent		
Water vapor present: No / Yes — If yes, is plume attached / detached		
Point where opacity was determined: End of Stack		
Describe background: Blue and White Sky		
Color of background: Blue and White		
Sky condition: Partly Cloudy		
Wind speed: 5-10 — Wind dir.: East		
Ambient temperature: 72		
Relative humidity		
Comments: * Quenching Vapor blocking View		
Layout sketch of source		



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

Range of opacity: 0 % to 0 %

# of readings above 0 % were

Observer's signature: Paul McGary

Date: 11/16/96

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Run 6   2 of 2

Visual Emissions Observation Form

Client/Owner: Koppers	Observer's name: Paul McGary	Project number: 5328
Plant: Dolmite Unit: North Stack	Certified by: Wisconsin DNR	Date Certified: 10/16/90
Observation date: 11/16/90	Start time: 12:16	Stop time: 1:32

Source/process: Coke Plant

Control equipment: Baghouse

Operating mode: 100 %

Describe emission point: Blue Stack after Baghouse next to quencher

Emission point height above ground level: 40 ft

Emission point height relative to observer: 35 ft

Distance to emission point: 200 ft

Direction to emission point from observer: N-W-N

Describe emission: No Visible Emission

Color of emission: N/A

Continuous Fugitive Intermittent

Water vapor present: No Yes | If yes, is plume attached detached

Point where opacity was determined: End of Stack

Describe background: Blue and White Sky

Color of background: Blue and White

Sky condition: Partly Cloudy

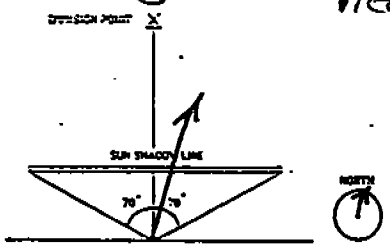
Wind speed: 5-10 | Wind dir.: East

Ambient temperature: 72

Relative humidity:

Comments: * Quenching Vapor Blocking View

Layout sketch of source



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

Range of opacity: 0 % to % | # of readings above 0 % were

Observer's signature: Paul McGary

Date: 11/16/90

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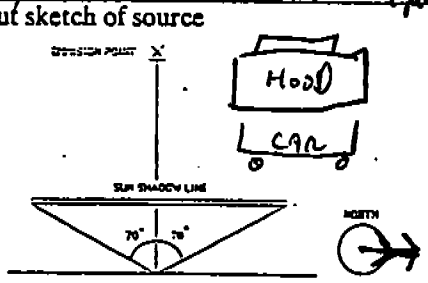
Run #1

Visual Emissions Observation Form

Client/Owner Kopper Coke Plant	Observer's name J. Burton	Project number 5238
Plant Bolmitrani Unit South Baghouse	Certified by Wisc. DNR	Date Certified 10/16/90
Observation date 11/15/90	Start time 8:26 A.M.	Stop time 9:30 AM.
Source/process Coke plant		
Control equipment Baghouse		
Operating mode 100 %		
Describe emission point Push unit Hood		
Emission point height above ground level 15'		
Emission point height relative to observer 15'		
Distance to emission point 30'		
Direction to emission point from observer West		
Describe emission smoke		
Color of emission Black		
Continuous Fugitive Intermittent		
Water vapor present No Yes	If yes, is plume attached detached	
Point where opacity was determined outside of Hood		
Describe background Sky		
Color of background Black		
Sky condition Partly cloudy		
Wind speed 0-5mph	Wind dir. WNW	
Ambient temperature 60		
Relative humidity		
Comments Watched area over Hood during push to get my observations. Push time [illegible]		

0	~~15~~	~~30~~	~~45~~	# 1 Furnace	0	~~15~~ Time	~~30~~	~~45~~ Readings	
~~0~~	Battery 13				~~30~~	8:26 Am		0	000
1	Battery 23				~~31~~	8:35 Am		0	000
2	Battery 33				~~32~~	8:40 Am		0	000
3	Battery 43				33	8:58 Am		0	000
4	Battery 53				34	9:05 Am		0	000
5	Battery 63				35	9:18 Am		0	000
6	~~Battery 4~~				36				
7					37				
8					38				
9					39				
10					40				
11					41				
12					42				
13					43				
14					44				
15					45				
16					46				
17					47				
18					48				
19					49				
20					50				
21					51				
22					52				
23					53				
24					54				
25					55				
26					56				
27					57				
28					58				
29					59				

