

Key fact

The file name refers to the file number, the AP42 chapter and then the section. The file name "rel01_c01s02.pdf" would mean the file relates to AP42 chapter 1 section 2. The document may be out of date and related to a previous version of the section. The document has been saved for archival and historical purposes. The primary source should always be checked. If current related information is available, it will be posted on the AP42 webpage with the current version of the section.

These are the source test reports for AP 42 section 11.17 Lime Manufacturing. They are referenced in the database as a group, Lime Manufacturing source tests.

Commonwealth of Pennsylvania
Environmental Resources
November 6, 1990

Subject: Stack Test Review

To: Data File
New Enterprise Stone and Lime Company, Inc.
Warriors Mark Township, Huntingdon County

From: Jaydeb Pal 
Air Pollution Control Engineer
Division of Technical Services
and Monitoring
Bureau of Air Quality Control

Through: Chief, Source Testing and Monitoring Section 

New Enterprise Stone and Lime Company, Inc. operates a limestone crushing plant with a rated capacity of 150 tons/hr. at the aforementioned location. This facility consists of two crushers, three screens, several conveyors, three product holding bins and one fines silo. The emissions from the three screens and the screening conveyor feed are ducted to a baghouse designated as the B-1 baghouse, while the emissions from the two crushers, the fines conveyor discharge and the fines silo vent are drawn through another baghouse designated as the B-2 baghouse. Water sprays are used to control the emissions from other areas. The exhaust from each baghouse is discharged to the atmosphere through a 29-inch by 42-inch stack.

Three particulate test runs were performed in each of the two baghouse exhaust stacks by the personnel of Gannett Fleming, Inc. In addition, visible emission tests were conducted for three hours for each stack. All opacity readings were zero. All of these tests, performed to demonstrate compliance with Section 60.672(a) of 40 CFR, Part 60 (NSPS), Subpart 000, are acceptable to the Department with the following exceptions:

1. None of the particulate tests met the minimum sample volume requirement of 60 dry standard cubic feet (dsaf) as required by Section 60.675 of NSPS, Subpart 000 (plan approval requirement). The sample volumes for B-1 baghouse tests were 51.8, 49 and 48.2 dsaf for the three runs, and the sample volumes for B-2 baghouse tests were 55.1, 52.1 and 54.1 dsaf for the three runs. However, this should have negligible effect on the final tests results.
2. Opacity observations were not performed concurrently with all particulate test runs as required by Section 60.675 of NSPS, Subpart 000 (plan approval requirement). No opacity observations were made during Run No. 3 of B-1 baghouse particulate tests. During B-2 baghouse particulate tests, opacity observations were performed for 56% and 13% of the test time for Run Nos. 1 and 3, respectively.

November 6, 1990

The following data was extracted from the test report:

B-1 baghouse exhaust stack

Test run no.	1	2	3
Test date	8/21/90	8/21/90	8/21/90
Process feed rate during test (ton/hr.)	170	170	170
Volumetric flow rate (dscfm)	24,559	24,214	23,730
Particulate emission concentration (gr./dscf)	0.022	0.011	0.005
Particulate emission rate (lb./hr.)	4.5	2.2	1.1
Allowable particulate emission concentration (gr./dscf) (per NSPS: 40 CFR, Part 60, Subpart 000)	0.022	0.022	0.022
Opacity during test (%)	0	0	not performed
Allowable opacity (%) (per NSPS: 40 CFR, Part 60, Subpart 000)	7	7	7

B-2 baghouse exhaust stack

Test run no.	1	2	3
Test date	8/28/90	8/28/90	8/28/90
Process feed rate during test (ton/hr.)	170	170	170
Volumetric flow rate (dscfm)	15,143	14,501	15,104
Particulate emission concentration (gr./dscf)	0.004	0.004	0.002
Particulate emission rate (lb./hr.)	0.5	0.4	0.3
Allowable particulate emission concentration (gr./dscf) (per NSPS: 40 CFR, Part 60, Subpart 000)	0.022	0.022	0.022
Opacity during test (%)	*0	0	*0
Allowable opacity (%) (per NSPS: 40 CFR, Part 60, Subpart 000)	7	7	7

*Opacity observations were made for 56% and 13% of the particulate test time for Run Nos. 1 and 3, respectively.

cc: Richard D. Holler, Region III, Harrisburg
File No. 31-310-010B through Doug Leisher
EPA/RSI
Reading File

JP:bad

Environmental Resources
October 11, 1990

SUBJECT: Source Test Review
New Enterprise Stone & Lime Co., Inc.
Narchood Crushing Plant No. 3
Warriors Mark Township, Huntingdon County
File: 31-310-0198

TO: L. Blaine DeLaven, Chief
Source Test and Monitoring Section
Division of Technical Services and Monitoring

FROM: Richard D. Roller *RDR*
Air Pollution Control Engineer
Harrisburg Regional Office

Please review the attached source tests which were conducted as a fulfillment of Conditions 4 through 9 of Plan Approval 31-310-0198. Rick Segley reviewed and accepted the pretest procedures.

The following should be considered when reviewing the tests:

1. The tests were performed to demonstrate compliance with Section 60.672(a)(162) of 40 CFR, Part 60, Subpart 600. Specifically, the emission standard is 0.022 gr/dscf and the opacity standard is 7 %.
2. I was present during the second and third runs during the first day of testing. All observed testing was conducted in accordance with the previously approved testing protocol.
3. Although the number of water sprays being used during testing, their locations and operating status were not recorded, I do not consider this to be a serious flaw with the testing protocol.
4. A process flow diagram and description were not included in the test report. If one is needed, I can supply it. Essentially, the B-1 baghouse (south module) controls emissions from the three screens plus the screenings conveyor feed. The D-2 baghouse (north module) controls emissions from the two crusher discharges, the fines conveyor discharge and the fines silo vent. Other areas are controlled by water sprays.

File No. 31-310-0198





GANNETT FLEMING, INC.
P.O. Box 1963
Harrisburg, PA 17105-1963

Location:
207 Senate Avenue
Camp Hill, PA 17011

Fax: (717) 763-8150
Office: (717) 763-7211

September 29, 1990

New Enterprise Stone & Lime Co., Inc.
New Enterprise, PA 16664

Attention: J. Lon Reffner, P.E.

Gentlemen:

Re: Emissions Testing

RECEIVED
OCT 11-1990
DER-HBG REGION
AIR QUALITY CONTROL

In accordance with your written authorization dated May 22, 1990, Gannett Fleming, Inc. conducted particulate emissions testing for state compliance. The testing was conducted on August 21 and 28, 1989⁸⁰ at your Narehood stone crushing plant No. 2 in Tyrone, Pennsylvania. The tests were conducted to determine if the operation of the two baghouse (B-1 Left, B-2 Right) was in compliance with the emission standards for particulate matter as outlined in Section 60.672 of 40 CFR, Part 60, Subpart 000. The testing was conducted in accordance with Federal Environmental Protection Agency (FEPA) regulations and Pennsylvania Department of Environmental Resources (PA DER) modifications where applicable.

Three tests were performed on each of the 20,000 CFM baghouses. A sketch of the sampling locations are attached as Exhibit A.

Mr. Brian Schreffler and Mr. Chris Key of Gannett Fleming performed the particulate emissions testing and Mr. Richard Roller of the PA DER was the state observer. Visible emission tests were performed by Mr. J. Lon Reffner of New Enterprise Stone & Lime.

The results of the testing indicate that for the B-1 Left baghouse the average particulate emission rate was 0.013 grains per dry standard cubic foot (gr/dscf) and the highest emission rate was 0.022 gr/dscf. For the B-2 Right baghouse, the average emission rate was 0.003 gr/dscf and the highest emission rate was 0.004 gr/dscf. The average particulate emission rates of each of the two baghouses are below the allowable standard of 0.022 gr/dscf. A summary of the data is presented as Exhibit B.

Gannett Fleming

New Enterprise Stone & Lime Co., Inc.
New Enterprise, PA 15664

-2-

September 29, 1990

Other supporting documentation including sample calculations, raw field, data, lab analysis summary, and instrument calibrations is attached as Exhibits C through F.

If you have any questions concerning this report, please contact us.

Very truly yours,

GANNETT FLEMING, INC.



ROBERT E. SHAFFER, P.E.
Project Manager

Attachments

26906.001
NRSMB001.024

GANNETT FLEMING

LIST OF EXHIBITS

EXHIBIT A - SKETCH OF SAMPLING LOCATION

EXHIBIT B - DATA SUMMARY

EXHIBIT C - SAMPLE CALCULATIONS

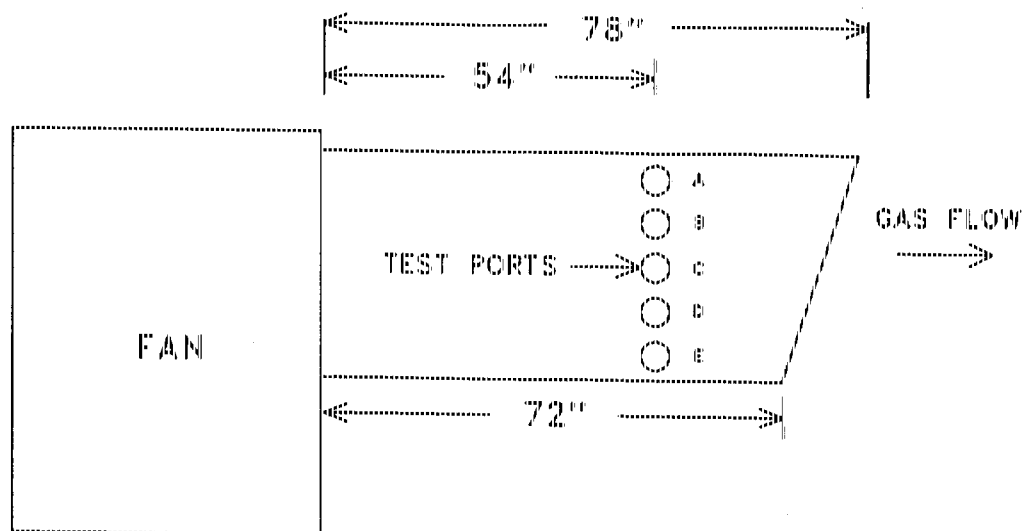
EXHIBIT D - RAW FIELD DATA

EXHIBIT E - LAB ANALYSIS SUMMARY

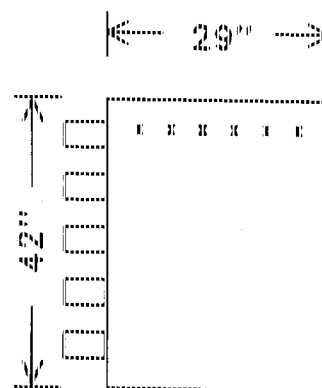
EXHIBIT F - INSTRUMENT CALIBRATIONS

GIANNETT FLEMING

EXHIBIT A - SKETCH OF SAMPLING LOCATION



SIDE VIEW



FRONT VIEW

5 TEST PORTS
6 SAMPLING POINTS/PORT
30 TOTAL SAMPLING POINTS

GANNETT FLEMING, INC.
P.O. BOX 1983
HARRISBURG, PA 17105

NEW ENTERPRISE STONE & LIME
STACKS B-1 & B-2

DATE: 9-17-90
SCALE: NONE

DRAWN BY:
KLS

DRAWING NUMBER
1

GANNETT FLEMING

EXHIBIT B - DATA SUMMARY

Gannett Fleming, Inc.

