AP42 Section:	11.16
Reference:	3
Title:	Source Emissions Test Report, Gold Bond Building Products, EMB-80-GYP-1, U. S. Environmental Protection Agency, Research Triangle Park, NC, November 1980.

United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Research Triangle Park NC 27711

EMB Report 80-GYP-1
November 1980

Air

EPA

Gypsum Industry

GYPSUM
MANUFACTURING
AP-42 Section 11.14
Reference Number
3

Emission Test Report Gold Bond Building Products Wilmington, North Carolina

NON-METALLIC MINERAL

PROCESSES 1) Gypsum Rock Dryer
SAMPLED 2) Gypsum Calciner

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

DATE: 4/2/81

SUBJECT: Source Test Report

FROM: J. E. McCarley, Chief, Field Testing Section,
Emission Measurement Branch, ESED (MD-13)

TO: See Below

The enclosed final source test report is submitted for your information. Any questions regarding the test should be directed to the Project Officer (telephone: 8/629-5243). Additional copies of this report are available from the ERC Library, Research Triangle Park, North Carolina 27711.

Industry: Gypsum

Process: 1 Rock Dryer
2 Gypsum calciner

Company: Gold Bond Building Products

Location: Wilmington, NC

Project Report Number: 80-GYP-1

Project Officer: Dennis P. Holzschuh

Enclosure

Addressees:
Ken Knapp, ESRL (MD-46)
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Director, Air & Hazardous Materials Division, Region IV
(copy enclosed for State agency)
Bob Kilgore, EPA Library Services (MD-35)

SOURCE EMISSIONS TEST REPORT

GOLD BOND BUILDING PRODUCTS
Wilmington, North Carolina

No. 2 Calcidyne Baghouse and
Rock Dryer Baghouse

Jeffrey D. O'Neill
Project Scientist

March 1981

Barry L. Jackson
Project Manager
Air Testing

Weston Report No. 0300-81-19
Contract No. 68-02-2816
Work Assignment No. 18

Prepared by
ROY F. WESTON, INC.
Designers-Consultants
Weston Way
West Chester, Pennsylvania

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SUMMARY

The Emission Measurement Branch of the U.S. Environmental Protection Agency contracted Roy F. Weston, Inc. (Weston) to conduct a source testing and analysis program at Gold Bond Building Products' Wilmington, North Carolina gypsum processing facility.

The primary objectives of the testing program were to determine collector particulate removal efficiencies, and to quantify particulate emissions to the atmosphere from two baghouse-controlled sources at the plant (No. 2 calcidyne and rock dryer). This objective was achieved by performing a series of three particulate tests utilizing EPA Method 5[1] procedures at each baghouse inlet duct and outlet stack location. In addition, visual determinations of plume opacities were made simultaneously with each particulate test at the two source discharge points according to EPA Method 9[2] protocol. A singular Anderson® cascade impactor[3] test was performed at each stack exhaust location and three Anderson® cascade impactor tests were conducted at each of the baghouse inlet locations. In addition, frequency of fugitive emissions (by EPA Method 22[4]) was monitored at several points in the processing operation.

Particulate matter and visible emissions results are summaried as follows:

No. 2 Calcidyne Baghouse Inlet Duct

Test Number	Date	Particulate Concentration Grains/DSCF	Particulate Emission Rate Pounds/Hour
1	5-19-80	22.0	288.
2	5-20-80	21.6	284.
3	5-20-80	21.2	269.
Series Average		-	280.

---

[1]"Standards of Performance for New Stationary Sources," Code of Federal Regulations, Title 40, Part 60, Appendix A, 18 August 1977.
[2]Federal Register, Vol. 39, No. 219, 12 November 1974.
[3]Operating Manual for Anderson 2000, Inc., "Mark III Particle Sizing Stack Samplers," Anderson 2000, Inc., P.O. Box 20769, Atlanta, Georgia.
[4]Draft Method, Revised 28 July 1978.

No. 2 Calcidyne Baghouse Outlet Stack

Test Number	Date	Particulate Concentration Grains/DSCF	Particulate Emission Rate Pounds/Hour	Maximum Recorded Opacity Percent
1	5-19-80	0.021	0.282	5
2	5-20-80	0.024	0.325	5
3	5-20-80	0.026	0.335	5
Series Average		-	0.314	-

Rock Dryer Baghouse Inlet Duct

Test Number	Date	Particulate Concentration Grains/DSCF	Particulate Emission Rate Pounds/Hour
1	5-21-80	50.7	4,900.
2	5-22-80	51.9	5,070.
3	5-22-80	51.2	5,180.
Series Average		-	5,050.

Rock Dryer Baghouse Outlet Stack

Test Number	Date	Particulate Concentration Grains/DSCF	Particulate Emission Rate Pounds/Hour	Maximum Recorded Opacity Percent
1	5-21-80	0.027	2.69	5
2	5-22-80	0.019	1.83	5
3	5-22-80	0.018	1.77	0
Series Average		-	2.10	-

Stucco Baghouse Outlet Stack

Test Number	Date	Maximum Recorded Opacity Percent
1	5-27-80	15
2	5-27-80	10
3	5-27-80	5

The average measured particulate removal efficiency of the No. 2 Calcidyne Baghouse was 99.89%; that of the Rock Dryer Baghouse was 99.96%.

Detailed particulate, particle size distribution, visible and fugitive emission test data, and test results are presented in the section "Test Results and Discussion."

INTRODUCTION

The Emission Measurement Branch of the U.S. Environmental Protection Agency contracted Weston to conduct a source testing and analysis program at Gold Bond Building Products' Wilmington, North Carolina gypsum processing facility. The objective of the testing program was to measure various emission parameters relating to milling, drying, and packaging operations at the plant.

The locations tested, plus the number and types of tests performed at each site, are listed below:

1. No. 2 Calcidyne Baghouse Inlet Duct
   a. Three particulate tests by EPA Method 5.
   b. Three particle size distribution tests by cascade impaction (Anderson®).
2. No. 2 Calcidyne Baghouse Outlet Stack
   a. Three particulate tests by EPA Method 5.
   b. One particle size distribution test by cascade impaction (Anderson®).
   c. Three opacity tests by EPA Method 9 simultaneous with particulate tests.
3. Rock Dryer Baghouse Inlet Duct
   a. Three particulate tests by EPA Method 5.
   b. Three particle size distribution tests by cascade impaction (Anderson®).
4. Rock Dryer Baghouse Outlet Stack
   a. Three particulate tests by EPA Method 5.
   b. One particle size distribution test by cascade impaction (Anderson®).

c. Three opacity tests by EPA Method 9 performed concurrently with particulate tests.

5. Board End Sawing

   a. Three EPA Method 22 fugitive emission tests.

6. Score Wheel

   a. Three EPA Method 22 fugitive emission tests.

7. Admix Conveyor

   a. Three EPA Method 22 fugitive emission tests.

8. Fiberglass Shredder

   a. Three EPA Method 22 fugitive emission tests.

9. Vermiculite Addition Process

   a. One EPA Method 22 fugitive emission test.

10. Stucco Baghouse Outlet Stack

    a. Three opacity tests by EPA Method 9.

All tests were conducted during the period 19 through 27 May 1980 by Weston personnel, and were observed by Mr. Dennis P. Holzschuh, EPA Technical Manager.

Test data and test result summaries are presented in Tables 8 through 23 of this report. Particle size distribution results are shown in Tables 24 through 31. Also included in this report are descriptions of the test locations, test equipment, test procedures, and sample recovery and analytical methods used during the test program. Raw test data, laboratory reports, sample calculations, equipment calibration records, and a list of project participants are provided in Appendices A through E, respectively.

PROCESS DESCRIPTION AND OPERATION

PLANT DESCRIPTION

The Gold Bond Building Products Wilmington, North Caroline plant produces wallboard from gypsum ore mined in Halifax, Nova Scotia. The ore is shipped to the plant by ocean-going freighter. A simplified flow diagram for the process used at the Wilmington plant is shown in Figure 1. Ore stockpiled at the plant is crushed to about minus 5 cm (2 inches) and then dried to remove surface moisture. The dry ore is further ground to about 90 percent minus 100 mesh in a grinding mill. The ground crude gypsum, primarily calcium sulfate dihydrate ($CaSO_4 \cdot 2H_2O$), is heated to around 571°K (300°F) to remove 75 percent of its water of hydration and thus form calcium sulfate hemihydrate ($CaSO_4 \cdot 1/2H_2O$). This process is known as calcining. The calcined gypsum or stucco is mixed with starch, water, and other additives to form a slurry. The slurry is spread between two paper sheets and formed into wet wallboard. The wallboard is subsequently dried in a multi-deck kiln, trimmed to the correct size, and shipped to distributors.

PROCESS EQUIPMENT TESTED

The emission tests conducted at the Wilmington plant are shown in Table 1. A brief description of the major processing equipment tested at the plant is provided in the following sections.

Rock Dryer

The rock dryer employed at the Wilmington plant is a direct-fired, co-current rotary dryer. As crushed wet gypsum is passed through the dryer, surface moisture is evaporated by hot combustion gases. A schematic diagram of this type of dryer is shown in Figure 2.

Calcidyne Unit

The calciner used at the Wilmington plant is a direct-contact flash calciner of National Gypsum's own patented design. The Calcidyne unit is a continuous calciner in which gypsum is calcined through direct contact with hot gases. A schematic diagram of the unit is shown in Figure 3.

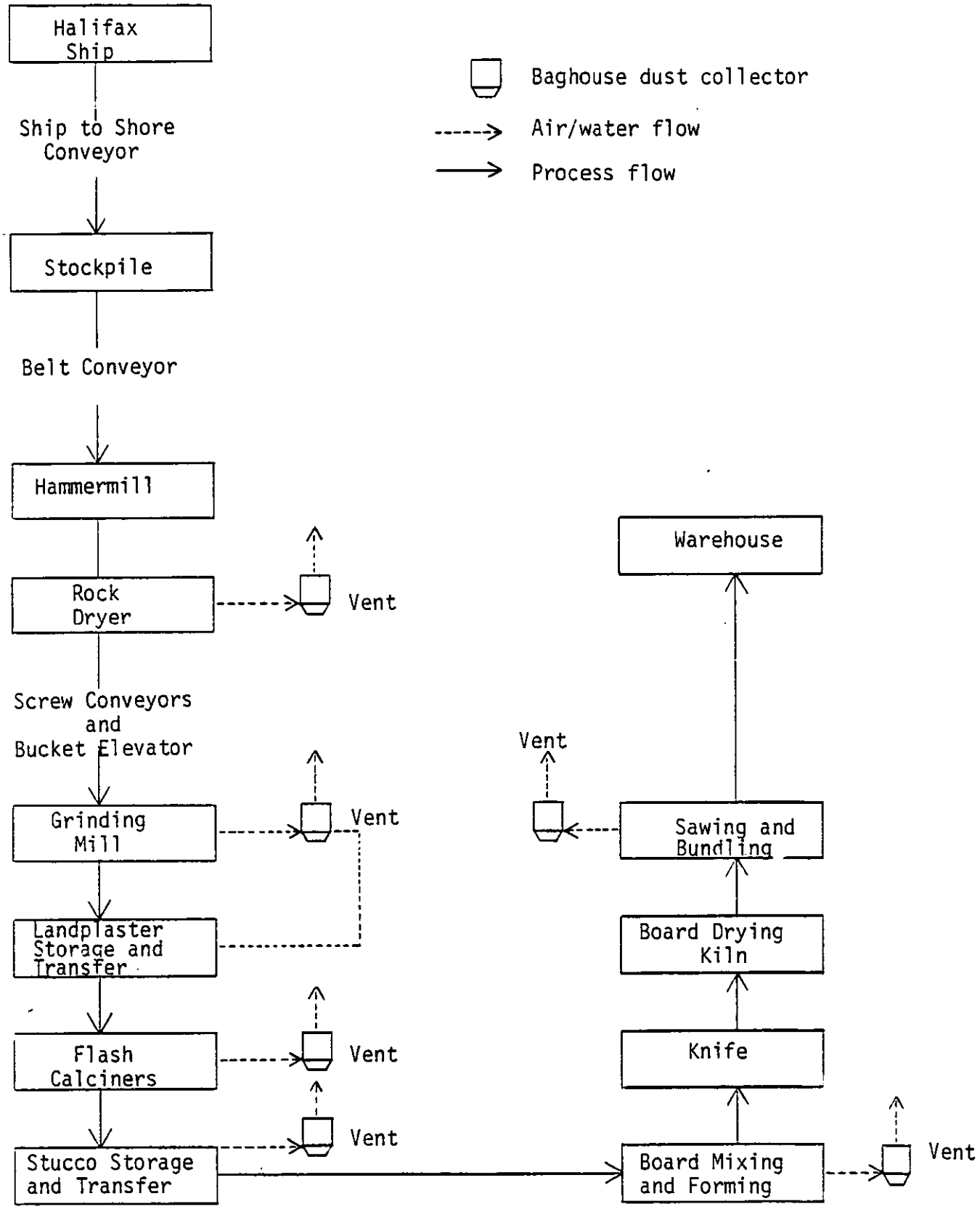


Figure 1. Block Flow Diagram for Wilmington Board Plant

TABLE 1. EMISSION TESTS CONDUCTED AT GOLD BOND, WILMINGTON, N.C. PLANT

PROCESS TESTED	DATE	CONTROL METHOD	TEST TYPE	INLET TEST	OUTLET TEST
Direct contact calciner	5/19/80	Fabric Filter	Particulate loading Particle size Visible Emission	3 EPA-5 3 Andersen N/A	3 EPA-5 1 Andersen EPA-9
Rock Dryer	5/21/80	Fabric Filter	Particulate loading Particle size Visible emission	3 EPA-5 3 Andersen N/A	3 EPA-5 1 Andersen EPA-9
Stucco Storage and Transfer (2 storage bins, 5 screw conveyors, 2 bucket elevators, admix conveyor, and air conveyor)	5/27/80	Fabric Filter	Visible emission	--	EPA-9
Board end-sawing	5/19/80 5/20/80	Capture Hood/ Fabric Filer	Visible emission	--	EPA-22
Paper scoring	5/20/80 5/21/80	Capture Hood/ Fabric Filter	Visible emission	--	EPA-22
Accelerator addition	5/21/80	Capture Hood/ Fabric Filter	Visible emission	--	EPA-22
Fiberglass Shredder	5/21/80 5/22/80	Capture Hood/ Fabric Filter	Visible emissions	--	EPA-22
Vermiculite Addition	5/22/80	Capture Hood/ Fabric Filter	Visible emissions	--	EPA-22

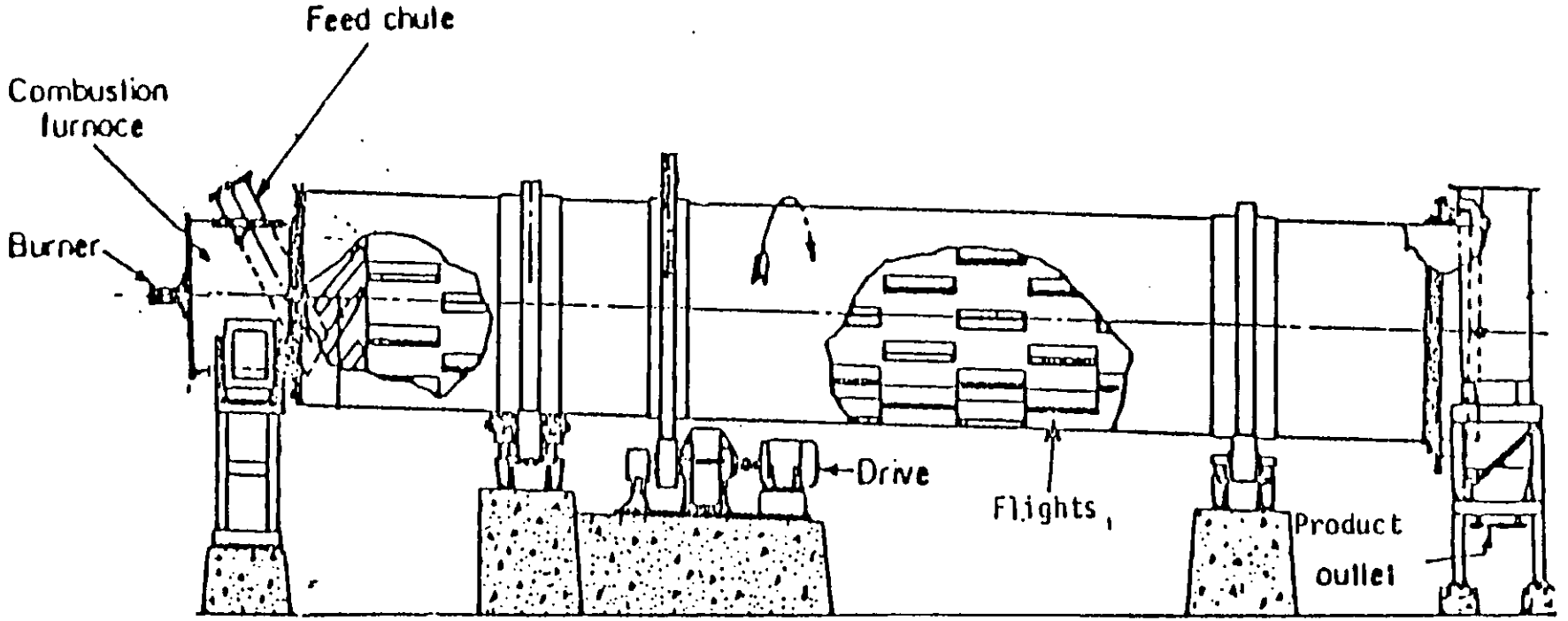


Figure 2 Direct-Fired, Co-Current, Rotary Dryer

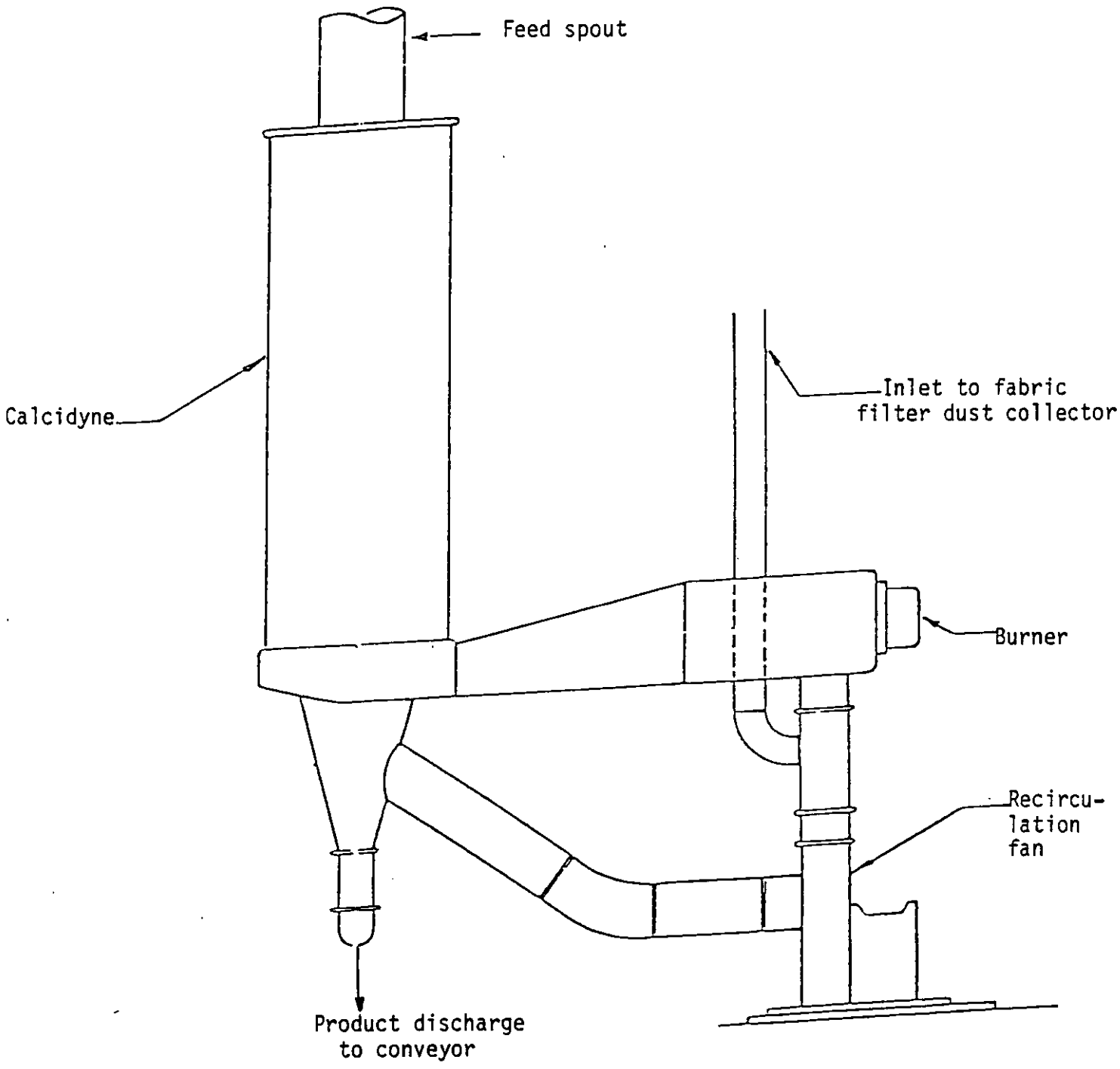


Figure 3 Calcidyne Flash Calciner

Stucco Storage and Transfer

The stucco storage and transfer system used at the plant employs conventional screw conveyors and bucket elevators to transfer stucco from the Calcidyne units to two 150-ton storage bins and from the storage bins to the board forming line.

Board Forming Line

The boardline tested at the Wilmington plant is of average size, capable of producing about 23 million square meters (250 million square feet) of wallboard per year on a half-inch basis. The process operations tested on the boardline, which include board end sawing, paper scoring, accelerator addition, fiberglass shredding, and vermiculite addition, are typical of those used throughout the gypsum industry.

EMISSION CONTROLS

Fabric filter dust collectors are used at the Wilmington plant to control gypsum particulate emissions. Dust-laden gases exiting the rock dryer and the direct contact calciner are vented to separate baghouses. Emissions from screw conveyors, bucket elevators, and storage bins are vented to two fabric filter dust collectors: one collector for transfer and storage of dried gypsum or landplaster, and a second collector for transfer and storage of calcined gypsum or stucco. Boardline emissions, which include emissions from mixing, paper scoring, fiberglass shredding, accelerator addition, and board end sawing, are also controlled by baghouses.

Design and operating parameters for the baghouses tested at the Wilmington plant are given in Table 2. Design parameters for the process units vented to the stucco storage and transfer baghouse are given in Table 3. The values for process rate and air flow given in Table 3 are design values and only approximate actual values.

Normal replacement frequencies and the most-recent replacement dates for bags in the dust collectors tested are shown in Table 4. Inspections of the rock dryer baghouse and the stucco transfer baghouse on May 17 and May 24, respectively, indicated that the filter bags were in need of replacement.

TABLE 2. CONTROL EQUIPMENT PARAMETERS

Process Unit Name	Baghouse Manufacturer	Number of Bags	Bag Dimensions (diam X length in inches)	Cloth Area (square feet)	Fabric Type	Design Air Flow (ACFM)	Duration of pulse[a] (sec)	Frequency of pulse[a] (sec)	Pressure of pulse (psig)
Direct Contact Calciner	Flex-Kleen (reverse pulse)	96	6 X 84	960	Nomex	4100	0.1	10	90
Rock Dryer	Ray Jet (reverse pulse)	192	6 X 108	2880	Nomex	14800	0.1	10	90
Stucco Transfer	Ray Jet (reverse pulse)	120	6 X 108	1800	Dacron	9030	0.1	10	90

[a]These values are approximate; they are varied automatically to maintain a set pressure drop across the filter.

TABLE 3. STUCCO TRANSFER AND STORAGE SYSTEM

Process Unit Description	Design Capacity[a]	Air Flow (ACFM)[a]
Two storage bins	150 tons each	390 (each)
Admix screw conveyor	25 TPH[b]	390
Bucket elevator feeding storage bins by way of screw conveyors	55 TPH	990
Bucket elevator feeding board plant screw conveyors	35 TPH	990
2 screw conveyors feeding bins from bucket elevator	55 TPH each	780 (each)
Air conveyor	30 TPH	220
Screw conveyor for stucco recycle from 3 calciner baghouses	10 TPH	390
Main stucco conveyor to board plant pin mixer	25 TPH	390
Main stucco conveyor from calciners	25 TPH	1220
Paper scoring	N/A[c]	2100

[a]Note should be made that these values are the design values and only approximate actual operating values.

[b]TPH=Tons per hour

[c]N/A=Not applicable

Table 4

Bag Replacement Schedules

Process Unit Name	Last Date of Bag Replacement	Normal Replacement Frequency (Months)
Direct Contact Calciner	1/20/80	4-6
Rock Dryer	5/17/80	9
Stucco Transfer	5/24/80	12

Process Conditions During Testing

In order to ensure that the rock dryer, calciner, and boardline operations were operating at representative steady-state conditions during the testing, various process parameters were monitored.

All processes and emission control equipment were operated at normal conditions during the emission testing except for the stucco storage and transfer baghouse. The operating conditions of each of the processes tested are discussed separately in the following sections.

Rock Dryer

During the emission testing, the rock dryer at the Wilmington plant was running at its normal operating rate, producing 30 tons of dry rock per hour. This operating rate is 60 percent of the design capacity of the dryer. Process data collected during the EPA Method 5 test runs is shown in Tables 5 and 6. The average heat usage of the dryer during the testing was 0.20 million Btu/ton of dried rock. The dryer was burning high sulfur No. 6 fuel oil with a heating value of 149,100 Btu/gallon. The temperature of the rock exiting the dryer was approximately 155 to 160°F. The results of measurements of the free moisture content of the ore entering and exiting the dryer are shown in Table 7. Due to a rainstorm that occurred on the evening of 20 May 1980, the ore may have been slightly wetter than normal during the emission tests on the dryer. This additional moisture should not affect the test results. The pressure drop through the fabric filter was constant at 2.5 inches of water.

Direct Contact Calciner

During the emission testing of the direct contact calciner, or Calcidyne unit, the calciner was operated at full capacity, reported as 7.0 tons per hour of calcined gypsum or stucco by plant personnel. Various process parameters were monitored during each of the three EPA Method 5 test runs on the direct contact calciner. The data show a seven-percent increase in the fuel usage rate between the first and second test runs. This increase in fuel usage is probably the result of a slight change in the operating rate of the unit. Wilmington plant personnel indicated, however, that the unit was producing approximately seven tons per hour during the entire test. Other process parameters monitored indicate that the calciner was operating at steady-state conditions throughout the testing. The pressure drop through the fabric filter dust collector was constant throughout the test at a value of 3.4 inches of water.

Table 5

Process Data from the Rock Dryer: Run No. 1

Plant: Gold Bond
Location: Wilmington, N.C.
Date: 5/21/80

Local Time	Dryer Temperature °C (°F)	Fuel Usage m^3/hr (gal/min)
10:16 AM	104 (220)	0.16 (0.69)
11:06	104 (220)	0.15 (0.66)
11:45	104 (220)	0.15 (0.65)
12:00 PM	104 (220)	0.14 (0.62)
12:45	104 (220)	0.13 (0.59)
1:00	104 (220)	0.16 (0.69)
1:33	104 (220)	0.15 (0.66)

Table 6

Process Data from the Rock Dryer: Runs No. 2 and 3

Plant: Gold Bond
Location: Wilmington, N.C.
Date: 5/22/80

Local Time	Dryer Temperature °C (°F)	Fuel Usage m^3/hr	(gal/min)
8:41	104 (220)	0.17	(0.76)
10:00	104 (220)	0.15	(0.65)
11:35	104 (220)	0.15	(0.67)
12:39	104 (220)	0.14	(0.63)
1:15 PM	104 (220)	0.15	(0.68)
2:10	104 (220)	0.15	(0.67)
2:33	104 (220)	0.14	(0.63)

Table 7

Free Moisture of Gypsum Rock[a]

Date	Wet Rock (Weight percent free water)	Dry Rock (Weight percent free water)
5/21/80	6.0%	1.0%
5/22/80	7.6%	<0.5%

[a]Free moisture is measured by drying ore sample for one hour at 160°F.

Stucco Transfer and Storage

The transfer and storage system was operating at normal capacity during the emission testing. One of the storage bins was three-fourths full, and the other was one-half full.

An inspection for fugitive emissions from each of the sources vented to the stucco transfer baghouse was performed. No visible emissions were observed from any of the sources during the inspection.

Test data from the stucco transfer and storage baghouse show higher-opacity readings than expected because the fabric filter bags had been changed on May 24 and were in operation only several hours prior to the testing. The EPA-Method 9 test on the stucco storage and transfer baghouse is not representative of normal fabric filter operation. The filter bags were not in operation long enough to allow a filter cake to form on the bags and, therefore, were not operating at maximum efficiency.

Board End Sawing

During the board end sawing testing, the board line was running regular, one-half inch board, eight feet in length for two-thirds of the testing, and regular, one-half inch board, twelve feet in length for the remainer of the testing. The board line was operating at normal speed during the testing.

Other Process Operations

The remaining processes tested, which include paper scoring, accelerator addition, fiberglass shredding, and vermiculite addition, were all tested under normal operating conditions.

PROCESS DESCRIPTION REFERENCES

1. U.S. Environmental Protection Agency. Sodium Carbonate Industry - Background Information for Proposed Standards. Research Triangle Park, North Carolina. EPA-450/3-80-029a. p. 3-30.

DESCRIPTION OF PARTICULATE TEST LOCATIONS

NO. 2 CALCIDYNE BAGHOUSE INLET DUCT

Two 4-inch I.D. test ports, 90° apart, were installed on a staight section of the 12-inch I.D. metal stack at a location that was 12 diameters (12 feet) downstream and 6 diameters (6 feet) upstream from the nearest flow disturbance. EPA Method 1 criteria for this test location required a minimum of 12 traverse points. See Figure 4 for port and sampling point locations.

NO. 2 CALCIDYNE BAGHOUSE OUTLET STACK

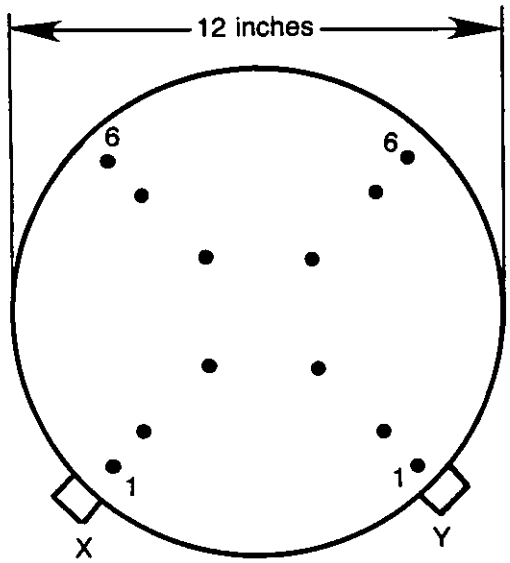
Two 4-inch I.D. test ports were placed at right angles on a straight section of the 11 1/4-inch I.D. metal stack serving the baghouse outlet. The ports were located 5.2 diameters downstream and 2 diameters upstream from the nearest flow disturbance. Stack geometry required the use of 20 sampling points (10 per axis). Figure 5 illustrates port and sampling point locations.

ROCK DRYER BAGHOUSE INLET DUCT

Two 4-inch test ports were placed, 90° apart, on the 25 1/2 -inch I.D. duct at a location which was 1.0 diameter downstream and 1.0 diameter upstream from the nearest gas stream flow disturbance. Forty-eight sampling points (24 per axis) were required for testing. See Figure 6 for port and sampling point locations.

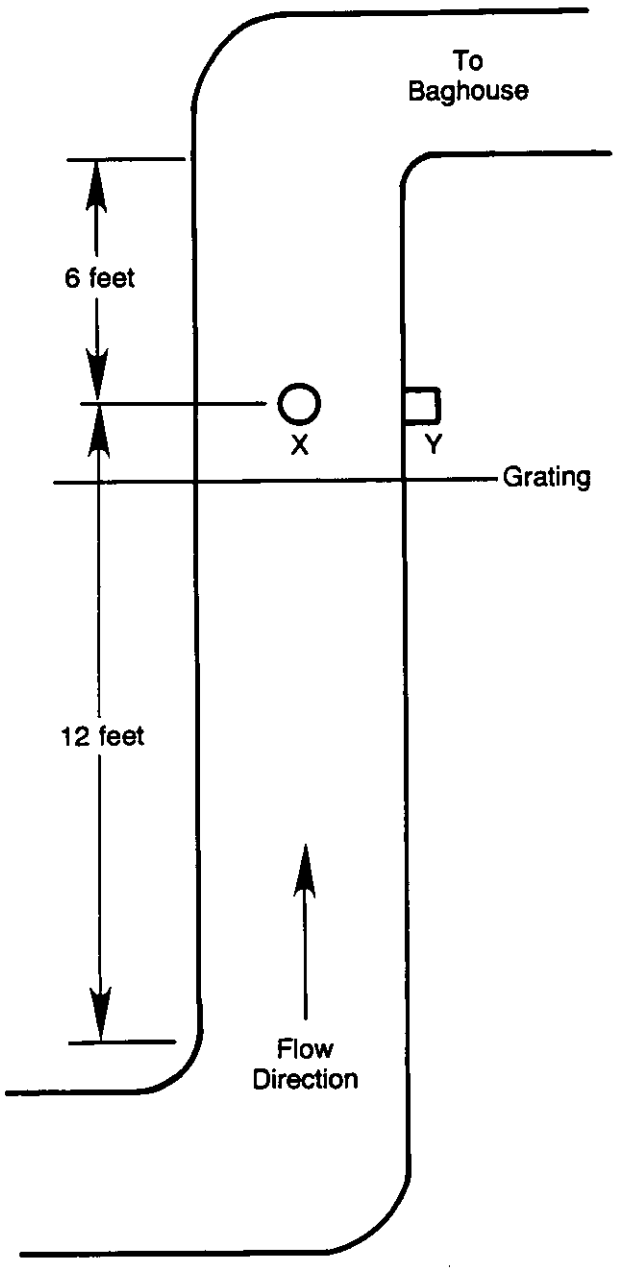
ROCK DRYER BAGHOUSE OUTLET STACK

Two 4-inch I.D. test ports were installed, 90° apart, on a straight section of the 27 1/2-inch I.D. metal stack. The ports were placed 5.2 diameters (143 inches) downstream and 1.3 diameters (35 inches) upstream from the nearest flow disturbance. EPA Method 1 required a minimum of 32 traverse points (16 per axis) for particulate sampling at this location. See Figure 7 for port and sampling point locations.



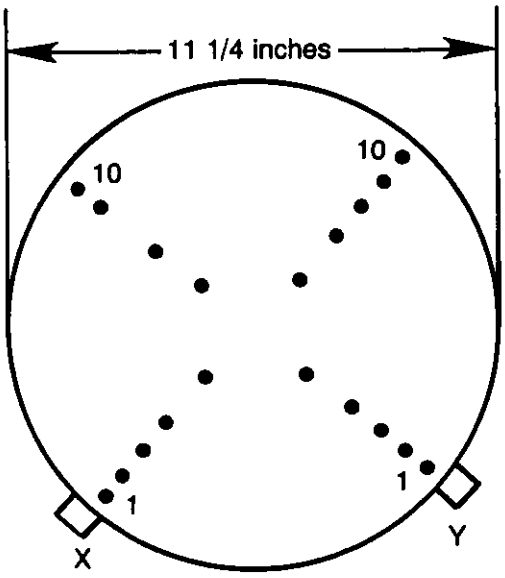
Duct Cross-Sectional Plan

Traverse Point Number	Distance From Inside Near Wall Inches
1	1/2
2	1 3/4
3	3 1/2
4	8 1/2
5	10 1/2
6	11 1/2



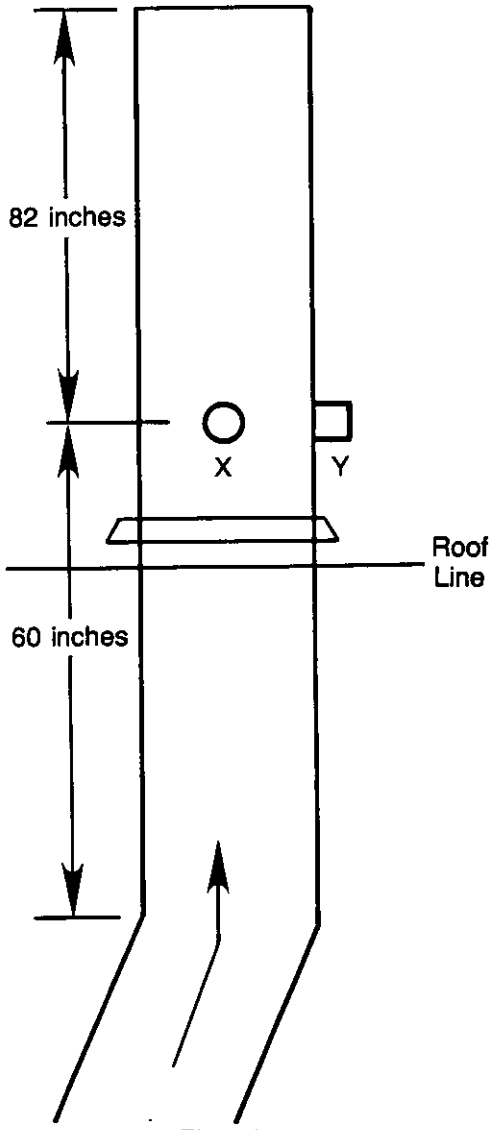
Duct Elevation

Figure 4 No. 2 Calcidyne Baghouse Inlet Duct Port and Sampling Point Locations



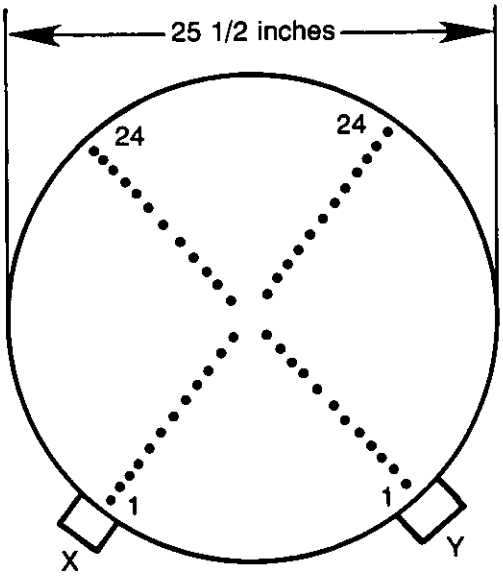
Stack Cross-Sectional Plan

Traverse Point Number	Inside Near Wall Inches
1	1/2
2	7/8
3	1 5/8
4	2 1/2
5	3 7/8
6	7 3/8
7	8 3/4
8	9 5/8
9	10 3/8
10	10 3/4



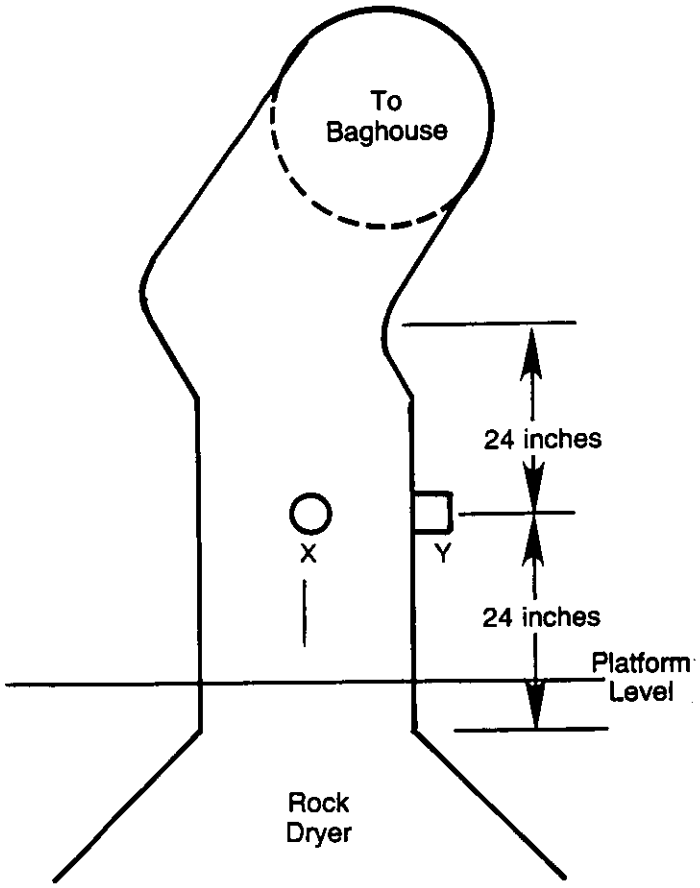
Stack Elevation

Figure 5 No. 2 Calcidyne Baghouse Outlet Stack Port and Sampling Point Locations



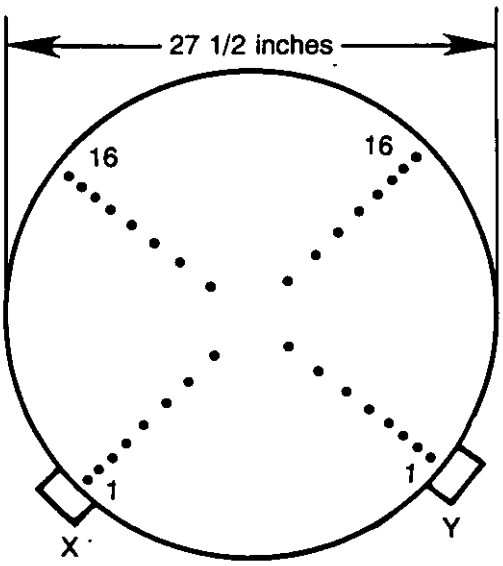
Duct Cross-Sectional View

Traverse Point Number	Distance From Inside Near Wall Inches
1	1/2
2	3/4
3	1 3/8
4	2
5	2 5/8
6	3 3/8
7	4 1/8
8	5
9	5 7/8
10	6 7/8
11	8 1/4
12	10 1/8
13	15 3/8
14	17 1/4
15	18 1/2
16	19 5/8
17	20 1/2
18	21 3/8
19	22 1/8
20	22 3/4
21	23 1/2
22	24 1/8
23	24 5/8
24	25



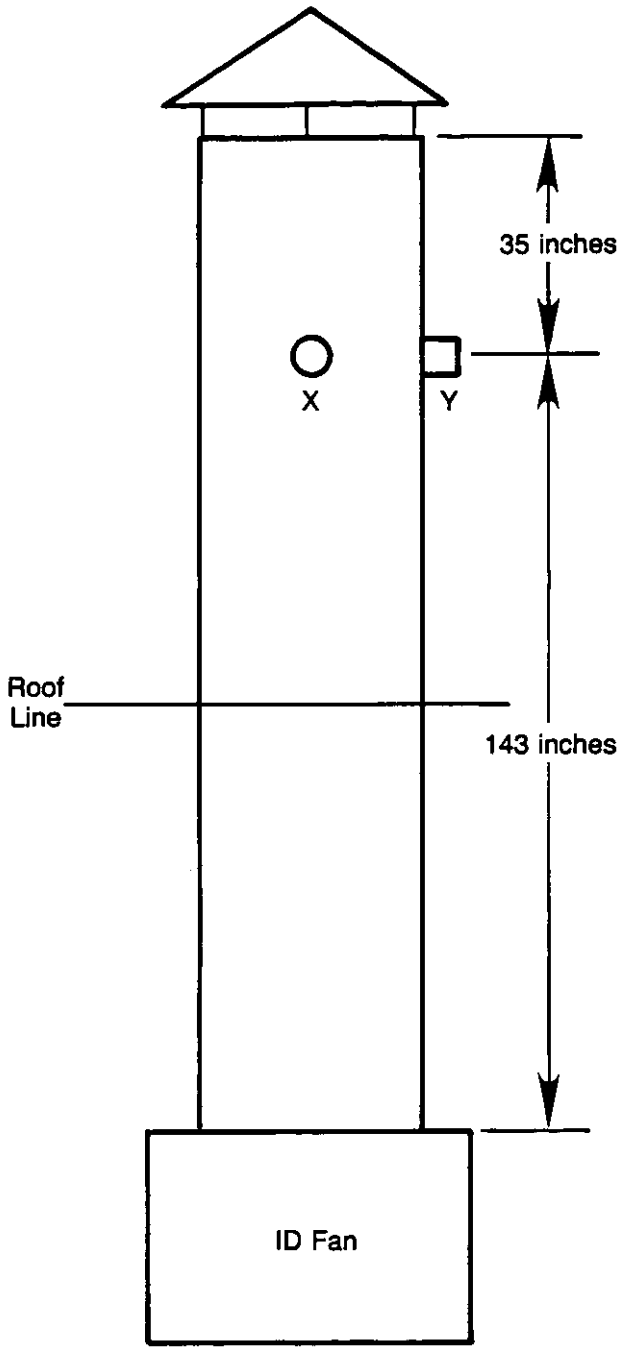
Duct Elevation

Figure 6 Rock Dryer Baghouse Inlet Duct Port and Sampling Point Locations



Duct Cross-Sectional Plan

Traverse Point Number	Distance From Inside Near Wall Inches
1	1/2
2	1 3/8
3	2 3/8
4	3 3/8
5	4 5/8
6	6
7	7 3/4
8	10 1/4
9	17 1/8
10	19 3/4
11	21 1/2
12	22 7/8
13	24 1/8
14	25 1/8
15	26 1/8
16	27



Stack Elevation

Figure 7 Rock Dryer Baghouse Outlet Stack Port and Sampling Point Locations

DESCRIPTION OF SAMPLING TRAINS

PARTICULATE SAMPLING TRAINS

The test train utilized for particulate sampling at the outlet locations was the standard EPA Method 5 train (see Figure 8).

A stainless steel nozzle was attached to a heated (~250°F) borosilicate glass probe which was connected directly to a borosilicate filter holder containing a 9-cm Reeve Angel 900 AF glass fiber filter. The filter holder was maintained at approximately 250°F in a heated chamber, and was connected by vacuum tubing to the first of four Greenburg-Smith impingers which were included in the train to condense the moisture in the gas stream. Each of the first two impingers contained 100 ml of distilled water, the third was dry, and the final impinger contained 200 grams of dry preweighed silica gel. The first, third, and fourth impingers were modified Greenburg-Smith types; the second was a standard Greensburg-Smith impinger. All impingers were maintained in a crushed ice bath. An RAC control console with vacuum pump, dry gas meter, a calibrated orifice, and inclined manometers completed the sampling train.

Flue gas temperature was measured by means of a calibrated Type K thermocouple which was connected to a direct readout pyrometer. The thermocouple sensor was positioned adjacent to the sampling nozzle.

Gas velocity was measured using a calibrated "S"-type pitot tube provided with extensions and fastened alongside the sampling probe. Gas stream composition (carbon dioxide, oxygen, and carbon monoxide content) was determined utilizing Orsat apparatus to analyze stack gas samples.