Layout sketch of source



Range of opacity: % to % | # of readings above % were

Observer's signature J Burton

Date 11/15/90

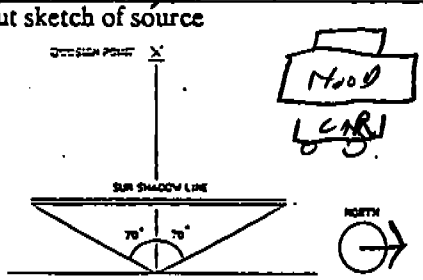
D:\vpforms\visualem

Run #2

Visual Emissions Observation Form

Client/Owner: Koppers Coke Plant	Observer's name: J. Burton	Project number: 5238
Plant: Dolmite, Ala. Unit: South Baghouse	Certified by: Wisc. DNR	Date Certified: 10/16/90
Observation date: 11/15/90	Start time: 10:40 AM	Stop time: 11:53 AM
Source/process: Coke Plant		
Control equipment: Baghouse		
Operating mode: 100%		
Describe emission point: Push unit Hood		
Emission point height above ground level: 15'		
Emission point height relative to observer: 15'		
Distance to emission point: 30'		
Direction to emission point from observer: West		
Describe emission: Smoke		
Color of emission: Black		
Continuous / Fugitive / Intermittent		
Water vapor present: No / Yes	If yes, is plume attached / detached	
Point where opacity was determined: Outside of Hood		
Describe background: Sky		
Color of background: Blue		
Sky condition: Partly Cloudy		
Wind speed: 0-5mph	Wind dir.: NNW	
Ambient temperature: 68		
Relative humidity		
Comments: Watched area over Hood during push to get my readings. Push time 100 min		

Layout sketch of source



0	15	30	45		0	15	30	45	
	#1 Furnace					Time		Readings	
0	Battery #5				30	10:43 AM		50	00
1	Battery #15				31	10:54 AM		00	00
2	Battery #25				32	11:04 AM		05	00
3	Battery #35				33	11:14 AM		00	00
4	Battery #45				34	11:23 AM		00	00
5	Battery #55				35	11:30 AM		00	00
6	Battery #65				36	11:39 AM		00	00
7	#4A-#6 Furnace				37				
8	~~Battery #7~~				38				
9					39				
10					40				
11					41				
12					42				
13					43				
14					44				
15					45				
16					46				
17					47				
18					48				
19					49				
20					50				
21					51				
22					52				
23					53				
24					54				
25					55				
26					56				
27					57				
28					58				
29					59				

Range of opacity: % to % | # of readings above % were

Observer's signature: J. Burton

Date: 11/15/90

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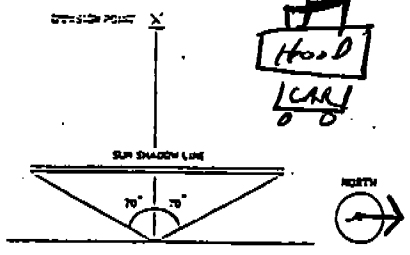
Pen #3

Visual Emissions Observation Form

Client/Owner: Koppers Coke Plant	Observer's name: Jim Burton	Project number: 5238
Plant: Dolomite, Ala. Unit: South Bathouse	Certified by: Wisc. D.N.R.	Date Certified: 10/16/90
Observation date: 11/15/90	Start time: 1:30 PM.	Stop time: 2:46 P.M.
Source/process: Coke Plant		
Control equipment: Bag House		
Operating mode: 100%		
Describe emission point: Push unit Hood		
Emission point height above ground level: 15'		
Emission point height relative to observer: 15'		
Distance to emission point: 30'		
Direction to emission point from observer: West		
Describe emission: Smoke		
Color of emission: Black		
Continuous / Fugitive / (Intermittent)		
Water vapor present: (No) / Yes — If yes, is plume attached / detached		
Point where opacity was determined: Outside of Hood		
Describe background: Sky		
Color of background: Blue		
Sky condition: Partly Cloudy		
Wind speed: 5-10 MPH Wind dir.: N		
Ambient temperature: 70		
Relative humidity		
Comments: Watched Area over Hood During Push to get Observations, Push Time too Few		

Layout sketch of source



	Furnace #1	Time	Readings
0			
30	Battery #7	1:31 PM.	0 0 0 0
31	Battery #17	1:42 PM	0 0 0 0
32	Battery #27	1:51 PM	0 0 0 0
33	Battery #37	2:03 PM.	0 0 0 0
34	Battery #47	2:11 PM	0 10 5 0
35	Battery #57	2:19 PM	0 0 0 0
36	Foundry #4	2:37 PM	5 30 30 5
37	Battery #37	2:45 PM	0 0 0 0
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			
51			
52			
53			
54			
55			
56			
57			
58			
59			

Range of opacity: % to %

# of readings above % were

Observer's signature: J. Burton

Date: 11/16/90

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Visual Emissions Observation Form

Run #1

Client/Owner: Koppers Coke Plant	Observer's name: Jim Burton	Project number: 523.8
Plant: Dolmite Pla. Unit: North Baghouse	Certified by: Wisc. DNR	Date Certified: 10/16/90
Observation date: 11/16/90	Start time: 8:05 AM.	Stop time: 9:21 AM

Source/process: Coke Plant

Control equipment: Baghouse

Operating mode: 100%

Describe emission point: Push Hood

Emission point height above ground level: 15'