DATA SUMMARY SHEET

PLANT NAME: NEW ENTERPRISE STONE & LIME

JOB NO.: 26906.001

LOCATION: STACK B-1 (LEFT)

TEST BY: BKS

OUTLET	DESIGN	TEST 1	TEST 2	TEST 3	AVERAGE
DATE		8/21/90	8/21/90	8/21/90	
START		0900	1220	1540	
FINISH		1035	1415	1715	
VOLUME ACFM		24,150	23,862	23,657	23,890
VOLUME SCFM		24,716	24,468	24,074	24,419
VOLUME DSCFM		24,559	24,214	23,730	24,168
TEMPERATURE °F		66	65	69	67
MOISTURE %		0.6	1.0	1.4	1.0
DUST CONCENTRATION gr/ACF		0.022	0.011	0.005	0.013
DUST CONCENTRATION gr/SCF		0.021	0.010	0.005	0.012
DUST CONCENTRATION gr/DSCF	0.022	0.022	0.011	0.005	0.013
DUST CONCENTRATION LBS/HR		4.5	2.2	1.1	2.6
FEED RATE TONS/HR		170	170	170	170
OPACITY	20%	0	0	0	0
O2 %		20.7	20.7	20.6	20.7
CO2 %		0.0	0.0	0.0	0.0
CO %		0	0	0	0
ISOTHERMICS	100 ± 10%	104.6	105.0	106.0	

Gannett Fleming, Inc.

DATA SUMMARY SHEET

PLANT NAME: NEW ENTERPRISE STONE & LIME

JOB NO.: 26906.001

LOCATION: STACK B-2 (RIGHT)

TEST BY: BKS

OUTLET	DESIGN	TEST 1	TEST 2	TEST 3	AVERAGE
DATE		8/28/90	8/28/90	8/28/90	
START		0905	1044	1333	
FINISH		0940	1232	1508	
VOLUME ACFM		15,332	14,932	15,716	15,327
VOLUME SCFM		15,245	14,657	15,286	15,063
VOLUME DSCFM		15,143	14,501	15,104	14,916
TEMPERATURE °F		78	85	90	84
MOISTURE %		0.7	1.1	1.2	1.0
DUST CONCENTRATION gr/ACF		0.004	0.003	0.002	0.003
DUST CONCENTRATION gr/SCF		0.004	0.004	0.002	0.003
DUST CONCENTRATION gr/DSCF	0.022	0.004	0.004	0.002	0.003
DUST CONCENTRATION LBS/HR		0.5	0.4	0.3	0.4
FEED RATE TONS/HR		170	170	170	170
OPACITY	20%	0	0	0	0
O2 %		20.6	20.6	20.7	20.6
CO2 %		0.0	0.0	0.0	0.0
CO %		0	0	0	0
ISOKINETICS	100 ± 10%	107.2	105.2	104.8	

GANNETT FLEMING

EXHIBIT C -- SAMPLE CALCULATIONS

13-Sep-90

E.P.A. METHOD 5 CALCULATION

JOB IDENTIFICATION

Client: NEW ENTERPRISE
Run No.: B-1-1
Date: 8/21/90

TOTAL GAS VOLUME	Vm=	52.158	cu.ft.
TOTAL WATER VOLUME	Vh2o=	7	ml
GAS METER TEMPERATURE	Tm=	80	deg.F
BAROMETRIC PRESSURE	BP=	30.39	"Hg
METER PRESSURE (dH ACTUAL)	Pm=	0.06	"Hg
STATIC PRESSURE	Ps=	0	"Hg
STACK TEMPERATURE	Ts=	66	deg.F
METER ERROR RATIO	Y=	0.994	
DUCT AREA	Ad=	8.46	sq.ft.
SQUARE ROOT OF VELOCITY PRESSURE	sq.rt.VP=	0.854	
PITOT TUBE CONSTANT	PC=	0.84	
TYPE "S" = 0.84 OR AS CALIBRATED			
PARTICULATE WEIGHT	Wp=	0.0722	g
NOZZLE DIAMETER	Dn=	0.187	In.
TOTAL SAMPLING TIME	T=	90	min.

GAS COMPOSITION:

PERCENT OXYGEN	O2=	20.7	% dry
PERCENT CARBON DIOXIDE	CO2=	0	% dry
PERCENT CARBON MONOXIDE	CO=	0	% dry

VOLUME SAMPLED AT STP., Vstp, DSCF

$$V_{stp} = V_m * Y * \frac{530}{460 + T_m} * \frac{BP + P_m}{29.92}$$

$$V_{stp} = (52.158) * (0.994) * \frac{530}{540} * \frac{30.45}{29.92}$$

$$V_{stp} = 51.786 \text{ DSCF}$$

EQUIVALENT VAPOR VOLUME OF TOTAL CONDENSATE, Veq/STP, SCF

$$V_{eq}/STP = 0.04707 * V_{h2o}$$

$$V_{eq}/STP = 0.04707 * (7)$$

$$V_{eq}/STP = 0.33 \text{ SCF}$$

VOLUME PERCENT WATER VAPOR AT STP, h2o, %

$$h2o = \frac{V_{eq}/STP}{V_{eq}/STP + V_{stp}} * 100$$

$$h2o = \frac{0.33}{0.33 + 51.786} * 100$$

$$h2o = 0.6 \%$$

VOLUME SAMPLED AT DUCT CONDITIONS, V1, (ACF)

$$V1 = (V_{stp} + V_{eq}/STP) * \frac{460 + T_s}{530} * \frac{29.92}{BP + P_s}$$

$$V1 = (51.786 + 0.33) * \frac{526}{530} * \frac{29.92}{30.39}$$

$$V1 = 50.92$$

PERCENT NITROGEN, N2, %

$$N2 = 100 - (O2 + CO2 + CO)$$

$$N2 = 100 - (20.7 + 0 + 0)$$

$$N2 = 79.3 \%$$

DRY MOLE FRACTION OF FLUE GAS

$$MFD = 1 - (H2O / 100)$$

$$MFD = 1 - (0.6 / 100)$$

$$MFD = 0.994$$

DRY MOLECULAR WEIGHT OF FLUE GAS

$$M_d = (\%CO2 * 0.44) + (\%O2 * 0.32) + (\%CO + N2 * 0.28)$$

$$M_d = (0 * 0.44) + (20.7 * 0.32) + (79 * 0.28)$$

$$M_d = 28.83 \text{ lb./lb.-mole}$$

WET MOLECULAR WEIGHT OF FLUE GAS

$$MW = (M_d * Mfd) + (0.18 * \%H2O)$$

$$MW = (28.83 * 0.994) + (0.18 * 0.63)$$

$$MW = 28.76 \text{ lb./lb.-mole}$$

GAS VELOCITY, VS, FPS

$$VS = 85.49 * PC * \text{sq.rt.VP} * \sqrt{(460 + ts) / (BP + PS) * MW}$$

$$VS = 85.49 * 0.84 * 0.854 * \sqrt{\frac{526}{874.002}}$$

$$VS = 47.576$$

VOLUMETRIC FLOW RATE AT ACTUAL CONDITIONS, VFR, ACFM

$$VFR = 60 * VS * AD$$

$$VFR = 60 * 47.576 * 8.46$$

$$VFR = 24150$$

VOLUMETRIC FLOW RATE AT STANDARD CONDITIONS, VFR/STP, SCFM

$$VFR/STP = VFR * \frac{530}{460 + TS} * \frac{BP + PS}{29.92}$$

$$VFR/STP = 24149.63 * \frac{530}{526} * \frac{30.39}{29.92}$$

$$VFR/STP = 24716$$

VOLUMETRIC FLOW RATE AT DRY STANDARD CONDITIONS, VFR/DSTP, DSCFM

$$VFR/DSTP = VFR/STP * \frac{100 - H_2O}{100}$$

$$VFR/DSTP = 24559$$

PERCENT EXCESS AIR

$$\%EA = \frac{\%O_2 - (0.5 * \%CO)}{(0.264 * \%N_2) - (\%O_2 - (0.5 * \%CO))} * 100$$

$$\%EA = \frac{20.7 - (0.5 * 0)}{(0.264 * 0) - (20.7 - (0.5 * 0))} * 100$$

$$\%EA = 8801$$

DUST CONCENTRATION AT DRY STANDARD CONDITIONS, DC/DSTP, gr/DSCF

$$\text{DC/DSTP} = \frac{15.43 * \text{WP}}{\text{VSTP}}$$

$$\text{DC/DSTP} = \frac{15.43 * 0.0722}{51.786}$$

$$\text{DC/DSTP} = 0.022$$

DUST CONCENTRATION AT STANDARD CONDITIONS, DC/STP, gr/SCF

$$\text{DC/STP} = \frac{15.43 * \text{WP}}{\text{VSTP} + \text{VEQ/STP}}$$

$$\text{DC/STP} = \frac{15.43 * 0.0722}{51.786 + 0.33}$$

$$\text{DC/STP} = 0.021$$

DUST CONCENTRATIONS AT ACTUAL CONDITIONS, DCA, gr/ACF

$$\text{DCA} = \frac{15.43 * \text{WP}}{\text{V1}}$$

$$\text{DCA} = \frac{15.43 * 0.0722}{50.92}$$

$$\text{DCA} = 0.022$$

MASS EMISSIONS, DQ, lbs./hr.

$$\text{DQ} = \frac{60 * \text{DCA} * \text{VFR}}{7000}$$

$$\text{DQ} = \frac{60 * 0.022 * 24150}{7000}$$

$$\text{DQ} = 4.5$$

NOZZLE AREA, An, ft2

$$An = \left[\frac{Dn}{24} \right]^2 * \frac{\pi}{4}$$

$$An = \left[\frac{0.187}{24} \right]^2 * 3.1415927$$

$$An = 0.000190$$

ISOKINETIC VARIANCE, I, %

$$I = \frac{100 * (TS + 460) * \left[0.002669 * VH2O + \frac{Vm}{(460 + Tm)} * (BP + Pm) \right]}{60 * T * VS * (BP + Ps) * An}$$

$$I = \frac{100 * (66 + 460) * \left[0.002669 * 7 + \frac{52.158}{460 + 80} * (30.39 + 0.06) \right]}{60 * 90 * 47.576 * 30.39 * 0.000190}$$