Figure 9 shows the EPA Method 5 train utilized at the No. 2 Calcidyne and Rock Dryer Baghouse inlet sites. The test train shown is identical to the one just described, except a rigid glass connection is used between the back half of the filter holder and the first impinger, rather than the flexible vacuum tubing.

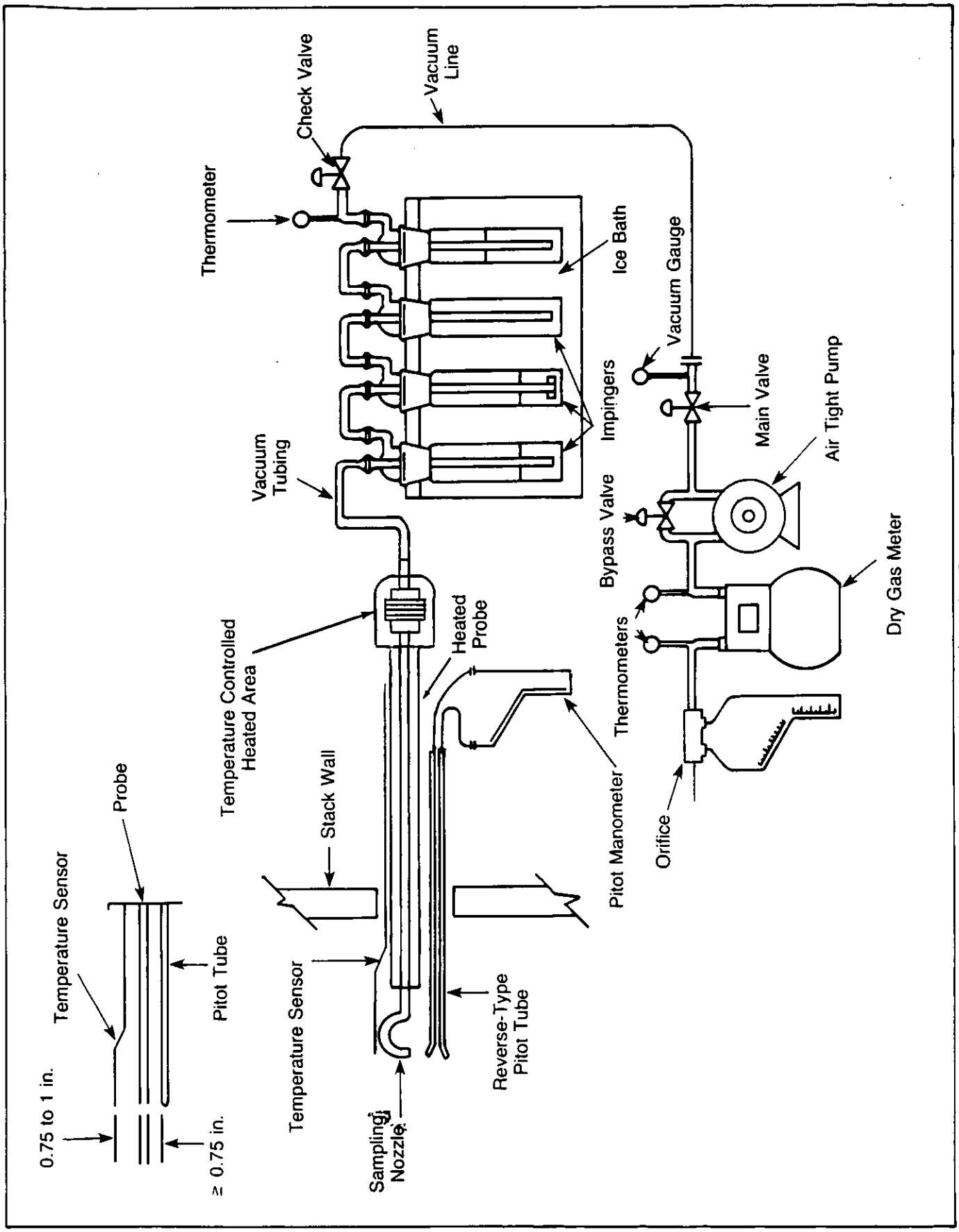


Figure 8 Particulate Sampling Train -EPA Method 5

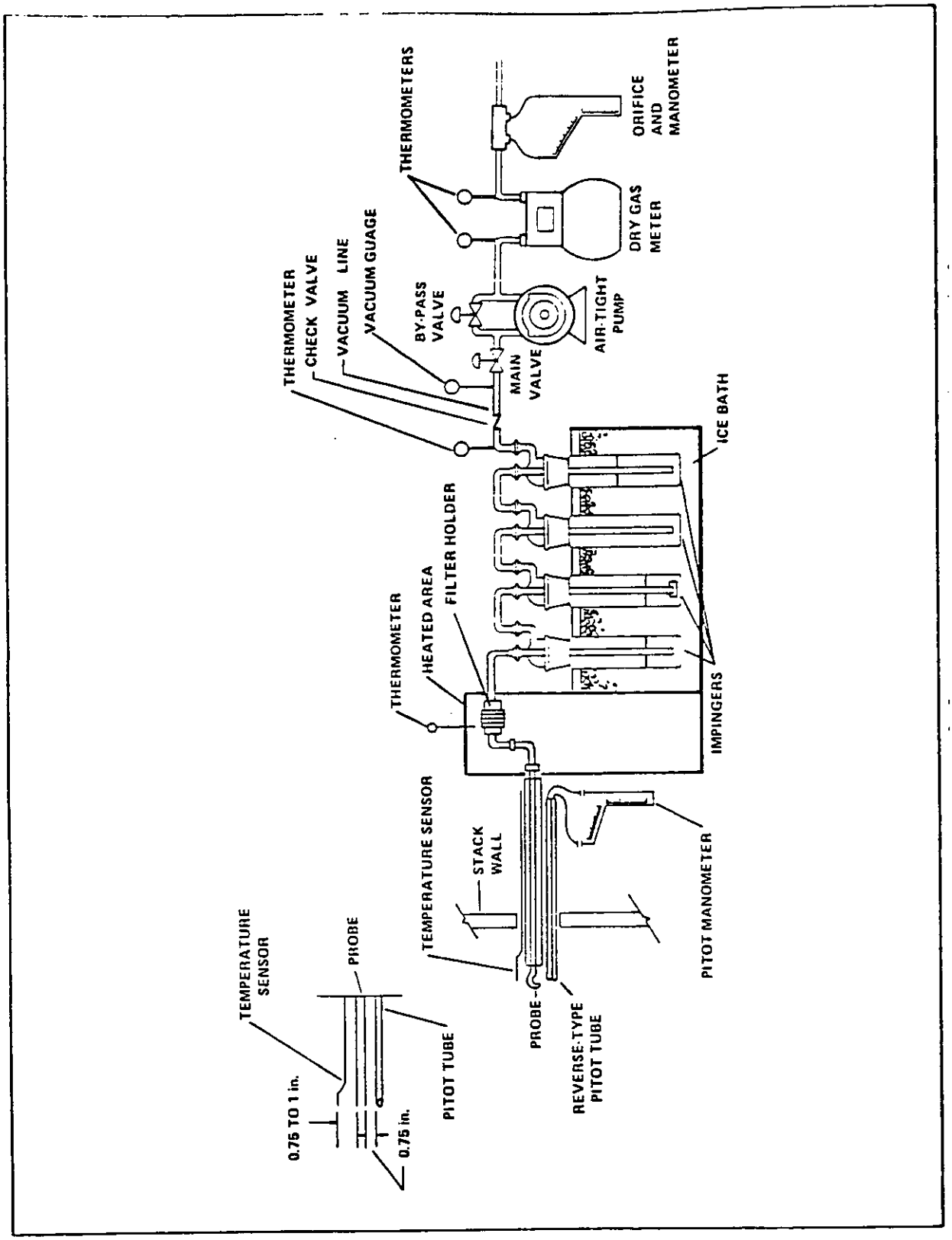


Figure 9 Particulate Sampling Train - EPA Method 5

PARTICULATE SIZE DISTRIBUTION SAMPLING APPARATUS

A stainless steel nozzle was connected directly to an 8-stage Anderson® cascade impaction device which separated the particles according to their effective aerodynamic particle diameters. A glass fiber filter was used to capture any particles that passed through the impactor substrates to permit the measurement of total particulates. The filter holder was maintained at stack temperature and was connected by vacuum tubing to the first of four Greenburg-Smith impingers which were included in the train to condense the moisture in the gas stream. All impingers were maintained in a crushed ice bath. An RAC control console with vacuum pump, dry gas meter, a calibrated orifice, and inclined manometers completed the sampling train (Figure 10).

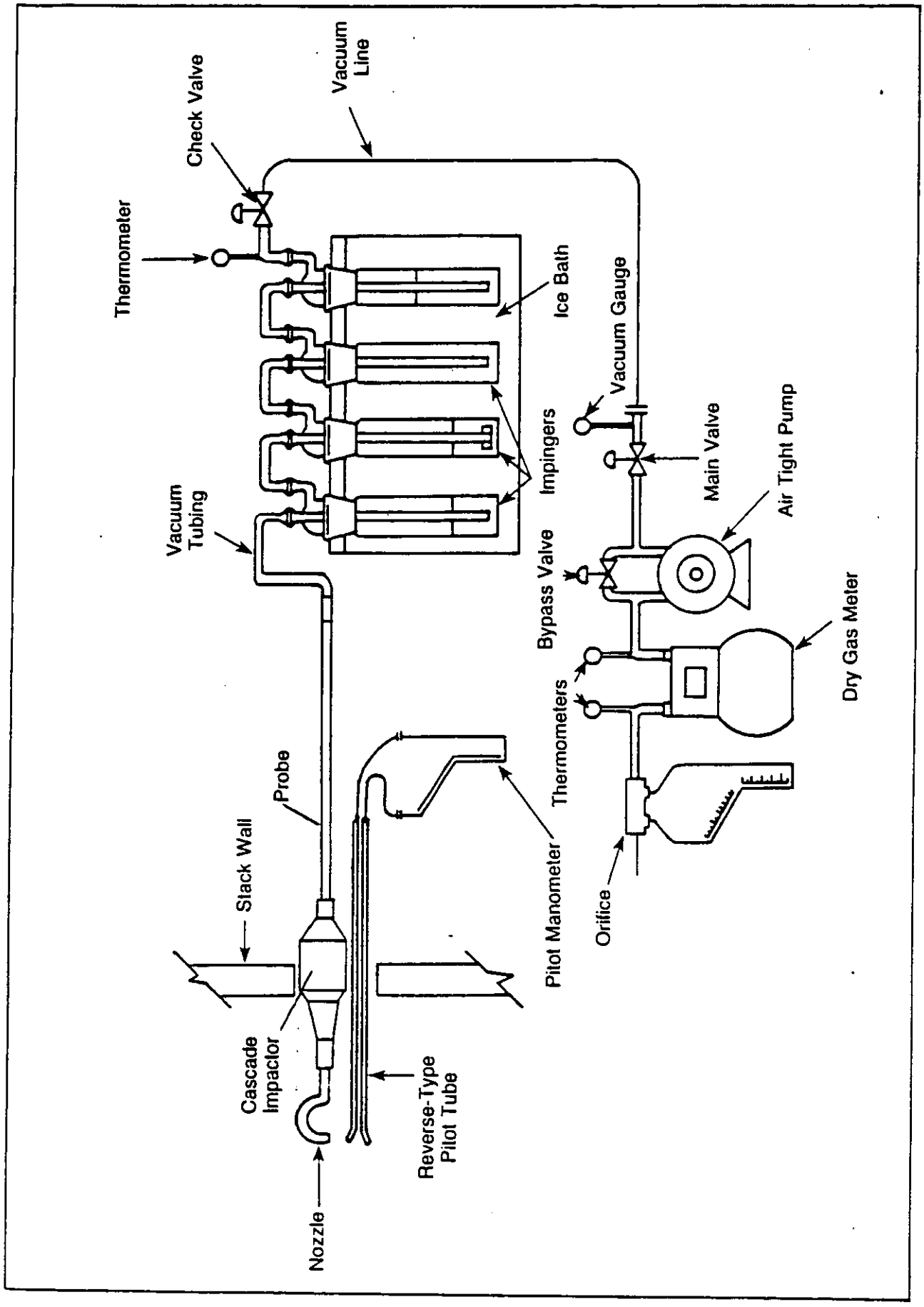


Figure 10 Particle Size Distribution Sampling Apparatus

TEST PROCEDURES

PRELIMINARY TESTS

Preliminary test data were obtained at each sampling location. Stack geometry measurements were recorded and sampling point distances calculated. A preliminary velocity traverse was performed at each test location utilizing a calibrated "S"-type pitot tube and a Dwyer inclined manometer to determine velocity profiles. A check for the presence or absence of cyclonic flow was conducted at each test location prior to formal testing. Stack gas temperatures were observed with a direct readout pyrometer equipped with a chromel-alumel thermocouple.

Preliminary test data was used for nozzle sizing and nomagraph set-up for isokinetic sampling procedures.

Calibration of the probe nozzles, pitot tubes, metering systems, probe heaters, temperature gauges, and barometer were performed as specified in Section 5 of EPA Method 5 test procedures (see Appendix D for calibration records).

FORMAL TESTS

No. 2 Calcidyne Baghouse Inlet Duct

A series of three tests was conducted at the No. 2 Calcidyne Baghouse inlet duct to measure the concentration and mass rate of particulate matter entering the baghouse. Twelve traverse points (six per port axis) were sampled for 5 minutes each, resulting in a total test time of 60 minutes.

During particulate sampling, gas stream velocities were measured by inserting a calibrated "S"-type pitot tube into the stream adjacent to the sampling nozzle. The velocity pressure differential was observed immediately after positioning the nozzle at each point, and sampling rates were adjusted to maintain isokinetic sampling. Stack gas temperatures were also monitored at each point with the pyrometer and thermocouple. Additional temperature measurements were made at the final impinger and at the inlet and outlet of the dry gas meter.

Test data were recorded at each traverse point during all test periods. Leak checks were performed according to EPA Method 5 instructions prior to and after each run and/or component change. Tables 8 and 9 present a summary of test data for each of the three runs. Test result summarization appears in Tables 16 and 17.

One sampling point located at a site of average velocity was selected from particulate traverse data for particle size distribution testing. The gas stream was sampled isokinetically at that point for 20 seconds which permitted collection of sufficient samples for analysis without overloading the filter substrates. Sample volume, temperature, and pressure data were recorded during sampling. See Tables 24 through 26 for distribution plots.

No. 2 Calcidyne Baghouse Outlet Stack

Three Method 5 tests were performed at the baghouse outlet stack. Forty traverse points (20 per axis) were sampled for 3 minutes each, yielding a 120-minute test period for the first test run; for test runs two and three, 20 traverse points (10 per axis) were sampled for 5 minutes each, yielding a 100-minute test period. With the permission of the Administrator, the nozzle size was increased from 0.195 inch to 0.225 inch during test runs two and three. The larger nozzle ensures sufficient sample collection, but allows for a reduction in test time from 120 minutes for the first test to 100 minutes for the second and third tests.

Sampling procedures were identical to those previously described. Tables 10 and 11 show the test data summaries, and Tables 18 and 19 present test results.

One particle size distribution sample was collected isokinetically at a point of average velocity over a 60-minute period. Sample volume, temperature, and pressure data were recorded every 5 minutes during sampling. See Table 27 for particle distribution results.

Visual determinations of plume opacity were performed by a certified observer according to EPA Method 9 procedures during the three particulate test runs. Summaries of results are presented in Tables 32 and 33.

Rock Dryer Baghouse Inlet Duct

Three test runs were conducted by EPA Method 5 procedures at the inlet to the Rock Dryer Baghouse. A total of 48 traverse points (24 per axis) were sampled for 2 minutes each, resulting in a total test time of 96 minutes per run. Tables 12 and 13 show test data, and Tables 20 and 21 show test result summaries.

Three particle size distribution tests were performed at a point of average velocity. Total sample time for each run was 20 seconds. Tables 28 through 30 show particle size distribution results.

Rock Dryer Baghouse Outlet Stack

Three 96-minute Method 5 test runs were performed at the baghouse outlet stack. Thirty-two traverse points (16 per axis) were sampled for 3 minutes each. Tables 14 and 15 show test data, and Tables 22 and 23 present test result summaries.

One particle size distribution test was performed at a point of average velocity over a 60-minute period. Readings were recorded at 5-minute intervals. Table 31 presents the particle size distribution plot.

Visual determinations of plume opacity were performed by a certified observer in conjunction with the particulate tests. Summaries of test results are presented in Tables 34 and 35.

OTHER TEST POINTS

The visible and fugitive emission tests conducted at the remaining test points were one hour in duration each.

ANALYTICAL PROCEDURES

PARTICULATE SAMPLE RECOVERY

At the conclusion of each test, the sampling trains were dismantled, openings sealed, and the components transported to the field laboratory. Sample integrity was assured by maintaining chain-of-custody records, which will be supplied upon request.

A consistent procedure was employed for sample recovery.

1. The glass fiber filter(s) was removed from its holder with tweezers and placed in its original container (petri dish), along with any loose particulate and filter fragments (sample type 1).

2. The probe and nozzle were separated, and the internal particulate rinsed with acetone into a borosilicate container while brushing a minimum of three times until no visible particles remained. Particulate adhering to the brush was rinsed with acetone into the same container. The front half of the filter holder was rinsed with acetone while brushing a minimum of three times. The rinses were combined (sample type 2) and the container sealed with a Teflon-lined closure. Fluid levels were marked to determine whether or not leakage occurred during transport. The container was labeled to clearly identify its contents.

3. The total liquid in impingers 1, 2, and 3 was measured, the value recorded, and the liquid discarded.

4. The silica gel was removed from the last impinger and immediately weighed.

5. An acetone sample was retained for blank analysis.

PARTICULATE ANALYSES

The filters (sample type 1) and any loose fragments were desiccated for 24 hours and weighed to the nearest 0.1 milligram to a constant weight.

The acetone wash samples (sample type 2) were evaporated at ambient temperature and pressure in tared beakers, and desiccated to a constant weight. All sample residue weights were adjusted by the acetone blank value.

The weight of the material collected on the glass fiber filter(s) plus the weight of the residue of the acetone nozzle/probe/front-half filter holder washes represents the "total" EPA Method 5 catch. Complete laboratory results are presented in Appendix B of this report.

PARTICULATE SIZE SAMPLE RECOVERY AND ANALYSES

The cascade impactor substrates and any loose fragments were carefully removed from their support plates with tweezers and placed in individual containers (petri dishes) for shipment to Weston's laboratory.

Each cascade impactor filter was fired at 525°C and pre-weighed to the nearest 0.1 milligram to constant weight at Weston's laboratory prior to on-site application. Subsequent to Weston's exposure, the cascade impactor substrates, back-up filters, and any loose fragments were desiccated for 24 hours in the laboratory, and weighed to the nearest 0.1 milligram to constant weight.

TEST RESULTS AND DISCUSSION

Particulate test data and test result summaries are presented in Tables 1 through 8 of this report. Tables 24 through 31 list the particle size distribution results for all locations.

No unusual sampling difficulties or process operating problems were encountered during any of the test periods, except for the Stucco Baghouse which needed rebagging. A Weston Method 9 observer returned to the plant site on 27 May 1980 to conduct the visible emission tests on the baghouse stack following completion of collector maintenance.

The amount of particulate matter discharged to the atmosphere from the No. 2 Calcidyne Baghouse outlet was $\leq$ 0.026 grains/DSCF and $\leq$ 0.34 pounds/hour. Baghouse particulate collection efficiency averaged 99.89%. No visible emission readings above 5 percent were recorded during any of the test periods.

The average Rock Dryer Baghouse particulate collection efficiency was 99.96%. The particulate matter discharged to the atmosphere was $\leq$ 0.027 grains/DSCF and $\leq$ 2.69 pounds/hour. All visible emission readings were 5% or lower.

At the Stucco Baghouse, the highest opacity reading noted during the first test was 15% (one reading). The highest opacity reading recorded during run 2 was 10% (one reading). All readings during run 3 were $\leq$ 5%. Readings $>$ 5% were likely due to the newly installed bags which, upon start-up, had an inadequate filter dust cake to assist in filtration.

Table 8

No. 2 Calcidyne Baghouse Inlet Duct

SUMMARY OF TEST DATA
(English Units)

	1	2	3
Test Data			
Test Run Number	1	2	3
Test Date	5-19-80	5-20-80	5-20-80
Test Period	1358-1532	0917-1030	1315-1436
Sampling Data			
Sampling Duration, minutes	60.0	60.0	60.0
Nozzle Diameter, inches	0.224	0.195	0.195
Barometric Pressure, inches mercury	30.1	30.0	30.0
Average Orifice Pressure Differential, inches water	1.3	0.67	0.60
Average Dry Gas Temperature at Meter, ^{o}F	117.	107.	112.
Total Water Collected by Train, ml	469.0	380.0	389.7
Standard Volume of Water Vapor Collected, cubic feet	22.1	17.9	18.3
Dry Gas Meter Calibration Factor, dimensionless	0.989	0.989	0.989
Sample Volume at Meter Conditions, cubic feet	37.9	28.0	26.5
Sample Volume at Standard Conditions, cubic feet[1]	34.6	25.9	24.3
Gas Stream Composition			
CO_2, percent by volume	7.7	8.2	8.6
O_2, percent by volume	9.3	9.5	8.3
CO, percent by volume	0.0	0.0	0.0
N_2, percent by volume	83.0	82.2	83.1
Moisture in Gas Stream, percent by volume	38.9	40.9	43.0
Mole Fraction of Dry Gas	0.611	0.591	0.570
Molecular Weight of Dry Gas	29.6	29.7	29.7
Molecular Weight of Wet Gas	25.1	24.9	24.7
Gas Stream Velocity and Volumetric Flow			
Static Pressure, inches water	-2.3	-2.2	-2.5
Absolute Pressure, inches mercury	29.9	29.8	29.8
Average Temperature, ^{o}F	370.	373.	369.
Pitot Tube Calibration Coefficient, dimensionless	0.84	0.84	0.84
Total Number of Traverse Points	12.0	12.0	12.0
Velocity at Actual Conditions, feet/second	83.3	87.2	87.0
Stack/duct Cross-Sectional Area, square feet	0.785	0.785	0.785
Volumetric Flow at Actual Conditions, cubic feet/minute	3920.	4110.	4100.
Volumetric Flow at Standard Conditions, cubic feet/minute	1520.	1530.	1480.
Percent Isokinetic	108.6	106.5	103.5
Unit/Process Operations Data	Monitored by Radian Corporation Personnel		

[1]Standard Conditions = $68^{o}F$ ($20^{o}C$) and 29.92 inches (760 mm) mercury, dry basis.

Table 9

No. 2 Calcidyne Baghouse Inlet Duct

SUMMARY OF TEST DATA
(Metric Units)

Test Data			
Test Run Number	1	2	3
Test Date	5-19-80	5-20-80	5-20-80
Test Period	1358-1532	0917-1030	1315-1436
Sampling Data			
Sampling Duration, minutes	60.0	60.0	60.0
Nozzle Diameter, centimeters	0.569	0.495	0.495
Barometric Pressure, millimeters mercury	764.54	762.0	762.0
Average Orifice Pressure Differential, millimeters water	33.02	17.02	15.24
Average Dry Gas Temperature at Meter, ^{o}C	47.	47.	44.
Total Water Collected by Train, ml	469.0	380.0	389.7
Volume of Water Vapor Collected, standard cubic meters	0.626	0.507	0.518
Dry Gas Meter Calibration Factor, dimensionless	0.989	0.989	0.989
Sample Volume at Meter Conditions, cubic feet	1.073	0.793	0.750
Sample Volume at Standard Conditions, cubic meters[1]	0.980	0.733	0.688
Gas Stream Composition			
CO_2, percent by volume	7.7	8.2	8.6
O_2, percent by volume	9.3	9.5	8.3
CO, percent by volume	0.0	0.0	0.0
N_2, percent by volume	83.0	82.2	83.1
Moisture in Gas Stream, percent by volume	38.9	40.9	43.0
Mole Fraction of Dry Gas	0.661	0.591	0.570
Molecular Weight of Dry Gas	29.6	29.7	29.7
Molecular Weight of Wet Gas	25.1	24.9	24.7
Gas Stream Velocity and Volumetric Flow			
Static Pressure, millimeters water	-58.42	-55.88	-63.50
Absolute Pressure, millimeters mercury	759.46	756.92	756.92
Average Temperature, ^{o}C	188.	189.	187.
Pitot Tube Calibration Coefficient, dimensionless	0.84	0.84	0.84
Total Number of Traverse Points	12.0	12.0	12.0
Velocity at Actual Conditions, meters/second	25.39	26.58	26.52
Stack/Duct Cross-Sectional Area, square meters	0.073	0.073	0.073
Volumetric Flow, Wet Actual Conditions, cubic meters/minute	111.	116.	116.
Volumetric Flow, Dry Standard Conditions, cubic meters/minute	43.	43.	42.
Percent Isokinetic	108.6	106.5	103.5
Unit Operations Data	Monitored by Radian Corporation Personnel		

[1]Standard Conditions = 68°F (20°C) and 29.92 inches (760 mm) mercury, dry basis.

Table 10

No. 2 Calcidyne Baghouse Outlet Stack

SUMMARY OF TEST DATA

(English Units)

	1	2	3
Test Data			
Test Run Number	1	2	3
Test Date	5-19-80	5-20-80	5-20-80
Test Period	1400-1630	0930-1110	1340-1530
Sampling Data			
Sampling Duration, minutes	120.0	100.0	100.0
Nozzle Diameter, inches	0.195	0.225	0.225
Barometric Pressure, inches mercury	30.1	30.0	30.0
Average Orifice Pressure Differential, inches water	0.99	1.7	1.6
Average Dry Gas Temperature at Meter, ^{o}F	93.	95.	95.
Total Water Collected by Train, ml	822.0	964.3	989.3
Standard Volume of Water Vapor Collected, cubic feet	38.7	45.4	46.5
Dry Gas Meter Calibration Factor, dimensionless	0.999	1.005	1.005
Sample Volume at Meter Conditions, cubic feet	65.3	66.5	65.5
Sample Volume at Standard Conditions, cubic feet[1]	62.8	64.0	63.0
Gas Stream Composition			
CO_2, percent by volume	7.5	8.1	8.2
O_2, percent by volume	10.1	9.8	9.9
CO, percent by volume	0.0	0.0	0.0
N_2, percent by volume	82.4	82.1	81.9
Moisture in Gas Stream, percent by volume	31.8	41.5	42.5
Mole Fraction of Dry Gas	0.619	0.585	0.575
Molecular Weight of Dry Gas	29.6	29.7	29.7
Molecular Weight of Wet Gas	25.2	24.8	24.7
Gas Stream Velocity and Volumetric Flow			
Static Pressure, inches water	0.50	0.45	0.45
Absolute Pressure, inches mercury	30.1	30.0	30.0
Average Temperature, ^{o}F	341.	340.	341.
Pitot Tube Calibration Coefficient, dimensionless	0.84	0.84	0.84
Total Number of Traverse Points	20.0	20.0	20.0
Velocity at Actual Conditions, feet/second	94.4	98.4	96.8
Stack/duct Cross-Sectional Area, square feet	0.690	0.690	0.690
Volumetric Flow at Actual Conditions, cubic feet/minute	3910.	4070.	4010.
Volumetric Flow at Standard Conditions, cubic feet/minute	1610.	1580.	1530.
Percent Isokinetic	108.5	101.4	103.3
Unit/Process Operations Data	Monitored by Radian Corporation Personnel		

[1]Standard Conditions = 68°F (20°C) and 29.92 inches (760 mm) mercury, dry basis.

Table 11

No. 2 Calcidyne Baghouse Outlet Stack
SUMMARY OF TEST DATA
(Metric Units)

Test Data			
Test Run Number	1	2	3
Test Date	5-19-80	5-20-80	5-20-80
Test Period	1400-1630	0930-1110	1340-1530
Sampling Data			
Sampling Duration, minutes	120.0	100.0	100.0
Nozzle Diameter, centimeters	0.495	0.572	0.572
Barometric Pressure, millimeters mercury	764.54	762.0	762.0
Average Orifice Pressure Differential, millimeters water	25.15	43.18	40.64
Average Dry Gas Temperature at Meter, ^{o}C	34.	35.	35.
Total Water Collected by Train, ml	822.0	964.3	989.3
Volume of Water Vapor Collected, standard cubic meters	1.096	1.286	1.317
Dry Gas Meter Calibration Factor, dimensionless	0.999	1.005	1.005
Sample Volume at Meter Conditions, cubic feet	1.849	1.883	1.855
Sample Volume at Standard Conditions, cubic meters[1]	1.778	1.812	1.784
Gas Stream Composition			
CO_2, percent by volume	7.5	8.1	8.2
O_2, percent by volume	10.1	9.8	9.9
CO, percent by volume	0.0	0.0	0.0
N_2, percent by volume	82.4	82.1	81.9
Moisture in Gas Stream, percent by volume	31.8	41.5	42.5
Mole Fraction of Dry Gas	0.619	0.585	0.575
Molecular Weight of Dry Gas	29.6	29.7	29.7
Molecular Weight of Wet Gas	25.2	24.8	24.7
Gas Stream Velocity and Volumetric Flow			
Static Pressure, millimeters water	12.7	11.43	11.43
Absolute Pressure, millimeters mercury	764.54	762.0	762.0
Average Temperature, ^{o}C	172.	171.	172.
Pitot Tube Calibration Coefficient, dimensionless	0.84	0.84	0.84
Total Number of Traverse Points	40.0	20.0	20.0
Velocity at Actual Conditions, meters/second	28.77	29.99	29.50
Stack/Duct Cross-Sectional Area, square meters	0.064	0.064	0.064
Volumetric Flow, Wet Actual Conditions, cubic meters/minute	111.	115.	114.
Volumetric Flow, Dry Standard Conditions, cubic meters/minute	46.	45.	43.
Percent Isokinetic	108.5	101.4	103.3
Unit Operations Data	Monitored by Radian Corporation Personnel		

[1]Standard Conditions = 68°F (20°C) and 29.92 inches (760 mm) mercury, dry basis.

Table 12

Rock Dryer Baghouse Inlet Duct

SUMMARY OF TEST DATA

(English Units)

Test Data	1	2	3
Test Run Number	1	2	3
Test Date	5-21-80	5-22-80	5-22-80
Test Period	1145-1343	0845-1037	1235-1450
Sampling Data			
Sampling Duration, minutes	96.0	96.0	96.0
Nozzle Diameter, inches	0.175	0.175	0.175
Barometric Pressure, inches mercury	30.2	30.1	30.1
Average Orifice Pressure Differential, inches water	1.1	1.1	1.1
Average Dry Gas Temperature at Meter, ^{o}F	115.	110.	120.
Total Water Collected by Train, ml	100.8	105.2	82.0
Standard Volume of Water Vapor Collected, cubic feet	4.75	4.95	3.86
Dry Gas Meter Calibration Factor, dimensionless	0.989	0.989	0.989
Sample Volume at Meter Conditions, cubic feet	55.5	55.1	56.3
Sample Volume at Standard Conditions, cubic feet[1]	50.9	51.0	51.2
Gas Stream Composition			
CO_2, percent by volume	1.9	1.7	1.5
O_2, percent by volume	17.8	17.5	18.3
CO, percent by volume	0.0	0.0	0.0
N_2, percent by volume	80.3	80.8	80.2
Moisture in Gas Stream, percent by volume	8.5	8.9	7.0
Mole Fraction of Dry Gas	0.915	0.911	0.930
Molecular Weight of Dry Gas	29.0	29.0	29.0
Molecular Weight of Wet Gas	28.1	28.0	28.2
Gas Stream Velocity and Volumetric Flow			
Static Pressure, inches water	-1.9	-1.7	-1.8
Absolute Pressure, inches mercury	30.0	30.0	30.0
Average Temperature, ^{o}F	215.	216.	215.
Pitot Tube Calibration Coefficient, dimensionless	0.84	0.84	0.84
Total Number of Traverse Points	48.0	48.0	48.0
Velocity at Actual Conditions, feet/second	73.8	75.0	76.0
Stack/duct Cross-Sectional Area, square feet	3.55	3.55	3.55
Volumetric Flow at Actual Conditions, cubic feet/minute	15,700.	16,000.	16,200.
Volumetric Flow at Standard Conditions, cubic feet/minute	11,300.	11,400.	11,800.
Percent Isokinetic	99.8	98.9	95.9
Unit/Process Operations Data	Monitored by Radian Corporation Personnel		

[1]Standard Conditions = 68°F (20°C) and 29.92 inches (760 mm) mercury, dry basis.

Table 13

Rock Dryer Baghouse Inlet Duct

SUMMARY OF TEST DATA

(Metric Units)

Test Data			
Test Run Number	1	2	3
Test Date	5-21-80	5-22-80	5-22-80
Test Period	1145-1343	0845-1037	1235-1450
Sampling Data			
Sampling Duration, minutes	96.0	96.0	96.0
Nozzle Diameter, centimeters	0.445	0.445	0.445
Barometric Pressure, millimeters mercury	767.08	764.54	764.54
Average Orifice Pressure Differential, millimeters water	27.94	27.94	27.94
Average Dry Gas Temperature at Meter, ^{o}C	46.	43.	49.
Total Water Collected by Train, ml	100.8	105.2	82.0
Volume of Water Vapor Collected, standard cubic meters	0.135	0.140	0.109
Dry Gas Meter Calibration Factor, dimensionless	0.989	0.989	0.989
Sample Volume at Meter Conditions, cubic feet	1.572	1.560	1.594
Sample Volume at Standard Conditions, cubic meters[1]	1.441	1.444	1.450
Gas Stream Composition			
CO_2, percent by volume	1.9	1.7	1.5
O_2, percent by volume	17.8	17.5	18.3
CO, percent by volume	0.0	0.0	0.0
N_2, percent by volume	80.3	80.8	80.2
Moisture in Gas Stream, percent by volume	8.5	8.9	7.0
Mole Fraction of Dry Gas	0.915	0.911	0.930
Molecular Weight of Dry Gas	29.0	29.0	29.0
Molecular Weight of Wet Gas	28.1	28.0	28.2
Gas Stream Velocity and Volumetric Flow			
Static Pressure, millimeters water	-48.26	-43.18	-45.72
Absolute Pressure, millimeters mercury	762.0	762.0	762.0
Average Temperature, ^{o}C	102.	102.	102.
Pitot Tube Calibration Coefficient, dimensionless	0.84	0.84	0.84
Total Number of Traverse Points	48.0	48.0	48.0
Velocity at Actual Conditions, meters/second	22.49	22.86	23.16
Stack/Duct Cross-Sectional Area, square meters	0.330	0.330	0.330
Volumetric Flow, Wet Actual Conditions, cubic meters/minute	445.	453.	459.
Volumetric Flow, Dry Standard Conditions, cubic meters/minute	320.	323.	334.
Percent Isokinetic	99.8	98.9	95.9
Unit Operations Data	Monitored by Radian Corporation Personnel		

[1]Standard Conditions = 68°F (20°C) and 29.92 inches (760 mm) mercury, dry basis.

Table 14

Rock Dryer Baghouse Outlet Stack

SUMMARY OF TEST DATA

(English Units)

Test Data			
Test Run Number	1	2	3
Test Date	5-21-80	5-22-80	5-22-80
Test Period	1145-1340	0845-1035	1235-1415
Sampling Data			
Sampling Duration, minutes	96.0	96.0	96.0
Nozzle Diameter, inches	0.190	0.190	0.190
Barometric Pressure, inches mercury	30.2	30.1	30.1
Average Orifice Pressure Differential, inches water	1.3	1.2	1.3
Average Dry Gas Temperature at Meter, ^{o}F	95.	91.	92.
Total Water Collected by Train, ml	104.0	120.5	114.3
Standard Volume of Water Vapor Collected, cubic feet	4.90	5.67	5.38
Dry Gas Meter Calibration Factor, dimensionless	1.005	1.005	1.005
Sample Volume at Meter Conditions, cubic feet	55.9	55.8	56.3
Sample Volume at Standard Conditions, cubic feet[1]	54.1	54.3	54.6
Gas Stream Composition			
CO_2, percent by volume	1.1	1.1	1.1
O_2, percent by volume	19.3	19.3	19.1
CO, percent by volume	0.0	0.0	0.0
N_2, percent by volume	79.6	79.6	79.8
Moisture in Gas Stream, percent by volume	8.3	9.5	9.0
Mole Fraction of Dry Gas	0.917	0.905	0.910
Molecular Weight of Dry Gas	29.0	29.0	28.9
Molecular Weight of Wet Gas	28.0	27.9	28.0
Gas Stream Velocity and Volumetric Flow			
Static Pressure, inches water	0.78	0.49	0.76
Absolute Pressure, inches mercury	30.2	30.2	30.2
Average Temperature, ^{o}F	200.	202.	203.
Pitot Tube Calibration Coefficient, dimensionless	0.84	0.84	0.84
Total Number of Traverse Points	32.0	32.0	32.0
Velocity at Actual Conditions, feet/second	64.6	63.5	65.3
Stack/duct Cross-Sectional Area, square feet	4.12	4.12	4.12
Volumetric Flow at Actual Conditions, cubic feet/minute	16,000.	15,700.	16,200.
Volumetric Flow at Standard Conditions, cubic feet/minute	11,800.	11,400.	11,800.
Percent Isokinetic	99.6	103.6	100.9
Unit/Process Operations Data	Monitored by Radian Corporation Personnel		

[1]Standard Conditions = 68°F (20°C) and 29.92 inches (760 mm) mercury, dry basis.

Table 15

Rock Dryer Baghouse Outlet Stack

SUMMARY OF TEST DATA

(Metric Units)

Test Data			
Test Run Number	1	2	3
Test Date	5-21-80	5-22-80	5-22-80
Test Period	1145-1340	0845-1035	1235-1415
Sampling Data			
Sampling Duration, minutes	96.0	96.0	96.0
Nozzle Diameter, centimeters	0.483	0.483	0.483
Barometric Pressure, millimeters mercury	767.08	764.54	764.54
Average Orifice Pressure Differential, millimeters water	33.02	30.48	33.02
Average Dry Gas Temperature at Meter, °C	35.	33.	33.
Total Water Collected by Train, ml	104.0	120.5	114.3
Volume of Water Vapor Collected, standard cubic meters	0.139	0.161	0.152
Dry Gas Meter Calibration Factor, dimensionless	1.005	1.005	1.005
Sample Volume at Meter Conditions, cubic feet	1.583	1.580	1.594
Sample Volume at Standard Conditions, cubic meters[1]	1.532	1.538	1.546
Gas Stream Composition			
CO_2, percent by volume	1.1	1.1	1.1
O_2, percent by volume	19.3	19.3	19.1
CO, percent by volume	0.0	0.0	0.0
N_2, percent by volume	79.6	79.6	79.8
Moisture in Gas Stream, percent by volume	8.3	9.5	9.0
Mole Fraction of Dry Gas	0.917	0.905	0.910
Molecular Weight of Dry Gas	29.0	29.0	28.9
Molecular Weight of Wet Gas	28.0	27.9	28.0
Gas Stream Velocity and Volumetric Flow			
Static Pressure, millimeters water	19.81	12.45	19.30
Absolute Pressure, millimeters mercury	767.08	767.08	767.08
Average Temperature, °C	93.	94.	95.
Pitot Tube Calibration Coefficient, dimensionless	0.84	0.84	0.84
Total Number of Traverse Points	32.0	32.0	32.0
Velocity at Actual Conditions, meters/second	19.69	19.35	19.90
Stack/Duct Cross-Sectional Area, square meters	0.383	0.383	0.383
Volumetric Flow, Wet Actual Conditions, cubic meters/minute	453.	445.	459.
Volumetric Flow, Dry Standard Conditions, cubic meters/minute	334.	323.	334.
Percent Isokinetic	99.6	103.6	100.9
Unit Operations Data	Monitored by Radian Corporation Personnel		

[1]Standard Conditions = 68°F (20°C) and 29.92 inches (760 mm) mercury, dry basis.

Table 16

No. 2 Calcidyne Baghouse Inlet Duct

SUMMARY OF TEST RESULTS

(English Units)

Test Data			
Test Run Number	1	2	3
Test Date	5-19-80	5-20-80	5-20-80
Test Time	1358-1532	0917-1030	1315-1436
Gas Flow			
Standard Cubic Feet/Minute, dry	1,520.	1,530.	1,480.
Actual Cubic Feet/Minute, wet	3,920.	4,110.	4,100.
Particulates			
Front-Half Wash Residue Catch Fraction, g	34.9505	27.7273	21.6266
Filter Catch Fraction, g	14.4848	8.4989	11.7345
Total Particulates, g	49.4353	36.2262	33.3611
Particulate Emissions[1]			
Grains/Dry Standard Cubic Foot[2]	22.0	21.6	21.2
Pounds/Hour	288.	284.	269.

[1]Based on Total Particulates captured by train.
[2]Standard Conditions = 68°F and 29.92 inches Hg.

Table 17

No. 2 Calcidyne Baghouse Inlet Duct

SUMMARY OF TEST RESULTS
(Metric Units)

Test Data			
Test Run Number	1	2	3
Test Date	5-19-80	5-20-80	5-20-80
Test Period	1358-1532	0917-1030	1315-1436
Gas Stream Volumetric Flow Rates			
Dry standard cubic meters/minute[1]	43.	43.	42.
Wet actual cubic meters/minute	111.	116.	116.
Particulate Laboratory Results			
Front-half Wash Residue Fraction, g	34.9505	27.7273	21.6266
Filter Catch Fraction, g	14.4848	8.4989	11.7345
Total Particulate Catch Weight, g	49.4353	36.2262	33.3611
Particulate Emission Results			
Grams/dry standard cubic meter	0.040	0.040	0.039
Kilograms/hour	131.	129.	122.

[1]Standard Conditions = 68°F (20°C) and 29.92 (760 mm) inches mercury, dry basis.

Table 18

No. 2 Calcidyne Baghouse Outlet Stack

SUMMARY OF TEST RESULTS

(English Units)

	1	2	3
Test Data			
Test Run Number	1	2	3
Test Date	5-19-80	5-20-80	5-20-80
Test Time	1400-1630	0930-1110	1340-1530
Gas Flow			
Standard Cubic Feet/Minute, dry	1,610.	1,580.	1,530.
Actual Cubic Feet/Minute, wet	3,910.	4,070.	4,010.
Particulates			
Front-Half Wash Residue Catch Fraction, g	0.0346	0.0422	0.0267
Filter Catch Fraction, g	0.0489	0.0574	0.0780
Total Particulates, g	0.0835	0.0996	0.1047
Particulate Emissions[1]			
Grains/Dry Standard Cubic Foot[2]	0.021	0.024	0.026
Pounds/Hour	0.282	0.325	0.335
Baghouse Particulate Removal Efficiency, percent	99.90	99.89	99.88
Visible Emissions[3]			
≥10 percent opacity, minutes observed	0	0	0
5 percent opacity, minutes observed	6 3/4	27 1/4	33
0 percent opacity, minutes observed	113 1/4	72 3/4	67
Observation Period, minutes	120	100	100

[1]Based on Total Particulates captured by train.
[2]Standard Conditions = 68°F and 29.92 inches Hg.
[3]Opacity results listed are in minutes of the observed reading during the test period.

Table 19

No. 2 Calcidyne Baghouse Outlet Stack

SUMMARY OF TEST RESULTS
(Metric Units)

Test Data			
Test Run Number	1	2	3
Test Date	5-19-80	5-20-80	5-20-80
Test Period	1400-1630	0930-1110	1340-1530
Gas Stream Volumetric Flow Rates			
Dry standard cubic meters/minute[1]	46.	45.	43.
Wet actual cubic meters/minute	111.	115.	114.
Particulate Laboratory Results			
Front-half Wash Residue Fraction, g	0.0346	0.0422	0.0267
Filter Catch Fraction, g	0.0489	0.0574	0.0780
Total Particulate Catch Weight, g	0.0835	0.0996	0.1047
Particulate Emission Results			
Grams/dry standard cubic meter	0.0385×10^{-3}	0.0440×10^{-3}	0.0477×10^{-3}
Kilograms/hour	0.128	0.147	0.152
Baghouse Particulate Removal Efficiency, percent	99.90	99.89	99.88

[1]Standard Conditions = 68°F (20°C) and 29.92 (760 mm) inches mercury, dry basis.

Table 20

Rock Dryer Baghouse Inlet Duct

SUMMARY OF TEST RESULTS

(English Units)

Test Data	1	2	3
Test Run Number	1	2	3
Test Date	5-21-80	5-22-80	5-22-80
Test Time	1145-1343	0845-1037	1235-1450
Gas Flow			
Standard Cubic Feet/Minute, dry	11,300.	11,400.	11,800.
Actual Cubic Feet/Minute, wet	15,700.	16,000.	16,200.
Particulates			
Front-Half Wash Residue Catch Fraction, g	151.2811	155.7670	156.2056
Filter Catch Fraction, g	15.8951	15.5035	13.5177
Total Particulates, g	167.1762	171.2705	169.7233
Particulate Emissions[1]			
Grains/Dry Standard Cubic Foot[2]	50.7	51.9	51.2
Pounds/Hour	4900.	5070.	5180.

[1]Based on Total Particulates captured by train.
[2]Standard Conditions = 68°F and 29.92 inches Hg.

Table 21

Rock Dryer Baghouse Inlet Duct

SUMMARY OF TEST RESULTS
(Metric Units)

Test Data			
Test Run Number	1	2	3
Test Date	5-21-80	5-22-80	5-22-80
Test Period	1145-1343	0845-1037	1235-1450
Gas Stream Volumetric Flow Rates			
Dry standard cubic meters/minute[1]	320.	323.	334.
Wet actual cubic meters/minute	445.	453.	459.
Particulate Laboratory Results			
Front-half Wash Residue Fraction, g	151.2811	155.7670	156.2056
Filter Catch Fraction, g	15.8951	15.5035	13.5177
Total Particulate Catch Weight, g	167.1762	171.2705	169.7233
Particulate Emission Results			
Grams/dry standard cubic meter	0.093	0.095	0.094
Kilograms/hour	2223.	2300.	2350.

[1]Standard Conditions = 68°F (20°C) and 29.92 (760 mm) inches mercury, dry basis.

Table 22

Rock Dryer Baghouse Outlet Stack

SUMMARY OF TEST RESULTS

(English Units)

Test Data	1	2	3
Test Run Number	1	2	3
Test Date	5-21-80	5-22-80	5-22-80
Test Time	1145-1340	0845-1035	1235-1415
Gas Flow			
Standard Cubic Feet/Minute, dry	11,800.	11,400.	11,800.
Actual Cubic Feet/Minute, wet	16,000.	15,700.	16,200.
Particulates			
Front-Half Wash Residue Catch Fraction, g	0.0307	0.0222	0.0149
Filter Catch Fraction, g	0.0620	0.0434	0.0470
Total Particulates, g	0.0927	0.0656	0.0619
Particulate Emissions[1]			
Grains/Dry Standard Cubic Foot[2]	0.027	0.019	0.018
Pounds/Hour	2.69	1.83	1.77
Baghouse Particulate Removal Efficiency, percent	99.95	99.96	99.97
Visible Emissions[3]			
≥10 percent opacity, minutes observed	0	0	0
5 percent opacity, minutes observed	22 1/4	3 3/4	0
0 percent opacity, minutes observed	73 3/4	96 1/4	117
Observation Period, minutes	96	100	117

[1]Based on Total Particulates captured by train.
[2]Standard Conditions = 68°F and 29.92 inches Hg.
[3]Opacity results listed are in minutes of the observed reading during the test period.