Emission point height relative to observer: 15'

Distance to emission point: 30'

Direction to emission point from observer: West

Describe emission: Smoke

Color of emission: Black

Continuous / Fugitive / Intermittent

Water vapor present: No / Yes — If yes, is plume attached / detached

Point where opacity was determined: Above Hood Area

Describe background: Sky

Color of background: Blue

Sky condition: Clear

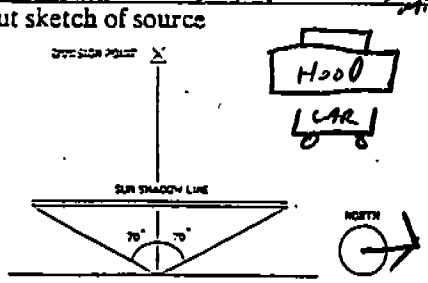
Wind speed: 0-5mph — Wind dir.: N

Ambient temperature: 60

Relative humidity:

Comments: Watched Area Around Hood to get my observations Push Time 100 min

Layout sketch of source



0	15	30	45	Time	0	15	30	45	
	Furnace #2B								
0	Battery #	5		8:05 AM	30	0	0	0	0
1	Battery #	15		8:12 AM	31	0	0	0	0
2	Battery #	25		8:20 AM	32	0	0	0	0
3	Furnace #2A				33				
4	Battery #	3		8:41 AM	34	0	0	0	0
5	Battery #	13		8:50 AM	35	0	0	0	0
6	Battery #	23		8:58 AM	36	0	5	10	0
7	Battery #	33		9:06 AM	37	0	0	0	0
8	Battery #	43		9:17 AM	38	0	0	0	0
9					39				
10					40				
11					41				
12					42				
13					43				
14					44				
15					45				
16					46				
17					47				
18					48				
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23					53				
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25					55				
26					56				
27					57				
28					58				
29					59				

Range of opacity: % to % — # of readings above % were

Observer's signature: J Burton

Date: 11/16/90

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JEFFERSON COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL HEALTH
AIR POLLUTION CONTROL PROGRAM

VISIBLE EMISSIONS OBSERVATION REPORT

Company Name Koppers Coke Plant V.E.E. No. [ ]

Source Baghouse Battery 2 Permit No. 900430

Start/Stop Time 8:15-9:15 Sky Condition Clear Date 11/16/90

Observation Point S of source Distance from Source 200'

Stack Height 50' Background Sky Plume Color [ ]

Method of Evaluation 06.01.01 [1] Wind Direction S

Total Minutes Observed [ ] Run # 1

Highest 6 Minute Average [ ]

Violation Observed [N] Source Test [Y]

Notice Number [ ]

Minutes Exceeding:
10% Opacity = [ ]
20% Opacity = [ ]
60% Opacity = [ ]
[ ] % Opacity = [ ]

Min	Seconds 0	15	30	45
0	0	0	0	0
1	0	0	0	0
2	0	/	/	/
3	0	0	0	0
4	0	/	0	0
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
8	0	0	0	0
9	0	0	0	/
10	/	/	0	0
11	0	0	0	/
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0

Min.	Seconds 0	15	30	45
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	/	/	/	/
19	/	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0

Min	Seconds 0	15	30	45
30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	/	/	/
40	/	/	/	/
41	0	0	0	0
42	0	0	0	0
43	0	0	0	0
44	0	0	0	0

Min	Seconds 0	15	30	45
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
48	/	/	/	/
49	/	/	/	/
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	/	/	/	/
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0

Results and Recommendations:

Observer K Witherspoon [33]

Time Analysis 1:00

ENV-AP-008-12/84 Revised

JEFFERSON COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL HEALTH
AIR POLLUTION CONTROL PROGRAM

VISIBLE EMISSIONS OBSERVATION REPORT

Company Name: Koppers Coke Plant V.E.E. No.:

Source: Baghouse Battery 2 Permit No.: 0094300

Start/Stop Time: 9:15-9:33 Sky Condition: Clear Date: 1/1/16/90

Observation Point: S of Source Distance from Source: 200

Stack Height: 50' Background: Sky Plume Color:

Method of Evaluation: 9.01.01 [1] Wind Direction: S

Total Minutes Observed: Run #1

Highest 6 Minute Average:

Violation Observed: [N] Source Test [Y]

Notice Number:

Minutes Exceeding:
10% Opacity =
20% Opacity =
60% Opacity =
% Opacity =

Min.	Seconds 0	15	30	45
0	0	0	0	0
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	/
5	/	/	/	0
6	0	0	0	0
7	0	0	/	/
8	/	/	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0

Min.	Seconds 0	15	30	45
15	0	/	/	/
16	0	0	/	0
17	0	0	0	0
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

Min	Seconds 0	15	30	45
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				

Min	Seconds 0	15	30	45
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				

Results and Recommendations:

Observer: K Witherspoon [3 3]

Time Analysis [2 5]

ENV-AP-008-12/84 Revised

JEFFERSON COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL HEALTH
AIR POLLUTION CONTROL PROGRAM

Source Inspection Report

Company Name Koppers Coke Plant

Source Batteries 1; 4A4B Permit No. 0 0 0 4 3 0 8 6 0 3

Person Contacted N/A Time 8:26 Date 1 1 1 5 9 0

Purpose Observe Pushes During Stack Test Notice No.