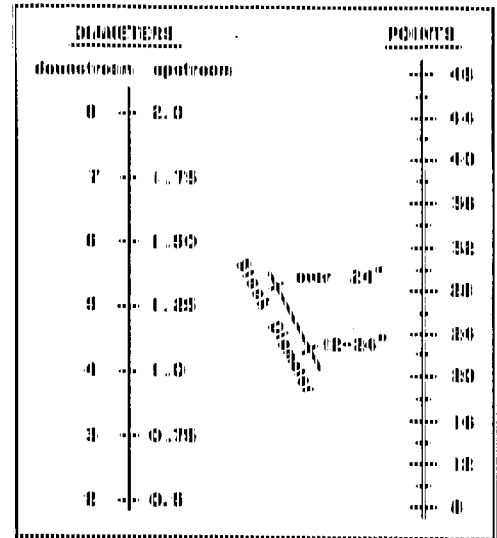
$$I = 104.6 \%$$

GANNETT FLEMING

EXHIBIT D -- RAW FIELD DATA

Preliminary Field Data

PLANT NAME	NEW ENTERPRISE STONE & LIME	
LOCATION	BAGHOUSE STACK	
SAMPLING LOCATION	OUTLET	
DUCT DEPTH	31"	
FROM INSIDE FAR WALL TO OUTSIDE OF PORT		
NIPPLE LENGTH	2"	
DEPTH OF DUCT	29"	
WIDTH (RECTANGULAR DUCT)	42"	
EQUIVALENT DIAMETER:		
$D_e = \frac{2 \times \text{DEPTH} \times \text{WIDTH}}{\text{DEPTH} + \text{WIDTH}} = \frac{2 \times 29 \times 42}{29 + 42} =$		
DISTANCE FROM PORTS	UPSTREAM	DOWNSTREAM
TO NEAREST FLOW		
DISTURBANCE:	FEET	
STACK DIAMETERS		
STACK AREA =	in ²	



Point	% OF DIAMETER	DISTANCE FROM INSIDE WALL	DISTANCE FROM OUTSIDE OF PORT
1	8.3	2.40	4.40
2	25.0	7.25	9.25
3	41.7	12.09	14.09
4	58.3	16.90	18.90
5	75.0	21.75	23.75
6	91.7	26.59	28.59
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

LOCATION OF TRAVERSE POINTS IN CIRCULAR STACKS

	4	6	8	10	12	14	16	18	20	22	24
1	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
3	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
4	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
5	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
6	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
7	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
8	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
9	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
10	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
11	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
12	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
13	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
14	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
15	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
16	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
17	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
18	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
19	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
20	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
21	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
22	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
23	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
24	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0

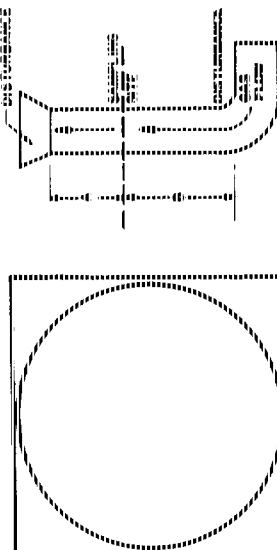
LOCATION OF TRAVERSE POINTS IN RECTANGULAR STACKS

	4	6	8	10	12	14	16	18	20	22	24
1	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
3	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
4	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
5	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
6	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
7	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
8	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
9	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
10	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
11	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
12	0.7	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0

10 PM
3:36 PM
EUD

GANNETT FLEMING ENVIRONMENTAL ENGINEERS, INC.

SCHEMATIC OF STACK



CROSS SECTION

PARTICULATE FIELD DATA

PLANT NEW ENTERPRISE AMBIENT TEMPERATURE 60
 DATE 8/21/90 BAROMETRIC PRESSURE 30.39
 LOCATION NAREHOB PLANT ASSUMED MOISTURE, % 3
 OPERATOR BKS PROBE LENGTH, in 60
 STACK NO. B-1 (LEFT) NOZZLE DIAMETER, in 1.87
 RUN NO. 2 STACK DIAMETER, in 29.86
 SAMPLE BOX NO. 2 NOZZLE I.D. A-2
 Y FACTOR .994 PITOT CONSTANT .84

METER H @ 1.78
 Y FACTOR
 PROBE OR PITOT I.D.

WEIGHT OF PARTICULATE COLLECTED, mg			
SAMPLE	FILTER	PROBE	WASH
FINAL WEIGHT			
TARE WEIGHT	<u>3464</u>		
WEIGHT GAIN			
CONTAINER NUMBER			
TOTAL			

TRAVERSE POINT NUMBER	SAMPLING TIME (min)	(P) STATIC PRESSURE (in. H ₂ O)	STACK TEMPERATURE (°F)	VELOCITY HEAD		PRESSURE DIFFERENTIAL ACROSS ORIFICE METER (in. H ₂ O)	GAS SAMPLE TEMPERATURE AT DRY GAS METER	SAMPLE BOX TEMPERATURE (°F)	TEMPERATURE OF GAS LEAVING CONDENSER OR LAST IMPINGER (°F)	PUMP VACUUM (in. Hg)	VELOCITY (ft/min)
				(in. H ₂ O)	(ft/min)		INLET (T _{in}) (°F)				
A1	3	0.1	67	.89	1.2	1.2	67	190	40	9	
2	6	—	—	.93	1.1	1.1	—	—	—	9	
3	9	0.1	—	.79	1.0	1.0	—	—	—	8	
4	12	—	68	.70	.92	.92	70	220	50	7	
5	15	0.1	—	.54	.72	.72	—	—	—	6	
6	18	—	—	.47	.62	.62	—	—	—	4	
B1	21	0.2	67	.81	1.1	1.1	71	230	56	9	
2	24	—	—	.74	1.0	1.0	—	—	—	8	
3	27	0.1	—	.81	.67	.67	—	—	—	5	
4	30	—	63	.39	.51	.51	76	200	60	3	
5	33	0.1	—	.28	.37	.37	—	—	—	3	
6	36	—	—	.32	.42	.42	—	—	—	4	
C-1	39	0.2	64	.87	1.1	1.1	78	200	56	9	
2	42	—	—	.83	1.1	1.1	—	—	—	9	
3	45	0.1	—	.70	1.0	1.0	—	—	—	9	
TOTAL											
AVERAGE											

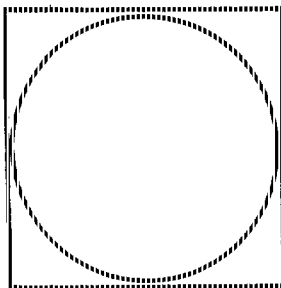
LEAK RATE, cm 102.11 / 0.025

COMMENTS:

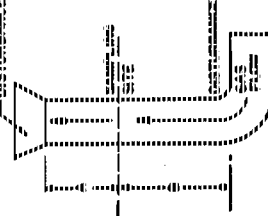
AVERAGE		IMPINGER VOLUME (L)				PULPER ORIFICE WEIGHT	ORIFICE MEASUREMENT		TIME	CO ₂	O ₂	N ₂
VOLUME OF LIQUID WATER COLLECTED		1	2	3	4							
FINAL		100	98	0	-	209	1			0	20.6	0
INITIAL		100	100	0	-	200	2			0	20.8	0
LIQUID COLLECTED		0	-2	0		9	3			0	20.1	0
TOTAL VOLUME COLLECTED							AVG			0	20.7	0

⑦

SCHEMATIC OF STACK



DISTANCE



CROSS SECTION

PARTICULATE FIELD DATA

PLANT NEW BUTTERFIELD AMBIENT TEMPERATURE 60
 DATE 7/21/90 BAROMETRIC PRESSURE 30.39
 LOCATION LAZARUS RD PLANT ASSUMED MOISTURE, % 3
 OPERATOR BK 3 PROBE LENGTH, " 60
 STACK NO. 0-1 (LEFT) NOZZLE DIAMETER, " .187
 RUN NO. 1 STACK DIAMETER, " 2.9 RECT. A-2
 SAMPLE BOX NO. 2 NOZZLE I.D. .74
 Y FACTOR .994 PIVOT CONSTANT .74

WEIGHT OF PARTICULATE COLLECTED, mg
 SAMPLE FILTER PROBE WASH
 FINAL WEIGHT
 TARE WEIGHT .3464
 WEIGHT GAIN
 CONTAINER NUMBER
 TOTAL

METERING 1.73

C FACTOR

PROBE OR PIVOT I.D.

TRAVERSE POINT NUMBER	SAMPLING TIME (min)	STACK TEMPERATURE (°F)	STATIC PRESSURE (in. H ₂ O)	VELOCITY HEAD (in.)	PRESSURE DIFFERENTIAL ORIFICE METER (in. H ₂ O)	GAS SAMPLE VOLUME (Vol.)	GAS SAMPLE TEMPERATURE AT DRY GAS METER		SAMPLE BOX TEMPERATURE (°F)	TEMPERATURE OF GAS LEAVING CONDENSER OR LAST IMPINGER (°F)	PUMP VOLUME in H ₂ O per min	VELOCITY ft/min
							INLET (T _{in}) (°F)	OUTLET (T _{out}) (°F)				
C4	48	65	0.1	.73	.196	377.3	82	82	200	60	9	9
5	51	—	—	.62	.182	380.0	—	—	—	—	7	7
6	54	—	0.1	.58	.176	391.6	—	—	—	—	6	6
D1	57	65	—	.85	.191	379.2	84	84	200	60	9	9
2	60	—	0.2	.10	.113	385.2	—	—	—	—	12	12
3	63	—	—	.14	.112	376.7	—	—	—	—	11	11
4	66	66	0.1	.85	.191	388.7	88	88	210	60	9	9
5	69	—	—	.77	.190	396.8	—	—	—	—	9	9
6	72	—	0.1	.76	.190	392.6	—	—	—	—	9	9
81	75	65	—	.10	.113	394.7	90	90	210	60	11	11
2	78	—	0.1	.10	.113	396.7	—	—	—	—	11	11
3	81	—	—	.98	.193	399.0	—	—	—	—	11	11
4	84	66	0.1	.92	.192	401.0	92	92	200	60	10	10
5	87	—	—	.94	.191	403.1	—	—	—	—	10	10
6	90	—	0.1	.67	.190	405.0	—	—	—	—	8	8
TOTAL					.97/24							
AVERAGE		66	.00	.854	1.04	391.50						

LEAK RATE, cfm - 0.002 CF/H @ 12 Hg

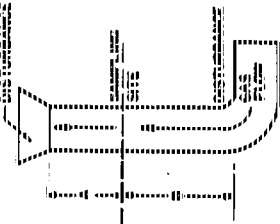
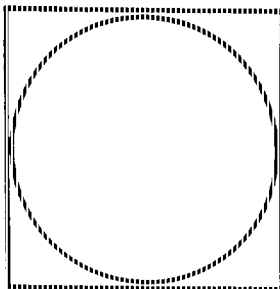
COMMENTS:

VOLUME OF LIQUID WATER COLLECTED	IMPINGER VOLUME =	SILENA CEL WEIGHT	ORIFICE MEASUREMENT	TIME	CO ₂	O ₂	H ₂
	1	2	3	4			
FINAL							
INITIAL							
LIQUID COLLECTED							
TOTAL VOLUME COLLECTED							

START 12:20
END

GANNETT FLEMING ENVIRONMENTAL ENGINEERS, INC.