Table 23

Rock Dryer Baghouse Outlet Stack

SUMMARY OF TEST RESULTS
(Metric Units)

Test Data			
Test Run Number	1	2	3
Test Date	5-21-80	5-22-80	5-22-80
Test Period	1145-1340	0845-1035	1235-1415
Gas Stream Volumetric Flow Rates			
Dry standard cubic meters/minute[1]	334.	323.	335.
Wet actual cubic meters/minute	453.	445.	459.
Particulate Laboratory Results			
Front-half Wash Residue Fraction, g	0.0307	0.0222	0.0149
Filter Catch Fraction, g	0.0620	0.0434	0.0470
Total Particulate Catch Weight, g	0.0927	0.0656	0.0619
Particulate Emission Results			
Grams/dry standard cubic meter	0.0495×10^{-3}	0.0349×10^{-3}	0.0330×10^{-3}
Kilograms/hour	1.22	0.83	0.80
Baghouse Particulate Removal Efficiency, percent	99.95	99.96	99.97

[1]Standard Conditions = 68°F (20°C) and 29.92 (760 mm) inches mercury, dry basis.

Table 24

Particle Size Distribution

Run: 1

Date: 5-19-80

Location: Gold Bond Building Products

Sampling Location: No. 2 Calcidyne Inlet

Traverse Point No. Sampled: X-3

P_{bar} (in. Hg) 30.1

Stack Temp (^{o}F) 370

Sample Time (min.) 0.333

Sample Volume (cf) 0.254

Moisture (% H_2O) 38.9

Meter Temp (^{o}F) 119.

Flow Setting, ΔH (in. H_2O) 2.0

Nozzle Diameter (in.) 0.252

Sample Flow Rate (at stack conditions): 1.14 cfm

Plate No.	Net Wt. (mg)	Percent	Cumulative Percent	EAD (microns)
1	324.9	83.9	100.0	10.7
2	12.4	3.2	16.2	6.8
3	19.5	5.0	13.0	4.5
4	16.8	4.3	7.9	3.2
5	7.2	1.9	3.6	2.0
6	2.4	0.6	1.7	1.0
7	0.0	0.0	1.1	0.6
8	0.7	0.1	1.1	0.4
Backup Filter	4.1	1.0	1.0	----
TOTAL	387.5	100.0		

No. 2 Calcidyne Baghouse Inlet Duct
Run 1

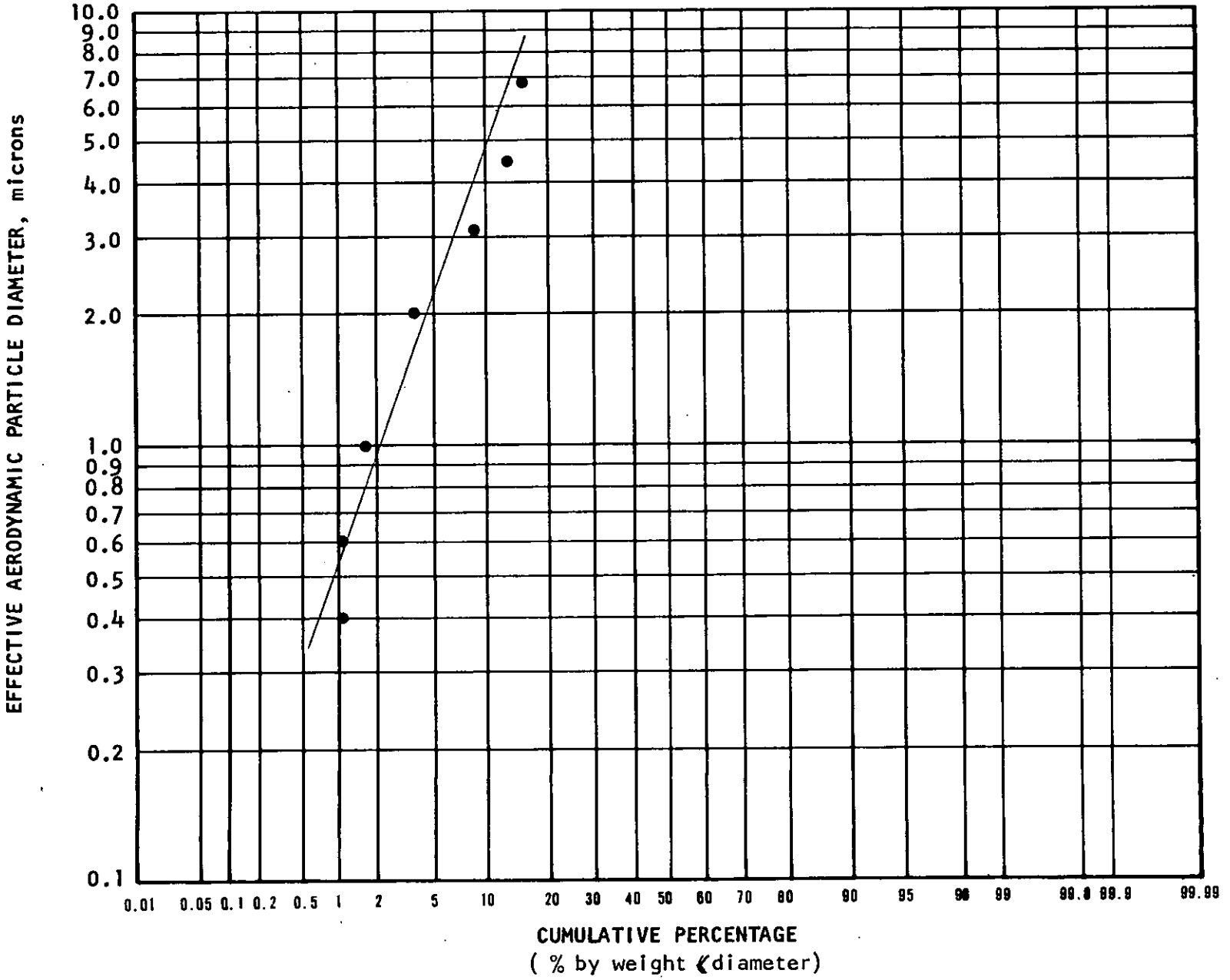


Table 25

Particle Size Distribution

Run: 2

Date: 5-20-80

Location: Gold Bond Building Products

Sampling Location: No. 2 Calcidyne Inlet

Traverse Point No. Sampled: X-4

P_{bar} (in. Hg) 30.0

Stack Temp (^{o}F) 373.

Sample Time (min.) 0.33

Sample Volume (cf) 0.244

Moisture (% H_2O) 40.9

Meter Temp (^{o}F) 105.

Flow Setting, ΔH (in. H_2O) 2.2

Nozzle Diameter (in.) 0.252

Sample Flow Rate (at stack conditions): 1.15 cfm

Plate No.	Net Wt. (mg)	Percent	Cumulative Percent	EAD (microns)
1	540.0	87.0	100.0	10.7
2	16.8	2.7	13.0	6.8
3	24.3	3.9	10.3	4.5
4	26.0	4.2	6.4	3.2
5	11.4	1.8	2.2	2.0
6	0.9	0.2	0.4	1.0
7	0.6	0.1	0.2	0.6
8	0.4	0.06	0.1	0.4
Backup Filter	0.1	0.04	0.04	----
TOTAL	620.5	100.0		

No. 2 Calcidyne Baghouse Inlet Duct
Run 2

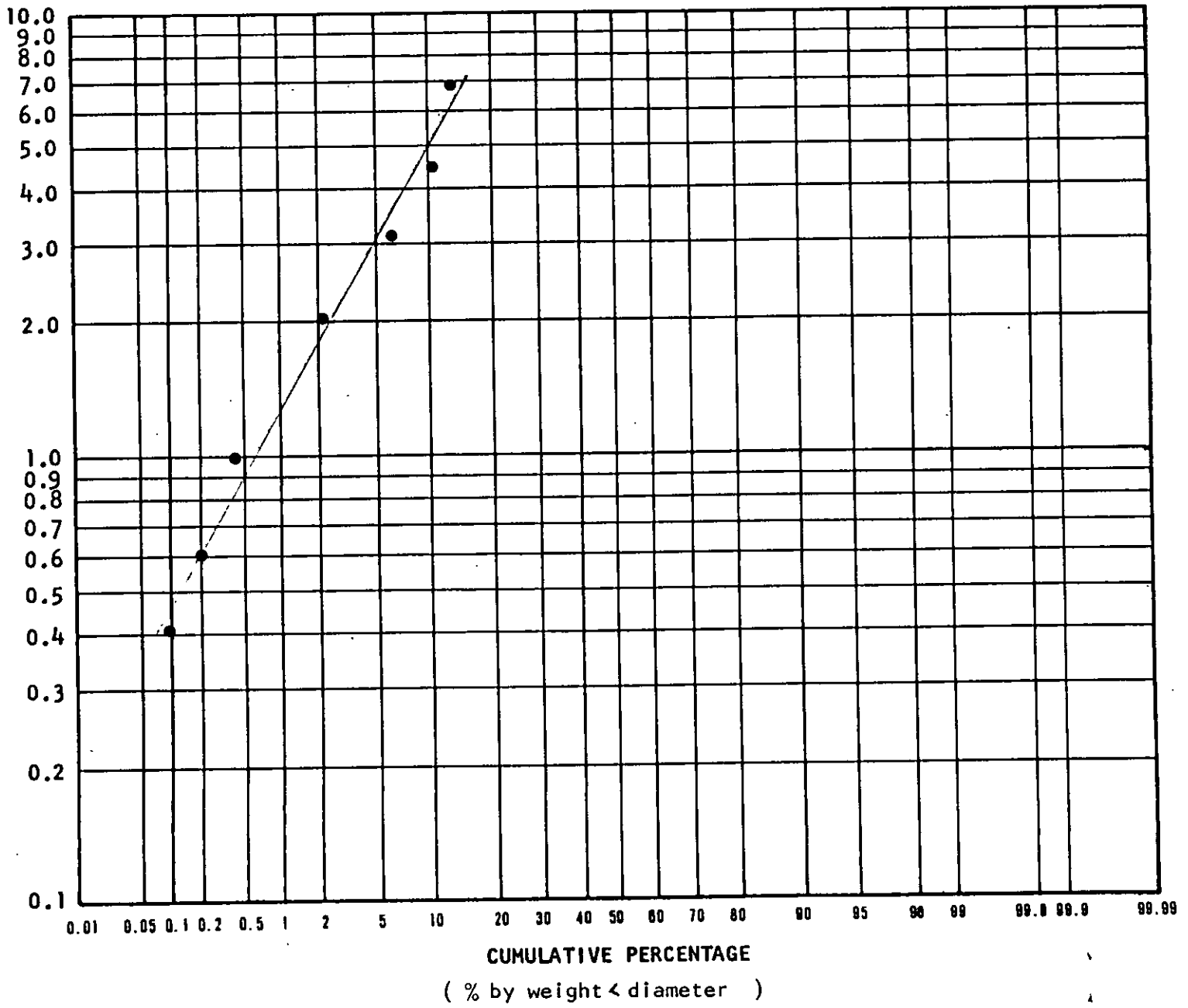


Table 26

Particle Size Distribution

Run: 3

Date: 5-20-80

Location: Gold Bond Building Products

Sampling Location: No. 2 Calcidyne Inlet

Traverse Point No. Sampled: Y-3

P_{bar} (in. Hg) 30.0

Stack Temp (^{o}F) 369.

Sample Time (min.) 0.333

Sample Volume (cf) 0.251

Moisture (% H_2O) 43.0

Meter Temp (^{o}F) 115.

Flow Setting, ΔH (in. H_2O) 2.2

Nozzle Diameter (in.) 0.252

Sample Flow Rate (at stack conditions): 1.21 cfm

Plate No.	Net Wt. (mg)	Percent	Cumulative Percent	EAD (microns)
1	314.5	78.88	100.0	10.7
2	17.5	4.39	21.1	6.6
3	21.2	5.32	16.7	4.5
4	21.8	5.47	11.4	3.1
5	15.0	3.76	5.9	1.9
6	5.8	1.45	2.2	1.0
7	0.6	0.15	0.7	0.6
8	2.2	0.55	0.6	0.4
Backup Filter	0.1	0.03	0.03	----
TOTAL	398.7	100.0		

No. 2 Calcidyne Baghouse Inlet Duct
Run 3

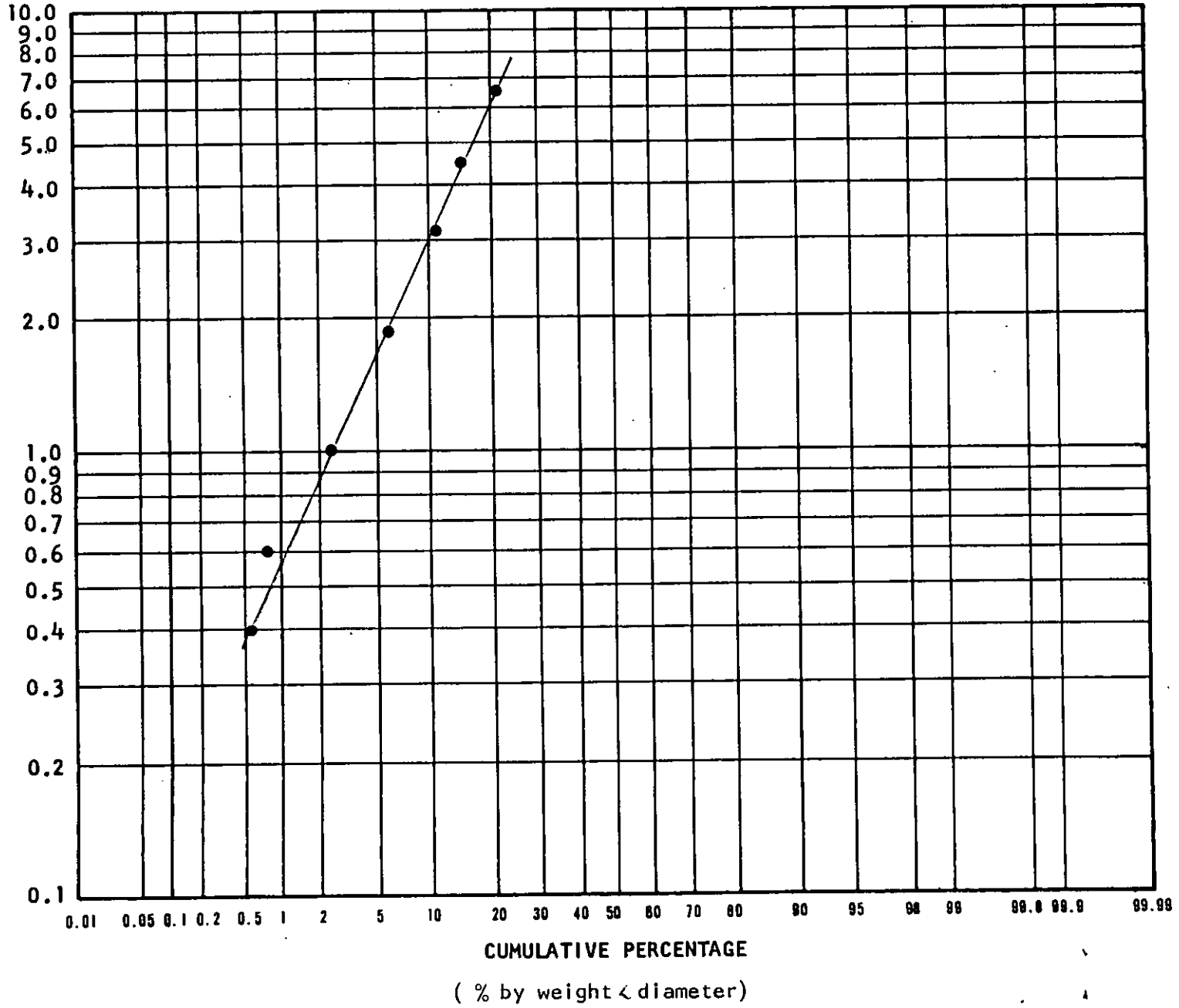


Table 27

Particle Size Distribution

Run:	1 of 1	P_{bar} (in. Hg)	30.0
Date:	5-20-80	Stack Temp (^{o}F)	340.
Location:	Gold Bond Building Products	Sample Time (min.)	60.0
Sampling Location:	No. 2 Calcidyne Outlet	Sample Volume (cf)	28.3
Traverse Point No. Sampled:	X-7	Moisture (% H_2O)	45.4
		Meter Temp (^{o}F)	92.
		Flow Setting, ΔH (in. H_2O)	0.74
		Nozzle Diameter (in.)	0.181

Sample Flow Rate (at stack conditions): 0.78 cfm

Plate No.	Net Wt. (mg)	Percent	Cumulative Percent	EAD (microns)
1	8.1	27.46	100.0	13.0
2	1.6	5.42	72.5	8.0
3	2.8	9.49	67.1	5.4
4	2.5	8.47	57.6	3.8
5	3.6	12.2	49.2	2.4
6	3.7	12.54	37.0	1.2
7	0.4	1.36	24.4	0.7
8	0.8	2.71	23.1	0.5
Backup Filter	6.0	20.35	20.4	----
TOTAL	29.5	100.0		

No. 2 Calcidyne Baghouse Outlet Stack
Run 1

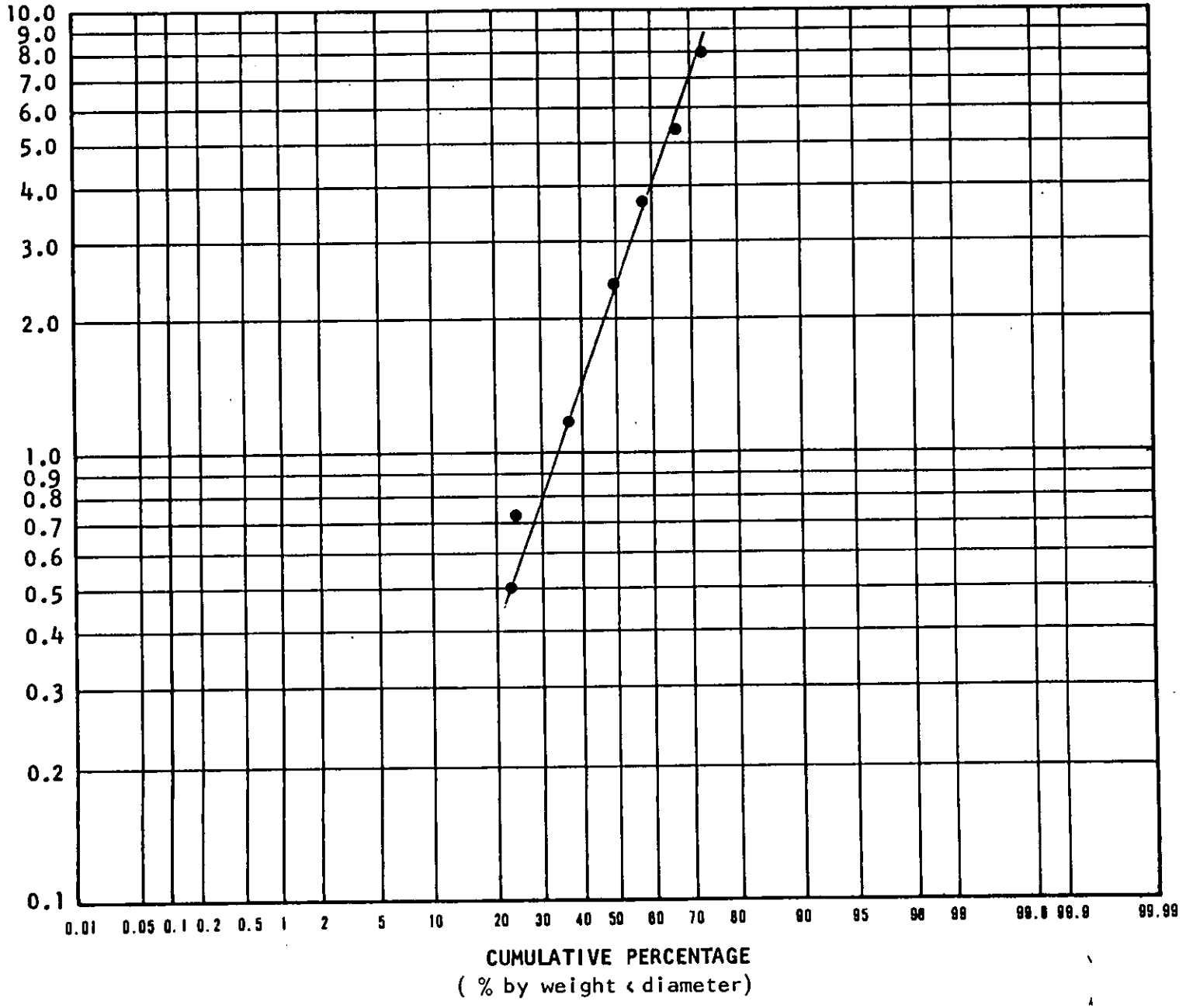


Table 28

Particle Size Distribution

Run: 1

Date: 5-21-80

Location: Gold Bond Building Products

Sampling Location: Rock Dryer Inlet

Traverse Point No. Sampled: X-10

P_{bar} (in. Hg) 30.2

Stack Temp (^{o}F) 215.

Sample Time (min.) 0.333

Sample Volume (cf) 0.305

Moisture (% H_2O) 8.5

Meter Temp (^{o}F) 112.

Flow Setting, ΔH (in. H_2O) 2.6

Nozzle Diameter (in.) 0.224

Sample Flow Rate (at stack conditions): 0.93 cfm

Plate No.	Net Wt. (mg)	Percent	Cumulative Percent	EAD (microns)
1	615.3	89.32	100.0	11.0
2	24.8	3.60	10.7	6.9
3	18.3	2.66	7.1	4.7
4	14.3	2.08	4.4	3.1
5	10.0	1.45	2.3	2.0
6	3.2	0.46	0.9	1.0
7	0.5	0.07	0.4	0.6
8	1.5	0.22	0.4	0.4
Backup Filter	1.9	0.14	0.14	----
TOTAL	688.9	100.0		

Rock Dryer Baghouse Inlet Duct
Run 1

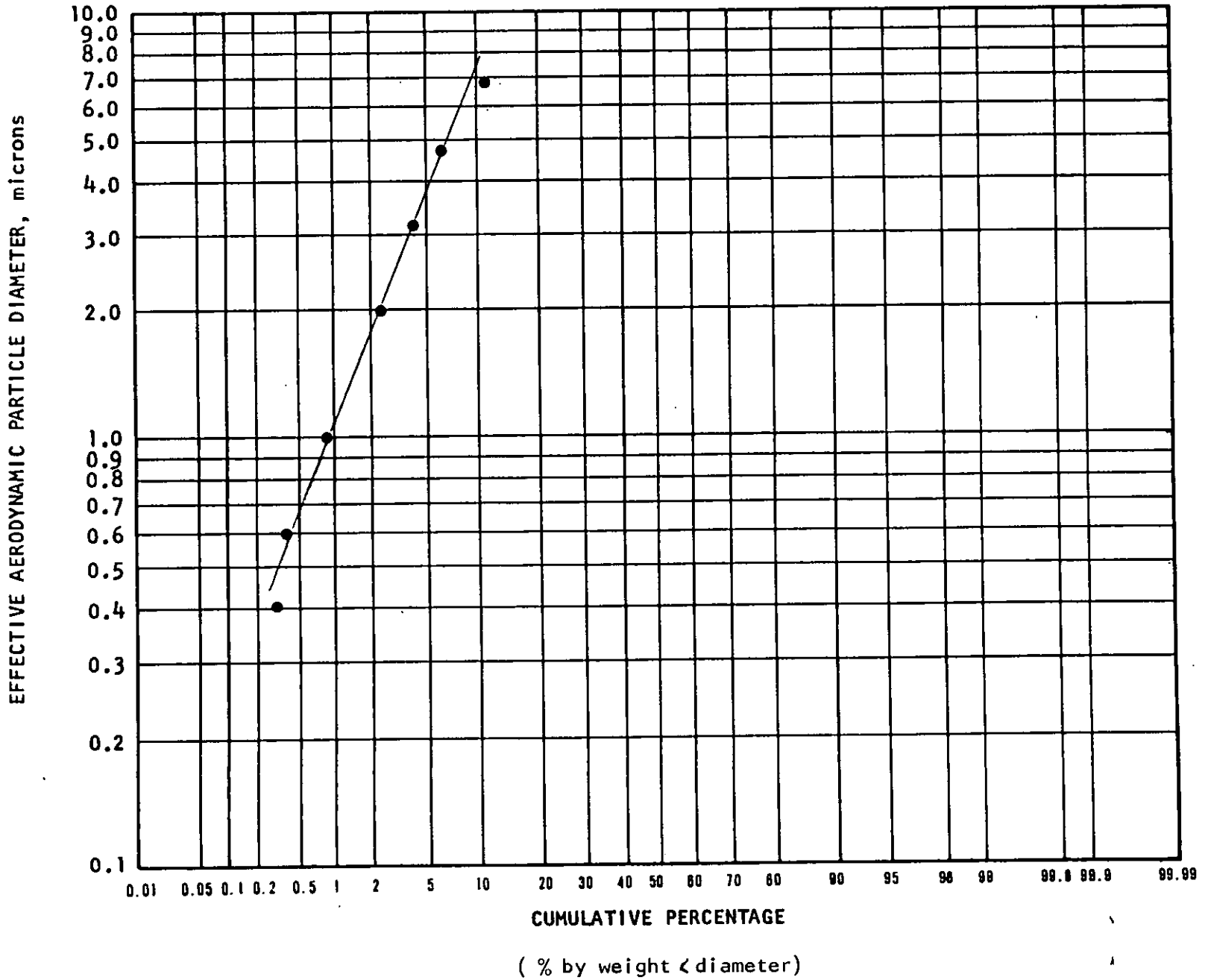


Table 29

Particle Size Distribution

Run:	2	P_{bar} (in. Hg)	30.1
Date:	5-22-80	Stack Temp (^{o}F)	216.
Location:	Gold Bond Building Products	Sample Time (min.)	0.333
Sampling Location:	Rock Dryer Inlet	Sample Volume (cf)	0.377
Traverse Point No. Sampled:	X-7	Moisture (% H_2O)	8.9
		Meter Temp (^{o}F)	111.
		Flow Setting, ΔH (in. H_2O)	3.0
		Nozzle Diameter (in.)	0.224

Sample Flow Rate (at stack conditions): 1.16 cfm

Plate No.	Net Wt. (mg)	Percent	Cumulative Percent	EAD (microns)
1	4,900.5	97.53	100.0	9.9
2	50.8	1.01	2.5	6.2
3	30.0	0.60	1.5	4.1
4	24.0	0.48	0.9	2.9
5	13.2	0.26	0.4	1.8
6	3.4	0.07	0.1	0.9
7	1.0	0.02	0.05	0.6
8	0.7	0.00	0.03	0.4
Backup Filter	0.7	0.03	0.03	----
TOTAL	5,024.6	100.0		

Rock Dryer Baghouse Inlet Duct
Run 2

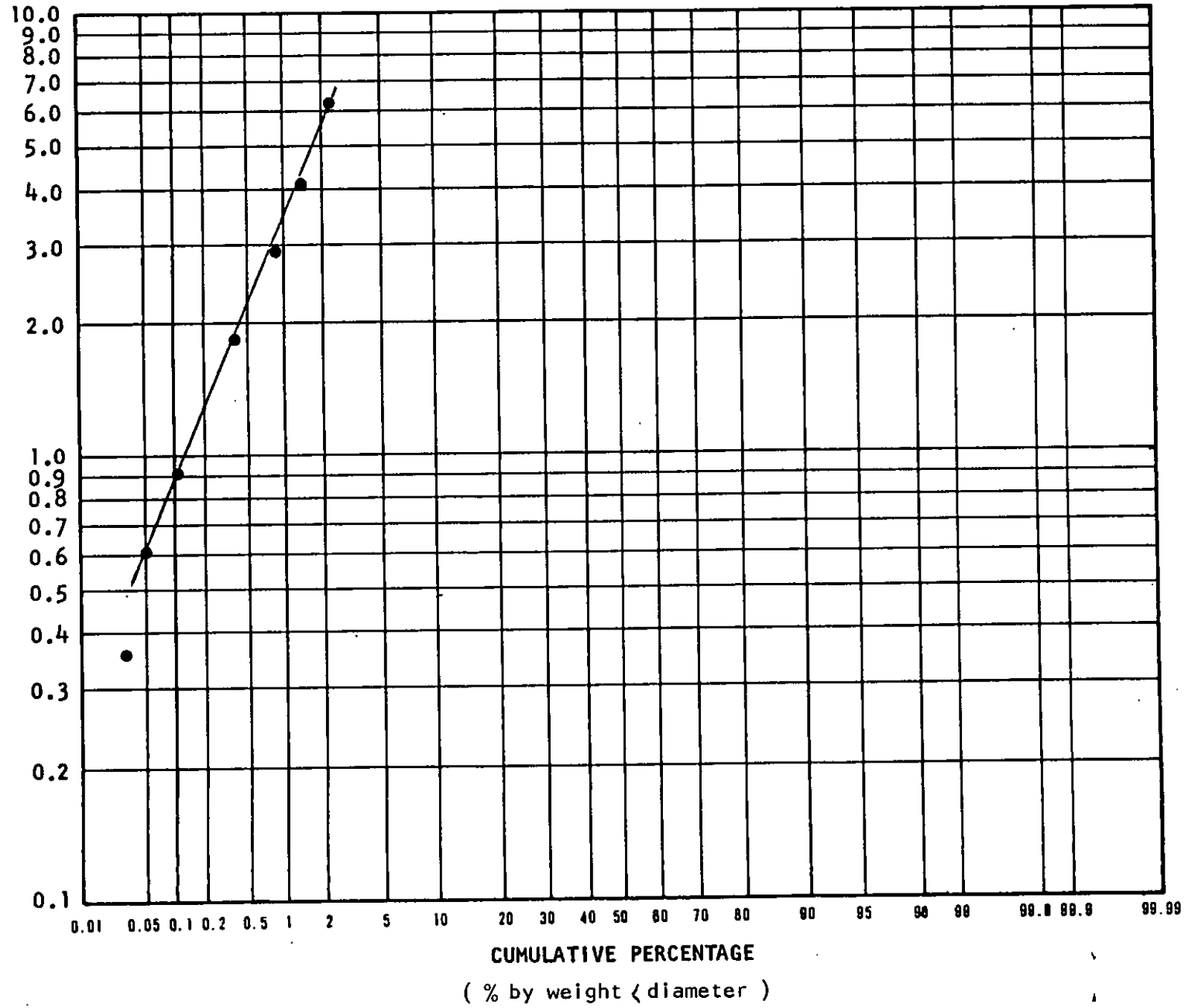


Table 30

Particle Size Distribution

Run: 3

Date: 5-22-80

Location: Gold Bond Building Products

Sampling Location: Rock Dryer Inlet

Traverse Point No. Sampled: X-7

P_{bar} (in. Hg) 30.1

Stack Temp (^{o}F) 215.

Sample Time (min.) 0.333

Sample Volume (cf) 0.383

Moisture (% H_2O) 7.0

Meter Temp (^{o}F) 111.

Flow Setting, ΔH (in. H_2O) 3.0

Nozzle Diameter (in.) 0.224

Sample Flow Rate (at stack conditions): 1.15 cfm

Plate No.	Net Wt. (mg)	Percent	Cumulative Percent	EAD (microns)
1	1,928.7	97.30	100.0	9.9
2	15.0	0.76	2.7	6.2
3	16.0	0.81	1.9	4.1
4	9.0	0.45	1.1	2.9
5	6.1	0.31	0.7	1.8
6	3.0	0.15	0.4	0.9
7	1.9	0.10	0.22	0.6
8	2.0	0.10	0.12	0.36
Backup Filter	0.6	0.02	0.02	----
TOTAL	1,982.3	100.0		

Rock Dryer Baghouse Inlet Duct
Run 3

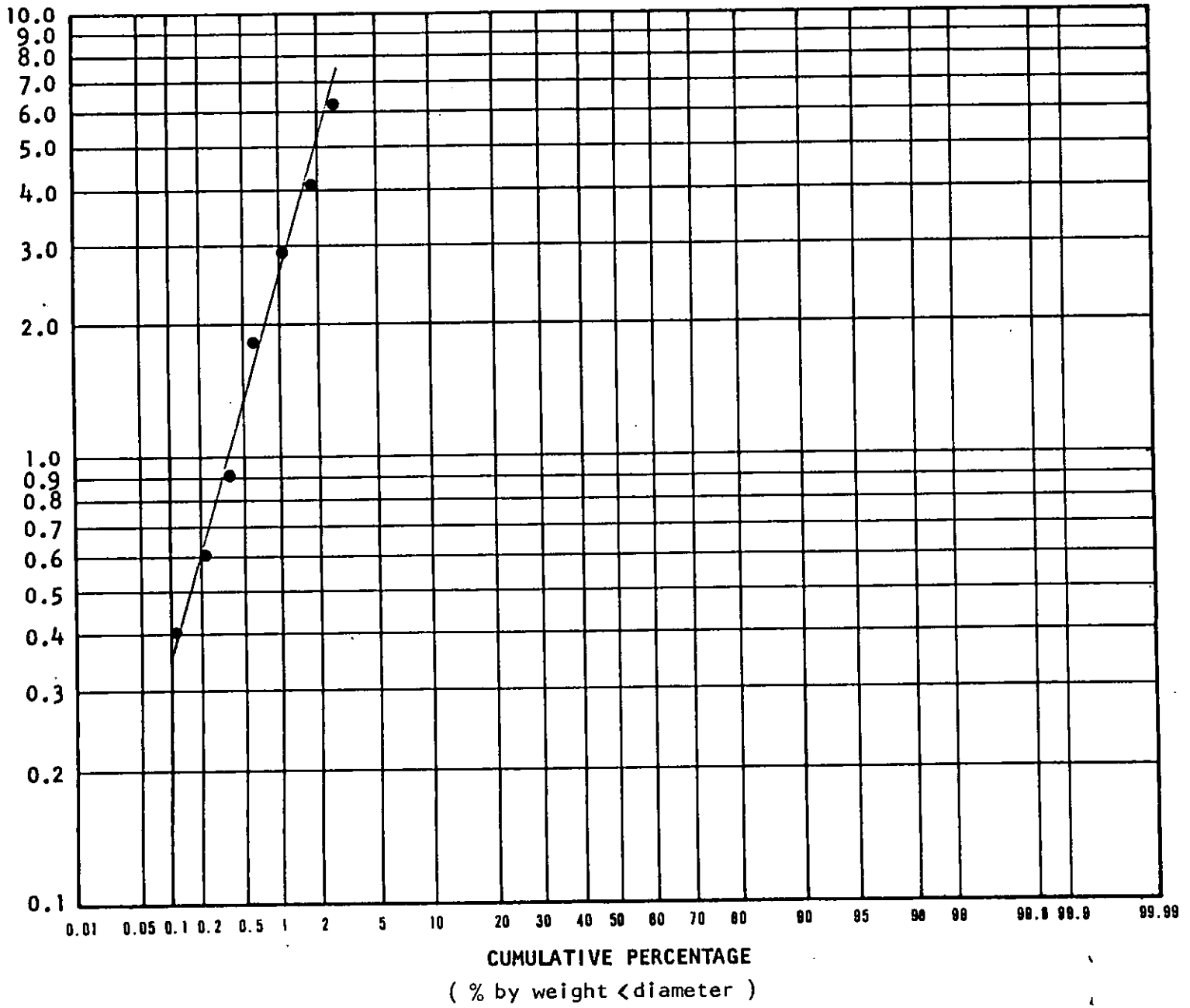


Table 31

Particle Size Distribution

Run: 1 of 1

Date: 5-21-80

Location: Gold Bond Building Products

Sampling Location: Rock Dryer Outlet

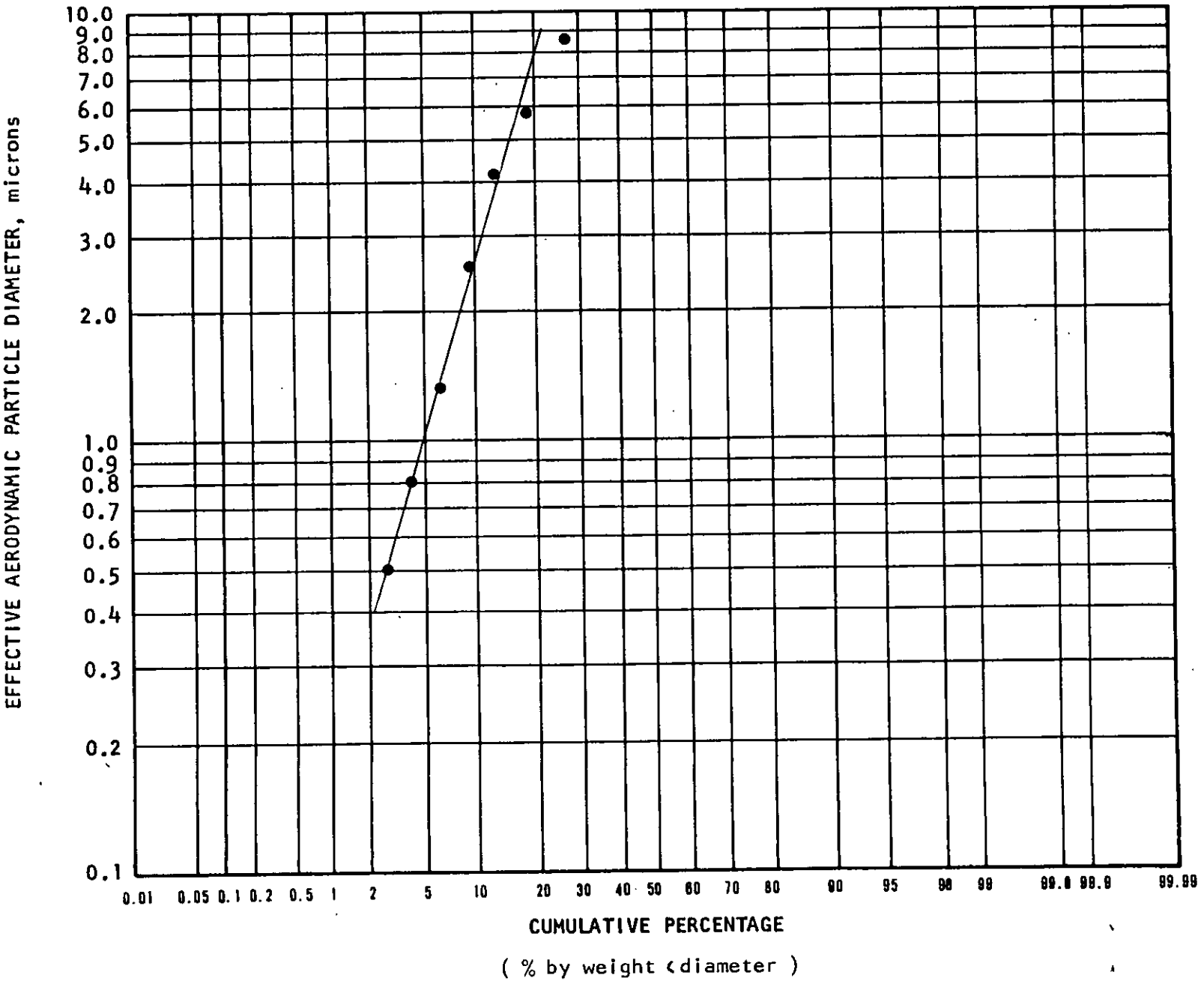
Traverse Point No. Sampled: X-6

P_{bar} (in. Hg)	30.1
Stack Temp (^{o}F)	200.
Sample Time (min.)	60.0
Sample Volume (cf)	33.3
Moisture (% H_2O)	8.3
Meter Temp (^{o}F)	102.
Flow Setting, ΔH (in. H_2O)	1.0
Nozzle Diameter (in.)	0.181

Sample Flow Rate (at stack conditions): 0.58 cfm

Plate No.	Net Wt. (mg)	Percent	Cumulative Percent	EAD (microns)
1	60.2	73.87	100.0	14.2
2	5.4	6.63	26.1	8.7
3	5.2	6.38	19.5	5.8
4	3.0	3.68	13.1	4.1
5	2.0	2.45	9.4	2.5
6	2.5	3.07	7.0	1.3
7	0.6	0.74	3.9	0.8
8	0.7	0.86	3.2	0.5
Backup Filter	1.9	2.32	2.3	----
TOTAL	81.5	100.0		

Rock Dryer Baghouse Outlet Stack
Run 1



SUMMARY OF VISIBLE EMISSIONS
TABLE 32

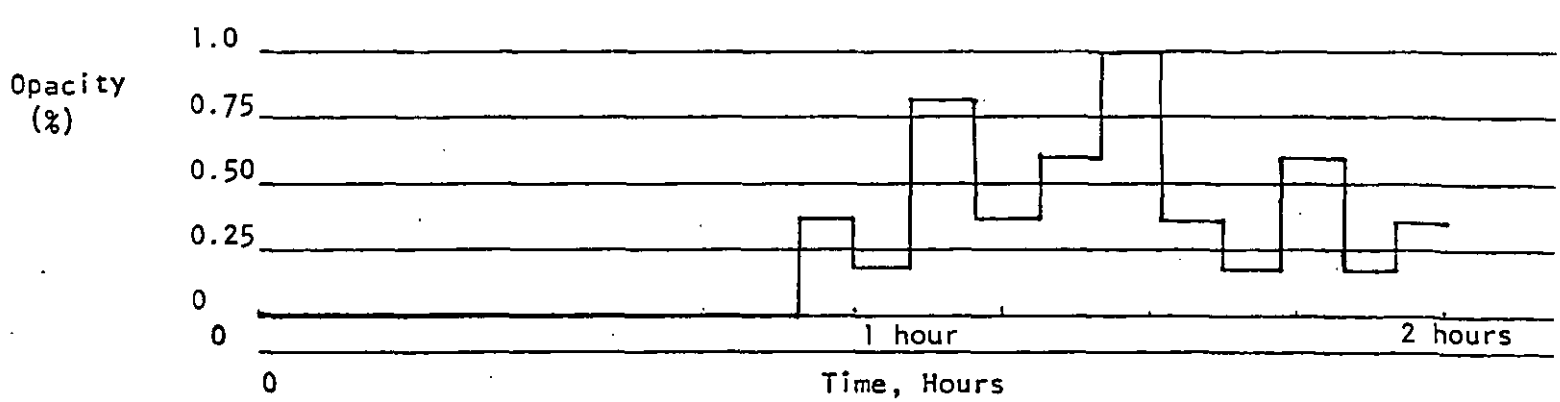
Date: May 19, 1980
Type of Discharge: Stack
Height of Point of Discharge: 10' above roof
Wind Direction: Westerly
Color of Plume: White
Observer No.:
Distance from Observer to Discharge Point: 25 feet
Direction of Observer from Discharge Point: South of stack
Height of Observation Point: 6 feet
Description of Background: Sky

Type of Plant: Gypsum Processing Facility
Location of Discharge: #2 Calcidyne Baghouse
Description of Sky: Partly Cloudy
Wind Velocity: 10-15 mph
Detached Plume: No
Duration of Observation: 1400-1600

SUMMARY OF AVERAGE OPACITY

Set Number	Time		Opacity		Set Number	Time		Opacity	
	Start	End	Sum	Average		Start	End	Sum	Average
1	1400	1406	0	0	21				
2	1406	1412	0	0	22				
3	1412	1418	0	0	23				
4	1418	1424	0	0	24				
5	1424	1430	0	0	25				
6	1430	1436	0	0	26				
7	1436	1442	0	0	27				
8	1442	1448	0	0	28				
9	1448	1454	0	0	29				
10	1454	1500	10	0.4	30				
11	1500	1506	5	0.2	31				
12	1506	1512	20	0.8	32				
13	1512	1518	10	0.4	33				
14	1518	1524	15	0.6	34				
15	1524	1530	25	1.0	35				
16	1530	1536	10	0.4	36				
17	1536	1542	5	0.2	37				
18	1542	1548	15	0.6	38				
19	1548	1554	5	0.2	39				
20	1554	1600	10	0.4	40				

Sketch Showing How Opacity Varied with Time:



SUMMARY OF VISIBLE EMISSIONS
TABLE 33

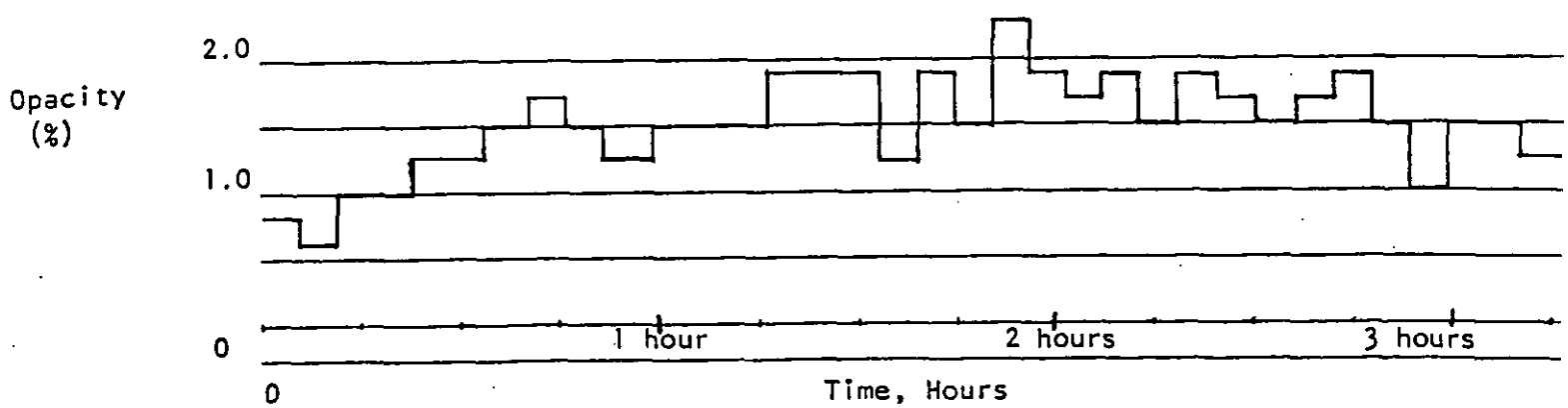
Date: May 20, 1980
Type of Discharge: Stack
Height of Point of Discharge: 10' above roof
Wind Direction: West
Color of Plume: White
Observer No.:
Distance from Observer to Discharge Point: 25 feet
Direction of Observer from Discharge Point: south of stack
Height of Observation Point: 6 feet
Description of Background: sky

