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.

AP-42 Section 12.2
Reference
Report Sect. 4
Reference 157

ENTEC Services, Inc.
Pollution Control System Evaluations and Source Emission Testing

FACSIMILE TRANSMITTAL SHEET

TO:

NAME: Butch Allen

COMPANY: Jefferson County Dept. of Health

LOCATION: Birmingham, AL

TELEPHONE: FAX: 939-3019 VOICE: 930-1276

FROM: Glen Corley
ENTEC SERVICES, INC.
HUEYTOWN, ALABAMA
FAX: (205) 491-6614 VOICE (205) 491-6676

DATE: March 21 1996 TIME: 9:05

TOTAL PAGES TRANSMITTED, INCLUDING THIS SHEET: 4

MESSAGE: Originals Being Mailed today

ENTEC Services, Inc.
Pollution Control System Evaluations and Source Emission Testing

March 19, 1996

Mr. Walter Allen
Jefferson County Department of Health
2648 Sixth Avenue South
P. O. Box 2648
Birmingham, Alabama 35202

Re: Emission Testing
Koppers Industries - Woodward Coke Plant
Dolomite, Alabama
Entec Project No.: 96-1002

Dear Mr. Allen,

As per your request in the letter faxed to Mr. Dan Bell of Koppers Industries on March 18, 1996 the minimum detection levels of instruments used to determine the TRS values during the eight hour test performed at Koppers Industries in Dolomite, Alabama on January 25, 1996 are listed below. Also enclosed is a corrected summary page (page 2-3) showing the last item to be Particulate Mass Rate / Pounds per Hour.

GAS	MIN. DET. LEVEL
Hydrogen Sulfide	100PPM
Carbonyl Sulfide	5PPM
Carbon Disulfide	5PPM
Methyl Mercaptan	5PPM
Dimethyl Sulfide	5PPM
Dimethyl Disulfide	5PPM

25 Commerce Avenue • Suite 104 • Hueytown, Alabama 35023 • Phone: (205) 491-6676 • FAX: (205) 491-6614

If you should have any other questions, please call us at (205) 491-6676.

Sincerely,
ENTEC SERVICES, INC.

Glen A. Corley

Glen A. Corley
President

Attachments: Summary Page Correction

GAC/md

ENTEC Services, Inc.

1429 2nd Avenue North-Bessemer, Alabama 35020

EMISSION CALCULATIONS

Client: Koppers Industries-Woodward Coke Plant Job No.: 96 -1002

Source: Number 1 Stack Data Input By: Glen Corley

INPUT DATA

Run Number	1	2	3	AVERAGE
Date	1-25-96	1-25-96	1-25-96	
Time Began-Ended	805-1000	1310-1432	1622-1748	
Sampling Time, Minutes	60	60	60	60
Stack Area, Square Feet	50.2660	50.2660	50.2660	
Barometric Pressure, Inches of mercury	29.94	29.99	29.90	29.94
Stack Pressure, Inches of mercury	29.86	29.90	29.82	29.86
Pitot Tube Correction factor	0.04	0.84	0.84	
Meter Correction Factor	1.011	1.011	1.011	
Nozzle Diameter, Inches	0.4710	0.4710	0.4710	
Meter Volume, Cubic feet	39.100	42.738	35.850	39.229
Meter Temperature, Degrees F	54.0	81.6	76.5	71.0
Average Orifice Velocity Head, Inches of Water	1.40	1.63	1.15	1.39
Volume H2O Collected, MilliLiters	89.0	89.0	76.5	84.8
CO2 Concentration, Percent	3.53	3.60	3.47	3.53
O2 Concentration, Percent	13.50	13.40	13.73	13.54
Average Square Root of Velocity Head, Inches of Water	0.235	0.254	0.212	0.234
Stack Temperature, Degrees F	505.7	483.3	473.2	487.4
Carbon Monoxide Concentration, ppm	4.2	0.0	1.1	1.8
Nitrogen Oxide Concentration, ppm	200.9	179.5	154.3	178.2
Sulfur Dioxide Concentration, ppm	297.4	300.3	279.7	292.5
Total Hydrocarbon, ppm	9.1	0.0	0.0	3.0
Filterable Particulate Collected, grams	0.1355	0.5391	0.0815	0.2520

CALCULATED DATA

Standard Meter Volume, Cubic Feet	40.694	42.374	35.733	39.600
Standard Water Volume, Cubic Feet	4.189	4.189	3.601	3.993
Moisture Fraction	0.093	0.090	0.092	0.092
Molecular Weight Of Stack Gas	28.068	28.112	28.086	28.089
Average Stack Gas Velocity, Feet/Second	18.084	19.338	16.092	17.838
Stack Gas Flow @ Actual Stack Conditions, ACFM	54540	58323	48534	53799
Stack Gas Flow @ Dry Stack Conditions, DCFM	49450	53075	44091	48872
Stack Gas Flow @ Dry Standard Conditions, DSCFM	26972	29677	24853	27167
Isokinetic Sampling Rate, Percent	104.49	90.88	99.57	100.98
Particulate Concentration @ Dry Standard Conditions, Grains/Cu.Ft.	0.0513	0.1959	0.0351	0.0941
Particulate Concentration per Cubic Foot of Dry Flue Gas, Grains/Cu.Ft.	0.0280	0.1095	0.0198	0.0524
Carbon Monoxide Emission Rate/Pounds Per Hour	0.50	0.00	0.12	0.21
Nitrogen Oxide Emission Rate/Pounds Per Hour	38.83	38.18	27.48	34.83
Sulfur Dioxide Emission Rate/Pounds Per Hour	79.98	88.88	69.32	79.39
Total Hydrocarbon Emission Rate/Pounds Per Hour	0.01	0.00	0.00	0.002
Particulate Mass Rate/Pounds per Hour	11.85	49.83	7.48	23.05

****
*** ACTIVITY REPORT ***
****

RECEPTION OK

TX/RX NO.	0868
CONNECTION TEL	
CONNECTION ID	
START TIME	03/21 10:14
USAGE TIME	03'15
PAGES	4
RESULT	OK

JEFFERSON COUNTY DEPARTMENT OF HEALTH
1400 SIXTH AVENUE SOUTH P.O. BOX 2648 BIRMINGHAM, AL 35202
FAX 205/939-3019
205/930-1550

Environmental Health
James L. Carroll, PE, MBA, Director
Frank Phillips, PE, Assistant Director

Mr. Dan Bell
Koppers Industries, Inc.
2134 Koppers Drive
Dolomite, Al 35061

Subject: Production Data and Underfire Stack Test

Dear Mr. Bell:

We are in receipt of Koppers March 6, 1996, letter in response to the Departments March 1, 1996, letter covering requested information for the stack test performed on January 25, 1996. Certain information is still lacking and must be completed if this test is to have value in emission fee estimates. Item number 1 covered in our letter refers to a new submittal covering Section 2, page 2-3, last item; What pollutant is the stack test referring to? Please re - submit this page with corrections. In addition concerning Koppers March 6, 1996, letter the values given for TRS for the eight hour test show no detection. Please submit the lower detectable limit for the instrument? As one final comment, grab bag sample number 2 has the following given information:

Hydrogen Sulfide	3300 ppm
Density grams/ml	0.00085

According to my calculations the following grains per dry standard cubic feet would result: $\frac{PPM}{10^6} = \frac{(3300 + 3300 + 1600)/3}{10^6} = 1.02\ gr/ft^3$

0.00085 gm/ml x 1000ml/l x 15.432gr/gm x 28.32 l/cubic ft = 371.479 gr/cubic foot. Information supplied by Koppers according to the Tutweiler testing for year 1995 = 1.93 gr/cubic foot. Apparently the test is suspect. Please supply your interpretation of the results.

One additional subject concerns production data. As requested in the Departments March 1, 1996, letter and not supplied were several items necessary for fee calculations. These are as follows:

1. A description of each Cooling Tower, its process usage and flow rate.
2. For gas and diesel fuel usage please supply usage in gallons, vehicular type and vehicular miles traveling on Koppers property whether owned by Koppers or an independent contractor.

Please submit the above information as expeditiously as possible so fees can be determined for your source. Information is necessary no later than the week of March 18, 1996.

If you have any comments or questions contact me at 930 - 1283.

Sincerely

Walter Allen

Walter Allen

JEFFERSON COUNTY DEPARTMENT OF HEALTH
1400 SIXTH AVENUE SOUTH P.O. BOX 2648 BIRMINGHAM, AL 35202
FAX 205/939-3019
205/930-1550

Environmental Health
James L. Carroll, PE, MBA, Director
Frank Phillips, PE, Assistant Director

March 1, 1996

File Copy

Mr. Dan Bell
Koppers Industries, Inc.
2134 Koppers Drive
Dolomite, Al 35061

Subject: Stack Test, 1996 Production Data, And Method 303 Contract.

Dear Mr. Bell:

We are in receipt of the stack test for the underfire serving battery number # 1 performed on January 25, 1996 for emission fee purposes. After a partial review by the Department certain additional information needs to be submitted before a final review can be performed. The following information is required as discussed in our January 12, 1996 letter as well as the pre - test meeting held at the Department. These are as follows:

Item No. 1
Section 2, page 2-3 the last item on the page **Pollutant Mass Rate/ Pounds per Hour.** What pollutant is the stack test referring to? Please re - submit this page with corrections.

Item No. 2
Three grab bag samples were required for the coke oven gas fuel. Items to be analyzed were H2S, Total Reduced Sulfur (TRS), BTU value of the fuel gas on a wet and dry basis per cubic foot. These are not included in the report.

Item No. 3
A continuous integrated sample was required of the flue gas for Total Reduced Sulfur (TRS). This has not been included in the report.

In addition we are in receipt of your February 20, letter confirming our phone conversation on February 16, 1996 as it relates to supplemental information concerning production data for 1996 emission fees. To complete our request please supply a description of each cooling tower, its process usage and flow rate. For gas and diesel fuel usage please supply usage in gallons, vehicle type and vehicle miles of all vehicles traveling on Koppers property whether

owned by Koppers or an independent contractor. If Koppers feels a need for any exclusion of some vehicle types for fee consideration an explanation is requested. As a suggestion this Department would entertain the usage of the Title V submittal for 1994 usage and mileage adjusted to coal usage between 1994 and 1995.

Finally the Department is requesting that Koppers supply a signed copy of the contractual agreement between the Method 303 contractor and Koppers industries. This would include proposals, purchase orders, contracts, etc. We plan on reviewing these documents as the administrator for Method 303.

Sincerely,

Walter Allen

Walter Allen
Air Pollution Control Engineer
Air Pollution Control Program

/at

KOPPERS INDUSTRIES

Koppers Industries, Inc.
Woodward Coke Plant
2134 Koppers Drive, P.O. Drawer 648
Dolomite, AL 35061

Telephone: 205-744-5653
FAX: 205-744-8303

March 6, 1996

Mr. Walter Allen
Air Pollution Control Engineer
Bureau of Environmental Health
Jefferson County Department of Health
P.O. Box 2648
Birmingham, Al 35202

Dear Mr. Allen,

Please find the attached laboratory test results for the eight hour continuous sample for total reduced sulfur and the laboratory analysis of the coke oven gas.

The pages should be placed in Section 7 of the of Koppers Industries No. 1 stack test performed by Entec Services on January 25, 1996.

If you have any questions or need additional information, call me at 744-5653.

Sincerely,

Dan Bell

Dan Bell
Environmental Manager

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power
Southern Enterprises

Certificate of Analysis

TO : MR. GLENN CORLEY
ADDRESS: ENTEC INC.
25 COMMERCE AVE
HUEYTOWN, AL. 35023

REPORT DATE : 02/16/96
SAMPLE DATE : 01/25/96
SAMPLE NUMBER : 960212-0053
LOCATION NUMBER : ENTEC

DESCRIPTION: KOPPERS IND. #1 UNDERFIRE AIR STACK, 8 HOUR SAMPLE STACK GAS

COMPOUND	PARTS PER MILLION
HYDROGEN SULFIDE	ND
CARBONYL SULFIDE	ND
CARBON DISULFIDE	ND
METHYL MERCAPTAN	ND
DIMETHYL SULFIDE	ND
DIMETHYL DISULFIDE	ND

NO OTHER HYDROCARBONS DETECTED

DENSITY, GRAMS/ML = 0.0012
GROSS BTU/FT3 = 13
GROSS BTU/LB = 190

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL

Quality Assurance	Supervisor	Page
A. RYALS/P. BERRY	C. HORN/ H. WESTON	1 of 1

5-2790 Rev. 9/94

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power
Southern Enterprises

Certificate of Analysis

TO : MR. GLENN CORLEY
ADDRESS: ENTEC INC.
25 COMMERCE AVE
HUEYTOWN, AL. 35023
DESCRIPTION: KOPPERS IND. #1 UNDERFIRE AIR STACK, S01 10:10 COKE OVEN GAS

REPORT DATE : 02/16/96
SAMPLE DATE : 01/25/96
SAMPLE NUMBER : 960212-0050
LOCATION NUMBER : ENTEC

COMPOUND	PARTS PER MILLION
HYDROGEN SULFIDE	3300
CARBONYL SULFIDE	18
CARBON DISULFIDE	30
METHYL MERCAPTAN	3
DIMETHYL SULFIDE	ND
DIMETHYL DISULFIDE	ND
BENZENE	>1000

ALSO PRESENT:
NUMEROUS ALKENES, ALKYNES, TOLUENE

DENSITY, GRAMS/ML = 0.0006
GROSS BTU/FT3 = 383 → WET BASIS PER MAX DEC'S 5/8/96 B.A. ENTEC
GROSS BTU/LB = 10349

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL

Quality Assurance
A. RYALS/P. BERRY

Supervisor
C. HORN/ H. WESTON

5-2790 Rev. 9/94

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power
Southern Enterprises

Certificate of Analysis

TO : MR. GLENN CORLEY
ADDRESS: ENTEC INC.
25 COMMERCE AVE
HUEYTOWN, AL. 35023
DESCRIPTION: KOPPERS IND. #1 UNDERFIRE AIR STACK, SO2 1:00 COKE OVEN GAS

REPORT DATE : 02/16/96
SAMPLE DATE/TIME: 01/25/96 13:00
SAMPLE NUMBER : 960212-0051
LOCATION NUMBER : ENTEC

COMPOUND	PARTS PER MILLION
HYDROGEN SULFIDE	3300
CARBONYL SULFIDE	16
CARBON DISULFIDE	13
METHYL MERCAPTAN	1
DIMETHYL SULFIDE	ND
DIMETHYL DISULFIDE	ND
BENZENE	>1000

ALSO PRESENT:
NUMEROUS ALKENES, ALKYNES, TOLUENE

DENSITY, GRAMS/ML = 0.00085
GROSS BTU/FT3 = 323 → WET BASIS PER MAX DEE'S ENTEC 5/3/96 B.A
GROSS BTU/LB = 6082

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL

Quality Assurance	Supervisor	Page
A. RYALS/P. BERRY	C. HORN/ H. WESTON	1 of 1

5-2790 Rev. 9/94

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power
Southern Enterprises

Certificate of Analysis

TO : MR. GLENN CORLEY
ADDRESS: ENTEC INC.
25 COMMERCE AVE
HUEYTOWN, AL. 35023
DESCRIPTION: KOPPERS IND. #1 UNDERFIRE AIR STACK, S#3 4:25 COKE OVEN GAS

REPORT DATE : 02/16/96
SAMPLE DATE/TIME: 01/25/96 16:25
SAMPLE NUMBER : 960212-0052
LOCATION NUMBER : ENTEC

COMPOUND	PARTS PER MILLION
HYDROGEN SULFIDE	1600
CARBONYL SULFIDE	12
CARBON DISULFIDE	13
METHYL MERCAPTAN	1
DIMETHYL SULFIDE	ND
DIMETHYL DISULFIDE	ND
BENZENE	>1000

ALSO PRESENT:
NUMEROUS ALKENES, ALKYNES, TOLUENE

DENSITY, GRAMS/ML = 0.0006
GROSS BTU/FT3 = 397 → WET BASIS PER MAX DEE'S ENTEC 5/8/96 B.A.
GROSS BTU/LB = 10598

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL

Quality Assurance
A. RYALS/P. BERRY

Supervisor
C. HORN/ H. WESTON

5-2790 Rev. 9/94

KOPPERS INDUSTRIES

Koppers Industries, Inc.
Woodward Coke Plant
2134 Koppers Drive, P.O. Drawer 640
Dolomite, AL 35061

Telephone: 205-744-5653
FAX: 205-744-8303

February 23, 1996

Mr. Walter Allen
Air Pollution Control Engineer
Bureau of Environmental Health
Jefferson County Department of Health
P.O. Box 2648
Birmingham, Al 35202

Dear Mr. Allen,

Please accept this submittal of the stack test report for #1 battery Underfiring stack (air permit #4-07-0430-9002) for Koppers Industries Inc. Woodward Coke Plant. The stack test was conducted in the presence of Jefferson County Department of Health personnel on January 25, 1995 for the purpose of establishing a emission rates for Title V fees.

This report confirms Koppers Industries belief that the emissions from the facility are lower than shown in earlier stack tests. According to the stack test report, test runs 1 and 3 for particulates are representative runs. However, the report indicates that for run 2 on particulates, the levels of metals present in the laboratory analysis could have skewed the results for run 2. Koppers Industries after careful review of the laboratory analysis of the particulate matter contained in Section 7 pages 4 and 5, considers test run 2 for particulates to be contaminated with metals that are not related to the stack gases; therefore, it should not in included in the average gain loading determination.

Koppers Industries respectfully requests that the Jefferson County Department of Health utilize the average of runs 1 and 2 for particulates from the stack test to calculate emission rates for future Title V fees.

If you have any questions or need additional information, call me at 744-5653.

Sincerely,

D — Bell

Dan Bell
Environmental Manager

ENTEC Services, Inc.
Pollution Control System Evaluations and Source Emission Testing

February 12, 1996

Mr. Dan Bell
Koppers Industries, Inc.
Woodward Coke Plant
2134 Koppers Drive
Dolomite, Alabama 35061

Re: Emission Testing
Koppers Industries - Woodward Coke Plant
Dolomite, Alabama
Entec Project No.: 96-1002

Dear Mr. Bell,

Enclosed please find the results of the emission test for the referenced subject performed on January 25, 1996.

We appreciate the opportunity to perform this project for you and hope to be of assistance to you in the future.

Sincerely,
ENTEC SERVICES, INC.

Glen A. Corley
President

Attachments: Report

GAC/md

25 Commerce Avenue • Suite 104 • Hueytown, Alabama 35023 • Phone: (205) 491-6676 • FAX: (205) 491-6614

Table of Contents

	Section
Introduction	1
Test Summary	2
Analytical Methodology	3
Process Data	4
Particulate Test and Pollutant Gas Emission Data	5
EPA Method 303 Inspection Data	6
Laboratory Data	7
Instrumentation Calibration	8
Particulate Sampling Equipment Calibration	9
Test Calculation and Nomenclature	10

1.0 Introduction

Entec Services, Inc. was retained by Koppers Industries to perform emission tests on the No. 1 Stack at the Woodward coke plant located in Dolomite, Alabama. The testing was performed in order to establish New Emission Factors for the No. 1 Stack with verifiable auditing procedures as required by Jefferson County Department of Health Air Pollution Control. The following parameters were tested on the No. 1 Stack in accordance with the referenced Code of Federal Regulations test methods:

- Particulate Matter (PM) - Methods 1-5, 40 CFR 60, Appendix A
- Sulfur Dioxide (SO_2) - Method 6C, 40 CFR 60, Appendix A
- Nitrogen Oxide (NO_x) - Method 7E, 40 CFR 60, Appendix A
- Carbon Monoxide (CO) - Method 10, 40 CFR 60, Appendix A
- Volatile Organic Compound (VOC) - Method 25A, 40 CFR 60, Appendix A

A pre-test meeting with the Jefferson County Department of Health Air Pollution Control was held on January 21, 1996 at the Jefferson County Department of Health office located in Birmingham, Alabama. Present at the meeting were:

Mr. Ken Hall - JCDH
Mr. Ralph Fulton -JCDH
Mr. Butch Allen - JCDH
Mr. Dan Bell - Koppers Industries
Mr. Glen Corley - Entec Services, Inc.

Items discussed included a proposed test schedule, test methods to be performed, calibration gases to be used, process data to be collected, and units for reporting the test results. The letter written by Mr. Walter Allen / Jefferson County Department of Health outlining the parameters to be tested and test method has been attached on the following pages.

The only deviation from the outlined parameters to be tested and testing procedures was a continuous integrated bag sample was taken for TRS simultaneously with the pollutant gas emission test. This procedure was approved at the pretest meeting by Mr. Walter Allen of the Jefferson County Department of Health Air Pollution Control. Koppers Industries agreed to use the F-Factor for determining gas consumption during the testing in lieu of a flow meter.

The Entec Project Manager for the project was Mr. Glen Corley, who was also responsible for the particulate sampling and analysis. Mr. Greg Clark was responsible for sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen oxides (NO_x) and volatile organic compound (VOC) sampling and analysis. The test crew also included Mr. Max Dees/Entec Services, Inc. and Mr. John Ross/Koppers Industries . The test crew arrived at the Koppers coke plant and began testing on January 25, 1996.

Mr. Ralph Fulton, Mr. Butch Allen, Mr. David Wootton, and Ms. Mollie Lyle of the Jefferson County Health Department Air Pollution Control were present and observed the field testing and calibrations. Mr. Dan Bell of Koppers Industries coordinated testing with plant operations and collected the process data during testing.

JEFFERSON COUNTY DEPARTMENT OF HEALTH
1400 SIXTH AVENUE SOUTH P O BOX 2648 BIRMINGHAM, ALABAMA 35202 205/933 9110

Environmental Health
James L. Carroll, Director

Post-it® Fax Note 7671	Date	# of pages ▶ 2
To DAN BELL	From DAVE Wootton	
Co./Dept.	Co.	
Phone #	Phone #	
Fax # 744-8303	Fax #	

January 12, 1996

Mr. Dan Bell
Koppers Industries, Inc.
Dolomite, AL 35061

Dear Mr. Bell:

The Department is in receipt of your January 9, 1996 letter delivered January 10, 1996 as it relates to a new stack test for underfire of battery number 1. Since the proposed test is to establish emission rates for Title V fees, the Department must approve test methods and be present during the test for quality assurance. As such we request a pretest meeting on January 18, 1996 at a conveinent time to be determined. The following Methods as well as production parameters are required to establish Koppers baseline emission rates:

Method 1 - 4
(Orsat in lieu of fyrite analyzer, method 3)

Method 5
Three one hour runs. Results are to indicate both the front half of the train as well as the condensable back half. Values are to be presented separately within the report.

Method 6C
Eight hours of data accumulation (continuous)

Method 7E
Eight hours of data accumulation (continuous)

Method 10
Eight hours of data accumulation (continuous)

Method 15 & 16 (Total Reduced Sulfur)
Eight hours of data accumulation (continuous)

Method 25A
Eight hours of data accumulation (continuous)

All Calibration Gases Are To Be Environmental Protection Agency Traceability Protocol Number 1.

A flow meter is a necessary requirement to measure coke oven gas combusted during the test serving battery number 1. In leiu of this requirement the Department will accept the use of the F - Factors as utilized for gas consumption determination. This procedure should be familiar to Koppers for it is contained in the Title V Emission Inventory as submitted to this Department in May 1995 for 1994 emissions. Additionally three grab bag samples of the coke oven gas should be taken coincident with the running of the Method 5 train serving battery number 1. Determination of hydrogen sulfide (H_2S), carbonyl sulfide (COS), carbon disulfide (CS_2), methyl mercaptan (MeSH), dimethyl disulfide (DMS), dimethyl disulfide (DMDS), and btu per cubic foot on a dry basis is required.

Production Parameters

A. A coal specification analysis of percent sulfur in the coal charged to battery number 1 on the day of the test. Average coal specification plant wide in 1995 will also be required.

B. The previous 30 calendar days of actual tons of coal charged to battery number 1 from the actual test date.

C. The monthly average for the previous twelve months of ovens in service at battery number 1.

D. Precise charging/pushing schedule for battery number 1 during the performance test.

E. Ovens in service for battery number 1 during the performance test.

F. Visible emissions of stack opacity will not be required.

G. A description in the report of the type of coke produced whether furnace or foundry during the test. The number of leaking doors, topside emissions, and seconds of visible emissions of charging in accordance with Method 303 during the test. This would comprise only the normal run time in relation to Method 303.

H. The maintenance schedule for the last 60 days for battery number 1 from the date of the test.

Please inform David Wootton or myself of the scheduled time of the pretest meeting. If you have any questions or need additional information, please feel free to call.

Sincerely,

Walter Allen
Air Pollution Control Engineer
Air Pollution Control Program

/at

cc: David Wootton
Air Pollution Control Engineer
Air Pollution Control Program

2.0 Test Summary

General

This section summarizes the test results for the No. 1 Stack. The data sheets for the test can be found in the following sections:

Process Data	-	Section 4
Field Data	-	Section 5
Pollutant Gas Emission Data	-	Section 6
EPA Method 303 Inspection Data	-	Section 7
Laboratory Data	-	Section 8
Instrumentation Calibration Data	-	Section 9

Test Results

The results of the emission tests for the No. 1 Stack with Coke Oven Gas as process fuel are summarized on page 2-2 of this section. The stack was tested for the following pollutants:

Test	Parameter	Process Fuel
1-2-3	Particulate Matter	Coke Oven Gas
	NO_x, SO_2, CO, VOC	

Emission rates for oxides of nitrogen, sulfur dioxide, carbon monoxide and total hydrocarbons were calculated as shown on the following test summary sheet.

Particulate Test Run No.	1	2	3
Pollutant Gas Emission Test No.	1-2-3	4	5

The time of the pollutant gas emission test were correlated to the test times of the particulate emission testing.

Two analyzers were used to measure the sulfur dioxides, oxides of nitrogen and carbon monoxide in the gas stream. The test results for sulfur dioxide, oxides of nitrogen and carbon monoxide were calculated using the average results of the two analyzers.

The particulate emission rates were calculated using the front-half filterable particulate. The back-half condensable particulate was also collected and measured. Results of the back-half condensable particulate can be foun on page 2 of Section 7.

Although the test ports were cleaned prior to testing and that extreme care was taken during the particulate testing to avoid contaminating the samples, it should be noted that due to the length of the sample ports (60 inches) and the corrosion accumulated on the walls of the sample ports, the particulate samples collected could have possibly been contaminated from the metal corrosion inside these ports. Although all tests performed had some particulate accumulation in the cyclone flask, test run number 2 had a considerable amount of particulate collected in the cyclone. It was noticed that much of this particulate matter resembled that of the corrosion accumulated on the inside of the sample port walls. Because of this possibility of contamination, a laboratory analysis for metal was performed on the particulate collected on the filters along with the particulate collected in the cyclone and probe wash for all three test runs. Laboratory analysis of the particulate indicated that the samples may have been possibly contaminated from the corrosion accumulated on the test port walls due to the amount of iron indicated in the laboratory results. Test run No. 2 had a considerable amount of iron indicated in the laboratory results which accounted for 73% of the total weight of the front-half particulate matter. Results of the metals analysis can be found on pages 4 and 5 of Section 7.

H_2S Calcs.

4/25/96
RCF

S 32.06
H_2 2.02
H_2S – 34.08 lb/lbmole

Flue Gas – 100 ppm H_2S
– 27,167 DSCF/min

$$H_2S\ lb/hr. = \frac{100\ ppm}{1\times10^6\ ppm} \times \frac{1\ lbmole}{385.3\ DSCF} \times \frac{34.08\ lb}{lbmole} \times 27{,}167\ \frac{DSCF}{min} \times \frac{60\ min}{hr} = 14.42\ lb/hr$$

$$Tpy = 14.42\ pph \times 4.38 = 63.15\ TPY$$

mmcf/yr

Battery COG

#1	2,098,134,000	—		X = 63.15 TPY
2A	1,264,629,000	—	$\frac{63.15}{2098,134,000} = \frac{X}{1,264,629,000}$	X = 38.06 TPY
2B	718,539,000		$\frac{38.06}{1,264,629,000} = \frac{X}{718,539,000}$	X = 21.63 TPY
4A	603,576,000		$\frac{21.63}{718539,000} = \frac{X}{603,576,000}$	X = 18.17 TPY
4B	603,573,000		$\frac{18.17}{603,576,000} = \frac{X}{603,573,000}$	X = 18.17 TPY
5	459,865,000		$\frac{18.17}{603,573,000} = \frac{X}{459,865,000}$	X = 13.84 TPY

TOTAL H_2S 173.02 TPY

ENTEC Services, Inc.
Pollution Control System Evaluations and Source Emission Testing

March 19, 1996

Mr. Walter Allen
Jefferson County Department of Health
2648 Sixth Avenue South
P. O. Box 2648
Birmingham, Alabama 35202

Re: Emission Testing
Koppers Industries - Woodward Coke Plant
Dolomite, Alabama
Entec Project No.: 96-1002

Dear Mr. Allen,

As per your request in the letter faxed to Mr. Dan Bell of Koppers Industries on March 18, 1996 the minimum detection levels of instruments used to determine the TRS values during the eight hour test performed at Koppers Industries in Dolomite, Alabama on January 25, 1996 are listed below. Also enclosed is a corrected summary page (page 2-3) showing the last item to be Particulate Mass Rate / Pounds per Hour.

GAS	MIN. DET. LEVEL
Hydrogen Sulfide	100PPM
Carbonyl Sulfide	5PPM
Carbon Disulfide	5PPM
Methyl Mercaptan	5PPM
Dimethyl Sulfide	5PPM
Dimethyl Disulfide	5PPM

25 Commerce Avenue • Suite 104 • Hueytown, Alabama 35023 • Phone: (205) 491-6676 • FAX: (205) 491-6614

If you should have any other questions, please call us at (205) 491-6676.

Sincerely,
ENTEC SERVICES, INC.

Glen A. Corley

Glen A. Corley
President

Attachments: Summary Page Correction

GAC/md

ENTEC Services, Inc.