SCHEMATIC OF STACK



PARTICULATE FIELD DATA

PLANT NEW ENTERPRISE
 DATE 8/21/90
 LOCATION HAREWOOD PLANT
 OPERATOR BKS
 STACK NO. A-1 (LEFT)
 RUN NO. 2
 SAMPLE BOX NO. 263
 SAMPLE BOX # 2, 994
 V FACTOR # 3, 956

AMBIENT TEMPERATURE 60
 BAROMETRIC PRESSURE 30.39
 ASSUMED MOISTURE, % 3
 PROBE LENGTH, " 60
 NOZZLE DIAMETER, " 1/8
 STACK DIAMETER, " 29 RECT.
 NOZZLE I.D. A-2
 PITOT CONSTANT 1.94

CROSS SECTION

TRAVERSE POINT NUMBER	SAMPLING TIME (min)	(in.) STATIC PRESSURE (in. H ₂ O)	STACK TEMPERATURE (°F)	VELOCITY HEAD		PRESSURE DIFFERENTIAL ACROSS ORIFICE (in. H ₂ O)	GAS SAMPLE TEMPERATURE AT DRY GAS METER		SAMPLE BOX TEMPERATURE °F	TEMPERATURE OF GAS LEAVING CONDENSER OR LAST IMPINGER °F	PUMP VOLUME in. H ₂ O	VELOCITY ft/min
				(in.) (v _{th})	(v _{act})		(T _{in}) °F	(T _{out}) °F				
A-1	3	0.1	66	70	1.0	1.0	74	72	250	50	3	3
2	6	—	66	62	1.75	1.75	76	72	—	—	2	2
3	9	0.1	67	70	1.88	1.88	76	80	—	—	3	3
4	12	—	66	68	1.98	1.98	70	66	250	50	3	3
5	15	0.1	65	45	1.64	1.64	74	66	—	—	2	2
6	18	—	65	41	1.58	1.58	76	68	—	—	2	2
A-1	21	0.2	65	47	1.13	1.13	79	70	250	50	3	3
2	24	—	64	47	1.12	1.12	82	70	—	—	3	3
3	27	0.1	64	74	1.1	1.1	84	72	—	—	3	3
4	30	—	63	42	1.64	1.64	86	72	250	50	2	2
5	33	0.1	65	33	1.47	1.47	87	72	—	—	2	2
6	36	—	65	37	1.51	1.51	88	74	—	—	2	2
C-1	39	0.2	67	1.1	1.16	1.16	88	76	250	40	4	4
2	42	—	67	92	1.3	1.3	90	76	—	—	3	3
3	45	0.1	66	64	1.92	1.92	93	78	—	—	3	3
TOTAL												
AVERAGE												

LEAK RATE, in. H₂O/ft/min 0.002

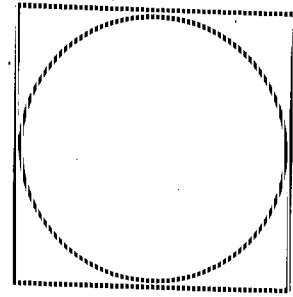
VOLUME OF LIQUID WATER COLLECTED	IMPINGER VOLUME (ml)				ORSAT MEASUREMENT	TIME	CO ₂	O ₂	CO	N ₂
	1	2	3	4						
FINAL	96	103	1	—	211					
INITIAL	160	160	0	—	200					
LIQUID COLLECTED	—	4	3	1	11					
TOTAL VOLUME COLLECTED										

COMMENTS: CHARTED ABOVE RESTARTED 12:50
 LEAK 0.002 cfm
 Sample Box #2 used for 90% of test
 y factor for Box #3 that was used
 1.5 factor for Box #1, 1.0 for Box #2
 1.0 factor for Box #4

31 JAN 1960
CUT 13.5 y/m

GANNETT FLEMING ENVIRONMENTAL ENGINEERS, INC.

SCHEMATIC OF STACK



CROSS SECTION

PARTICULATE FIELD DATA

PLANT New Enterprise
 DATE 2/21/60
 LOCATION NARROW PLANT
 OPERATOR ARKS
 STACK NO. B-1 (left)
 RUN NO. 3
 SAMPLE BOX NO. 3
 Y FACTOR .956
 AMBIENT TEMPERATURE 60
 BAROMETRIC PRESSURE 30.39
 ASSUMED MOISTURE, % 3
 PROBE LENGTH, in. 60
 NOZZLE DIAMETER, in. .187
 STACK DIAMETER, in. 29
 NOZZLE I.D. A-2
 PITOT CONSTANT .94

METERING 1.96
 C FACTOR
 PROBE OR PITOT I.D.

WEIGHT OF PARTICULATE COLLECTED, mg			
SAMPLE	FILTER	PROBE WASH	
FINAL WEIGHT			
TARE WEIGHT	1350.4		
WEIGHT GAIN			
CONTAINER NUMBER	TOTAL		

TRaverse SAMPLING POINT NUMBER	IN-STACK STATIC PRESSURE (L.H.P.) (-)	STACK TEMPERATURE (°F)	VELOCITY HEAD		PRESSURE DIFFERENTIAL (INCHES WATER) (H.H.O.)	GAS SAMPLE TEMPERATURE AT DRY GAS METER		SAMPLE BOX TEMPERATURE (°F)	TEMPERATURE OF GAS LEAVING OR CONDENSER OR LAST IMPINGER (°F)	PUMP VOLUME (cu ft)	VELOCITY (ft/min)
			(AP)	(VAP)		INLET (T _{in}) (°F)	OUTLET (T _{out}) (°F)				
1	0.1	69	.75	1.1	140.025	76	73	250	60	3	
2	-	68	.78	1.1	143.3	77	75	-	-	3	
3	0.1	68	.77	1.0	145.2	80	76	-	-	3	
4	-	68	.62	.89	146.8	84	76	250	58	3	
5	0.1	69	.55	.78	148.7	88	77	-	-	2	
6	-	69	.46	.66	149.9	90	77	-	-	2	
B-1	0.1	70	.84	1.2	151.6	90	78	260	60	3	
2	-	69	.76	1.1	153.4	102	78	-	-	3	
3	0.1	70	.56	.80	155.0	94	80	-	-	3	
4	-	70	.40	.57	156.3	95	81	250	60	2	
5	0.1	70	.24	.37	157.4	95	81	-	-	2	
6	-	70	.27	.39	159.5	96	82	-	-	2	
C-1	0.2	70	.85	1.2	160.4	96	82	260	68	4	
2	-	74	.80	1.1	162.3	96	83	-	-	3	
3	0.1	76	.65	.93	163.9	100	84	-	-	3	
TOTAL											
AVERAGE											

LEAK RATE, cm³ L.002 cfm @ 10 in Hg

COMMENTS:

VOLUME OF LIQUID WATER COLLECTED	IMPINGER VOLUME = 1				GROSS MEASUREMENT	TIME	CO ₂	O ₂	CO	N ₂
	1	2	3	4						
FINAL	92	110	0	-	2/3		0	20.5	0	
INITIAL	100	100	0	-	2.00		0	26.1	0	
LIQUID COLLECTED	-8	10	0	-	13		0	76.4	0	
TOTAL VOLUME COLLECTED							0	24.9	0	

15

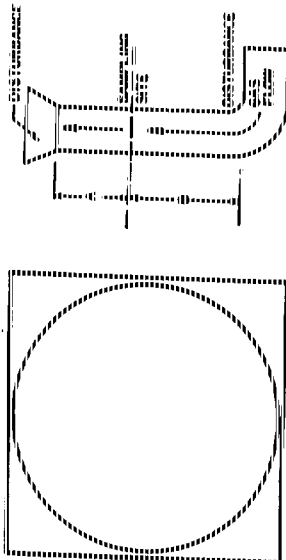
750 E. 10th Ave.
Denver, CO 80202

10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 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
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100
 101
 102
 103
 104
 105
 106
 107
 108
 109
 110
 111
 112
 113
 114
 115
 116
 117
 118
 119
 120
 121
 122
 123
 124
 125
 126
 127
 128
 129
 130
 131
 132
 133
 134
 135
 136
 137
 138
 139
 140
 141
 142
 143
 144
 145
 146
 147
 148
 149
 150
 151
 152
 153
 154
 155
 156
 157
 158
 159
 160
 161
 162
 163
 164
 165
 166
 167
 168
 169
 170
 171
 172
 173
 174
 175
 176
 177
 178
 179
 180
 181
 182
 183
 184
 185
 186
 187
 188
 189
 190
 191
 192
 193
 194
 195
 196
 197
 198
 199
 200
 201
 202
 203
 204
 205
 206
 207
 208
 209
 210
 211
 212
 213
 214
 215
 216
 217
 218
 219
 220
 221
 222
 223
 224
 225
 226
 227
 228
 229
 230
 231
 232
 233
 234
 235
 236
 237
 238
 239
 240
 241
 242
 243
 244
 245
 246
 247
 248
 249
 250
 251
 252
 253
 254
 255
 256
 257
 258
 259
 260
 261
 262
 263
 264
 265
 266
 267
 268
 269
 270
 271
 272
 273
 274
 275
 276
 277
 278
 279
 280
 281
 282
 283
 284
 285
 286
 287
 288
 289
 290
 291
 292
 293
 294
 295
 296
 297
 298
 299
 300
 301
 302
 303
 304
 305
 306
 307
 308
 309
 310
 311
 312
 313
 314
 315
 316
 317
 318
 319
 320
 321
 322
 323
 324
 325
 326
 327
 328
 329
 330
 331
 332
 333
 334
 335
 336
 337
 338
 339
 340
 341
 342
 343
 344
 345
 346
 347
 348
 349
 350
 351
 352
 353
 354
 355
 356
 357
 358
 359
 360
 361
 362
 363
 364
 365
 366
 367
 368
 369
 370
 371
 372
 373
 374
 375
 376
 377
 378
 379
 380
 381
 382
 383
 384
 385
 386
 387
 388
 389
 390
 391
 392
 393
 394
 395
 396
 397
 398
 399
 400
 401
 402
 403
 404
 405
 406
 407
 408
 409
 410
 411
 412
 413
 414
 415
 416
 417
 418
 419
 420
 421
 422
 423
 424
 425
 426
 427
 428
 429
 430
 431
 432
 433
 434
 435
 436
 437
 438
 439
 440
 441
 442
 443
 444
 445
 446
 447
 448
 449
 450
 451
 452
 453
 454
 455
 456
 457
 458
 459
 460
 461
 462
 463
 464
 465
 466
 467
 468
 469
 470
 471
 472
 473
 474
 475
 476
 477
 478
 479
 480
 481
 482
 483
 484
 485
 486
 487
 488
 489
 490
 491
 492
 493
 494
 495
 496
 497
 498
 499
 500
 501
 502
 503
 504
 505
 506
 507
 508
 509
 510
 511
 512
 513
 514
 515
 516
 517
 518
 519
 520
 521
 522
 523
 524
 525
 526
 527
 528
 529
 530
 531
 532