Regulation(s) Violated

Inspection Code (20,23,27,50,54) 5 4 Time Spent: 7.50

Inspector(s) Life 4 4

Results and Recommendations:

Run I

Oven	Battery	Time	Percent Capture
#13	1	8:26+2	90%
#23	1	8:33	100%
#33	1	8:48	100%
#43	1	8:57	100%
#53	1	9:05	100%
#63	1	9:17	100%

Run II

#5	1	10:42+2	100%
#15	1	10:52	100%
#25	1	11:03	100%
#35	1	11:13	100%
#45	1	11:22	100%
#55	1	11:28	100%
#65	1	11:38	100%
#7	4A	11:50	100%

ENV-AP-009-09/89-Revised

JEFFERSON COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL HEALTH
AIR POLLUTION CONTROL PROGRAM

Source Inspection Report

Company Name _____

Source _____ Permit No. _____

Person Contacted _____ Time _____ Date _____

Purpose _____ Notice No. _____

Regulation(s) Violated _____

Inspection Code (20,23,27,50,54) _____ Time Spent: _____

Inspector(s) _____

Results and Recommendations: Run III

Oven #	Battery	Time	Percent Capture
1	5	12:15	95%
11	5	12:26	100%
21	5	12:36	95%
31	5	12:45	100%
7	2A	12:55	90%
17	2A	1:02	90%
27	2A	1:12	95%
37	2A	1:26	100%

JEFFERSON COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL HEALTH
AIR POLLUTION CONTROL PROGRAM

Source Inspection Report

Company Name _____

Source _____ Permit No. _____

Person Contacted _____ Time _____ Date _____

Purpose _____ Notice No. _____

Regulation(s) Violated _____

Inspection Code (20,23,27,50,54) _____ Time Spent: _____

Inspector(s) _____

Results and Recommendations:

Run III

Oven	Battery	Time	Percent Capture
7	1	1:29	100%
17	1	1:40	100%
27	1	1:48	100%
37	1	2:00	100%
47	1	2:10	95%
57	1	2:17	100%
37	4A	2:37	50%
47	4A	2:43	100%

JEFFERSON COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL HEALTH
AIR POLLUTION CONTROL PROGRAM

Source Inspection Report

2717
2713

Company Name Koppers Coke Plant

Source Batteries 2A, 2B, 5 Permit No. 0004308604

Person Contacted N/A Time 8:05 Date 111690

Purpose Observe Pushes During Stack Test Notice No.

Regulation(s) Violated

Inspection Code (20,23,27,50,54) 54 Time Spent: 7.50

Inspector(s) Life 44

Results and Recommendations:

Run I

Oven #	Battery	Time	Percent Capture
5	2B	8:06	100%
15	2B	8:10	100%
25	2B	8:20	100%
3	2A	8:40	95%
13	2A	8:50	95%
23	2A	8:56	100%
33	2A	9:05	100%
43	2A	9:16	100%

Run II

8	5	10:13	100%
18	5	10:21	85%
28	5	10:30	100%
5	2A	10:54	85%
15	2A	11:01	90%
25	2A	11:09	100%
35	2A	11:18	95%
[illegible]	[illegible]	11:27	100%

ENV-AP-009-09/89-Revised

FIELD DATA PRINTOUTS

RAW DATA SET # 1

1)	Plant	KOPPERS INDUSTRY	17	Heater Box Setting	
2)	Location	SOUTH BAGHOUSE	18)	Probe Length'.' Ft.	
3)	Operator	K.S.	19)	Nozzle Diameter'.'In.	0.188
4)	Date	11/15/90	20)	Probe Heater Setting	
5)	Run No.	1	21)	% O2	20.[illegible]
6)	Sample Box No.		22)	% CO2	0.0
7)	Meter Box No.	U	23)	Ml. H2O	9
8)	Meter H@	1.791	24)	Gr. Silica Gel	7
9)	K Factor		25)	Total	15
10)	Pitot Factor	0.84	26)	Start Time	8:26 AM
11)	Leak Rate Before	0.003@15	27)	Finish Time	9:31 AM
12)	Leak Rate After	0.003@15	28)	Yo.	1.0002
13)	Static Pres., in H2O	-0.1	29)	Stack Area	47.68
14)	Ambient Temperature		30)	Sampling Time (MIN/PT)	2.5
15)	Barometric Pressure	29.80	31)	Initial Volume	574.00
16)	Assumed Moisture, %		32)	FILTER & BEAKER #'S	32717F
				1B	