1429 2nd Avenue North-Bessemer, Alabama 35020

EMISSION CALCULATIONS

Client: Koppers Industries-Woodward Coke Plant Job No.: 96 -1002

Source: Number 1 Stack Data Input By: Glen Corley

INPUT DATA

Run Number	1	2	3	AVERAGE
Date	1-25-96	1-25-96	1-25-96	
Time Began-Ended	805-1000	1310-1432	1622-1748	
Sampling Time, Minutes	60	60	60	60
Stack Area, Square Feet	50.2660	50.2660	50.2660	
Barometric Pressure, Inches of mercury	29.94	29.99	29.90	29.94
Stack Pressure, Inches of mercury	29.86	29.90	29.82	29.86
Pitot Tube Correction factor	0.84	0.84	0.84	
Meter Correction Factor	1.011	1.011	1.011	
Nozzle Diameter, Inches	0.4710	0.4710	0.4710	
Meter Volume, Cubic feet	39.100	42.738	35.850	39.229
Meter Temperature, Degrees F	54.8	81.6	76.5	71.0
Average Orifice Velocity Head, Inches of Water	1.40	1.63	1.15	1.39
Volume H2O Collected, MilliLiters	89.0	89.0	76.5	84.8
CO2 Concentration, Percent	3.53	3.60	3.47	3.53
O2 Concentration, Percent	13.50	13.40	13.73	13.54
Average Square Root of Velocity Head, Inches of Water	0.235	0.254	0.212	0.234
Stack Temperature, Degrees F	505.7	483.3	473.2	487.4
Carbon Monoxide Concentration, ppm	4.2	0.0	1.1	1.8
Nitrogen Oxide Concentration, ppm	200.9	179.5	154.3	178.2
Sulfur Dioxide Concentration, ppm	297.4	300.3	279.7	292.5
Total Hydrocarbon, ppm	9.1	0.0	0.0	3.0
Filterable Particulate Collected, grams	0.1355	0.5391	0.0815	0.2520

CALCULATED DATA

Standard Meter Volume, Cubic Feet	40.694	42.374	35.733	39.600
Standard Water Volume, Cubic Feet	4.189	4.189	3.601	3.993
Moisture Fraction	0.093	0.090	0.092	0.092
Molecular Weight Of Stack Gas	28.068	28.112	28.088	28.089
Average Stack Gas Velocity, Feet/Second	18.084	19.338	16.092	17.838
Stack Gas Flow @ Actual Stack Conditions, ACFM	54540	58323	48534	53799
Stack Gas Flow @ Dry Stack Conditions, DCFM	49450	53075	44091	48872
Stack Gas Flow @ Dry Standard Conditions, DSCFM	26972	29677	24853	27167
Isokinetic Sampling Rate, Percent	104.49	98.88	99.57	100.98
Particulate Concentration @ Dry Standard Conditions,Grains/Cu.Ft.	0.0513	0.1959	0.0351	0.0941
Particulate Concentration per Cubic Foot of Dry Flue Gas,Grains/Cu.Ft.	0.0280	0.1095	0.0198	0.0524
Carbon Monoxide Emission Rate/Pounds Per Hour	0.50	0.00	0.12	0.21
Nitrogen Oxide Emission Rate/Pounds Per Hour	38.83	38.18	27.48	34.83
Sulfur Dioxide Emission Rate/Pounds Per Hour	79.98	88.86	69.32	79.39
Total Hydrocarbon Emission Rate/Pounds Per Hour	0.01	0.00	0.00	0.002
Particulate Mass Rate/Pounds per Hour	11.85	49.83	7.48	23.05

ENTEC Services, Inc.

1429 2nd Avenue North-Bessemer, Alabama 35020

EMISSION CALCULATIONS

Client: Koppers Industries-Woodward Coke Plant Job No.: 96 -1002

Source: Number 1 Stack Data Input By: Glen Corley

INPUT DATA

Run Number (RUN 2 IS VOID AS PER BUTCH ALLEN (BASED ON LAB ANALYSIS))	1	2	3	AVERAGE
Date	1-25-96	1-25-96	1-25-96	
Time Began-Ended	805-1000	1310-1432	1622-1748	
Sampling Time, Minutes	60	60	60	60
Stack Area, Square Feet	50.2660	50.2660	50.2660	
Barometric Pressure, Inches of mercury	29.94	29.99	29.90	29.94
Stack Pressure, Inches of mercury	29.86	29.90	29.82	29.86
Pitot Tube Correction factor	0.84	0.84	0.84	
Meter Correction Factor	1.011	1.011	1.011	
Nozzle Diameter, Inches	0.4710	0.4710	0.4710	
Meter Volume, Cubic feet	39.100	42.738	35.850	39.229
Meter Temperature, Degrees F	54.8	81.6	76.5	71.0
Average Orifice Velocity Head, Inches of Water	1.40	1.63	1.15	1.39
Volume H2O Collected, MilliLiters	89.0	89.0	76.5	84.8
CO2 Concentration, Percent	3.53	3.60	3.47	3.53
O2 Concentration, Percent	13.50	13.40	13.73	13.54
Average Square Root of Velocity Head, Inches of Water	0.235	0.254	0.212	0.234
Stack Temperature, Degrees F	505.7	483.3	473.2	487.4
Carbon Monoxide Concentration, ppm	4.2	0.0	1.1	1.8
Nitrogen Oxide Concentration, ppm	200.9	179.5	154.3	178.2
Sulfur Dioxide Concentration, ppm	297.4	300.3	279.7	292.5
Total Hydrocarbon, ppm	9.1	0.0	0.0	3.0
Filterable Particulate Collected, grams	0.1355	0.5391	0.0815	0.2520

CALCULATED DATA

Standard Meter Volume, Cubic Feet	40.694	42.374	35.733	39.600
Standard Water Volume, Cubic Feet	4.189	4.189	3.601	3.993
Moisture Fraction	0.093	0.090	0.092	0.092
Molecular Weight Of Stack Gas	28.068	28.112	28.088	28.089
Average Stack Gas Velocity, Feet/Second	18.084	19.338	16.092	17.838
Stack Gas Flow @ Actual Stack Conditions, ACFM	54540	58323	48534	53799
Stack Gas Flow @ Dry Stack Conditions, DCFM	49450	53075	44091	48872
Stack Gas Flow @ Dry Standard Conditions, DSCFM	26972	29677	24853	27167
Isokinetic Sampling Rate, Percent	104.49	98.88	99.57	100.98
Particulate Concentration @ Dry Standard Conditions,Grains/Cu.Ft.	0.0513	0.1959	0.0351	0.0941
Particulate Concentration per Cubic Foot of Dry Flue Gas,Grains/Cu.Ft.	0.0280	0.1095	0.0198	0.0524
Carbon Monoxide Emission Rate/Pounds Per Hour	0.50	0.00	0.12	0.21
Nitrogen Oxide Emission Rate/Pounds Per Hour	38.83	38.18	27.48	34.83
Sulfur Dioxide Emission Rate/Pounds Per Hour	79.98	88.86	69.32	79.39
Total Hydrocarbon Emission Rate/Pounds Per Hour	0.01	0.00	0.00	0.002
Pollutant Mass Rate/Pounds per Hour (TSP) E.A 4/16/96	11.85	49.83	7.48	23.05

SEE ABOVE

3.0 Analytical Methodology

3.1 Procedures

Testing was performed using the EPA Reference Methods identified below:

Parameter	EPA Reference Method
Volumetric Flow	1,2
Gas Composition (CO_2 and O_2)	3
Moisture	4
Particulate Emissions	5
Sulfur Dioxide Emissions	6C
Nitrogen Oxide Emissions	7E
Carbon Monoxide	10
Volatile Organic Compounds	25A

The most current revision of each method (as described in the Federal Register) was used. The following paragraphs summarize the protocol.

3.2 STACK GAS VOLUMETRIC FLOW

The sampling points were selected in accordance with EPA Reference Method 1 so that a representative sample of stack gas was taken. The traverse points were located in the centers of equal area zones, the number of which was determined by the stack dimensions and the number of duct diameters upstream and downstream from the sampling points to the nearest disturbance.

The velocity of the gas stream was determined according to EPA Reference Method 2 by reading the instantaneous velocity head with an inclined manometer at each sampling point with a calibrated S-type pitot tube attached adjacent to the sample nozzle. The stack pressure was measured with the static side of an S-type pitot tube. A calibrated pyrometer was used to measure stack temperature at each sampling point. The stack was tested for cyclonic flow according to EPA Reference Method 2.

3.2.1 Stack Gas Molecular Weight

The carbon dioxide and oxygen concentrations were determined using EPA Reference Method 3A. An integrated sample was taken for each test run and analyzed with a Burrell brand Orsat with a 50 percent capacity for carbon dioxide and oxygen content. The molecular weight of the gas was calculated using the moisture, oxygen and carbon dioxide content and the measured stack gas temperature.

3.2.2 Moisture Content

The moisture content used for calculating the gas stream flow rate was determined by weighing the amount of condensed moisture in the impingers of the sampling train as described in EPA Reference Method 4.

3.3 PARTICULATE

The particulate emission testing was conducted using EPA Reference Method 5. Calibrations and sketches of the trains used are included in Section 9. An S-type pitot tube was connected adjacent to the sample nozzle so that an instantaneous velocity head was determined at each traverse point during each test run according to EPA Reference Method 2. The stack temperature was also obtained at each traverse point.

At the completion of the particulate sampling, all sample-exposed surfaces were washed with acetone to remove all adhering particulate matter. The filter was removed from the filter assembly and stored in a petri dish or polypropylene bottle for transport to the laboratory. The liquid level of the wash solvent was marked and all sample containers were transported to the laboratory by the sampling team.

3.4 Sulfur Dioxide

The sulfur dioxide concentrations were measured in the stack in accordance with EPA Method 6C. Two Western Research Model 721M ultraviolet (UV) absorbance analyzers were used to continuously determine the stack SO_2 concentrations. Prior to the stack emission test the instruments and sampling system were calibrated using EPA Protocol gases in accordance with EPA Method 6C Section 6. Immediately preceeding each test run the instrument system calibration drift was checked in accordance with EPA Method 6C Section 7.4. Ralph Fulton of the Jefferson County Department of Health Air Pollution Control was present during the calibrations.

3.5 Nitrogen Oxides

The nitrogen oxide concentrations were measured in the stack in accordance with EPA Method 7E. A Thermo Electronics Model 10AR chemiluminesence analyzer and a Thermo Electronics Model 10S chemiluminesence analyzer were used to continuously determine the stack NO_x concentrations. Prior to the stack emission test the instruments and sampling system were calibrated using EPA Protocol gases in accordance with EPA Method 7E Section 3.2. Immediately preceeding each test run the instrument system calibration drift was checked in accordance with EPA Method 7E Section 3.2. Ralph Fulton of the Jefferson County Department of Health Air Pollution Control was present during the calibrations.

3.6 Carbon Monoxide

The carbon monoxide concentrations were measured in the stack in accordance with EPA Method 10. A Siemens nondestructive infared (NDIR) analyzer was used to continuously determine stack CO concentrations. Prior to the stack emission test the instrument and sampling system was calibrated using EPA Protocol gases in accordance to EPA Method 10 Section 6. Ralph Fulton of the Jefferson County Department of Health Air Pollution was present during the calibrations.

3.7 Volatile Organic Compounds

The volatile organic compound concentrations were measured in the stack in accordance with EPA Method 25A. A DYNA-FID SE-630 Flame Ionization Detector (FID) was used to continuously determine the stack VOC concentrations. Prior to the stack emission test the sampling system was calibrated using EPA Protocol gases in accordance with EPA Method 25A Sections 4 and 5. Immediately preceeding each test run the instrument system calibration drift was checked in accordance with EPA Method 25A Section 7.2. Ralph Fulton of the Jefferson County Department of Health Air Pollution Control was present during the calibrations.

3.8 QUALITY CONTROL

3.8.1 General

Throughout the entire project, a high level of quality control was maintained to ensure the accuracy of the data. The test personnel were experienced in the use of the instrumentation, the procedures, and the quality control requirements. The following paragraphs briefly summarize the quality control associated with the project.

All data was recorded at the time of collection on preprinted data sheets. Calculations were performed (where possible) with preprogrammed calculators. Data transfers were minimized and all calculations were verified by a second person.The report was reviewed and approved by the Project Technical Director prior to transmittal. In general all accepted quality control and practices recommended by the reference methods were followed.

3.8.2 Stack Gas Volumetric Flow

The stack was measured with a certified tape to an accuracy of 0.1 inch. The velocity and sampling traverse points were marked on the probe with heat-resistant fiber tape.

The S-type pitot tubes used to measure the velocity pressures were geometrically calibrated prior to the test and verified at the completion of the test. The pyrometer used to measure the stack gas temperature and all thermocouples for intermediate measurements were calibrated with respect to standard thermometers prior to the test. At the completion of the test, all equipment was visually inspected and damage was not indicated.

3.8.3 Stack Gas Molecular Weight

Quality control on oxygen analyses by EPA Reference Method 3A involved the analysis of ambient air before and after every sixth sample. If the measured concentration was less than 20.0 percent, the Orsat chemicals were changed before proceeding. If the measure concentration was greater than 20.0 percent, but less that 20.6 percent, the sample data was corrected for the low measurement. If the measured concentration was 20.6 percent or greater, no correction was made.

3.8.4 Moisture Content

Quality control of the moisture analysis involves the accurate measurement of the gas flow and the accurate determination of the moisture condensed in the sampling train. A graduated cylinder was used to measure the amount of water in each of the first three impingers before and after each test run. The measurement was made to thje nearest 1 milliliter. A calibrated triple-beam balance was used to measure the weight of dessicant before and after sampling. The measurement was made to the nearest 0.1 gram in each use. The difference in measurement was considered to be the moisture collected.

3.8.5 Particulate

The amount of particulate matter collected was measured in the laboratory by evaporating the wash solvent and weighing the residue and filter in a tared beaker. A blank of the wash solvent was analyzed at the same time to ensure that weight was not being contributed by residue from the solvent. All weight measurements were made on the same Ohaus balance (accurate to 0.1 mg).

3.8.6 Sulfur Dioxide

At the time of analyses, EPA Protocol gases were used to calibrate the ultraviolet analyzer. Calibration was conducted before and after analyses to document that the analyzer did not drift during analysis. The analyzer demonstrated to be free of interference from moisture.

3.8.7 Nitrogen Oxides

At the time of analyses, EPA Protocol gases were used to calibrate the chemiluminesence analyzer. Calibration was conducted before and after analyses to document that the analyzer did not drift during analysis. The analyzer demonstrated to be free of interference from moisture.

3.8.8 Carbon Monoxide

At the time of analyses, EPA Protocol gases were used to calibrate the NDIR analyzer. Calibration was conducted before and after analyses to document that the analyzer did not drift during analysis. The analyzer has been demonstrated to be free of interference from moisture and carbon dioxide.

3.8.9 Volatile Organic Compounds

At the time of analyses, EPA Protocol gases (Propane) were used to calibrate the analyzer. Calibration was conducted before and after analyses to document that the analyzer did not drift during analysis. A 100' heated sample line was used in the sample system to reduce the effects of moisture on the FID.

The following production parameters were required as per the letter from the county dated January 12, 1995 to Koppers Industries regarding the stack test conducted on January 25, 1996.

A. The percent sulfur in the furnace coal mix for the coal charged to the #1 Battery on January 25, 1996 was 0.80 (the day of the test.) The average percent sulfur in the furnace coal mix plant wide in 1995 was 0.71 .

B. The following is the previous 30 calendar days of actual tons of coal charged to the number 1 battery from January 25, 1996.

Date	Tons Charged	Date	Tons Charged
1/24/96	867.3	1/09/96	907.2
1/23/96	788.5	1/08/96	811.0
1/22/96	839.3	1/07/96	784.4
1/21/96	889.8	1/06/96	833.5
1/20/96	667.7	1/05/96	901.1
1/19/96	856.4	1/04/96	889.8
1/18/96	889.8	1/03/96	751.9
1/17/96	874.8	1/02/96	840.0
1/16/96	803.0	1/01/96	889.8
1/15/96	833.5	12/31/95	878.6
1/14/96	856.4	12/30/95	856.0
1/13/96	901.1	12/29/95	880.0
1/12/96	913.5	12/28/95	837.4
1/11/96	888.3	12/27/95	828.8
1/10/96	720.9	12/26/95	864.0

Avg. 844.8

C. The monthly average for the previous twelve months of ovens in service at battery number 1 is 60.

D. The precise charging/pushing schedule for the number 1 battery is attached.

E. The number of ovens in service for battery number 1 during the performance test was 60.

G. The type of coke produced on the #1 battery is furnace coke.

H. The maintenance schedule for the last 60 days for the number 1 battery is attached.

KOPPERS INDUSTRIES, INC.
WOODWARD COKE PLANT

OCTOBER/NOVEMBER/DECEMBER 1995

QUARTERLY MAINTENANCE REPORT

COKE BATTERY #1

1. OVEN DOORS REPAIRED	16
2. OVEN BURNERS	
GAS PIPING TO GUNLINES CLEANED	1080
GUNLINES CLEANED	82
FLUE NOZZLES RODDED	67
3. OVEN INTERIORS	
CHARGING HOLES PATCHED	27
OVENS SILICA DUSTED	28
OVENS CERAMIC WELDED	2
JAMBS/WALLS PATCHED	220

KOPPERS INDUSTRIES, INC.
WOODWARD COKE PLANT

JANUARY 1-24, 1995

QUARTERLY MAINTENANCE REPORT

COKE BATTERY #1

1. OVEN DOORS REPAIRED	4
2. OVEN BURNERS	
GAS PIPING TO GUNLINES CLEANED	360
GUNLINES CLEANED	22
FLUE NOZZLES RODDED	18
3. OVEN INTERIORS	
CHARGING HOLES PATCHED	7
OVENS SILICA DUSTED	7
OVENS CERAMIC WELDED	1
JAMBS/WALLS PATCHED	61

KOPPERS INDUSTRIES WOODWARD COKE PLANT
PUSHING SCHEDULE SOUTH BATTERIES

DATE 1-25-96

7/8						9/11						11/7					
	4A	1	PUSH	CHG	AMP		4A	1	PUSH	CHG	AMP		4A	1	PUSH	CHG	AMP
1		7		8:43		1		26	2:34	2:56	133	1		45	10:45	11:07	107
2		17		6:53		2		36	2:42	3:05	132	2		55	10:50	11:17	111
3		27		7:00		3		46	2:52	3:12	127	3		65	11:05	11:25	110
4		37	6:46	7:08	94	4		56	3:01	3:19	130	4	4		11:35	11:55	134
5		47	6:54	7:12	98	5		66	3:10	3:26	131	5	14		11:42	12:05	123
6	1	57	7:04	7:18	100	6		8	3:22	3:46	128	6	34		11:50	12:15	135
7	3		7:24	7:48	134	7		18	3:32	3:52	135	7	44		12:00	12:35	139
8	13		7:43	8:06	127	8		28	3:40	4:01	134	8		7	12:10	12:42	138
9	23		7:57	10:15	174	9		38	3:49	4:06	127	9		17	12:20	12:50	137
10	[redacted]					10		48	3:58	4:15	145	10		27	12:35	12:57	116
11	43		8:01	8:28	185	11		58	4:08	4:20	126	11		37	12:45	1:05	117
12	53		8:10	8:42	171	12	[redacted]				152	12		47	12:52	1:13	116
13	63		8:18		169	13	19		4:26	4:48	157	13		57	1:08	1:20	120
14		9	8:31	8:50	103	14	29		4:36	4:55	182	14	6		1:30	1:30	110
15		19	8:43	9:00	107	15	65		4:46	5:08	239	15	[illegible]				
16		29	8:51	9:06	108	16		1	5:05	5:30	122	16	26		1:[illegible]	2:05	110
17		39	9:02	9:14	110	17		11	5:16	5:36	133	17	36		1:[illegible]	2:15	118
18		49	9:09	9:27	99	18		21	5:24	5:45	125	18	[redacted]		[illegible]	2:24	121
19		59	9:17	9:32	101	19		31	5:32	5:53	131	19		9	2:10	2:33	113
20	1	[redacted]	9:33	[redacted]	[redacted]	20		41	5:41	6:00	140	20		19	2:20	2:43	111
21	5		9:39	9:55	130	21		51	5:50	6:19	234	21		29	2:27	2:52	101
22	15		9:44	10:05	129	22		61	6:08	6:25	126	22		39	2:35	3:00	95
23	25		9:51	10:24	116	23	39		7:11	7:30	223	23		49	2:47	3:09	110
24	35		10:00	10:37	131	24	59		7:22	7:39	150	24		59	2:56	3:18	85
25	45		10:10	10:40	274	25		3	7:32	7:53	127	25	46		3:50	4:12	163
26		2	10:20	11:51	172	26		13	7:41	8:01	145	26	51				
27		12	10:30	12:00	98	27		23	7:48	8:08	177	27	66		4:05	4:26	232
28		22	11:45	12:06	104	28		33	7:55	8:17	161	28		2	4:14	4:35	123
29		32	11:55	12:10	104	29		43	8:05	8:25	136	29		12	4:20	4:45	111
30		42	12:02	12:18	97	30		53	8:13	8:32	203	30		22	4:30	4:55	87
31		52	12:12	12:26	100	31		63	8:22	8:39	139	31		32	4:38	5:05	93
32		62	12:19	12:29	103	32	2		9:08	9:26	132	32		42	4:50	5:12	126
33		4	12:32	12:48	99	33	12		9:15	9:44	159	33		52	5:00	5:22	96
34		14	12:38	12:56	98	34	22		9:22	9:54	146	34		62	5:08	5:28	125
35		24	12:45	1:03	88	35	[redacted]		[redacted]	[redacted]	154	35	8		5:30	5:55	161
36		34	12:52	1:08	103	36		5	9:38	10:14	139	36	16		5:40	6:05	106
37		44	1:00	1:16	111	37		15	9:46	10:20	119	37	18		5:50	6:20	116
38		54	1:05	1:20	88	38		25	9:52	10:26	125	38	28		6:00		171
39		64	1:12	1:25	102	39		35	10:01	11:20	130	39		4	6:11		116
40	7		1:38	1:58	334	40	11		—	7:20	—	40		14	6:20		108
41	17		1:46	2:04	114	41						41		24			
42	27		1:54	2:12	125	42						42		34			
43	37		2:00	2:24	140	43						43					
44		6	2:09	2:39	104	44						44					
45		16	2:16	2:48	114	45						45					
46						46						46					
47						47						47					
48	16	25				48	10	29				48	14	24			
49						49						49					
50						50						50					

Washington C.C. MATTHEWS Donald [illegible]

General

The test ports and the sampling area were located on the exhaust duct upstream of the under fire air source. All pitot and sampling lines, electrical connections, and thermocouples on the probe and filter box were connected to the console by a one hundred foot umbilical cord. All thermocouple readings were obtained from a digital thermometer manufactured by Jenco.

Before the test, the probe and filter holder assembly were secured in the filter box. In each of the first two impingers was placed 100 milliliters of deionized water. The third impinger was left empty, and 250.0 grams of silica gel was put in the fourth impinger. Before the test, and optional leak check was performed to insure all connections were secure.

Immediately following the test, leak checks were performed on the train and pitot tubes. The train was then disassembled, starting with the filter holder. It was removed and immediately sealed to be sure no particulate matter was lost. A stopper was placed in the end of the probe liner to be sure no particulate matter was lost from that component. Next, the moisture in impingers one, two, and three was measured with graduated cylinder, and the silica gel from impinger number four was returned to its container and sealed. The deionized water along with the condensate collected during the sampling was stored in a container and labeled for laboratory analysis of the backhalf of the sampling train for condensable particulate matter.

The nozzle, union, and probe liner were cleaned with reagent grade acetone, including brushing and rinsing, until all particulate matter was removed.

FIELD DATA SHEET

RUN # 1

PLANT	Koppers Ind.	AMBIENT TEMPERATURE	32			Meter reading	
SAMPLING SITE	No. 1 Stack	PROBE HEATER SETTING		LENGTH	10'	FINAL	251.635
TEST OPERATOR	G. Cooley	PROBE LINER MATERIAL	Stainless Steel	ID		INITIAL	212.535
	DATE 1-25-96					NET	
						TOTAL	39.100

START TIME	805	END TIME	1000
FILTER NUMBER	421323		

SAMPLE BOX #	HC-1
METER BOX #	Console E-10
PITOT ID	ESP-03
Cp	.84

O2	13.5	13.5	13.5
CO2	3.5	3.5	3.6
CO			

NOZZLE CALIBRATION		ID
1	.471	
2	.473	
3	.469	
AVG.	.471	

DELTA H@		Tm	
H2O ml collected	H2O 75ml Dess. 14ml	Ps/Pm	
	TOTAL 89ml		

Barometric pressure	29.94
Static Pressure	-1.10"

PORT --- POINT		TIME	DGM VOLUME (CU FT)	STACK VELOCITY HEAD	ORIFICE VELOCITY HEAD	DGM TEMPERATURE Tm (DEG F) INLET	OUTLET	STACK TEMP Ts (DEG F)	OVEN TEMP (DEG F)	IMPINGER TEMP (DEG F)	SYSTEM VACUUM (In. Hg)	COMMENTS
1	1	5	215.230	.03	.75	54	45	541	262	45	1.0	
	2	10	217.905	.06	1.51	59	48	493	255	45	2.0	
	3	15	222.215	.07	1.79	60	48	485	254	46	2.5	
2	1	5	225.230	.05	1.26	53	49	499	246	46	2.0	
	2	10	228.550	.06	1.51	57	49	507	245	47	2.1	
	3	15	231.900	.06	1.51	59	50	509	241	47	2.1	
3	1	5	234.720	.04	1.00	55	51	529	245	48	2.0	
	2	10	238.540	.06	1.51	66	52	538	255	48	2.1	
	3	15	241.845	.07	1.79	63	53	480	260	48	2.5	
	1	5	244.630	.04	1.0	57	54	481	256	49	2.0	
	2	10	247.950	.06	1.51	62	54	500	258	50	2.1	
	3	15	251.655	.07	1.79	66	56	516	252	51	2.8	

ENTEC Services, Inc.

1429 2nd Avenue North-Bessemer, Alabama 35020

Project:: Koppers Industries Date: 1-25-96
Source: No. 1 Stack Run No.: 2

PARTICULATE FIELD DATA, METHOD 5

Port - Point	Delta P	Sq.Rt. Delta P	Delta H	Tm In (°F)	Tm Out (°F)	Ts (°F)
1 - 1	0.07	0.2646	1.76	82	71	520
1 - 2	0.06	0.2449	1.51	85	73	465
1 - 3	0.06	0.2449	1.51	86	74	466
2 - 1	0.08	0.2828	2.01	83	77	477
2 - 2	0.07	0.2646	1.76	86	77	484
2 - 3	0.07	0.2646	1.76	88	78	490
3 - 1	0.05	0.2236	1.26	83	80	484
3 - 2	0.05	0.2236	1.26	86	80	499
3 - 3	0.06	0.2449	1.51	88	80	508
4 - 1	0.07	0.2646	1.76	84	81	467
4 - 2	0.06	0.2449	1.51	86	81	468
4 - 3	0.08	0.2828	2.01	88	81	471
	AVERAGE	0.2542	1.6315		81.6	483.3

FIELD DATA SHEET

RUN # 2

PLANT	Koppers Industries	AMBIENT TEMPERATURE	63			Meter reading	
SAMPLING SITE	No. 1 Stack	PROBE HEATER SETTING	250°	LENGTH	100"	FINAL	295.273
TEST OPERATOR	G Corley	PROBE LINER MATERIAL	stainless steel	ID		INITIAL	252.535
	DATE 1-25-96					NET	
						TOTAL	42.738

START TIME	END TIME	FILTER NUMBER
1310	1432	421326

SAMPLE BOX # HC-1

METER BOX # Console E-10

PITOT ID ESP-03

Cp .84

O2	13.4	13.4	13.4
CO2	3.6	3.6	3.6
CO			

NOZZLE CALIBRATION		ID
1	.471	
2	.473	
3	.469	
AVG.	.471	

DELTA H@		Tm	
% H2O	H2O 85 ml.	Ps/Pm	
ml. collected	Dess. 4.0g.		
c			

Barometric pressure 29.99

Static Pressure -1.20"

PORT ... POINT	TIME	DGM VOLUME (CU FT)	STACK VELOCITY HEAD	ORIFICE VELOCITY HEAD	DGM TEMPERATURE Tm (DEG F) INLET	DGM TEMPERATURE Tm (DEG F) OUTLET	STACK TEMP Ts (DEG F)	OVEN TEMP (DEG F)	IMPINGER TEMP (DEG F)	SYSTEM VACUUM (In. Hg)	COMMENTS
1	5	256.170	.07	1.75	82	71	520	238	46	2.5	
	10	259.710	.06	1.51	85	73	465	246	50	2.1	
	15	262.980	.06	1.51	86	74	466	242	53	2.1	
2	5	267.020	.08	2.00	83	77	477	247	54	3.0	
	10	270.800	.07	1.76	86	77	484	248	58	2.5	
	15	274.480	.07	1.76	88	78	490	247	59	2.5	
3	5	277.610	.05	1.26	83	80	484	249	55	2.0	
	10	280.650	.05	1.26	86	80	499	249	49	2.0	
	15	284.010	.06	1.51	88	80	508	250	49	2.2	
4	5	287.890	.07	1.76	84	81	467	242	43	2.5	
	10	291.340	.06	1.51	86	81	468	249	44	2.2	
	15	295.273	.08	2.00	88	81	471	247	44	3.0	
			.2542	1.6315		81.6	483.3				

ENTEC Services, Inc.