CC
C
F
C
st
ll
C

2
b
4
5
6
7
8
9

155



55-10000

[illegible]

10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 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
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100
 101
 102
 103
 104
 105
 106
 107
 108
 109
 110
 111
 112
 113
 114
 115
 116
 117
 118
 119
 120
 121
 122
 123
 124
 125
 126
 127
 128
 129
 130
 131
 132
 133
 134
 135
 136
 137
 138
 139
 140
 141
 142
 143
 144
 145
 146
 147
 148
 149
 150
 151
 152
 153
 154
 155
 156
 157
 158
 159
 160
 161
 162
 163
 164
 165
 166
 167
 168
 169
 170
 171
 172
 173
 174
 175
 176
 177
 178
 179
 180
 181
 182
 183
 184
 185
 186
 187
 188
 189
 190
 191
 192
 193
 194
 195
 196
 197
 198
 199
 200
 201
 202
 203
 204
 205
 206
 207
 208
 209
 210
 211
 212
 213
 214
 215
 216
 217
 218
 219
 220
 221
 222
 223
 224
 225
 226
 227
 228
 229
 230
 231
 232
 233
 234
 235
 236
 237
 238
 239
 240
 241
 242
 243
 244
 245
 246
 247
 248
 249
 250
 251
 252
 253
 254
 255
 256
 257
 258
 259
 260
 261
 262
 263
 264
 265
 266
 267
 268
 269
 270
 271
 272
 273
 274
 275
 276
 277
 278
 279
 280
 281
 282
 283
 284
 285
 286
 287
 288
 289
 290
 291
 292
 293
 294
 295
 296
 297
 298
 299
 300
 301
 302
 303
 304
 305
 306
 307
 308
 309
 310
 311
 312
 313
 314
 315
 316
 317
 318
 319
 320
 321
 322
 323
 324
 325
 326
 327
 328
 329
 330
 331
 332
 333
 334
 335
 336
 337
 338
 339
 340
 341
 342
 343
 344
 345
 346
 347
 348
 349
 350
 351
 352
 353
 354
 355
 356
 357
 358
 359
 360
 361
 362
 363
 364
 365
 366
 367
 368
 369
 370
 371
 372
 373
 374
 375
 376
 377
 378
 379
 380
 381
 382
 383
 384
 385
 386
 387
 388
 389
 390
 391
 392
 393
 394
 395
 396
 397
 398
 399
 400
 401
 402
 403
 404
 405
 406
 407
 408
 409
 410
 411
 412
 413
 414
 415
 416
 417
 418
 419
 420
 421
 422
 423
 424
 425
 426
 427
 428
 429
 430
 431
 432
 433
 434
 435
 436
 437
 438
 439
 440
 441
 442
 443
 444
 445
 446
 447
 448
 449
 450
 451
 452
 453
 454
 455
 456
 457
 458
 459
 460
 461
 462
 463
 464
 465
 466
 467
 468
 469
 470
 471
 472
 473
 474
 475
 476
 477
 478
 479
 480
 481
 482
 483
 484
 485
 486
 487
 488
 489
 490
 491
 492
 493
 494
 495
 496
 497
 498
 499
 500
 501
 502
 503
 504
 505
 506
 507
 508
 509
 510
 511
 512
 513
 514
 515
 516
 517
 518
 519
 520
 521
 522
 523
 524
 525
 526
 527
 528
 529
 530
 531
 532

LOCATION

1950

[illegible]

2000

門
 東
 宮
 門
 東
 宮
 門
 東
 宮

1500

	19
18	19
17	19
16	19
15	19
14	19
13	19
12	19
11	19
10	19
9	19
8	19
7	19
6	19
5	19
4	19
3	19
2	19
1	19

[illegible]

Director General

1
 2
 3
 4
 5
 6
 7
 8
 9
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 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
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100
 101
 102
 103
 104
 105
 106
 107
 108
 109
 110
 111
 112
 113
 114
 115
 116
 117
 118
 119
 120
 121
 122
 123
 124
 125
 126
 127
 128
 129
 130
 131
 132
 133
 134
 135
 136
 137
 138
 139
 140
 141
 142
 143
 144
 145
 146
 147
 148
 149
 150
 151
 152
 153
 154
 155
 156
 157
 158
 159
 160
 161
 162
 163
 164
 165
 166
 167
 168
 169
 170
 171
 172
 173
 174
 175
 176
 177
 178
 179
 180
 181
 182
 183
 184
 185
 186
 187
 188
 189
 190
 191
 192
 193
 194
 195
 196
 197
 198
 199
 200
 201
 202
 203
 204
 205
 206
 207
 208
 209
 210
 211
 212
 213
 214
 215
 216
 217
 218
 219
 220
 221
 222
 223
 224
 225
 226
 227
 228
 229
 230
 231
 232
 233
 234
 235
 236
 237
 238
 239
 240
 241
 242
 243
 244
 245
 246
 247
 248
 249
 250
 251
 252
 253
 254
 255
 256
 257
 258
 259
 260
 261
 262
 263
 264
 265
 266
 267
 268
 269
 270
 271
 272
 273
 274
 275
 276
 277
 278
 279
 280
 281
 282
 283
 284
 285
 286
 287
 288
 289
 290
 291
 292
 293
 294
 295
 296
 297
 298
 299
 300
 301
 302
 303
 304
 305
 306
 307
 308
 309
 310
 311
 312
 313
 314
 315
 316
 317
 318
 319
 320
 321
 322
 323
 324
 325
 326
 327
 328
 329
 330
 331
 332
 333
 334
 335
 336
 337
 338
 339
 340
 341
 342
 343
 344
 345
 346
 347
 348
 349
 350
 351
 352
 353
 354
 355
 356
 357
 358
 359
 360
 361
 362
 363
 364
 365
 366
 367
 368
 369
 370
 371
 372
 373
 374
 375
 376
 377
 378
 379
 380
 381
 382
 383
 384
 385
 386
 387
 388
 389
 390
 391
 392
 393
 394
 395
 396
 397
 398
 399
 400
 401
 402
 403
 404
 405
 406
 407
 408
 409
 410
 411
 412
 413
 414
 415
 416
 417
 418
 419
 420
 421
 422
 423
 424
 425
 426
 427
 428
 429
 430
 431
 432
 433
 434
 435
 436
 437
 438
 439
 440
 441
 442
 443
 444
 445
 446
 447
 448
 449
 450
 451
 452
 453
 454
 455
 456
 457
 458
 459
 460
 461
 462
 463
 464
 465
 466
 467
 468
 469
 470
 471
 472
 473
 474
 475
 476
 477
 478
 479
 480
 481
 482
 483
 484
 485
 486
 487
 488
 489
 490
 491
 492
 493
 494
 495
 496
 497
 498
 499
 500
 501
 502
 503
 504
 505
 506
 507
 508
 509
 510
 511
 512
 513
 514
 515
 516
 517
 518
 519
 520
 521
 522
 523
 524
 525

FOR THE

[illegible]

100
1
122

1000

WEIGHT OF PARTICULATE COLLECTED, mg			
SAMPLE	FILTER	POCKET	WEIGHT
CONTAINER NUMBER			TOTAL

[illegible]

500 499 498 497 496 495 494 493 492 491 490 489 488 487 486 485 484 483 482 481 480 479 478 477 476 475 474 473 472 471 470 469 468 467 466 465 464 463 462 461 460 459 458 457 456 455 454 453 452 451 450 449 448 447 446 445 444 443 442 441 440 439 438 437 436 435 434 433 432 431 430 429 428 427 426 425 424 423 422 421 420 419 418 417 416 415 414 413 412 411 410 409 408 407 406 405 404 403 402 401 400 399 398 397 396 395 394 393 392 391 390 389 388 387 386 385 384 383 382 381 380 379 378 377 376 375 374 373 372 371 370 369 368 367 366 365 364 363 362 361 360 359 358 357 356 355 354 353 352 351 350 349 348 347 346 345 344 343 342 341 340 339 338 337 336 335 334 333 332 331 330 329 328 327 326 325 324 323 322 321 320 319 318 317 316 315 314 313 312 311 310 309 308 307 306 305 304 303 302 301 300 299 298 297 296 295 294 293 292 291 290 289 288 287 286 285 284 283 282 281 280 279 278 277 276 275 274 273 272 271 270 269 268 267 266 265 264 263 262 261 260 259 258 257 256 255 254 253 252 251 250 249 248 247 246 245 244 243 242 241 240 239 238 237 236 235 234 233 232 231 230 229 228 227 226 225 224 223 222 221 220 219 218 217 216 215 214 213 212 211 210 209 208 207 206 205 204 203 202 201 200 199 198 197 196 195 194 193 192 191 190 189 188 187 186 185 184 183 182 181 180 179 178 177 176 175 174 173 172 171 170 169 168 167 166 165 164 163 162 161 160 159 158 157 156 155 154 153 152 151 150 149 148 147 146 145 144 143 142 141 140 139 138 137 136 135 134 133 132 131 130 129 128 127 126 125 124 123 122 121 120 119 118 117 116 115 114 113 112 111 110 109 108 107 106 105 104 103 102 101 100 99 98 97 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

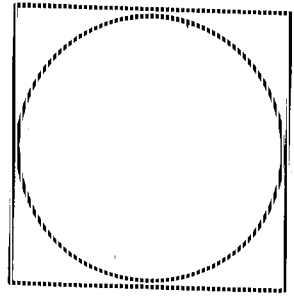
00
10
20
30
40
50
60
70
80
90

	DATE	TIME	INITIALS	REMARKS
FINAL				
TOTAL				
Liquid Collected				
Solid Collected				
Total Volume Collected				
Avg				

START - 7
END - 1

GANNETT FLEMING ENVIRONMENTAL ENGINEERS, INC.