Type of Plant: Gypsum Processing Facility
Location of Discharge: #2 Calcidyne Baghouse
Description of Sky: Partly Cloudy
Wind Velocity: 10-15 mph
Detached Plume: NO
Duration of Observation: 0934-1513

SUMMARY OF AVERAGE OPACITY

Set Number	Time		Opacity		Set Number	Time		Opacity	
	Start	End	Sum	Average		Start	End	Sum	Average
1	0934	0940	20	0.8	21	1351	1357	45	1.9
2	0940	0946	15	0.6	22	1357	1403	40	1.7
3	0946	1952	25	1.0	23	1403	1409	45	1.9
4	0952	0958	25	1.0	24	1409	1415	35	1.5
5	0958	1004	30	1.3	25	1415	1421	45	1.9
6	1004	1010	30	1.3	26	1421	1427	40	1.7
7	1010	1016	35	1.5	27	1427	1433	35	1.5
8	1016	1022	40	1.7	28	1433	1439	40	1.7
9	1022	1028	35	1.5	29	1439	1445	45	1.9
10	1028	1034	30	1.3	30	1445	1451	35	1.5
11	1034	1040	35	1.5	31	1451	1457	25	1.0
12	1040	1046	35	1.5	32	1457	1503	35	1.5
13	1046	1052	35	1.5	33	1503	1509	35	1.5
14	1052	1058	45	1.9	34	1509	1513	25	1.3
15	1058	1104	45	1.9	35				
16	1104	1110	45	1.9	36				
17	1110	1113	20	1.3	37				
18	1333	1339	45	1.9	38				
19	1339	1345	35	1.5	39				
20	1345	1351	55	2.3	40				

Sketch Showing How Opacity Varied with Time:



SUMMARY OF VISIBLE EMISSIONS
TABLE 34

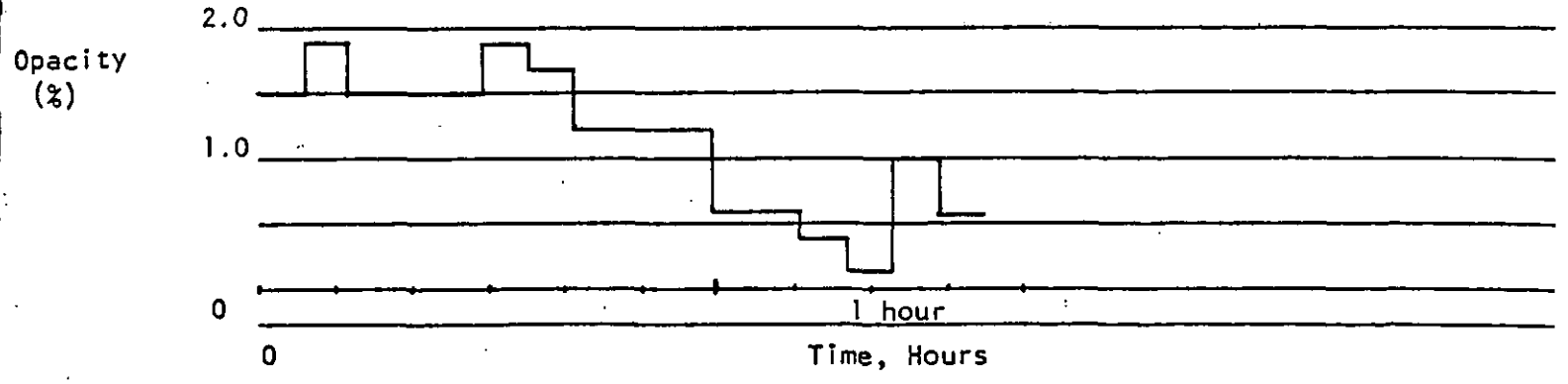
Date: May 21, 1980
Type of Discharge: Stack
Height of Point of Discharge: 8' above roof
Wind Direction: Westerly
Color of Plume: White
Observer No.:
Distance from Observer to Discharge Point: 15 feet
Direction of Observer from Discharge Point: South
Height of Observation Point: 4 feet
Description of Background: Clear Blue Sky

Type of Plant: Gypsum Processing Facility
Location of Discharge: Rock Dryer Baghouse Outlet
Description of Sky: Clear
Wind Velocity: 5-10 mph
Detached Plume: NO
Duration of Observation: 1157-1332 Run 1

SUMMARY OF AVERAGE OPACITY

Set Number	Time		Opacity		Set Number	Time		Opacity	
	Start	End	Sum	Average		Start	End	Sum	Average
1	1157	1203	35	1.5	21				
2	1203	1209	45	1.9	22				
3	1209	1215	35	1.5	23				
4	1215	1221	35	1.5	24				
5	1221	1227	35	1.5	25				
6	1227	1233	45	1.9	26				
7	1233	1239	40	1.7	27				
8	1239	1245	30	1.3	28				
9	1245	1251	30	1.3	29				
10	1251	1257	30	1.3	30				
11	1257	1303	15	0.6	31				
12	1303	1309	15	0.6	32				
13	1309	1315	10	0.4	33				
14	1315	1321	5	0.2	34				
15	1321	1327	25	1.0	35				
16	1327	1332	15	0.6	36				
17					37				
18					38				
19					39				
20					40				

Sketch Showing How Opacity Varied with Time:



SUMMARY OF VISIBLE EMISSIONS
TABLE 35

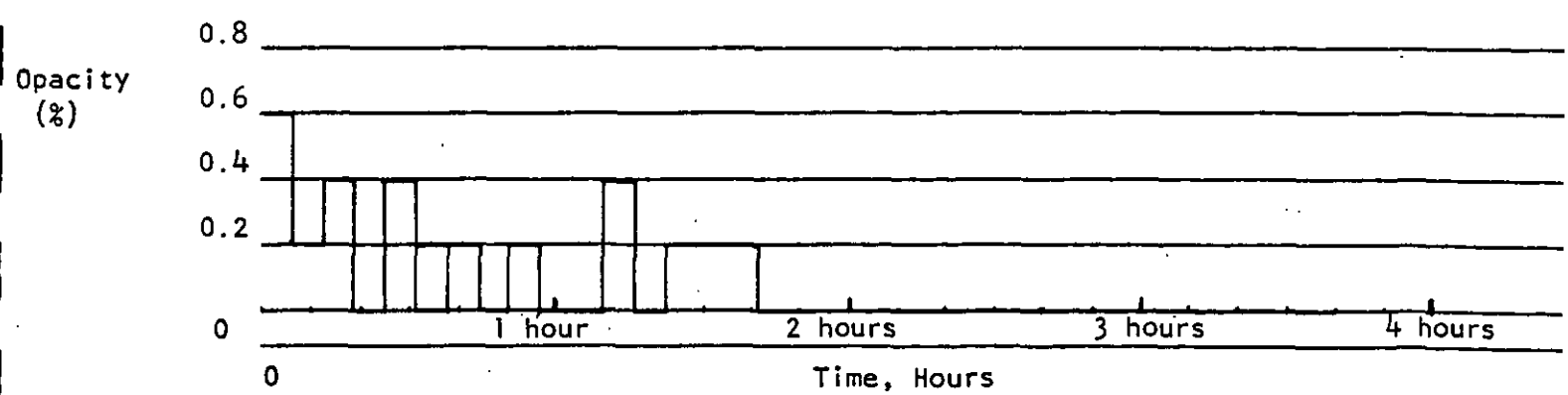
Date: May 22, 1980
Type of Discharge: stack
Height of Point of Discharge: 8' above roof
Wind Direction: Southeast
Color of Plume: White
Observer No.:
Distance from Observer to Discharge Point: 50 feet
Direction of Observer from Discharge Point: South
Height of Observation Point: 6 feet
Description of Background: cloudy sky

Type of Plant: Gypsum Processing Facility
Location of Discharge: Rock Dryer Baghouse
Description of Sky: Partly Cloudy
Wind Velocity: 5-10 mph
Detached Plume: No
Duration of Observation: 0849-1426 Runs 2-3

SUMMARY OF AVERAGE OPACITY

Set Number	Time		Opacity		Set Number	Time		Opacity	
	Start	End	Sum	Average		Start	End	Sum	Average
1	0849	1855	15	0.6	21	1248	1254	0	0.0
2	0855	0901	5	0.2	22	1254	1300	0	0.0
3	0901	0907	10	0.4	23	1300	1306	0	0.0
4	0907	0913	0	0.0	24	1306	1312	0	0.0
5	0913	1919	10	0.4	25	1312	1318	0	0.0
6	0919	0925	0	0.0	26	1318	1324	0	0.0
7	0925	0931	5	0.2	27	1324	1330	0	0.0
8	0931	0937	0	0.0	28	1330	1336	0	0.0
9	0937	0943	5	0.2	29	1336	1342	0	0.0
10	0943	0949	0	0.0	30	1342	1348	0	0.0
11	0949	0955	0	0.0	31	1348	1354	0	0.0
12	0955	1001	10	0.4	32	1354	1400	0	0.0
13	1001	1007	0	0.0	33	1400	1406	0	0 0
14	1007	1013	5	0.2	34	1406	1412	0	0.0
15	1013	1019	5	0.2	35	1412	1418	0	0.0
16	1419	1025	5	0.2	36	1418	1424	0	0.0
17	1025	1028	0	0.0	37	1424	1426	0	0.0
18	1230	1236	0	0.0	38				
19	1236	1242	0	0.0	39				
20	1242	1248	0	0.0	40				

Sketch Showing How Opacity Varied with Time:



SUMMARY OF VISIBLE EMISSIONS
TABLE 36

Date: May 27, 1980
Type of Discharge: Stack
Height of Point of Discharge: 6' above roof
Wind Direction: Southwest
Color of Plume: White
Observer No.:
Distance from Observer to Discharge Point: 20 feet
Direction of Observer from Discharge Point: West
Height of Observation Point: roof level
Description of Background: clear

Type of Plant: Gypsum Processing Facility
Location of Discharge: Stucco Baghouse
Description of Sky: Clear
Wind Velocity:
Detached Plume: No
Duration of Observation: 1330-1705 Runs 1-3

SUMMARY OF AVERAGE OPACITY

Set Number	Time		Opacity		Set Number	Time		Opacity	
	Start	End	Sum	Average		Start	End	Sum	Average
1	1330	1336	90	3.8	21	1605	1611	95	4.0
2	1336	1342	95	4.0	22	1611	1617	70	2.9
3	1342	1348	70	2.9	23	1617	1623	90	3.8
4	1348	1354	110	4.6	24	1623	1629	100	4.2
5	1354	1400	115	4.8	25	1629	1635	75	3.1
6	1400	1406	120	5.0	26	1635	1641	75	3.1
7	1406	1412	60	2.5	27	1641	1647	90	3.8
8	1412	1418	75	3.1	28	1647	1653	100	4.2
9	1418	1424	60	2.5	29	1653	1659	95	4.0
10	1424	1430	75	3.1	30	1659	1705	85	3.5
11	1440	1446	40	1.7	31				
12	1446	1452	45	1.9	32				
13	1452	1458	60	2.5	33				
14	1458	1504	80	3.3	34				
15	1504	1510	85	3.5	35				
16	1510	1516	55	2.3	36				
17	1516	1522	110	4.6	37				
18	1522	1528	105	4.4	38				
19	1528	1534	65	2.7	39				
20	1534	1540	100	4.2	40				

Sketch Showing How Opacity Varied with Time:

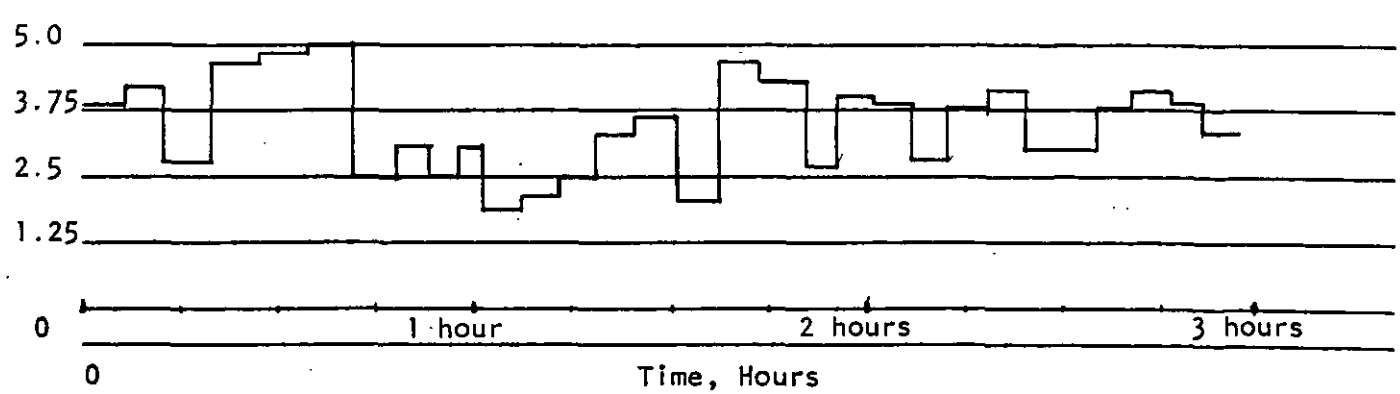


Table 37

Mean Fugitive Emission Values (% Frequency Emission)
For Three Tests at Each Location

Board End Sawing

Test	Test Mean
Test 1	37.5
Test 2	35.8
Test 3	19.2
Site Mean	30.8

Score Wheel

Test	Test Mean
Test 1	0.0
Test 2	0.0
Test 3	0.0
Site Mean	0.0

Admix Conveyor

Test	Test Mean
Test 1	0.0
Test 2	0.0
Test 3	0.0
Site Mean	0.0

Fiberglass Shredder

Test	Test Mean
Test 1	0.13
Test 2	0.22
Test 3	0.22
Site Mean	0.19

Vermiculite Addition

Test	Test Mean
Test 1	65.5
Site Mean	65.5

APPENDIX A

RAW TEST DATA

TRAVERSE POINT LOCATION FOR CIRCULAR DUCTS

PLANT Gold Bond
DATE 5-19-80
SAMPLING LOCATION Calciner Inlet
INSIDE OF FAR WALL TO OUTSIDE OF PORT. (DISTANCE A) 15"
INSIDE OF NEAR WALL TO OUTSIDE OF PORT. (DISTANCE B) 3" 2½"
STACK I.D.. (DISTANCE A - DISTANCE B) 12"
NEAREST UPSTREAM DISTURBANCE 6'
NEAREST DOWNSTREAM DISTURBANCE 12'
CALCULATOR O'Neill

SCHEMATIC OF SAMPLING LOCATION

TRAVERSE POINT NUMBER	FRACTION OF STACK I.D.	STACK I.D.	PRODUCT OF COLUMNS 2 AND 3 (TO NEAREST 1 8 INCH)	DISTANCE B	TRAVERSE POINT LOCATION FROM OUTSIDE OF PORT (SUM OF COLUMNS 4 & 5)
X 1	.044	12"	½"	2½	3"
2	.146	↓	1 3/4"	↓	4¼"
3	.296		3½"		6
4	.704		8½"		11
5	.854		10¼"		12¾
6	.956	↓	11½"	↓	14

PRELIMINARY VELOCITY TRAVERSE

PLANT Gold Bond
DATE 5-19-80
LOCATION 12" Calciner Inlet
STACK I.D.
BAROMETRIC PRESSURE, in. Hg
STACK GAUGE PRESSURE, in. H_2O -2.5"
OPERATORS O'Neill/Frye

SCHEMATIC OF TRAVERSE POINT LAYOUT

	TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F	Cyclone check
X	1	1.35	363	0
	2	1.4	363	0
	3	1.5	366	-2
	4	1.25	360	+2
	5	1.1	355	+2
	6	0.9	350	+2
Y	1	1.4	355	0
	2	1.4	360	0
	3	1.35	362	-2
	4	1.2	350	-2
	5	1.0	340	+2
	6	0.80	335	+2
	AVERAGE			

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
AVERAGE		

NOMOGRAPH DATA

PLANT Gold Bond

DATE 5-19-80

SAMPLING LOCATION ~~Gateiner~~ NO2 Calcidyne unit

CONTROL BOX NO. ~~1226~~ 1204

CALIBRATED PRESSURE DIFFERENTIAL ACROSS ORIFICE. in. H_2O	$\Delta H_@$	1.91
AVERAGE METER TEMPERATURE (AMBIENT + 20°F). °F	$T_{m_{avg.}}$	115°
PERCENT MOISTURE IN GAS STREAM BY VOLUME	B_{wo}	35%
BAROMETRIC PRESSURE AT METER. in Hg	P_m	
STATIC PRESSURE IN STACK. in. Hg ($P_m \pm 0.073$ x STACK GAUGE PRESSURE in in. H_2O)	P_s	-2.5
RATIO OF STATIC PRESSURE TO METER PRESSURE	P_s P_m	1.0
AVERAGE STACK TEMPERATURE. °F	$T_{s_{avg.}}$	355
AVERAGE VELOCITY HEAD. in. H_2O	$\Delta p_{avg.}$	1.4
MAXIMUM VELOCITY HEAD. in. H_2O	$\Delta p_{max.}$	1.5
C FACTOR		0.6
CALCULATED NOZZLE DIAMETER. in.		.224
ACTUAL NOZZLE DIAMETER. in.		.224
REFERENCE Δp. in. H_2O		1.7

P.S.

2.

FIELD DATA

PLANT Gold Bond
DATE 5-19-80
SAMPLING LOCATION #2 Calcyduer
SAMPLE TYPE Moisture
RUN NUMBER One
OPERATOR O'Neill
AMBIENT TEMPERATURE 95°
BAROMETRIC PRESSURE
STATIC PRESSURE, (P_s)
FILTER NUMBER (s)

As =

PROBE LENGTH AND TYPE 3'
NOZZLE I.D. —
ASSUMED MOISTURE, % —
SAMPLE BOX NUMBER —
METER BOX NUMBER 1204
METER $\Delta H_@$ 1.85
C FACTOR
PITOT TUBE FACTOR
REFERENCE Δp
NOTE L_{CI} = Ok
C_{LF} =

[illegible] pres nomograph — a noz.
Imp And.
on/at probe
stop watch

READ AND RECORD ALL DATA EVERY ______ MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft³	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
	0	1125	61.745									
Y	5		65.0	—	2.0		—	100	100	5	—	
	10		69.5	—	2.0		—	102	110	5	—	
	15		73.4	—	2.0		—	121	104	6	—	
	20		77.3	—	2.0		—	127	106	6.3	—	
	25		81.1	—	2.0		—	130	108	6.8	—	
	30	25'10"	81.918	—	2.0		—	133	111	7.8	—	
			20.173					133	111	7.8		

H_2O Imp = 213
5.6 = 13.8
Tot = 226.8

ID = .7854

30.00

FIELD DATA

PLANT Gold Bond
DATE 5-19-80
SAMPLING LOCATION #2 calcydyne
SAMPLE TYPE Particulate
RUN NUMBER One
OPERATOR Orvel H
AMBIENT TEMPERATURE 100
BAROMETRIC PRESSURE 30.08
STATIC PRESSURE, (P_s) - 2.3
FILTER NUMBER (s)

PROBE LENGTH AN
NOZZLE I.D.
ASSUMED MOISTURE
SAMPLE BOX NUMBI
METER BOX NUMBE
METER $\Delta H_@$
C FACTOR
PITOT TUBE FA
REFERENCE Δp
NOTE

READ AND RECORD ALL DATA EVERY 5. MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTL ($T_{m\,out}$)
	0 1358	82.242						
X 1	5	86.0	1.45	1.6	1.6	373	104	10
2	10 87.200	86.863	1.45	1.6	1.6	369	106	11
3	15 92.355	89.0	1.3	1.4	1.4	373	109	11
4	20 92.875	95.9	1.35	1.5	1.5	370	113	12
5	25 99.058 →	99.092	1.15	1.25	1.25	370	114	12
6	30	301.948	0.9	.97	.97	363	115	12
	0	301.948						
Y 1	5 5.490 →	5.541	1.45	1.6	1.6	375	117	12
2	10	8.70	1.35	1.5	1.5	377	118	13
3	15 11.205 →	11.250	1.3	1.4	1.4	360	118	12
4	20	15.7	1.15	1.25	1.25	375	120	12
5	25 16.601 →	16.668	0.95	1.0	1.0	373	128	11
6	30 1532	321.224	0.9	.97	.97	362	120	12
		37.947 ✓	1.1028 ✓	1.337 ✓		370 ✓	117.	
	.338 ✓							
	.520 ✓							
	.034 ✓							
	.051 ✓							
	.045 ✓							
	.047 ✓							
	= 1.035 ✓							

1.1028	ΓΔP
1.337	ΔH
370.	TS
117.42	TM
37.947	VMA
30.08	PBAR
434.	VWC
35.	WSG
29.62	MWD
0.7854	AS
60.	TT
-2.3	STAT
0.224	DN
0.989	Y
0.84	CP
469.	TH2D
34.61367413	VMS
22.07863	VWS
38.94466866	%M
.6105533134	MD
25.0946295	MWS
25.0946295	MWS
29.91088235	PS
83.27706304	VACT
3924.348319	QACT
32.33486192	VSTD
1523.748033	QSTD
108.654537	%I
0.	FHWT
49.4353	T WT
0.	FHGR
0.	FHLB
22.04000496	T GR
287.8568766	T LB

quartant 1 1410
stopped 1418
1422

A-5

1 Change filter

DRY MOLECULAR WEIGHT DETERMINATION

PLANT Gold Bond
DATE 5-19-80
SAMPLING TIME (24-hr CLOCK)
SAMPLING LOCATION #2 Inlet
SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS)
ANALYTICAL METHOD Orsat
AMBIENT TEMPERATURE 105
OPERATOR O'Neill

COMMENTS:

GAS \ RUN 1	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	7.7	7.7	7.8	7.8	7.6	7.6	7.7	44/100	3.39
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	16.8	9.1	17.0	9.2	17.1	9.5	9.3	32/100	2.976
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)	16.8	0.0	17.0	0.0	17.1	0.0	0.0	28/100	
N_2 (NET IS 100 MINUS ACTUAL CO READING)	83.2	83.2	83.0	83.0	82.9	82.9	83.0	28/100	23.249
								TOTAL	29.62

FIELD DATA

As = .7854

PLANT Gold Bond
DATE 5-20-80
SAMPLING LOCATION #2 Calcining Inlet
SAMPLE TYPE Particulate
RUN NUMBER Two
OPERATOR O'Neill
AMBIENT TEMPERATURE 98°
BAROMETRIC PRESSURE 29.98
STATIC PRESSURE, (P_s) -2.2
FILTER NUMBER (s) 28041, 28050, 28029

PROBE LENGTH AND TYPE 3'
NOZZLE I.D. .195
ASSUMED MOISTURE, % 38%
SAMPLE BOX NUMBER 1
METER BOX NUMBER 1204
METER $\Delta H_@$ 1.85
C FACTOR 0.55
PITOT TUBE FACTOR .84[illegible]
REFERENCE Δp 3.6
NOTE LC = .01

READ AND RECORD ALL DATA EVERY 5.0 MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VACUUM, in. Hg
	0 0917	24,945							
X 1	5	24.3	1.5	0.75	0.75	375	93	96	3
2	10 26.916	→26.958	1.55	0.80	0.80	375	98	100	6
3	15	29.5	1.5	0.75	0.75	370	78	100	5
4	20	31.7	1.35	0.69	0.69	377	102	108	5
5	25	33.7	1.05	0.53	0.53	374	103	110	8
6	30 *LC	35.817	0.95	.48	.48	374	104	112	12
	0	35.864							
Y 1	5	38.4	1.6	0.83	0.83	370	110	105	3
2	10	40.9	1.5	0.75	0.75	373	108	113	5
3	15 42.610	→42.658	1.5	0.75	0.75	374	109	116	12
4	20	45.8	1.3	0.67	0.67	373	109	110	3
5	25	47.9	1.15	0.58	0.58	373	110	117	6
6	30 1030	50.046	0.95	.48	.48	372	112	116	9
	.042	27.964 ✓	1.146 ✓	0.6717 ✓		373.33 ✓	106.6 ✓		
	.047			~~.6875~~					
	.048								
	.137								

1.146	Γ△F
0.6717	△H
373.33	TS
106.6	TM
27.964	VMA
29.98	PBAR
363.	VWC
17.	WSG
29.69	MWD
0.7854	AS
60.	TT
-2.2	STAT
0.195	DN
0.989	Y
0.84	CP
380.	TH2O
25.86642486	VMS
17.88796	VWS
40.88266824	%M
.5911733176	MD
24.91081608	MWS
24.91081608	MWS
29.81823529	PS
87.16713719	VACT
4107.664173	QACT
32.53894091	VSTD
1533.365051	QSTD
106.4709142	%I
0.	FHWT
36.2262	T WT
0.	FHGR
0.	FHLB
21.61267827	T GR
284.0572719	T LB

*LC : leak check - filter change

DRY MOLECULAR WEIGHT DETERMINATION

PLANT Gold Bond

DATE 5-20-80

SAMPLING TIME (24-hr CLOCK)

SAMPLING LOCATION #2 Calcydyne. Bag Inlet

SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS)

ANALYTICAL METHOD Orsat

AMBIENT TEMPERATURE 100

OPERATOR O'Neill

COMMENTS:

GAS \ RUN 2	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	8.2	8.2	8.3	8.3	8.2	8.2	8.23	44/100	3.62
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	17.7	9.5	17.8	9.5	17.8	9.6	9.53	32/100	3.05
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)	17.7	0.0	17.8	0.0	17.8	0.0	0.00	28/100	0.00
N_2 (NET IS 100 MINUS ACTUAL CO READING)	82.3	82.3	82.2	82.2	82.2	82.2	82.23	28/100	23.02
								TOTAL	29.69

FIELD DATA

PLANT Gold Bond 80
DATE 5-20
SAMPLING LOCATION #2 Calcidyne Inlet
SAMPLE TYPE Particulate
RUN NUMBER three
OPERATOR O'Neill
AMBIENT TEMPERATURE 105°
BAROMETRIC PRESSURE 29.98
STATIC PRESSURE, (P_s) -2.5
FILTER NUMBER (s) 28027
28028
28020 , 28026

PROBE LENGTH AND TYPE 3'
NOZZLE I.D. .19
ASSUMED MOISTURE, % 38
SAMPLE BOX NUMBER 7
METER BOX NUMBER 1204
METER $\Delta H_@$ 1.87
C FACTOR 0.513
PITOT TUBE FACTOR .8
REFERENCE Δp 3.
NOTE LCf = .005

A = .7854

READ AND RECORD ALL DATA EVERY 5.0 MINUTES

LCF = .013

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VACUUM in. Hg
	0 / 1315	50.544							
X 1	5	53.1	1.6	.74	.74	365	97	99	3
2	10	55.2	1.6	.74	.74	362	102	104	3
3	15 w 56.658	→ 56.773	1.3	.69	.69	371	106	109	9
4	20	60.0	1.3	.60	.60	370	110	112	4
5	25	62.0	1.1	.5	-5	370	109	115	6
6	30	63.997	0.97	.44	.44	369	109	117	9
	0	64.067							
Y 1	5	66.3	1.5	.68	.68	374	112	112	4
2	10	68.8	1.5	.68	.68	376	113	118	6
3	15 69,300	→ 69.346	1.4	.65	.65	374	114	120	13
4	20	73.2	1.2	.55	.55	373	116	121	5
5	25	75.4	1.1	.5	-5	365	116	120	9
6	30	77.300	0.97	.44	.44	361	117	120	11
	1436								
		26.525 ✓	1.1409 ✓		0.6008 ✓				
	.115					369.2 ✓		112. ✓	
	.070								
	.046								

Sub-x stopped 1330
1325
A-9

1.1409	ΓΔP
0.6008	ΔH
369.2	TS
112.	TM
26.525	VMA
29.98	PBAR
382.	VWC
7.7	WSG
29.71	MWD
0.7854	AS
60.	TT
-2.5	STAT
0.195	DN
0.989	Y
0.84	CP
389.7	TH2O
24.29951722	VMS
18.343795	VWS
43.01681564	%M
.5698318436	MD
24.67273089	MWS.
24.67273089	MWS
29.79617647	PS
87.01276115	VACT
4100.389356	QACT
31.44139417	VSTD
1481.644259	QSTD
103.5127483	%I
0.	FHWT
33.3611	T WT
0.	FHGR
0.	FHLB
21.18677876	T GR
269.0671241	T LB

DRY MOLECULAR WEIGHT DETERMINATION

PLANT Gold Bond
DATE 5-20-80
SAMPLING TIME (24-hr CLOCK)
SAMPLING LOCATION #2 Calcidyne, Inlet
SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS) Grabs
ANALYTICAL METHOD Orsat
AMBIENT TEMPERATURE
OPERATOR O'Neill

COMMENTS:

GAS \ RUN 3	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	8.4	8.4	8.8	8.8	8.6	8.6	8.6	44/100	3.784
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	16.7	8.3	17.0	8.2	16.9	8.3	8.3	32/100	2.656
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)	16.7	0.0	17.0	0.0	16.9	0.0	0.0	28/100	0.000
N_2 (NET IS 100 MINUS ACTUAL CO READING)	83.3	83.3	83.	83	83.1	83.1	83.13	28/100	23.268
								TOTAL	29.708

FIELD DATA

PLANT Gold Bond
DATE 5-19-80
SAMPLING LOCATION #3 Inlet
SAMPLE TYPE Part. size
RUN NUMBER ONE
OPERATOR O'DELL
AMBIENT TEMPERATURE 100
BAROMETRIC PRESSURE
STATIC PRESSURE, (P_s)
FILTER NUMBER (s) Set 26C

PROBE LENGTH AND TYPE —
NOZZLE I.D. .253
ASSUMED MOISTURE, % 23.0
SAMPLE BOX NUMBER
METER BOX NUMBER
METER $\Delta H_@$
C FACTOR
PITOT TUBE FACTOR
REFERENCE Δp
NOTE ΔC_p = .011 Ckm

READ AND RECORD ALL DATA EVERY — MINUTES

TRAVERSE POINT NUMBER	CLOCK TIME (24-hr CLOCK) / SAMPLING TIME, min	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0	21.287									
1525	20 sec	21.541	1.3	2.0	2.0	—	115	122	—	—	—
								118.5			
		Acetone rinse = 00961									
		filter set 26C = 00980									
		$17.71\,(.254)\,.989\left(30.08+\frac{2.0}{13.6}\right)$							= .381	× 3 =	1.14 ft³/min
			.611	$(460+118.5)$							
	level	Series 26C	%		Cum %		ECD	x	Tconv.		EAD
	0	324.9	83.85		100		9.0		1.19		10.7
	1	12.4	3.20		16.15		5.7				6.8
	2	19.5	5.03		12.95		3.75				4.5
	3	16.8	4.34		7.92		2.65				3.2
	4	7.2	1.86		3.58		1.7				2.0
	5	2.4	0.62		1.72		.85				1.0
	6	0.0	0.00		1.10		0.5				0.6
	7	0.2	0.05		1.10		0.33				0.4
	8	4.1	1.05		1.05						
		387.5									

FIELD DATA

PLANT Gold Bond
DATE 5-20-80
SAMPLING LOCATION #2 Cal. Inlet
SAMPLE TYPE Part. Size
RUN NUMBER TWO
OPERATOR O'Neill
AMBIENT TEMPERATURE
BAROMETRIC PRESSURE
STATIC PRESSURE, (P_s)
FILTER NUMBER (s) Set # II

PROBE LENGTH AND TYPE —
NOZZLE I.D. .252
ASSUMED MOISTURE, % —
SAMPLE BOX NUMBER —
METER BOX NUMBER
METER $\Delta H_@$ —
C FACTOR —
PITOT TUBE FACTOR —
REFERENCE Δp
NOTE C_p = Ok

READ AND RECORD ALL DATA EVERY — MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0 / 1046	50.123									
X	20	50.367	.14	2.2	2.2	—	109	100	—	—	—
		17.71	(.244)	.989	(29.98 $\frac{2.2}{13.6}$)			= .386	X3	= 1.158	
			.591	(565)							
				333.6							
	level	Series IIC		%		Com%		ECD	x	Tconv.	EMD
	0	540.0		87.0		100		9.0	x	1.19	10.7
	1	16.8		2.7		13		5.7			6.8
	2	24.3		3.9		10.3		3.75			4.5
	3	26.0		4.2		6.4		2.65			3.2
	4	11.4		1.8		2.2		1.7			2.0
	5	0.9		0.2		0.4		0.85			1.0
	6	0.6		0.1		0.2		0.5			0.6
	7	0.4		0.06		0.1		0.33			0.4
	8	0.1		0.04		0.04					
		620.5									

FIELD DATA

PLANT Gold Bond
DATE 5-20-80
SAMPLING LOCATION #2 Calcidyne I.Gt
SAMPLE TYPE Particulate
RUN NUMBER Three
OPERATOR O'Neill
AMBIENT TEMPERATURE
BAROMETRIC PRESSURE
STATIC PRESSURE, (P_s) —
FILTER NUMBER (s) 5C

PROBE LENGTH AND TYPE
NOZZLE I.D. .252
ASSUMED MOISTURE, % —
SAMPLE BOX NUMBER —
METER BOX NUMBER 1204
METER $\Delta H_@$
C FACTOR —
PITOT TUBE FACTOR —
REFERENCE Δp — 2.2
NOTE L-C-F = Otc

READ AND RECORD ALL DATA EVERY — MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0	77.370									
	20 1440	77.621	1.4	2.2	2.2		114	116			
		0.251					115				
		17.71 (.251) .989 (29.92 2.2/13.6)		(575)			= 0.404		x 3	= 1.21	
		.570									
	level	Series 5C	%		Cum %		ECD	x	Tcorr.	=	END
	0	314.5	78.88		100		8.8		1.19		10.5
	1	17.5	4.39		21.12		5.5				6.6
	2	21.2	5.32		16.73		3.75				4.5
	3	21.8	5.47		11.41		2.6				3.1
	4	15.0	3.76		5.94		1.6				1.9
	5	5.8	1.45		2.18		0.83				1.0
	6	0.6	0.15		0.73		0.5				0.6
	7	2.2	0.55		0.58		.325				0.4
	8	0.1	.03		0.03						
		398.7	100.00								

TRAVERSE POINT LOCATION FOR CIRCULAR DUCTS

PLANT Gold Bond

DATE 5-A-80

SAMPLING LOCATION Cakidyne Outlet

INSIDE OF FAR WALL TO OUTSIDE OF PORT. (DISTANCE A) 16"

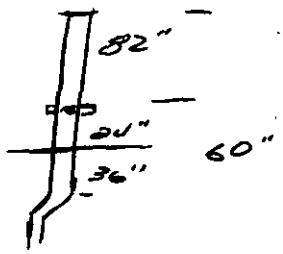
INSIDE OF NEAR WALL TO OUTSIDE OF PORT. (DISTANCE B) 4 3/4"

STACK I.D.. (DISTANCE A - DISTANCE B) 11 1/4

NEAREST UPSTREAM DISTURBANCE 60" 5.2 D

NEAREST DOWNSTREAM DISTURBANCE 82" >2 D

CALCULATOR



SCHEMATIC OF SAMPLING LOCATION

.125
.250
.375
.50
.625
.750
.875

TRAVERSE POINT NUMBER	FRACTION OF STACK I.D.	STACK I.D.	PRODUCT OF COLUMNS 2 AND 3 (TO NEAREST 1 8 INCH)	DISTANCE B	TRAVERSE POINT LOCATION FROM OUTSIDE OF PORT (SUM OF COLUMNS 4 & 5)
1	.026	11 1/4"	.29 1/8	4 3/4"	5 1/4
2	.082		.92 7/8		5 5/8
3	.146		1.64 1 5/8		6 3/8
4	.226		2.54 2 1/2		7 1/4
5	.342		3.84 3 7/8		8 5/8
6	.658		7.40 7 3/8		12 1/8
7	.774		8.70 8 3/4		13 1/2
8	.854		9.60 9 5/8		14 3/8
9	.918		10.32 10 3/8		15 1/8
10	.974		10.95 10 3/4		15 1/2

PRELIMINARY VELOCITY TRAVERSE

PLANT Gold Bond, Wilmington, N.C.
DATE 5-19-80
LOCATION Calcidyne Outlet
STACK I.D. 11 1/4
BAROMETRIC PRESSURE, in. Hg
STACK GAUGE PRESSURE, in. H_2O .59
OPERATORS Meeter / Dobrowski

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
X 1	1.4	333
2	1.5	335
3	1.6	333
4	1.6	342
5	1.65	345
6	1.7	346
7	1.65	346
8	1.6	345
9	1.5	345
10	1.4	345
Δp ave	1.56	
$T_{STACK\ (AVE)}$ =		336.85
AVERAGE		

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
1	1.4	300
2	1.55	320
3	1.45	320
4	1.65	320
5	1.75	340
6	1.65	345
7	1.6	346
8	1.6	346
9	1.55	345
10	1.45	340
Δp ave =	1.565	
AVERAGE		

NOMOGRAPH DATA

PLANT Gold Bond, Wilmington N.C.

DATE 5-20-80

SAMPLING LOCATION Coldfire Outlet

CONTROL BOX NO. 5

CALIBRATED PRESSURE DIFFERENTIAL ACROSS ORIFICE. in. H_2O	$\Delta H_@$	1.805
AVERAGE METER TEMPERATURE (AMBIENT + 20 °F). °F	$T_{m_{avg.}}$	100
PERCENT MOISTURE IN GAS STREAM BY VOLUME	B_{wo}	38 %
BAROMETRIC PRESSURE AT METER. in Hg	P_m	
STATIC PRESSURE IN STACK. in. Hg ($P_m \pm 0.073$ x STACK GAUGE PRESSURE in in. H_2O)	P_s	
RATIO OF STATIC PRESSURE TO METER PRESSURE	P_s P_m	1.0
AVERAGE STACK TEMPERATURE. °F	$T_{s_{avg.}}$	300
AVERAGE VELOCITY HEAD. in. H_2O	$\Delta p_{avg.}$	
MAXIMUM VELOCITY HEAD. in. H_2O	$\Delta p_{max.}$	
C FACTOR		.51
CALCULATED NOZZLE DIAMETER. in.		
ACTUAL NOZZLE DIAMETER. in.		.225
REFERENCE Δp. in. H_2O		1.9

NOMOGRAPH DATA

PLANT Gold Bond, Wilmington, N.C.

DATE 5/19/80

SAMPLING LOCATION Calcidyne Outlet

CONTROL BOX NO. Nutech #5

CALIBRATED PRESSURE DIFFERENTIAL ACROSS ORIFICE. in. H_2O	$\Delta H_@$	1.805
AVERAGE METER TEMPERATURE (AMBIENT + 20 °F). °F	$T_{m_{avg.}}$	120
PERCENT MOISTURE IN GAS STREAM BY VOLUME	B_{wo}	34.6
BAROMETRIC PRESSURE AT METER. in Hg	P_m	
STATIC PRESSURE IN STACK. in. Hg ($P_m \pm 0.073$ x STACK GAUGE PRESSURE in in. H_2O)	P_s	
RATIO OF STATIC PRESSURE TO METER PRESSURE	P_s/P_m	1.0
AVERAGE STACK TEMPERATURE. °F	$T_{s_{avg.}}$	337
AVERAGE VELOCITY HEAD. in. H_2O	$\Delta p_{avg.}$	1.56
MAXIMUM VELOCITY HEAD. in. H_2O	$\Delta p_{max.}$	1.75
C FACTOR	.59	
CALCULATED NOZZLE DIAMETER. in.	.230	
ACTUAL NOZZLE DIAMETER. in.	~~.181~~ .190	
REFERENCE Δp. in. H_2O	~~3.8~~ 3.2	

.181 .230 3.8 1.28

FIELD DATA

PLANT Gold Bond
DATE 5-19-80
SAMPLING LOCATION Calcidyne outlet
SAMPLE TYPE Particulate
RUN NUMBER 1
OPERATOR Meeter
AMBIENT TEMPERATURE 100
BAROMETRIC PRESSURE 30.08
STATIC PRESSURE, (P_s) -.60
FILTER NUMBER (s) [illegible]

.6903

PROBE LENGTH AND TYPE 4' Glass
NOZZLE I.D. .195
ASSUMED MOISTURE, % 34.9
SAMPLE BOX NUMBER
METER BOX NUMBER Nute
METER $\Delta H_@$ 1.805
C FACTOR .59
PITOT TUBE FACTOR
REFERENCE Δp 3.2
NOTE LCI = 5.0
LCF =

READ AND RECORD ALL DATA EVERY 3 MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	
	14:00	93.906							
	0	[illegible]							
X 1	3	95.6	1.5	.9	.9	330	94		6.0
2	6	97.1	1.5	.9		330	94		6.0
3	9	98.5	1.7	1.05		335	95		8.0
4	12	100.3	1.7	1.05		345	95		9.0
5	15	102.0	1.7	1.05		344	96		9.5
6	18	103.8	1.75	1.05		345	96		10.0
7	21	105.2	1.75	1.05		345	96		10.0
8	24	107.1	1.8	1.1		343	96		10.0
9	27	108.7	1.65	1.0		341	96		10.0
10	30	110.435	1.6	.95		340	96		9.0
Y 1	3	111.9	1.35	.8		330	96		6.0
2	6	113.3	1.4	.84		335	96		7.0
3	9	115.1	1.60	.96		340	96		8.0
4	12	116.6	1.65	.98		340	96		9.0
5	15	118.4	1.7	1.05		342	96		10.0
6	18	120.0	1.75	1.05		344	96		10.0
7	21	121.7	1.75	1.05		344	96		10.0
8	24	123.4	1.75	1.05		343	96		10.0
9	27	125.2	1.8	1.1		344	98		11.0
10	30	127.05	1.75	1.05		344	99		11.0

1.5725	CAL
0.9932	ΔH
340.5	TS
92.88	TM
65.34	VMA
30.08	PBAR
778.	VWC
44.	WSG
29.6	MWD
0.6903	AS
120.	TT
0.5	STAT
0.195	DN
0.9988	Y
0.84	CP
822.	TH2O
62.80997505	VMS
38.69506	VWS
38.12132076	%M
.6187867924	MD
25.17792679	MWS
25.17792679	MWS
30.11676471	PS
94.38426123	VACT
3909.207331	QACT
38.77559597	VSTD
1606.007634	QSTD
108.4771167	%I
0.	FHWT
0.0835	T WT
0.	FHGR
0.	FHLB
.0205154038	T GR
.2824095881	T LB

FIELD DATA

PLANT Gold Bond
DATE 5-19-80
SAMPLING LOCATION Calcidyne Outlet
SAMPLE TYPE Particulate
RUN NUMBER 1
OPERATOR Meeter
AMBIENT TEMPERATURE 100
BAROMETRIC PRESSURE
STATIC PRESSURE, (P_s)
FILTER NUMBER (s)

PROBE LENGTH AND TYPE 4' glass
NOZZLE I.D. .196
ASSUMED MOISTURE, %
SAMPLE BOX NUMBER
METER BOX NUMBER
METER $\Delta H_@$
C FACTOR
PITOT TUBE FACTOR .84
REFERENCE ΔP 3.2
NOTE Continuation of Run #1

READ AND RECORD ALL DATA EVERY 3 MINUTES

LCF = .011

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0	See page 1									
Y 1	3	129.0	1.1	.66		330	90		4.5	185	80
2	6	129.9	1.5	.899		330	90		6.0	200	81
3	9	131.1	1.6	.95		333	90		7.5	215	82
4	12	133.0	1.6	.95		333	90		9.0	220	84
5	15	134.7	1.70	1.05		343	88		10.0	225	84
6	18	136.4	1.80	1.1		343	88		10.0	225	84
7	21	138.0	1.8	1.1		344	88		11.0	225	86
8	24	139.7	1.8	1.1		344	88		13.0	220	86
9	27	141.2	1.8	1.1		344	89		13.0	217	94
10	30	143.246	1.8	1.1		345	90		13.0	235	96
	0										
X 1	3	144.5	.95	.54		340	89		4.0	240	91
2	6	146.0	1.4	.85		340	89		7.0	270	92
3	9	147.5	1.6	.95		340	89		9.0	270	89
4	12	149.1	1.7	1.05		335	90		10.0	270	90
5	15	150.8	1.7	1.05		343	90		10.0	270	90
6	18	152.5	1.75	1.05		347	90		10.0	270	92
7	21	154.3	1.8	1.1		346	90		10.5	275	89
8	24	155.9	1.8	1.1		345	91		11.0	275	90
9	27	157.5	1.75	1.05		345	91		11.0	275	88
10	30	159.246	1.60	.95		346	91		11.0	275	86
	16:30										
		65.340	1.279 ✓	.993 ✓		340.5 ✓	92.875 ✓				

DRY MOLECULAR WEIGHT DETERMINATION

PLANT Gold Bond.
DATE 5-19-80
SAMPLING TIME (24-hr CLOCK)
SAMPLING LOCATION #2 Calcidyne Outlet
SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS)
ANALYTICAL METHOD Orsat
AMBIENT TEMPERATURE
OPERATOR

COMMENTS:

GAS \ RUN 1	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	7.5	7.5	7.6	7.6	7.5	7.5	7.53	44/100	3.31
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	17.7	10.2	17.6	10.0	17.5	10.0	10.07	32/100	3.22
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)	17.7	0.0	17.6	0.0	17.5	0.0	0.00	28/100	0.00
N_2 (NET IS 100 MINUS ACTUAL CO READING)	82.3	82.3	82.4	82.4	82.5	82.5	82.4	28/100	23.07
								TOTAL	29.60

FIELD DATA

PLANT Gold Bond
DATE 5-20-80
SAMPLING LOCATION Caldidyne Outlet
SAMPLE TYPE Particulate
RUN NUMBER 2
OPERATOR Meeter
AMBIENT TEMPERATURE 80
BAROMETRIC PRESSURE 29.98
STATIC PRESSURE, (P_s) -.45
FILTER NUMBER (s)

PROBE LENGTH AND TYPE 4'
NOZZLE I.D. .225
ASSUMED MOISTURE, % 38
SAMPLE BOX NUMBER 12
METER BOX NUMBER
METER $\Delta H_@$
C FACTOR
PITOT TUBE FACTOR
REFERENCE ΔP 1.9
NOTE LCF = .00

LCF = .00

READ AND RECORD ALL DATA EVERY 5 MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft³	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	
	0 / 9:30	87.645							
X 1	5	90.8	1.45	1.4		325	87	83	2
2	10	94.3	1.7	1.7		338	94	84	2
3	15	98.1	1.8	1.75		342	100	86	2.5
4	20	101.2	2.2	2.35		344	105	87	4.0
5	25	105.1	2.2	2.35		343	108	89	3.5
6	30	108.6	1.9	1.95		342	108	90	4.0
7	35	111.9	1.75	1.65		343	108	91	3.0
8	40	115.5	1.75	1.65		343	106	91	3.0
9	45	119.0	1.7	1.60		341	103	91	3.0
10	50	121.606	1.6	1.55		337	103	91	3.0
Y 1	5	124.8	1.6	1.55		320	97	90	3.0
2	10	127.85	1.6	1.55		323	100	90	3.0
3	15	131.2	1.6	1.55		342	99	90	3.0
4	20	134.1	1.7	1.65		345	100	90	3.5
5	25	137.6	1.75	1.65		345	99	90	3.5
6	30	140.7	1.75	1.65		344	99	89	3.5
7	35	144.1	1.65	1.6		345	99	89	3.5
8	40	147.2	1.8	1.75		346	100	89	4.0
9	45	151.0	1.75	1.65		349	102	90	4.0
10	50	154.113	1.8	1.75		344	103	90	4.0
				1.75				95.00	
		66.468	1.3222	1.7175		340.1			