1429 2nd Avenue North-Bessemer, Alabama 35020

Project:: Koppers Industries Date: 1-25-96
Source: No. 1 Stack Run No.: 3

PARTICULATE FIELD DATA, METHOD 5

Port - Point	Delta P	Sq.Rt. Delta P	Delta H	Tm In (°F)	Tm Out (°F)	Ts (°F)
1 - 1	0.05	0.2236	1.26	74	72	469
1 - 2	0.03	0.1732	0.75	76	72	469
1 - 3	0.04	0.2000	1.00	78	72	472
2 - 1	0.04	0.2000	1.00	76	73	475
2 - 2	0.03	0.1732	0.75	78	73	482
2 - 3	0.04	0.2000	1.00	81	74	483
3 - 1	0.06	0.2449	1.51	80	75	488
3 - 2	0.04	0.2000	1.00	80	75	457
3 - 3	0.05	0.2236	1.26	82	75	463
4 - 1	0.04	0.2000	1.00	78	75	471
4 - 2	0.06	0.2449	1.51	81	75	472
4 - 3	0.07	0.2646	1.76	84	76	477
	AVERAGE	0.2123	1.1504		76.5	473.2

FIELD DATA SHEET

RUN # 3

PLANT	Koppers Industries	AMBIENT TEMPERATURE	52			Meter reading FINAL	331.180
SAMPLING SITE	No 1 Stack	PROBE HEATER SETTING		LENGTH	10'	INITIAL	295.330
TEST OPERATOR	G. Corley	PROBE LINER MATERIAL		ID		NET	
DATE	1-25-96					TOTAL	35.850

START TIME	1622	END TIME	1748
FILTER NUMBER	421324		

SAMPLE BOX # 4C-1

METER BOX # Console E-10

PITOT ID ESP-08

Cp .84

O2	13.8	13.7	13.7
CO2	3.4	3.5	3.5
CO			

NOZZLE CALIBRATION		ID
1	.471	
2	.473	
3	.469	
AVG.	.471	

DELTA H@		Tm	
% H2O	H2O 73 ml	Ps/Pm	
m. collected	Dess 3.5 grams		
c			

Barometric pressure 29.90

Static Pressure -1.10"

PORT ... POINT	TIME	DGM VOLUME (CU FT)	STACK VELOCITY HEAD	ORIFICE VELOCITY HEAD	DGM TEMPERATURE Tm (DEG F) INLET	OUTLET	STACK TEMP Ts (DEG F)	OVEN TEMP (DEG F)	IMPINGER TEMP (DEG F)	SYSTEM VACUUM (In. Hg)	COMMENTS
1	5	298.350	.05	1.26	74	72	469	237	44	2.0	
	10	300.605	.03	.75	76	72	469	244	42	1.5	
	15	303.660	.04	1.0	78	72	472	250	44	2.0	
2	5	306.550	.04	1.0	76	73	475	261	45	2.0	
	10	309.120	.03	.75	78	73	482	262	45	1.5	
	15	311.895	.04	1.0	81	74	483	256	47	2.0	
3	5	315.350	.06	1.51	80	75	488	260	45	2.6	
	10	318.020	.04	1.0	80	75	457	262	46	2.0	
	15	321.055	.05	1.26	82	75	463	249	46	2.0	
	5	324.200	.04	1.0	78	75	471	247	44	2.0	
	10	327.546	.06	1.51	81	75	472	245	44	2.5	
	15	331.186	.07	1.76	84	76	477	246	46	3.0	

5-7

Sampling Port Information
No. 1 Stack

Size of Duct: 96" Diameter

Area of Duct: 50.266 Square Feet

Stack Height: Approx. 240 Feet

Test Port Data:

A. **Diameter: 4 Inches**

B. **Upstream Disturbance (L/D): 25**

C. **Downstream Disturbance (L/D): 5**

Number of Traverse Points: 12

Minimum Number of Traverse Points Required: 12

Sampling Point Number:	Distance From Stack Wall (Inches)
1	4.22
2	14.02
3	28.42

Koppers Industries - Dolomite, Alabama
No. 1 Stack
January 25, 1996

	1 O2	2 O2	1 CO	2 CO	2 CO2	1 NOX	2 NOX	1 SO2	2 SO2	VOC
08:12:07	12.51	12.57	7	13	4.06	328	305	368	333	19
08:12:37	12.44	12.48	7	13	4.22	335	312	373	337	17
08:13:07	12.54	12.61	7	12	4.08	329	307	370	334	16
08:13:37	12.6	12.64	7	12	4.07	324	306	366	333	16
08:14:07	12.94	12.97	7	13	4	295	281	366	323	16
08:14:37	13.05	13.11	8	12	3.83	286	265	370	323	16
08:15:07	13.14	13.19	7	12	3.88	281	264	365	323	16
08:15:37	12.98	13.04	8	13	3.93	294	271	368	322	16
08:16:07	12.79	12.86	8	13	3.94	309	284	371	321	16
08:16:37	12.64	12.7	8	12	4.1	324	300	383	330	15
08:17:07	12.85	12.91	8	13	3.97	313	290	375	324	14
08:17:37	12.65	12.71	8	12	4.07	328	303	384	333	13
08:18:07	12.86	12.95	8	12	3.99	315	288	380	324	12
08:18:37	12.64	12.71	8	13	4.03	332	304	391	334	12
08:19:07	12.51	12.59	9	13	4.12	343	313	402	342	11
08:19:37	12.48	12.54	9	13	4.19	345	317	404	344	11
08:20:07	12.4	12.47	9	14	4.12	354	324	415	347	69
08:20:37	12.88	12.9	9	12	4	322	309	394	337	102
08:21:07	13.47	13.51	9	12	3.67	282	264	364	306	97
08:21:37	13.04	13.16	9	13	3.8	318	276	388	310	91
08:22:07	12.26	12.34	10	13	4.28	370	338	427	352	82
08:22:37	12.36	12.41	10	13	4.14	368	338	427	353	74
08:23:07	12.4	12.45	10	13	4.15	366	338	424	353	71
08:23:37	12.69	12.74	10	13	4.08	339	315	411	334	66
08:24:07	14.72	14.23	10	11	3.45	242	282	314	305	62
08:24:37	19.7	19.53	21	15	0.82	33	76	87	105	59
08:25:07	15.16	15.66	230	151	2.57	122	95	270	167	57
08:25:37	13.43	13.47	13	16	3.76	121	111	374	353	60
08:26:07	13.44	13.48	9	13	3.82	126	116	377	353	49
08:26:37	13.42	13.47	8	14	3.77	129	120	382	359	45
08:27:07	13.49	13.54	7	13	3.71	130	122	381	360	43
08:27:37	13.44	13.52	6	11	3.77	133	124	384	362	40
08:28:07	13.4	13.44	7	11	3.75	137	127	386	365	37
08:28:37	13.28	13.38	7	11	3.78	142	128	393	364	35
08:29:07	13.38	13.43	6	11	3.77	139	130	588	512	35
08:29:37	13.53	13.59	6	11	3.61	137	127	498	500	37
08:30:07	13.55	13.59	6	11	3.72	139	129	418	410	39
08:30:37	13.53	13.58	6	11	3.68	140	130	378	363	42
08:31:07	13.49	13.56	6	11	3.63	142	131	358	339	42
08:31:37	13.42	13.48	6	11	3.75	145	134	345	325	42
08:32:07	13.32	13.4	6	11	3.72	148	135	340	317	41
08:32:37	13.04	13.1	6	11	3.93	154	142	345	323	41
08:33:07	13.6	13.66	6	11	3.67	145	135	318	299	40
08:33:37	13.55	13.62	6	11	3.6	146	134	314	290	39
08:34:07	13.23	13.29	5	11	3.84	153	141	321	298	38
08:34:37	13.19	13.24	6	11	3.87	155	143	319	297	36
08:35:07	13.27	13.32	6	11	3.77	154	143	311	291	35
08:35:37	13.51	13.57	6	11	3.71	147	137	304	281	33
08:36:07	13.67	13.73	6	11	3.58	143	133	302	279	32
08:36:37	13.71	13.77	6	11	3.56	144	132	295	273	30
08:37:07	13.6	13.67	6	11	3.67	146	135	296	273	29
08:37:37	13.58	13.64	6	9	3.58	147	135	295	272	27
08:38:07	13.54	13.59	6	11	3.67	149	137	295	272	28
08:38:37	13.54	13.59	6	9	3.69	149	138	294	270	35
08:39:07	13.53	13.58	5	9	3.62	150	138	292	270	34
08:39:37	13.48	13.54	5	11	3.71	151	140	292	268	34
08:40:07	13.48	13.55	6	11	3.65	152	141	292	267	32
08:40:37	13.45	13.51	5	9	3.67	153	142	293	269	30
08:41:07	13.44	13.5	5	8	3.74	154	142	294	269	28
08:41:37	13.45	13.5	5	11	3.66	155	143	293	268	26
08:42:07	13.45	13.5	5	9	3.7	155	143	292	267	25
08:42:37	13.45	13.51	5	11	3.71	155	143	294	266	24
08:43:07	13.42	13.49	5	11	3.65	156	143	293	266	22
08:43:37	13.42	13.49	5	11	3.72	158	145	291	265	21
08:44:07	13.42	13.48	5	9	3.71	159	146	294	266	20

08:44:37	13.4	13.46	6	11	3.67	159	147	295	266	19
08:45:07	13.31	13.38	6	8	3.79	162	149	299	269	17
08:45:37	13.43	13.48	6	9	3.68	160	147	296	268	17
08:46:07	13.5	13.55	6	8	3.64	159	146	297	264	16
08:46:37	13.55	13.6	5	8	3.68	155	144	295	265	15
08:47:07	13.73	13.81	5	8	3.5	151	139	290	260	14
08:47:37	13.66	13.72	5	8	3.62	154	141	292	261	13
08:48:07	13.59	13.66	5	8	3.63	157	142	295	262	13
08:48:37	13.57	13.64	6	8	3.57	157	143	300	264	13
08:49:07	13.56	13.62	5	8	3.67	158	144	296	264	13
08:49:37	13.57	13.64	5	8	3.62	159	145	297	264	12
08:50:07	13.5	13.58	6	8	3.66	161	145	302	265	12
08:50:37	13.5	13.57	6	8	3.69	163	147	304	268	12
08:51:07	13.69	13.76	5	8	3.54	157	143	299	264	13
08:51:37	13.82	13.88	5	7	3.52	155	141	305	266	13
08:52:07	13.78	13.86	6	8	3.54	156	141	310	270	12
08:52:37	13.57	13.65	5	8	3.58	162	144	315	276	11
08:53:07	13.47	13.54	6	8	3.7	164	148	320	281	10
08:53:37	13.56	13.61	6	8	3.65	163	149	321	281	10
08:54:07	13.88	13.96	6	8	3.43	158	141	310	266	10
08:54:37	18.72	18.57	6	7	1.29	43	62	118	129	10
08:55:07	16.34	16.9	11	11	1.91	106	59	200	107	10
08:55:37	12.6	12.66	8	11	4.17	179	155	389	360	12
08:56:07	12.57	12.63	8	13	4.21	204	179	392	367	11
08:56:37	12.68	12.74	8	11	4.03	210	187	392	369	12
08:57:07	12.71	12.76	6	9	4.1	213	192	391	369	12
08:57:37	13.02	13.08	5	8	3.91	203	182	387	363	9
08:58:07	13.03	13.11	6	8	3.87	208	184	377	356	8
08:58:37	12.94	13.02	5	8	4	216	191	368	345	8
08:59:07	12.83	12.9	5	8	3.99	224	198	414	370	9
08:59:37	12.91	12.95	5	8	3.95	229	200	395	383	8
09:00:07	12.96	13.03	5	8	3.97	231	204	362	344	8
09:00:37	12.99	13.03	5	8	3.89	235	206	346	326	7
09:01:07	12.89	12.95	5	8	3.97	244	212	342	320	7
09:01:37	12.85	12.92	5	7	4	251	219	338	315	6
09:02:07	12.66	12.75	4	8	3.99	266	228	341	316	5
09:02:37	12.33	12.39	4	8	4.28	288	250	354	329	5
09:03:07	12.88	12.94	5	8	3.96	261	229	331	310	4
09:03:37	12.61	12.67	5	8	4.04	284	246	339	312	4
09:04:07	12.34	12.41	5	9	4.24	307	262	346	317	4
09:04:37	12.13	12.2	5	8	4.24	324	277	352	324	12
09:05:07	12.08	12.15	5	8	4.35	330	284	356	327	11
09:05:37	12.03	12.09	5	8	4.38	332	288	358	331	9
09:06:07	12.43	12.49	5	8	4.1	301	265	347	317	7
09:06:37	12.64	12.71	5	7	4.1	288	249	340	313	6
09:07:07	12.58	12.67	5	8	4.1	294	251	340	311	5
09:07:37	12.53	12.6	5	8	4.12	300	257	344	312	5
09:08:07	12.52	12.58	6	8	4.17	305	259	344	312	6
09:08:37	12.47	12.54	5	8	4.13	308	262	345	313	10
Average:	13.28	13.34	8.47	11.44	3.77	211.31	192.13	341.00	307.90	25.32

Koppers Industries - Dolomite, Alabama
No. 1 Stack
January 25, 1996

	1 O2	2 O2	1 CO	2 CO	2 CO2	1 NOX	2 NOX	1 SO2	2 SO2	VOC
09:57:41	13.04	13.14	5	6	3.78	232	166	361	342	153
09:58:11	12.95	13.04	5	6	3.93	243	175	348	329	227
09:58:41	12.82	12.91	4	5	3.91	255	182	346	325	22
09:59:11	12.77	12.83	3	5	3.93	265	192	399	363	6
09:59:41	12.74	12.82	2	5	4	275	197	365	352	6
10:00:11	12.79	12.89	2	5	3.87	278	201	338	320	4
10:00:41	12.74	12.82	2	5	3.97	284	205	326	306	-2
10:01:11	12.73	12.81	2	5	3.99	293	212	321	301	3
10:01:41	12.79	12.84	2	3	3.88	295	214	314	295	-1
10:02:11	12.6	12.69	2	5	4.03	310	219	316	292	0
10:02:41	12.53	12.57	2	5	4.06	315	229	322	303	-1
10:03:11	13.1	13.15	2	3	3.75	282	203	303	284	-1
10:03:41	13.04	13.13	2	5	3.81	287	204	302	280	-2
10:04:11	13.1	13.17	2	5	3.73	285	205	302	282	-2
10:04:41	13.05	13.15	2	5	3.75	292	203	303	281	2
10:05:11	12.96	13.04	2	5	3.84	308	216	302	282	-2
10:05:41	13.01	13.09	2	3	3.73	303	213	300	280	2
10:06:11	13.1	13.16	2	5	3.77	296	208	297	277	3
10:06:41	13.01	13.09	2	3	3.81	303	210	299	278	0
10:07:11	12.95	13.01	2	5	3.79	311	215	301	280	-3
10:07:41	12.87	12.94	2	3	3.89	321	220	304	281	2
10:08:11	12.87	12.92	2	4	3.83	325	225	304	283	-2
10:08:41	12.95	13.01	2	4	3.8	328	226	301	282	-2
10:09:11	12.85	12.93	2	5	3.9	335	227	302	280	0
10:09:41	12.87	12.95	2	5	3.8	336	228	301	281	3
10:10:11	12.93	13.01	2	3	3.83	336	230	297	276	1
10:10:41	12.85	12.91	2	4	3.87	342	232	302	278	-1
10:11:11	12.69	12.78	2	3	3.87	360	242	308	284	0
10:11:41	12.67	12.76	2	4	3.98	366	250	310	286	1
10:12:11	12.5	12.59	2	5	4.01	382	258	317	291	1
10:12:41	12.53	12.6	2	4	3.96	381	261	318	292	-2
10:13:11	12.52	12.6	2	4	4.04	384	261	315	291	1
10:13:41	12.5	12.57	2	4	3.97	389	265	317	293	1
10:14:11	12.48	12.55	2	4	4.02	394	268	319	292	0
10:14:41	12.54	12.59	3	5	4.04	392	268	322	288	-2
10:15:11	12.83	12.88	2	4	3.81	362	250	313	282	-1
10:15:41	12.93	13.01	2	3	3.84	348	236	310	281	4
10:16:11	12.88	12.98	3	4	3.81	356	237	315	283	-1
10:16:41	13.03	13.06	3	3	3.74	341	237	310	282	0
10:17:11	13.31	13.41	2	3	3.65	319	212	299	269	0
10:17:41	13.22	13.29	2	3	3.65	325	217	306	273	3
10:18:11	13.15	13.22	3	3	3.74	336	223	311	276	0
10:18:41	13.13	13.21	2	3	3.76	339	226	309	275	0
10:19:11	13.04	13.13	3	3	3.7	349	233	314	280	-2
10:19:41	12.92	12.99	3	5	3.84	361	239	321	282	2
10:20:11	12.89	12.98	3	3	3.83	367	244	321	282	2
10:20:41	12.89	12.98	3	3	3.79	372	245	320	281	2
10:21:11	12.66	12.75	3	3	3.95	392	258	329	290	-1
10:21:41	12.67	12.76	3	3	3.91	391	260	334	289	2
10:22:11	12.58	12.67	3	3	3.93	405	268	344	290	0
10:22:41	12.58	12.64	3	4	4	407	270	335	288	-2
10:23:11	12.81	12.88	3	3	3.81	381	255	336	285	3
10:23:41	12.98	13.05	3	3	3.78	367	242	341	285	-2
10:24:11	16.42	16.22	3	3	2.34	196	186	211	228	-1
10:24:41	20.04	20.13	11	11	0.34	23	29	71	66	1
10:25:11	13.79	14.11	99	52	3.34	157	99	285	210	7
10:25:41	13.56	13.63	6	5	3.55	152	99	319	299	2
10:26:11	13.52	13.61	3	3	3.54	159	103	322	302	4
10:26:41	13.44	13.52	2	3	3.65	163	106	324	304	3
10:27:11	13.45	13.52	2	3	3.59	166	108	324	304	1
10:27:41	13.46	13.53	1	3	3.59	170	110	325	306	0
10:28:11	13.45	13.54	1	1	3.6	173	111	327	307	-1
10:28:41	13.42	13.51	1	1	3.56	176	113	329	309	-1
10:29:11	13.81	13.85	1	0	3.41	165	108	494	458	0
10:29:41	14.05	14.12	1	0	3.3	161	103	391	392	-4

10:30:11	13.91	14.03	1	0	3.28	166	104	332	321	0
10:30:41	13.62	13.72	0	0	3.51	174	110	310	294	0
10:31:11	13.58	13.66	0	0	3.48	177	113	302	284	-1
10:31:41	13.52	13.59	1	0	3.52	181	115	296	278	-1
10:32:11	13.37	13.49	2	1	3.61	185	116	297	275	-2
10:32:41	13.29	13.34	2	3	3.6	185	120	300	283	-1
10:33:11	13.7	13.79	2	1	3.47	179	113	283	264	-1
10:33:41	13.46	13.54	1	1	3.57	187	118	289	270	-1
10:34:11	13.52	13.59	1	0	3.49	187	120	285	267	-2
10:34:41	13.84	13.9	1	0	3.42	177	115	277	258	-2
10:35:11	14.28	14.34	0	0	3.16	167	107	280	260	-2
10:35:41	14.36	14.44	0	0	3.13	167	107	270	253	0
10:36:11	14.21	14.31	0	0	3.23	170	108	264	246	-1
10:36:41	13.9	14	0	0	3.28	178	113	265	246	-2
10:37:11	13.73	13.81	0	0	3.42	185	118	264	244	-2
10:37:41	14.05	14.11	0	0	3.3	177	115	257	239	-2
10:38:11	14.36	14.44	-1	0	3.09	168	108	260	238	-2
10:38:41	14.38	14.46	0	0	3.14	167	108	265	247	-2
Average:	13.28	13.36	3.25	3.67	3.65	272.76	185.36	309.49	285.00	4.95

Koppers Industries - Dolomite, Alabama
No. 1 Stack
January 25, 1996

	1 O2	2 O2	1 CO	2 CO	2 CO2	1 NOX	2 NOX	1 SO2	2 SO2	VOC
11:28:18	13.09	13.18	-3	0	3.62	142	124	316	297	0
11:28:48	13.05	13.16	-3	0	3.68	143	125	325	299	1
11:29:18	13.3	13.38	-3	0	3.49	137	122	475	440	-2
11:29:48	13.43	13.53	3	0	3.42	135	119	371	388	-3
11:30:18	13.48	13.56	4	0	3.47	137	119	313	312	-3
11:30:48	13.54	13.63	3	0	3.38	137	121	289	278	-3
11:31:18	13.39	13.49	-4	0	3.44	142	123	281	264	-3
11:31:48	13.48	13.57	3	0	3.44	140	124	272	258	-4
11:32:18	12.98	13.12	4	0	3.46	149	126	283	255	-4
11:32:48	12.83	12.88	-4	0	3.85	153	135	290	275	-4
11:33:18	13.42	13.51	4	0	3.46	144	127	269	255	-4
11:33:48	13.37	13.47	-4	0	3.41	145	127	267	249	-4
11:34:18	13.42	13.54	-4	0	3.48	146	128	265	249	-4
11:34:48	13.41	13.51	-3	0	3.43	148	129	267	249	-4
11:35:18	13.45	13.55	-3	0	3.43	148	129	264	247	-4
11:35:48	13.49	13.59	-4	0	3.45	148	129	263	246	-4
11:36:18	13.5	13.6	-4	0	3.35	147	129	261	244	-4
11:36:48	13.43	13.53	-3	0	3.44	150	129	260	242	-4
11:37:18	13.49	13.57	-4	0	3.45	151	131	261	244	-4
11:37:48	13.51	13.62	-4	0	3.36	151	131	258	241	-4
11:38:18	13.51	13.63	-4	0	3.42	150	130	256	238	-4
11:38:48	13.49	13.58	-4	0	3.39	153	132	256	239	-4
11:39:18	13.58	13.66	-4	0	3.36	154	132	256	238	-4
11:39:48	13.57	13.67	-3	0	3.39	153	132	253	235	-4
11:40:18	13.6	13.7	-4	0	3.3	155	133	254	234	-4
11:40:48	13.6	13.7	-4	0	3.36	155	133	253	236	-4
11:41:18	13.55	13.64	-4	0	3.38	156	134	254	236	-4
11:41:48	13.57	13.65	-4	0	3.33	156	134	253	235	-4
11:42:18	13.6	13.69	-4	0	3.38	155	134	253	234	-5
11:42:48	13.62	13.72	-4	0	3.34	154	134	252	234	-4
11:43:18	13.6	13.68	-4	0	3.3	155	134	253	235	-4
11:43:48	13.62	13.71	-4	0	3.35	156	133	252	233	-3
11:44:18	13.61	13.72	-4	0	3.28	156	135	252	232	-3
11:44:48	13.67	13.77	-3	0	3.32	156	136	251	233	-3
11:45:18	13.72	13.83	-3	0	3.33	155	136	251	230	-2
11:45:48	13.49	13.59	-3	0	3.31	160	137	256	233	-2
11:46:18	13.18	13.29	-3	0	3.45	167	140	265	239	-2
11:46:48	13.07	13.17	-4	0	3.56	169	147	271	249	-3
11:47:18	13.03	13.13	-3	0	3.55	171	147	274	249	-3
11:47:48	12.97	13.08	-3	0	3.64	173	148	275	250	-3
11:48:18	12.97	13.07	-3	0	3.59	172	149	277	252	-3
11:48:48	13.02	13.12	-3	0	3.61	172	149	278	250	-3
11:49:18	13.02	13.12	-3	0	3.62	173	149	280	249	-3
11:49:48	13.06	13.16	-3	0	3.53	173	150	278	247	-2
11:50:18	13.13	13.23	-3	0	3.56	174	149	276	243	-2
11:50:48	13.13	13.23	-3	0	3.53	174	150	279	243	-2
11:51:18	13.15	13.24	3	0	3.49	175	150	279	243	-2
11:51:48	13.15	13.25	-3	0	3.56	176	151	279	242	-2
11:52:18	13.06	13.16	-3	0	3.55	177	152	290	245	-2
11:52:48	13.04	13.14	3	0	3.56	178	153	295	247	-2
11:53:18	12.99	13.14	3	0	3.61	178	153	294	247	-3
11:53:48	13.04	13.15	-3	0	3.52	179	153	294	246	-2
11:54:18	15.87	15.75	-3	0	3.44	114	152	217	237	-2
11:54:48	19.99	20.13	47	6	0.72	10	47	70	93	-2
11:55:18	12.24	12.56	-1	0	2.89	172	88	301	171	1
11:55:48	11.93	12.01	0	0	4.29	218	176	339	323	-1
11:56:18	12.15	12.25	-1	0	4.05	231	194	337	319	1
11:56:48	12.05	12.15	-1	0	4.09	249	205	342	322	1
11:57:18	12.12	12.25	-1	0	4.13	255	216	336	323	2
11:57:48	12.09	12.18	-2	0	4.01	262	220	334	317	1
11:58:18	12.18	12.29	3	0	4.04	262	222	327	313	2
11:58:48	12.09	12.2	-4	0	4.07	271	226	327	307	-1
11:59:18	12.14	12.22	-4	0	4.01	275	231	380	345	-3
11:59:48	12.17	12.28	-4	0	4.02	279	234	338	333	-3
12:00:18	11.91	12.01	-4	0	4.08	298	244	326	308	-3

12:00:48	11.77	11.87	-4	0	4.13	307	255	321	303	-4
12:01:18	11.9	11.98	-4	0	4.16	308	259	314	296	-4
12:01:48	11.91	12	-5	0	4.06	310	260	310	292	-3
12:02:18	11.69	11.8	13	5	4.19	306	260	317	291	-3
12:02:48	12.29	12.31	4	11	4.19	274	251	319	302	-3
12:03:18	12.72	12.84	-4	0	3.66	250	211	296	277	-2
12:03:48	12.53	12.63	-4	0	3.82	264	220	288	266	-3
12:04:18	12.6	12.7	-4	0	3.72	266	222	287	258	-3
12:04:48	12.39	12.49	-4	0	3.89	281	236	294	265	-3
12:05:18	12.44	12.54	-4	0	3.93	278	237	293	264	-3
12:05:48	12.48	12.58	-4	0	3.8	277	233	291	262	-2
12:06:18	12.85	12.92	-4	0	3.73	253	226	303	265	-3
12:06:48	13.02	13.13	-3	0	3.61	240	204	300	267	-3
12:07:18	12.7	12.8	3	0	3.69	260	214	286	253	-2
12:07:48	12.82	12.92	3	0	3.77	252	220	290	252	-3
12:08:18	13.14	13.24	-4	0	3.58	228	200	299	261	-3
12:08:48	13.07	13.17	-3	0	3.51	235	195	290	253	-2
12:09:18	13.12	13.21	-3	0	3.63	233	201	285	246	-3
12:09:48	13.22	13.33	-3	0	3.53	228	197	287	243	-3
12:10:18	13.26	13.37	-3	0	3.48	229	195	290	240	-3
12:10:48	13.28	13.37	-3	0	3.52	228	195	287	237	-3
12:11:18	13.3	13.41	-3	0	3.44	234	196	288	239	-3
12:11:48	13.12	13.24	-3	0	3.51	252	205	285	236	-3
12:12:18	12.63	12.75	-2	0	3.74	284	229	302	242	-3
12:12:48	12.28	12.4	-3	0	3.84	307	252	318	256	-3
12:13:18	12.04	12.16	-3	0	4.05	323	266	328	267	-4
12:13:48	12.26	12.34	-3	0	3.99	305	267	333	270	-4
12:14:18	12.76	12.86	-2	0	3.78	270	235	334	270	-4
12:14:48	13.18	13.26	-2	0	3.63	242	217	335	260	-4
12:15:18	13.43	13.54	-3	0	3.37	224	190	332	259	-4
12:15:48	13.72	13.81	-2	0	3.31	214	181	317	247	-4
12:16:18	13.3	13.44	2	0	3.41	234	185	313	232	-4
12:16:48	13.22	13.3	-3	0	3.57	242	207	310	234	-4
12:17:18	13.24	13.38	-2	0	3.5	240	198	319	232	-5
12:17:48	12.87	13	-2	0	3.62	269	215	335	243	-4
12:18:18	12.89	13	-2	0	3.64	268	227	334	250	-4
12:18:48	12.8	12.91	-2	0	3.71	274	223	339	252	-4
12:19:18	13.08	13.17	-2	0	3.6	257	225	331	250	-4
12:19:48	13.51	13.6	-2	0	3.4	228	197	326	240	-5
12:20:18	13.63	13.74	-2	0	3.35	225	186	322	235	-4
12:20:48	13.24	13.36	-2	0	3.43	250	198	324	237	-5
12:21:18	13.28	13.4	-1	0	3.48	255	209	318	231	-5
12:21:48	13.48	13.59	-2	0	3.36	251	207	309	222	-5
12:22:18	13.37	13.47	-1	0	3.37	261	212	317	223	-4
12:22:48	13.43	13.55	-1	0	3.39	256	209	319	224	-4
12:23:18	12.76	12.9	-1	0	3.56	297	226	343	237	-4
12:23:48	12.37	12.49	-1	0	3.83	331	260	360	255	-4
12:24:18	16.63	16.67	-1	0	2.45	155	200	188	201	-4
12:24:48	19.44	19.71	76	11	0.33	35	40	80	66	-2
12:25:18	13.19	13.35	28	46	3.16	125	96	301	200	2
12:25:48	13.36	13.48	0	0	3.54	125	101	305	286	2
12:26:18	13.16	13.27	-3	0	3.56	132	106	295	278	-3
12:26:48	13.12	13.23	-1	0	3.67	136	110	298	274	-3
12:27:18	13.16	13.25	-3	0	3.64	137	113	305	282	-3
12:27:48	13.51	13.6	0	0	3.45	132	109	307	285	-4
12:28:18	13.54	13.65	0	0	3.48	133	108	301	282	-3
12:28:48	13.48	13.58	1	0	3.42	135	110	309	278	-3
12:29:18	13.57	13.68	-5	0	3.41	131	108	452	414	-3
12:29:48	13.51	13.63	-5	0	3.43	133	108	361	372	-4
12:30:18	13.25	13.37	5	0	3.46	139	112	309	304	-4
12:30:48	13.26	13.36	5	0	3.58	142	115	288	273	-5
12:31:18	13.33	13.44	5	0	3.5	142	116	279	261	-5
12:31:48	13.47	13.57	-5	0	3.45	140	115	273	254	-5
12:32:18	13.64	13.75	-5	0	3.39	134	110	275	250	-5
12:32:48	13.76	13.87	-2	0	3.31	134	109	272	256	-5
12:33:18	13.99	14.11	5	0	3.14	132	106	249	231	-4
12:33:48	13.68	13.8	-5	0	3.34	138	110	255	231	-5
12:34:18	13.52	13.64	-5	0	3.34	142	113	261	239	-4
12:34:48	13.53	13.62	-5	0	3.44	143	117	263	241	-4
12:35:18	13.89	13.99	-1	0	3.28	135	112	261	239	-5