SCHEMATIC OF STACK



CROSS SECTION

PARTICULATE FIELD DATA

PLANT NEW ENTERPRISE
 DATE 8/28/90
 LOCATION ALABAMA PLANT
 OPERATOR BKS
 STACK NO. 3-2 (RIGHT)
 RUN NO. 3
 SAMPLE BOX NO. 3
 Y FACTOR .956

AMBIENT TEMPERATURE 80
 BAROMETRIC PRESSURE 30.20
 ASSUMED MOISTURE, % 3
 PROBE LENGTH, " 60
 NOZZLE DIAMETER, " .247
 STACK DIAMETER, " 28 1/2 RECT.
 NOZZLE I.D. 3-4
 PITOT CONSTANT .94

METER H₂O 1.96

C FACTOR

PROBE OR PITOT I.D.

WEIGHT OF PARTICULATE COLLECTED, mg			
SAMPLE	FILTER	PROBE WASH	
FINAL WEIGHT			
TARE WEIGHT			
WEIGHT GAIN			
CONTAINER NUMBER			
TOTAL			

TRAVERSE POINT NUMBER	SAMPLING TIME (min)	(P) STAG. PRESSURE (in. H ₂ O)	(P) STACK TEMPERATURE (T) °F	VELOCITY HEAD		PRESSURE DIFFERENTIAL URIFICE METER GAS SAMPLE (in. H ₂ O)	GAS SAMPLE TEMPERATURE AT DRY GAS METER	SAMPLE BOX TEMPERATURE °F	TEMPERATURE OF GAS LEAVING OR CONDENSER OR LAST IMPINGER °F	PUMP VACUUM in. Hg	VELOCITY ft/min
				(in. H ₂ O)	(in. H ₂ O)		INLET (T _{in}) °F				
A-1	3	0.1	75	.41	1.9	194.590	76	74	50	4	
2	4	-	74	.42	1.9	196.7	83	74	-	4	
3	9	0.1	75	.47	2.2	199.0	89	76	-	4	
4	12	-	74	.45	2.0	201.4	89	76	-	4	
5	15	0.1	74	.32	1.5	203.7	92	76	52	4	
6	18	-	75	.22	1.0	205.9	94	76	-	3	
B-1	21	0.1	75	.41	1.9	207.7	94	78	-	3	
2	24	-	74	.39	1.8	209.7	94	78	54	4	
3	27	0.1	76	.40	1.8	212.2	96	70	-	4	
4	30	-	76	.40	1.8	214.4	100	72	-	4	
5	33	0.1	75	.37	1.7	216.7	102	72	52	4	
6	36	-	76	.38	1.7	218.7	104	74	-	4	
C-1	39	0.1	77	.31	2.3	221.2	106	94	-	4	
2	42	-	77	.27	1.3	223.8	106	84	56	3	
3	45	0.1	77	.29	1.3	225.6	106	87	-	3	
TOTAL						227.6	106	87	-	3	
AVERAGE											

LEAK RATE, in. L. 2002 CF/min @ 10 in. Hg

COMMENTS:

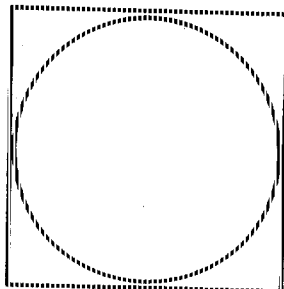
VOLUME OF LIQUID WATER COLLECTED	IMPIINGER VOLUME =				ORSAT MEASUREMENT	TIME	CO ₂	O ₂	N ₂
	1	2	3	4					
FINAL	103	101	0	2.04	1		0	20.1	0
INITIAL	100	100	0	2.00	2		0	20.7	0
LIQUID COLLECTED	3	1	0	-	3		0	20.4	0
TOTAL VOLUME COLLECTED					AVG		0	20.6	0

8

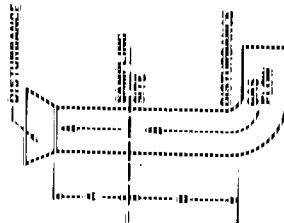
11-20-19
11-20-19

GANNETT FLEMING ENVIRONMENTAL ENGINEERS, INC.

SCHEMATIC OF STACK



CROSS SECTION



PARTICULATE FIELD DATA

PLANT/NEW ENTERPRISE
DATE 11/28/90
LOCATION/JAREHOLD PLANT
OPERATOR BKS
STACK NO. 6-2 (E19117)
RUN NO. 2
SAMPLE BOX NO. 3
Y FACTOR .956

AMBIENT TEMPERATURE 70
BAROMETRIC PRESSURE 29.20
ASSUMED MOISTURE % 3
PROBE LENGTH, in 60
NOZZLE DIAMETER, in 12.47
STACK DIAMETER, in 29 1/2 INCH
NOZZLE I.D. 3-4
PITOT CONSTANT 13.4

METER # 196

C FACTOR

PROBE OR PITOT I.D.

WEIGHT OF PARTICULATE COLLECTED, mg			
SAMPLE	FILTER	PROBE WASH	
FINAL WEIGHT			
TARE WEIGHT	3.490		
WEIGHT GAIN			
CONTAINER NUMBER			
TOTAL			

TRAVERSE SAMPLING POINT NUMBER	(P) STATIC PRESSURE (in H ₂ O)	STACK TEMPERATURE (°F)	VELOCITY HEAD		PRESSURE DIFFERENTIAL ACROSS ORIFICE METER (in H ₂ O)	GAS SAMPLE VOLUME (V _{SL}) (m ³)	GAS SAMPLE TEMPERATURE AT DRY GAS METER		SAMPLE BOX TEMPERATURE (°F)	TEMPERATURE OF GAS LEAVING CONDENSER OR LAST IMPINGER (°F)	PUMP VACUUM in Hg	VELOCITY in ft/min
			(in)	(in)			INLET (T _{in}) (°F)	OUTLET (T _{out}) (°F)				
A-1	3	80	.50		2.2	257.0	90	90	250	55	3	
2	6	80	.45		1.9	257.4	94	90			3	
3	9	80	.48		2.1	261.7	99	90			3	
4	12	80	.41		1.8	264.1	102	90	260	60	2	
5	15	81	.29		1.3	266.1	104	92			2	
6	18	81	.25		1.1	269.1	104	92			2	
A-1	21	81	.44		1.9	270.2	104	92	240	60	3	
2	24	80	.39		1.7	272.3	104	94			3	
3	27	81	.36		1.6	274.5	106	94			2	
4	30	81	.24		1.1	276.4	107	94	240	60	2	
5	33	82	.22		1.07	277.1	108	95			2	
6	36	83	.20		.89	279.9	109	96			2	
C-1	39	83	.36		1.6	281.9	109	96	240	60	2	
2	42	84	.28		1.2	283.9	112	98			2	
3	45	86	.32		1.4	285.9	114	98			2	
TOTAL												
AVERAGE												

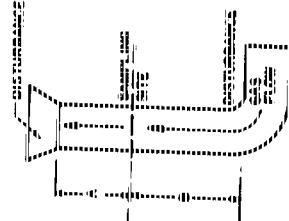
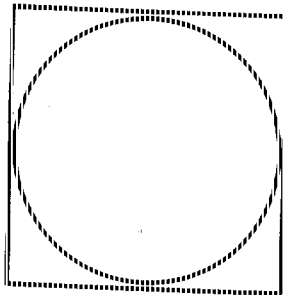
LEAK RATE, in 1.002 cc/min @ 10 in.

COMMENTS:

VOLUME OF LIQUID WATER COLLECTED	IMPINGER VOLUME = 1				ORIFICE MEASUREMENT	TIME	CO ₂	O ₂	N ₂
	1	2	3	4					
FINAL	104	103	0	20.5					
INITIAL	100	100	0	20.0					
LIQUID COLLECTED	4	3	0	5					
TOTAL VOLUME COLLECTED									

12

1995



**THE
SCHOOL OF THE
FUTURE**

[illegible]

04/20/2011

LOCATION

97-201

THE NEW YORK PUBLIC LIBRARY

PROGRESS

900

953

SECRET

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

Percentage of total population

9

9
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
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
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
84

02
03
04
05
06
07
08
09
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
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
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
84

07-00000

Chief Counsel

③
22
23
24
25
26
27

1200
1200
1200
1200
1200

1011
1012
1013
1014
1015

Q

12

my

99

and

005

100

451

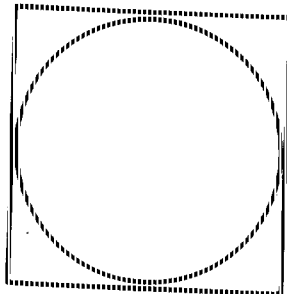
LEARN RATE: 0.002

0123456789

[illegible]

VOLUME OF LIQUID WATER COLLECTED	IMPIRGER VOLUME #1				WELA OIL WEIGHT	OCSAT MEASUREMENT	TIME	CO ₂	O ₂	H ₂		
	1	2	3	4								
FINAL		100	100	0	206	14		0	20.6	0	1	
INITIAL		100	100	0	100				0	20.8	0	
LIQUID COLLECTED		0	0	0	0				0	20.7	0	
TOTAL VOLUME COLLECTED						AVG		0	20.7	0		

SCHEMATIC OF STACK



CROSS SECTION

PARTICULATE FIELD DATA

PLANT NEW ENTERPRISEDATE 11/11/90LOCATION WAB NEW PLANTOPERATOR BL SSTACK NO. 0-2 (K1407)RUN NO. 3SAMPLE BOX NO. 3Y FACTOR 1.956AMBIENT TEMPERATURE 80BAROMETRIC PRESSURE 30.20ASSUMED MOISTURE, % 3PROBE LENGTH, " 60NOZZLE DIAMETER, " 1.247STACK DIAMETER, " 39.1/20.61NOZZLE I.D. 3-4PITOT CONSTANT 1.94METER NO. 1.96

C FACTOR

PROBE OR PITOT I.D.