1.3222	ΓΔP
1.7175	ΔH
340.1	TS
95.	TM
66.468	VMA
29.98	PBAR
820.	VWC
144.3	WSG
29.68	MWD
0.6903	AS
100.	TT
0.45	STAT
0.225	DN
1.0053	Y
0.84	CP
964.3	TH2O
63.96514524	VMS
45.401145	VWS
41.51292405	%M
.5848707595	MD
24.83129047	MWS
24.83129047	MWS
30.01308824	PS
98.38047239	VACT
4074.722405	QACT
38.08957381	VSTD
1577.593968	QSTD
101.3656253	%I
0.	FHWT
0.0996	T WT
0.	FHGR
0.	FHLB
.0240291364	T GR
.3249265225	T LB

DRY MOLECULAR WEIGHT DETERMINATION

PLANT Gold Bond Wilmington, N.C. COMMENTS:
DATE 5-20-80
SAMPLING TIME (24-hr CLOCK)
SAMPLING LOCATION Calcidyne Outlet
SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS)
ANALYTICAL METHOD Orsat
AMBIENT TEMPERATURE 85°F
OPERATOR

GAS \ RUN 2	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	8.0	8.0	8.2	8.2	8.0	8.0	8.1	44/100	3.564
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	17.8	9.8	18.0	9.8	17.8	9.8	9.8	32/100	3.136
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)	17.8	0.0	18.0	0.0	17.8	0.0	0.0	28/100	
N_2 (NET IS 100 MINUS ACTUAL CO READING)	82.2	82.2	82	82.0	82.2	82.2	82.1	28/100	22.98
								TOTAL	29.68

FIELD DATA

PLANT Gold Bond
DATE 5-20-80
SAMPLING LOCATION Calcidyne Outlet
SAMPLE TYPE Particulate
RUN NUMBER 3
OPERATOR Meeter
AMBIENT TEMPERATURE 85 °F
BAROMETRIC PRESSURE 29.98
STATIC PRESSURE, (P_s) -.50
FILTER NUMBER (s) 28032

PROBE LENGTH AND TYPE 4' Glass
NOZZLE I.D. .225
ASSUMED MOISTURE, % 38
SAMPLE BOX NUMBER 120
METER BOX NUMBER
METER $\Delta H_@$
C FACTOR
PITOT TUBE FACTOR .84
REFERENCE Δp 1.9
NOTE

LCF = .00

READ AND RECORD ALL DATA EVERY 5 MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	
	0 / 13:40	154.379							
X 1	5	157.8	1.5	1.45		318	87	85	2.0
2	10	160.5	1.55	1.5		335	92	87	2.0
3	15	163.7	1.5	1.45		340	95	87	2.0
4	20	167.1	1.75	1.65		343	98	88	3.0
5	25	170.5	1.75	1.65		344	99	88	3.0
6	30	174.0	1.8	1.75		344	100	89	3.0
7	35	177.1	1.8	1.75		344	100	89	3.0
8	40	180.5	1.8	1.75		344	101	90	3.0
9	45	185.0	1.85	1.8		343	101	90	3.0
10	50	187.153	1.5	1.45		339	101	90	
X 1	5	190.1	1.5	1.45		328	95	89	3.0
2	10	193.2	1.5	1.45		339	100	91	3.0
3	15	196.7	1.7	1.6		343	100	91	3.0
4	20	199.9	1.75	1.65		343	102	91	3.0
5	25	203.1	1.75	1.65		345	103	92	3.0
6	30	206.8	1.8	1.75		347	104	92	4.0
7	35	210.1	1.8	1.75		346	104	93	4.0
8	40	213.3	1.8	1.75		346	104	94	4.0
9	45	216.5	1.75	1.65		343	103	93	4.0
10	50	219.851	1.6	1.55		337	102	93	4.0
	15:30								
		65.472 ✓	1.2981 ✓	1.6235 ✓				94.83 ✓	
						340.55 ✓	100		

1.2981	ΔP
1.6235	ΔH
340.55	TS
94.83	TM
65.472	VMA
29.98	PBAR
970.	VWC
19.3	WSG
29.71	MWD
0.6903	AS
100.	TT
0.5	STAT
0.225	DN
1.0053	Y
0.84	CP
989.3	TH2O
63.01148548	VMS
46.567895	VWS
42.49695043	%M
.5750304957	MD
24.7336071	MWS
24.7336071	MWS
30.01676471	PS
96.79909894	VACT
4009.22508	QACT
36.8305748	VSTD
1525.448747	QSTD
103.2677341	%I
0.	FHWT
0.1047	T WT
0.	FHGR
0.	FHLB
.0256418395	T GR
.3352729853	T LB

DRY MOLECULAR WEIGHT DETERMINATION

PLANT Gold Bond
DATE 5-20-80
SAMPLING TIME (24-hr CLOCK)
SAMPLING LOCATION #2 Calcidyne
SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS)
ANALYTICAL METHOD
AMBIENT TEMPERATURE
OPERATOR Ed Dobroski

COMMENTS:

GAS \ RUN 3	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	8.0	8.0	8.2	8.2	8.3	8.3	8.2	44/100	3.61
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	17.8	9.8	18.0	9.8	18.4	10.1	9.9	32/100	3.17
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)	17.8	0.0	18.0	0.0	18.4	0.0	0.0	28/100	0.00
N_2 (NET IS 100 MINUS ACTUAL CO READING)	82.2	82.2	82.0	82.0	81.6	81.6	81.9	28/100	22.93
								TOTAL	29.71

FIELD DATA

PLANT Gold Bond
DATE 5-20-80
SAMPLING LOCATION Calcidyne outlet
SAMPLE TYPE Part. Size
RUN NUMBER 1
OPERATOR Daniels
AMBIENT TEMPERATURE
BAROMETRIC PRESSURE
STATIC PRESSURE, (P_s)
FILTER NUMBER (s)

PROBE LENGTH AND TYPE
NOZZLE I.D. .181
ASSUMED MOISTURE, % 38 %
SAMPLE BOX NUMBER 1226
METER BOX NUMBER
METER $\Delta H_@$
C FACTOR .51
PITOT TUBE FACTOR
REFERENCE Δp 4.4
NOTE

READ AND RECORD ALL DATA EVERY 5 MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0 1125	391.111									
	5	93.4	1.75	.74			89	89	4		
	10	95.9	1.75	.74			89	89	7		
	15	98.0	1.75	.74			90	90	7		
	20	400.4	1.75	.74			93	91	7		
	25	402.7	1.75	.74			95	91	7		
	30	405.1	1.75	.74			98	92	8		
	35	7.8	1.75	.74			97	92	8		
	40	9.8	1.75	.74			97	92	8		
	45	12.2	1.75	.74			95	92	8		
	50	14.6	1.75	.74			94	91	9		
	55	16.9	1.75	.74			94	91	9		
	60 1225	419.375	1.75	.74			93	91	9		
		28.264	1.75	.74			92.333				
		17.11 (28264)	1	(	29.98	.74 / 15.6)	− 46.530	= 0.776			
			.585								
				323.11	552.33						
	level										
	0										
	1										
	2										
	3										
	4										

Run 1

SUMMARY
RECORD OF VISIBLE EMISSIONS

Type of Plant Gypsum Dry Wall Manufacturer Date 5/19/80

Company Name Gold Bond Building Supplies Hours of Observation 120 minutes

Plant Address _____ Observer David A. Ralston

Type of Discharge (STACK) OTHER _____

Discharge Location #2 Calciner Baghouse Outlet

Height of Point of Discharge ~ 10'

Observer's Location:

Distance to Discharge Point ~ 25'

Height of Observation Point 6'

Direction from Discharge Point South of stack

Background Description _____

Weather: Clear Overcast (Partly Cloudy) Other _____ Sky Color _____

Wind Direction Out of the West Wind Velocity 10 - 15 mi/hr gusts to 25

Plume Description:

No direct plume obvious

Detached: Yes No

Color: Black (White) Other _____

Plume Dispersion Behavior: Looping Coning Fanning

Lofting Fumigating Other _____

Estimated Distance Plume Visible 0 ft

RECORD OF VISIBLE EMISSIONS

Company Name GOLD BOND Date 5/19/80

Plant Address Wilmington, North Carolina Observer David Ralston

Stack Location #2 Cak Baghouse Outlet Observer's Location South of stack

Weather Conditions Partly Cloudy

Run 1

HR	MIN	TIME SECONDS 00	15	30	45	COMMENTS
1400	00	0	0	0	0	no visible plume (heat waves visible)
	01	0	0	0	0	
	02	0	0	0	0	
	03	0	0	0	0	
	04	0	0	0	0	
	05	0	0	0	0	
	06	0	0	0	0	
	07	0	0	0	0	
	08	0	0	0	0	
	09	0	0	0	0	
	10	0	0	0	0	
	11	0	0	0	0	
	12	0	0	0	0	
	13	0	0	0	0	
	14	0	0	0	0	
	15	0	0	0	0	
	16	0	0	0	0	
	17	0	0	0	0	
	18	0	0	0	0	
	19	0	0	0	0	
	20	0	0	0	0	
	21	0	0	0	0	
	22	0	0	0	0	
	23	0	0	0	0	
	24	0	0	0	0	Test Time 120 minutes
	25	0	0	0	0	
	26	0	0	0	0	min.
	27	0	0	0	0	0% 453 113.25
	28	0	0	0	0	5% 27 6.75
	29	0	0	0	0	Total 480

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Building Products Date 5/19/80

Plant Address Wilmington, N. Carolina Observer David Balsha

Stack Location #2 Calc. Baghouse Outlet Observer's Location South of stack

Weather Conditions Partly Cloudy

TIME HR	MIN	SECONDS 00	15	30	45	COMMENTS
	30	0	0	0	0	No visible plume (heat waves visible)
	31	0	0	0	0	
	32	0	0	0	0	
	33	0	0	0	0	
	34	0	0	0	0	
	35	0	0	0	0	
	36	0	0	0	0	
	37	0	0	0	0	
	38	0	0	0	0	
	39	0	0	0	0	
	40	0	0	0	0	
	41	0	0	0	0	
	42	0	0	0	0	
	43	0	0	0	0	
	44	0	0	0	0	
	45	0	0	0	0	
	46	0	0	0	0	
	47	0	0	0	0	
	48	0	0	0	0	
	49	0	0	0	0	
	50	0	0	0	0	
	51	0	0	0	0	
	52	0	0	0	0	
	53	0	0	0	0	
	54	0	0	0	0	
	55	0	0	0	0	
	56	0	0	0	0	
	57	0	0	0	0	
	58	0	0	5	0	* May have been due to abrupt wind
1500	59	5	0	0	0	direction change that caused a plume opposite to appear. In fact was from another stack.

RECORD OF VISIBLE EMISSIONS

Company Name GOLD Bond Building Products Date 5-19-80

Plant Address _____ Observer _____

Stack Location _____ Observer's Location _____

Weather Conditions Partly Cloudy - becoming overcast

TIME HR	MIN	SECONDS 00	15	30	45	COMMENTS
1500	00	0	0	0	0	No plume visible (heat waves visible)
	01	0	0	0	0	
	02	0	0	0	0	
	03	0	0	0	0	
	04	0	0	0	0	
	05	0	0	0	5	Occasional puffs with a
	06	0	0	0	0	duration of no more than 1 second.
	07	0	0	5	5	
	08	0	5	0	0	
	09	5	0	0	0	
	10	0	0	0	0	
	11	0	0	0	0	
	12	0	0	0	0	Winds becoming gusty & variable
	13	5	0	0	0	Sky becoming overcast & grey.
	14	0	0	0	0	
	15	0	0	0	0	
	16	0	0	0	0	
	17	0	0	0	0	
	18	0	5	0	0	
	19	0	0	5	0	
	20	0	0	0	5	
	21	0	0	0	0	
	22	0	0	0	0	
	23	0	0	5	0	
	24	0	0	0	0	
	25	0	0	0	5	Durations of puffs still less
	26	0	0	0	0	than 1 seconds
	27	0	5	0	5	
	28	0	0	0	0	
	29	0	5	0	0	

RECORD OF VISIBLE EMISSIONS

Company Name _____ Date 5/19/80

Plant Address _____ Observer Davis Ralston

Stack Location #2 Calcidyne Baghouse outlet Observer's Location South of Stack

Weather Conditions Overcast

HR	MIN	TIME SECONDS 00	15	30	45	COMMENTS
	30	0	0	5	0	
	31	0	0	0	0	Winds increasing to avg. of 20 knots
	32	0	0	0	0	Heavily overcast clouds black &
	33	0	0	0	0	dark grey.
	34	0	0	5	0	
	35	0	0	0	0	
	36	0	0	0	5	
	37	0	0	0	0	
	38	0	0	0	5	
	39	0	0	0	0	
	40	0	0	0	0	
	41	0	0	0	0	
	42	0	0	0	0	
	43	0	0	0	0	
	44	0	0	5	5	Again, puffs are of a very
	45	0	0	0	0	short duration.
	46	0	0	0	0	
	47	0	0	0	0	
	48	0	0	0	5	
	49	0	0	0	0	
	50	0	0	0	0	
	51	0	0	5	0	
	52	0	0	0	0	
	53	0	0	0	5	
	54	0	0	0	0	
	55	0	0	5	0	
	56	0	0	0	0	All puffs observed were of
	57	0	0	0	5	a very short duration and were
	58	0	0	0	0	of a very low opacity.
	59	0	0	0	0	

Run 2

SUMMARY
RECORD OF VISIBLE EMISSIONS

Type of Plant Gypsum Products Date 5-20-80

Company Name Gold Bond Building Products Hours of Observation 100 minutes

Plant Address Wilmington, N. Carolina Observer David Ralston

Type of Discharge (STACK) OTHER _____

Discharge Location #2 Calcidyne Baghouse Outlet

Height of Point of Discharge ~ 12'

Observer's Location:

Distance to Discharge Point ~25'

Height of Observation Point 6'

Direction from Discharge Point South of stack

Background Description another stack & a railing

Weather: Clear Overcast (Partly Cloudy) Other _____ Sky Color Blue/White

Wind Direction Out of West Wind Velocity ~10 - 15 mi/hr

Plume Description:

Detached: Yes No

Color: Black (White) Other _____

Plume Dispersion Behavior: Looping Coning Fanning

Lofting Fumigating Other _____

Estimated Distance Plume Visible ~ 1 - 5'

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Bldg Products Date 5-20-80

Plant Address Wilmington, N.C. Observer David A. Ralston

Stack Location #2 Calcidyne Outlet Observer's Location South of stack

Weather Conditions Partly Cloudy

TIME HR	MIN	SECONDS 00	15	30	45	COMMENTS
	30					
	31					
	32					
	33					
0934	34	0	0	0	0	Occasional puffs of short
	35	0	0	0	0	duration & very low opacity.
	36	0	5	0	5	Duration ≤ 1 second.
	37	0	0	0	0	
	38	0	5	0	0	
	39	0	0	0	5	
	40	0	5	0	0	
	41	0	0	0	0	
	42	0	0	0	5	
	43	0	0	0	0	
	44	0	0	0	5	
	45	0	0	0	0	
	46	5	0	0	0	
	47	0	5	0	0	
	48	0	0	0	5	
	49	0	5	0	0	
	50	0	5	0	0	
	51	0	0	0	0	
	52	0	0	0	0	
	53	0	0	5	0	
	54	0	5	0	0	
	55	0	0	0	5	
	56	0	5	0	0	
	57	5	0	0	0	
	58	5	0	0	0	
	59	5	0	0	0	

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Bldg. Prdts. Date 5-20-80

Plant Address Wilmington, N. C. Observer David A. Palston

Stack Location # 2 Calcidyne B.H. Outlet Observer's Location South of Stack

Weather Conditions Partly Cloudy

HR	MIN	TIME SECONDS 00	15	30	45	COMMENTS
10	00	0	0	5	0	
	01	5	0	0	0	
	02	5	0	0	0	
	03	0	5	0	0	
	04	5	0	0	5	
	05	0	0	0	0	* The puff that occurs in the 00
	06	5	0	0	0	column occurs at 04 seconds &
	07	5	0	0	0	is of short duration & low
	08	5	0	0	0	opacity. The rest of the 00 period
	09	5	0	0	0	(0-15 seconds) is clear. Exactly
	10	5	0	0	0	every 60 seconds the puff occurs.
	11	5	0	0	0	
	12	5	0	0	0	
	13	5	0	0	0	
	14	5	0	0	0	
	15	5	5	0	0	
	16	5	0	0	0	
	17	5	0	0	0	
	18	5	5	0	0	
	19	5	0	0	0	
	20	5	0	5	0	
	21	5	0	0	0	
	22	5	0	0	0	Increasing cloudyness
	23	5	0	0	0	
	24	5	0	0	0	
	25	5	0	0	0	
	26	5	0	0	0	
	27	5	0	5	0	
	28	5	0	0	0	
	29	5	0	0	0	

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Bldg. Products Date 5-20-80

Plant Address Wilmington, N Carolina Observer David Palston

Stack Location #2 Calcidyne Outlet Observer's Location South of stack

Weather Conditions Partly Cloudy

TIME						COMMENTS
HR	MIN	SECONDS				
		00	15	30	45	
10	30	5	0	0	0	
	31	5	0	0	0	
	32	5	0	0	0	
	33	5	0	0	0	
	34	5	0	0	0	
	35	5	0	0	0	
	36	5	0	0	0	
	37	5	0	0	0	
	38	5	0	0	0	
	39	5	0	5	0	
	40	5	0	0	0	
	41	5	0	0	0	
	42	5	0	0	0	
	43	5	0	0	0	
	44	5	0	0	5	
	45	5	0	0	0	
	46	5	0	0	0	
	47	5	0	0	0	
	48	5	0	0	0	
	49	5	5	0	0	
	50	5	0	0	0	
	51	5	0	0	0	
	52	5	0	0	0	
	53	5	0	0	0	
	54	5	0	0	5	
	55	5	0	0	5	
	56	5	0	0	0	
	57	5	0	0	5	
	58	5	0	0	0	
	59	5	0	0	0	

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Bldg. Products Date 5-20-80

Plant Address Wilmington N. Carolina Observer David Palston

Stack Location #2 Calcidyne Outlet Observer's Location South of stack

Weather Conditions Partly Cloudy

HR	MIN	TIME SECONDS 00	15	30	45	COMMENTS
11	00	5	0	0	5	
	01	5	0	0	5	
	02	5	0	0	0	
	03	5	0	5	0	
	04	5	0	0	5	
	05	5	0	0	0	
	06	5	0	0	0	
	07	5	5	0	0	
	08	5	0	0	0	
	09	5	0	5	0	
	10	5	0	0	0	
	11	5	0	0	0	
	12	5	0	0	0	
STOP → 1113	13	5	0	0	0	
	14					
	15					Total Test Time = 100 min
	16					
	17					0% 291 72.75
	18					5% 109 27.25
	19					
	20					Total 400
	21					
	22					
	23					
	24					
	25					
	26					
	27					
	28					
	29					

Run #3

SUMMARY
RECORD OF VISIBLE EMISSIONS

Type of Plant Gypsum Bldg. Supplies Date 5-20-80

Company Name Gold Bond Bldg. Products Hours of Observation 100 min.

Plant Address Wilmington, N. Carolina Observer David A. Balsley

Type of Discharge (STACK) OTHER _____

Discharge Location #2 Calcidyne Baghouse Outlet

Height of Point of Discharge ~ 12

Observer's Location:

Distance to Discharge Point ~ 25'

Height of Observation Point 6'

Direction from Discharge Point South

Background Description Another stack & some railings

Weather: Clear (Overcast) Partly Cloudy Other _____ Sky Color Grey

Wind Direction Out of the West Wind Velocity 10-20 mi/hr

Plume Description:

Detached: Yes No

Color: Black (White) Other _____

Plume Dispersion Behavior: Looping Coning Fanning

Lofting Fumigating Other _____

Estimated Distance Plume Visible _____

RECORD OF VISIBLE EMISSIONS

Company Name GOLD BOND Bldg. PRODUCTS Date 5-20-80

Plant Address Wilmington, N. Carolina Observer Dzuid

Stack Location #2 Calcidyne Observer's Location South of stack

Weather Conditions Overcast & windy

TIME HR	MIN	SECONDS 00	15	30	45	COMMENTS
	30					
	31					
	32					Occasional puffs are of a
1333	33	0	5	0	0	very short duration & very low
	34	0	0	0	0	opacity.
	35	0	5	5	0	
	36	5	5	0	0	
	37	0	5	0	5	
	38	0	5	5	0	
	39	5	0	5	5	
	40	0	0	5	0	
	41	0	0	0	0	
	42	0	5	0	5	
	43	0	0	0	0	
	44	0	5	0	0	
	45	0	5	0	5	
	46	0	5	0	5	
	47	0	5	0	0	
	48	0	5	0	5	
	49	5	5	0	5	
	50	0	5	0	0	
	51	0	5	0	0	
	52	0	5	0	5	
	53	0	5	0	5	
	54	0	5	0	5	
	55	0	5	0	0	
	56	0	0	0	5	
	57	0	5	0	0	
	58	0	5	0	5	
	59	0	5	0	0	

RECORD OF VISIBLE EMISSIONS

Company Name GOLD BOND BLDG. PRODUCTS Date 5-20-80

Plant Address Wilmington, N. Carolina Observer David A. Pelsta

Stack Location #2 Calcidyne Outlet Observer's Location South of stack

Weather Conditions Overcast

HR	MIN	TIME SECONDS 00	15	30	45	COMMENTS
14	00	0	5	0	0	
	01	0	5	0	0	Wind speed increasing to avg 20 mph
	02	0	5	5	0	
	03	0	5	0	5	
	04	0	5	0	0	
	05	0	5	0	5	
	06	0	5	0	5	
	07	5	5	0	0	
	08	0	0	0	0	
	09	0	5	0	5	
	10	0	5	0	0	
	11	0	5	0	0	
	12	0	5	0	0	
	13	5	0	0	0	
	14	0	5	0	0	
	15	0	5	0	0	
	16	0	5	0	5	
	17	0	5	0	0	
	18	0	5	0	0	
	19	0	5	5	0	
	20	0	5	0	5	
	21	0	5	0	5	
	22	0	5	0	0	
	23	0	5	0	0	
	24	5	5	0	0	
	25	0	5	0	5	
	26	0	0	0	0	
	27	0	5	0	0	
	28	0	5	0	5	
	29	0	5	0	0	

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Bldg. Products Date 5-20-80

Plant Address Wilmington N. Carolina Observer David L. Ralph

Stack Location #2 Cladyne Outlet Observer's Location South of stack

Weather Conditions Party Cloudy

TIME						COMMENTS
HR	MIN	SECONDS 00	15	30	45	
14	30	0	5	0	0	Skys clearing slightly
	31	0	5	0	0	
	32	0	5	0	0	
	33	0	5	0	0	
	34	0	5	0	5	
	35	0	5	5	0	
	36	0	0	5	0	
	37	0	5	0	0	
	38	0	5	0	0	
	39	5	5	0	5	
	40	0	0	0	0	
	41	0	5	5	0	
	42	0	5	0	0	
	43	5	5	0	0	
	44	0	5	0	0	
	45	0	0	0	0	
	46	0	5	0	0	
	47	0	5	0	0	
	48	0	5	0	5	
	49	0	5	0	5	
	50	0	5	0	0	
	51	0	5	0	0	
	52	0	0	0	0	
	53	5	0	0	0	
	54	5	0	0	0	
	55	5	0	0	0	
	56	5	0	0	0	
	57	5	0	0	0	
	58	5	0	0	5	
	59	5	0	0	0	

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Bldg. Products Date 5-20-80

Plant Address Wilmington N. Carolina Observer David A. Ralston

Stack Location #2 Calcidyne Outlet Observer's Location South of stack

Weather Conditions Partly Cloudy

HR	MIN	TIME SECONDS 00	15	30	45	COMMENTS
	00	0	0	5	0	
	01	5	0	0	0	min
	02	5	0	0	0	0% 268 67
	03	5	0	0	5	5% 132 33
	04	5	0	0	0	100
	05	5	0	0	0	Total 400
	06	5	0	0	0	Total Time 100
	07	5	0	0	0	
	08	5	0	0	0	
	09	5	0	0	5	
	10	0	0	0	0	
	11	5	0	0	0	
	12	5	0	0	0	
1513	13	5	0	0	0	
	14					
	15					
	16					
	17					
	18					
	19					
	20					
	21					
	22					
	23					
	24					
	25					
	26					
	27					
	28					
	29					

TRAVERSE POINT LOCATION FOR CIRCULAR DUCTS

PLANT Gold Bond
DATE 5-21-80
SAMPLING LOCATION ~~Rock Dryer Inlet~~
INSIDE OF FAR WALL TO
OUTSIDE OF PORT, (DISTANCE A) ~~29~~ X: 33" Y:
INSIDE OF NEAR WALL TO
OUTSIDE OF PORT, (DISTANCE B) 5" 5"
STACK I.D., (DISTANCE A - DISTANCE B) ~~29"~~ 27" 25 1/2" ID Avg.
NEAREST UPSTREAM DISTURBANCE —
NEAREST DOWNSTREAM DISTURBANCE 1.0
CALCULATOR O'Neill

SCHEMATIC OF SAMPLING LOCATION

TRAVERSE POINT NUMBER	FRACTION OF STACK I.D.	STACK I.D.	PRODUCT OF COLUMNS 2 AND 3 (TO NEAREST 1.8 INCH)	DISTANCE B	TRAVERSE POINT LOCATION FROM OUTSIDE OF PORT (SUM OF COLUMNS 4 & 5)
X,Y-1	.011	25 1/2"	→ 1/2"	5"	5 1/2"
2	.032		3/4		5 3/4
3	.055		1 3/8		6 3/8
4	.079		2		7
5	.105		2 5/8		7 5/8
6	.132		3 3/8		8 3/8
7	.161		4 1/8		9 1/8
8	.194		5		10
9	.230		5 7/8		10 7/8
10	.272		6 7/8		11 7/8
11	.323		8 1/4		13 1/4
12	.398		10 1/8		15 1/8
13	.602		15 3/8		20 3/8
14	.677		17 1/4		22 1/4
15	.728		18 1/2		23 1/2
16	.770		19 5/8		24 5/8
17	.806		20 1/2		25 1/2
18	.839		21 3/8		26 3/8
19	.868		22 1/8		27 1/8
20	.895		22 3/4		27 3/4
21	.921		23 1/2		28 1/2
22	.945		24 1/8		29 1/8
23	.968		24 5/8		29 5/8
24	.989		→ 25		30

PRELIMINARY VELOCITY TRAVERSE

PLANT Gold Bond
DATE 5-21-80
LOCATION Rock Dryer Inlet
STACK I.D. 26
BAROMETRIC PRESSURE, in. Hg
STACK GAUGE PRESSURE, in. H_2O - 2.2
OPERATORS O'Neill / Ralston

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F	Cyclonic Flow ✓
X 1	.70	207	-2 %
2	.72	209	-2
3	.83	210	-3
4	.85	212	-3
5	.93	214	-2
6	.93	214	-1
7	.93	215	-1
8	1.0	213	-2
9	1.1	217	-1
10	1.1	214	0
11	1.1	213	0
12	1.2	213	0
13	1.2	212	0
14	1.1	210	+2
15	1.6	211	+3
16	1.8	211	+3
17	1.7	209	+2
18	1.7	209	+2
19	1.7	210	+1
20	1.6	207	0
21	1.5	205	+1
22	1.5	204	+1
23	1.4	198	+2
24	1.4	197	+2
AVERAGE			

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F	Cyclonic Flow ✓
Y 1	.95	200	-5
2	1.0	203	-6
3	.98	204	-4
4	1.05	209	-4
5	1.2	209	-3
6	1.2	210	-2
7	1.3	212	-2
8	1.4	213	-1
9	1.5	217	0
10	1.6	219	0
11	1.7	220	0
12	1.7	218	0
13	1.8	217	0
14	1.9	218	0
15	2.0	215	+1
16	1.8	214	+2
17	1.8	214	+3
18	1.8	210	+4
19	2.0	210	+3
20	2.0	208	+3
21	2.0	207	+4
22	1.8	203	+5
23	1.7	200	+5
24	1.6	200	+4
AVERAGE			

1.4 $\sqrt{1.184}$

NOMOGRAPH DATA

PLANT Gold Bond

DATE 5-21-80

SAMPLING LOCATION Rock Dryer Inlet

CONTROL BOX NO. 1204

CALIBRATED PRESSURE DIFFERENTIAL ACROSS ORIFICE, in. H_2O	$\Delta H_@$	1.8101
AVERAGE METER TEMPERATURE (AMBIENT + 20°F), °F	$T_{m_{avg.}}$	110
PERCENT MOISTURE IN GAS STREAM BY VOLUME	B_{wo}	10
BAROMETRIC PRESSURE AT METER, in. Hg	P_m	
STATIC PRESSURE IN STACK, in. Hg ($P_m \pm 0.073$ x STACK GAUGE PRESSURE in in. H_2O)	P_s	-2.2
RATIO OF STATIC PRESSURE TO METER PRESSURE	P_s P_m	1.0
AVERAGE STACK TEMPERATURE, °F	$T_{s_{avg.}}$	215
AVERAGE VELOCITY HEAD, in. H_2O	$\Delta p_{avg.}$	1.4
MAXIMUM VELOCITY HEAD, in. H_2O	$\Delta p_{max.}$	2.0
C FACTOR		~~1.35~~ 0.97
CALCULATED NOZZLE DIAMETER, in.		~~.183~~ .175
ACTUAL NOZZLE DIAMETER, in.		
REFERENCE Δp, in. H_2O		~~1.7~~ 2.4

FIELD DATA

PLANT Gold Bond
DATE 5-21-80
SAMPLING LOCATION Rock Dryer Inlet
SAMPLE TYPE Particulate
RUN NUMBER One
OPERATOR O.W. Jeil
AMBIENT TEMPERATURE 95°
BAROMETRIC PRESSURE 30.17
STATIC PRESSURE, (P_s) -1.9
FILTER NUMBER (s)

3.547

25.5

PROBE LENGTH AND TYPE 4'
NOZZLE I.D. .175
ASSUMED MOISTURE, % 10
SAMPLE BOX NUMBER 1
METER BOX NUMBER 1204
METER $\Delta H_@$ 1.91
C FACTOR .97
PITOT TUBE FACTOR .841
REFERENCE Δp 2.4
NOTE L_{CJ} = .011

READ AND RECORD ALL DATA EVERY 2 MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VACUUM, in. Hg
	0 / 1145	77,868							
X 1	2	78.800	.73	.57	.57	203	104	106	3
2	4	79.6	.70	.55	.55	202	106	107	3
3	6	80.5	.73	.57	.57	204	106	108	3
4	8	81.6	.82	.64	.64	204	108	108	4
5	10	82.6	.92	.72	.72	207	108	110	4
6	12	83.6	1.0	.78	.78	210	110	110	4
7	14	84.5	1.1	.86	.86	212	112	108	4
8	16	85.7	1.1	.86	.86	214	114	108	5
9	18	86.9	1.3	1.0	1.0	216	114	108	5
10	20	88.1	1.3	1.0	1.0	214	114	110	6
11	22	89.7	1.45	1.15	1.15	215	116	109	6
12	24	90.7	1.5	1.15	1.15	213	120	110	8
13	26	91.6	1.6	1.25	1.25	212	120	110	8
14	28	92.8	1.6	1.25	1.25	210	124	110	8
15	30	94.0	1.6	1.25	1.25	208	124	110	10
16	32	95.4	1.65	1.3	1.3	209	124	110	11
17	34	96.5	1.65	1.3	1.3	220	124	110	12
18	36	98.0	1.6	1.25	1.25	223	124	111	13
19	38	99.2	1.5	1.15	1.15	225	126	112	12
20	40	400.4	1.4	1.1	1.1	218	125	110	13
21	42	02.1	1.3	1.0	1.0	220	125	111	14
22	44	03.0	1.1	.86	.86	217	123	111	14
23	46	403.7	1.0	.78	.78	221	124	112	14
24	48	404.738	1.0	.78	.78	220	124	112	14

1.14878	Γ∘F
1.0515	∘H
214.85	TS
115.25	TM
55.495	VMA
30.17	PBAR
89.	VWC
11.8	WSG
29.016	MWD
3.54656	AS
96.	TT
-1.9	STAT
0.175	DN
0.989	Y
0.84	CP
100.8	TH2O
50.92737034	VMS
4.7456	VWS
8.524064678	%M
.9147593532	MD
28.07690904	MWS
28.07698904	MWS
30.03029412	PS
73.80402311	VACT
15705.02377	QACT
53.01638533	VSTD
11281.54749	QSTD
99.84176964	∘%I
0.	FHWT
167.1762	T WT
0.	FHGR
0.	FHLB
50.65769352	T GR
4898.530889	T LB

RUN 1

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24 hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0	4.887									
Y 1	2	5.7	.65	.50	.50	205	110	112	2	230	72
2	4	6.6	.70	.54	.54	213	112	112	3	230	70
3	6	7.6	.74	.58	.58	218	112	112	3	230	70
4	8	8.5	1.0	.78	.78	224	112	113	3	230	72
5	10	9.7	1.3	1.0	1.0	227	112	114	3	235	72
6	12	11.2	1.6	1.25	1.25	228	113	118	4	230	73
7	14	12.3	1.7	1.35	1.35	226	112	120	4	235	73
8	16	13.3	1.6	1.25	1.25	223	112	120	5	240	73
9	18	14.9	1.6	1.25	1.25	223	112	122	5	240	73
10	20	16.4	1.6	1.25	1.25	224	112	122	7	235	74
11	22	17.3	1.7	1.33	1.33	219	112	122	7	230	67
12	24	18.8	1.7	1.33	1.33	217	113	124	7	235	74
13	26	19.7	1.7	1.33	1.33	220	112	125	7	240	74
14	28	21.2	1.7	1.33	1.33	220	113	124	10	240	74
15	30 21.675	→ 21.715 22.4	1.7	1.33	1.33	218	114	127	12	240	74
16	32	23.4	1.75	1.4	1.4	215	114	122	3	230	74
17	34 −.040	24.9	1.6	1.25	1.25	210	114	122	5	230	74
18	36	26.5	1.6	1.25	1.25	212	114	124	4	238	75
19	38	27.5	1.65	1.3	1.3	213	113	124	4	240	74
20	40	29.0	1.65	1.3	1.3	210	113	126	5	240	74
21	42	30.1	1.65	1.3	1.3	209	114	124	6	240	74
22	44	31.1	1.4	1.1	1.1	208	114	126	6	240	74
23	46	32.3	1.4	1.1	1.1	209	114	126	6	235	74
24	48 1343	33.552	1.2	.95	.95	210	114	126	6	235	74
		LCF = .009 cfm at 15" Hg									
	.189										
		~~55.684~~						115.25 ✓			
		55.495 ✓	1.14868 ✓	1.0515 ✓		~~215~~		~~115~~			
						214.85 ✓					

F.C

DRY MOLECULAR WEIGHT DETERMINATION

PLANT Gold Bond
DATE 5-21-80
SAMPLING TIME (24-hr CLOCK)
SAMPLING LOCATION Rock Dryer Inlet
SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS) Grabs
ANALYTICAL METHOD Orsat
AMBIENT TEMPERATURE
OPERATOR O'Neill

COMMENTS:

GAS \ RUN	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	2.0	2.0	1.8	1.8	2.0	2.0	1.93	44/100	0.836
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	19.8	17.8	19.7	17.9	19.7	17.7	17.8	32/100	5.696
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)	19.8	0.0	19.7	0.0	19.7	0.0	0.0	28/100	0.000
N_2 (NET IS 100 MINUS ACTUAL CO READING)	80.2	80.2	80.3	80.3	80.3	80.3	80.3	28/100	22.484
								TOTAL	29.016

FIELD DATA

PLANT Gold Bond
DATE 5-22-90
SAMPLING LOCATION Rock Dryer Inlet
SAMPLE TYPE Particulate
RUN NUMBER TWO
OPERATOR O'Neill
AMBIENT TEMPERATURE 100
BAROMETRIC PRESSURE 30.12
STATIC PRESSURE, (P_s) -1.7
FILTER NUMBER (s)

PROBE LENGTH AND TYPE 4'
NOZZLE I.D. .175
ASSUMED MOISTURE, % 7
SAMPLE BOX NUMBER
METER BOX NUMBER 1
METER $\Delta H_@$ 1.81
C FACTOR .99
PITOT TUBE FACTOR
REFERENCE Δp 2
NOTE Leg

READ AND RECORD ALL DATA EVERY 2 MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F
	0 0845	34.768						
X 1	2	35.7	.75	.58	.58	205	90	90
2	4	36.8	.90	.70	.70	212	93	93
3	6	37.6	1.0	.79	.79	214	94	95
4	8	38.6	1.25	.97	.97	218	94	97
5	10	39.7	1.3	1.0	1.0	219	96	100
6	12	41.0	1.4	1.1	1.1	220	96	103
7	14	42.2	1.5	1.15	1.15	218	96	104
8	16	43.2	1.6	1.25	1.25	215	96	108
9	18	44.5	1.6	1.25	1.25	218	99	108
10	20	45.8	1.7	1.3	1.3	219	99	109
11	22	46.8	1.7	1.3	1.3	219	100	112
12	24	47.9	1.7	1.3	1.3	217	100	111
13	26	49.9	1.7	1.3	1.3	219	101	114
14	28 50.826 →	50.985	1.8	1.4	1.4	220	102	114
15	30	52.5	1.8	1.4	1.4	218	104	109
16	32 -.159	53.8	1.8	1.4	1.4	216	104	112
17	34	55.1	1.8	1.4	1.4	217	104	112
18	36	56.6	1.8	1.4	1.4	217	104	116
19	38	57.8	1.75	1.35	1.35	215	106	118
20	40	58.7	1.75	1.35	1.33	217	106	118
21	42	59.8	1.7	1.3	1.3	218	106	120
22	44	61.2	1.4	1.1	1.1	213	106	120
23	46	62.7	1.2	.94	.94	210	106	126
24	48	63.364	1.2	.94	.94	208	106	121

-1.1648	ΓΔP
1.0688	ΔH
215.77	TS
109.88	TM
55.119	VMA
30.12	PBAR
89.	VWC
16.2	WSG
28.97	MWD
3.547	AS
96.	TT
-1.7	STAT
0.175	DN
0.989	Y
0.84	CP
105.2	TH2O
50.97670165	VMS
4.95306	VWS
8.855857515	%M
.9114414249	MD
27.99851243	MWS
27.99851243	MWS
29.995	PS
75.03320665	VACT
15968.56704	QACT
53.56771414	VSTD
11400.28092	QSTD
98.90989706	%I
0.	FHWT
171.2705	T WT
0.	FHGR
0.	FHLQ
51.84812415	T GR
5066.410375	T LQ

Run 2 Rock Dryer Inlet

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24 hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0	63,550									
X1	2	64.4	.70	.53	.55	198	109	109	2	230	69
2	4	65.3	.75	.58	.58	201	108	110	2	220	65
3	6	66.3	.84	.65	.65	209	100	110	2	240	71
4	8	67.2	.93	.72	.72	214	100	110	3	245	70
5	10	68.3	1.05	.82	.82	218	104	112	3	240	77
6	12	69.3	1.1	.87	.87	219	110	114	3	240	73
7	14	70.5	1.2	.94	.94	221	110	115	4	245	73
8	16	71.4	1.2	.94	.94	225	110	116	4	245	72
9	18	72.6	1.3	1.0	1.0	223	110	118	4	240	72
10	20	73.7	1.4	1.1	1.1	220	110	118	6	240	73
11	22	74.8	1.4	1.1	1.1	230	110	120	6	240	73
12	24	76.3	1.4	1.1	1.1	220	111	120	6	240	73
13	26	77.7	1.5	1.15	1.15	217	110	122	6	240	73
14	28	78.6	1.7	1.3	1.3	216	110	121	8	240	74
15	30	79.6	1.7	1.3	1.3	215	112	123	8	237	74
16	32	81.0	1.7	1.3	1.3	215	112	124	8	237	74
17	34	82.4	1.7	1.3	1.3	218	112	124	12	240	74
18	36	83.6	1.6	1.25	1.25	216	112	126	11	235	74
19	38	85.0	1.5	1.15	1.15	213	112	126	11	240	74
20	40	86.2	1.3	1.0	1.0	219	114	126	12	240	74
21	42	87.2	1.2	.94	.94	217	114	126	12	240	74
22	44	88.5	1.0	.79	.79	219	114	127	11	240	74
23	46	89.3	.95	.74	.74	212	114	127	10	285	74
24	48 1037	90.272	.95	.74	.74	210	114	127	10	235	74
		L_{cp} = .007 cfm at 15" Hg					109.88✓				
	-.345										
		55.119✓	1.1648✓		1.0688✓						
						215.77✓					

DRY MOLECULAR WEIGHT DETERMINATION

PLANT Gold Bond

DATE 5-22-80

SAMPLING TIME (24-hr CLOCK) R

SAMPLING LOCATION Rotc Dryer Inlet

SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS) Grabs

ANALYTICAL METHOD Orsat

AMBIENT TEMPERATURE 100°

OPERATOR O'Neill

COMMENTS:

RUN 2 / GAS	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	1.5	1.5	1,8	1.8	1,7	1.7	1.67	44/100	0.735
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	19,0	17.5	19,4	17.6	19,2	17.5	17.53	32/100	5.61
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)	19,0	0.0	19,4	0.0	19,2	0.00	0.00	28/100	0.00
N_2 (NET IS 100 MINUS ACTUAL CO READING)	81.0	81.0	80.6	80.6	80.8	80.8	80.8	28/100	22,62
								TOTAL	28.97

FIELD DATA

PLANT Gold Bond
DATE 5-22-80
SAMPLING LOCATION Rock Dryer Inlet
SAMPLE TYPE Particulate
RUN NUMBER Three
OPERATOR ~~Everett~~ Meeter
AMBIENT TEMPERATURE 100
BAROMETRIC PRESSURE 30.12
STATIC PRESSURE, (P_s) - 1.8
FILTER NUMBER (s)

PROBE LENGTH AND TYPE 4
NOZZLE I.D. .175
ASSUMED MOISTURE, % 10
SAMPLE BOX NUMBER —
METER BOX NUMBER 12
METER $\Delta H_@$ 1.87
C FACTOR .97
PITOT TUBE FACTOR
REFERENCE Δp
NOTE Leg =
LCF =

READ AND RECORD ALL DATA EVERY 2 MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)		GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in.
					DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	
	0	12:35	491.691							
X 1	2		492.4	.51	.39		210	112	113	1.6
2	4		493.2	.59	.44		210	112	113	2.4
3	6		494.1	1.1	.86		211	114	114	2.8
4	8		495.2	1.35	.96		213	116	114	2.
5	~~10~~ 10		496.6	1.4	1.1		214	118	114	3
6	~~12~~ 12		497.7	1.5	1.18		215	119	114	3.2
7	~~14~~ 14		498.9	1.65	1.3		215	120	116	4.1
8	~~16~~ 16		499.9	1.75	1.4		215	122	114	5.
9	18		501.5	1.75	1.4		216	124	114	6.4
10	20		502.8	1.70	1.35		216	125	115	6.2
11	22		504.3	1.8	1.45		216	126	115	8.
12	24		505.7	1.8	1.45		219	127	116	8.
13	26		507.1	1.85	1.45		218	128	116	10.
14	28		508.5	1.9	1.5		218	128	117	11.
15	30		509.5	1.8	1.4		218	129	117	11.
16	32		511.0	1.8	1.4		219	129	116	12.
17	34	Change Filter ↓	512.3	1.7	1.35		218	129	117	13.
18	36	513.367 →	513.574	1.7	1.35		218	130	116	14.
19	38	- .207	515.0	1.7	1.35		216	120	116	2.0
20	40		516.3	1.8	1.4		216	122	116	2.8
21	42		517.5	1.6	1.25		216	124	116	3.0
22	44		518.7	1.5	1.15		215	125	116	3.1
23	46		519.9	1.5	1.15		214	126	116	3.3
24	48		521.160	1.5	1.15		214	126	116	5.0

1.1855	ΓΔP
1.113	ΔH
214.58	TS
120.31	TM
56.332	VMA
30.12	PBAR
66.	VWC
16.	WSG
28.98	MWD
3.547	AS
96.	TT
-1.8	STAT
0.175	DN
0.989	Y
0.84	CP
82.	TH2O
51.16767346	VMS
3.86102	VWS
7.016375925	%M
.9298362408	MD
28.20960192	MWS
28.20960192	MWS
29.98764706	PS
76.02268739	VACT
16179.14833	QACT
55.45356893	VSTD
11801.62854	QSTD
95.90412798	%I
0.	FHWT
169.7233	T WT
0.	FHGR
0.	FHLB
51 [illegible]	T GR
51 [illegible]96054	T LB

-.215

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24 hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0	521.375									
1	2	522.3	.82	.63		206	117	117	1.0	235	72
2	4	523.2	.86	.67		207	118	116	2.0	235	72
3	6	524.3	.87	.67		209	119	116	2.0	230	72
4	8	525.2	1.1	.84		207	120	116	3.0	240	72
5	10	526.4	1.1	.84		210	121	116	3.0	240	72
6	12	527.5	1.25	.97		211	122	117	4.0	240	72
7	14	528.5	1.3	1.0		213	123	117	4.5	245	70
8	16	529.9	1.25	.97		215	124	117	5.0	245	70
9	18	530.8	1.4	1.1		216	125	117	6.0	245	70
10	20	532.1	1.45	1.15		218	126	117	7.0	250	70
11	22	533.3	1.35	1.05		218	126	117	7.5	250	70
12	24	534.3	1.4	1.1		218	126	118	8.0	250	71
13	26	535.5	1.5	1.15		219	126	118	10	250	72
14	28	536.8	1.7	1.3		218	128	118	11	255	72
15	30	538.0	1.7	1.3		218	128	118	12	250	74
16	32	539.1	1.7	1.3		218	129	118	14	250	74
17	34	540.6	1.65	1.3		218	128	118	14	250	74
18	36	541.9	1.65	1.3		218	128	118	15	250	73
19	38	543.1	1.5	1.15		217	130	118	15	255	73
20	40	544.2	1.3	1.0		216	130	118	15	250	74
21	42	545.3	1.3	1.0		213	130	118	15	250	74
22	44	546.3	1.3	1.0		212	131	118	15	250	75
23	46	547.4	1.0	.78		210	130	118	15	250	75
24	48	548.445	.9	.68		205	130	118	14	250	75
	14:50	56.332 ✓				214.58 ✓		120.31 ✓			
			1.1855 ✓								
				1.113 ✓							