12:35:48	13.92	14.04	9	0	3 17	134	108	254	233	-2
12:36:18	13.82	13.95	-1	0	3.29	137	110	254	230	1
12:36:48	13.73	13 83	-3	0	3.27	139	111	259	234	-3
12:37:18	13.74	13.84	-1	0	3.29	141	113	257	235	-3
12:37:48	13.91	14.01	11	0	3.26	139	113	250	228	-3
12:38:18	13.78	13.91	-3	0	3.19	142	113	253	226	1
12:38:48	13.58	13.7	-4	0	3.35	145	116	262	235	-4
12:39:18	13.48	13.58	-4	0	3.4	151	121	263	238	-5
12:39:48	13.71	13 82	-5	0	3.29	149	122	252	231	-5
12:40:18	13.78	13.91	-5	0	3.29	145	119	252	225	-5
12:40:48	13.87	13.98	-5	0	3.23	141	116	255	228	-5
12:41:18	13.82	13.95	-5	0	3.19	142	114	256	227	-4
12:41:48	13.78	13.89	-5	0	3.31	145	117	254	226	-4
12:42:18	13.84	13.95	-5	0	3.2	146	118	252	222	-4
12:42:48	13.73	13.85	-5	0	3.28	149	120	255	223	-4
12:43:18	13.62	13.74	-4	0	3.35	151	122	262	227	-4
12:43:48	13.53	13.66	-4	0	3.31	153	123	262	229	-4
12:44:18	13.41	13.53	-4	0	3.47	157	126	266	233	-4
12:44:48	13.39	13.5	-4	0	3.44	159	128	268	233	-4
12:45:18	13.47	13.56	-5	0	3.39	160	129	267	233	-4
12:45:48	13.46	13.57	-4	0	3.44	162	130	266	231	-4
12:46:18	13.21	13.37	-4	0	3.37	166	130	274	230	-3
12:46:48	12.89	12.99	-4	0	3.69	175	139	287	246	-3
12:47:18	12.79	12.9	-5	0	3.74	178	143	289	250	-3
12:47:48	12.73	12.85	-5	0	3.69	180	144	292	253	-3
12:48:18	12.74	12 85	-5	0	3.78	180	145	297	253	-4
12:48:48	12.82	12.93	-5	0	3.69	180	144	296	252	-4
12:49:18	12.98	13.08	-5	0	3.63	174	141	296	250	-3
12:49:48	13	13.13	-4	0	3 63	173	139	299	250	-3
12:50:18	13.01	13.12	-4	0	3 6	175	140	299	250	-3
12:50:48	13.04	13.15	-4	0	3 58	176	140	296	247	-3
12:51:18	13.09	13.21	-4	0	3.6	175	140	295	245	-3
12:51:48	13.02	13.13	-4	0	3 56	179	142	300	246	-2
12:52:18	13	13.12	-4	0	3 63	179	144	302	246	-1
12:52:48	12.93	13.05	-4	0	3.65	181	144	307	248	0
12:53:18	13.02	13.14	-4	0	3.57	180	144	304	248	1
12:53:48	13.01	13.13	-4	0	3 63	179	144	305	246	1
12:54:18	15.89	15.83	-2	0	3.31	110	141	225	234	0
12:54:48	19.91	20.07	41	1	0.72	11	45	77	93	2
12:55:18	12.45	12.78	-1	0	2.81	168	80	282	154	5
12:55:48	11.88	11.99	-2	0	4.22	213	163	334	308	3
12:56:18	12.14	12.24	-4	0	4.14	225	176	332	308	1
12:56:48	11.94	12.08	-3	0	4 1	243	187	338	313	0
Average:	13.28	13.39	-1.83	0.45	3 49	186.89	156.81	287.83	253.20	-2.88

Koppers Industries - Dolomite, Alabama
No. 1 Stack
January 25, 1996

	1 O2	2 O2	1 CO	2 CO	2 CO2	1 NOX	2 NOX	1 SO2	2 SO2	VOC
13:23:55	12.76	12.89	-5	0	3.78	250	226	309	284	3
13:24:25	17.55	17.45	4	0	1.88	118	121	175	172	3
13:24:55	18.62	18.99	300	246	0.69	55	27	111	62	7
13:25:25	12.97	13.11	7	0	3.71	107	99	317	271	14
13:25:55	13.27	13.38	-2	0	3.57	109	99	316	292	0
13:26:25	13.47	13.59	4	0	3 5	109	99	310	286	-4
13:26:55	13.46	13.58	5	0	3.46	111	101	311	286	3
13:27:25	13.39	13.52	-6	0	3.46	116	105	310	285	-2
13:27:55	13.38	13.5	-2	0	3.53	118	106	310	284	-1
13:28:25	13.22	13.36	-6	0	3.49	121	109	311	285	4
13:28:55	12.76	12.88	-6	0	3.84	132	120	380	322	-6
13:29:25	12.8	12.92	-7	0	3.71	129	116	486	481	-5
13:29:55	12.91	13.04	-7	0	3.67	127	116	384	377	-4
13:30:25	12.91	13.03	-7	0	3.74	128	115	340	321	-4
13:30:55	12.94	13.07	-7	0	3.64	129	117	318	297	-5
13:31:25	12.91	13.05	-7	0	3.64	130	117	307	284	3
13:31:55	12.8	12.92	-7	0	3.78	134	122	308	284	-5
13:32:25	12.41	12.55	-7	0	3.86	140	126	317	288	-2
13:32:55	12.72	12.8	-7	0	3.84	137	127	309	290	-8
13:33:25	12.75	12.88	-7	0	3.73	139	125	303	277	-2
13:33:55	12.42	12.55	-6	0	3.82	144	130	308	281	-6
13:34:25	12.39	12.5	-7	0	3.96	149	134	313	287	-8
13:34:55	12.55	12.68	-7	0	3.8	147	133	306	283	-6
13:35:25	13.03	13.12	-7	0	3.62	135	125	302	276	-1
13:35:55	13.45	13.57	-7	0	3.43	125	114	299	278	-4
13:36:25	13.53	13.65	-7	0	3.36	123	112	279	258	5
13:36:55	13.51	13.63	-7	0	3.43	125	112	268	244	-3
13:37:25	13.47	13.59	-7	0	3.45	127	113	270	243	-5
13:37:55	13.47	13.59	-7	0	3.37	126	114	273	247	-4
13:38:25	13.47	13.59	-7	0	3.47	127	114	274	247	-4
13:38:55	13.4	13.52	-7	0	3.46	128	116	274	249	-5
13:39:25	13.47	13.6	-7	0	3 35	127	115	274	248	-7
13:39:55	13.42	13.56	8	0	3.43	129	116	276	249	-6
13:40:25	13.26	13.39	-8	0	3.46	134	120	279	254	-2
13:40:55	13.38	13 5	7	0	3.47	132	120	278	252	-1
13:41:25	13.54	13.67	7	0	3.4	130	116	276	248	-3
13:41:55	13.14	13.28	-8	0	3.43	135	120	280	251	-2
13:42:25	13.04	13.15	7	0	3.65	140	126	284	257	-1
13:42:55	12.92	13.06	-8	0	3.62	143	128	286	259	3
13:43:25	13.04	13.14	-7	0	3.61	143	129	288	258	0
13:43:55	13.31	13.43	-7	0	3 52	136	124	287	256	-6
13:44:25	13.39	13.52	-7	0	3.38	134	121	291	261	0
13:44:55	13.28	13.42	-7	0	3.51	137	123	285	253	-2
13:45:25	13.05	13.19	-7	0	3.62	142	128	283	249	-5
13:45:55	13.07	13.18	-7	0	3 53	142	128	286	252	6
13:46:25	12.84	12.98	-7	0	3.69	146	129	294	257	-5
13:46:55	12.91	13.03	-7	0	3.68	148	132	293	259	-3
13:47:25	12.94	13.07	-7	0	3.64	148	133	293	257	-4
13:47:55	12.93	13.08	-7	0	3.68	148	132	294	257	5
13:48:25	12.87	13	6	0	3.64	148	133	297	257	-2
13:48:55	12.85	12.98	-7	0	3 69	150	134	299	257	-6
13:49:25	12.74	12.88	-7	0	3.76	155	138	300	261	-4
13:49:55	12.67	12.81	-7	0	3.72	157	139	300	259	-5
13:50:25	12.56	12.71	-7	0	3.84	159	142	306	264	-4
13:50:55	12.39	12.53	-6	0	3.9	163	145	317	270	5
13:51:25	12.45	12.59	-6	0	3 83	164	146	316	270	-6
13:51:55	12.46	12.6	-6	0	3 9	166	148	318	269	-1
13:52:25	12.45	12.57	-6	0	3.82	166	149	318	271	-6
13:52:55	12.47	12.59	-6	0	3.84	166	149	323	271	-2
13:53:25	12.76	12.86	-6	0	3.71	155	141	320	265	-6
13:53:55	13.21	13.34	-6	0	3.46	147	132	316	267	-1
13:54:25	16.04	16.14	-6	0	2.2	88	95	207	200	-2
13:54:55	18.67	19.05	18	7	0.32	19	13	85	58	-3
13:55:25	12.11	12.37	-1	0	3.97	146	115	331	253	7
13:55:55	11.95	12.05	-1	0	4.29	176	155	356	331	-3

13:56:25	11.94	12.08	-4	0	4.13	190	167	359	333	10
13:56:55	11.98	12.11	-2	0	4.15	199	176	359	333	1
13:57:25	12.01	12.14	-4	0	4.13	203	178	359	331	4
13:57:55	12.13	12.24	-4	0	4.05	204	180	353	327	-1
13:58:25	12.2	12.32	-6	0	4.07	204	182	348	323	-4
13:58:55	12.21	12.34	-7	0	4.04	205	182	346	317	1
13:59:25	12.16	12.31	-7	0	3.95	211	183	403	378	7
13:59:55	12.17	12.29	-7	0	4.08	219	193	353	333	-2
14:00:25	12.16	12.26	-7	0	4.01	226	200	332	307	-1
14:00:55	11.96	12.1	-7	0	4.12	241	210	329	300	-6
14:01:25	11.7	11.85	-7	0	4.29	256	223	336	305	-4
14:01:55	11.42	11.54	-7	0	4.34	265	234	340	310	-3
14:02:25	10.88	11.02	-7	0	4.62	282	248	357	324	-5
14:02:55	11.28	11.35	-7	0	4.5	273	249	350	323	-7
14:03:25	11.41	11.55	-7	0	4.28	280	245	341	306	0
14:03:55	11.34	11.47	-7	0	4.39	288	252	345	308	-4
14:04:25	11.28	11.42	-7	0	4.44	291	256	346	310	-3
14:04:55	11.23	11.36	-7	0	4.43	292	259	350	310	-3
14:05:25	11.24	11.37	-7	0	4.46	297	263	352	311	0
14:05:55	11.49	11.61	-7	0	4.25	288	256	343	305	-2
14:06:25	11.71	11.84	-7	0	4.19	275	245	339	298	-3
14:06:55	11.62	11.76	-7	0	4.31	286	250	349	304	-7
14:07:25	11.62	11.74	-7	0	4.18	285	253	350	303	-2
14:07:55	11.59	11.73	-7	0	4.28	289	255	349	302	-2
14:08:25	11.55	11.67	-7	0	4.26	292	257	349	301	-7
14:08:55	11.64	11.78	-7	0	4.18	293	258	349	299	-8
14:09:25	11.61	11.73	-6	0	4.29	297	262	351	301	-6
14:09:55	11.56	11.69	-6	0	4.25	307	267	356	302	-2
14:10:25	11.51	11.63	-6	0	4.29	310	274	362	305	-5
14:10:55	11.53	11.67	-6	0	4.28	308	273	361	303	1
14:11:25	11.53	11.69	-6	0	4.24	312	274	362	303	-5
14:11:55	11.63	11.73	-6	0	4.22	309	272	359	302	-7
14:12:25	11.62	11.77	-6	0	4.25	308	270	363	304	-8
14:12:55	11.59	11.72	-6	0	4.16	309	273	367	305	2
14:13:25	11.56	11.72	-6	0	4.29	311	274	368	305	-1
14:13:55	11.69	11.83	-6	0	4.15	304	270	365	305	-2
14:14:25	11.97	12.09	-6	0	4.09	287	257	361	297	-8
14:14:55	12.25	12.4	-6	0	3.92	263	235	355	290	-7
14:15:25	12.29	12.45	-6	0	3.9	265	231	355	287	-5
14:15:55	12.19	12.32	-6	0	4	272	240	356	289	-4
14:16:25	12.11	12.26	-6	0	4.01	279	245	363	290	-5
14:16:55	12.37	12.49	-6	0	3.85	267	240	358	288	3
14:17:25	12.2	12.36	-6	0	3.97	270	239	359	287	-4
14:17:55	12.19	12.36	-6	0	3.89	272	240	367	289	-6
14:18:25	12.79	12.46	-8	0	3.12	149	232	214	271	-7
Average:	12.7	12.8	-3.1	2.3	3.8	189.5	169.5	318.4	282.2	-2.3

Koppers Industries - Dolomite, Alabama
No. 1 Stack
January 25, 1996

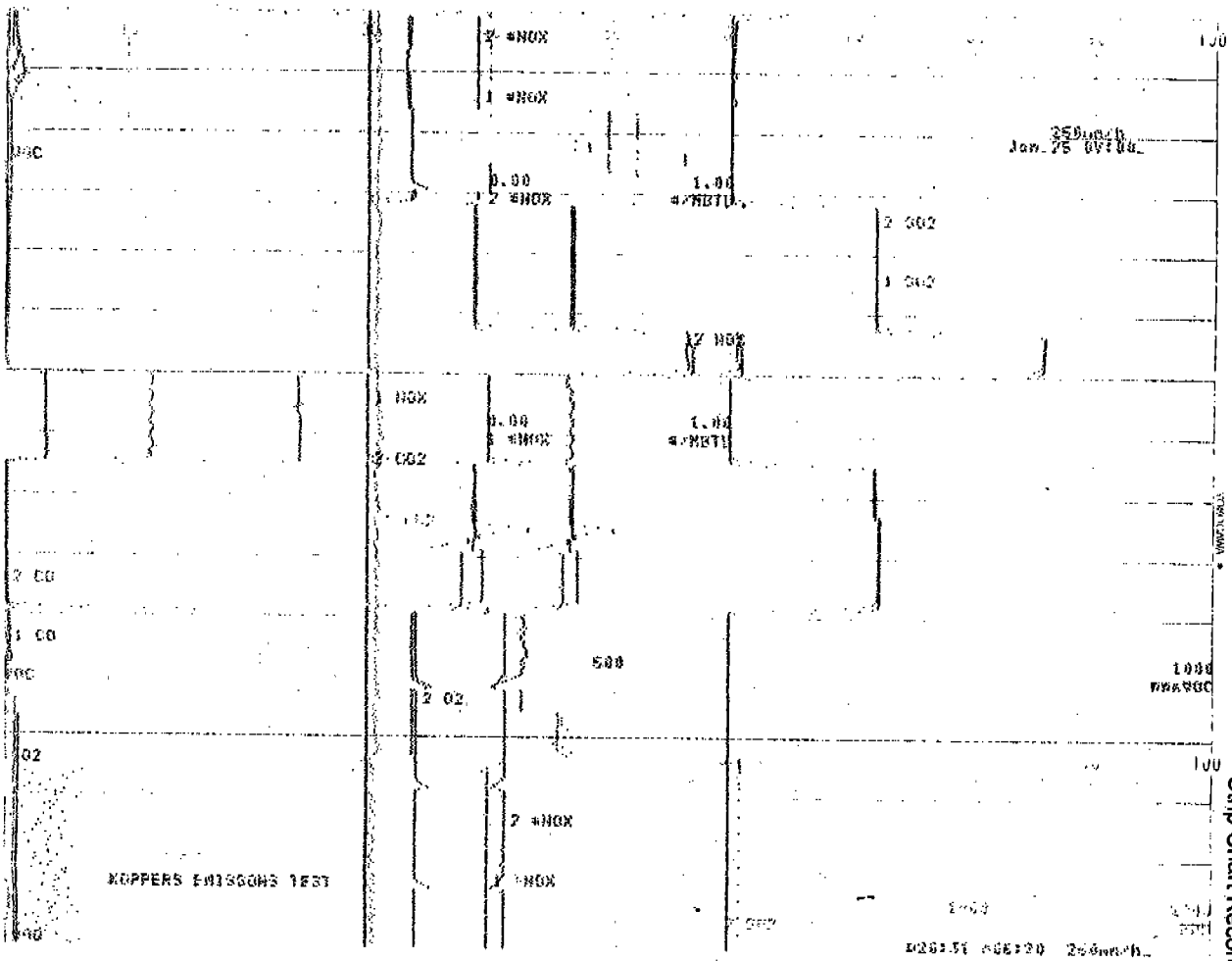
	1 O2	2 O2	1 CO	2 CO	2 CO2	1 NOX	2 NOX	1 SO2	2 SO2	VOC
15:07:35	12.14	12.27	0	0	4.06	249	219	315	285	-6
15:08:05	12.1	12.24	0	0	3.96	252	220	313	283	-6
15:08:35	12.11	12.25	-1	0	3.96	254	221	310	279	1
15:09:05	12.12	12.25	0	0	4	257	226	310	279	-3
15:09:35	12.13	12.26	-1	0	3.92	257	226	312	281	1
15:10:05	12.06	12.19	0	0	4.02	263	230	316	283	-6
15:10:35	12.22	12.37	-1	0	3.91	260	229	310	278	-5
15:11:05	11.92	12.07	-1	0	3.99	279	240	316	280	-6
15:11:35	12.51	12.63	0	0	3.83	253	228	301	271	-1
15:12:05	12.5	12.65	-1	0	3.77	254	224	299	265	-6
15:12:35	12.51	12.64	-1	0	3.74	255	225	298	265	-4
15:13:05	12.95	13.08	-1	0	3.62	227	205	300	263	-1
15:13:35	13.27	13.42	-1	0	3.36	209	186	300	265	-4
15:14:05	13.24	13.4	-1	0	3.42	208	183	296	258	-6
15:14:35	13.08	13.23	-1	0	3.5	211	185	298	260	-2
15:15:05	12.92	13.08	0	0	3.53	216	191	300	260	-6
15:15:35	12.84	13	0	0	3.65	223	195	294	255	-5
15:16:05	12.8	12.93	0	0	3.67	224	198	294	254	-7
15:16:35	12.71	12.85	0	0	3.63	230	203	300	262	-4
15:17:05	12.98	13.14	0	0	3.59	221	195	294	253	-5
15:17:35	12.9	13.05	0	0	3.55	231	201	299	251	-5
15:18:05	12.91	13.07	0	0	3.56	228	201	298	252	-2
15:18:35	13	13.14	0	0	3.59	232	202	298	249	-6
15:19:05	12.55	12.71	0	0	3.75	265	223	314	259	-4
15:19:35	12.15	12.31	0	0	3.96	274	240	323	271	-6
15:20:05	12.13	12.27	1	0	3.92	281	246	324	273	-8
15:20:35	12.46	12.57	0	0	3.81	265	240	319	271	-7
15:21:05	12.79	12.92	0	0	3.66	236	212	324	268	-6
15:21:35	12.86	13.01	1	0	3.59	232	205	330	271	-1
15:22:05	12.73	12.88	1	0	3.64	238	208	325	267	6
15:22:35	12.55	12.7	1	0	3.82	253	219	325	264	-1
15:23:05	12.55	12.71	1	0	3.73	257	224	327	265	-4
15:23:35	12.52	12.66	1	0	3.79	260	228	333	266	-2
15:24:05	13.2	13.05	1	0	3.66	248	228	307	263	-3
15:24:35	18.49	18.32	35	12	0.58	26	62	106	102	-2
15:25:05	14.84	15.33	198	186	1.63	98	62	184	103	-1
15:25:35	12.93	13.08	6	0	3.65	109	97	316	279	3
15:26:05	13.01	13.16	5	0	3.63	113	99	321	288	-2
15:26:35	12.95	13.09	9	0	3.65	116	103	332	299	-3
15:27:05	13.17	13.31	0	0	3.47	116	102	326	294	-2
15:27:35	13.47	13.63	-1	0	3.38	112	100	317	288	-2
15:28:05	13.51	13.67	-1	0	3.35	113	100	315	283	-4
15:28:35	13.7	13.87	-2	0	3.17	111	97	315	281	-4
15:29:05	13.8	13.96	-2	0	3.25	112	100	452	365	-3
15:29:35	13.86	14	-2	0	3.12	109	96	429	425	-3
15:30:05	13.88	14.03	-2	0	3.13	109	97	343	325	-4
15:30:35	13.87	14.02	3	0	3.17	110	97	299	273	-4
15:31:05	14.08	14.22	-2	0	3.02	109	97	284	256	-6
15:31:35	14.16	14.31	2	0	3.04	107	95	277	245	-2
15:32:05	14	14.16	-2	0	3.03	110	96	276	242	-6
15:32:35	13.68	13.84	-2	0	3.19	116	102	285	252	-8
15:33:05	14.3	14.46	2	0	2.96	109	98	265	237	-6
15:33:35	13.86	14.03	0	0	3.06	114	99	268	233	-6
15:34:05	13.71	13.86	-2	0	3.22	119	103	273	238	-3
15:34:35	13.7	13.86	-2	0	3.25	119	105	272	239	-3
15:35:05	13.72	13.87	-2	0	3.16	120	106	272	239	-2
15:35:35	13.88	14.02	-1	0	3.15	116	104	270	238	-3
15:36:05	14.12	14.25	-2	0	3.05	112	100	268	235	-5
15:36:35	14.15	14.3	-2	0	2.96	112	98	265	233	-6
15:37:05	14.09	14.24	-2	0	3.04	114	100	262	230	-4
15:37:35	14.07	14.22	-2	0	3.03	115	102	262	229	-4
15:38:05	14.02	14.18	-2	0	3.02	118	103	263	228	-7
15:38:35	13.9	14.05	-2	0	3.15	120	105	265	231	-7
15:39:05	13.99	14.13	-2	0	3.04	119	104	264	231	-6
15:39:35	14.08	14.23	-2	0	3.05	116	103	262	229	4

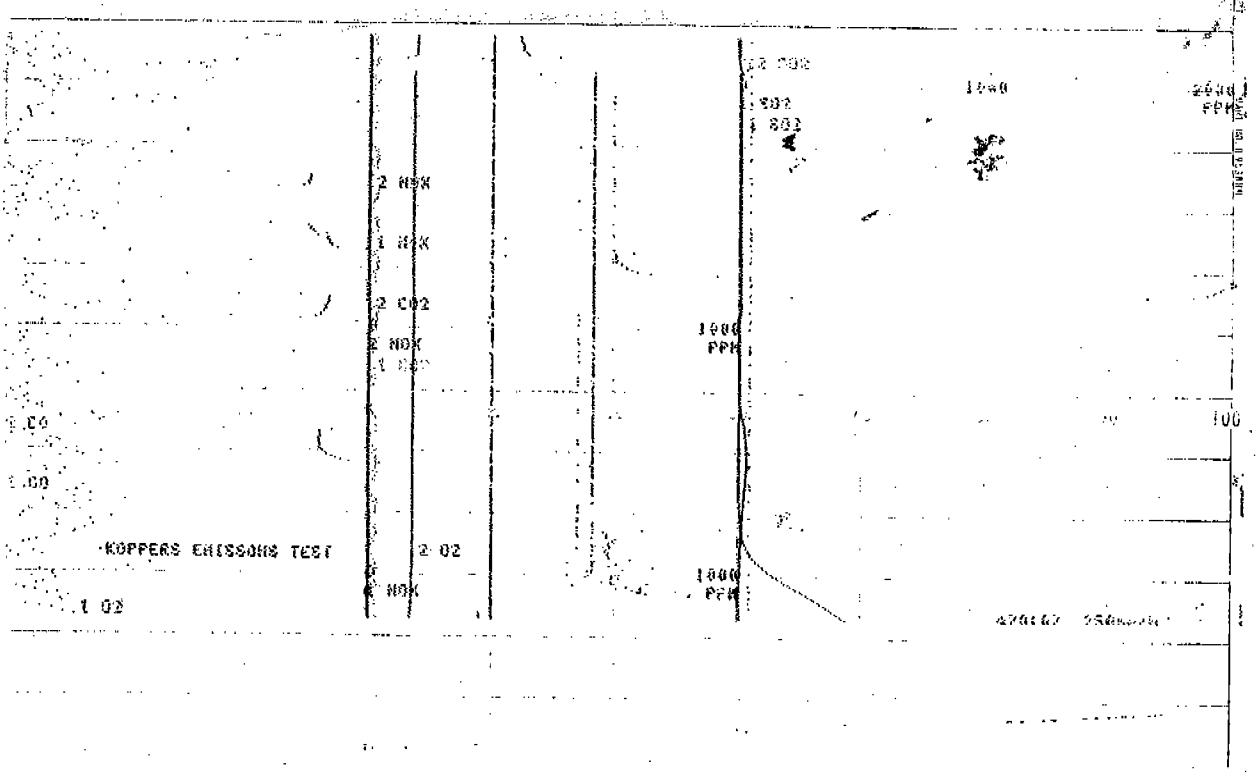
15:40:05	14.12	14.27	-3	0	3.02	117	102	260	227	-4
15:40:35	14.06	14.2	-3	0	2.98	118	104	260	228	-6
15:41:05	14.11	14.27	-2	0	3.03	118	105	259	226	-6
15:41:35	14.09	14.23	-2	0	2.99	119	105	257	225	2
15:42:05	14.01	14.18	-2	0	3.01	121	106	259	224	-5
15:42:35	13.84	14	-2	0	3.18	124	108	264	230	-8
15:43:05	13.69	13.85	-2	0	3.21	129	111	271	236	-4
15:43:35	13.44	13.59	-2	0	3.32	133	116	277	242	-4
15:44:05	13.36	13.52	-2	0	3.4	134	118	280	247	-5
15:44:35	13.43	13.57	-2	0	3.29	134	118	278	245	-9
15:45:05	13.36	13.51	-2	0	3.38	136	119	281	247	-3
15:45:35	13.41	13.57	-2	0	3.32	135	118	278	245	-7
15:46:05	13.42	13.58	-2	0	3.31	135	119	278	244	-5
15:46:35	13.4	13.57	-2	0	3.38	136	120	278	245	-6
15:47:05	13.56	13.72	-3	0	3.23	133	117	276	241	-5
15:47:35	13.42	13.58	-3	0	3.32	137	120	280	244	-3
15:48:05	13.37	13.52	-2	0	3.39	139	121	282	246	-4
15:48:35	13.4	13.55	-3	0	3.3	139	122	281	246	-3
15:49:05	13.42	13.57	-2	0	3.35	139	121	280	244	-3
15:49:35	13.52	13.66	-2	0	3.29	138	121	278	244	1
15:50:05	13.56	13.72	-2	0	3.22	137	120	276	241	-5
15:50:35	13.54	13.7	-2	0	3.3	136	119	277	240	-7
15:51:05	13.55	13.71	-2	0	3.19	136	120	277	238	-3
15:51:35	13.44	13.6	-1	0	3.32	140	122	281	242	-7
15:52:05	13.31	13.47	-1	0	3.39	143	125	287	246	-5
15:52:35	13.34	13.49	-1	0	3.31	144	126	287	247	-3
15:53:05	13.19	13.36	-1	0	3.43	147	129	290	249	1
15:53:35	13.07	13.25	1	0	3.53	152	132	296	255	-6
15:54:05	13.14	13.26	0	0	3.45	151	133	299	256	-3
15:54:35	18.01	17.92	3	0	1.88	73	77	178	165	-8
15:55:05	17.29	17.82	11	0	1.12	71	33	149	79	3
15:55:35	11.76	11.91	1	0	4.16	166	141	364	324	10
15:56:05	12.14	12.27	0	0	4.08	169	150	377	344	-4
15:56:35	12.43	12.56	3	0	3.83	168	148	368	339	5
15:57:05	12.34	12.5	1	0	3.92	178	155	355	326	-1
15:57:35	12.24	12.39	-1	0	3.96	188	163	355	322	-3
15:58:05	12.33	12.47	-1	0	3.86	192	168	356	325	1
15:58:35	12.42	12.56	0	0	3.91	190	168	349	319	5
15:59:05	12.51	12.63	-2	0	3.81	184	164	391	340	-5
15:59:35	12.93	13.07	-2	0	3.51	166	149	371	352	-6
16:00:05	13.31	13.45	-2	0	3.45	155	137	342	313	2
16:00:35	13.32	13.47	-3	0	3.36	158	137	322	294	-4
16:01:05	13.32	13.49	-3	0	3.4	164	141	307	275	4
16:01:35	13.03	13.18	-3	0	3.59	178	155	295	263	-5
16:02:05	12.88	13.05	-3	0	3.55	185	161	295	259	-4
16:02:35	12.51	12.66	-2	0	3.84	203	177	313	277	-4
16:03:05	13.13	13.27	-2	0	3.49	181	163	295	265	-7
16:03:35	13.06	13.19	-2	0	3.47	188	165	291	257	-4
16:04:05	12.91	13.07	-2	0	3.6	194	170	294	258	7
16:04:35	12.87	13.02	-2	0	3.58	200	175	298	262	3
16:05:05	12.85	13	-2	0	3.63	203	177	298	261	-6
16:05:35	12.75	12.92	-2	0	3.67	212	183	301	263	-5
16:06:05	12.52	12.68	-2	0	3.71	223	194	305	267	3
16:06:35	12.7	12.86	-2	0	3.72	212	189	304	266	-2
16:07:05	12.6	12.75	-2	0	3.77	215	187	312	272	0
16:07:35	12.47	12.63	-2	0	3.77	223	196	312	272	-3
16:08:05	12.68	12.81	-2	0	3.72	214	191	305	267	-6
16:08:35	13.31	13.46	-2	0	3.43	189	171	307	265	-2
16:09:05	13.54	13.7	-2	0	3.32	172	154	307	265	-6
16:09:35	13.54	13.7	-2	0	3.35	175	151	295	254	-3
16:10:05	13.12	13.28	-2	0	3.44	191	164	290	247	-7
16:10:35	13.01	13.17	-2	0	3.55	199	174	295	249	-4
16:11:05	13.23	13.38	-1	0	3.42	191	168	293	247	-5
16:11:35	13.12	13.29	-1	0	3.47	195	171	293	246	-6
16:12:05	13.3	13.47	-1	0	3.43	185	164	293	246	-3
16:12:35	13.27	13.42	-1	0	3.38	186	162	297	248	-4
16:13:05	13.23	13.4	-1	0	3.44	191	166	298	248	-6
16:13:35	13.17	13.34	-1	0	3.49	197	170	298	248	-7
16:14:05	12.9	13.06	-2	0	3.54	217	186	306	254	-5
16:14:35	12.82	12.95	-1	0	3.62	222	193	310	256	-5