Pt. #	0	Vac.	Ts	DPs	DH	Vm	Tm in	Tmout	Tc	Tb	%I	
0 - 0						574.00					K.S.	
1 - 1	2.5	3	104	1.10	1.41	575.65	86	70	50	237	99.4	
1 - 2	2.5	3	98	0.98	1.25	577.17	92	72	50	242	95.8	
1 - 3	2.5	3	95	0.98	1.25	578.78	96	74	46	249	100.6	
1 - 4	2.5	3	106	0.95	1.22	580.21	98	74	46	252	91.5	
1 - 5	2.5	3	95	0.98	1.25	581.65	102	76	52	258	89.3	*
1 - 6	2.5	3	104	0.94	1.20	583.27	102	76	52	259	103.4	
1 - 7	2.5	4	99	1.20	1.54	584.95	104	78	52	252	94.2	
1 - 8	2.5	4	108	1.20	1.54	586.64	106	78	54	249	95.4	
1 - 9	2.5	4	114	1.20	1.54	588.33	106	80	52	258	95.7	
1 - 10	2.5	4	99	1.40	1.79	590.15	106	80	56	261	94.2	
1 - 11	2.5	4	105	1.30	1.66	591.93	108	80	56	265	96.0	
1 - 12	2.5	3	92	0.94	1.20	593.47	106	82	58	261	96.4	
2 - 1	2.5	3	105	1.10	1.41	595.13	102	82	50	270	97.6	
2 - 2	2.5	4	100	1.20	1.54	596.83	104	84	54	270	94.9	
2 - 3	2.5	4	108	1.20	1.54	598.55	106	84	56	266	96.6	
2 - 4	2.5	3	116	1.00	1.28	600.12	106	84	58	256	97.2	
2 - 5	2.5	3	104	1.05	1.34	601.72	106	84	60	259	95.6	
2 - 6	2.5	3	107	1.05	1.34	603.34	108	84	60	256	96.9	
2 - 7	2.5	3	115	1.05	1.34	604.52	108	84	60	260	71.1	*
2 - 8	2.5	3	119	1.05	1.34	606.14	108	86	60	255	97.8	
2 - 9	2.5	3	111	1.00	1.28	607.72	108	86	58	254	97.0	
2 - 10	2.5	4	100	1.20	1.54	609.42	108	86	58	250	94.4	
2 - 11	2.5	4	108	1.20	1.54	611.14	110	86	58	249	96.0	
2 - 12	2.5	4	115	1.20	1.54	612.88	110	86	58	250	97.8	

60	105	1.049	1.41	38.88	92
Total	Avg.	Root	Avg.	Volume	Avg.

1) Plant	COPPERS INDUSTR	17) Heater Box Setting	
2) Location	NORTH BAGHOUSE	18) Probe Length , Ft.	
3) Operator	K.S.	19) Nozzle Diameter, In.	[illegible]
4) Date	11/16/90	20) Probe Heater Setting	
5) Run No.	3	21) % O2	[illegible]
6) Samole Box No.		22) % CO2	2.2
7) Meter Box no.	6	23) Ml. H2O	[illegible]
8) Meter H@	1.991	24) GM. Silica Gel	[illegible]
9) K Factor		25) Total	[illegible]
10) Pitot Factor	0.84	26) Start Time	[illegible]
11) Leak Rate Before	0.002@10	27) Finish Time	1:30 PM
12) Leak Rate After	0.002@10	28) Yd.	1.0032
13) Static Pres., in H2O	-0.10	29) Stack Area	47.68
14) Ambient Temperature		30) Sampling Time (MIN/PT)	3
15) Barometric Pressure	29.59	31) Initial Volume	820.10
16) Assumed Moisture, %		32) FILTER & BEAKER #'S	32718F 6B