DRY MOLECULAR WEIGHT DETERMINATION

PLANT Gold. Bond
DATE 5-22-80
SAMPLING TIME (24-hr CLOCK)
SAMPLING LOCATION Rock. Dryer Inlet
SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS)
ANALYTICAL METHOD
AMBIENT TEMPERATURE 100
OPERATOR O'Neill

COMMENTS:

GAS \ RUN 3	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	1.5	1.5	1.7	1.7	1.4	1.4	1.53	44/100	0.673
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	19.8	18.3	19.7	18.	19.9	18.5	18.27	32/100	5.846
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)	19.8	0.0	19.7	0.0	19.9	0.0	0.0	28/100	
N_2 (NET IS 100 MINUS ACTUAL CO READING)	80.2	80.2	80.3	80.3	80.1	80.1	80.2	28/100	22.456
								TOTAL	28.975

FIELD DATA

PLANT Gold Bond
DATE 5-21-80
SAMPLING LOCATION Rock Dryer Inlet
SAMPLE TYPE Particle Size
RUN NUMBER One
OPERATOR O'Neill
AMBIENT TEMPERATURE 95
BAROMETRIC PRESSURE —
STATIC PRESSURE, (P_s) —
FILTER NUMBER (s) 5F

PROBE LENGTH AND TYPE 4'
NOZZLE I.D. —
ASSUMED MOISTURE, % 10
SAMPLE BOX NUMBER 1
METER BOX NUMBER 1204
METER $\Delta H_@$ 1.81
C FACTOR .97
PITOT TUBE FACTOR —
REFERENCE Δp —
NOTE LCF =

READ AND RECORD ALL DATA EVERY 20 MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft³	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0	33,682									
	20 1408	33,987	1.3	2.6	2.6		110	114	3	—	—
		17.71 (.989) (.305) (30.17 $\frac{2.6}{13.6}$)					= 0.310		X 3. = 0.93		cfm
			.915	(572)							
	level	Series C	%		%Cum.		ECD	X	T. comp.		EAD
	0	615.3	89.32		100		10		1.1		11
	1	24.8	3.60		10.68		6.3				6.9
	2	18.3	2.66		7.08		4.3				4.7
	3	14.3	2.08		4.42		2.8				3.1
	4	10.0	1.45		3.34		1.8				2.0
	5	3.2	0.46		0.89		.94				1.0
	6	0.5	0.07		0.43		.56				0.6
	7	1.5	0.22		0.36		.38				0.4
	8	1.0	0.14		0.14						
		688.9									

FIELD DATA

PLANT Gold Bond
DATE 5-22-80
SAMPLING LOCATION Rock Dryer Inlet
SAMPLE TYPE Particle Size
RUN NUMBER TWO
OPERATOR Robertson
AMBIENT TEMPERATURE 100
BAROMETRIC PRESSURE
STATIC PRESSURE, (P_s) —
FILTER NUMBER (s) Set # 6A

PROBE LENGTH AND TYPE —
NOZZLE I.D. .224
ASSUMED MOISTURE, % 10
SAMPLE BOX NUMBER —
METER BOX NUMBER 1204
METER $\Delta H_@$ 1.81
C FACTOR .97
PITOT TUBE FACTOR —
REFERENCE Δp 0.9
NOTE

READ AND RECORD ALL DATA EVERY _____ MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0 / 1102	90.350									
X-19	20	90.727	1.5	3.0	3.0		111	111	3	—	—
		0.377									
							111				
		17.71(.377)	.989	(30.12 + 3/13.6)		= .385			x3	= 1.16 cfm	
			.911	(571)							
			520.								
	level	Set 6A	%			Cu %		ECD		1.	
	0	4900.5	97.53			100		9.0		1.1	9.9
	1	50.8	1.01			2.47		5.6			6.2
	2	30.0	0.60			1.46		3.75			4.1
	3	24.0	0.48			0.86		2.6			2.9
	4	13.2	0.26			0.38		1.65			1.8
	5	3.4	.07			0.18		.85			.9
	6	1.0	.02			0.05		.5			.6
	7	0.0	0.0			0.03		.33			.36
	8	1.7	.03			0.03					
		5024.6									

FIELD DATA

PLANT Gold Bond
DATE 5-22-80
SAMPLING LOCATION Rock Dryer Inlet
SAMPLE TYPE Part. Size
RUN NUMBER Three
OPERATOR O'Neill
AMBIENT TEMPERATURE
BAROMETRIC PRESSURE
STATIC PRESSURE, (P_s)
FILTER NUMBER (s) SET # 7F-

PROBE LENGTH AND TYPE —
NOZZLE I.D. .224
ASSUMED MOISTURE, % 10
SAMPLE BOX NUMBER
METER BOX NUMBER 1204
METER $\Delta H_@$ 1.87
C FACTOR
PITOT TUBE FACTOR .840
REFERENCE Δp
NOTE L_{CS} =

READ AND RECORD ALL DATA EVERY — MINUTES

TRAVERSE POINT NUMBER	CLOCK TIME (24 hr CLOCK) / SAMPLING TIME, mm	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
	0	548.539									
	20 seconds	548.922	~~3.0~~	3.0			111	110			
		0.383	1.5	3.0			114				
		$17.71\,(.383)\,(.989)\left(30.2\frac{3}{13.6}\right)$									$+.383 \times 3 = 1.15$
			(.930)		(571)						
				531.0							
	level	1F	%		Curve %		ELD	X	V	=	EAD
0		1928.7	97.30		100		9.0	X	1.1		9.9
1		15.0	0.76		2.7		5.6				6.2
2		16.0	0.81		1.94		3.75				4.1
3		9.0	0.45		1.13		2.6				2.9
4		6.1	0.31		0.68		1.65				1.8
5		3.0	0.15		0.37		.85				.9
6		1.9	0.1		.22		.5				.6
7		3.0	0.1		.15		.33				.36
8		0.6	.02		.02						
		1982.3									

A-55

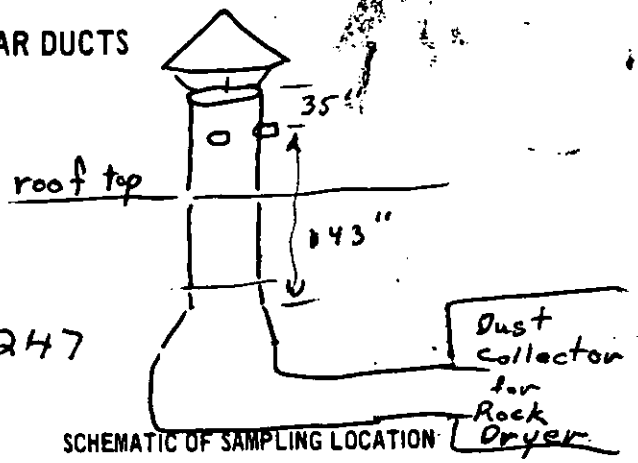
.125 1/8 .625 5/8
.250 2/4 .750 3/4
.375 3/8 .875 7/8
.5 = 1/2

54
89
143

5.2
1.3

TRAVERSE POINT LOCATION FOR CIRCULAR DUCTS

PLANT Gold Bond - EPA
DATE 5-21-80
SAMPLING LOCATION Rock Dryer Outlet
INSIDE OF FAR WALL TO OUTSIDE OF PORT, (DISTANCE A) 31"
INSIDE OF NEAR WALL TO OUTSIDE OF PORT, (DISTANCE B) 3 1/2"
STACK I.D., (DISTANCE A - DISTANCE B) 27 1/2" = 4.1247
NEAREST UPSTREAM DISTURBANCE ~~3~~ 143"
NEAREST DOWNSTREAM DISTURBANCE 35"
CALCULATOR Meeter



SCHEMATIC OF SAMPLING LOCATION

TRAVERSE POINT NUMBER	FRACTION % OF STACK I.D.	STACK I.D.	PRODUCT OF COLUMNS 2 AND 3 (TO NEAREST 1/8 INCH)	DISTANCE B	TRAVERSE POINT LOCATION FROM OUTSIDE OF PORT (SUM OF COLUMNS 4 & 5)
XY 1	.016	27.5"	1/2	3 1/2"	4"
2	.049		1 3/8		4 7/8
3	.085		2 3/8		5 7/8
4	.125		3 3/8		6 7/8
5	.169		4 5/8		8 1/8
6	.220		6		9 1/2
7	.283		7 3/4		11 1/4
8	.375		10 1/4		13 3/4
9	.625		17 1/8		20 5/8
10	.717		19 3/4		23 1/4
11	.78		21 1/2		25
12	.831		22 7/8		26 1/8
13	.875		24 1/8		27 5/8
14	.915		25 1/8		28 5/8
15	.951		26 1/8		29 5/8
16	.984		27		30 1/2

15.58
196.8 .97375
13.76 .86

PRELIMINARY VELOCITY TRAVERSE

PLANT Gold Bond - EPA
DATE 5-21-80
LOCATION Rock Dryer Outlet
STACK I.D. 27½ 28"
BAROMETRIC PRESSURE, in. Hg
STACK GAUGE PRESSURE, in. H_2O .78
OPERATORS Meete / Dabrowski

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
X 1	.42	180
2	.48	193
3	.62	200
4	.74	200
5	.90	200
6	1.0	199
7	1.1	198
8	1.35	199
9	1.5	199
10	1.4	199
11	1.35	198
12	1.3	198
13	.85	197
14	.97	197
15	.65	196
16	.85	196
$\overline{\Delta p}$ = .92		.959
$T_{s\,ave}$	197.5	
AVERAGE		

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
Y 1	.20	187
2	.25	190
3	.35	196
4	.43	198
5	.88	199
6	1.0	199
7	1.2	200
8	1.2	200
9	1.3	200
10	1.3	201
11	1.2	201
12	1.1	201
13	.96	200
14	.88	200
15	.83	200
16	.68	200
AVERAGE		

NOMOGRAPH DATA

PLANT Gold Bond - EPA

DATE 5-21-80

SAMPLING LOCATION Rock Dryer Outlet

CONTROL BOX NO. 1205

CALIBRATED PRESSURE DIFFERENTIAL ACROSS ORIFICE, in. H_2O	$\Delta H_@$	1.89
AVERAGE METER TEMPERATURE (AMBIENT + 20°F), °F	$T_{m_{avg.}}$	100
PERCENT MOISTURE IN GAS STREAM BY VOLUME	B_{wo}	10.0%
BAROMETRIC PRESSURE AT METER, in. Hg	P_m	
STATIC PRESSURE IN STACK, in. Hg ($P_m \pm 0.073$ x STACK GAUGE PRESSURE in in. H_2O)	P_s	
RATIO OF STATIC PRESSURE TO METER PRESSURE	P_s/P_m	1.0
AVERAGE STACK TEMPERATURE, °F	$T_{s_{avg.}}$	197.5
AVERAGE VELOCITY HEAD, in. H_2O	$\Delta p_{avg.}$	.92
MAXIMUM VELOCITY HEAD, in. H_2O	$\Delta p_{max.}$	1.5
C FACTOR	1.0	
CALCULATED NOZZLE DIAMETER, in.	.22	
ACTUAL NOZZLE DIAMETER, in.	.190	
REFERENCE Δp, in. H_2O	1.6	

FIELD DATA

PLANT Gold Bond - EPA
DATE 5-21-80
SAMPLING LOCATION Rock Dryer outlet
SAMPLE TYPE Particulate
RUN NUMBER 1
OPERATOR Meeter / Dobrowski
AMBIENT TEMPERATURE 80°F
BAROMETRIC PRESSURE 30.17
STATIC PRESSURE, (P_s) +.78
FILTER NUMBER (s)

PROBE LENGTH AND TYPE 4'
NOZZLE I.D. .190
ASSUMED MOISTURE, % 10%
SAMPLE BOX NUMBER 1205
METER BOX NUMBER
METER $\Delta H_@$ 1.8945
C FACTOR 1.0
PITOT TUBE FACTOR .84
REFERENCE Δp 1.6
NOTE LCI = .009
LCF = .015

READ AND RECORD ALL DATA EVERY 3 MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft³	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	T
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F		
	0 / 11:45	220.036								
x 1	3	221.3	.53	.63		197	85	83	3.0	
2	6	223.0	.58	.68		199	87	84	3.0	
3	9	224.1	.72	.84		198	90	85	3.5	
4	12	225.6	.85	.985		198	92	86	4.0	
5	15	227.3	.9	1.1		198	93	86	4.5	
6	18	229.1	1.0	1.2		204	94	87	6.0	
7	21	231.2	1.3	1.55		202	97	88	7.0	
8	24	233.2	1.3	1.55		202	99	88	7.0	
9	27	235.2	1.5	1.75		201	101	89	8.0	
10	30	237.1	1.4	1.65		202	102	89	8.0	
11	33	239.8	1.25	1.45		202	102	90	6.5	
12	36	241.0	1.1	1.35		202	102	90	6.0	
13	39	242.8	1.1	1.35		201	102	91	6.0	
14	42	245.0	1.0	1.2		202	101	91	5.0	
15	45	246.2	.94	1.1		201	101	91	5.0	
16	48	247.901	.92	1.05		199	100	91	4.5	
	0									
Y 1	3	249.1	.53	.63		203	94	90	3.0	
2	6	250.5	.53	.63		199	95	92	3.0	
3	9	252.1	.59	.67		199	97	92	3.0	
4	12	253.4	.76	.88		200	97	92	4.0	
5	15	255.0	.76	.88		200	98	92	4.0	
6	18	257.1	.88	1.0		200	100	93	4.5	255 / 84
7	21	258.0	.92	1.1		199	100	93	5.0	255 / 81

1.0198	FAP
1.262	AH
200.41	TS
95.16	TM
55.922	VMA
30.17	PBAR
88.	VWC
16.	WSG
28.95	MWD
4.1247	AS
96.	TT
0.78	STAT
0.19	DN
1.0053	Y
0.84	CP
104.	TH2O
54.08042795	VMS
4.89656	VWS
8.302492498	%M
0.916975075	MD
28.04087707	MWS
28.04087707	MWS
30.22735294	PS
64.64286197	VACT
15997.94476	QACT
47.87794139	VSTD
11848.92869	QSTD
99.59663804	%I
0.	FHWT
0.0927	T WT
0.	FHGR
0.	FHLB
.0264522819	T GR
2.886536081	T LB

Run #1 Rock Dryer Outlet 5-21-80

MISCO

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24 hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
8	24	260.1	1.15	1.35		201	102	93	6.0	260	80
9	27	262.1	1.7	2.0		202	103	94	12.0	250	80
10	30	264.0	1.7	2.0		202	104	94	12.0	250	80
11	33	266.3	1.75	2.05		202	106	94	12.0	255	80
12	36	268.2	1.7	2.0		201	108	94	12.0	245	80
13	39	270.5	1.7	2.0		201	108	94	12.0	245	80
14	42	272.3	1.25	1.45		199	110	95	8.0	250	80
15	45	274.5	1.0	1.15		199	108	96	6.0	250	80
16	48 1340	275.928	1.0	1.15		198	107	95	6.0	250	80
		55.922	~~1.198~~ ≠1.0198	1.262		200.41		95.186			
									.183		

DRY MOLECULAR WEIGHT DETERMINATION

PLANT Gold Bond - EPA

DATE 5-21-80

SAMPLING TIME (24-hr CLOCK)

SAMPLING LOCATION Rock Dryer Outlet

SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS)

ANALYTICAL METHOD Orsat

AMBIENT TEMPERATURE 80°F

OPERATOR

COMMENTS:

GAS \ RUN	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	1.1	1.1	1.0	1.0	1.2	1.2	1.1	44/100	0.484
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	20.6	19.5	20.4	19.4	20.2	19.0	19.3	32/100	6.18
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)	20.6	0.0	20.4	0.0	20.2	0.0	0.0	28/100	0.00
N_2 (NET IS 100 MINUS ACTUAL CO READING)	79.4	00	79.6	79.6	79.8	79.8	79.6	28/100	22.29
								TOTAL	28.95

FIELD DATA

PLANT Gold Bond
DATE 5-22-80
SAMPLING LOCATION Rock Dryer Outlet
SAMPLE TYPE Particulate
RUN NUMBER 2
OPERATOR Meeter
AMBIENT TEMPERATURE 75
BAROMETRIC PRESSURE 30.12
STATIC PRESSURE, (P_s) -.49
FILTER NUMBER (s)

PROBE LENGTH AND TYPE 4' Glass
NOZZLE I.D. .190
ASSUMED MOISTURE, %
SAMPLE BOX NUMBER 1
METER BOX NUMBER
METER $\Delta H_@$ 1.89
C FACTOR 1.
PITOT TUBE FACTOR
REFERENCE Δp 1.
NOTE LCT =
LCF =

READ AND RECORD ALL DATA EVERY 3 MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		VA
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	
	0 / 8:45	276.458							
X 1	3	277.6	.37	.45		196	77	77	2
2	6	279.3	.48	.55		201	79	77	2
3	9	280.3	.58	.66		201	82	78	3
4	12	281.8	.70	.82		202	85	80	3
5	15	283.5	.90	.88	1.05	202	89	81	4
6	18	285.0	1.2	1.4		202	92	82	6
7	21	287.3	1.25	1.45		203	95	83	6
8	24	289.6	1.4	1.65		203	99	85	7
9	27	291.2	1.55	1.75		202	101	86	7
10	30	293.6	1.55	1.75		202	102	86	7
11	33	295.6	1.35	1.6		202	103	87	7
12	36	297.6	1.25	1.45		202	103	88	6
13	39	299.3	1.1	1.3		202	103	89	6
14	42	301.3	.98	1.15		202	103	90	5
15	45	302.8	.93	1.08		203	102	90	4
16	48	304.524	.94	1.1		204	102	91	4
Y 1	3	306.1	.45	.52		203	90	88	2
2	6	307.7	.45	.52		203	90	90	2
3	9	308.3	.54	.625		203	92	90	3
4	12	309.5	.58	.66		203	92	90	3
5	15	311.0	.58	.66		203	92	90	3
6	18	312.5	.60	.79		203	92	90	4
7	21	313.9	.77	.90		203	92	89	4

0.99673	ΓΔP
1.1995	ΔH
201.97	TS
90.84	TM
55.813	VMA
30.12	PBAR
104.	VWC
16.5	WSG
28.95	MWD
4.1247	AS
96.	TT
0.49	STAT
0.19	DN
1.0053	Y
0.84	CP
120.5	TH2D
54.30018289	VMS
5.673255	VWS
9.459612788	%M
.9054038721	MD
27.9141724	MWS
27.9141724	MWS
30.15602941	PS
63.47340988	VACT
15708.52642	QACT
46.199887	VSTD
11433.64043	QSTD
103.6335575	%I
0.	FHWT
0.0656	T WT
0.	FHGR
0.	FHLB
.0186433847	T GR
1.827094687	T LB

Rock Dryer Outlet Run #2 5-22-80

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24 hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
8	24	315.9	.86	1.0		203	93	89	4.5	255	75
9	27	318.0	1.45	1.65		203	94	89	7.0	255	76
10	30	320.3	1.7	1.95		203	96	89	10.0	255	76
11	33	322.0	1.7	1.95		203	98	89	10.0	255	76
12	36	324.3	1.6	1.85		202	100	89	10.0	250	78
13	39	326.4	1.4	1.6		201	100	90	9.0	250	78
14	42	328.3	1.4	1.6		200	99	89	8.5	250	78
15	45	330.5	1.3	1.5		199	99	89	7.5	250	78
16	48 1035	332.271	1.2	1.4		199	99	89	7.0	250	79
	V_m =	55.813	✓.99673	1.1995 ✓		202.9 ✓		90.84 ✓			

90.5

DRY MOLECULAR WEIGHT DETERMINATION

PLANT Gold Bond - EPA
DATE 5-22-80
SAMPLING TIME (24-hr CLOCK)
SAMPLING LOCATION Rock Dryer Outlet Run # 2
SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS)
ANALYTICAL METHOD Orsat
AMBIENT TEMPERATURE 75°F
OPERATOR Dobrowski

COMMENTS:

GAS \ RUN	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	1.0	1.0	1.0	1.0	1.2	1.2	1.07	44/100	.469
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	20.2	19.2	20.4	19.4	20.4	19.2	19.27	32/100	6.17
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)	20.2	0.0	20.4	0.0	20.4	0.0	0.0	28/100	0.0
N_2 (NET IS 100 MINUS ACTUAL CO READING)		79.8		79.6		79.6	79.66	28/100	22.31
								TOTAL	28.95

FIELD DATA

PLANT Gold Bond - EPA
DATE 5-22-80
SAMPLING LOCATION Rock Dryer Outlet
SAMPLE TYPE Particulate
RUN NUMBER 3
OPERATOR Meeter FRYE
AMBIENT TEMPERATURE 80
BAROMETRIC PRESSURE 30.12
STATIC PRESSURE, (P_s) -.76
FILTER NUMBER (s)

PROBE LENGTH AND TYPE 4'
NOZZLE I.D. .190
ASSUMED MOISTURE, % 10
SAMPLE BOX NUMBER 120
METER BOX NUMBER
METER $\Delta H_@$ 1.89
C FACTOR 1.0
PITOT TUBE FACTOR
REFERENCE Δp 1.6
NOTE LCI = .0
LCF = .0

READ AND RECORD ALL DATA EVERY 3 MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	
	0 / 1235	332.448							
Y 1	3	33.8	.46	.53	.53	207	86	85	2.5
2	6	35.0	.48	.56	.56	206	88	88	2.5
3	9	36.0	.52	.59	.59	205	90	90	2.0
4	12	37.3	.60	.69	.69	204	92	88	3.0
5	15	38.9	.89	1.00	1.00	204	93	89	4.5
6	18	40.5	.93	1.07	1.07	203	95	89	5.0
7	21	42.2	1.15	1.34	1.34	205	96	90	6.5
8	24	44.0	1.20	1.36	1.36	205	96	90	7.0
9	27	48.4	1.75	2.00	2.00	205	97	90	12.5
10	30	50.8	1.80	2.10	2.10	206	101	89	14.6
11	33	53.1	1.75	2.00	2.00	206	102	89	14.0
12	36	55.3	1.70	1.95	1.95	206	104	89	14.0
13	39	57.4	1.45	1.65	1.65	203	104	89	10.0
14	42	59.4	1.30	1.50	1.50	202	104	89	9.0
15	45	60.4	1.25	1.45	1.45	202	103	90	8.8
16	48	361.6	1.80	2.10	2.10	205	101	89	14.6
	0								
X 1	3	62.9	.44	.50	.50	200	89	89	2.5
2	6	64.2	.52	.60	.60	200	89	89	3.0
3	9	65.7	.69	.80	.80	201	89	88	3.5
4	12	67.3	.81	.95	.95	200	90	87	4.5
5	15	68.9	.88	1.03	1.03	201	90	87	5.0
6	18	70.3	.97	1.12	1.12	201	93	87	6.0
7	21	72.3	1.25	1.45	1.45	202	94	88	7.0

1.0256	ΔΓ
1.2613	ΔH
203.19	TS
92.17	TM
56.293	VMA
30.12	PBAR
98.	VWC
16.3	WSG
28.93	MWD
.1247	AS
96.	TT
0.76	STAT
0.19	DN
1.0053	Y
0.84	CP
114.3	TH2O
54.64347453	VMS
5.381405	VWS
8.965290797	%M
0.910347092	MD
27.95009372	MWS
27.95009372	MWS
30.17588235	PS
65.32127592	VACT
16165.84001	QACT
47.7479316	VSTD
11816.75361	QSTD
100.9075754	%I
0.	FHWT
0.0619	T WT
0.	FHGR
0.	FHLB
.0174813335	T GR
1.720616472	T LB

Run # 3 Rock Dryer Outlet 5-22-80

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24 hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	12120	72.3									
8	24	74.1	1.35	1.57	1.57	202	95	98	9.0	250±20	60±10
9	27	76.2	1.50	1.76	1.76	202	96	99	10.0		
10	30	78.4	1.35	1.56	1.56	202	98	99	9.0		
11	33	80.3	1.30	1.50	1.50	202	99	98	9.0		
12	36	82.0	1.20	1.36	1.36	203	99	98	8.0		
13	39	83.8	1.10	1.26	1.26	203	99	99	7.0		
14	42	85.5	.90	1.03	1.03	203	99	89	5.0		
15	45	87.2	.86	1.00	1.00	203	99	89	5.0		
16	48	388.741	.85	.98	.98	203	99	89	5.0		
	End Time 14115										
		56.293 =									
							92.17 =				
		1.02 =	1.0258 =			203.19 =					
				1.2613 =							

DRY MOLECULAR WEIGHT DETERMINATION

PLANT Gold Bond

DATE 5-22-80

SAMPLING TIME (24-hr CLOCK) 0930

SAMPLING LOCATION Rock Dryer Outlet

SAMPLE TYPE (BAG, INTEGRATED, CONTINUOUS)

ANALYTICAL METHOD Orsat

AMBIENT TEMPERATURE 80

OPERATOR

COMMENTS:

GAS \ RUN	1		2		3		AVERAGE NET VOLUME	MULTIPLIER	MOLECULAR WEIGHT OF STACK GAS (DRY BASIS) M_d, lb lb-mole
	ACTUAL READING	NET	ACTUAL READING	NET	ACTUAL READING	NET			
CO_2	1.0	1.0	~~1.0~~ .9	.9	1.2	1.2	1.03	44/100	0.453
O_2 (NET IS ACTUAL O_2 READING MINUS ACTUAL CO_2 READING)	20.1	19.1	20.0	19.1	20.4	19.2	19.13	32/100	6.122
CO (NET IS ACTUAL CO READING MINUS ACTUAL O_2 READING)	20.1	0.0	20.0	0.0	20.4	0.0	0.00	28/100	0.00
N_2 (NET IS 100 MINUS ACTUAL CO READING)	79.9	79.9	80.0	80.0	79.6	79.6	79.83	28/100	22.352
								TOTAL	28.93

FIELD DATA

PLANT Gold Bond
DATE 5-21-80
SAMPLING LOCATION Rock Dryer outlet
SAMPLE TYPE Part size
RUN NUMBER
OPERATOR Dekoski
AMBIENT TEMPERATURE
BAROMETRIC PRESSURE
STATIC PRESSURE, (P_s)
FILTER NUMBER (s)

PROBE LENGTH AND TYPE
NOZZLE I.D. .181
ASSUMED MOISTURE, % 10
SAMPLE BOX NUMBER
METER BOX NUMBER
METER $\Delta H_@$
C FACTOR 1.0
PITOT TUBE FACTOR
REFERENCE Δp 1.95
NOTE

READ AND RECORD ALL DATA EVERY 5 MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	~~1300~~ 1300	419.648									
	5	423	1.05	1.0			87	90	3		
	10	25.1	1.05	1.0			91	90	3		
	15	27.9	1.05	1.0			97	92	3		
	20	30.5	1.05	1.0			101	94	3		
	25	33.3	1.05	1.0			106	96	3		
	30	36.1	1.05	1.0			108	98	3		
	35	39.1	1.05	1.0			111	101	3		
	40	41.7	1.05	1.0			113	103	3		
	45	45.0	1.05	1.0			113	104	3		
	50	47.2	1.05	1.0			114	105	3		
	55	50.1	1.05	1.0			116	106	3		
	60	452.897	1.05	1.0			1.4	107	3		
	1400										
		33,249		1.0			102.4				
		17.71 (1.0) (33,249) (30.17 $\frac{1.0}{515.4}$)							= 34,533	÷ 60 =	.576
			.917	562.4							
				515.7							

SUMMARY
RECORD OF VISIBLE EMISSIONS

Type of Plant Gypsum Building Products Date _____

Company Name GOLD BOND Bldg. PRODUCTS Hours of Observation _____

Plant Address Wilmington, N. Carolina Observer _____

Type of Discharge STACK OTHER _____

Discharge Location ROCK DRIER OUTLET

Height of Point of Discharge ~8'

Observer's Location:

Distance to Discharge Point ~15'

Height of Observation Point 4'

Direction from Discharge Point South of Stack

Background Description Clear Blue Sky ; Smoke stack

Weather: (Clear) Overcast Partly Cloudy Other _____ Sky Color Blue

Wind Direction Out of West Wind Velocity 5-10 mi/hr

Plume Description:

Detached: Yes No

Color: Black (White) Other _____

Plume Dispersion Behavior: Looping Coning Fanning

Lofting Fumigating Other _____

Estimated Distance Plume Visible 5'

RECORD OF VISIBLE EMISSIONS

Run 1 :
Rock Drier

Company Name Gold Bond Date 5-21-80
Plant Address Wilmington, N. Carolina Observer David Ralston
Stack Location Rock Drier Outlet Observer's Location
Weather Conditions Clear

	TIME					COMMENTS
HR	MIN	SECONDS				
		00	15	30	45	
	30	●				
	31					
	32					
	33					
	34					
	35					
	36					
	37					
	38					
	39					
	40					
	41					
	42					
	43					
	44					
	45					
	46					
	47					
	48					
	49					
	50					
	51					
	52					
	53					
	54					
	55					
	56					
START 1157	57	0	5	0	0	Occasional puffs of low opacity
	58	0	5	0	0	& short duration
	59	0	5	5	0	

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Bldg Products Date 5-21-80

Plant Address Wilmington, N. Carolina Observer David Ralston

Stack Location Rock Dryer Observer's Location South of Stack

Weather Conditions Clear

HR	MIN	TIME SECONDS 00	15	30	45	COMMENTS
12	00	0	5	0	0	
	01	0	5	0	0	
	02	0	5	0	0	
	03	0	5	0	0	
	04	0	5	5	0	
	05	0	5	0	0	
	06	5	5	0	0	
	07	0	5	0	5	
	08	0	5	0	0	
	09	0	5	0	0	
	10	0	5	0	0	
	11	5	5	0	0	
	12	0	5	0	0	
	13	0	5	0	0	
	14	0	5	0	0	During a 1 minute period;
	15	0	5	0	0	3 puffs occur. Very low opacity
	16	0	5	0	0	& a duration of less than 1 second.
	17	5	5	0	0	The puff is barely discernable.
	18	0	5	0	0	
	19	0	5	0	0	
	20	0	5	0	0	
	21	0	5	0	0	
	22	0	5	0	0	
	23	0	5	0	0	
	24	0	5	5	0	
	25	5	5	0	0	
	26	0	0	0	0	
	27	0	5	0	0	
	28	0	5	0	0	
	29	0	5	0	0	

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Bldg. Products Date 5-21-80

Plant Address Wilmington N. Carolina Observer David Ralston

Stack Location Rock Drier Observer's Location South of Stack

Weather Conditions Clear

TIME HR	MIN	SECONDS 00	15	30	45	COMMENTS
12	30	0	5	5	0	
	31	0	5	5	0	
	32	5	0	5	0	
	33	5	0	5	0	
	34	5	0	5	0	
	35	5	0	5	0	
	36	0	0	0	0	
	37	5	0	0	0	
	38	5	0	0	0	
	39	5	0	5	0	
	40	0	0	5	0	
	41	0	0	0	0	
	42	0	0	5	0	
	43	0	0	5	0	
	44	0	0	5	0	
	45	0	0	5	0	
	46	0	0	5	0	
	47	0	0	5	0	
	48	5	0	5	0	
	49	0	0	5	0	
	50	0	0	0	0	
	51	0	0	5	0	
	52	0	0	5	0	
	53	0	0	5	0	
	54	0	0	5	0	
	55	0	0	5	0	
	56	0	0	5	0	
	57	0	0	0	0	
	58	0	0	5	0	
	59	0	0	0	0	

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Bldg. Products Date 5-21-80

Plant Address Wilmington, N. Carolina Observer David Ralston

Stack Location Rock Drier Outlet Observer's Location South of Stack

Weather Conditions Clear

HR	MIN	TIME SECONDS 00	15	30	45	COMMENTS
13	00	0	0	0	0	
	01	0	0	5	0	
	02	0	0	5	0	
	03	5	0	0	0	
	04	0	0	5	0	
	05	0	0	0	0	
	06	0	0	0	0	
	07	0	0	5	0	
	08	0	0	0	0	
	09	0	5	0	0	
	10	0	0	0	0	
	11	0	0	0	0	
	12	0	5	0	0	
	13	0	0	0	0	
	14	0	0	0	0	
	15	0	0	0	0	
	16	0	5	0	0	
	17	0	0	0	0	
	18	0	0	0	0	
	19	0	0	0	0	
	20	0	0	0	0	
	21	0	0	5	0	
	22	0	0	5	0	
	23	0	0	5	0	
	24	0	0	5	0	
	25	0	0	0	5	
	26	0	0	0	0	
	27	0	0	0	5	
	28	0	0	0	5	
	29	0	0	0	0	

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Bldg. Products Date 5-21-80

Plant Address Wilmington N. Carolina Observer David Ralston

Stack Location Rock Drier Outlet Observer's Location South of Stack

Weather Conditions Clear

TIME HR	MIN	SECONDS 00	15	30	45
1300	30	0	0	0	0
	31	0	0	0	0
1332	32	0	0	5	0
	33				
	34				
	35				
	36				
	37				
	38				
	39				
	40				
	41				
	42				
	43				
	44				
	45				
	46				
	47				
	48				
	49				
	50				
	51				
	52				
	53				
	54				
	55				
	56				
	57				
	58				
	59				

COMMENTS

# of obs = 384
0 = 295
5 = 89
10 = 0

min obs = T - 96
0 = 73.75 min
5 = 22.25 min
96.00

SUMMARY
RECORD OF VISIBLE EMISSIONS

Type of Plant Gypsum Wall Board Date 5/22/80

Company Name Gold Bond Hours of Observation 96 minutes

Plant Address Wilmington, NC Observer Nancy E. Robertson

Type of Discharge (STACK) OTHER _____

Discharge Location Rock Dryer outlet

Height of Point of Discharge ~8 ft

Observer's Location:

Distance to Discharge Point 50'

Height of Observation Point ~6'

Direction from Discharge Point SE

Background Description cloudy sky

Weather: Clear Overcast (Partly Cloudy) Other _____ Sky Color _____

Wind Direction out of SE Wind Velocity 5-10 mi/hr

Plume Description:

Detached: Yes No

Color: Black (White) Other _____

Plume Dispersion Behavior: Looping Coning Fanning

Lofting Fumigating Other _____

Estimated Distance Plume Visible ~5 ft

Run #2

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Bldg Supplies Date 5-22-80

Plant Address Wilmington NC Observer Nancy E Robertson

Stack Location Rock Dryer Outlet Observer's Location 50' SE of stack

Weather Conditions partly cloudy

TIME						COMMENTS
HR	MIN	SECONDS				Run #2
		00	15	30	45	
	30					
	31					
	32					
	33					
	34					
	35					
	36					
	37					
	38					
	39					
	40					
	41					
	42					
	43					
	44					
	45					
	46					
	47					
	48					
0849	49	0	0	0	0	
	50	0	5	0	0	
	51	0	0	0	0	
	52	0	0	0	5	
	53	0	0	0	0	
	54	5	0	0	0	
	55	0	0	0	0	
	56	0	0	0	0	
	57	0	0	0	0	
	58	0	0	0	0	
	59	5	0	0	0	

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Bldg. Supplies Date 5/22/80

Plant Address Wilmington NC Observer Nancy

Stack Location Back Dryer Outlet Observer's Location 50' SE of stack

Weather Conditions partly cloudy

TIME						COMMENTS
HR	MIN	SECONDS 00	15	30	45	
@ 0900	30	0	0	0	0	Run #2
	31	0	0	5	0	
	32	5	0	0	0	
	33	0	0	0	0	
	34	0	0	0	0	
	35	0	0	0	0	
	36	0	0	0	0	
	37	0	0	0	0	
	38	0	0	0	0	
	39	0	0	0	0	
	40	0	0	0	0	
	41	0	0	0	0	
	42	0	0	0	0	
	43	5	0	0	0	
	44	0	0	0	0	
	45	0	0	0	0	
	46	0	0	0	0	
	47	0	0	5	0	
	48	0	0	0	0	
	49	0	0	0	0	
	50	0	0	0	0	
	51	0	0	0	0	
	52	0	0	0	0	
	53	0	0	0	0	
	54	0	0	0	0	
	55	0	0	0	0	
	56	0	0	0	0	
	57	0	0	0	0	
	58	0	0	0	0	
0930	59	0	0	0	0	

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Bldg. Supplie Date 5-22-80

Plant Address Wilmington NC Observer Nancy Roberson

Stack Location Rock Dryer Outlet Observer's Location 50' SE of Stack

Weather Conditions Partly Cloudy

TIME HR	MIN	SECONDS 00	15	30	45	COMMENTS
0930 1000	00	0	0	5	0	Run #2
	01	0	0	0	0	
	02	0	0	0	0	
	03	0	0	0	0	
	04	0	0	0	0	
	05	0	0	0	0	
	06	0	0	0	0	
	07	0	0	0	0	
	08	0	0	0	0	
	09	0	0	5	0	
	10	0	0	0	0	
	11	0	0	0	0	
	12	0	0	0	0	
	13	0	0	0	0	
	14	0	0	0	0	
	15	0	0	0	0	
	16	0	0	0	0	
	17	0	0	0	0	
	18	0	0	0	0	
	19	0	0	0	0	
	20	0	0	0	0	
	21	0	0	0	0	
	22	0	0	0	0	
	23	0	0	0	0	
	24	0	0	0	0	
	25	0	0	0	0	
	26	0	0	0	0	
	27	0	0	0	5	
	28	0	0	0	0	
	29	0	5	0	0	

112

RECORD OF VISIBLE EMISSIONS

Company Name Eold Bank Bldg. Supplie Date 5-22-80

Plant Address Wilmington, NC Observer Nancy E. Robertson

Stack Location Rock Observer's Location 50' SE of stack

Weather Conditions partly cloudy

TIME HR	MIN	SECONDS 00	15	30	45	COMMENTS
1200	30	0	0	0	0	Run #2
	31	0	0	0	0	
	32	0	0	0	0	
	33	0	0	0	0	
	34	0	0	0	0	
	35	0	0	0	0	
	36	0	0	0	0	
	37	0	0	0	0	
	38	0	5	0	0	
	39	0	0	0	0	
	40	0	0	0	0	
	41	0	0	0	0	
	42	0	0	0	0	
	43	0	0	0	0	
	44	5	0	0	0	
	45	0	0	0	0	
	46	0	0	0	0	
	47	0	0	0	0	
	48	0	0	0	0	
	49	0	0	0	0	
	50	0	0	0	0	
	51	0	0	5	0	
	52	0	0	0	0	
	53	0	0	0	0	100 minute min
	54	0	0	0	0	0% 385 96.25
	55	0	0	0	0	5% 15 3.75
	56	0	0	0	0	400
1028	57	0	0	0	0	
~~1058~~	58	0	0	0	0	
	59					

385
15

SUMMARY
RECORD OF VISIBLE EMISSIONS

Type of Plant Gypsum Wall Board Date 5-22-80

Company Name Gold Bond Bldg. Supplies Hours of Observation 96 min

Plant Address Wilmington NC Observer Nancy Robertson

Type of Discharge (STACK) OTHER _____

Discharge Location Rock Dryer Outlet

Height of Point of Discharge ~8 ft.

Observer's Location:

Distance to Discharge Point 50'

Height of Observation Point ~6'

Direction from Discharge Point South

Background Description cloudy sky

Weather: Clear Overcast (Partly Cloudy) Other _____ Sky Color _____

Wind Direction out of SE Wind Velocity 5-10 mi/hr

Plume Description:

Detached: Yes (No)

Color: Black (White) Other _____

Plume Dispersion Behavior: Looping Coning Fanning

Lofting Fumigating Other _____

Estimated Distance Plume Visible ~5 ft.

Run #3

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Bldg Supplies Date 5-22-80

Plant Address Wilmington NC Observer Nancy Robertson

Stack Location Rock Dryer Outlet Observer's Location 50' South of stack

Weather Conditions partly cloudy

TIME						COMMENTS
HR	MIN	SECONDS 00	15	30	45	Run #3
1230	30	0	0	0	0	
	31	0	0	0	0	
	32	0	0	0	0	
	33	0	0	0	0	
	34	0	0	0	0	
	35	0	0	0	0	
	36	0	0	0	0	
	37	0	0	0	0	
	38	0	0	0	0	
	39	0	0	0	0	
	40	0	0	0	0	
	41	0	0	0	0	
	42	0	0	0	0	
	43	0	0	0	0	
	44	0	0	0	0	
	45	0	0	0	0	
	46	0	0	0	0	
	47	0	0	0	0	
	48	0	0	0	0	
	49	0	0	0	0	
	50	0	0	0	0	
	51	0	0	0	0	
	52	0	0	0	0	
	53	0	0	0	0	
	54	0	0	0	0	
	55	0	0	0	0	
	56	0	0	0	0	
	57	0	0	0	0	
	58	0	0	0	0	
	59	0	0	0	0	

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Bldg. Supplies Date 5/22/80

Plant Address Wilmington, NC Observer Nancy Robertson

Stack Location Rock Dryer Outlet Observer's Location 50' South of Stack

Weather Conditions partly cloudy

TIME HR	MIN	SECONDS 00	15	30	45	COMMENTS
1300	00	0	0	0	0	Run #3
	01	0	0	0	0	
	02	0	0	0	0	
	03	0	0	0	0	
	04	0	0	0	0	
	05	0	0	0	0	
	06	0	0	0	0	
	07	0	0	0	0	
	08	0	0	0	0	
	09	0	0	0	0	
	10	0	0	0	0	
	11	0	0	0	0	
	12	0	0	0	0	
	13	0	0	0	0	
	14	0	0	0	0	
	15	0	0	0	0	
	16	0	0	0	0	
	17	0	0	0	0	
	18	0	0	0	0	
	19	0	0	0	0	
	20	0	0	0	0	
	21	0	0	0	0	
	22	0	0	0	0	
	23	0	0	0	0	
	24	0	0	0	0	
	25	0	0	0	0	
	26	0	0	0	0	
	27	0	0	0	0	
	28	0	0	0	0	
	29	0	0	0	0	

Change ports at outlet

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Building Date 5/22/80

Plant Address Wilmington NC Observer Nancy Robertson

Stack Location Rock Dryer Outlet Observer's Location 50' South of stack

Weather Conditions partly cloudy

TIME						COMMENTS
HR	MIN	SECONDS 00	15	30	45	Run #3
13	30	0	0	0	0	
	31	0	0	0	0	
	32	0	0	0	0	
	33	0	0	0	0	
	34	0	0	0	0	
	35	0	0	0	0	
	36	0	0	0	0	
	37	0	0	0	0	
	38	0	0	0	0	
	39	0	0	0	0	
	40	0	0	0	0	
	41	0	0	0	0	
	42	0	0	0	0	
	43	0	0	0	0	
	44	0	0	0	0	
	45	0	0	0	0	
	46	0	0	0	0	
	47	0	0	0	0	
	48	0	0	0	0	
	49	0	0	0	0	
	50	0	0	0	0	
	51	0	0	0	0	
	52	0	0	0	0	
	53	0	0	0	0	
	54	0	0	0	0	
	55	0	0	0	0	
	56	0	0	0	0	
	57	0	0	0	0	
	58	0	0	0	0	
	59	0	0	0	0	

RECORD OF VISIBLE EMISSIONS

Company Name Gold Bond Building Prod Date 5/22/80

Plant Address Wilmington, NC Observer Nancy Robertson

Stack Location Roof Dryer outlet Observer's Location 50' South of stack

Weather Conditions partly cloudy

TIME HR	MIN	SECONDS 00	15	30	45	COMMENTS
14	00	0	0	0	0	Run #3
	01	0	0	0	0	
	02	0	0	0	0	
	03	0	0	0	0	
	04	0	0	0	0	
	05	0	0	0	0	
	06	0	0	0	0	
	07	0	0	0	0	
	08	0	0	0	0	
	09	0	0	0	0	
	10	0	0	0	0	
	11	0	0	0	0	
	12	0	0	0	0	
	13	0	0	0	0	
	14	0	0	0	0	outlet finished 2:15 PM
	15	0	0	0	0	
	16	0	0	0	0	
	17	0	0	0	0	
	18	0	0	0	0	
	19	0	0	0	0	
	20	0	0	0	0	
	21	0	0	0	0	
	22	0	0	0	0	
	23	0	0	0	0	
	24	0	0	0	0	
	25	0	0	0	0	
	26	0	0	0	0	inlet test finished 2:27 PM
	27					Total 117 minutes
	28					0% 468
	29					TOTAL 468

Run 1

SUMMARY
RECORD OF VISIBLE EMISSIONS

Type of Plant Gypsum — Date 5/27/80

Company Name Gold Bond — Hours of Observation one

Plant Address Wilmington, N.C. — Observer T. Davis

Type of Discharge STACK OTHER _____

Discharge Location BTucco Baghouse

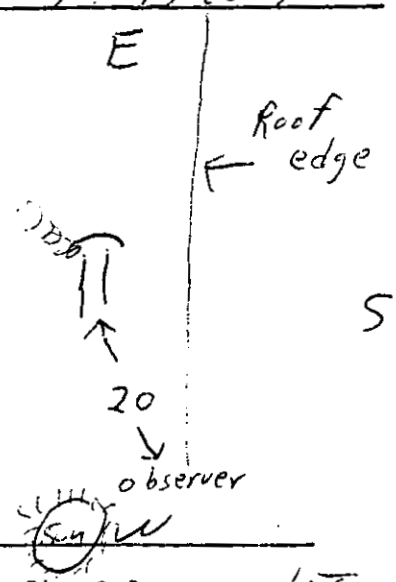
Height of Point of Discharge 15 ft. flat roof

Observer's Location:

Distance to Discharge Point 20'

Height of Observation Point roof level

Direction from Discharge Point West



Background Description Hat of stack

Weather: (Clear) Overcast Partly Cloudy Other _____ Sky Color white

Wind Direction Northeast Wind Velocity _____ mi/hr

Plume Description:

Detached: Yes (No)

Color: Black (White) Other _____

Plume Dispersion Behavior: Looping Coning (Fanning)

Lofting Fumigating Other _____

Estimated Distance Plume Visible 3 ft

ER-AQ-39 (5/73)

Commonwealth of Pennsylvania
Department of Environmental Resources
Bureau of Air Quality & Noise Control

File No. _____

VISIBLE EMISSIONS OBSERVATION RECORD

Description of Source: Stucco baghouse stack

Observers Name: Thomas Davis

Owner of Source: Gold Bond

Title:

Location of Source: Wilmington N.C.

Date: 5/27/80

PART OF MINUTES

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

Hours:

From 1:30 PM to 2:30 PM

OBSERVERS LOCATION

Street Roof Top

Distance to Source 20 ft.