16:15:05	12.53	12.71	-2	0	3.74	237	202	318	261	-4
16:15:35	12.37	12.55	-1	0	3.79	245	213	325	269	-4
16:16:05	12.42	12.57	-2	0	3.86	246	214	326	270	-5
16:16:35	12.39	12.52	-1	0	3.8	241	215	333	271	0
16:17:05	13.29	13.45	-1	0	3.39	191	171	336	275	1
16:17:35	13.38	13.56	-1	0	3.43	188	161	326	259	-5
16:18:05	13.17	13.34	0	0	3.43	194	169	328	245	-3
16:18:35	13.17	13.35	0	0	3.48	197	169	337	247	-5
16:19:05	13.23	13.4	0	0	3.41	197	171	338	250	-4
16:19:35	13.19	13.34	0	0	3.42	201	173	335	249	0
16:20:05	13.05	13.21	0	0	3.56	208	180	334	251	-2
16:20:35	13.13	13.31	0	0	3.45	200	176	334	252	-2
16:21:05	13.12	13.28	0	0	3.49	204	176	333	255	-4
16:21:35	13.22	13.4	0	0	3.48	206	178	327	251	-4
16:22:05	13.3	13.46	0	0	3.34	204	178	322	246	-7
16:22:35	13.35	13.53	0	0	3.37	205	178	322	241	5
16:23:05	12.53	12.73	0	0	3.81	256	215	347	260	-6
16:23:35	12.34	12.5	0	0	3.79	270	233	352	269	-3
16:24:05	12.94	12.75	0	0	3.17	185	226	282	254	1
16:24:35	18.38	18.21	17	0	0.63	27	66	116	108	-7
16:25:05	16.31	16.83	301	286	2.27	105	78	235	141	4
16:25:35	13.37	13.52	5	0	3.5	102	89	319	283	5
16:26:05	13.46	13.61	0	0	3.38	103	90	317	281	-3
16:26:35	13.92	14.07	6	0	3.24	99	86	321	283	-5
16:27:05	14.2	14.36	-2	0	3.05	98	85	317	284	2
16:27:35	14.31	14.48	0	0	2.93	97	85	306	271	-7
16:28:05	14.05	14.23	-3	0	3.06	100	86	294	257	-5
16:28:35	13.87	14.07	-3	0	3.14	103	90	307	265	-5
16:29:05	13.79	13.93	-3	0	3.22	106	94	444	356	-6
16:29:35	13.92	14.08	-3	0	3.16	104	91	426	416	-1
16:30:05	14.03	14.19	-3	0	3.04	103	91	344	322	-8
16:30:35	14.04	14.2	-4	0	3.03	103	91	304	272	0
16:31:05	14.04	14.22	-4	0	3.09	104	91	294	259	-2
16:31:35	13.83	14	0	0	3.14	108	93	292	255	-7
16:32:05	13.54	13.71	-4	0	3.34	113	98	292	254	2
16:32:35	13.09	13.26	-4	0	3.51	121	105	305	267	-5
16:33:05	13.4	13.57	-4	0	3.33	117	103	294	259	-7
16:33:35	13.57	13.72	-4	0	3.32	114	100	286	250	-2
16:34:05	13.99	14.14	-4	0	3.04	108	95	290	252	-6
16:34:35	14.17	14.34	-4	0	2.99	107	93	284	248	-8
16:35:05	13.97	14.15	-4	0	3.08	109	94	273	237	0
16:35:35	13.85	14.04	-4	0	3.11	111	97	272	232	-6
16:36:05	13.84	14.01	-4	0	3.13	112	98	276	237	-7
16:36:35	13.74	13.92	-4	0	3.23	116	100	280	242	-7
16:37:05	13.69	13.86	-4	0	3.19	116	100	280	243	-5
16:37:35	13.62	13.79	-4	0	3.3	118	103	282	244	-4
16:38:05	13.43	13.63	-4	0	3.27	121	105	284	246	-7
16:38:35	13.31	13.47	-4	0	3.39	126	110	289	251	-4
16:39:05	13.3	13.46	-4	0	3.4	126	110	289	252	-6
16:39:35	13.25	13.42	-4	0	3.36	127	111	291	252	-6
16:40:05	13.13	13.31	-4	0	3.5	130	113	294	255	-5
16:40:35	12.98	13.14	-4	0	3.57	133	116	297	259	-5
16:41:05	12.95	13.11	-4	0	3.52	136	118	298	260	-5
16:41:35	12.92	13.09	-4	0	3.61	137	119	299	261	-8
16:42:05	12.96	13.13	-4	0	3.52	137	119	299	260	-7
16:42:35	13.02	13.19	-4	0	3.52	135	119	296	258	-7
16:43:05	13.42	13.56	-4	0	3.38	127	113	294	254	-8
Average:	13.34	13.49	1.65	2.52	3.38	164.16	144.30	300.40	259.01	-3.55

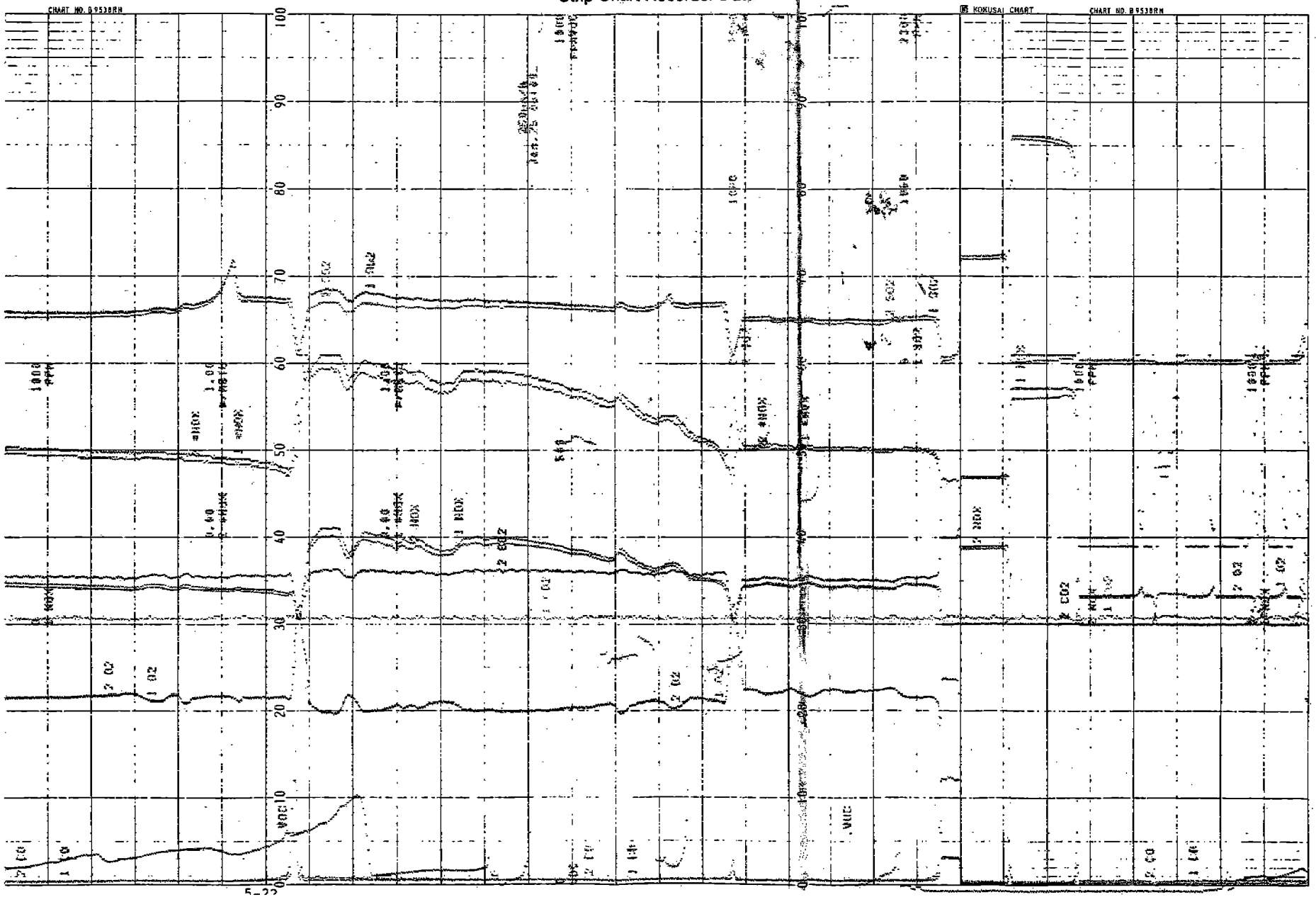
Originals in document are 11x17. Poor print quality. Reduced to scan.

Koppers Industries - Dolomite, Alabama
No. 1 Stack
Strip Chart Recorder Data

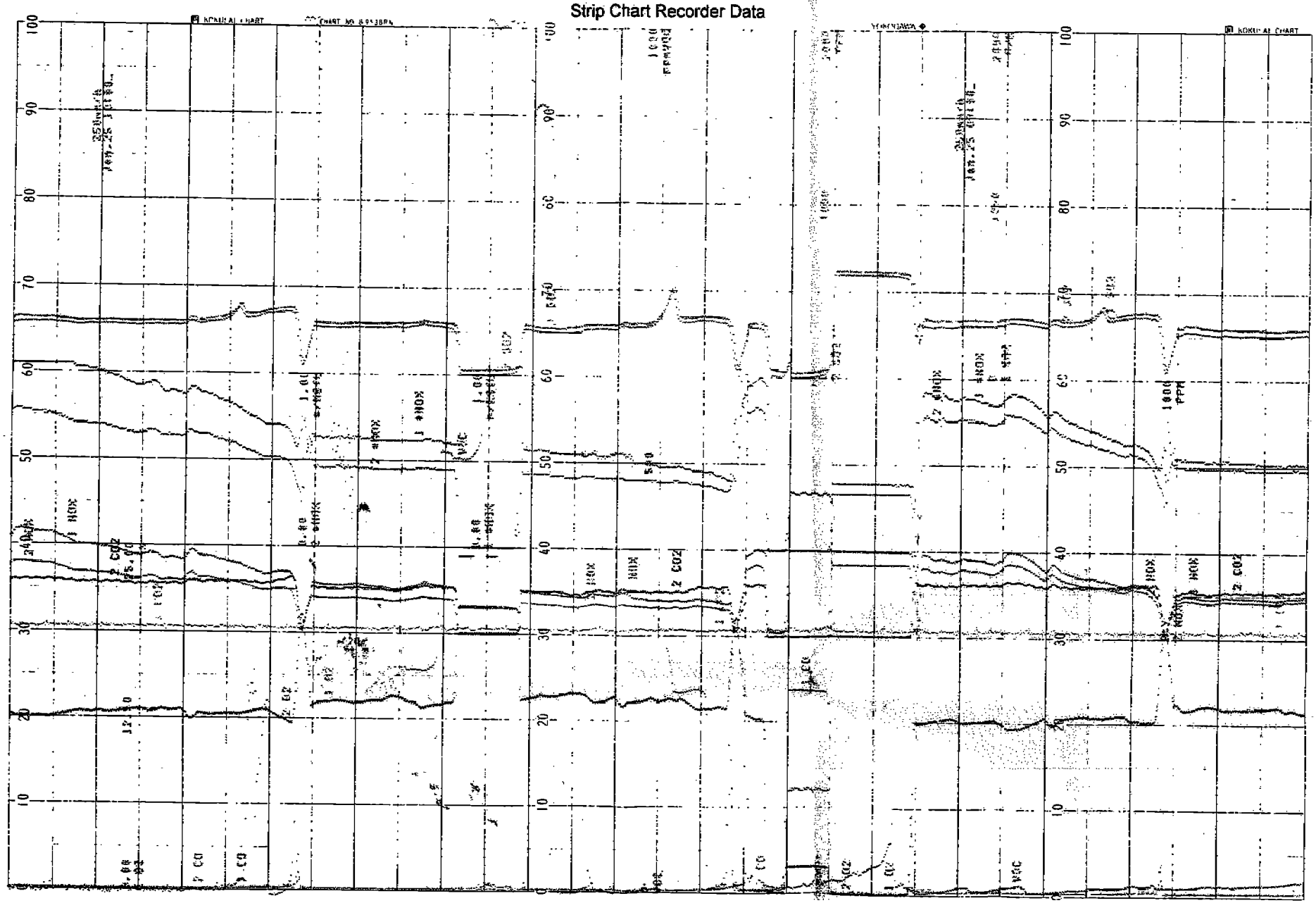




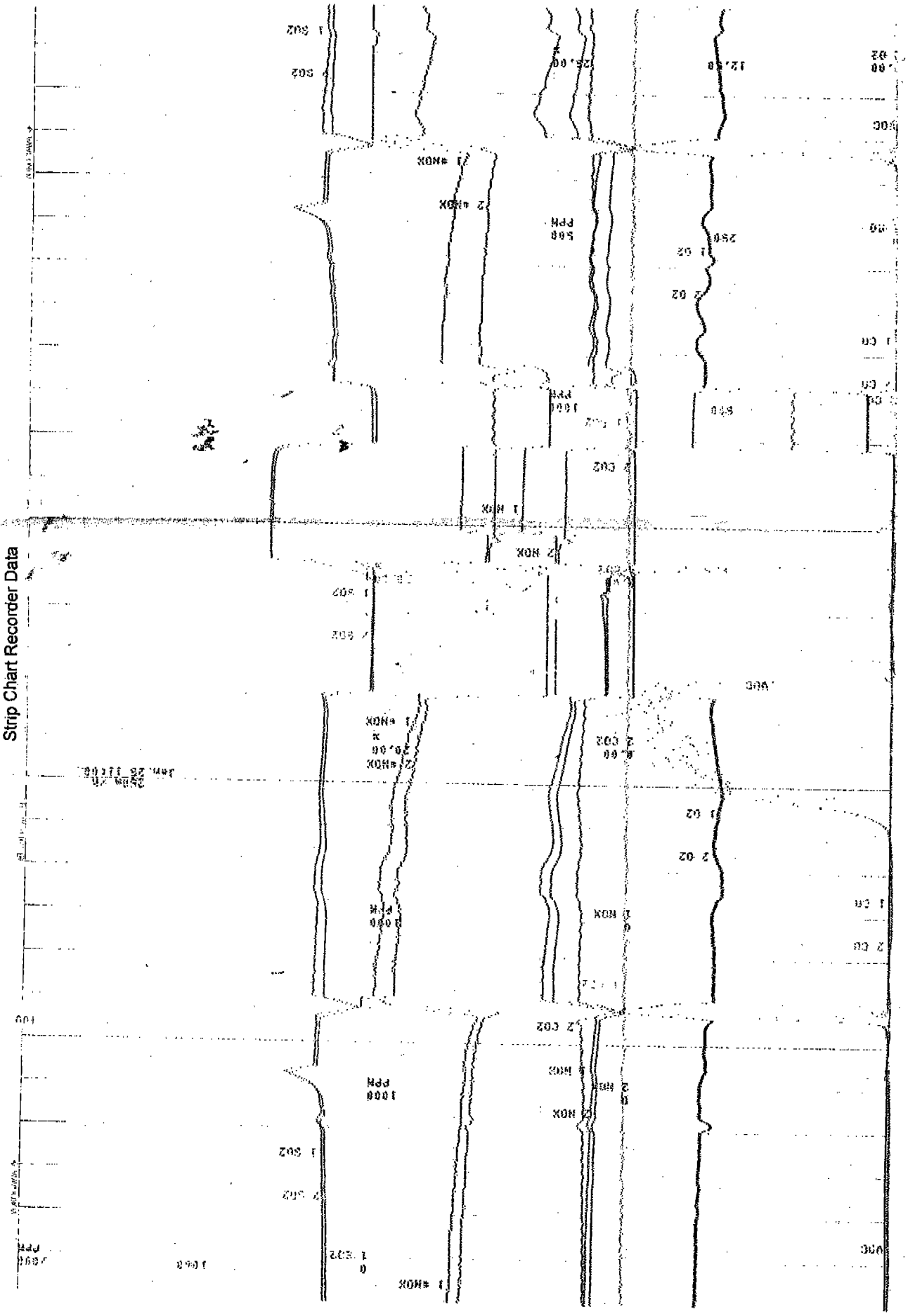
Koppers Industries - Dolomite, Alabama
No. 1 Stack
Strip Chart Recorder Data



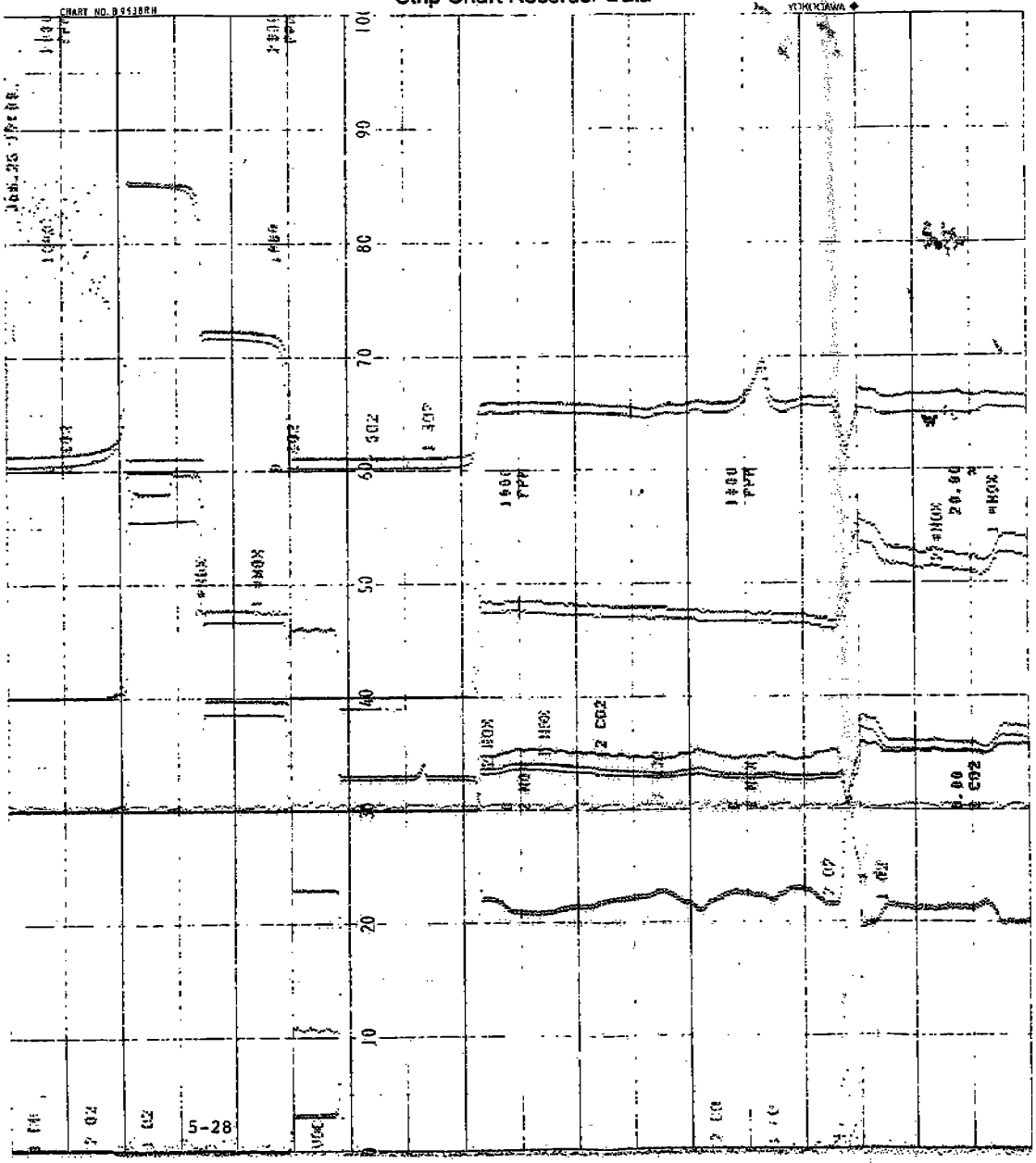
Koppers Industries - Dolomite, Alabama
No. 1 Stack
Strip Chart Recorder Data



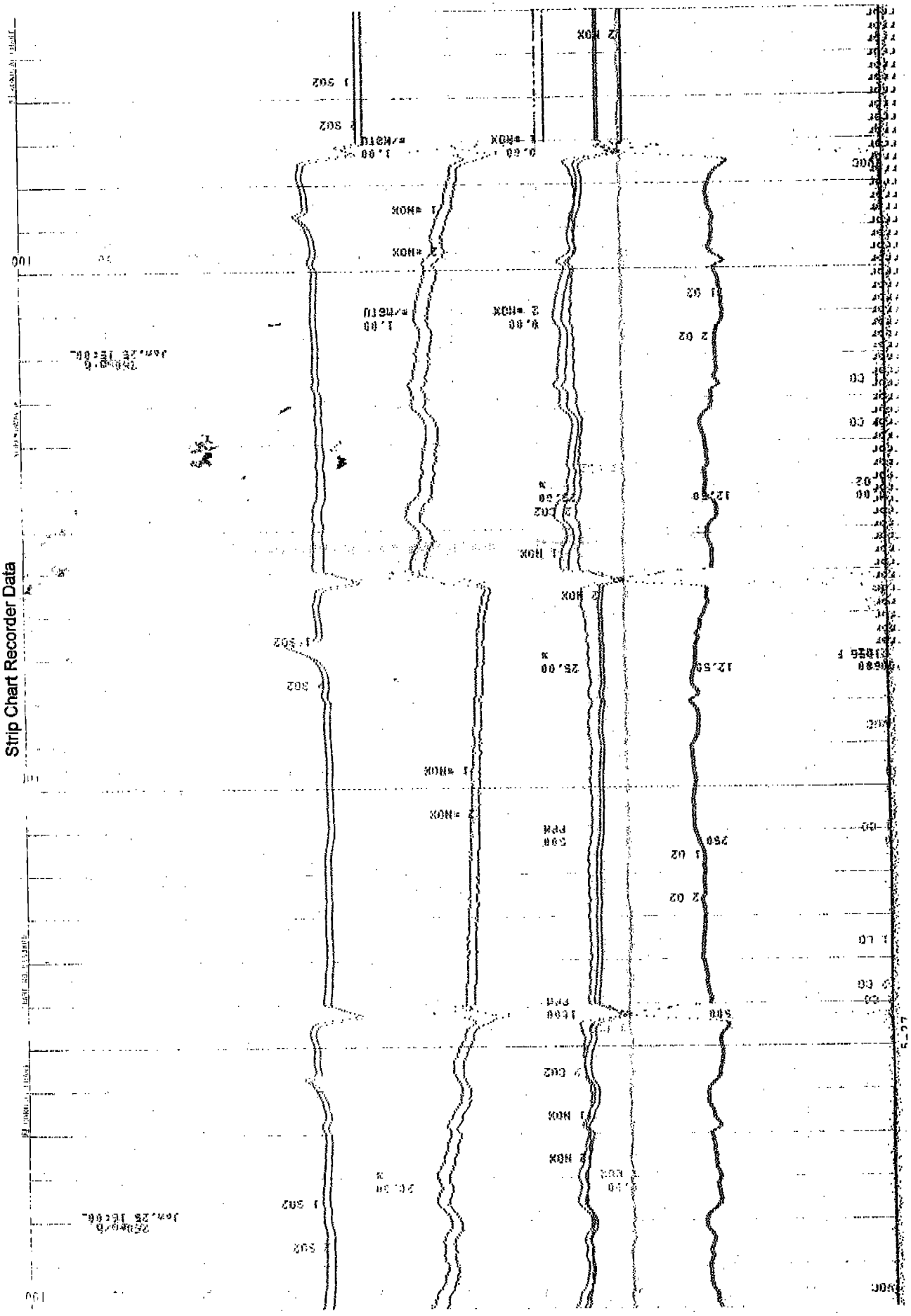
Koppers Industries - Dolomite, Alabama
No. 1 Stack
Strip Chart Recorder Data



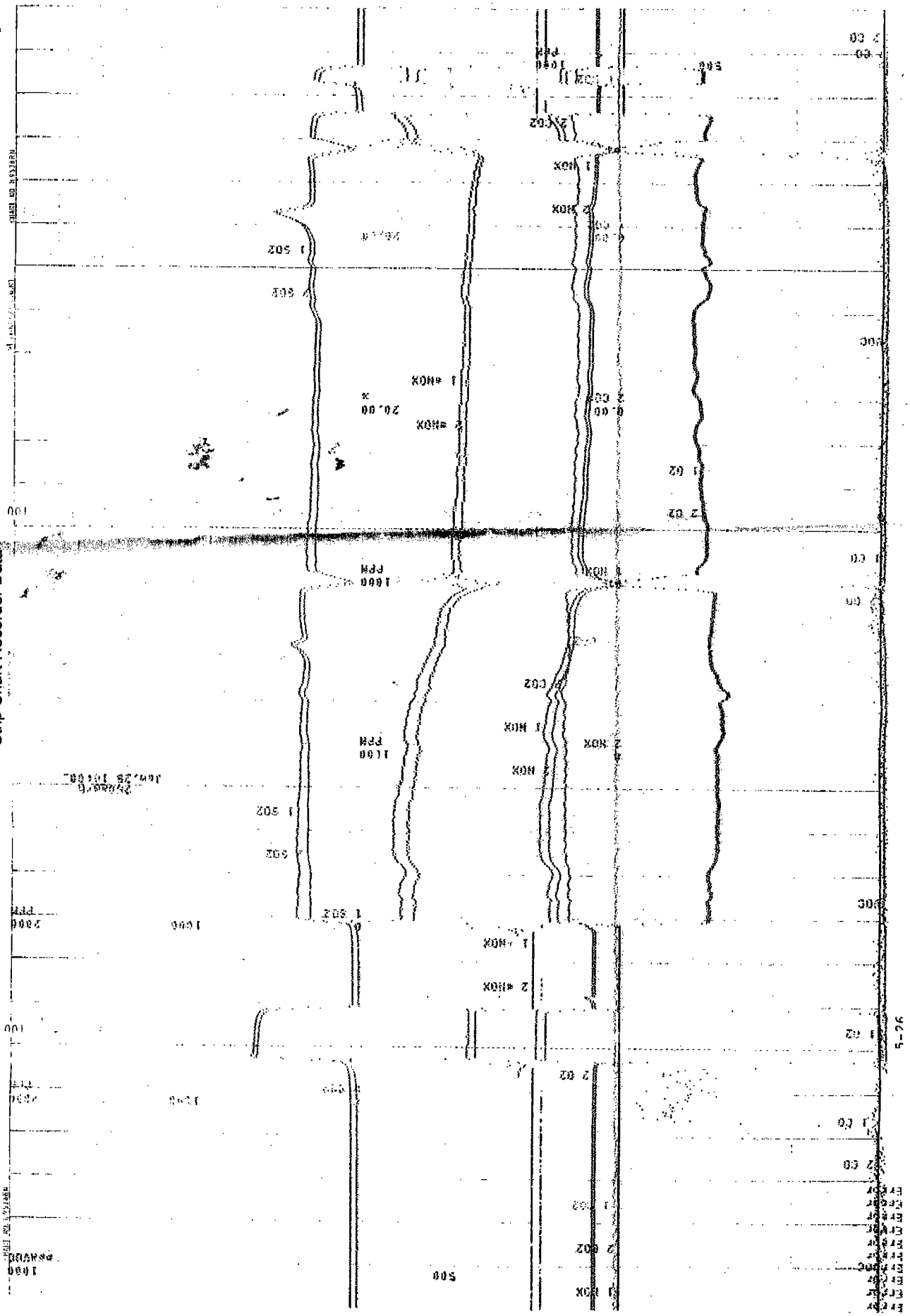
Koppers Industries - Dolomite, Alabama
No. 1 Stack
Strip Chart Recorder Data



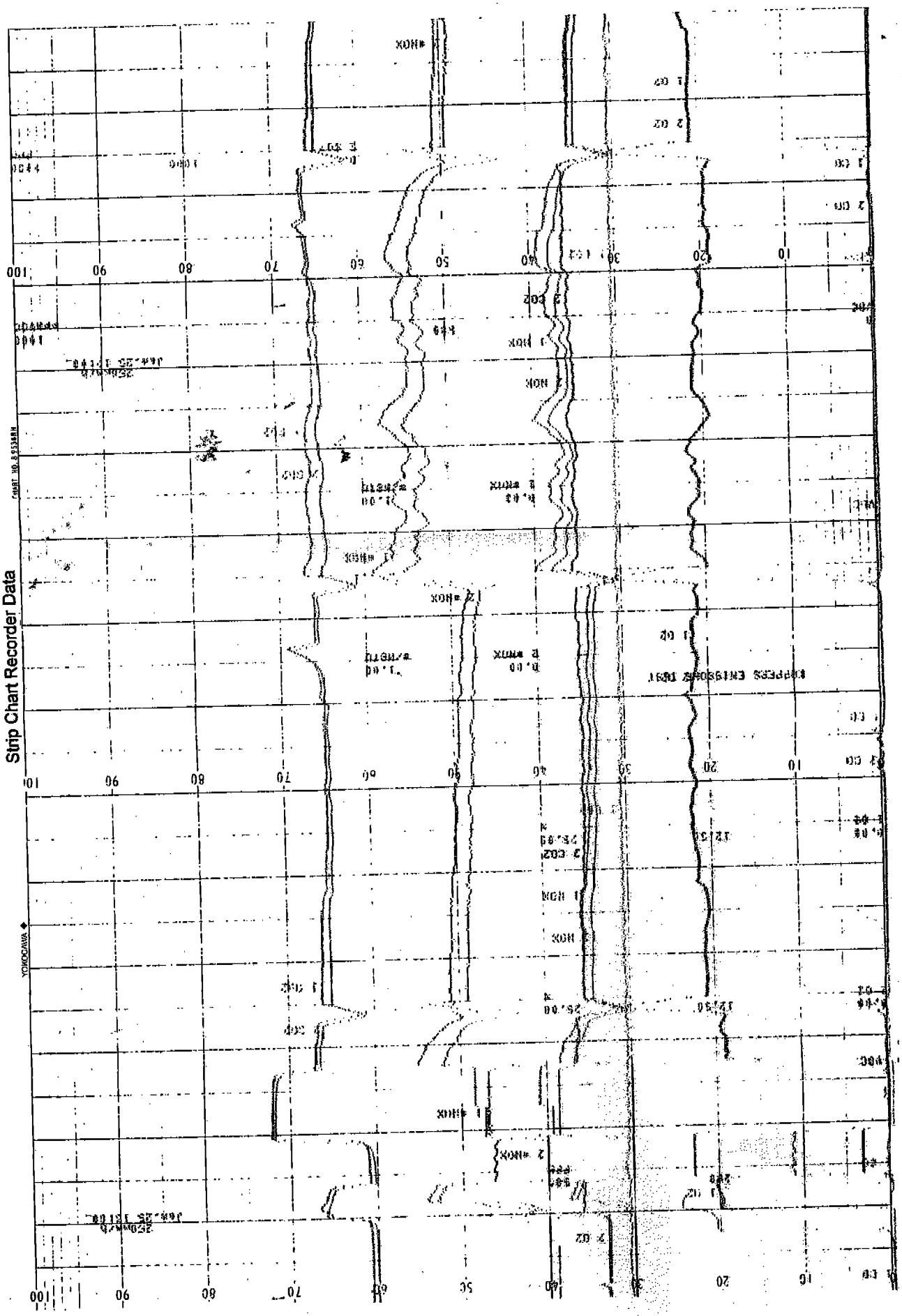
Hoppers Industries - Colorado, Illinois
No. 1 Stack
Strip Chart Recorder Data



Alabama
No. 1 Stack
Strip Chart Recorder Data



Koppers Industries - Dolomite, Alabama
No. 1 Stack
Strip Chart Recorder Data



EPA Method 303 Inspection Data

COMPANY NAME: Koppers Ind. DATE: 1-25-96

STATE: Dolomite Al OBSERVER NAME: S. Speer

COMPANY REP: W. Lewis CERT. EXP. DATE: 11-96

BATTERY #: 2A # OF OVENS IN BATTERY: 40 INOPERABLE OVENS 0

DOOR INSPECTION

TIME	P/C	DOOR#	COMMENTS
702	P	14	17 open
703		34	
		39	
1006	C	21	
007		41	
		42	

TRAVERSE TIME PS: 75 VALID TIME: 160

TRAVERSE TIME CS: 82 VALID TIME: 160

TOTAL # LEAKING DOORS: 6

TOTAL # IN SERVICE DOORS 80

TOTAL # DOORS NOT OBSERVED: 1

PERCENT LEAKING DOORS: 7.59%

LID INSPECTION

TIME	OVEN#	LID#	COMMENTS
720			17 27 37 D/C
722			0 Leaks

TRAVERSE TIME: 86 VALID TIME: 160

TOTAL # LEAKING LIDS: 0

TOTAL # IN SERVICE LIDS: 160

TOTAL # LIDS NOT OBSERVED: 12

PERCENT LEAKING LIDS: 0%

CHARGING

OVEN#	START	END	VE TIMED	COMMENTS
35	445	450	1.0	2A
31	519	525	6.5	2B
41	530	535	9.5	2B
2	552	557	7.0	5
32	604	610	11.5	5

MAIN PRESSURE: P 6.0 TIME: 1018

MAIN PRESSURE: C 6.5 TIME: 1018

OFFTAKE INSPECTION

TIME	P/C	OVEN#	COMMENTS
722	P		0 Leaks
724			
724	C	25	B
726			

TRAVERSE TIME PS: 84 VALID TIME: 160

TRAVERSE TIME CS: 85 VALID TIME: 160

TOTAL # LEAKING OFFTAKES: 1

TOTAL # IN SERVICE OFFTAKES: 80

TOTAL # OFFTAKES NOT OBSERVED: 0

PERCENT LEAKING OFFTAKES: 1.25%

ENTEC SERVICES, INC.