Pt. #	Ø	Vac.	Ts	DPs	DH	Vm	Tm in	Tmout	Tc	Tb	%I
Ø - Ø						820.10					K.S.
1 - 1	3	3	Ø98	1.10	1.52	822.15	86	82	44	256	100.8
1 - 2	3	3	108	1.05	1.45	824.15	90	82	54	268	101.2
1 - 3	3	3	102	1.05	1.45	826.17	92	82	54	259	101.5
1 - 4	3	4	100	1.20	1.66	828.28	92	82	56	260	99.0
1 - 5	3	3	100	1.05	1.45	830.32	92	82	54	254	102.3
1 - 6	3	4	109	1.15	1.59	832.40	94	80	54	254	100.5
1 - 7	3	4	103	1.25	1.73	834.58	96	80	54	255	100.3
1 - 8	3	6	98	1.70	2.35	837.07	98	82	54	256	97.6
1 - 9	3	6	109	1.60	2.21	839.55	100	82	54	250	101.0
1 - 10	3	6	99	1.60	2.21	842.03	100	82	56	254	100.1
1 - 11	3	5	99	1.55	2.14	844.47	100	82	56	256	100.0
1 - 12	3	5	118	1.40	1.93	846.79	100	82	58	256	101.7
2 - 1	3	5	105	1.50	2.07	849.18	96	84	56	259	100.3
2 - 2	3	4	113	1.30	1.79	851.42	98	84	58	261	101.4
2 - 3	3	5	109	1.40	1.93	853.73	100	84	58	258	100.3
2 - 4	3	4	109	1.25	1.73	855.91	100	84	60	257	100.1
2 - 5	3	5	120	1.35	1.86	858.17	104	84	64	256	100.5
2 - 6	3	5	113	1.55	2.14	860.59	106	84	62	256	99.7
2 - 7	3	4	113	1.00	1.38	862.58	104	86	60	256	101.9
2 - 8	3	3	116	0.80	1.10	864.37	102	86	58	255	102.9
2 - 9	3	3	113	0.80	1.10	866.14	100	86	58	254	101.6
2 - 10	3	3	111	0.74	1.02	867.88	106	86	56	253	103.1
2 - 11	3	3	117	0.70	0.97	869.57	104	84	56	250	103.9
2 - 12	3	2	115	0.65	0.90	871.21	92	84	54	249	105.6
72 Total			108 Avg.	1.085 Root	1.65 Avg.	51.11 Volume		91 Avg.			

STATISTICAL ANALYSIS

STATISTICAL ANALYSIS KOPPERS INDUSTRY

LOCATION - SOUTH BAGHOUSE

RUN	DATE OF RUN	AVERAGE SQ. RT. VEL PRES	AVERAGE TEMP	STANDARD DEVIATION SQ. RT. VEL PRES	STANDARD DEVIATION TEMP	VARIANCE SQ. RT. VEL PRES	VARIANCE TEMP	RMS DEVIATION SQ. RT. VEL PRES	RMS DEVIATION TEMP
1	11/15/90	1.049	105.0	0.059	7.2	0.003	52.0	5.630	6.9
2	11/15/90	1.050	104.6	0.069	5.7	0.005	34.3	6.576	5.6
3	11/15/90	1.067	104.1	0.025	4.9	0.004	23.8	6.350	4.8

LOCATION - NORTH BAGHOUSE

RUN	DATE OF RUN	AVERAGE SQ. RT. VEL PRES	AVERAGE TEMP	STANDARD DEVIATION SQ. RT. VEL PRES	STANDARD DEVIATION TEMP	VARIANCE SQ. RT. VEL PRES	VARIANCE TEMP	RMS DEVIATION SQ. RT. VEL PRES	RMS DEVIATION TEMP
1	11/16/90	1.051	97.0	0.127	9.9	0.016	99.0	12.049	10.3
2	11/16/90	1.062	106.8	0.132	6.8	0.017	46.8	12.454	6.4
3	11/16/90	1.085	108.2	0.147	6.9	0.022	48.3	13.535	6.4

CHAIN OF CUSTODY

2458

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
5238	Koppers

SAMPLERS: (Signature) David Lloyd

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	REMARKS
	7	11/15	9:30am	Front ½ Run 1 @ SouthBH		
	8	11/15	11:55am	" 2 "		
	9	11/15	2:48pm	" 3 "		
	10	11/16	8:30am	" 1 @ NorthBH		
	11	11/16	10:30am	" 2 "		
	12	11/16	12:30pm	" 3 "		
	13	11/15	8:15am	Pretest probe wash		
	14	11/15	3:30pm	Acetone Blank		

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
David Lloyd	9/25	WA FC			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by:	Date / Time		

REMARKS:

Clean Air Engineering
207 N. Woodwork Ln.
Palatine, IL 60067
312/991-3300

2983

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
5238	Koppers

SAMPLERS: (Signature) David Lloyd

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	REMARKS
32707						
32708						
32709						
32704						
32705						
32706						
32715	3	11/15	2:48pm	Run3 - South Baghouse	1	
32710	2	11/15	11:55am	Run2 - South Baghouse	1	
32702	4	11/16	8:30am	Run1 - North BH	1	
32703	5	11/16	10:30am	Run2 - North BH	1	
32717	1	11/15	7:21am	Run1 - South Baghouse	1	
32718	6	11/16	12:30	Run3 - North BH	1	

10 cm filters

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
J. Fenerty	11/12/90 9:00				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by:	Date / Time		

REMARKS:

Clean Air Engineering
207 N. Woodwork Ln.
Palatine, IL 60067
312/991-3300

PROCESS DATA

A1:W82 & Y1:AX56

WOODWARD COKE PLANT - BATTERY PUSHING SCHEDULE

THURSDAY DATE - 11/15/90

MESSAGES: XX INDICATES OVEN MAINTENANCE TO BE PERFORMED!