Wind Direction Northeast

Wind Velocity

Weather Conditions clear cloudless

Plume Color white

SUMMARY

Opacity	No. of Readings	Total Time Minutes
<20%	240	60
>20%	0	0
>60%	0	0

	min
0% - 76	19
5% - 155	38.75
10% - 8	2.0
15% - 1	0.25
Total = 240	

Other Comments:

Run 2

SUMMARY
RECORD OF VISIBLE EMISSIONS

Type of Plant _____ Date 5/27/80

Company Name Gold Bond Hours of Observation one

Plant Address Wilmington NC Observer T. Davis

Type of Discharge STACK OTHER _____

Discharge Location Stucco Baghouse

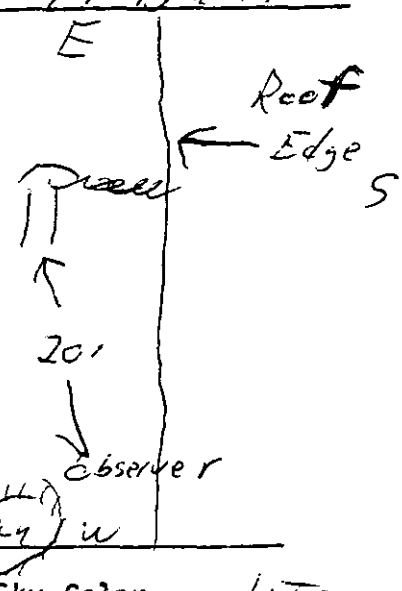
Height of Point of Discharge 15' from roof

Observer's Location:

Distance to Discharge Point 20'

Height of Observation Point roof level

Direction from Discharge Point west



Background Description Hat of Stack in

Weather: (Clear) Overcast Partly Cloudy Other _____ Sky Color white

Wind Direction Southwest Wind Velocity _____ mi/hr

Plume Description:

Detached: Yes (No)

Color: Black (White) Other _____

Plume Dispersion Behavior: Looping Coning (Fanning)

Lofting Fumigating Other _____

Estimated Distance Plume Visible 3FT.

ER-AQ-39 (5/73)

Commonwealth of Pennsylvania
Department of Environmental Resources
Bureau of Air Quality & Noise Control

File No. _____

VISIBLE EMISSIONS OBSERVATION RECORD

Description of Source: Bag house (57000) Observers Name: Thomas Dodd

Owner of Source: Cold Bond Title:

Location of Source: Wilmington N.C. Date: 5/21/80

PART OF MINUTES

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

Hours:

From 2:40 PM to 3:40 PM

OBSERVERS LOCATION

Street Roof top

Distance to Source 20 ft

Wind Direction South west

Wind Velocity

Weather Conditions clear

Plume Color white

SUMMARY

Opacity	No. of Readings	Total Time Minutes
<20%	240	60
>20%	0	0
>60%	0	0
0 %	- 92	23
5	- 147	36.75
10	- 1	0.25
15	- 0	0.0
	Total = 240	

Other Comments:

Run 3

SUMMARY
RECORD OF VISIBLE EMISSIONS

Type of Plant _____ Date 5/27/80

Company Name Gold Bond Hours of Observation one

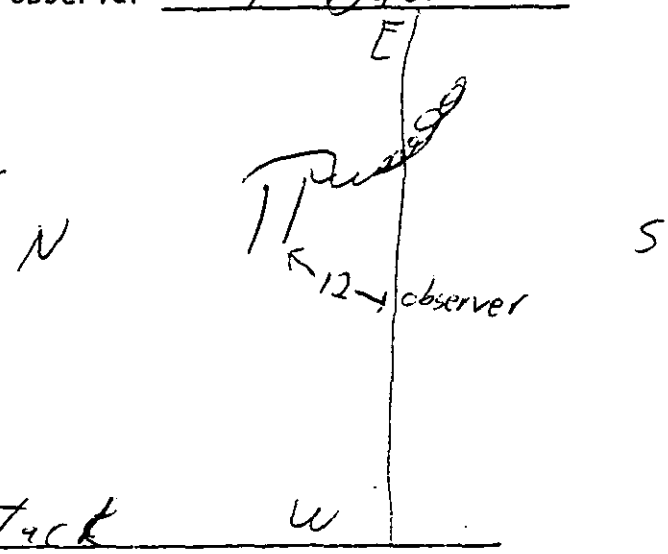
Plant Address Wilmington NC Observer I. Davis

Type of Discharge STACK OTHER _____

Discharge Location Stucco Baghouse

Height of Point of Discharge 15 FT. from roof

Observer's Location:



Distance to Discharge Point 12 FT.

Height of Observation Point roof level

Direction from Discharge Point SW

Background Description Hgt of stack W

Weather: (Clear) Overcast Partly Cloudy Other _____ Sky Color white

Wind Direction Southeast Wind Velocity _____ mi/hr

Plume Description:

Detached: Yes (No)

Color: Black (White) Other _____

Plume Dispersion Behavior: Looping Coning (Fanning)

Lofting Fumigating Other _____

Estimated Distance Plume Visible _____

ER-AQ-39 (5/73)

Commonwealth of Pennsylvania
Department of Environmental Resources
Bureau of Air Quality & Noise Control

File No. _____

VISIBLE EMISSIONS OBSERVATION RECORD

Description of Source: Stucco Bag House

Observers Name: Thomas Davis

Owner of Source: Gold Bond

Title:

Location of Source: Wilmington, NC

Date: 5/27/80

PART OF MINUTES

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

Hours:

From 4:05 to 5:05

OBSERVERS LOCATION

Street Roof Top

Distance to Source 12 FT.

Wind Direction South East

Wind Velocity

Weather Conditions clear, cloudless

Plume Color White

SUMMARY

Opacity	No. of Readings	Total Time Minutes
<20%	240	60
>20%	0	0
>60%	0	0
0 %	65	16.25
5 %	175	43.75
10 %	0	0.0
	240	

Other Comments:

FUGITIVE EMISSION INSPECTION

Company: Gold Bond Bldg. Supplies
Location: Wilmington NC
Company Rep.: Ray F. Weston

Inspector: Nancy E. Robertson
Affiliation: Ray F. Weston
Date: 5/19/80

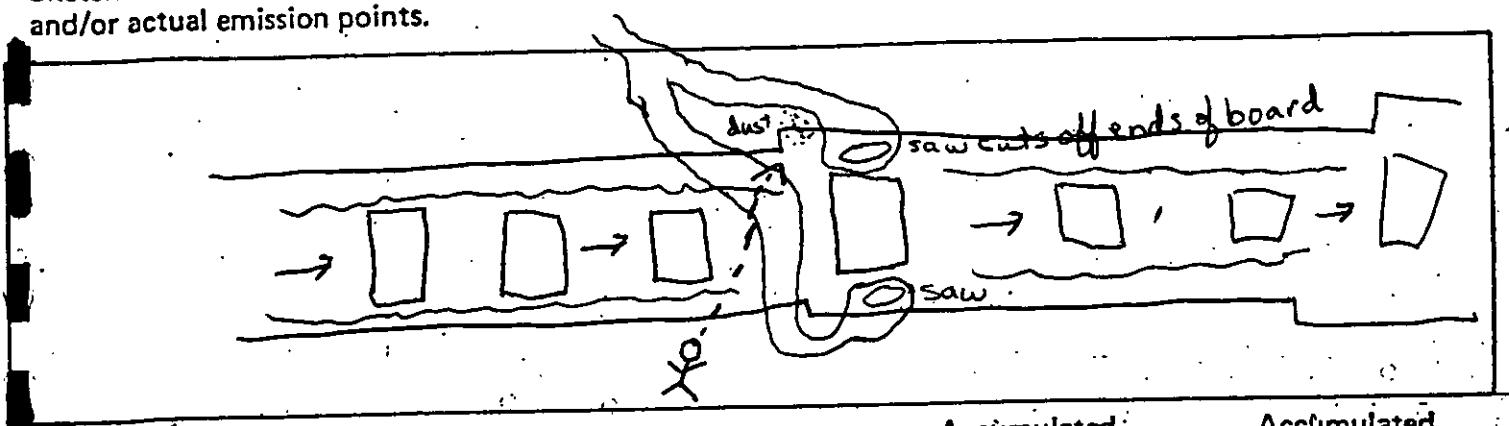
Sky Conditions: NA (Indoors)
Precipitation: NA

Wind Direction: NA (Indoors)
Wind Speed: NA (")

Facility Type: Wall Board emission
Gypsum wall Board

Emission Source: Board end Saw

Sketch emission source, indicate observer position relative to source; indicate potential emission points and/or actual emission points.



OBSERVATIONS

		Time	Accumulated Observation Period (Min: Sec)	Accumulated Emission Time (Min: Sec)
Begin Observation	Run 1	1405	20.0	7 min 55 sec
		1427	20.0	7 min 21 sec
Boards are ½" x 8' x 4'		1452	20.0	7 min 16 sec
				22. 32 sec
estimated distance emission is visible is 4"				
	Run 2	1530	20.0	6 min 40 sec
		1555	20.0	8 min 23 sec
		1618	20.0	6 min. 45 sec
				21 min 48 sec
End Observation		1640		

INSPECTION

Company: Gold Bond Bldg. Supplies
Location: Wilmington NC
Company Rep.: Ray F. Weston

Inspector: Nancy E. Robertson
Affiliation: Ray F. Weston
Date: 5/20/80

Sky Conditions: NA (Indoors)
Precipitation: NA

Wind Direction: NA (Indoors)
Wind Speed: NA (")

Facility Type: Wall Board emission Gypsum wall Board

Emission Source: Board End Saw

Sketch emission source, indicate observer position relative to source; indicate potential emission points and/or actual emission points.

drawing on preceding page

OBSERVATIONS

	Time	Accumulated Observation Period (Min: Sec)	Accumulated Emission Time (Min: Sec)
Begin Observation: Run 3	0820	20.0	4 min 22 sec
	0842	20.0	4 min 4 sec
Boards are 1/2" x 12' x 4'	0905	20.0	3 min 45 sec
			11 30 sec
Boards come off assembly much slower than Boards on Runs 1+2			
Estimated distance emission is visible is ~4"			
End Observation	0925		

FUGITIVE EMISSION INSPECTION

Company Gold Bond Bldg. Supplies
Location Wilmington NC
Company Rep. Roy F Weston

Inspector Nancy E. Robertson
Affiliation Roy F. Weston
Date 5/20/80

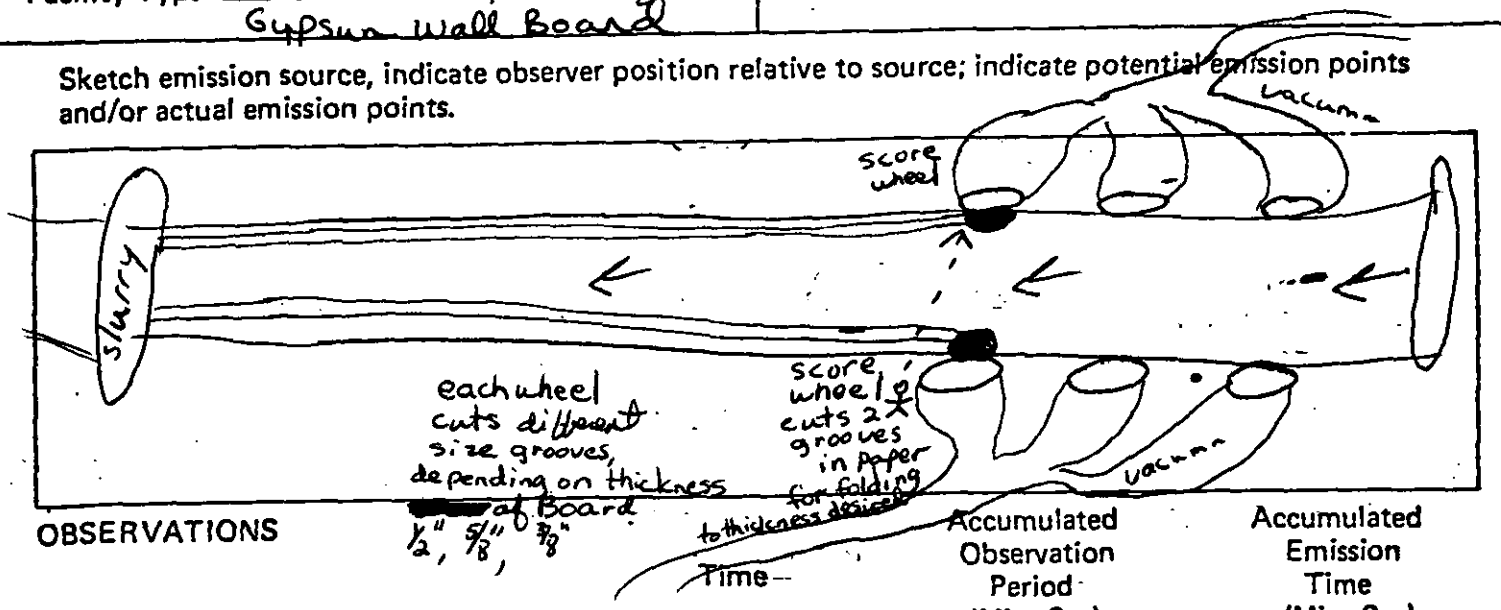
Sky Conditions NA (Indoors)
Precipitation NA

Wind Direction NA (Indoors)
Wind Speed NA (")

Facility Type [redacted] slurry system Gypsum Wall Board

Emission Source score wheel

Sketch emission source, indicate observer position relative to source; indicate potential emission points and/or actual emission points.



OBSERVATIONS	Time	Accumulated Observation Period (Min: Sec)	Accumulated Emission Time (Min: Sec)
Begin Observation — Run 1	1012	20.0	0.0
	1035	20.0	0.0
	1057	20.0	0.0
Run 2	1120	20.0	0.0
	1141	20.0	0.0
	1205	20.0	0.0
Run 3	1226	20.0	0.0
	1246	20.0	0.0
	1307	20.0	0.0
End Observation	1327		

* Throughout the test a particle would be seen bouncing off the paper

FUGITIVE EMISSION INSPECTION

Company: Gold Bond Bldg. Supplies
Location: Wilmington, NC
Company Rep.: Roy F. Weston

Inspector: Nancy E. Robertson
Affiliation: Roy F. Weston
Date: 5/20/80

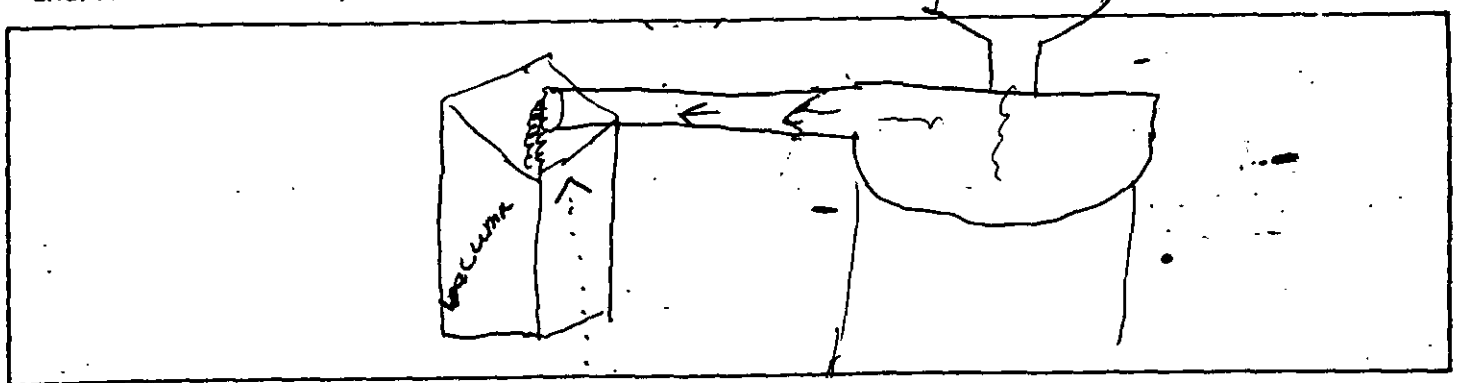
Sky Conditions: NA (Indoors)
Precipitation: NA

Wind Direction: NA (Indoors)
Wind Speed: NA (")

Facility Type: Gypsum & Starch mix Gypsum Wall Board

Emission Source: Admix conveyor

Sketch emission source, indicate observer position relative to source; indicate potential emission points and/or actual emission points.



OBSERVATIONS

		Time	Accumulated Observation Period (Min: Sec)	Accumulated Emission Time (Min: Sec)
Begin Observation	Run 1	1415	20.0	0.0
		1435	20.0	0.0
		1455	20.0	0.0
	Run 2	1515	20.0	0.0
		1535	20.0	0.0
		1555	20.0	0.0
End Observation		1615		

FUGITIVE EMISSION INSPECTION

Company: Gold Bond Bldg. Supplies
Location: Wilmington NC
Company Rep.: Roy F. Weston

Inspector: Nancy E. Robertson
Affiliation: Roy F. Weston
Date: 5/21/80

Sky Conditions: NA (Indoors)
Precipitation: NA

Wind Direction: NA (Indoors)
Wind Speed: NA "

Facility Type: Gypsum + Starch mfg Gypsum wall Board

Emission Source: Admix Conveyor

Sketch emission source, indicate observer position relative to source; indicate potential emission points and/or actual emission points.

drawing on preceding page

OBSERVATIONS

		Time	Accumulated Observation Period (Min: Sec)	Accumulated Emission Time (Min: Sec)
Begin Observation	Run 3	0900	20.0	0.0
		0920	20.0	0.0
		0950	20.0	0.0
End Observation		1010		

INSPECTION

Company: Gold Bond Bldg Supplies
Location: Wilmington NC
Company Rep.: Bay F. Weston

Inspector: Nancy E Robertson
Affiliation: Bay F. Weston
Date: 5/21/80

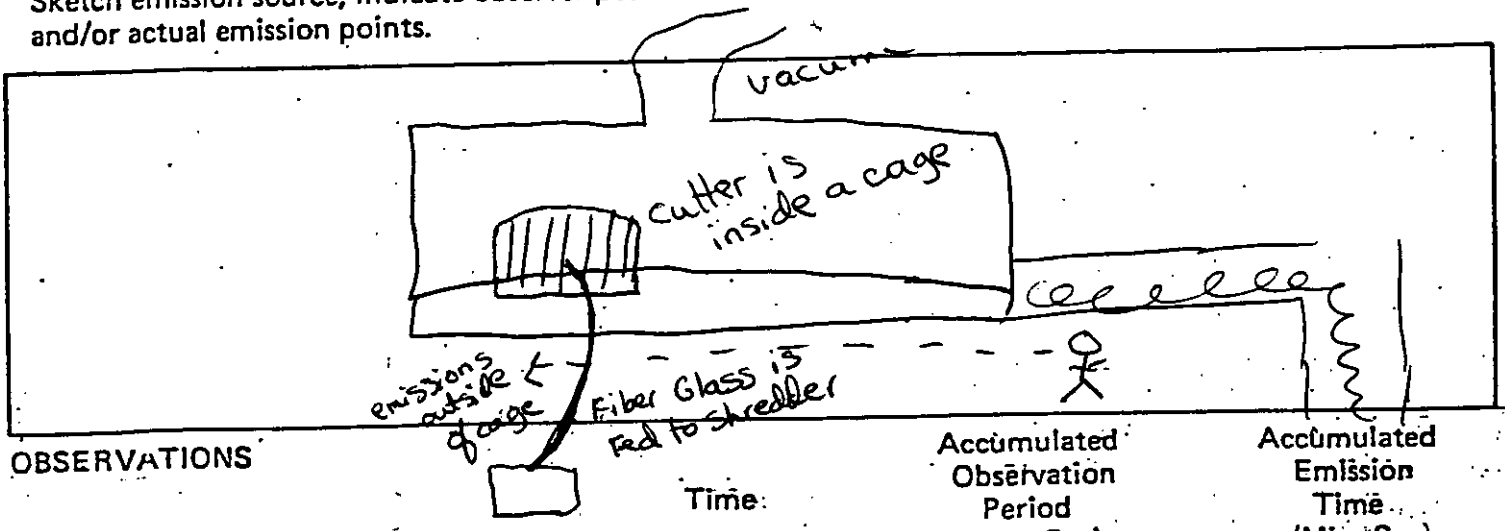
Sky Conditions: NA (Indoors)
Precipitation: NA "

Wind Direction: NA (Indoors)
Wind Speed: NA "

Facility Type: Fire Shield Gypsum wall Board

Emission Source: Fiber Glass Shredder

Sketch emission source, indicate observer position relative to source; indicate potential emission points and/or actual emission points.



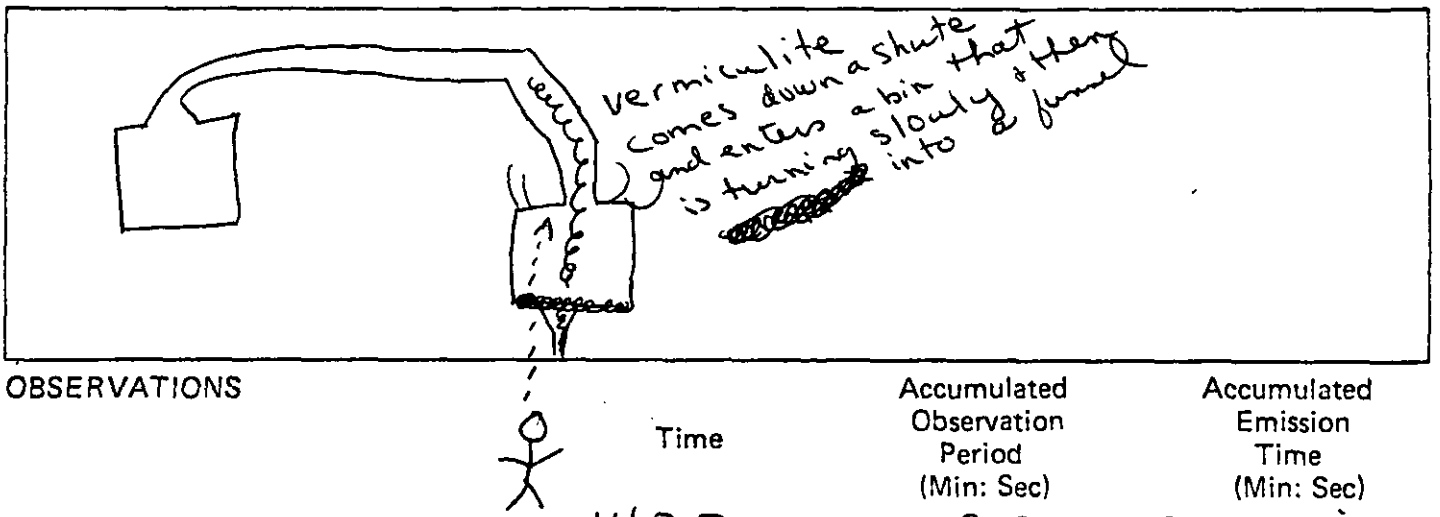
OBSERVATIONS

		Time	Accumulated Observation Period (Min: Sec)	Accumulated Emission Time (Min: Sec)
Begin Observation	Run 1	1245	20.0	2 sec
		1305	20.0	4 sec
		1325	20.0	2 sec
				8 sec
	Run 2	1350	20.0	4 sec
		1410	20.0	5 sec
		1430	20.0	4 sec
				13 sec
	Run 3	1450	20.0	3 sec
		1510	20.0	7 sec
		1530	20.0	3 sec
				13 sec
End Observation		1550		

FUGITIVE EMISSION INSPECTION

Company Gold Bond Bldg Supplies	Inspector Nancy Robertson
Location Wilmington NC	Affiliation Roy F. Weston
Company Rep. Roy F. Weston	Date 5/22/80
Sky Conditions NA (Indoors)	Wind Direction NA (Indoors)
Precipitation NA	Wind Speed NA "
Facility Type Gypsum Wall Board Fire Shield	Emission Source Vermiculite addition

Sketch emission source, indicate observer position relative to source; indicate potential emission points and/or actual emission points.



OBSERVATIONS

	Time	Accumulated Observation Period (Min: Sec)	Accumulated Emission Time (Min: Sec)
Begin Observation	1420	29.0	19.0 min
	1429	total	
End Observation	1449		

* the vermiculite comes down the shute either trickling or heavily during a heavy load the emissions are constant, during a trickle, there are no emissions.

APPENDIX B

LABORATORY REPORTS

ANALYTICAL DATA

PLANT Gold Bond

DATE 5-19-80

SAMPLING LOCATION #2 Calcydnyne

SAMPLE TYPE Particulate

RUN NUMBER One

SAMPLE BOX NUMBER 1

CLEAN UP MAN O'Neill/Frye

COMMENTS:

FRONT HALF

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER

CONTAINER 00979 00958 LABORATORY RESULTS See lab. data. mg

FILTER NUMBER 28042, 43, 44, 45, 46, 47, 48

CONTAINER 00978 _____ mg

FRONT HALF SUBTOTAL _____ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER

CONTAINER _____ _____ mg

ETHER-CHLOROFORM EXTRACTION _____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER

CONTAINER _____ _____ mg

BACK HALF SUBTOTAL _____ mg

TOTAL WEIGHT _____ mg

MOISTURE

IMPINGERS

FINAL VOLUME 634 ml

INITIAL VOLUME 200 ml

NET VOLUME 434 ml

SILICA GEL

FINAL WEIGHT 235 g _____ g

INITIAL WEIGHT 200 g _____ g

NET WEIGHT 35 g _____ g

SUBTOTAL _____ g

TOTAL MOISTURE 469 g

ANALYTICAL DATA

PLANT Gold Bond

DATE 5-20-80

SAMPLING LOCATION #2 Cal. Inlet

SAMPLE TYPE Particulate

RUN NUMBER TWO

SAMPLE BOX NUMBER 1

CLEAN UP MAN O'Neill/Frye

COMMENTS:

FRONT HALF

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER

FILTER NUMBER 28041 _____
28030 _____
28029 _____

LABORATORY RESULTS

CONTAINER 00962 See lab. data mg

CONTAINER 00986 _____ mg

FRONT HALF SUBTOTAL _____ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER

CONTAINER _____ _____ mg

ETHER-CHLOROFORM EXTRACTION _____ mg

CONTAINER _____ _____ mg

BACK HALF SUBTOTAL _____ mg

TOTAL WEIGHT _____ mg

MOISTURE

IMPINGERS

FINAL VOLUME	563	ml
INITIAL VOLUME	200	ml
NET VOLUME	363	ml

SILICA GEL

FINAL WEIGHT	217	g	_____ g
INITIAL WEIGHT	200	g	_____ g
NET WEIGHT	17	g	_____ g

SUBTOTAL _____ g

$$\begin{array}{r} {}^{1} \\ 363 \\ 17 \\ \hline 380 \end{array}$$

TOTAL MOISTURE 380 g

ANALYTICAL DATA

PLANT Gold Bond

DATE 5-20-80

SAMPLING LOCATION #2 Calcidyne Inlet

SAMPLE TYPE Particulate

RUN NUMBER Three

SAMPLE BOX NUMBER _____

CLEAN UP MAN O'Neill / Frye

COMMENTS:

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER

CONTAINER 00963 See lab data mg

FILTER NUMBER 28027

28028

28026

28020

CONTAINER 00988 _____ mg

FRONT HALF SUBTOTAL _____ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER

CONTAINER _____ mg

ETHER-CHLOROFORM EXTRACTION _____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER

CONTAINER _____ mg

BACK HALF SUBTOTAL _____ mg

TOTAL WEIGHT _____ mg

MOISTURE

IMPINGERS

FINAL VOLUME 582 ml

INITIAL VOLUME 200 ml

NET VOLUME 382 ml

SILICA GEL

FINAL WEIGHT	207.7 g	_____ g
INITIAL WEIGHT	200 g	_____ g
NET WEIGHT	7.7 g	_____ g

SUBTOTAL _____ g

TOTAL MOISTURE 389.7 g

ANALYTICAL DATA

PLANT Gold Bond

DATE 5-19-80

SAMPLING LOCATION #2 Calcydyne Outlet

SAMPLE TYPE Particulate

RUN NUMBER One

SAMPLE BOX NUMBER _____

CLEAN UP MAN Frye / Meeler

COMMENTS:

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER 00964 — 34.6 mg

FILTER NUMBER _____ 28649 — CONTAINER 00981 — 48.9 mg

FRONT HALF SUBTOTAL 83.5 mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ — _____ mg

ETHER-CHLOROFORM EXTRACTION — _____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ — _____ mg

BACK HALF SUBTOTAL _____ mg

TOTAL WEIGHT 83.5 mg

MOISTURE

IMPINGERS

FINAL VOLUME	978	ml
INITIAL VOLUME	200	ml
NET VOLUME	778	ml

SILICA GEL

FINAL WEIGHT	244.0	g	_____	g
INITIAL WEIGHT	200	g	_____	g
NET WEIGHT	44.0	g	_____	g

SUBTOTAL _____ g

TOTAL MOISTURE 822 g

ANALYTICAL DATA

PLANT Gold Bond Bldg Products

DATE 5-20-80

SAMPLING LOCATION #2 Calcidyzer Outlet

SAMPLE TYPE Particulate

RUN NUMBER #2

SAMPLE BOX NUMBER _____

CLEAN UP MAN Ralston & Meeter

COMMENTS:

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER 00965 — 42.2 mg

FILTER NUMBER 28031 — CONTAINER 00985 — 57.4 mg

FRONT HALF SUBTOTAL 99.6 mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ _____ mg

ETHER-CHLOROFORM EXTRACTION _____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ _____ mg

BACK HALF SUBTOTAL _____ mg

TOTAL WEIGHT 99.6 mg

MOISTURE

IMPINGERS

FINAL VOLUME	1080	ml
INITIAL VOLUME	200	ml
NET VOLUME	880	ml

SILICA GEL

FINAL WEIGHT	344.3	g	_____	g
INITIAL WEIGHT	200	g	_____	g
NET WEIGHT	144.3	g	_____	g

SUBTOTAL _____ g

TOTAL MOISTURE 964.3 g

ANALYTICAL DATA

PLANT Gold Bond - EPA

DATE 5-20-80

SAMPLING LOCATION Calcidyne Outlet

SAMPLE TYPE Particulate

RUN NUMBER 3

SAMPLE BOX NUMBER 1205

CLEAN UP MAN _____

COMMENTS:

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER 00966 — 26.7 mg

FILTER NUMBER 28032 — CONTAINER 00989 — 78.0 mg

FRONT HALF SUBTOTAL 104.7 mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ — _____ mg

ETHER-CHLOROFORM EXTRACTION — _____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ — _____ mg

BACK HALF SUBTOTAL _____ mg

TOTAL WEIGHT _____ mg

MOISTURE

IMPINGERS

FINAL VOLUME	1170	ml
INITIAL VOLUME	200	ml
NET VOLUME	970	ml

SILICA GEL

FINAL WEIGHT	219.3	g	_____	g
INITIAL WEIGHT	200	g	_____	g
NET WEIGHT	19.3	g	_____	g

SUBTOTAL _____ g

TOTAL MOISTURE 989.3 g

ANALYTICAL DATA

PLANT Gold Bond

DATE 5-21-80

SAMPLING LOCATION Rock Dryer Inlet

SAMPLE TYPE Particulate

RUN NUMBER one

SAMPLE BOX NUMBER 1

CLEAN UP MAN O'Neill / Frye

COMMENTS:

FRONT HALF

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER

FILTER NUMBER 28017
28018
28019

LABORATORY RESULTS

CONTAINER 00718
00968
00971 _____ mg

CONTAINER 00793 _____ mg

FRONT HALF SUBTOTAL _____ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER

CONTAINER _____ _____ mg

ETHER-CHLOROFORM EXTRACTION _____ mg

CONTAINER _____ _____ mg

BACK HALF SUBTOTAL _____ mg

TOTAL WEIGHT _____ mg

MOISTURE

IMPINGERS

FINAL VOLUME	289	ml
INITIAL VOLUME	200	ml
NET VOLUME	89	ml

SILICA GEL

FINAL WEIGHT	211.8	g	_____	g
INITIAL WEIGHT	200	g	_____	g
NET WEIGHT	11.8	g	_____	g

SUBTOTAL _____ g

TOTAL MOISTURE 100.8 g

ANALYTICAL DATA

PLANT Gold Bond

DATE 5-22-80

SAMPLING LOCATION Rock Dryer Inlet

SAMPLE TYPE Particulate

RUN NUMBER TWO

SAMPLE BOX NUMBER _____

CLEAN-UP MAN _____

COMMENTS:

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER _____ _____ mg

FILTER NUMBER		CONTAINER	
28036	_____	00801	_____ mg
28037	_____	00803	
28038	_____	00804	

FRONT HALF SUBTOTAL _____ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ _____ mg

ETHER-CHLOROFORM EXTRACTION _____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ _____ mg

BACK HALF SUBTOTAL _____ mg

TOTAL WEIGHT _____ mg

MOISTURE

IMPINGERS

FINAL VOLUME	289	ml
INITIAL VOLUME	200	ml
NET VOLUME	89	ml

SILICA GEL

FINAL WEIGHT	216.2	g	_____	g
INITIAL WEIGHT	200	g	_____	g
NET WEIGHT	_____	g	_____	g

SUBTOTAL _____ g

TOTAL MOISTURE 105.2 g

ANALYTICAL DATA

PLANT Gold Bond

DATE 5-22-80

SAMPLING LOCATION Rock Dryer Inlet

SAMPLE TYPE Particulate

RUN NUMBER Three

SAMPLE BOX NUMBER 1

CLEAN UP MAN O'Neill

COMMENTS:

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER _____ _____ mg

FILTER NUMBER 28025 _____ — CONTAINER _____ _____ mg

28023 _____

28024 _____

FRONT HALF SUBTOTAL _____ mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ _____ mg

ETHER-CHLOROFORM EXTRACTION _____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ _____ mg

BACK HALF SUBTOTAL _____ mg

TOTAL WEIGHT _____ mg

MOISTURE

IMPINGERS

FINAL VOLUME	266	ml
INITIAL VOLUME	200	ml
NET VOLUME	66	ml

SILICA GEL

FINAL WEIGHT	216	g	_____	g
INITIAL WEIGHT	200	g	_____	g
NET WEIGHT	16	g	_____	g

SUBTOTAL _____ g

TOTAL MOISTURE 82 g

ANALYTICAL DATA

PLANT Gold Bond - EPA

DATE 5-21-80

SAMPLING LOCATION Rock Dryer Outlet

SAMPLE TYPE Particulate

RUN NUMBER 1

SAMPLE BOX NUMBER 1205

CLEAN UP MAN Meeter / Dabrowski

COMMENTS:

00977 - Anderson wash

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER 00974 — 30.7 mg

FILTER NUMBER 28033 — CONTAINER 00992 — 62.0 mg

FRONT HALF SUBTOTAL 92.7 mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ _____ mg

ETHER-CHLOROFORM EXTRACTION _____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ _____ mg

BACK HALF SUBTOTAL _____ mg

TOTAL WEIGHT 92.7 mg

MOISTURE

IMPINGERS

FINAL VOLUME	288	ml
INITIAL VOLUME	200	ml
NET VOLUME	88.0	ml

SILICA GEL

FINAL WEIGHT	220.7	g	_____	g
INITIAL WEIGHT	200	g	_____	g
NET WEIGHT	20.7	g	_____	g

SUBTOTAL _____ g

TOTAL MOISTURE 108.7 g

ANALYTICAL DATA

PLANT Gold Bond - EPA

DATE 5-22-80

SAMPLING LOCATION Rock Dryer Outlet

SAMPLE TYPE Particulate

RUN NUMBER 2

SAMPLE BOX NUMBER 1205

CLEAN UP MAN Meeter / Dabrowski / Ralston

COMMENTS:

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER 00975 — 22.2 mg

FILTER NUMBER 28035 — CONTAINER ____ — 43.4 mg

FRONT HALF SUBTOTAL 65.6 mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ____ — ____ mg

ETHER-CHLOROFORM EXTRACTION — ____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER ____ — ____ mg

BACK HALF SUBTOTAL ____ mg

TOTAL WEIGHT 65.6 mg

MOISTURE

IMPINGERS

FINAL VOLUME	~~2116.5~~	ml	304
INITIAL VOLUME	~~1911~~	ml	200
NET VOLUME	~~205.5~~	ml	104.0 ml.

SILICA GEL

FINAL WEIGHT	~~[illegible]~~	g	216.5 g
INITIAL WEIGHT	~~[illegible]~~	g	200 g
NET WEIGHT	~~134.0~~	g	16.5 g

SUBTOTAL ____ g

TOTAL MOISTURE 120.5 g

ANALYTICAL DATA

PLANT Gold Bond

DATE 5-22-80

SAMPLING LOCATION Rotc. Dryer ~~Inlet~~ Outlet

SAMPLE TYPE Part.

RUN NUMBER 3

SAMPLE BOX NUMBER —

CLEAN UP MAN ~~Ott~~ Meeter

COMMENTS:

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER _____ 14.9 mg

FILTER NUMBER 88014 — CONTAINER _____ 47.0 mg

FRONT HALF SUBTOTAL 61.9 mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ _____ mg

ETHER-CHLOROFORM EXTRACTION _____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ _____ mg

BACK HALF SUBTOTAL _____ mg

TOTAL WEIGHT 61.9 mg

MOISTURE

IMPINGERS

FINAL VOLUME	298	ml
INITIAL VOLUME	200	ml
NET VOLUME	98	ml

SILICA GEL

FINAL WEIGHT	216.3	g	_____	g
INITIAL WEIGHT	200.0	g	_____	g
NET WEIGHT	16.3	g	_____	g

SUBTOTAL _____ g

TOTAL MOISTURE 114.3 g

PARTICULATE SAMPLE ANALYSES Analyst NHG Date 6-2.7-80

Plant Gold Bond Sampling Location Rock Dryer Inlet Run # 3
Test Date _____ Test Period _____ Stack # _____ Process# _____

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δwt. grams	Blk. Cor. grams	Net wt. grams
FHA	J-35	90+	100.1159	100.1160	161.4240	161.4245	61.3081	.0003	61.3078
~~FILTER 1 #~~	J-29	500	105.1019	105.1443	135.8758	135.8454	30.6961	.0017	30.6944
~~FILTER 2 #~~	J-13		102.9997	102.9999	167.2031	167.2033	64.2034	—	64.2034
FH TOTAL								=	156.2056
~~BHW~~ Filter 1	28025		.4538	.4536	5.1645	5.1640	4.7102		4.7102
~~BHA~~ Filter 2	28024		.4502	.4503	7.2273	7.2375	6.7870		6.7870
~~TOTAL~~ Filter 3	28023		.4565	.4560	2.4774	2.4770	2.0205		2.0205
								Total =	169.7233

Comments _____

Plant Gold Bond Sampling Location Rock Dryer Inlet Run # 2
Test Date 5-22-80 Test Period _____ Stack # _____ Process# _____

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δwt. grams	Blk. Cor. grams	Net wt. grams
FHA	J-10	340	102.4670	102.4670	[illegible]	[illegible]	67.6585	.0011	67.6574
~~FILTER 1 #~~	J-21	+230	103.2804	103.2811	153.3314	153.3322	50.1123	.0008	50.1115
~~FILTER 2 #~~	J-24		98.5274	98.5276	136.5255	136.5255	37.9981	—	37.9981
FH TOTAL								=	155.7670
~~BHW~~ Filter 1	23026		.4550	.4545	5.3565	5.3565	4.9020	—	4.9020
~~BHA~~ Filter 2	23027		.4602	.4601	4.2085	4.2080	3.7479	—	3.7479
~~TOTAL~~ Filter 3	23028		.4580	.4580	7.3116	7.3116	6.8536	—	6.8536
								Total =	171.2705

Comments _____

Plant Gold Bond Sampling Location Rock Dryer Inlet Run # 1
Test Date 5-21-80 Test Period _____ Stack # _____ Process# _____

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δwt. grams	Blk. Cor. grams	Net wt. grams
FHA	J-8	310	100.9627	100.9632	149.4481	149.4487	48.4862	.0010	48.4852
~~FILTER 1 #~~	J-20	+100	102.3962	102.3958	149.0122	149.0125	46.6764	.0003	46.6761
~~FILTER 2 #~~	J-34		104.3118	104.3120	160.4916	160.4920	56.1198	—	56.1198
FH TOTAL								=	151.2811
~~BHW~~ Filter 1	28018		.4602	.4600	8.5205	8.5210		=	8.0605
~~BHA~~ Filter 2	28019		.4594	.4594	3.6982	3.6984		=	3.2388
~~TOTAL~~ Filter 3	28017		.4619	.4617	5.0575	5.0575			4.5958
									167.1762

Comments _____

ACETONE BLK	J-19	90	105.1666	105.1669	105.1669	105.1669	.0003	0.00000033 mg/ml
WATER BLK								

CODE: FHA=Front half acetone wash BHW=Back half water(impinger contents + water wash) BHA=Back half acetone wash FH TOTAL=Front half catch weight TOTAL=Total train catch weight

PARTICULATE SAMPLE ANALYSES Analyst [redacted] Date [redacted]

Plant Gold Pond Sampling Location Calcining System Inlet Run # 1
Test Date 5-19-80 Test Period [redacted] Stack # [redacted] Process# [redacted]

Particle sp. 00961

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δ wt. grams	Blk. Cor. grams	Net wt. grams
FHA	J-17	120	100.9721	100.9732	101.2932	101.2932	.3211	.0004	.3207
FILTER$_1$ #									
FILTER$_2$ #									
FH TOTAL									
BHW									
BHA									
TOTAL									
Comments									

Plant G.B. Sampling Location Calcining System Inlet Run # 2
Test Date 5-20-80 Test Period [redacted] Stack # [redacted] Process# [redacted]

00962

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δ wt. grams	Blk. Cor. grams	Net wt. grams
FHA P.S	J-26	150	102.2579	102.2583	102.7896	102.2816	.5317	.0005	.5312 P.S
FILTER$_1$ #	28027		.4655	.4655	3.4391	3.4311	2.9836		2.9836
FILTER$_2$ #	28032		.4555	.4555	3.9805	3.9805	3.5250		3.5250
~~FH TOTAL~~ 3	28041		.4619	.4619	2.4623	2.4520	1.9901		1.9901
BHW									
BHA									
TOTAL									8.4989
Comments									

ROY F. WESTON

Plant G.B. Sampling Location Calcining System Inlet Run # 3
Test Date 5-20-80 Test Period [redacted] Stack # [redacted] Process# [redacted]

00963

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δ wt. grams	Blk. Cor. grams	Net wt. grams
FHA P.S.	J-27	235	103.2700	103.2705	[illegible]	[illegible]	0.3063	.0008	.3055 P.S
FILTER$_1$ #	28020		.4573	.4573	3.9600	3.9603	3.5027		3.5027
FILTER$_2$ #	28026		.4533	.4533	2.6238	2.6235	2.1702		2.1702
~~FH TOTAL~~ 3	28027		.4552	.4553	3.8206	3.8202	3.3649		3.3649
~~BHW~~ 4	28028		.4533	.4533	3.1500	3.1500	2.6967		2.6967
BHA									
TOTAL									11.7345
Comments									
ACETONE BLK									
WATER BLK									

CODE: FHA=Front half acetone wash BHW=Back half water(impinger contents + water wash) BHA=Back half acetone wash FH TOTAL=Front half catch weight TOTAL=Total train catch weight

PARTICULATE SAMPLE ANALYSES [redacted] aly[redacted] WG [redacted] Date [redacted]

Plant Gold Bond Sampling Location Cakidge System Outlet Run # 1
Test Date 5-20-80 Test Period [redacted] Stack # [redacted] Process# [redacted]

Particle 33
00967

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δwt. grams	Blk. Cor. grams	Net wt. grams
FHA	J-5	30	103.0384	103.0389	103.0462	103.0459	.0075	.0001	.0074
FILTER$_1$ #									
FILTER$_2$ #									
FH TOTAL									
BHW									
BHA									
TOTAL									
Comments									

Plant G.B. Sampling Location Rock Dryer Outlet Run # 1
Test Date 5-21-80 Test Period [redacted] Stack # [redacted] Process# [redacted]

P.S.
00977

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δwt. grams	Blk. Cor. grams	Net wt. grams
FHA	J-4	45	102.9501	102.9506	103.0065	103.0064	.0564	.0001	.0563
FILTER$_1$ #									
FILTER$_2$ #									
FH TOTAL									
BHW									
BHA									
TOTAL									
Comments									

ROY F. WESTON

P.S

Plant G.B Sampling Location Rock Dryer Inlet Run # 1
Test Date 5-21-80 Test Period [redacted] Stack # [redacted] Process# [redacted]

00971

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δwt. grams	Blk. Cor. grams	Net wt. grams
FHA	J-3	200	101.7208	101.7212	102.3156	102.3160	.5948	.0007	.5941
FILTER$_1$ #									
FILTER$_2$ #									
FH TOTAL									
BHW									
BHA									
TOTAL									
Comments									
ACETONE BLK									
WATER BLK									

CODE: FHA=Front half acetone wash BHW=Back half water(impinger contents + water wash) BHA=Back half acetone wash FH TOTAL=Front half catch weight TOTAL=Total train catch weight

B-15

PARTICULATE SAMPLE ANALYSES Analyst _____ Date 6-28-00

Plant Gold Bond Sampling Location Calcidyne Sys. Inlet Run # 2 Process# _____
Test Date 5-20-00 Test Period _____ Stack # _____

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δwt grams	Blk. Cor. grams	Net wt. grams
FHA	T-30	500	100.5869	100.5874	115.6304	115.6304	15.0430	.0017	15.0413
FILTER$_1$ # 00959	GB-15	47mm	113.4054	113.4066	113.0937	113.0934	12.6875	.0015	12.6860
FILTER$_2$ # 00983									
FH TOTAL									27.7273
BHW									
BHA									
TOTAL									

Comments

Plant G.B. Sampling Location Calcidyne Sys. Inlet Run # 3 Process# _____
Test Date _____ Test Period _____ Stack # _____

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δwt grams	Blk. Cor. grams	Net wt. grams
FHA	T-13	500	103.0768	103.0763	116.2105	116.2112	13.1342	.0017	13.1325
FILTER$_1$ # 00960	GB-24	47mm	101.7443	101.7446	110.2324	110.2324	8.4948	.0007	8.4941
FILTER$_2$ # 00990									
FH TOTAL									21.6266
BHW									
BHA									
TOTAL									

Comments

B-16 ROY F. WESTON

Plant Gold Bond Sampling Location Calcidyne Sys. Outlet Run # 1 Process# _____
Test Date 5-19-00 Test Period _____ Stack # _____

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δwt grams	Blk. Cor. grams	Net wt. grams
FHA	T-31	300	103.0679	103.0675	103.1031	103.1031	0.0356	.0010	.0346
FILTER$_1$ # 00964	28049		.4601	.4603	.5095	.5012	.0489		.0489
FILTER$_2$ #									
FH TOTAL									.0835
BHW									
BHA									
TOTAL									

Comments

ACETONE BLK
WATER BLK

CODE: FHA=Front half acetone wash BHW=Back half water(impinger contents + water wash) BHA=Back half acetone wash FH TOTAL=Front half catch weight TOTAL=Total train catch weight

[redacted] PARTICULATE SAMPLE ANALYSES [redacted] Analy[redacted] 186 [redacted] Date[redacted]

Plant Gold Bond Sampling Location Calciner Gas Outlet Run # 2
Test Date 5-20 Test Period [redacted] Stack # [redacted] Process# [redacted]