KOPPERS INDUSTRIES, INC.
WOODWARD COKE PLANT
DOLOMITE, ALABAMA

BATTERY # 2A (40 OVENS)

	DAILY				30 DAY ROLLING AVERAGE			
DATE	CHARGING LOG AVG.	% DOOR LEAKS	% LID LEAKS	% OFFTAKE LEAKS	CHARGING LOG AVG.	% DOOR LEAKS	% LID LEAKS	% OFFTAKE LEAKS
01/25/96	5.91	7.59	0.00	1.25	4.09	2.67	0.20	1.29
01/24/96	6.26	3.75	0.00	2.56	4.00	2.51	0.20	1.30
01/23/96	4.53	2.50	0.00	0.00	3.92	2.43	0.20	1.22
01/22/96	3.65	0.00	0.00	1.35	3.85	2.40	0.20	1.22
01/21/96	4.15	3.75	1.39	5.56	3.82	2.54	0.22	1.27
01/20/96	6.95	2.53	0.69	4.17	3.77	2.46	0.18	1.08
01/19/96	3.37	2.56	0.00	0.00	3.66	2.38	0.16	1.03
01/18/96	1.43	3.75	0.00	0.00	3.70	2.29	0.16	1.03
01/17/96	25.13	2.50	1.97	5.00	3.80	2.21	0.16	1.03
01/16/96	8.11	1.25	0.00	1.25	3.62	2.18	0.09	0.92
01/15/96	2.05	3.75	0.00	1.25	3.54	2.23	0.09	0.87
01/14/96	2.11	2.50	0.00	2.50	3.61	2.15	0.09	0.94
01/13/96	2.29	2.50	0.00	0.00	3.71	2.19	0.09	0.99
01/12/96	5.74	2.50	0.00	2.50	3.78	2.32	0.09	1.03
01/11/96	5.90	1.25	0.00	0.00	3.73	2.28	0.09	0.94
01/10/96	4.82	2.50	0.00	0.00	3.65	2.32	0.09	1.03
01/09/96	2.79	0.00	0.00	0.00	3.57	2.32	0.09	1.08
01/08/96	5.42	1.27	0.00	0.00	3.68	2.53	0.09	1.08
01/07/96	2.63	1.25	0.00	0.00	3.58	2.57	0.09	1.16
01/06/96	2.29	1.25	0.00	0.00	3.60	2.57	0.09	1.21
01/05/96	1.91	1.25	0.63	0.00	3.67	2.61	0.09	1.29
01/04/96	4.44	2.53	0.00	0.00	3.80	2.66	0.07	1.33
01/03/96	5.88	2.53	0.00	0.00	3.73	2.61	0.07	1.42
01/02/96	11.53	5.00	0.66	2.63	3.65	2.61	0.07	1.47
01/01/96	2.70	1.25	0.00	2.78	3.52	2.53	0.05	1.38
12/31/95	2.45	2.78	0.69	1.39	3.50	2.61	0.05	1.33
12/30/95	2.35	2.86	0.00	0.00	3.52	2.52	0.02	1.33
12/29/95	3.17	2.86	0.00	2.86	3.59	2.47	0.02	1.37
12/28/95	2.14	4.29	0.00	0.00	3.60	2.46	0.02	1.41
12/27/95	5.33	5.71	0.00	1.61	3.59	2.40	0.02	1.46
12/26/95	3.18	2.86	0.00	1.61	3.60	2.25	0.02	1.49
12/25/95	3.34	1.43	0.00	0.00	3.70	2.24	0.02	1.49
12/24/95	2.58	1.43	0.00	0.00	3.68	2.32	0.02	1.58

METHOD 303 INSPECTION REPORT

COMPANY NAME: Koppers Ind

DATE: 1-25-96

STATE: Dolomite Al

OBSERVER NAME: J. Speer

COMPANY REP: W. Lewis

CERT. EXP. DATE: 11-96

BATTERY #: 2B

OF OVENS IN BATTERY: 38

INOPERABLE OVENS 8 (1-8

DOOR INSPECTION

TIME	P/C	DOOR#	COMMENTS
704	P		0 Leaks
705			
1008	C	41	
1009			

TRAVERSE TIME PS: 53 VALID TIME: 152

TRAVERSE TIME CS: 57 VALID TIME: 152

TOTAL # LEAKING DOORS: 1

TOTAL # IN SERVICE DOORS 60

TOTAL # DOORS NOT OBSERVED: 0

PERCENT LEAKING DOORS: 1.67%

LID INSPECTION

TIME	OVEN#	LID#	COMMENTS
715	14	4	13 23 33 D/C
716			

TRAVERSE TIME: 55 VALID TIME: 152

TOTAL # LEAKING LIDS: 1

TOTAL # IN SERVICE LIDS: 120

TOTAL # LIDS NOT OBSERVED: 12

PERCENT LEAKING LIDS: 0.83%

CHARGING

OVEN#	START	END	VE TIMED	COMMENTS
35	445	450	1.0	2A
31	519	525	6.5	2B
41	530	535	9.5	2B
2	552	557	7.0	5
32	604	610	11.5	5

MAIN PRESSURE: 5.5 TIME: 1017

MAIN PRESSURE: _____ TIME: _____

OFFTAKE INSPECTION

TIME	P/C	OVEN#	COMMENTS
716			13 23 33 D/C
717			0 Leaks

TRAVERSE TIME PS: 58 VALID TIME: 152

TRAVERSE TIME CS: _____ VALID TIME: _____

TOTAL # LEAKING OFFTAKES: 0

TOTAL # IN SERVICE OFFTAKES: 30

TOTAL # OFFTAKES NOT OBSERVED: 3

PERCENT LEAKING OFFTAKES: 0%

ENTEC SERVICES, INC.

KOPPERS INDUSTRIES, INC.
WOODWARD COKE PLANT
DOLOMITE, ALABAMA

BATTERY # 2B (38 OVENS)

	DAILY				30 DAY ROLLING AVERAGE			
DATE	CHARGING LOG AVG.	% DOOR LEAKS	% LID LEAKS	% OFFTAKE LEAKS	CHARGING LOG AVG.	% DOOR LEAKS	% LID LEAKS	% OFFTAKE LEAKS
01/25/96	5.91	1.67	0.93	0.00	4.09	2.06	0.03	1.11
01/24/96	6.26	5.00	0.00	0.00	4.00	2.06	0.00	1.11
01/23/96	4.53	1.67	0.00	0.00	3.92	1.89	0.00	1.11
01/22/96	3.65	3.33	0.00	0.00	3.85	1.84	0.00	1.11
01/21/96	4.15	1.67	0.00	6.67	3.82	1.78	0.03	1.23
01/20/96	6.95	0.00	0.00	16.67	3.77	1.72	0.03	1.00
01/19/96	3.37	5.00	0.00	0.00	3.66	1.72	0.03	0.45
01/18/96	1.43	1.67	0.00	0.00	3.70	1.61	0.03	0.45
01/17/96	25.13	5.00	0.00	3.33	3.80	1.56	0.03	0.67
01/16/96	8.11	3.33	0.00	0.00	3.62	1.39	0.03	0.56
01/15/96	2.05	5.00	0.00	0.00	3.54	1.34	0.03	0.56
01/14/96	2.11	1.67	0.00	0.00	3.61	1.24	0.03	0.70
01/13/96	2.29	1.67	0.00	0.00	3.71	1.25	0.03	0.84
01/12/96	5.74	3.39	0.00	3.45	3.78	1.34	0.03	0.84
01/11/96	5.90	1.67	0.00	0.00	3.73	1.37	0.03	0.72
01/10/96	4.82	3.33	0.00	0.00	3.65	1.60	0.03	1.00
01/09/96	2.79	0.00	0.00	0.00	3.57	1.56	0.03	1.00
01/08/96	5.42	0.00	0.00	0.00	3.68	1.90	0.03	1.14
01/07/96	2.63	1.67	0.00	0.00	3.58	1.97	0.03	1.28
01/06/96	2.29	1.67	0.00	0.00	3.60	1.99	0.03	1.42
01/05/96	1.91	0.00	0.00	0.00	3.67	1.93	0.03	1.58
01/04/96	4.44	1.67	0.00	0.00	3.80	2.35	0.03	1.87
01/03/96	5.88	1.67	0.00	0.00	3.73	2.50	0.03	2.15
01/02/96	11.53	5.00	0.00	0.00	3.65	2.73	0.03	2.15
01/01/96	2.70	0.00	0.00	0.00	3.52	2.77	0.03	2.30
12/31/95	2.45	0.00	0.00	0.00	3.50	2.77	0.03	2.44
12/30/95	2.35	0.00	0.00	0.00	3.52	2.84	0.03	2.44
12/29/95	3.17	1.67	0.00	0.00	3.59	2.84	0.03	2.58
12/28/95	2.14	1.67	0.00	0.00	3.60	2.99	0.03	2.73
12/27/95	5.33	1.67	0.00	3.33	3.59	3.01	0.03	3.03
12/26/95	3.18	1.67	0.00	0.00	3.60	3.16	0.03	2.92
12/25/95	3.34	0.00	0.00	0.00	3.70	3.24	0.03	3.07
12/24/95	2.58	0.00	0.00	0.00	3.68	3.24	0.03	3.23

METHOD 303 INSPECTION REPORT

COMPANY NAME: Koppers Ind. DATE: 1-25-96

STATE: Dolomite Al OBSERVER NAME: S. Spear

COMPANY REP: W. Lewis CERT. EXP. DATE: 11-96

BATTERY #: 5 # OF OVENS IN BATTERY: 30 INOPERABLE OVENS 12 (8-12 19 23-29

DOOR INSPECTION

TIME	P/C	DOOR#	COMMENTS
701	P		0 Leak
708			
711	C		22 open
712			0 Leaks

TRAVERSE TIME PS: 35 VALID TIME: 120

TRAVERSE TIME CS: 42 VALID TIME: 120

TOTAL # LEAKING DOORS: 0

TOTAL # IN SERVICE DOORS 36

TOTAL # DOORS NOT OBSERVED: 1

PERCENT LEAKING DOORS: 0%

LID INSPECTION

TIME	OVEN#	LID#	COMMENTS
711			22 D/C
712			0 Leaks

TRAVERSE TIME: 40 VALID TIME: 120

TOTAL # LEAKING LIDS: 0

TOTAL # IN SERVICE LIDS: 72

TOTAL # LIDS NOT OBSERVED: 4

PERCENT LEAKING LIDS: 0%

CHARGING

OVEN#	START	END	VE TIMED	COMMENTS
35	445	450	1.0	2A
31	519	525	6.5	2B
41	530	535	9.5	2B
2	552	527	7.0	5
32	604	610	11.5	5

MAIN PRESSURE: 8 TIME: 1015

MAIN PRESSURE: _____ TIME: _____

OFFTAKE INSPECTION

TIME	P/C	OVEN#	COMMENTS
712			22 D/C
713			0 Leaks

TRAVERSE TIME PS: 143 VALID TIME: 120

TRAVERSE TIME CS: _____ VALID TIME: _____

TOTAL # LEAKING OFFTAKES: 0

TOTAL # IN SERVICE OFFTAKES: 18

TOTAL # OFFTAKES NOT OBSERVED: 1

PERCENT LEAKING OFFTAKES: [redacted]%

ENTEC SERVICES, INC.

KOPPERS INDUSTRIES, INC.
WOODWARD COKE PLANT
DOLOMITE, ALABAMA

BATTERY # 5 (30 OVENS)

	DAILY				30 DAY ROLLING AVERAGE			
DATE	CHARGING LOG AVG.	% DOOR LEAKS	% LID LEAKS	% OFFTAKE LEAKS	CHARGING LOG AVG.	% DOOR LEAKS	% LID LEAKS	% OFFTAKE LEAKS
01/25/96	5.91	0.00	0.00	0.00	4.09	2.17	0.08	1.19
01/24/96	6.26	2.86	0.00	0.00	4.00	2.17	0.08	1.19
01/23/96	4.53	0.00	0.00	0.00	3.92	2.08	0.08	1.19
01/22/96	3.65	0.00	0.00	5.56	3.85	2.08	0.08	1.19
01/21/96	4.15	2.78	0.00	5.56	3.82	2.16	0.08	1.16
01/20/96	6.95	0.00	0.00	0.00	3.77	2.07	0.08	0.98
01/19/96	3.37	4.76	0.00	0.00	3.66	2.14	0.08	0.98
01/18/96	1.43	2.38	0.00	0.00	3.70	1.99	0.08	1.16
01/17/96	25.13	4.76	1.19	4.76	3.80	1.99	0.08	1.16
01/16/96	8.11	2.38	0.00	0.00	3.62	1.83	0.04	1.19
01/15/96	2.05	4.76	0.00	5.56	3.54	1.83	0.04	1.19
01/14/96	2.11	0.00	0.00	0.00	3.61	1.83	0.04	1.16
01/13/96	2.29	2.38	0.00	0.00	3.71	2.22	0.04	1.16
01/12/96	5.74	4.76	0.00	0.00	3.78	2.30	0.04	1.32
01/11/96	5.90	2.38	0.00	0.00	3.73	2.38	0.04	1.32
01/10/96	4.82	2.38	0.00	0.00	3.65	2.54	0.04	1.32
01/09/96	2.79	0.00	0.00	0.00	3.57	2.46	0.04	1.32
01/08/96	5.42	0.00	0.00	0.00	3.68	2.62	0.04	1.32
01/07/96	2.63	0.00	0.00	0.00	3.58	2.62	0.04	1.48
01/06/96	2.29	2.38	0.00	0.00	3.60	2.62	0.04	1.48
01/05/96	1.91	2.38	0.00	0.00	3.67	2.62	0.04	1.66
01/04/96	4.44	2.44	0.00	0.00	3.80	2.54	0.04	1.82
01/03/96	5.88	0.00	0.00	0.00	3.73	2.46	0.04	1.82
01/02/96	11.53	4.76	0.00	0.00	3.65	2.70	0.04	1.82
01/01/96	2.70	2.38	0.00	4.76	3.52	2.70	0.04	1.82
12/31/95	2.45	2.38	0.00	4.76	3.50	2.70	0.04	1.82
12/30/95	2.35	0.00	0.00	0.00	3.52	2.70	0.04	1.66
12/29/95	3.17	4.76	1.19	0.00	3.59	2.70	0.04	1.66
12/28/95	2.14	2.38	0.00	0.00	3.60	2.70	0.00	1.66
12/27/95	5.33	4.76	0.00	4.76	3.59	2.78	0.00	1.66
12/26/95	3.18	0.00	0.00	0.00	3.60	2.70	0.00	1.90
12/25/95	3.34	0.00	0.00	0.00	3.70	2.70	0.00	1.90
12/24/95	2.58	0.00	0.00	0.00	3.68	2.70	0.00	2.06

METHOD 303 INSPECTION REPORT

COMPANY NAME: Koppers Ind. DATE: 1-25-96

CITY, STATE: Dolomite Al OBSERVER NAME: S. Speer

COMPANY REP: W. Lewis CERT. EXP. DATE: 11-96

BATTERY #: 4A # OF OVENS IN BATTERY: 28 INOPERABLE OVENS 1 (24

DOOR INSPECTION

TIME	P/C	DOOR#	COMMENTS
655	P		
656			
1000	C	16	11 open
1001			

TRAVERSE TIME PS: 38 VALID TIME: 112

TRAVERSE TIME CS: 42 VALID TIME: 112

TOTAL # LEAKING DOORS: 1

TOTAL # IN SERVICE DOORS: 54

TOTAL # DOORS NOT OBSERVED: 1

PERCENT LEAKING DOORS: 1.89%

LID INSPECTION

TIME	OVEN#	LID#	COMMENTS
842			23 D/C
843			0 Leaks

TRAVERSE TIME: 40 VALID TIME: 112

TOTAL # LEAKING LIDS: 0

TOTAL # IN SERVICE LIDS: 108

TOTAL # LIDS NOT OBSERVED: 4

PERCENT LEAKING LIDS: 0%

CHARGING

OVEN#	START	END	VE TIMED	COMMENTS
3	741	745	1.5	4A
3	758	804	21.5	4A
3	823	829	43.5	4E 23 out Repair
3	834	839	5.0	4B
5	953	958	11.0	4A

MAIN PRESSURE: 9.0 TIME: 1024

MAIN PRESSURE: _____ TIME: _____

OFFTAKE INSPECTION

TIME	P/C	OVEN#	COMMENTS
843		21	23 D/C
844			

TRAVERSE TIME PS: 43 VALID TIME: 112

TRAVERSE TIME CS: _____ VALID TIME: _____

TOTAL # LEAKING OFFTAKES: 1

TOTAL # IN SERVICE OFFTAKES: 27

TOTAL # OFFTAKES NOT OBSERVED: 1

PERCENT LEAKING OFFTAKES: 3.5%

ENTEC SERVICES, INC.

Laboratory Data

LABORATORY DATA

PROJECT: KOPPERS INDUSTRIES **DATE:** 1-26-96
SOURCE: NO. 1 STACK **PROJECT NO.:** 96-1002

FILTER PARTICULATE

RUN NUMBER	1	2	3
FILTER NUMBER	421323	421324	421326
INITIAL WEIGHT #1	113.0186	114.2650	121.6513
INITIAL WEIGHT #2	113.0194	114.2649	121.6517
INITIAL WEIGHT #3	113.0186	114.2652	121.6509
AVERAGE	113.0189	114.2650	121.6513
FINAL WEIGHT #1	113.0327	114.2866	121.6788
FINAL WEIGHT #2	113.0320	114.2869	121.6788
FINAL WEIGHT #3	113.0327	114.2868	121.6785
AVERAGE	113.0325	114.2866	121.6787
TOTAL WT. OF FILTER PARTICULATE	.0136	.0218	.0274

FRONT HALF ACETONE WASH PARTICULATE

RUN NUMBER	1	2	3	BLANK
BEAKER NUMBER	5101	5102	5103	5104
VOLUME OF ACETONE	200ML	200ML	200ML	200ML
INITIAL WEIGHT #1	76.0488	76.8300	77.1242	78.9748
INITIAL WEIGHT #2	76.0490	76.8298	77.1242	78.9746
INITIAL WEIGHT #3	76.0487	76.8298	77.1245	78.9746
AVERAGE	76.0488	76.8299	77.1243	78.9747
FINAL WEIGHT #1	76.1713	77.3479	77.1790	78.9754
FINAL WEIGHT #2	76.1715	77.3480	77.1792	78.9753
FINAL WEIGHT #3	76.1714	77.3479	77.1791	78.9756
AVERAGE	76.1714	77.3479	77.1791	78.9754
TOTAL WT. OF ACETONE WASH PARTICULATE	.1226	.5180	.0548	.0007

RUN NUMBER	1	2	3
TOTAL WEIGHT OF PARTICULATE	.1355	.5341	.0815

ANALYST: [signature]

LABORATORY DATA

PROJECT: Koppers Industries **DATE:** 1-26-96
SOURCE: NO. 1 STACK **PROJECT NO.:** 96-1002

FILTER PARTICULATE

RUN NUMBER	1	2	3
FILTER NUMBER			
INITIAL WEIGHT #1			
INITIAL WEIGHT #2			
INITIAL WEIGHT #3			
AVERAGE			
FINAL WEIGHT #1			
FINAL WEIGHT #2			
FINAL WEIGHT #3			
AVERAGE			
TOTAL WT. OF FILTER PARTICULATE			

BACK HALF ~~ACETONE~~ IMPINGER WASH PARTICULATE

RUN NUMBER	1	2	3	BLANK
BEAKER NUMBER	5109	5110	5111	
VOLUME OF ACETONE	475ML	485ML	473ML	
INITIAL WEIGHT #1	79.8139	75.7317	80.9931	
INITIAL WEIGHT #2	79.8136	75.7317	80.9930	
INITIAL WEIGHT #3	79.8139	75.7317	80.9932	
AVERAGE	79.8138	75.7317	80.9931	
FINAL WEIGHT #1	79.8515	75.7642	81.0351	
FINAL WEIGHT #2	79.8517	75.7642	81.0350	
FINAL WEIGHT #3	79.8515	75.7643	81.0352	
AVERAGE	79.8516	75.7642	81.0351	
TOTAL WT. OF ACETONE WASH PARTICULATE	.0378	.0325	.0420	

RUN NUMBER	1	2	3
TOTAL WEIGHT OF PARTICULATE			

ANALYST: M. Dean

Instrumentation Calibration

Koppers Industries - Dolomite, Alabama
No. 1 Stack
January 25, 1996

	1 O2	2 O2	1 CO	2 CO	2 CO2	1 NOX	2 NOX	1 SO2	2 SO2	VOC
07:07:32	20.95	20.94	4	1	0.01	-1	0	5	3	-2
07:08:02	20.95	20.93	4	1	0.01	-1	-1	5	2	-2
07:08:32	20.96	20.95	4	1	0.01	-1	-1	4	2	-3
07:09:02	20.94	20.95	4	1	0.01	1	-1	4	1	-3
07:09:32	20.95	20.94	4	1	0.01	-1	-1	4	2	-3
07:10:02	20.95	20.95	4	1	0.01	-1	1	5	2	-2
07:10:32	20.76	20.85	4	1	0.03	-1	1	15	2	11
07:11:02	20.73	20.83	8	1	0.02	4	-1	9	2	1
07:11:32	20.71	20.81	16	1	0.03	-1	-1	10	1	8
07:12:02	20.68	20.75	17	0	0.03	0	-1	18	2	5
07:12:32	20.68	20.68	16	1	0.03	1	-1	9	3	8
07:13:02	20.67	20.73	9	3	0.03	-1	1	13	8	11
07:13:32	20.79	20.88	6	3	0.04	-1	1	16	4	9
07:14:02	20.76	20.89	7	3	0.03	1	1	19	3	8
07:14:32	20.74	20.89	6	3	0.02	-1	-1	20	3	7
07:15:02	13.35	13.65	7	7	0.11	247	1	227	43	15
07:15:32	20.7	20.76	6	5	2.88	5	138	32	106	18
07:16:02	20.71	20.82	7	3	0.05	0	15	24	20	15
07:16:32	21.29	21.39	6	5	0.04	1	0	23	5	12
07:17:02	20.76	20.84	7	3	0.04	1	-1	22	3	10
07:17:32	20.73	20.82	7	5	0.03	-1	-1	22	3	8
07:18:02	18.42	16.93	7	5	1.26	169	64	93	34	10
07:18:32	17.02	17.7	7	5	0.17	107	11	98	20	9
07:19:02	20.73	20.81	7	5	0.18	0	4	24	17	9
07:19:32	20.74	20.82	7	5	0.04	0	0	23	4	7
07:20:02	20.76	20.84	6	5	0.04	0	1	23	3	0
07:20:32	20.77	20.82	6	5	0.04	-1	-1	23	2	15
07:21:02	20.74	20.81	6	5	0.04	-1	1	22	2	-5
07:21:32	21.38	21.5	6	5	0.03	-1	-1	22	1	-5
07:22:02	20.76	20.84	6	5	0.04	-1	-1	22	2	-6
07:22:32	20.75	20.82	6	5	0.04	-1	-1	23	1	-7
07:23:02	20.75	20.82	6	5	0.04	1	1	23	2	-7
07:23:32	20.91	20.91	6	3	0.03	-1	1	16	2	-7
07:24:02	20.93	20.92	5	3	0.03	-1	1	8	1	-7
07:24:32	20.95	20.96	5	3	0.02	-1	1	7	1	-7
07:25:02	20.96	20.97	4	3	0.03	-1	1	7	1	-7
07:25:32	19.31	19.39	37	44	0.83	43	25	17	4	-7
07:26:02	20.78	20.89	5	3	0.04	-1	1	21	2	-7
07:26:32	21.23	21.39	6	5	0.04	-1	1	22	1	-7
07:27:02	20.75	20.86	6	5	0.03	-1	1	23	1	-7
07:27:32	20.75	20.84	6	5	0.04	-1	1	23	1	-7
07:28:02	20.74	20.82	6	5	0.03	1	1	23	1	-7
07:28:32	20.74	20.82	6	5	0.04	0	1	24	1	-7
07:29:02	20.75	20.82	6	5	0.04	0	1	23	1	-7
07:29:32	20.73	20.82	6	5	0.04	0	1	23	1	-7
07:30:02	20.73	20.8	6	5	0.04	0	-1	23	2	-7
07:30:32	20.74	20.82	6	5	0.04	0	-1	23	1	-7
07:31:02	1.19	2.27	31	8	0.82	802	162	837	334	-7
07:31:32	0.11	0.12	5	5	0.05	904	878	1264	1232	-7
07:32:02	0.07	0.09	5	5	0.04	908	877	1283	1260	-7
07:32:32	0.06	0.06	5	5	0.04	908	873	1292	1271	-7
07:33:02	0.06	0.05	5	5	0.04	908	870	1298	1277	-7
07:33:32	0.05	0.04	5	6	0.04	908	870	1302	1282	-7
07:34:02	0.04	0.03	5	5	0.05	907	868	1305	1286	-7
07:34:32	0.03	0.03	5	5	0.05	908	867	1307	1288	-7
07:35:02	0.04	0.02	5	5	0.04	909	866	1309	1290	-7
07:35:32	1.28	0.75	126	236	3.86	187	844	455	1024	-7
07:36:02	0.08	0.07	5	5	0.06	303	293	632	614	-7
07:36:32	0.07	0.05	5	5	0.05	301	292	626	609	-7
07:37:02	0.06	0.05	5	6	0.05	302	292	623	606	-7
07:37:32	0.06	0.04	5	5	0.04	301	292	622	604	-7
07:38:02	0.05	0.05	5	6	0.05	300	292	621	603	-7
07:38:32	0.08	0.07	5	5	0.05	299	290	620	602	-7
07:39:02	1.7	1.41	169	268	5.95	39	272	196	450	-7
07:39:32	1.98	1.97	297	306	11.14	2	2	46	30	-7

07:40:02	1.97	1.97	297	302	11.16	1	1	38	18	-7
07:40:32	12.99	12.83	28	23	3.97	145	105	253	173	-7
07:41:02	13.48	13.53	10	13	3.67	151	145	275	254	-7
07:41:32	13.46	13.5	7	11	3.66	156	150	276	255	-7
07:42:02	13.46	13.51	7	11	3.59	157	152	273	253	-3
07:42:32	13.47	13.5	7	11	3.68	158	152	271	250	-2
07:43:02	13.61	13.64	7	11	3.59	153	150	266	246	-1
07:43:32	14.07	14.1	7	11	3.32	142	138	268	246	18
07:44:02	14.13	14.17	7	11	3.37	142	136	254	235	12
07:44:32	14	14.05	6	11	3.38	143	138	249	227	9
07:45:02	13.95	14	6	11	3.41	146	139	252	229	5
07:45:32	13.91	13.96	6	11	3.48	148	142	253	231	1
07:46:02	13.97	14	7	11	3.37	146	141	254	231	0
07:46:32	13.82	13.86	7	11	3.52	151	144	259	235	-1
07:47:02	13.87	13.91	6	11	3.51	149	144	256	236	-99999
07:47:32	14	14.04	7	11	3.4	146	141	252	232	1015
07:48:02	14.01	14.07	7	12	3.44	146	140	254	232	1006
07:48:32	13.95	14	7	11	3.43	148	142	254	234	999
07:49:02	13.66	13.68	7	12	3.59	155	147	260	237	452
07:49:32	13.47	13.52	7	12	3.72	161	154	268	246	443
07:50:02	13.62	13.66	7	12	3.57	158	153	263	244	443
07:50:32	13.88	13.93	7	12	3.49	151	146	265	242	904
07:51:02	13.99	14.04	7	11	3.47	150	142	268	248	1010
07:51:32	13.78	13.82	7	12	3.53	155	147	262	242	997
07:52:02	13.74	13.78	6	11	3.61	157	150	267	244	1000
07:52:32	13.6	13.63	7	12	3.64	161	154	274	252	517
07:53:02	13.82	13.86	7	11	3.5	154	150	271	250	508
07:53:32	13.98	14.02	6	12	3.49	150	144	270	249	502
07:54:02	14.01	14.05	7	11	3.41	150	143	271	250	506
07:54:32	18.08	17.88	8	11	1.67	58	77	128	141	264
07:55:02	18.06	18.52	15	15	1.15	75	35	130	63	259
07:55:32	12.95	13	8	15	4.01	156	144	360	323	257
07:56:02	13.18	13.23	7	12	3.95	169	159	352	331	250
07:56:32	13.24	13.29	7	13	3.86	175	166	354	332	246
07:57:02	13.34	13.37	7	13	3.81	178	169	351	331	375
07:57:32	13.32	13.37	7	12	3.88	183	172	351	330	741
07:58:02	13.23	13.29	7	13	3.83	195	182	344	324	108
07:58:32	12.75	12.83	6	11	4.05	225	208	351	326	25
07:59:02	12.61	12.66	7	12	4.17	237	225	376	342	19
07:59:32	12.93	12.96	6	13	3.95	229	219	375	365	23
08:00:02	13.13	13.16	6	11	3.92	219	211	346	329	26
08:00:32	13.19	13.25	6	11	3.87	221	207	332	311	276
08:01:02	13.07	13.14	6	11	3.85	228	215	327	306	283
08:01:32	12.95	13	6	11	4	245	228	327	305	263
08:02:02	12.77	12.82	6	13	4.02	260	245	333	310	264
08:02:32	12.3	12.35	6	12	4.22	290	271	351	326	262
08:03:02	12.91	12.95	6	12	4.03	258	253	327	312	260
08:03:32	12.92	12.99	6	13	3.9	256	243	328	305	255
08:04:02	12.89	12.95	6	12	3.99	262	249	332	309	265
08:04:32	12.76	12.8	6	12	4.07	274	258	335	312	508
08:05:02	12.72	12.75	6	12	4.01	281	267	337	314	511
08:05:32	12.69	12.74	6	12	4.11	285	270	339	316	516
08:06:02	12.67	12.72	7	13	4.07	288	273	341	317	513
08:06:32	12.66	12.7	7	14	4.08	295	279	342	319	508
08:07:02	12.54	12.58	7	12	4.19	304	286	346	323	993
08:07:32	12.54	12.56	7	13	4.12	308	292	349	326	1010
08:08:02	12.47	12.51	7	13	4.15	314	296	352	327	992
08:08:32	12.48	12.54	7	13	4.2	317	298	355	328	-99999
08:09:02	12.49	12.53	7	13	4.11	320	302	356	329	37
08:09:32	12.45	12.49	7	12	4.2	325	306	358	330	9
08:10:02	12.39	12.45	7	13	4.2	331	307	361	332	6
08:10:32	12.43	12.49	7	12	4.12	331	309	364	331	5
08:11:02	12.4	12.46	7	12	4.23	333	309	365	332	0