WEIGHT OF PARTICULATE COLLECTED, mg

SAMPLE FILTER

FINAL WEIGHT

TARE WEIGHT 2471

WEIGHT GAIN

CONTAINER NUMBER

TOTAL

TRAVERSE POINT NUMBER	SAMPLING TIME (min)	STACK TEMPERATURE (°F)	VELOCITY HEAD (in. H ₂ O)	VELOCITY (ft/min)	PRESSURE DIFFERENTIAL PROBE METER GAS SAMPLE (in. H ₂ O)	GAS SAMPLE TEMPERATURE AT DRY GAS METER	SAMPLE BOX TEMPERATURE	TEMPERATURE OF GAS LEAVING CONDENSER OR FAST IMPINGER	PUMP VACUUM in Hg	VELOCITY ft/min
1-4	47	90	1.25	1.1	346.7	120	250	64	2	
5	51	90	1.21	1.92	341.3	120	—	—	2	
6	54	90	1.20	1.97	350.1	120	—	—	2	
B-1	57	89	1.23	1.1	351.3	112	250	65	2	
2	60	91	1.02	1.74	353.4	117	—	—	1	
3	63	91	1.15	1.66	354.9	117	—	—	1	
4	66	90	1.17	1.74	356.2	117	250	65	2	
5	69	90	1.17	1.74	357.7	117	—	—	1	
6	72	90	1.27	1.2	359.7	120	—	—	2	
B-1	75	90	1.33	1.4	361.6	117	250	65	2	
2	78	90	1.32	1.4	362.7	117	—	—	2	
3	81	90	1.30	1.3	365.7	117	—	—	2	
4	84	90	1.29	1.3	367.7	117	—	—	2	
5	87	90	1.30	1.3	367.7	117	250	65	2	
6	90	90	1.35	1.5	367.7	120	—	—	2	
TOTAL					372.058	120	—	—	2	
AVERAGE					366.99	116	—	—	2	

LEAK RATE (in. Hg) 2.002 at 10.14 10.14

COMMENTS:

VOLUME OF LIQUID COLLECTED

IMPINGER VOLUME

PULPER VOLUME

WEIGHT

MEASUREMENT

TIME

CO₂O₂

CO

N₂

AVG

FINAL

INITIAL

LIQUID COLLECTED

TOTAL VOLUME COLLECTED

GANNETT FLEMING

EXHIBIT E -- LAB ANALYSIS SUMMARY

SUMMARY OF LAB ANALYSIS

TEST DATES: 8/21/90 8/28/90	PROBE & FILTER RINSE		IMPINGER SOLUTION (H2O)*			TOTAL PARTICULATE (gm)**
	ACETONE (gm)	H2O (gm)	SOLUBLE (gm)	INSOLUBLE (gm)		
				WASH		
TEST NO.						
B-1-1	0.0541	0.0174	0.0012	0.0004	N.D.	0.0722
B-1-2	0.0288	0.0044	0.0180	0.0006	0.0006	0.0338
B-1-3	0.0101	0.0045	0.0021	0.0005	0.0016	0.0184
B-2-1	0.0118	0.0008	0.0035	0.0003	0.0008	0.0137
B-2-2	0.0095	0.0016	0.0039	0.0007	0.0007	0.0121
B-2-3	0.0058	0.0012	0.0027	0.0005	N.D.	0.0085
BLANK	0.0002	0.0001				

NOT INCLUDED IN FINAL REPORT

* - NOT INCLUDED IN FINAL WEIGHT (SOLUBLES)

** - BLANKS HAVE BEEN SUBTRACTED FROM TOTAL WEIGHT

N.D. - NONE DETECTED

GANNETT FLEMING, INC.

FRONT HALF ANALYSISFILTERS

Test Run

No. 1 Final	0.3474	No. 2	0.3499	No. 3	0.3509
Tare (-)	0.3464	(-)	0.3496	(-)	0.3504
Net	0.0010		0.0003		0.0005

PROBE WASH (H₂O) (1)

Test Run

No. 1 Final	101.0808	No. 2	102.0326	No. 3	100.7138
Tare (-)	101.0634	(-)	102.0282	(-)	100.7093
Net	0.0174		0.0044		0.0045

Blank

Final	101.8729
Tare (-)	101.8729
Net	0.0001

PROBE WASH (ACETONE) (1)

Test Run

No. 1 Final	82.3445	No. 2	82.0566	No. 3	81.3884
Tare (-)	82.2904	(-)	82.0278	(-)	81.3783
Net	0.0541		0.0288		0.0101

Blank

Final	103.6475
Tare (-)	103.6473
Net	0.0002

(1) All washes brought up to 200 ml standard

FRONT HALF ANALYSIS

FILTERS

Test Run

No. 1 Final	0.3514	No. 2	0.3505	No. 3	0.3489
Tare (-)	0.3506	(-)	0.3490	(-)	0.3471
Net	0.0008		0.0015		0.0018

PROBE WASH (H2O) (1)

Test Run

No. 1 Final	100.7112	No. 2	104.7310	No. 3	100.2878
Tare (-)	100.7104	(-)	104.7294	(-)	100.2864
Net	0.0008		0.0016		0.0012

Blank

Final	101.8729
Tare (-)	101.8728
Net	0.0001

PROBE WASH (ACETONE) (1)

Test Run

No. 1 Final	111.3096	No. 2	109.6062	No. 3	101.5646
Tare (-)	111.2978	(-)	109.5976	(-)	101.5588
Net	0.0118		0.0086		0.0058

Blank

Final	103.6475
Tare (-)	103.6473
Net	0.0002

(1) All washes brought up to 200 ml standard

GANNETT FLEMING, INC.
ENVIRONMENTAL LABORATORY
209 SENATE AVENUE
CAMP HILL, PA 17011
(717) 763-7211
PA DER Certification No. 22-133

New Enterprise Stone & Lime
GF

Attn: Nate Stauffer - East 214
GF Job Number: 26906.001

Client Number: 1258
Project Number: 10502
Sample Number: 28907
Date Received: 08/29/90
Time Received: 09:30
Discard Date: 09/25/90

LABORATORY ANALYSIS REPORT
September 11, 1990

Sample Identification: B-1 (Loft) Test 1
Date Collected: 08/28/90 Time: 09:00

Collected By: BKS

ANALYSIS	RESULTS	MEASUREMENT UNITS	DETECTION LIMITS	ANALYSIS METHOD
Insoluble Particulate	None Detected	mg	.1	PA-DER STM
Soluble Particulate	1.4	mg	.1	PA-DER STM

Gannett Fleming, Inc.


David W. Lane, Laboratory Manager

GANNETT FLEMING, INC.
 ENVIRONMENTAL LABORATORY
 209 BERRATE AVENUE
 CAMP HILL, PA 17011
 (717) 763-7211
 PA DER Certification No. 22-133

New Enterprise Stone & Lime
 GP

Attn: Nate Stauffer - East 214
 GP Job Number: 26906.001

Client Number: 1258
 Project Number: 10502
 Sample Number: 28908
 Date Received: 08/29/90
 Time Received: 09:30
 Discard Date: 09/25/90

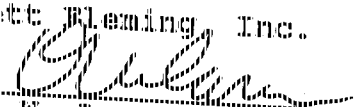
LABORATORY ANALYSIS REPORT
 September 11, 1990

Sample Identification: B-1 (Loft) Test 2
 Date Collected: 08/28/90 Time: 10:00

Collected By: BKS

ANALYSIS	RESULTS	MEASUREMENT UNITS	DETECTION LIMITS	ANALYSIS METHOD
Insoluble Particulate	0.8	mg	.1	PA-DER STM
Soluble Particulate	18.2	mg	.1	PA-DER STM

Gannett Fleming, Inc.


 David W. Lane, Laboratory Manager

GANNETT FLEMING, INC.
 ENVIRONMENTAL LABORATORY
 209 SHERATE AVENUE
 CLAMP HILL, PA 17011
 (717) 763-7211
 PA DER Certification No. 22-133

New Enterprise Stone & Lime
 GF

Attn: Nate Stauffer - East 214
 GF Job Number: 26906.001

Client Number: 1258
 Project Number: 10502
 Sample Number: 28909
 Date Received: 08/29/90
 Time Received: 09:30
 Discard Date: 09/25/90

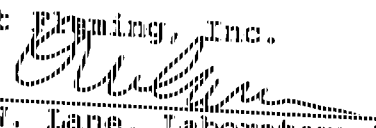
LABORATORY ANALYSIS REPORT
 September 11, 1990

Sample Identification: B-1 (Loft) Test 3
 Date Collected: 08/28/90 Time: 11:00

Collected By: BKS

ANALYSIS	RESULTS	MEASUREMENT UNITS	DETECTION LIMITS	ANALYSIS METHOD
Insoluble Particulate	1.8	mg	.1	PA-DER STM
Soluble Particulate	2.3	mg	.1	PA-DER STM

Gannett Fleming, Inc.


 David W. Lane, Laboratory Manager

GANNETT FLEMING, INC.
 ENVIRONMENTAL LABORATORY
 209 SEDATE AVENUE
 CAMP HILL, PA 17011
 (717) 763-7211
 PA DER Certification No. 22-133

New Enterprise Stone & Lime
 GF

Attn: Nate Stauffer - East 214
 GF Job Number: 26906.001

Client Number: 1258
 Project Number: 10502
 Sample Number: 28910
 Date Received: 08/29/90
 Time Received: 09:30
 Discard Date: 09/25/90

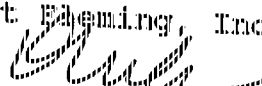
LABORATORY ANALYSIS REPORT
 September 11, 1990

Sample Identification: B-2 (Right) Test 1
 Date Collected: 08/28/90 Time: 13:00

Collected By: BKS

ANALYSIS	RESULTS	MEASUREMENT UNITS	DETECTION LIMITS	ANALYSIS METHOD
Insoluble Particulate	0.8	mg	.1	PA-DER STM
Soluble Particulate	3.7	mg	.1	PA-DER STM

Gannett Fleming, Inc.


 David W. Lane, Laboratory Manager

GANNETT PLEENING, INC.
 ENVIRONMENTAL LABORATORY
 209 HERMAN AVENUE
 CAMP HILL, PA 17011
 (717) 763-7211
 PA DER Certification No. 22-113

New Enterprise Stone & Lime
 GF

Attn: Nate Stauffer - East 214
 GF Job Number: 26906.001

Client Number: 1258
 Project Number: 10502
 Sample Number: 28911
 Date Received: 08/29/90
 Time Received: 09:30
 Discard Date: 09/25/90

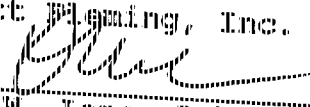
LABORATORY ANALYSIS REPORT
 September 11, 1990

Sample Identification: B-2 (Right) Tont 2
 Date Collected: 08/28/90 Time: 14:00

Collected By: BKS

ANALYSIS	RESULTS	MEASUREMENT UNITS	DETECTION LIMITS	ANALYSIS METHOD
Insoluble Particulate	0.9	mg	.1	PA-DER STM
Soluble Particulate	4.1	mg	.1	PA-DER STM

Gannett Pleening, Inc.