7 - 3 SHIFT

	[#4]	[#1]	TIME	[#2A]	[#2B]	[#5]
1		1	6:35			24
2		11	6:48	6		
3		21	7:01	16		
4		31	7:14	26		
5		41	7:27	36		
6		51	7:40		3	
7		61	7:53		13	
8	31		8:06		23	
9	41		8:19		XXX	
10	51		8:32			6
11		13	8:45			26
12		23	8:58	8		
13		33	9:11	18		
14		43	9:24	28		
15		53	9:37	38		
16	4	63	9:50		5 *	
17	14		10:03		15	
18	24		10:16		25 *	
19	34		10:29		XXX	
20	44		10:41			8
21	54	5	10:54			18
22		15	11:07	1		28
23		25	11:20	11		
24		35	11:33	21		
25		45	11:46	31		
26		55	11:59	41		
27		65	12:12		7	
28	7		12:25		17	
29	17		12:38		27	
30	27	7	12:51		XXX	
31		17	1:04			1
32		27	1:17			11
33		37	1:30			21
34		47	1:43	3		31
35		57	1:56	13		
36	37		2:09	23		
37	47		2:22	33		

Run 1 — Run 2 — 36

Battery	COUNT	
4	42	FOUNDRY
1	81	FURNACE
2A	53	FURNACE
2B	29	FURNACE
5	30	FURNACE
PUSHES	235	TOTAL
2B	+ 8	
	243	

42	FOUNDRY	
193	FURNACE	

NOTES: #4 BATTERY - FOUNDRY

#1,2A,2B,5, BATTERY - FURNACE.

3 - 11 SHIFT

	[#4]	[#1]	TIME	[#2A]	[#2B]	[#5]
1	57		2:35	43		
2		9	2:48		9	
3		19	3:01		19	
4		29	3:14		29	
5		39	3:27	5	32 XXX	
6		49	3:40	15	42	
7	10	59	3:53	25		
8	20 *		4:06	35		
9	40		4:19			3
10	50 *		4:32		38	13
11	60	2	4:45			23
12		12	4:58	7		33
13		22	5:11	17		
14		32	5:24	27		
15		42	5:37	37		
16		52	5:50		2	
17		62	6:03		12	
18	3		6:16		22	
19	13		6:29		XXX	
20	23	4	6:41		XXX	
21		14	6:54			5
22		24	7:07			15
23		34	7:20	9		25
24		44	7:33	19		
25		54	7:46	29		
26		64	7:59	39		
27	33		8:12		4 *	
28	43		8:25		14	
29	53	6	8:38		24 *	
30		16	8:51		XXX	
31		26	9:04			7
32		36	9:17			17
33		46	9:30	2		27
34		56	9:43	12		
35		66	9:56	22		
36	6		10:09	32		
37	16		10:22	42		

11 - 7 SHIFT

	[#4]	[#1]	TIME	[#2A]	[#2B]	[#5]
1	26		10:35		6	
2		8	10:48		16	
3		18	11:01		26	
4		28	11:14		33 XXX	
5		38	11:27		35 *	9
6		48	11:40	4		29
7		58	11:53	14		
8	36		12:06	24		
9	46		12:19	34		
10	56	1	12:32	44		
11		11	12:45		8	
12		21	12:58		18	
13		31	1:11		28	
14		41	1:24	6	XXX	
15		51	1:37	16	34	
16	9	61	1:50	26	39	
17	19		2:03	36		
18	39		2:16			2
19	49 *		2:29			12
20	59	3	2:41			22
21		13	2:54	8		32
22		23	3:07	18		
23		33	3:20	28		
24		43	3:33	38		
25		53	3:46		1	
26	2	63	3:59		11	
27	12		4:12		21	
28	32		4:25		31	
29	42		4:38		XXX	
30	52		4:51			4
31		5	5:04			14
32		15	5:17	1		24
33		25	5:30	11		
34		35	5:43	21		
35		45	5:56	31		
36		55	6:09	41		
37		65	6:22		3	

A1:W82 & Y1:AX56

WOODWARD COKE PLANT - BATTERY PUSHING SCHEDULE

FRIDAY DATE - 11/16/90

MESSAGES: XX INDICATES OVEN MAINTENANCE TO BE PERFORMED!

Battery	COUNT	
4	44	FOUNDRY
1	79	FURNACE
2A	49	FURNACE
2B	30	FURNACE
5	31	FURNACE
PUSHES	233	TOTAL

2B + 8 = 241

44 FOUNDRY

189 FURNACE

NOTES: #4 BATTERY - FOUNDRY

#1,2A,2B,5, BATTERY - FURNACE.