Koppers Industries - Dolomite, Alabama
No. 1 Stack
January 25, 1996

	1 O2	2 O2	1 CO	2 CO	2 CO2	1 NOX	2 NOX	1 SO2	2 SO2	VOC
09:11:06	12.55	12.61	9	13	4.12	310	260	336	297	3
09:11:36	12.39	12.46	9	11	4.08	323	270	346	306	2
09:12:06	12.43	12.5	8	19	4.15	21	25	216	317	4
09:12:36	0.03	0.08	4	3	0.13	328	273	581	504	9
09:13:06	-0.02	0	3	3	0.09	331	281	611	585	12
09:13:36	-0.03	-0.01	3	3	0.07	330	280	616	592	16
09:14:06	-0.04	-0.01	3	3	0.06	331	281	617	595	48
09:14:36	-0.04	-0.02	3	3	0.06	332	281	618	595	35
09:15:06	-0.05	-0.03	3	3	0.06	331	281	619	597	31
09:15:36	-0.04	-0.02	3	4	0.06	332	280	621	599	27
09:16:06	-0.05	-0.02	3	3	0.05	333	280	621	599	24
09:16:36	-0.04	-0.03	3	3	0.05	333	280	622	600	22
09:17:06	-0.05	-0.03	3	3	0.05	333	280	623	601	15
09:17:36	-0.05	-0.03	3	3	0.06	333	280	623	601	16
09:18:06	1.5	1.21	168	263	5.87	42	266	254	483	14
09:18:36	1.94	1.96	296	302	11.17	1	1	52	32	11
09:19:06	1.94	1.97	296	302	11.08	0	0	42	17	15
09:19:36	1.95	1.96	296	307	11.06	0	0	38	12	8
09:20:06	1.94	1.97	296	298	11.19	0	0	36	9	8
09:20:36	1.94	1.96	296	303	11.06	0	0	35	7	5
09:21:06	1.41	1.85	264	192	10.98	61	0	153	17	7
09:21:36	0.03	0.05	8	9	0.32	0	0	38	15	6
09:22:06	0.09	0.1	10	11	0.35	1	0	47	15	4
09:22:36	7.99	5.33	12	11	1.01	100	4	140	31	3
09:23:06	12.64	12.71	6	8	4.03	334	275	317	287	2
09:23:36	12.77	12.81	6	8	3.91	326	272	319	293	15
09:24:06	14.92	14.4	6	8	3.41	231	252	260	280	11
09:24:36	19.77	19.62	14	11	0.74	28	62	84	95	8
09:25:06	14.9	15.42	216	141	2.64	126	89	259	165	7
09:25:36	13.39	13.44	10	13	3.8	128	103	345	319	5
09:26:06	13.37	13.45	7	8	3.75	134	109	351	325	5
09:26:36	13.33	13.4	5	8	3.73	138	113	356	332	208
09:27:06	13.29	13.36	5	6	3.81	142	116	357	333	235
09:27:36	13.48	13.52	4	7	3.63	141	116	348	328	236
09:28:06	13.87	13.93	4	7	3.48	134	110	347	323	233
09:28:36	13.96	14.06	4	6	3.44	137	108	350	323	233
09:29:06	14.05	14.1	4	6	3.33	135	110	526	457	257
09:29:36	13.94	14.01	3	6	3.44	136	109	433	436	25
09:30:06	13.88	13.95	4	6	3.42	139	111	358	346	5
09:30:36	14.07	14.15	4	6	3.3	137	109	319	301	4
09:31:06	13.92	13.99	4	7	3.47	142	113	314	291	3
09:31:36	13.85	13.92	4	6	3.42	145	114	314	291	1
09:32:06	13.78	13.88	3	5	3.46	156	116	311	287	0
09:32:36	13.56	13.61	4	6	3.61	166	121	317	294	0
09:33:06	14.19	14.26	4	6	3.25	154	112	298	277	-1
09:33:36	13.94	14.02	3	8	3.42	154	115	301	276	0
09:34:06	13.79	13.87	3	5	3.49	156	118	301	278	2
09:34:36	13.78	13.83	3	6	3.46	161	120	301	279	10
09:35:06	14.23	14.28	3	5	3.32	149	114	299	276	5
09:35:36	14.38	14.46	3	5	3.08	146	110	292	266	-1
09:36:06	14.41	14.48	3	5	3.08	147	108	288	258	-2
09:36:36	14.28	14.37	4	5	3.2	150	110	284	255	-2
09:37:06	14.16	14.26	3	5	3.28	153	114	279	255	-1
09:37:36	14.15	14.23	4	5	3.35	155	115	282	258	661
09:38:06	14.19	14.26	4	6	3.33	156	116	283	260	906
09:38:36	14.08	14.16	3	5	3.28	161	118	288	263	913
09:39:06	13.99	14.08	3	6	3.39	162	120	294	269	939
09:39:36	13.87	13.95	3	5	3.42	166	122	295	273	1016
09:40:06	20.58	20.67	5	5	0.11	1	1	47	30	1010
09:40:36	20.62	20.72	7	5	0.1	0	0	38	13	1009
09:41:06	20.64	20.73	6	3	0.1	0	0	35	9	1003
09:41:36	20.62	20.76	9	8	0.09	-1	0	34	8	1001
09:42:06	20.64	20.74	6	4	0.09	0	0	33	7	1014
09:42:36	20.66	20.76	5	3	0.09	0	0	32	6	523
09:43:06	20.66	20.77	4	0	0.09	0	-1	32	5	506

09:43:36	20.67	20.77	4	0	0.09	-1	-1	31	4	503
09:44:06	15.78	17.17	4	4	1.57	136	19	182	53	504
09:44:36	13.62	13.7	3	5	3.61	180	132	298	271	508
09:45:06	13.5	13.58	3	5	3.56	185	135	305	281	512
09:45:36	13.44	13.52	3	5	3.62	189	137	308	284	264
09:46:06	13.34	13.42	3	5	3.71	195	140	313	289	257
09:46:36	13.37	13.42	3	5	3.63	192	141	314	293	257
09:47:06	13.67	13.75	3	5	3.52	183	133	305	284	258
09:47:36	13.89	13.96	2	3	3.39	178	129	298	277	261
09:48:06	14.08	14.14	3	5	3.28	173	125	300	277	251
09:48:36	14.07	14.16	3	5	3.35	174	125	300	278	246
09:49:06	13.82	13.91	3	5	3.43	180	129	297	275	252
09:49:36	13.79	13.87	3	5	3.44	181	131	297	274	242
09:50:06	13.75	13.83	2	5	3.49	183	132	296	274	251
09:50:36	13.61	13.68	3	5	3.5	188	136	298	275	266
09:51:06	13.56	13.64	3	5	3.57	192	137	298	276	258
09:51:36	13.65	13.74	3	6	3.53	188	136	296	273	521
09:52:06	13.74	13.81	3	5	3.42	187	135	294	272	500
09:52:36	13.72	13.79	3	5	3.51	187	135	294	271	501
09:53:06	13.66	13.75	3	5	3.49	189	136	294	272	274
09:53:36	13.59	13.67	3	5	3.51	191	137	299	274	251
09:54:06	13.39	13.46	3	3	3.67	197	142	304	280	1050
09:54:36	18.74	18.59	3	2	1.21	49	59	123	136	1047
09:55:06	16.1	16.68	9	6	2	123	57	191	106	703
09:55:36	12.18	12.25	8	9	4.35	230	162	384	358	3
09:56:06	12.53	12.57	5	6	4.08	238	174	383	363	-4
09:56:36	12.75	12.8	5	6	4.07	237	174	376	358	-6

Koppers Industries - Dolomite, Alabama
No. 1 Stack
January 25, 1996

	1 O2	2 O2	1 CO	2 CO	2 CO2	1 NOX	2 NOX	1 SO2	2 SO2	VOC
10:39:47	13.72	13.81	0	0	3.33	187	118	268	242	-3
10:40:17	13.71	13.8	-1	0	3.37	75	14	269	255	-3
10:40:47	13.7	13.81	-1	0	3.34	98	7	253	258	-3
10:41:17	13.9	13.84	0	29	3.15	181	113	175	257	-3
10:41:47	1.99	2.03	291	293	10.95	1	0	37	20	-1
10:42:17	1.96	2.01	291	297	10.93	0	0	32	9	-3
10:42:47	1.96	2.01	291	293	11.11	0	0	30	7	-2
10:43:17	1.95	2	292	293	11	0	0	29	5	-2
10:43:47	1.93	1.99	292	298	10.99	0	0	28	5	-3
10:44:17	1.93	1.99	292	291	11.08	0	0	27	4	-2
10:44:47	1.94	1.98	292	295	10.97	-1	0	27	4	-2
10:45:17	1.94	1.98	292	297	11.05	-1	1	27	4	-4
10:45:47	-0.03	0.02	2	0	0.19	428	250	549	452	-3
10:46:17	-0.05	-0.01	0	0	0.06	429	269	592	573	-4
10:46:47	-0.07	0	-1	0	0.04	430	269	600	584	-3
10:47:17	-0.05	-0.01	1	0	0.03	431	268	605	589	-4
10:47:47	-0.05	-0.02	-1	0	0.01	432	268	607	592	-3
10:48:17	-0.06	-0.02	1	0	0	433	267	608	594	-3
10:48:47	-0.07	-0.03	2	0	0	433	267	610	594	-3
10:49:17	-0.08	-0.05	-2	0	0	434	268	616	600	-3
10:49:47	-0.07	-0.04	2	0	0	434	268	609	594	-4
10:50:17	-0.07	-0.04	-2	0	0	434	267	612	598	-4
10:50:47	0.53	0.8	-2	0	0	403	268	605	589	-2
10:51:17	-0.06	-0.04	-3	0	0	436	270	610	607	-5
10:51:47	-0.05	-0.04	-3	0	0	304	270	609	607	-3
10:52:17	-0.06	-0.04	-4	0	0	304	285	608	607	-4
10:52:47	-0.05	-0.05	-4	0	0	304	293	608	607	-3
10:53:17	-0.06	-0.04	-4	0	0	305	293	604	607	-3
10:53:47	13.58	12.08	-1	0	0.34	16	59	51	355	-4
10:54:17	20.26	18.7	-3	0	0.23	1	48	13	136	-3
10:54:47	20.57	20.74	-3	0	0	0	15	11	37	-3
10:55:17	20.57	20.68	3	0	0	0	2	11	12	0
10:55:47	20.81	21.16	-3	0	0	0	0	11	9	1
10:56:17	20.63	20.97	-3	0	0	-1	1	11	8	2
10:56:47	20.69	20.97	-3	0	0	0	1	13	7	1
10:57:17	20.69	20.93	-2	0	0	0	-1	16	8	1
10:57:47	20.66	20.85	-1	0	0	0	-1	18	8	0
10:58:17	20.65	20.8	-1	0	0	0	1	18	9	-2
10:58:47	20.64	20.77	-1	0	0	0	-1	17	11	-3
10:59:17	20.63	20.76	2	0	0	0	1	17	11	-3
10:59:47	20.62	20.75	-2	0	0	0	-1	17	11	-1
11:00:17	20.62	20.74	-2	0	0	0	1	17	11	-3
11:00:47	20.61	20.74	-1	0	0	0	-1	18	10	-3
11:01:17	20.6	20.74	-1	0	0	1	-1	19	10	7
11:01:47	20.6	20.73	-1	0	0.02	0	-1	20	8	199
11:02:17	20.61	20.72	0	0	0.02	0	-1	20	7	262
11:02:47	20.75	20.84	0	0	0.01	0	-1	30	7	268
11:03:17	12.91	13.03	-2	0	3.81	241	224	295	280	280
11:03:47	12.95	13.05	-2	0	3.71	239	222	288	271	304
11:04:17	12.97	13.07	-2	0	3.76	242	225	285	268	270
11:04:47	12.79	12.89	-2	0	3.81	254	231	289	270	255
11:05:17	12.81	12.9	2	0	3.74	258	235	286	268	271
11:05:47	12.74	12.81	-2	0	3.87	267	243	289	270	241
11:06:17	12.62	12.72	-2	0	3.88	273	247	292	273	243
11:06:47	12.56	12.65	2	0	3.88	277	252	292	275	223
11:07:17	12.51	12.59	2	0	3.98	285	258	295	276	256
11:07:47	12.41	12.5	2	0	3.97	290	263	298	278	222
11:08:17	12.27	12.37	-2	0	3.99	299	267	302	282	219
11:08:47	12.2	12.29	-2	0	4.1	307	273	306	286	190
11:09:17	12.12	12.19	-2	0	4.06	315	280	308	288	185
11:09:47	12.04	12.11	-2	0	4.14	321	286	311	290	148
11:10:17	12.14	12.22	-1	0	4.12	319	285	309	287	81
11:10:47	12.32	12.41	-1	0	3.98	314	283	306	282	39
11:11:17	12.32	12.42	-1	0	4.04	312	279	307	278	13
11:11:47	12.51	12.59	-1	0	3.9	305	275	305	278	3

11:12:17	12.55	12.65	-1	0	3.87	302	271	301	272	0
11:12:47	12.6	12.69	-1	0	3.93	301	269	300	272	-1
11:13:17	12.59	12.72	-1	0	3.78	303	267	299	268	-2
11:13:47	12.56	12.63	-1	0	3.86	309	270	305	268	-3
11:14:17	12.34	12.44	-1	0	3.96	322	281	314	276	-3
11:14:47	12.1	12.21	-1	0	4.01	339	296	323	284	-3
11:15:17	12.05	12.13	-1	0	4.12	345	304	327	288	-3
11:15:47	12.06	12.12	-1	0	4.11	345	306	331	290	-3
11:16:17	12.01	12.1	-1	0	4.1	348	308	331	289	-3
11:16:47	12.17	12.22	-1	0	4.16	339	308	327	289	-3
11:17:17	12.48	12.58	-1	0	3.92	323	290	316	277	-4
11:17:47	12.7	12.78	-1	0	3.83	312	280	313	267	-4
11:18:17	12.71	12.8	0	0	3.81	311	275	314	263	-4
11:18:47	12.68	12.76	0	0	3.75	317	277	315	262	-4
11:19:17	12.67	12.74	0	0	3.85	320	280	321	265	-3
11:19:47	12.64	12.74	0	0	3.85	320	282	320	265	-2
11:20:17	12.54	12.61	0	0	3.82	328	286	320	266	-2
11:20:47	12.57	12.65	0	0	3.91	326	287	321	267	-1
11:21:17	12.53	12.64	0	0	3.84	330	290	326	267	-1
11:21:47	12.5	12.6	0	0	3.91	335	293	326	269	-1
11:22:17	12.55	12.65	0	0	3.9	332	292	322	268	-1
11:22:47	12.53	12.62	0	0	3.82	334	292	329	268	-1
11:23:17	12.58	12.66	0	0	3.87	332	290	331	267	-2
11:23:47	12.55	12.64	0	0	3.89	335	291	331	266	-3
11:24:17	16.67	16.7	0	0	2.44	159	222	177	210	-3
11:24:47	19.56	19.8	75	17	0.37	33	45	76	67	-3
11:25:17	12.64	12.81	27	53	3.35	127	103	300	204	-2
11:25:47	13.06	13.14	2	0	3.73	126	111	307	290	-2
11:26:17	13.15	13.24	0	0	3.71	129	114	309	289	-2
11:26:47	13.12	13.22	-2	0	3.6	133	117	312	294	-2

Koppers Industries - Dolomite, Alabama
No. 1 Stack
January 25, 1996

	1 O2	2 O2	1 CO	2 CO	2 CO2	1 NOX	2 NOX	1 SO2	2 SO2	VOC
12:58:21	11.72	11.82	-3	0	4.29	281	223	354	322	1
12:58:51	0	0.1	-7	0	0	358	255	570	488	2
12:59:21	-0.07	0.01	-7	0	0	361	287	595	572	2
12:59:51	-0.08	-0.01	-7	0	0	362	288	601	580	0
13:00:21	-0.09	-0.01	-7	0	0	362	288	604	584	-1
13:00:51	-0.08	-0.02	-7	0	0	362	288	607	587	5
13:01:21	-0.09	-0.02	-7	0	0	362	288	608	587	5
13:01:51	-0.09	-0.03	-7	0	0	313	287	609	588	0
13:02:21	-0.09	-0.03	-7	0	0	313	288	610	589	0
13:02:51	-0.1	-0.03	-7	1	0	313	288	610	589	0
13:03:21	-0.1	-0.04	-7	0	0	313	288	611	590	-1
13:03:51	1.88	1.95	286	281	10.6	1	22	74	112	-1
13:04:21	1.88	1.95	286	279	10.86	0	1	54	32	1
13:04:51	1.88	1.96	287	280	10.77	0	1	48	21	2
13:05:21	1.88	1.95	286	284	10.78	0	0	44	15	1
13:05:51	1.88	1.96	286	279	10.94	-1	0	42	13	1
13:06:21	1.89	1.95	286	280	10.82	-1	0	40	11	1
13:06:51	12.5	12.46	-2	0	3.92	221	146	249	151	-3
13:07:21	12.6	12.72	-5	0	3.88	229	208	289	259	-2
13:07:51	12.35	12.5	-5	0	3.9	247	220	300	271	237
13:08:21	12.15	12.32	-1	0	3.89	133	48	333	287	243
13:08:51	12.27	12.4	-1	0	3.99	30	8	268	292	244
13:09:21	20.82	20.94	-6	0	0	0	11	50	44	209
13:09:51	20.51	20.66	-5	0	0	0	0	40	11	203
13:10:21	20.51	20.66	-6	0	0	0	0	38	9	203
13:10:51	20.52	20.67	-6	0	0	0	0	37	7	2
13:11:21	20.53	20.68	-5	0	0	0	0	37	6	-2
13:11:51	20.54	20.69	-6	0	0	-1	0	37	6	-3
13:12:21	20.54	20.69	-5	0	0	-1	0	36	6	-3
13:12:51	20.54	20.68	-6	0	0	0	0	36	5	-4
13:13:21	20.54	20.69	-6	0	0	-1	0	36	5	-4
13:13:51	20.54	20.69	-6	0	0	-1	0	36	5	-4
13:14:21	20.77	20.95	-6	0	0	-1	0	36	5	-4
13:14:51	20.56	20.71	-6	0	0	-1	0	36	5	-4
13:15:21	20.55	20.69	-6	0	0	-1	0	36	5	-4
13:15:51	20.55	20.7	-6	0	0	-1	0	36	4	-4
13:16:21	20.55	20.7	-6	0	0	-1	0	36	4	-4
13:16:51	20.54	20.69	-6	0	0	-1	0	36	4	-4
13:17:21	20.54	20.7	-6	0	0	-1	0	36	4	-4
13:17:51	20.56	20.71	-6	0	0	-1	0	36	4	-4
13:18:21	20.54	20.69	-6	0	0	-1	0	36	4	-4
13:18:51	20.54	20.69	-6	0	0	-1	-1	36	4	-3
13:19:21	12.93	13.07	-5	0	3.68	244	219	271	224	-2
13:19:51	12.95	13.09	-5	0	3.63	243	221	286	257	-3
13:20:21	20.36	20.46	-3	0	0.01	2	38	79	101	-3
13:20:51	20.46	20.62	-5	0	0	0	0	47	19	-1
13:21:21	20.48	20.63	-6	0	0	-1	0	42	12	-4
13:21:51	20.48	20.64	-6	0	0	-1	0	40	9	-3
13:22:21	12.38	12.57	-5	0	3.98	287	209	275	186	-3
13:22:51	12.48	12.62	-5	0	3.85	272	251	299	272	-1

Koppers Industries - Dolomite, Alabama
No. 1 Stack
January 25, 1996

	1 O2	2 O2	1 CO	2 CO	2 CO2	1 NOX	2 NOX	1 SO2	2 SO2	VOC
14:19:25	20.48	20.65	9	0	0	0	1	50	16	1
14:19:55	20.49	20.65	9	0	0	0	0	47	12	-3
14:20:25	20.49	20.66	-9	0	0	0	0	46	11	-4
14:20:55	20.5	20.67	9	0	0	0	0	45	10	4
14:21:25	20.5	20.67	-9	0	0	0	0	44	9	2
14:21:55	20.51	20.68	9	0	0	0	0	44	9	-2
14:22:25	20.5	20.67	-9	0	0	-1	0	43	8	6
14:22:55	20 5	20.67	9	0	0	0	0	43	7	-1
14:23:25	20.56	20.69	9	0	0	-1	0	43	7	-3
14:23:55	20.52	20.71	-9	0	0	0	0	43	8	-5
14:24:25	0.71	1.38	-9	0	0.86	174	0	294	55	-7
14:24:55	-0.04	0.07	-10	0	0	321	284	585	555	-5
14:25:25	-0.07	0.03	10	0	0	322	285	597	571	-8
14:25:55	-0.08	0.02	10	0	0	322	285	602	578	-6
14:26:25	-0.09	0 01	10	0	0	322	285	605	581	-7
14:26:55	-0.1	0	10	0	0	322	285	607	583	-3
14:27:25	-0.11	-0.01	-10	0	0	323	285	609	585	-4
14:27:55	17.95	16.71	-7	0	0	299	285	449	588	-2
14:28:25	20.4	20.56	-10	0	0	1	2	76	53	202
14:28:55	20.42	20.59	1	0	0	0	1	60	28	249
14:29:25	20.42	20.59	2	0	0	0	0	53	19	223
14:29:55	20.45	20.61	1	0	0	0	0	51	16	268
14:30:25	20.46	20.63	2	0	0	-1	0	49	14	247
14:30:55	20.46	20.63	5	0	0	-1	0	47	12	275
14:31:25	20.46	20.63	7	0	0	-1	0	47	11	240
14:31:55	20.47	20.64	1	0	0	-1	0	46	11	236
14:32:25	20.46	20.63	5	0	0	-1	0	46	10	12
14:32:55	20.47	20.65	2	0	0	-1	0	45	9	6
14:33:25	20.48	20.65	2	0	0	-1	0	45	9	-1
14:33:55	20.46	20.64	2	0	0	0	0	45	9	-2
14:34:25	20.47	20.65	4	0	0	-1	0	44	9	-2
14:34:55	20.48	20.65	1	0	0	-1	0	44	8	-3
14:35:25	20.47	20.65	6	0	0	-1	0	44	8	-7
14:35:55	20.48	20.65	2	0	0	-1	0	44	8	6
14:36:25	20.48	20.66	0	0	0	-1	0	44	8	-6
14:36:55	20.48	20.65	0	0	0	0	0	44	8	-4
14:37:25	20.47	20.65	4	0	0	-1	0	43	8	-7
14:37:55	20.48	20.65	3	0	0	-1	0	44	8	-2
14:38:25	20.48	20.66	1	0	0	-1	0	44	7	-6
14:38:55	20.48	20.65	1	0	0	-1	0	43	8	-5
14:39:25	20.47	20.65	2	0	0	-1	0	44	7	-7
14:39:55	20.48	20.65	3	0	0	1	0	44	7	-8
14:40:25	20.48	20.66	0	0	0	-1	0	44	7	-8
14:40:55	20.48	20.66	2	0	0	-1	0	44	7	-4
14:41:25	20.47	20.64	3	0	0	-1	-1	44	7	-3
14:41:55	20.47	20.65	2	0	0	1	0	44	7	-5
14:42:25	20.47	20.65	1	0	0	-1	0	44	8	-7
14:42:55	20.47	20.65	1	0	0	1	0	44	8	-1
14:43:25	20.48	20.65	3	0	0	-1	0	44	7	-4
14:43:55	20.48	20.65	1	0	0	-1	-1	44	7	-5
14:44:25	20.47	20.65	3	0	0	1	-1	44	8	-8
14:44:55	20.47	20.65	1	0	0	1	0	44	7	-1
14:45:25	20.46	20.64	1	0	0	0	0	44	8	-5
14:45:55	20.47	20.65	0	0	0	-1	0	44	7	-4
14:46:25	20.48	20.66	0	0	0	-1	1	44	7	-3
14:46:55	20.45	20.63	4	1	0	-1	-1	44	7	-7
14:47:25	20.47	20.65	1	0	0	-1	-1	44	6	-4
14:47:55	20.48	20.66	0	0	0	-1	0	44	7	-4
14:48:25	20.48	20.65	1	0	0	-1	0	44	7	-5
14:48:55	20.49	20.66	-1	0	0	-1	0	44	7	-6
14:49:25	20.48	20.65	0	1	0	-1	0	44	7	-6
14:49:55	20.48	20.66	4	0	0	-1	0	44	7	-4
14:50:25	20.48	20.65	2	0	0	-1	-1	43	7	-5
14:50:55	20.47	20.66	-1	0	0	-1	0	44	7	-6
14:51:25	20.49	20.66	0	0	0	1	-1	44	7	-6

14:51:55	20.48	20.65	0	0	0	-1	-1	44	7	-8
14:52:25	20.47	20.65	2	0	0	-1	0	44	6	-7
14:52:55	20.48	20.65	2	0	0	-1	-1	44	6	-1
14:53:25	20.47	20.65	6	0	0	-1	0	44	7	-3
14:53:55	20.48	20.66	2	1	0	-1	0	44	7	-4
14:54:25	16.18	16.61	2	0	1.74	92	32	156	68	-7
14:54:55	19.42	19.73	88	61	0.3	20	14	85	53	-3
14:55:25	11.23	11.43	6	0	4.23	164	126	353	271	-1
14:55:55	11.71	11.81	4	0	4.29	190	170	384	353	2
14:56:25	12.14	12.27	3	0	4.09	181	163	393	363	-1
14:56:55	12.39	12.52	3	0	3.89	179	159	381	356	9
14:57:25	12.63	12.77	4	0	3.74	178	158	369	342	4
14:57:55	12.68	12.84	3	0	3.77	181	160	363	335	-1
14:58:25	12.54	12.69	3	0	3.72	185	164	362	333	-2
14:58:55	12.47	12.61	2	0	3.84	197	172	370	332	9
14:59:25	12.27	12.42	0	0	3.93	205	180	409	385	-1
14:59:55	12.29	12.43	-1	0	3.89	209	184	362	340	-7
15:00:25	12.24	12.39	-1	0	3.96	217	189	343	316	-6
15:00:55	12.34	12.48	-1	0	3.83	216	192	326	300	-2
15:01:25	12.44	12.57	-1	0	3.82	213	189	322	293	-6
15:01:55	12.39	12.53	-1	0	3.85	212	183	319	288	-2
15:02:25	11.72	11.88	-1	0	4.11	247	209	333	298	-3
15:02:55	12.09	12.2	-1	0	4.14	241	222	323	300	-7
15:03:25	12.12	12.25	-1	0	3.98	238	207	311	280	-6
15:03:55	11.88	12.04	-1	0	4.02	248	216	316	284	-7
15:04:25	11.86	12	-1	0	4.13	254	223	315	284	-5
15:04:55	11.7	11.85	-1	0	4.09	263	229	318	287	-7
15:05:25	11.69	11.82	-1	0	4.17	268	235	318	289	-5
15:05:55	11.59	11.72	-1	0	4.26	272	239	321	289	-7
15:06:25	11.58	11.72	0	0	4.17	276	242	321	291	-6