00965

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δ wt. grams	Blk. Cor. grams	Net wt. grams
FHA	I-15	375	103.6006	103.6005	103.6440	103.6440	.0435	.0013	.0422
FILTER$_1$ #	28031		45[illegible]	[illegible]	51 56	5156	.0574		.0574
FILTER$_2$ #									
FH TOTAL									
BHW									
BHA									.0996
TOTAL									
Comments									

Plant Gold Bond Sampling Location Calciner Gas Outlet Run # 3
Test Date 5-20-80 Test Period [redacted] Stack # [redacted] Process# [redacted]

00966

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δ wt. grams	Blk. Cor. grams	Net wt. grams
FHA	I-16	360	102.1325	102.1321	102.1600	102.1600	.0279	.0012	.0267
FILTER$_1$ #	28032		[illegible]	[illegible]	.5371	.5371	.0780		.0780
FILTER$_2$ #									
FH TOTAL									
BHW									
BHA									
TOTAL									.1047
Comments									

ROY F. WESTON 8-17

Plant [redacted] Sampling Location [redacted] Run # [redacted]
Test Date [redacted] Test Period [redacted] Stack # [redacted] Process# [redacted]

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δ wt. grams	Blk. Cor. grams	Net wt. grams
FHA									
FILTER$_1$ #									
FILTER$_2$ #									
FH TOTAL									
BHW									
BHA									
TOTAL									
Comments									
ACETONE BLK									
WATER BLK									

CODE: FHA=Front half acetone wash BHW=Back half water(impinger contents + water wash) BHA=Back half acetone wash FH TOTAL=Front half catch weight TOTAL=Total train catch weight

PARTICULATE SAMPLE ANALYSIS [redacted] Date 6/[redacted]

Plant Gold Bond Sampling Location Rock Dryer Inlet Run # 2 Process# [redacted]
Test Date 5-21-80 Test Period [redacted] Stack # [redacted]

P.S. 00972

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δ wt. grams	Blk. Cor. grams	Net wt. grams
FHA	J-1	200	100.9978	100.9981	105.8386	105.3390	4.8408	.0007	4.8401
FILTER$_1$ #									
FILTER$_2$ #									
FH TOTAL									
BHW									
BHA									
TOTAL									
Comments									

P.S. 00973

Plant G.B Sampling Location Rock Dryer-Inlet Run # 3 Process# [redacted]
Test Date [redacted] Test Period [redacted] Stack # [redacted]

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δ wt. grams	Blk. Cor. grams	Net wt. grams
FHA	J-7	155	103.9607	103.9614	105.8764	105.8763	1.9154	.0005	1.9149
FILTER$_1$ #									
FILTER$_2$ #									
FH TOTAL									
BHW									
BHA									
TOTAL									
Comments									

ROY F. WESTON 81-8

Plant G.B. Sampling Location Calcining Sys. Inlet Run # 1 Process# [redacted] ✓
Test Date 5-19-80 Test Period [redacted] Stack # [redacted]

00958 ✓ 00979 ✓ 00982

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δ wt. grams	Blk. Cor. grams	Net wt. grams
FHA	J-9	360	100.4251	100.4256	114.3205	114.3205	13.8949	.0015	13.8934
FILTER$_1$ #	GB-18	515	99.4159	99.4163	110.7480	110.7480	11.3317	.0017	11.3330
FILTER$_2$ #	GB-16	+40	100.6385	100.6380	110.3623	110.3623	9.7238	.0004	9.7234
FH TOTAL	28042		.4649	.4649	2.1800	2.1800	1.7151		1.7151
BHW 2	28043		.4619	.4619	2.6262	2.6262	2.1641		2.1641
BHA 3	28044		.4645	.4645	2.1510	2.1510	2.1510		2.1510
TOTAL 4	28045		.4637	.4637	2.4285	2.4285	2.4285		2.4285
Comments 5	28046		.4649	.4649	2.5358	2.5358	2.5358		2.5358
6	28047		.4609	.4605	1.6205	1.6205	1.6205		1.6205
ACETONE BLK	28048		.4630	.4627	1.8678	1.8678	1.8678		1.8678
WATER BLK									

CODE: FHA=Front half acetone wash BHW=Back half water(impinger contents + water wash) BHA=Back half acetone wash FH TOTAL=Front half catch weight TOTAL=Total train catch weight

49.4353

PARTICULATE SAMPLE ANALYSES

Analyst [redacted] Date [redacted]

Plant Gold Bond Sampling Location Rock Dryer Outlet Run # 1 Process#

Test Date 5-21-82 Test Period Stack #

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δwt. grams	Blk. Cor. grams	Net wt. grams
FHA	J-2	380	100.4527	100.4532	100.4847	100.4847	.0320	.0013	.0307
FILTER$_1$ #	28033		.1419	.1419	.5171	.5110	.3753		.0620
FILTER$_2$ #			.4550	.4550					
FH TOTAL									
BHW									.0927
BHA									
TOTAL									

Comments

Plant G.B. Sampling Location Rock Dryer Outlet Run # 2 Process#

Test Date Test Period Stack #

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δwt. grams	Blk. Cor. grams	Net wt. grams
FHA	J-6	355	100.5122	100.5127	100.5356	100.5356	.0234	.0012	.0222
FILTER$_1$ #	28035		.4613	.4613	.5047	.5047	.0434		.0434
FILTER$_2$ #									
FH TOTAL									
BHW									.0656
BHA									
TOTAL									

Comments

Plant Gold Bond Sampling Location Rock Dryer Outlet Run # 3 Process#

Test Date Test Period Stack #

	Beaker #	Volume ml	Tare(1) grams	Tare(2) grams	Final(1) grams	Final(2) grams	Δwt. grams	Blk. Cor. grams	Net wt. grams
FHA	J-11	240	103.3740	103.3745	103.3897	103.3927	.0157	.0008	.0149
FILTER$_1$ #	28014		.4560	.4560	.5034	.5030			.0470
FILTER$_2$ #									
FH TOTAL									
BHW									.0619
BHA									
TOTAL									

Comments

ACETONE BLK

WATER BLK

CODE: FHA=Front half acetone wash BHW=Back half water(impinger contents + water wash) BHA=Back half acetone wash FH TOTAL=Front half catch weight TOTAL=Total train catch weight

ROY F. WESTON

11

TITLE Anderson Filters

Project No. _____

Book No. _____

From Page No.	Filter #	final (1)	final (2)	Tare (1)	Tare (2)		
Gold Bond Rock Dryer Inlet Run 2	6A-1	.1907	.1904	.1300	.1300		.0604
	2	.1714	.1714	.1206	.1206		.0508
	3	.1616	.1613	.1313	.1313		.0300
	4	.1440	.1440	.1200	.1200		.0240
	5	.1490	.1490	.1358	.1358		.0132
	6	.1244	.1242	.1208	.1205		.0034
	7	.1360	.1360	.1350	.1350		.0010
	8	.1210	.1208	.1208	.1205		.0000
	9 Bu	.2578	.2578	.2561	.2561		.0017
Gold Bond #20 Calcidure Inlet Run 1	8A-1	.1308	.1308	.1301	.1301	.0007	
	2	.1226	.1222	.1206	.1206	.0016	
	3	.1327	.1324	.1296	.1296	.0028	
	4	.1225	.1225	.1200	.1200	.0025	
	5	.1358	.1358	.1322	.1322	.0036	
	6	.1240	.1237	.1200	.1200	.0037	
	7	.1306	.1306	.1302	.1302	.0004	
	8	.1258	.1256	.1248	.1248	.0008	
	9 Bu	.2620	.2620	.2560	.2560	.0060	
	30A-1			.1316	.1316		
	2			.1260	.1260		
	3			.1310	.1310		
	4			.1247	.1247		
	5			.1372	.1372		
	6			.1258	.1258		
	7			.1348	.1348		
	8			.1261	.1261		
	9 Bu			.2549	.2549		

To Page No.

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Date

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11

TITLE Anderson Filters

Project No. _____
Book No. _____

COPY

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From Page No. _____

client	filter #	final (1)	final (2)	Tare (1)	Tare (2)	g	
Gold Bond Inlet Calcining Inlet Rm 1	26C-1	.1400	.1400	.1361	.1359	.0042	
	2	.1377	.1377	.1258	.1253	.0124	
	3	.1556	.1553	.1361	.1358	.0195	
	4	.1411	.1410	.1245	.1242	.0169	
	5	.1438	.1436	.1367	.1364	.0072	
	6	.1266	.1266	.1250	.1242	.0024	
	7	.1365	.1365	.1368	.1365	.0000	
	8	.1256	.1258	.1258	.1254	.0002	
	9Bu	.2557	.2557	.2520	.2516	.0041	
	27C-1	.1379	.1381	.1358	.1353	.0021	
	2	.1282	.1285	.1248	.1248	.0034	
	3	.1408	.1413	.1365	.1361	.0043	
	4	.1311	.1313	.1258	.1256	.0055	
	5	.1438	.1440	.1367	.1367	.0071	
	6	.1408	.1410	.1256	.1256	.0152	
	7	.1416	.1416	.1346	.1346	.0070	
	8	.1334	.1336	.1245	.1247	.0089	
	9Bu	.2590	.2590	.2550	.2550	.0040	
	28C-1			.1355	.1352		
	2			.1248	.1245		
	3			.1370	.1367		
	4			.1257	.1254		
	5			.1355	.1352		
	6			.1253	.1249		
	7			.1351	.1348		
	8			.1253	.1250		
	9 Bu			.2500	.2497		

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To Page No. _____

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NR		Recorded by	

11

TITLE Anderson filters

Project No. _____
Book No. _____

COPY

From Page No. client	filter #		Tare (1)	Tare (2)	final (1)	final (2)	
Gold	1E-1		.1739	.1737	.1877	.1875	.0137 191 H.F
Bond	2		.1640	.1640	.1793	.1790	.0150
Rock Dryer	3		.1764	.1762	.1922	.1925	.0160
Inlet	4		.1616	.1615	.1705	.1705	.0090
	5		.1762	.1760	.1821	.1821	.0061
Run 3	6		.1630	.1628	.1658	.1658	.0030
	7		.1769	.1767	.1786	.1788	.0019
	8		.1764	.1764	.1766	.1766	.0000
	9		.2527	.2525	.2534	.2531	.0006
	2F-1		.1779	.1777			
	2		.1618	.1616			
	3		.1789	.1789			
	4		.1637	.1635			
	5		.1776	.1774			
	6		.1631	.1631			
	7		.1773	.1770			
	8		.1644	.1642			
	9		.2537	.2535			
Gold	3F-1		.1778	.1776	.1818	.1815	.0039
Bond	2		.1653	.1650	.1707	.1704	.0054
	3		.1784	.1782	.1834	.1834	.0052
	4		.1651	.1651	.1685	.1681	.0030
	5		.1780	.1780	.1802	.1800	.0020
Rock	6		.1648	.1646	.1671	.1671	.0025
Dryer	7		.1800	.1800	.1806	.1806	.0006
Outlet	8		.1648	.1648	.1655	.1655	.0007
Run 1	9		.2496	.2496	.2518	.2515	.0019
	4F-1		.1785	.1783			
	2		.1640	.1640			
	3		.1772	.1772			
	4		.1633	.1630			
	5		.1779	.1779			
	6		.1642	.1640			
	7		.1771	.1770			
	8		.1636	.1635			
	9		.2497	.2495			

To Page No.

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NR

Date

B-22

Date

Project No. _____

TITLE _____ Book No. _____

From Page No.	filter #		Tail 1	Tail 2	final 1	final 2	DWT
Gold Bond	5F-1		.1788	.1788	.2002	.2000	.0212
	2		.1640	.1639	.1887	.1885	.0248
	3		.1781	.1781	.1964	.1964	.0183
Rock Dryer	4		.1646	.1644	.1787	.1787	.0143
Inlet	5		.1794	.1792	.1895	.1892	.0100
	6		.1665	.1662	.1697	.1694	.0032
Run 1	7		.1775	.1775	.1783	.1780	.0005
	8		.1659	.1657	.1672	.1672	.0015
	9		.2525	.2522	.2532	.2532	.0010
[redacted]	6F-1		.1789	.1759	.1812	.1810	.0021
	2		.1648	.1[illegible]	[illegible]	.1676	[illegible]30
	3		.1[illegible]	.1[illegible]90	[illegible]	.184[illegible]	.0053
	4		.1643	.1[illegible]0	.1722	[illegible]	.0081
	5		.1773	.177[illegible]	[illegible]	.2002	.0231
	6		.1636	.163[illegible]	.1[illegible]	.1854	.0218
	7		.1775	.1[illegible]5	.1842	[illegible]	.0067
	8		.1[illegible]	.1637	.1660	.1660	.0023
	9		.2515	.2512	.2546	.2546	.0034
	7F-1		.1786	.1786			
	2		.1631	.1630			
	3		.1796	.1796			
	4		.1646	.1646			
	5		.1775	.1775			
	6		.1642	.1642			
	7		.1792	.1790			
	8		.1643	.1640			
	9		.2533	.2530			
	8F-1		.1787	.1785			
	2		.1651	.1650			
	3		.1769	.1769			
	4		.1645	.1645			
	5		.1780	.1780			
	6		.1640	.1640			
	7		.1807	.1805			
	8		.1654	.1652			
	9		.2492	.2492			

To Page No.

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Date 7-14-80

Invented by B-23

Recorded by

Date

11

Project No. _____

TITLE Anderson Book No. _____

From Page No. — Client	filter #	final (1)	final (2)	Tare (1)	Tare (2)	Front Half Acetone	Δ wt grams
Gold Bond	5C- 1	.1407	.1404	.1314	.1319	.0090	
	2	.1396	.1396	.1221	.1227	.0175	
	3	.1543	.1560	.1348	.1354	.0212	
IF 2 calcium	4	.1454	.1454	.1236	.1242	.0218	
	5	.1477	.1477	.1327	.1333	.0150	
Run #	6	.1281	.1281	.1223	.1229	.0058	
3	7	.1395	.1345	.1339	.1345	.0006	
	8	.1498	.1469	.1480	.1476	.0022	
	Bl 9	.2034	.2035	.2033	.2039	.0001	
	6C- 1	.1358	.1350	.1338	.1338	.0040	.0052
	2	.1358	.1358	.1254	.1254		.0002
			.1341	.1334	.1334		.0027
	4		.1235	.1232	.1235		.0032
	5			.1323	.1323		.0021
	6	.1260		.1259	.1260		.0003
	7	.1354		.1346	.1346		.0008
	8	.1251		.1248	.1246		.0006
	Bl 9	.2096		.2048	.2049		.0048
	7C- 1	.1378	.1378	.1344	.1342	.3901	.3937
	2	.1324	.1322	.1261	.1260		.0062
	3	.1426	.1422	.1360	.1360		.0062
	4	.1296	.1296	.1267	.1267		.0029
	5	.1364	.1364	.1339	.1339		.0025
	6	.1262	.1265	.1252	.1250		.0012
	7	.1353	.1353	.1347	.1347		.0006
	8	.1265	.1265	.1258	.1258		.0007
	Bl 9	.2061	.2063	.2052	.2052		.0009
	8C- 1	.1362	.1360	.1328	.1328	.0104	.0136
	2	.1258	.1258	.1238	.1238		.002
	3	.1369	.1369	.1351	.1351		.0018
	4	.1265	.1267	.1252	.1253		.0015
	5	.1360	.1358	.1343	.1343		.0015
	6	.1267	.1267	.1260	.1262		.0007
	7	.1363	.1365	.1357	.1355		.0008
	8	.1255	.1255	.1252	.1252		.0003
	Bl 9	.2057	.2057	.2051	.2051		.0035

N.R.

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Date

Invented by B-24

Recorded by

Date

TITLE Anderson Project No. _____ Book No. _____ COPY 10

From Page No. client

filter #	final (1)	final (2)	Tare (1)	Tare (2)	Front Half Acetone	Δ wt grams
9C- 1	.1380	.1382	.1368	.1368	.0017	.0029
2	.1252	.1255	.1247	.1247		.0005
3	.1357	.1357	.1355	.1355		.0002
4	.1247	.1247	.1245	.1244		.0003
5	.1355	.1355	.1349	.1350		.0006
6	.1242	.1242	.1239	.1239		.0003
7	.1328	.1333	.1327	.1327		.0001
8	.1257	.1257	.1253	.1253		.0004
Bu 9	.2060	.2060	.2053	.2053		.0007
10C- 1			.1350	.1356		
2			.1256	.1261		
3			.1347	.1352		
4			.1240	.1245		
5			.1338	.1343		
6			.1276	.1281		
7			.1354	.1359		
8			.1245	.1250		
Bu 9			.2047	.2051		
11C- 1	.1463	.1460	.1372	.1376	.0088	
2	.1428	.1425	.1257	.1261	.0168	
3	.1600	.1600	.1357	.1361	.0243	
4	.1534	.1530	.1270	.1274	.0260	
5	.1474	.1474	.1360	.1364	.0114	
6	.1264	.1264	.1255	.1259	.0009	
7	.1353	.1353	.1347	.1351	.0006	
8	.1252	.1252	.1248	.1252	.0004	
Bu 9	.2059	.2058	.2055	.2057	.0001	
12C- 1	.1427	.1428	.1347	.1347	.5222	.5303
2	.1375	.1375	.1361	.1361		.0112
3	.1400	.1400	.1349	.1349		.0051
4	.1278	.1276	.1250	.1250		.0026
5	.1378	.1378	.1354	.1355		.0024
6	.1246	.1249	.1236	.1237		.0010
7	.1355	.1353	.1349	.1349		.0003
8	.1262	.1260	.1255	.1255		.0003
Bu 9	.2104	.2104	.2098	.2098		.0012

To Page

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N.A.

Witnessed & Understood by me. NR | Date | Inventoried by B-25 | Date | Reviewed by

APPENDIX C

SAMPLE CALCULATIONS

SAMPLE CALCULATIONS

Test Run 1 ROCK DRYER INLET

1. Volume of dry gas sampled at standard conditions (68°F, 29.92 in. Hg), dscf.

$$V_{m(std)} = \frac{17.647 \times Y \times V_m \times \left(P_b + \frac{\Delta H}{13.6} \right)}{\left(T_m + 460 \right)}$$

$$V_{m(std)} = \frac{17.647 \times 0.989 \times 55.50 \times \left(30.17 + \frac{1.05}{13.6} \right)}{\left(115 + 460 \right)} = 50.93$$

Where:

$V_{m(std)}$ = Volume of gas sample measured by the dry gas meter, corrected to standard conditions, dscf.

V_m = Volume of gas sample measured by the dry gas meter at meter conditions, dcf.

P_b = Barometric pressure, in. Hg.

ΔH = Average pressure drop across the orifice meter, in. H_2O.

T_m = Average dry gas meter temperature, °F.

17.647 = Factor that includes ratio of standard temperature (528°R) to standard pressure (29.92 in. Hg), °R/in. Hg.

Y = Dry gas meter calibration factor.

2. Volume of water vapor in the gas sample corrected to standard conditions, scf.

$$V_{w(std)} = (0.04707 \times V_{wc}) + (0.04715 \times W_{wsg})$$

$$V_{w(std)} = (0.04707 \times 89.1) + (0.04715 \times 11.8\ 1 = 4.75$$

Where:

$V_{w(std)}$ = Volume of water vapor in the gas sample corrected to standard conditions, scf.

V_{wc} = Volume of liquid condensed in impingers, ml.

W_{wsg} = Weight of water vapor collected in silica gel, g.

0.04707 = Factor which includes the density of water (0.002201 lb/ml), the molecular weight of water (18.0 lb/lb-mole), the ideal gas constant [21.85 (in. Hg) $(ft^3)/(lb\text{-mole})(^oR)$] ; absolute temperature at standard conditions (528^oR), absolute pressure at standard conditions (29.92 in. Hg), ft^3/ml.

0.04715 = Factor which includes the molecular weight of water (18.0 lb/lb-mole), the ideal gas constant [21.85 (in. Hg) $(ft^3)/(lb\text{-mole})(^oR)$], absolute temperature at standard conditions (528^oR), absolute pressure at standard conditions (29.92 in. Hg), and 453.6 g/lb, ft^3/g.

3. Moisture content.

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

$$B_{ws} = \frac{4.75}{4.75 + 50.93} = 0.085$$

Where:

B_{ws} = Proportion of water vapor, by volume, in the gas stream, dimensionless.

4. Mole fraction of dry gas.

$$M_d = 1 - B_{ws}$$

$$M_d = 1 - .085 = 0.915$$

Where:

M_d = Mole fraction of dry gas, dimensionless

5. Dry molecular weight of gas stream, lb/lb-mole.

$$MW_d = 0.440(\%CO_2) + 0.320\ (\%O_2) + 0.280\ (\%N_2 + \%\ CO)$$

MW_d = $(0.440 \times 1.9\ ) + (0.320 \times 17.8\ ) + [0.280\ (\ 80.3 + 0.0\ )]$

= 29.02

Where:

MW_d = Dry molecular weight, lb/lb-mole.

$\%CO_2$ = Percent carbon dixoide by volume, dry basis.

$\%O_2$ = Percent oxygen by volume, dry basis.

$\%N_2$ = Percent nitrogen by volume, dry basis.

%CO = Percent carbon monoxide by volume, dry basis.

0.440 = Molecular weight of carbon dioxide, divided by 100.

0.320 = Molecular weight of oxygen, divided by 100.

0.280 = Molecular weight of nitrogen or carbon monoxide, divided by 100.

6. Actual molecular weight of gas stream (wet basis), lb/lb-mole.

$MW_s = (MW_d \times M_d) + [18\ (1 - M_d)]$

$MW_s = (29.02 \times .915) + [18\ (1 - .915\ )]$

= 28.08

Where:

MW_s = Molecular weight of wet gas, lb/lb-mole.

18 = Molecular weight of water, lb/lb-mole.

7. Average velocity of gas stream at actual conditions, ft/sec.

$$v_s = 85.49 \times C_p \times (\sqrt{\Delta p})_{avg.} \times \left[\frac{T_s\ (avg)}{P_s \times MW_s}\right]^{\frac{1}{2}}$$

$$v_s = 85.49 \times 0.840 \times 1.15 \times \left[\frac{675.}{30.03 \times 28.08}\right]^{\frac{1}{2}}$$

$$= 73.8$$

Where:

v_s = Average gas stream velocity, ft/sec.

85.49 = Pitot tube constant, ft/sec x $\left[\frac{(lb/lb\text{-}mole)(in.Hg)}{(^{o}R)\ (in.\ H_2O)}\right]^{\frac{1}{2}}$.

C_p = Pitot tube coefficient, dimensionless.

Δp = Velocity head of stack gas, in H_2O.

T_s = Absolute gas stream temperature, ^{o}R.

P_s = Absolute gas stack pressure, in. Hg.

8. Average gas stream dry volumetric flow rates, dscf/min.

$$Q_{s(std)} = \frac{1058.8 \times v_s \times A_s \times M_d \times P_s}{T_s}$$

$$Q_{s(std)} = \frac{1058.8 \times 73.8 \times 3.55 \times 0.915 \times 30.03}{(115 + 460)}$$

$$= 11,280.$$

Where:

$Q_{s(std)}$ = Volumetric flow rate of dry stack gas, corrected to standard conditions, dscf/min.

A_s = Cross-sectional area of stack, ft^2.

1058.8 = Factor which includes standard temperature ($528^{o}R$), standard pressure (29.92 in. Hg), and 60 sec/min, $\frac{(^{o}R)\ (sec)}{(in.\ Hg)(min)}$.

9. Isokinetic variation calculated from intermediate values, percent.

$$I = \frac{17.316 \times T_s \times V_{m(std)}}{v_s \times \theta \times P_s \times M_d \times (D_n)^2}$$

$$I = \frac{17.316 \times 675. \times 50.93}{73.8 \times 96.0 \times 30.03 \times .915 \times (.175)^2}$$

$$= 99.8$$

Where:

I = Percent of isokinetic sampling.

θ = Total sampling time, minutes.

D_n = Diameter of nozzle, inches.

17.316 = Factor which includes standard temperature ($528^{\circ}R$), standard pressure (29.92 in. Hg), the formula for calculating area of circle $\frac{\pi D^2}{4}$, conversion of square feet to square inches (144), conversion of seconds to minutes (60), and conversion to percent (100), $\frac{(\text{in. Hg})\ (\text{in}^2)\ (\text{min})}{(^{\circ}R)\ (\text{ft}^2)\ (\text{sec})}$.

10. Particulate concentration, gr/dscf.

$$C_1 = 0.015432 \times \frac{M_t}{V_{m(std)}}$$

$$C_1 = 0.015432 \times \frac{167,176.2}{50.93} = 50.7$$

Where:

C_1 = Particulate concentration, gr/dscf.

M_t = Total weight of particulate caught by train, mg.

0.015432 = Conversion factor of gr/mg.

11. Particulate mass emission rate, lb/hr.

$$PMR_t = 0.0085714 \times C_1 \times Q_{s(std)}$$

$$= 0.0085714 \times 50.66 \times 11,300. = 4,900.$$

Where:

PMR_t	=	Particulate mass emission rate, lb/hr.
0.0085714	=	Conversion factor relating minutes to hours (60), and grains to pounds (7,000), (lb) (min)/(gr) (hr).

APPENDIX D

EQUIPMENT CALIBRATION DATA

Calibrate #4

RAC

Date 7/15/80

Box No. # 1205

Barometric pressure, P_b = 30.07 in. Hg

Dry gas meter No. _____

Orifice manometer setting, ΔH, in. H_2O	Gas volume wet test meter V_w, ft^3	Gas volume dry gas meter V_d, ft^3	Temperature: Wet test Meter t_w, °F	Temperature: Dry gas meter Inlet t_{di}, °F	Temperature: Dry gas meter Outlet t_{do}, °F	Temperature: Dry gas meter Average t_d, °F	Time θ, min	Y	ΔH@
0.5	5	023.642 028.779	82	96 100 101	92 94 95	96.33	12.77	.9978	1.725
1.0	5	028.779 033.902	82	97 103 104	94 95 97	98.33	9.22	1.003	1.898
~~2.0~~ 1.5	10	033.902 044.156	82	99 104 110	94 96 97	100.7	15.59	1.006	1.999
~~1.0~~ 2.0	10	044.156 054.450	82	103 102 118	95 97 98	101.33	13.67	1.001	2.061
6.0	10								
8.0	10							1.002	
						Average		1.002	1.921

Calculations

ΔH	$\frac{\Delta H}{13.6}$	Y: $\frac{V_w P_b (t_d + 460)}{V_d\left(P_b + \frac{\Delta H}{13.6}\right)(t_w + 460)}$		ΔH@: $\frac{0.0317\ \Delta H}{P_b (t_d + 460)}\left[\frac{(t_w + 460)\ \theta}{V_w}\right]^2$	
0.5	0.0368	536.3 + 30.07 - 5 542 - 30.11 - 5.187	.9978	.015835 .0000009 552.53 - 30.07	542 - 12.77 ±5 ✓ 1.725
1.0	0.0737	558.3 - 30.07 - 5 542 - 30.14 - 5.123	1.003	.0317 .0000019 558.33 - 30.07	542 - 9.22 ±5 ✓ 1.896
1.5 ~~2.0~~	0.147	566.7 - 30.07 - 10 542 - 30.14 - 10.254	1.006	.04755 .0000028 566.7 - 30.07	542 - 15.59 ±10 ✓ 1.999
2.0 ~~4.0~~	0.294	576.3 + 30.07 - 10 542 - 30.14 -	1.001	.0634 .0000039 576.33 - 30.07	542 - 13.67 ±10 ✓ 2.061
6.0	0.431	Avg	1.002		Avg 1.921
8.0	0.588				

Y = Ratio of accuracy of wet test meter to dry test meter. Tolerance = ± 0.01

ΔH@ = Orifice pressure differential that gives 0.75 cfm of air at 70° F and 29.92 inches of mercury, in. H_2O. Tolerance = ± 0.15

F-1D

Date 1-28-80 Box No. 1205

Barometric pressure, P_b = 30.08 in. Hg Dry gas meter No. ____

Orifice manometer setting, ΔH, in. H_2O	Gas volume wet test meter V_w, ft^3	Gas volume dry gas meter V_d, ft^3	Temperature: Wet test Meter t_w, °F	Temperature: Dry gas meter Inlet t_{di}, °F	Temperature: Dry gas meter Outlet t_{do}, °F	Temperature: Dry gas meter Average t_d, °F	Time θ, min	Y	ΔH@
0.5	5	060.653 / 065.639	80	63, 78, 80	63, 74, 74	72	12.43	.9867	1.7849
1.0	5	065.639 / 070.583	80	78, 80, 88	74, 76, 77	78.5	9.1	1.006	1.8902
~~2.0~~ 1.5	10	070.583 / 075.529	80	85, 91, 93	76, 78, 79	83	7.55	1.0128	1.9355
~~4.0~~ 2.0	10	075.529 / 085.458	79	86, 90, 90	78, 80, 81	87.16	13.26	1.0157	1.9677
6.0	10								
8.0	10								
						Average		1.0053	1.8945

Calculations

ΔH	$\frac{\Delta H}{13.6}$	Y: $\frac{V_w P_b (t_d + 460)}{V_d\left(P_b + \frac{\Delta H}{13.6}\right)(t_w + 460)}$	ΔH@: $\frac{0.0317\ \Delta H}{P_b (t_d + 460)}\left[\frac{(t_w + 460)\ \theta}{V_w}\right]^2$
0.5	0.0368		
1.0	0.0737		
2.0	0.147		
4.0	0.294		
6.0	0.431		
8.0	0.588		

Y = Ratio of accuracy of wet test meter to dry test meter. Tolerance = ± 0.01

ΔH@ = Orifice pressure differential that gives 0.75 cfm of air at 70° F and 29.92 inches of mercury, in. H_2O. Tolerance - ± 0.15

Date 5-2-80 Box No. NUTECH #5

Barometric pressure, P_b = 29.93 in. Hg Dry gas meter No. #5

DR.

Orifice manometer setting, ΔH, in. H_2O	Gas volume wet test meter V_w, ft^3	Gas volume dry gas meter V_d, ft^3	Temperature: Wet test Meter t_w, °F	Temperature: Dry gas meter Inlet t_{di}, °F	Temperature: Dry gas meter Outlet t_{do}, °F	Temperature: Dry gas meter Average t_d, °F	Time θ, min	Y	ΔH@
0.5	5	852.144 / 857.393	63°	82°	83°	84°	83°	12.69	1.0049	1.7183
1.0	5	857.295 / 862.474	65°	84°	85°	85	84.67	9.09	.9911	1.7714
1.5	5	862.475 / 867.669	64°	85°	86°	87°	86°	7.63	.9953	1.5605
2.0	10	867.670 / 878.161	64°	86°	88°	90	88°	13.14	.9938	1.8325
6.0	10									
8.0	10									
							Average		.9958	1.7956

Calculations

ΔH	$\frac{\Delta H}{13.6}$	Y: $\frac{V_w P_b (t_d + 460)}{V_d\left(P_b + \frac{\Delta H}{13.6}\right)(t_w + 460)}$	ΔH@: $\frac{0.0317\ \Delta H}{P_b (t_d + 460)}\left[\frac{(t_w + 460)\ \theta}{V_w}\right]^2$
0.5	0.0368		
1.0	0.0737		
2.0	0.147		
4.0	0.294		
6.0	0.431		
8.0	0.588		

Y = Ratio of accuracy of wet test meter to dry test meter. Tolerance = ± 0.01

ΔH@ = Orifice pressure differential that gives 0.75 cfm of air at 70° F and 29.92 inches of mercury, in. H_2O. Tolerance - ± 0.15

Calibrator JW

NOTEBK

Date 7/21/80

Box No. #5

Barometric pressure, P_b = 30.02 in. Hg

Dry gas meter No. _____

Orifice manometer setting, ΔH, in. H_2O	Gas volume wet test meter V_w, ft^3	Gas volume dry gas meter V_d, ft^3	Temperature: Wet test Meter t_w, °F	Temperature: Dry gas meter Inlet t_{di}, °F	Temperature: Dry gas meter Outlet t_{do}, °F	Temperature: Dry gas meter Average t_d, °F	Time θ, min	Y	ΔH@
0.5	5	182.352 187.330	86	87 88	89	88	11.97	1.009	1.646
1.0	5	187.330 192.319	85	88 90	91	89.7	8.7	1.006	1.727
~~2.0~~ 1.5	10	192.319 202.596	85	90 93	94	92.3	15.0	.9825	1.917
~~4.0~~ 2.0	10	202.596 212.687	85	93 95	96	94.7	12.75	1.004	1.838
6.0	10								
8.0	10								
						Average		1.000	1.782

Calculations

ΔH	$\frac{\Delta H}{13.6}$	Y: $\frac{V_w P_b (t_d + 460)}{V_d\left(P_b + \frac{\Delta H}{13.6}\right)(t_w + 460)}$	ΔH@: $\frac{0.0317\ \Delta H}{P_b (t_d + 460)}\left[\frac{(t_w + 460)\,\theta}{V_w}\right]^2$	
0.5	0.0368	528-30.02-5 546-30.06-4.948	1.009	.0317 .000019 528·30.02	546-11.97 ÷5	1.646
1.0	0.0737	529.7-30.02-5 545-30.09-4.999	1.006	.0317 .000019 529.7-30.02	545-8.7 ÷5	1.727
~~2.0~~ 1.5	0.147	553.3-30.02-10 545-30.13-10.197	.9825	.04755 .000019 553.3-30.02	545-15.0 ÷10	1.917
~~4.0~~ 2.0	0.294	554.7-30.02-10 545-30.17-10.041	1.004	.0634 .000038 554.7-30.02	545-12.75 ÷10	1.858
6.0	0.431					
8.0	0.588		Avg 1.000			Avg 1.782

Y = Ratio of accuracy of wet test meter to dry test meter. Tolerance = ± 0.01

ΔH@ = Orifice pressure differential that gives 0.75 cfm of air at 70° F and 29.92 inches of mercury, in. H_2O. Tolerance = ± 0.15

Calibrator BN

RAC

Date 7/9/80

Box No. #1226

Barometric pressure, P_b = 29.98 R in. Hg

Dry gas meter No. _____

Orifice manometer setting, ΔH, in. H_2O	Gas volume wet test meter V_w, ft^3	Gas volume dry gas meter V_d, ft^3	Temperature: Wet test Meter t_w, °F	Temperature: Dry gas meter Inlet t_{di}, °F	Temperature: Dry gas meter Outlet t_{do}, °F	Temperature: Dry gas meter Average t_d, °F	Time θ, min	Y	$\Delta H_@$
0.5	5	723.819 729.034	76	90 95 97	92 94 95	93.8	13.01	.9894	1.945
1.0	5	729.034 734.248	76	93 100 101	94 96 95	97.7	9.36	.9954	1.913
~~2.0~~ 1.5	10	734.248 744.739	76	96 107 108	94 96 96	99.5	10.35	.9914	2.15
~~4.0~~ 2.0	10	744.739 755.240	76	99 110 111	90 99 98	102.2	14.02	.1892	2.14
6.0	10								
8.0	10								
						Average		.9914	2.03

Calculations

ΔH	$\frac{\Delta H}{13.6}$	Y: $\frac{V_w P_b (t_d + 460)}{V_d\left(P_b + \frac{\Delta H}{13.6}\right)(t_w + 460)}$		$\Delta H_@$: $\frac{0.0317\ \Delta H}{P_b (t_d + 460)}\left[\frac{(t_w + 460)\ \theta}{V_w}\right]^2$		
0.5	0.0368	553.8-29.98-5 536-30.03-5.215	.9894	.0315.000001 553.8-29.98	536-13.01 ÷5	1.945
1.0	0.0737	557.7-29.98-5 536-30.05-5.214	.9954	.0317.000019 557.7-29.98	536-9.36 ÷5	1.913
1.5 ~~2.0~~	0.147	559.5-29.98-10 536-30.09-10.291	.9914	.0475.000028 559.5-29.98	536-10.35	2.15
2.0 ~~4.0~~	0.294	562.2-29.98-10 536-30.13-10.561	.9892	.0634 .000038 562.2-29.98	536-14.02 ÷10	2.14
6.0	0.431					
8.0	0.588	Avg .9914			Avg 2.03	

Y = Ratio of accuracy of wet test meter to dry test meter. Tolerance = ± 0.01

$\Delta H_@$ = Orifice pressure differential that gives 0.75 cfm of air at 70° F and 29.92 inches of mercury, in. H_2O. Tolerance = ± 0.15

Date 6/12/80 Box No. 1209

Barometric pressure, P_b = 30.01 in. Hg Dry gas meter No. ORIGINAL

Orifice manometer setting, ΔH, in. H_2O	Gas volume wet test meter V_w, ft^3	Gas volume dry gas meter V_d, ft^3	Temperature: Wet test meter t_w, °F	Temperature: Dry gas meter inlet t_{di}, °F	Temperature: Dry gas meter outlet t_{do}, °F	Temperature: Dry gas meter average t_d, °F	Time θ, min	Y	ΔH@
0.5	5.000	5.164	68>67 / 66	69 / 84	71 / 79	75.75	12.433		
1.0	5.001	5.257	66>66	82 / 90	79 / 89	85.75	9.183		
2.0	~~109.778~~	10.490	66>66	88	89 / 89	89.0	13.233		
~~2.0~~ 4.0	~~109.977~~	10.529	64>65	79 / 78	81 / 81	92.75	13.516		
6.0	10								
8.0	10								
						Average		.988	1.824

Calculations

ΔH	$\frac{\Delta H}{13.6}$	Y: $\frac{V_w P_b (t_d + 460)}{V_d\left(P_b + \frac{\Delta H}{13.6}\right)(t_w + 460)}$	ΔH@: $\frac{0.0317\ \Delta H}{P_b (t_d + 460)}\left[\frac{(t_w + 460)\ \theta}{V_w}\right]^2$
0.5	0.0368	.98311	1.686
1.0	0.0737	.98100	1.812
2.0	0.147	.99466	1.865
~~2.0~~ 4.0	0.294	.97989	1.733
6.0	0.431		
8.0	0.588		

Y = Ratio of accuracy of wet test meter to dry test meter. Tolerance = ± 0.01

ΔH@ = Orifice pressure differential that gives 0.75 cfm of air at 70° F and 29.92 inches of mercury, in. H_2O. Tolerance - ± 0.15

Date 1/30/80

Box No. 1204

Barometric pressure, P_b = 30.28 in. Hg

Dry gas meter No. _____

Orifice manometer setting, ΔH, in. H_2O	Gas volume wet test meter V_w, ft^3	Gas volume dry gas meter V_d, ft^3	Temperature: Wet test Meter t_w, °F	Temperature: Dry gas meter Inlet t_{di}, °F	Temperature: Dry gas meter Outlet t_{do}, °F	Temperature: Dry gas meter Average t_d, °F	Time θ, min	Y	ΔH@
0.5	5	047.348 054.322	75	56 74 67	62 75 64	66.66	12.13	.9883	1.6742
1.0	5	054.322 059.431	74	72 89 81	70 88 74	79.5	8.91	.9863	1.7848
~~2.0~~ 1.5	~~10~~ 5	059.431 064.626	74	96 100	82 85	90.75	7.56	.9894	1.8905
~~4.0~~ 2.0	10	064.626 070.215	74	92 110 109	86 94 91	96.83	13.28	.9799	1.8909
6.0	10								
8.0	10								
						Average		.9858	1.8101

Calculations

ΔH	$\frac{\Delta H}{13.6}$	Y: $\frac{V_w P_b (t_d + 460)}{V_d \left(P_b + \frac{\Delta H}{13.6}\right)(t_w + 460)}$	ΔH@: $\frac{0.0317\ \Delta H}{P_b (t_d + 460)} \left[\frac{(t_w + 460)\ \theta}{V_w}\right]^2$ (535 X)
0.5	0.0368		
1.0	0.0737		
2.0	0.147		
4.0	0.294		
6.0	0.431		
8.0	0.588		

Y = Ratio of accuracy of wet test meter to dry test meter. Tolerance = ± 0.01

ΔH@ = Orifice pressure differential that gives 0.75 cfm of air at 70° F and 29.92 inches of mercury, in. H_2O. Tolerance - ± 0.15

.99 → 1.01

Probe	100	150	200	250	
1-3'	15	30	40	50	
2-3'	14	29	38	50	Rheo.
1-4'	22	38	52	60	setting
2-4'	26	37	50	60	
1-6'	36	50	72	77	

Simple case thermometers:
① Adj. filt. chamber thermometers to boiling pt. (212°F). OK
② Adj. control box & exit imp. thermometers to ice pt. (32°F). OK
③ Check pyrometers & thermocouples @ B.P. of H_2O & oil & at ice pt. OK ± 2°F.

Calibration Check: Nomographs

Laboratory Weston by BLJ

Date 4-18-80

(1) C Factor Adjustment

Probe 1	Probe 2	Probe 3
$C_p =$ _____	$C_p =$ _____	$C_p =$ _____

If $C_p > 0.87$ or $C_p < 0.83$

$$C_{adj} = C\frac{C_p^2}{(0.85)^2}$$

Probe 1	Probe 2	Probe 3
$= C\frac{(\quad)^2}{(0.85)^2}$	$= C\frac{(\quad)^2}{(0.85)^2}$	$= C\frac{(\quad)^2}{(0.85)^2}$
$= C(\quad).$	$= C(\quad).$	$= C(\quad).$

(2) Accuracy (±10% Deviation acceptable)

(a) K-factor line, ΔH and Δp scales

Aline	Set	ΔH Reading 1	Nomograph 2	3	Nomograph 4	5
$\Delta p = 0.001$; $\Delta H = 0.1$	$\Delta p = 0.01$	1.02	0.97	0.93	1.00	0.92
	$\Delta p = 0.1$	10.0	9.4	8.7	9.3	8.6
$\Delta p = 10.0$; $\Delta H = 10.0$	$\Delta p = 1.0$	1.02	1.02	1.06	0.99	1.04
	$\Delta p = 0.1$	0.103	0.108	0.108	0.100	0.112
$\Delta p = 0.1$; $\Delta H = 1.0$	$\Delta p = 1.0$	9.9	9.4	9.5	9.9	9.4
	$\Delta p = 0.01$	0.101	0.104	0.106	0.102	0.106

(b) C, t_s and D_n scales

ΔH_{calc}	C	D_n	t_s (°F)	Δp	ΔH Readings 1	Nomograph 2	3	Nomograph 4	5
0.47	2.0	0.5	2500	0.02	0.47	0.49	0.51	0.48	0.49
8.6	1.5	0.4	1500	0.8	8.7	8.6	8.6	9.0	8.5
0.31	1.0	0.3	1000	0.1	0.32	0.32	0.33	0.31	0.33
4.7	0.7	0.25	500	3.0	4.8	4.7	4.8	4.8	4.7
0.60	0.5	0.2	200	0.9	0.69	0.65	0.66	0.62	0.65

$$\Delta H_{calc} = K_e\, C\, \frac{D_h^4}{T_s}\, \Delta p$$

$K_e = 5.507 \times 10^5$

1, 2, 4 OK

3, 5 Unacceptable

WEIGHT TRACEABILITY CERTIFICATE

TO: WESTON, Roy F.
1426 Lewis Lane
West Chester, Pa. 19380

The Mettler balances listed below have been serviced by our representative on June 24 1980

This is to certify that the test weights used are traceable to the National Bureau of Standards.

Mettler identification number of test weights used: #26

Mettler calibration date of test weights used: 11-29-79

National Bureau of Standards test number: 732/0670-38

National Bureau of Standards test date: 6-6-78

Type and serial number of balances serviced:

H10W 388106	H5 52252
H15 2F3215	P163 564070

Joseph Rogowicz
Mettler Service Representative

6-24-80
Date of Issue

METTLER
Mettler Instrument Corporation
Box 71, Hightstown, NJ 08520
(609) 448-3000

F124 (9/78)

RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY

COOK COLLEGE

New Brunswick, New Jersey

THIS IS TO CERTIFY THAT

NANCY ROBERTSON

HAS COMPLETED THE SHORT COURSE

VISUAL EMISSIONS EVALUATION RECERTIFICATION

APRIL 17, 1980

COOK COLLEGE

Grant F. Walton

Dean

D-10

RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY

COOK COLLEGE

New Brunswick, New Jersey

THIS IS TO CERTIFY THAT

DAVID A. RALSTON

HAS COMPLETED THE SHORT COURSE

VISUAL EMISSIONS EVALUATION RECERTIFICATION

APRIL 17, 1980

Grant F. Walton

Dean

D-11

RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY

COOK COLLEGE

New Brunswick, New Jersey

THIS IS TO CERTIFY THAT

THOMAS J. DAVIS

HAS COMPLETED THE SHORT COURSE

VISUAL EMISSIONS EVALUATION CERTIFICATION

APRIL 17, 1980

COOK COLLEGE
RUTGERS UNIVERSITY

Grant E. Walton

Dean

D-12

TAYLOR
SYBRON CORPORATION
TAYLOR INSTRUMENT / CONSUMER PRODUCTS DIVISION SYBRON CORPORATION / ARDEN, N C 28704

REPORT OF CALIBRATION

CERTIFIED PRECISION QUALITY
Type of Instrument

Catalog No. 21015 Serial No. 67F 0961

Scale and Subdivision 203 to 311°F, 0.5°F

FEATURES: TOTAL IMMERSION

Results of Tests

Reading of Thermometer	Temperature IPTS-68	Correction To Be Applied
32.050	32.000	-.050
205.000	205.000	.000
240.000	240.000	.000
274.950	275.000	+.050
310.050	310.000	-.050

If the correction is + the true temperature is higher than the indicated temperature; if the correction is — the true temperature is lower than the indicated temperature.

The following paragraph applies to thermometers with an ice point. The tabulated corrections apply provided the ice-point reading, taken after exposure for not less than 3 days to a temperature of about 25° C. (77° F) is 32.050 If the ice-point reading is found to be higher (or lower) than stated, all other readings will be higher (or lower) by the same amount. If the thermometer is used or tested at a given temperature shortly after being heated to a higher temperature, an error of (minus) —0.01° or less; for each 10° difference between the two temperatures, may be introduced.

We hereby certify that this thermometer is calibrated by comparison to "working standards" whose primary source of accuracy rests in platinum resistance thermometers calibrated by the National Bureau of Standards. Continuing accuracy is assured by periodically submitting our platinum resistance thermometers to the National Bureau of Standards. In addition, intermediate checks are made against a triple point of water cell, a freezing point of zinc cell, and a freezing point of tin cell.

Date ~~12/22/76~~ Recertified 6/9/77 No change

Signed R. Wilcox

A7400-C REV. 6/75

APPENDIX E

PROJECT PARTICIPANTS

APPENDIX E

PROJECT PARTICIPANTS

Peter J. Marks Vice President Laboratory Services	econENVIRONomics Division
Barry L. Jackson Project Manager Air Testing	econENVIRONomics Division
Jeffrey D. O'Neill Project Scientist	econENVIRONomics Division
Charles J. Dobroski, Jr. Assistant Project Scientist	econENVIRONomics Division
David A. Ralston Assistant Project Scientist	econENVIRONomics Division
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Russel P. Frye Laboratory Technician	econENVIRONomics Division