7 - 3 SHIFT

	[#4]	[#1]	TIME	[#2A]	[#2B]	[#5]
1	5		6:35		13	
2	15		6:48		23	
3	25	7	7:01		XXX	
4		17	7:14			6
5		27	7:27			16
6		37	7:40	3		26
7		47	7:53	13	1st Run	
8		57	8:06	23		
9	35		8:19	33		
10	45		8:32	43		
11	55	9	8:45		5 *	
12		19	8:58		15	
13		29	9:11		25 *	
14		39	9:24		XXX	
15		49	9:37			8
16	8	59	9:50			18
17	18		10:03	5	2nd Run	28
18	28		10:16	15		
19	48		10:29	25		
20	58	2	10:41	35		
21		12	10:54		7	
22	pp W.	22	11:07		~~17~~	
23	71	32	11:20		27	
24		42	11:33		XXX	
25		52	11:46			1
26		62	11:59			11
27	1		12:12	7	3rd Run	21
28	11		12:25	17		31
29	21 *		12:38	27		
30		4	12:51	37		
31		14	1:04		9	
32		24	1:17		19	
33		34	1:30		29	
34		44	1:43		37 XXX	
35		54	1:56	9	41	
36		64	2:09	19		
37	31		2:22	29		

3 - 11 SHIFT

	[#4]	[#1]	TIME	[#2A]	[#2B]	[#5]
1	41		2:35	39		
2	51	6	2:48			3
3		16	3:01			13
4		26	3:14			23
5		36	3:27	2		33
6		46	3:40	12		
7		56	3:53	22		
8	4	66	4:06	32		
9	14		4:19	42		
10	24		4:32		2	
11	34		4:45		12	
12	44		4:58		22	
13	54	8	5:11		XXX	
14		18	5:24		XXX	
15		28	5:37			5
16		38	5:50			15
17		48	6:03	4		25
18		58	6:16	14		
19	7		6:29	24		
20	17		6:41	34		
21	27	1	6:54	44		
22		11	7:07		4 *	
23		21	7:20		14	
24		31	7:33		24 *	
25		41	7:46		36 XXX	
26		51	7:59			7
27		61	8:12			17
28	37		8:25	6		27
29	47		8:38	16		
30	57		8:51	26		
31		3	9:04	36		
32		13	9:17		6	
33		23	9:30		16	
34		33	9:43		26	
35		43	9:56		32 XXX	
36		53	10:09		42	9
37		63	10:22			29

11 - 7 SHIFT

	[#4]	[#1]	TIME	[#2A]	[#2B]	[#5]
1	10		10:35	8		
2	20 *		10:48	18		
3	40		11:01	28		
4	50 *		11:14	38		
5	60	5	11:27		8	
6		15	11:40		18	
7		25	11:53		28	
8		35	12:06	1	XXX	
9		45	12:19	11	38	
10		55	12:32	21		
11		65	12:45	31		
12	3		12:58	41		
13	13		1:11			2
14	23	7	1:24			12
15		17	1:37			22
16		27	1:50	3		32
17		37	2:03	13		
18		47	2:16	23		
19		57	2:29	33		
20	33		2:41	43		
21	43		2:54		1	
22	53	9	3:07		11	
23		19	3:20		21	
24		29	3:33		31	
25		39	3:46		XXX	
26		49	3:59			4
27		59	4:12			14
28	6		4:25	5		24
29	16		4:38	15		
30	26	2	4:51	25		
31		12	5:04	35		
32		22	5:17		3	
33		32	5:30		13	
34		42	5:43		23	
35		52	5:56		33 XXX	
36		62	6:09			6
37	36		6:22		35 *	16

STACK TEST DATA FOR KOPPERS NEW COKE PUSH CONTROLS

1990 DATE RUN #	Length OF SAMPLING (MIN)	Battery No.	No. of Ovens Pushed	TOTAL TIME DAMPER CLOSED (MIN.)	% of Sample Time The DAMPER Was CLOSED (%)	Average Time Damper is Closed per Push per Run (min)	Particu. Allowat Emissic (lbs/h.
11-15							
1	60 (2.5 min/pt)	#1	15, 23, 33, 43, 53, & 63 TOTAL = 6	25	41.67	4.2	2.20
2	72 (3.0 min/pt)	#1 #4	5, 15, 25, 35, 45, 55, 65 7 TOTAL = 8	18	25.0	2.3	2.40
3 SOUTH BH.	72 (3.0 min/pt)	#1 #4	7, 17, 27, 37, 47, & 57 37, & 47 TOTAL = 8	8	11.11	1.0	2.40 COMBINE AVERAGE-3 2.33
11-16							
1	72 (3.0 min/pt)	#2B #2A	5, 15, & 25 3, 13, 23, 33, & 43 TOTAL = 8	12	16.67	1.5	2.40
2	72 (3.0 min/pt)	#5 #2A #2B	8, 18, & 28 5, 15, 25, & 35 7 TOTAL = 8	7	9.72	0.9	2.40
3 NORTH BH.	72 (3.0 Min./pt)	#5 #2A	1, 11, 21, & 31 7, 17, 27, & 37 TOTAL = 8	9	12.5	1.1	2.40 Combined Aver OF 3 RUNS 2.40