Koppers Industries - Dolomite, Alabama
No. 1 Stack
January 25, 1996

	1 O2	2 O2	1 CO	2 CO	2 CO2	1 NOX	2 NOX	1 SO2	2 SO2	VOC
16:44:06	13.72	13.89	4	0	3.18	123	106	291	251	-8
16:44:36	20.39	20.57	4	0	0	0	1	72	37	-7
16:45:06	20.42	20.61	-4	0	0	0	0	63	19	-3
16:45:36	20.42	20.62	3	0	0	0	0	60	15	-9
16:46:06	20.44	20.63	3	0	0	0	0	59	14	-5
16:46:36	20.44	20.64	3	0	0	0	0	58	13	-4
16:47:06	20.78	20.79	-3	0	0	0	0	57	12	-7
16:47:36	20.51	20.71	-4	0	0	0	0	57	12	-8
16:48:06	20.45	20.65	4	0	0	0	0	56	12	-6
16:48:36	20.45	20.65	-4	0	0	-1	0	56	11	-8
16:49:06	20.44	20.65	-4	0	0	0	0	56	10	-5
16:49:36	20.44	20.66	3	0	0	-1	0	56	10	-2
16:50:06	20.44	20.65	-4	0	0	-1	0	56	10	-4
16:50:36	20.46	20.63	-4	0	0	-1	0	56	10	-8
16:51:06	20.45	20.65	-4	1	0	-1	0	56	10	-3
16:51:36	8.64	12.33	258	189	2.19	0	0	56	10	-6
16:52:06	1.93	2.06	288	266	10.72	-1	0	56	10	-5
16:52:36	1.9	2.02	288	266	10.64	-1	0	56	10	-3
16:53:06	1.87	2.01	288	269	10.63	-1	0	56	10	-3
16:53:36	1.86	2	288	264	10.8	-1	0	56	10	-1
16:54:06	1.86	1.99	242	258	10.69	-1	0	102	10	-5
16:54:36	-0.12	0	-4	0	0	322	282	581	531	4
16:55:06	-0.13	-0.01	-5	0	0	323	283	599	562	2
16:55:36	-0.13	-0.01	-5	0	0	323	283	606	572	-1
16:56:06	-0.14	-0.02	-5	0	0	324	284	610	576	2
16:56:36	-0.14	-0.03	-5	0	0	324	284	612	578	0
16:57:06	-0.14	-0.03	5	0	0	324	283	614	581	-2
16:57:36	-0.15	-0.03	-5	0	0	324	284	615	581	-5
16:58:06	-0.14	-0.03	-5	0	0	324	283	616	583	-3
16:58:36	-0.15	-0.04	-5	0	0	324	284	616	584	-1
16:59:06	-0.13	-0.01	5	0	0	987	855	1229	1176	1
16:59:36	-0.13	-0.02	-5	0	0	989	854	1257	1232	1
17:00:06	-0.13	-0.02	5	0	0	988	853	1256	1243	-2
17:00:36	-0.14	-0.02	-5	0	0	932	851	1260	1248	-6
17:01:06	-0.14	-0.02	-5	0	0	933	850	1262	1251	1
17:01:36	-0.13	-0.02	5	0	0	929	849	1265	1254	-4
17:02:06	-0.14	-0.02	-5	0	0	929	849	1266	1255	-1
17:02:36	-0.13	-0.03	5	0	0	792	850	1273	1261	5
17:03:06	-0.16	-0.04	-6	0	0	15	20	148	160	1
17:03:36	-0.09	0.01	-6	0	0	6	11	107	70	744
17:04:06	-0.04	0.08	-6	0	0	3	4	90	48	767
17:04:36	-0.05	0.08	-6	0	0	2	3	81	38	761
17:05:06	-0.04	0.08	-6	0	0	2	2	76	31	734
17:05:36	-0.04	0.08	-6	0	0	2	2	72	26	805
17:06:06	-0.04	0.08	6	0	0	2	2	70	23	790
17:06:36	-0.04	0.08	-6	1	0	1	1	68	22	810
17:07:06	-0.04	0.08	6	0	0	2	1	66	20	840
17:07:36	-0.05	0.07	6	0	0	1	1	65	18	842
17:08:06	-0.05	0.07	6	0	0	1	1	64	17	833
17:08:36	-0.05	0.07	6	0	0	1	1	63	16	875
17:09:06	-0.05	0.07	6	0	0	1	1	63	16	946
17:09:36	-0.05	0.07	6	0	0	1	1	62	15	900
17:10:06	-0.05	0.07	6	0	0	1	1	61	15	904
17:10:36	-0.02	0.09	-6	0	0	1	1	61	14	892
17:11:06	-0.04	0.07	-6	0	0	1	1	61	13	909
17:11:36	-0.04	0.08	-6	0	0	1	1	61	13	397
17:12:06	-0.04	0.07	-6	0	0	1	0	60	12	460
17:12:36	-0.04	0.08	-6	0	0	2	2	60	13	439
17:13:06	-0.04	0.07	-6	0	0	1	1	60	13	435
17:13:36	-0.05	0.07	-6	0	0	2	1	59	12	450
17:14:06	-0.05	0.07	-6	0	0	1	1	59	12	445
17:14:36	-0.05	0.06	-6	0	0	1	1	59	12	445
17:15:06	-0.05	0.07	-6	0	0	1	1	59	12	435
17:15:36	-0.05	0.07	-6	0	0	1	1	59	12	457
17:16:06	-0.05	0.07	-6	0	0	1	1	59	11	469

17:16:36	-0.09	0.02	-6	0	0	1	1	58	11	446
17:17:06	-0.1	0.02	-6	1	0	0	1	58	11	249
17:17:36	-0.1	0.02	-6	0	0	1	1	58	11	250
17:18:06	-0.09	0.02	-6	0	0	0	0	58	11	265
17:18:36	-0.09	0.02	-6	1	0	0	0	58	11	254
17:19:06	-0.09	0.02	-6	0	0	1	1	58	10	277
17:19:36	-0.09	0.02	-5	1	0	1	1	58	10	245
17:20:06	13.45	10.13	-4	0	0	0	1	58	11	233
17:20:36	20.3	20.49	-3	0	0	-1	0	57	9	261
17:21:06	20.34	20.54	-3	0	0	-1	0	57	10	6
17:21:36	20.37	20.56	-3	0	0	-1	0	57	10	-1
17:22:06	20.5	20.71	-3	0	0	-1	-1	57	10	6
17:22:36	20.38	20.58	-3	1	0	-1	0	57	10	1
17:23:06	20.4	20.59	-3	0	0	-1	0	58	10	0
17:23:36	20.4	20.6	-3	0	0	-1	-1	57	10	1
17:24:06	20.39	20.59	-3	0	0	-1	-1	58	10	-3
17:24:36	20.41	20.61	-3	0	0	-1	0	58	10	-5
17:25:06	20.41	20.61	-4	0	0	-1	0	57	10	-2
17:25:36	20.41	20.62	-4	0	0	-1	0	58	10	-2
17:26:06	20.41	20.62	-3	0	0	-1	-1	57	10	-3
17:26:36	20.41	20.62	-4	0	0	-1	0	58	10	-1
17:27:06	20.54	20.77	-4	1	0	-1	-1	57	9	-1
17:27:36	20.42	20.62	-4	0	0	-1	0	57	10	3
17:28:06	20.42	20.62	-4	1	0	-1	0	57	9	-4
17:28:36	20.42	20.63	-4	1	0	-1	0	57	10	1
17:29:06	20.43	20.63	-4	1	0	-1	-1	58	10	-2
17:29:36	20.42	20.63	-4	0	0	-1	-1	57	9	-4
17:30:06	20.42	20.63	-4	0	0	-1	0	57	9	-1
17:30:36	20.43	20.63	-4	0	0	-1	0	58	10	-4
17:31:06	20.43	20.63	-4	0	0	-1	0	57	9	-6
17:31:36	20.43	20.64	-4	0	0	-1	-1	57	9	2
17:32:06	20.47	20.69	-4	0	0	-1	-1	56	9	-4
17:32:36	20.44	20.65	-4	0	0	-1	0	56	9	-3
17:33:06	20.44	20.64	-4	0	0	-1	-1	56	9	-3
17:33:36	20.44	20.64	-4	1	0	-1	0	57	10	-1
17:34:06	20.44	20.65	-4	1	0	-1	0	57	10	0
17:34:36	20.44	20.65	-4	1	0	-1	0	56	9	-4
17:35:06	20.44	20.64	-4	0	0	-1	0	56	9	3
17:35:36	20.44	20.65	-4	1	0	-1	0	56	9	-5
17:36:06	20.44	20.65	-4	0	0	-1	0	56	9	-2
17:36:36	20.56	20.66	-4	0	0	-1	-1	56	9	-4
17:37:06	20.5	20.7	-5	0	0	-1	0	56	9	-3
17:37:36	20.45	20.65	-4	1	0	-1	0	56	10	-1
17:38:06	20.44	20.65	-4	0	0	-1	0	56	9	-3
17:38:36	20.44	20.65	-4	0	0	-1	-1	56	9	-2
17:39:06	20.43	20.65	-5	0	0	-1	0	56	9	-5

Scott Specialty Gases, Inc.

1750 EAST CLUB BOULEVARD, DURHAM, NC 27704 (919) 220-0805 FAX (919) 220-0808

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
Alabama Power Company
Attn: Bill Pockstaller
P.O. Box 2641 GSC8
Birmingham, AL 35291

Assay Laboratory
Scott Specialty Gases, Inc.
1750 East Club Boulevard
Durham, NC 27704

Purchase Order B3126RLSR64936
Scott Project # 12-08218

ANALYTICAL INFORMATION

Certified to exceed the minimum specifications of EPA Protocol Procedure #G1, issued September, 1993.

Cylinder Number ALM-016965
Cylinder Pressure 1915 PSIG
Certification Date 09-01-94
Previous Certification None
Expiration Date 09-01-97

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Carbon Monoxide	303 PPM	+/- 1% NIST Directly Traceable
Carbon Dioxide	11.07 %	+/- 1% NIST Directly Traceable
Oxygen	2.01 %	+/- 1% NIST Directly Traceable
Nitrogen		Balance

Do not use when cylinder pressure is less than 150 PSIG.

* Analytical uncertainty is inclusive of usual known error sources which at least includes reference standard error & precision of the measurement processes

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
NTRM # 2636	12/94	ALM-024902	243.2 PPM Balance in Nitrogen
NTRM # 1675	09/95	ALM-032766	14.01% Balance in Nitrogen
NTRM # 2657	10/94	ALM-017725	1.975% Balance in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Varian /3400/16804	08-15-94	Gas Chromatography
Varian /3400/0160	08-15-94	Gas Chromatography

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
Carbon Monoxide	Date: 08-23-94 Response Units: Area STD=11460 SPL=14295 SPL=14260 SPL=14285 STD=11399 STD=11439	Date: 09-01-94 Response Units: Area STD=11399 SPL=14484 SPL=14399 SPL=14409 STD=11608 STD=11638	Date: 08-15-94
Carbon Dioxide	Date: 09-01-94 Response Units: Area STD=572830 SPL=452359 SPL=452151 SPL=452439 STD=572383 STD=572162	Date: Response Units: STD= SPL= SPL= SPL= STD= STD=	Date: 08-15-94
Oxygen	Date: 09-01-94 Response Units: Area STD=98091 SPL=100673 SPL=99606 SPL=99314 STD=98221 STD=98306	Date: Response Units: STD= SPL= SPL= SPL= STD= STD=	Date: 08-15-94

A. Barber

Analyst A. Barber

Scott Specialty Gases, Inc.

on Road, PO Box 310 Plumsteadville PA 18949-0310 FAX: (215) 766-0320

CERTIFICATE OF ANALYSIS: Interference-Free™ Multi-Component EPA Protocol Gas

Customer
ALABAMA POWER COMPANY
GSC BLDG #8 / 5 MILES
SO OF ALABASTER & I65
VARNONS, AL 35040

Assay Laboratory
Scott Specialty Gases, Inc.
6141 Easton Road
Plumsteadville, PA 18949

Purchase Order E3126
Scott Project # 5968002B

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards, Procedure G1; September, 1993

Cylinder Number *ALM039181*
Cylinder Pressure+ *1920 psig*

Previous Certification Dates
Certification Date *8/25/94*
Expiration Date *8/23/96*

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Accuracy*
Sulfur Dioxide	602.6 PPM	± 1% NIST Traceable
Nitric Oxide	296.1 PPM	± 1% NIST Traceable
Total Oxides in Nitrogen	296.5 PPM	Reference Value Only
Nitrogen	Balance Gas	

+ Do not use when cylinder pressure is below 150 psig
* Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes

REFERENCE STANDARD

Type/Sample No.	Expiration Date	Cylinder Number	Concentration
NTRM1661A	*3/18/95*	*ALM031877*	*467 ppm SO2 in N2*
M1686	*7/23/95*	*ALM022286*	*492 ppm NO in N2*

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Method
Nicolet FTIR/8220/AAB9300174	*8/10/94 SO2*	*Scott Enhanced FTIR TM*
Nicolet FTIR/8220/AAB9300174	*8/16/94 NO*	*Scott Enhanced FTIR TM*

ANALYZER READINGS

(Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components — First Triad Analysis — Second Triad Analysis — Calibration Curve

SO2

Date: 8/16/94			Resp. Units: PPM		
Z1=	0.37	R1=	467.10	T1=	602.03
R2=	467.90	Z2=	0.82	T2=	602.26
Z3=	0.82	T3=	602.81	R3=	467.55
Avg Concentration:			602.37		

Date: 8/23/94			Resp. Units: PPM		
Z1=	0.06	R1=	467.10	T1=	603.20
R2=	466.14	Z2=	0.42	T2=	603.15
Z3=	0.14	T3=	602.44	R3=	467.33
Avg Concentration:			602.93		

Concentration = A+Bx+Cx2+Dx3+Ex4

r= 1		LA-020164	
Constants:		A= 0.0E+00	
B= 6.5E+05		C= 1.5E+10	
D= 1.4E+16		E= 0.0E+00	

NO

Date: 8/16/94			Resp. Units: PPM		
Z1=	0.00	R1=	492.00	T1=	295.58
R2=	492.23	Z2=	0.00	T2=	296.21
Z3=	0.09	T3=	296.67	R3=	492.91
Avg Concentration:			296.3		

Date: 8/23/94			Resp. Units: PPM		
Z1=	0.00	R1=	492.00	T1=	296.61
R2=	492.79	Z2=	0.00	T2=	296.07
Z3=	0.00	T3=	295.34	R3=	490.94
Avg Concentration:			296.0		

Concentration = A+Bx+Cx2+Dx3+Ex4

r= 1		ALM022392	
Constants:		A= 0.0E+00	
B= 5.9E+01		C= 5.4E+04	
D= 5.1E+07		E= 0.0E+00	

Special Notes:

Analyst Michael A. Kuhns

Scott Specialty Gases, Inc.

Easton Road, PO Box 310 Plumsteadville PA 18949-0310 FAX: (215) 766-0320

CERTIFICATE OF ANALYSIS: Interference-Free™ Multi-Component EPA Protocol Gas

Customer
ALABAMA POWER COMPANY
SSC BLDG #8 / 5 MILES
SOUTH OF ALABASTER & I65
VARNONS, AL 35040

Assay Laboratory
Scott Specialty Gases, Inc
6141 Easton Road
Plumsteadville, PA 18949

Purchase Order *83126R64936*
Scott Project # *5998901D*

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number *ALM049838*
Cylinder Pressure+ *1990 psig*

Previous Certification Dates

Certification Date *9/1/94*
Expiration Date *8/31/96*

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Accuracy*
Sulfur Dioxide	1302 PPM	± 1% NIST Traceable
Nitric Oxide	886.7 PPM	± 1% NIST Traceable
Total Oxides in Nitrogen	886.7 PPM	Reference Value Only
Nitrogen	Balance Gas	

+ Do not use when cylinder pressure is below 150 psig.
**Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.*

REFERENCE STANDARD

Type/Sample No.	Expiration Date	Cylinder Number	Concentration
NTRM1663	6/9/95	ALM024037	1425 ppm SO2 in N2
NTRM1687	8/4/96	ALM021384	954 ppm NO in N2

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Method
Nicolet FTIR/8220/AAB9300174	8/17/94 :SO2	Scott Enhanced FTIR ™
Nicolet FTIR/8220/AAB9300174	8/1/94 :NO	Scott Enhanced FTIR ™

ANALYZER READINGS

(Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: First Triad Analysis | Second Triad Analysis | Calibration Curve

SO2

Date: 8/24/94			Resp. Units: PPM		
Z1=	0.83	R1=	1425.00	T1=	1299.90
R2=	1425.10	Z2=	0.30	T2=	1302.40
Z3=	1.11	T3=	1302.90	R3=	1431.10
Avg. Concentration:			1301.73		

Date: 8/31/94			Resp. Units: PPM		
Z1=	0.00	R1=	1425.00	T1=	1301.50
R2=	1427.70	Z2=	0.00	T2=	1302.50
Z3=	0.02	T3=	1302.10	R3=	1428.90
Avg. Concentration:			1302.03		

Concentration = A+Bx+Cx2+Dx3+Ex4

r= 1		ALM024037	
Constants:		A= 0.0E+00	
B= 6.5E+05		C= 1.5E+10	
D= 1.4E+16		E= 0.0E+00	

NO

Date: 8/24/94			Resp. Units: PPM		
Z1=	0.00	R1=	954.00	T1=	883.90
R2=	956.46	Z2=	0.06	T2=	887.70
Z3=	0.18	T3=	887.19	R3=	957.30
Avg. Concentration:			886.3		

Date: 8/31/94			Resp. Units: PPM		
Z1=	0.29	R1=	954.00	T1=	887.31
R2=	956.81	Z2=	0.38	T2=	886.08
Z3=	0.29	T3=	887.74	R3=	957.71
Avg. Concentration:			887.0		

Concentration = A+Bx+Cx2+Dx3+Ex4

r= 1		ALM021384	
Constants:		A= 0.0E+00	
B= 5.8E+01		C= 5.4E+04	
D= 5.1E+07		E= 0.0E+00	

Special Notes:

Analyst GARREN R. KNOLL

TOTAL P.05

Particulate Sampling Equipment Calibration

ENTEC Services, Inc.

1429 2nd Avenue North, Bessemer, Alabama 35020

Client: Koppers Industries - Woodward Coke Plant — Date: 6-1-95
Source: No. 1 Stack — Tech: M. Dees

Pre- Meter Box Calibration
Meter I.D.- Console E-10

RUN NUMBER	1	2	3	4
BAROMETRIC PRESSURE	29.73	29.73	29.73	29.73
ORIFICE PRESSURE DROP, IN. H2O	0.50	1.00	2.00	3.00
PRESSURE WET TEST METER, IN. H2O	-0.20	-0.40	-0.80	-1.20
WET TEST METER				
INITIAL VOLUME	558.563	564.949	570.591	578.24
FINAL VOLUME	564.949	570.591	578.24	585.871
TOTAL VOLUME	6.386	5.642	7.649	7.631
INITIAL TEMPERATURE	67.0	67.0	67.0	67.0
FINAL TEMPERATURE	67.0	67.0	67.0	67.0
AVG. TEMPERATURE	67.0	67.0	67.0	67.0
DRY GAS METER				
INITIAL VOLUME	804.633	811.049	816.745	824.415
FINAL VOLUME	811.049	816.745	824.415	832.169
TOTAL VOLUME	6.416	5.696	7.67	7.754
TEMPERATURE IN	76.0	78.0	79.0	80.0
TEMPERATURE OUT	69.0	69.0	71.0	71.0
AVG. TEMPERATURE	72.5	73.5	75.0	75.5
RUN TIME	16.0	10.0	10.0	8.0
METER CALIBRATION FACTOR, Y	1.007	1.006	1.019	1.010
AVERAGE Y	1.011			
DELTA H @	1.745	1.744	1.892	1.823
AVERAGE H@	1.801			

ENTEC Services, Inc.

1429 2nd Avenue North, Bessemer, Alabama 35020

Client: Koppers Industries - Woodward Coke Plant Date: 1-29-96
Source: No. 1 Stack Tech: M. Dees

Post- Meter Box Calibration
Meter I.D.- Console E-10

RUN NUMBER	1	2	3
BAROMETRIC PRESSURE	29.5	29.5	29.5
ORIFICE PRESSURE DROP, IN. H2O	2.00	2.00	2.00
PRESSURE WET TEST METER, IN. H2O	-0.80	-0.80	-0.80
WET TEST METER			
INITIAL VOLUME	786.297	793.990	801.668
FINAL VOLUME	793.990	801.668	809.348
TOTAL VOLUME	7.693	7.678	7.680
INITIAL TEMPERATURE	67.0	67.0	67.0
FINAL TEMPERATURE	67.0	67.0	67.0
AVG. TEMPERATURE	67.0	67.0	67.0
DRY GAS METER			
INITIAL VOLUME	357.354	365.049	372.732
FINAL VOLUME	365.049	372.732	380.420
TOTAL VOLUME	7.695	7.683	7.688
TEMPERATURE IN	72.0	73.0	73.0
TEMPERATURE OUT	74.0	75.0	75.0
AVG. TEMPERATURE	73.0	74.0	74.0
RUN TIME	10.0	10.0	10.0
METER CALIBRATION FACTOR, Y	1.018	1.020	1.019
AVERAGE Y	1.019		
DELTA H @	1.892	1.896	1.895
AVERAGE H@	1.894		

PITOT TUBE IDENTIFICATION NUMBER: ESP-03 DATE: 1-15-96

CALIBRATED BY: Max Dees

	"A" SIDE CALIBRATION			
RUN NO.	Δp_{std} cm H_2O (in. H_2O)	$\Delta p_{(s)}$ cm H_2O (in. H_2O)	$C_{p(s)}$	DEVIATION $C_{p(s)} - \bar{C}_p(A)$
1	.67	.94	.844	.001
2	.67	.94	.844	.001
3	.67	.95	.840	.003
		$\bar{C}_p$ (SIDE A)	.843	

	"B" SIDE CALIBRATION			
RUN NO.	Δp_{std} cm H_2O (in. H_2O)	$\Delta p_{(s)}$ cm H_2O (in. H_2O)	$C_{p(s)}$	DEVIATION $C_{p(s)} - \bar{C}_p(B)$
1	.67	.94	.844	.002
2	.67	.94	.844	.002
3	.66	.94	.838	.004
		$\bar{C}_p$ (SIDE B)	.842	

$$\text{AVERAGE DEVIATION} = \sigma\,(\text{A OR B}) = \frac{\sum_{1}^{3} \left| C_p(s) - \bar{C}_p(\text{A OR B}) \right|}{3} \longleftarrow \text{MUST BE} \leq 0.01$$

$$\left| \bar{C}_p\,(\text{SIDE A}) - \bar{C}_p\,(\text{SIDE B}) \right| \longleftarrow \text{MUST BE} < 0.01$$

Pitot tube calibration data.

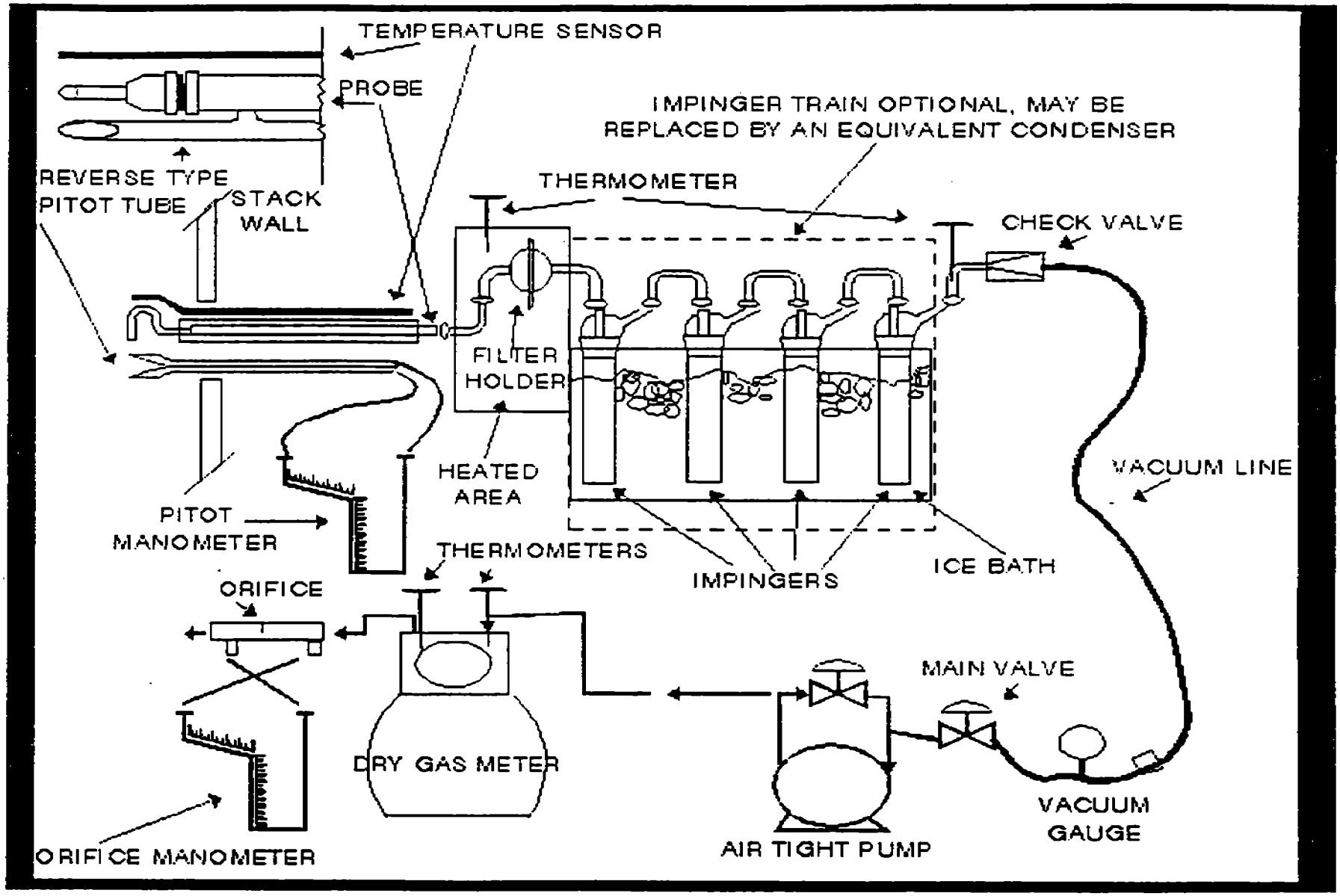
THERMOCOUPLE CALIBRATION

Project: Koppers Industries | Date: 1-29-96

Source: No. 1 Stack | Calibrated by: M. Dees

Thermocouple Identification		Reference Thermometer Temperature	Thermocouple Potententiometer Temperature	% Temperature Difference
Meter Box In (Console E-10)	Cold	33	33	0.00
	Ambient	74	75	-0.19
	Hot	209	208	0.15
Meter Box Out (Console E-10)	Cold	33	34	-0.20
	Ambient	76	76	0.00
	Hot	210	210	0.00
Heater Box (HB-1)	Cold	33	33	0.00
	Ambient	77	76	0.19
	Hot	210	210	0.00
Stack Gas Probe(ESP-04)	Cold	34	33	0.20
	Ambient	78	78	0.00
	Hot	210	210	0.00
Impinger Exit (HB-1)	Cold	33	34	-0.20
	Ambient	76	76	0.00
	Hot	211	212	-0.15

% Difference=[{(Ref. Thermometer+460) - (Thermocouple+460)}/(Ref. Thermometer+460)] x 100 < 1.5%



Particulate Matter Sampling Train

Test Calculation and Nomenclature

I. Determination of Moisture in Stack Gases

a. Volume of Water Vapor Collected (Cubic Feet):
Vwstd = 0.04707 * (Vlc)

b. Dry Gas Volume Through Meter (Cubic Feet):
Vmstd = 17.64 * Vm * Y * {(Pbar + (H/13.6)) / Tm}

c. Moisture Content (Fraction):
Bws + Vwstd / { Vwstd + Vmstd }

d. Wet Molecular Weight : (Ms)
Ms = { Md * (1-Bws) } + { 18.0 * Bws }

II. Actual Stack Gas Volume Sampled (Cubic Feet):

Vma = { Vmstd * Ts * Pstd } / { (1-Bws) * Tstd * Ps }

III. Determination of Stack Gas Velocity & Volumetric Flow Rate

a. Stack Gas Velocity (Feet per Second):
Vs = Kp * Cp * (SqR P) * { SqR (Ts / (Ps * Ms) }

b. Stack Volumetric Flow Rate (Cubic Feet per Minute):

1. Dry Standard Conditions (Qs)
Qs = 60 * (1-Bws) * Vs * As * (Tstd/Ts) * (Ps/Pstd)

2. Actual Conditions (Qa)
Qa = Vs * As * 60

3. Dry Actual Conditions
Qd = (1-Bws) * Qa

IV. Determination of Particulate Concentration (Grainloading)

a. Dry Standard Conditions: (cs)
cs = 0.01543 * (Mn / Vmstd)

b. Actual Conditions: (csl)
csl = 0.01543 * (Mn / Vma)

c. Per Cubic Foot of Dry of Flue Gas
csf = (E * 7000) / 60 / Qd

V. Emission Rate (Pounds per Hour)

$$E = 60 * Qs * cs / 7000$$

VI. Determination of Acceptability of Sampling Results: (I)

$$I = \frac{Ts * ((0.00267 * V1c) = ((Vm*Y/Tm)*(Pbar=(^{2}H/13.6))))}{0.599 * 0 * Vs * Ps * An}$$

As	Cross-sectional area of stack, square feet
An	Cross-sectional area of nozzle, square feet
ACF	Actual cubic feet of gas at stack conditions
ACFM	Actual cubic feet of gas per minute at stack conditions
Bws	Moisture fraction in gas stream
cs	Particulate concentration in stack gas, gr/dscf
csf	Particulate concentration per cubic foot of dry flue gas, gr/dacf
csl	Particulate concentration in stack gas, gr/acf
Ca	Acetone blank residue concentration, g
Cp	Pitot tube coefficient
delta H	Pressure drop across orifice meter, inches water
dp	Nozzle diameter, inches
delta P	Velocity head of stack gas, inches water
dscf	Cubic feet of dry gas corrected to standard conditions
E	Particulate emission rate, pounds/hour
Kp	Constant (85.49)
Ma	Mass of residue of acetone after evaporation, g
Maw	Mass of residue of acetone blank, g
Mf	Particulate matter collected on filter, g
Mn	Total particulater matter collected, g
I	Percent of isokinetic sampling
Pbar	Barometric pressure, inches mercury
Pm	Barometric pressure of dry gas meter, in. mercury
Ps	Absolute stack gas pressure, inches mercury
Pstd	Barometric pressure, standard conditions, 29.92 "Hg
Qa	Volumetric flow rate, actual conditions, acf/min
Qd	Volumetric flow rate, dry actual conditions, dacf/min
Qs	Volumetric flow rate, dry standard conditions, dscf/min
Tm	Absolute average dry gas meter temperature, degree R
Ts	Absolute average stack gas temperature, degree R
Tstd	Absolute temperature at standard conditions, 528 R
O	Total sampling time, minutes
Va	Volume of acetone blank, ml
Vaw	Volume of acetone used in wash, ml
Vlc	Total volume collected in impingers and silica gel, ml
Vm	Volume of gas sampled through gas meter, cubic feet
Vma	Stack gas volume sampled, ACF
Vmstd	Volume of gas sampled through gas meter, cubic feet
Vs	Average stack gas velocity, feet/sec
Vwstd	Volume of water vapor in gas sampled, standard cubic feet
Wa	Weight of residue in acetone wash, g
Wf	Final weight of filter or probe wash beaker, g
Wi	Initial weight of filter or probe wash beaker, g
Y	Dry gas meter calibration factor

FLOW RATE CALCULATIONS

$$Bws = \frac{Vp}{Ps} - \frac{(td - tw)}{2782} - \frac{tw\,(td - tw)}{4{,}281{,}000}$$

$$Ms = [.44\,(\%CO2) + .32(\%02) + .28(\%N2 + CO)]\,(1\text{-}Bws) + 18(Bws)$$

$$Vs = 5128.8 \times Cp \times \sqrt{\frac{Ts}{PsMs}} \times \sqrt{(\Delta p)\ avg.}$$

$$Qa = VsA$$

$$Qs = Qa \times \frac{T\ std}{Ts} \times \frac{Ps}{P\ std} \times (1\text{-}Bws)$$

Where:

Bws = Moisture fraction in gas stream
Vp = Vapor pressure in gas stream
Ps = Static pressure in hg.
Td = Dry bulb temperature, °F
Tw = Wet bulb temperature, °F
Ms = Molecular weight of gas (wet), lb/lb - mole
CO2 = Carbon dioxide fraction of gas
02 = Oxygen fraction of gas
N2 = Nitrogen fraction of gas
CO = Carbon monoxide fraction of gas
Vs = Average gas velocity, FPM
Cp = Pitot tube correction factor
Ts = Gas temperature, °R
Δp = Velocity pressure differential, in. H20
Qa = Average gas flow rate, ACFM
A = Duct cross sectional area, ft.
Qs = Average gas flow rate, DSCFM
Tstd = Standard temperature, 528°R
Pstd = Standard pressure, 29.92 in. hg.