 David W. Lane, Laboratory Manager

GANNETT FLEMING, INC.
ENVIRONMENTAL LABORATORY
209 SENATE AVENUE
CAMP HILL, PA 17011
(717) 763-7211

PA DER Certification No. 22-133

New Enterprise Stone & Lime
GF

Attn: Nate Stauffer - East 214
GF Job Number: 26906.001

Client Number: 1258
Project Number: 10502
Sample Number: 28912
Date Received: 08/29/90
Time Received: 09:30
Discard Date: 09/25/90

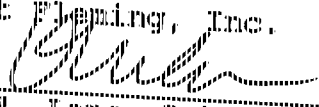
LABORATORY ANALYSIS REPORT
September 11, 1990

Sample Identification: B-2 (Right) Test 3
Date Collected: 08/28/90 Time: 15:00

Collected By: BKS

ANALYSIS	RESULTS	MEASUREMENT UNITS	DETECTION LIMITS	ANALYSIS METHOD
Insoluble Particulate	0.2	mg	.1	PA-DER STM
Soluble Particulate	2.9	mg	.1	PA-DER STM

Gannett Fleming, Inc.


David W. Lane, Laboratory Manager

GANNETT FLEMING, INC.
ENVIRONMENTAL LABORATORY
200 GERRARD AVENUE
CAMP HILL, PA 17011
(717) 763-7211

PA DER Certification No. 22-133

New Enterprise Stone & Lime
GF

Attn: Nate Stauffer - East 214
GF Job Number: 26906.001

Client Number: 1258
Project Number: 10502
Sample Number: 28913
Date Received: 08/29/90
Time Received: 09:30
Discard Date: 09/25/90

LABORATORY ANALYSIS REPORT
September 11, 1990

Sample Identification: Blank

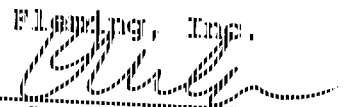
Date Collected: 08/28/90

Time:

Collected By: BKS

ANALYSIS	RESULTS	MEASUREMENT UNITS	DETECTION LIMITS	ANALYSIS METHOD
Insoluble Particulate	0.2	mg	.1	PA-DER STM
Soluble Particulate	0.2	mg	.1	PA-DER STM

Gannett Fleming, Inc.


David W. Lane, Laboratory Manager

GANNETT FLEMING

EXHIBIT F -- INSTRUMENT CALIBRATIONS

CALIBRATION OF SAMPLER CONTROL CONSOLE

(DRY GAS METER AND ORIFICE METER)

CALIBRATION DATE 7/25/90

SAMPLER I.D. AND NO. _____

BAROMETRIC PRESSURE, Pb 30.13 IN. Hg

METER NO. RAC-2

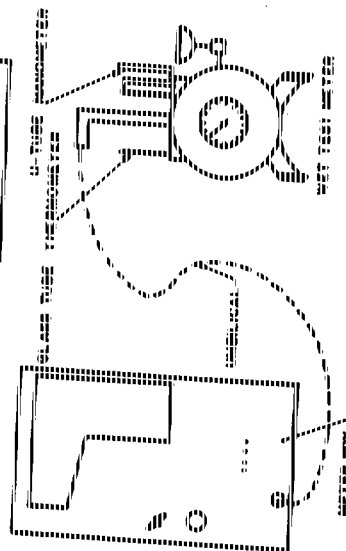
CALIBRATED BY: BKS

ANG = 1.78
Y = .994

ORIFICE MANOMETER SETTING ΔH, IN H ₂ O	GAS VOLUME WET TEST METER V _w , ft ³	GAS VOLUME DRY GAS METER V _d , ft ³	TEMPERATURE, °F		TIME Q MIN.	Y	ANG
			WET TEST METER t _w	DRY GAS METER INLET t _d	OUTLET t _d		
.5	5	5.031	75				
1.0	5	5.080	75		84	12.32	1.009
2.0	10	10.320	75		85	8.60	1.001
3.0	10	10.456	75		88	12.53	.988
					92	11.30	.979
							2.09
AVERAGE							

ΔH (3.6)	Y	ANG
$V_w P_b (t_d + 460)$	$V_d (P_b + \frac{\Delta H}{13.6}) (t_w + 460)$	$.0317 \Delta H \left[\frac{(t_w + 460) Q}{V_w} \right]^2$
.5 .036	1.0093	1.680
1.0 .073	1.0002	1.634
2.0 .147	.9877	1.725
3.0 .220	.9796	2.089

Y = RATIO OF READINGS OF WET TEST METER TO DRY TEST METER, TOLERANCE FOR INDIVIDUAL VALUES ±0.02 FROM AVERAGE.
 NS = ORIFICE PRESSURE DIFFERENTIAL THAT EQUATES TO 0.75 CFM OF AIR @ 68°F AND 29.92 INCHES OF MERCURY, IN H₂O, TOLERANCE FOR INDIVIDUAL VALUES ±0.20 FROM AVERAGE.



CALIBRATION SETUP

CONNECT THE COMPONENTS AS SHOWN IN THE FIGURE. RUN THE PUMP FOR ABOUT 15 MINUTES WITH THE ORIFICE MANOMETER SET AT ABOUT .5 IN. H₂O. THIS WILL ALLOW THE INTERIOR SURFACE OF THE WET TEST METER TO BE WETTED. GATHER THE INFORMATION AS REQUESTED ON THE DATA SHEET.

CALIBRATION OF SAMPLER CONTROL CONSOLE

(DRY GAS METER AND ORIFICE METER)

CALIBRATION DATE 10/2/90

SAMPLER I.D. AND NO. _____

BAROMETRIC PRESSURE, P_b 30.09 IN. Hg

CALIBRATED BY: BKS

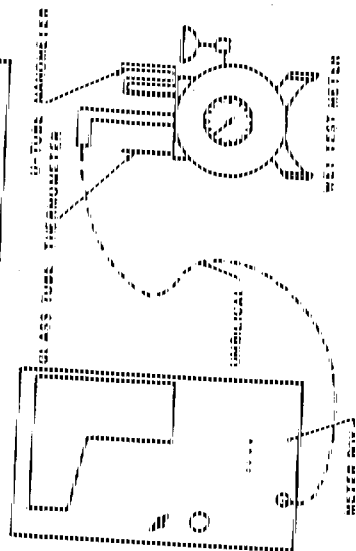
METER NO. RAC-2

$AKG = 1.85$ $Y = .983$

ORIFICE MANOMETER SETTING AH IN H ₂ O	GAS VOLUME WET TEST METER V _w ft ³	GAS VOLUME DRY GAS METER V _d ft ³	TEMPERATURE, °F			TIME θ MIN.	Y	AKG
			WET TEST METER t _w	INLET t _{d1}	OUTLET t _{d2}	AVERAGE t _d		
0.5	5	5.032	69					
1.0	5	5.160	71			84	12.67	1.020
2.0	10	10.804	72			98	9.05	1.001
3.0	10	11.085	73			102	12.97	.966
						102	11.43	.944
								2.087
AVERAGE								

ΔH	ΔH 13.6	Y	AKG
0.5	.036	$V_w P_b (t_d + 460)$	$.0317 \Delta H \left[\frac{(t_w + 460) \theta}{V_w} \right]^2$
1.0	.073	$V_d \left(P_b + \frac{\Delta H}{13.6} \right) (t_w + 460)$	
2.0	.147		
3.0	.220		
Y =	.944		

RATIO OF READING OF WET TEST METER TO DRY TEST METER, TOLERANCE FOR INDIVIDUAL VALUES ±0.02 FROM AVERAGE.
 ORIFICE PRESSURE DIFFERENTIAL THAT EQUATES TO 0.75 CFM OF AIR @ 68°F AND 29.92 INCHES OF MERCURY, IN H₂O, TOLERANCE FOR INDIVIDUAL VALUES ±0.20 FROM AVERAGE.



CALIBRATION SETUP

CONNECT THE COMPONENTS AS SHOWN IN THE FIGURE. RUN THE PUMP FOR ABOUT 15 MINUTES WITH THE ORIFICE MANOMETER SET AT ABOUT 5 IN. H₂O. THIS WILL ALLOW THE INTERIOR SURFACE OF THE WET TEST METER TO BE WETTED. OBTAIN THE INFORMATION AS REQUESTED ON THE DATA SHEET.

CALIBRATION OF SAMPLER CONTROL CONSOLE

(DRY GAS METER AND ORIFICE METER)

CALIBRATION DATE 7/23/90

SAMPLER I.D. AND NO. _____

BAROMETRIC PRESSURE, P_b 29.88 IN. Hg

METER NO RAC-3

CALIBRATED BY: BKS

ANG = 1.96

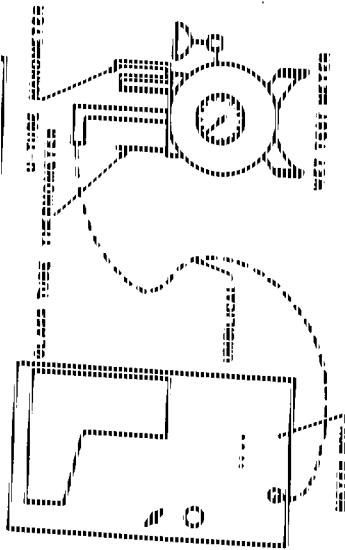
Y = .956

ORIFICE MANOMETER SETTING in H ₂ O	GAS VOLUME		TEMPERATURE, °F				TIME O MIN	Y	ANG
	WET TEST METER V _w ft ³	GAS VOLUME DRY GAS METER V _d ft ³	DRY GAS METER			AVERAGE t _d			
			INLET t _d	OUTLET t _d	AVERAGE t _d				
0.5	5	5.223	75			90	12.65	.983	1.77
1.0	5	5.326	75			93	9.30	.968	1.90
2.0	10	10.967	76			97	13.70	.943	2.05
3.0	10	11.209	76			102	11.45	.929	2.13
AVERAGE									

ΔH	Y	ANG
$\frac{\Delta H}{13.6}$	$V_w P_b (t_d + 460)$	$.0317 \Delta H \left[\frac{(t_w + 460) \theta}{V_w} \right] 2$
$V_d \left(P_b + \frac{\Delta H}{13.6} \right) (t_w + 460)$		
.5	.9829	1.766
1.0	.9680	1.899
2.0	.9429	2.054
3.0	.9285	2.133

Y = RATIO OF READINGS OF WET TEST METER TO DRY TEST METER; TOLERANCE FOR INDIVIDUAL VALUES ±0.02 FROM AVERAGE.

ANG = ORIFICE PRESSURE DIFFERENTIAL THAT EQUATES TO 0.75 CFM OF AIR @ 68°F AND 29.92 INCHES OF MERCURY, IN. H₂O, TOLERANCE FOR INDIVIDUAL VALUES ±0.20 FROM AVERAGE.



CALIBRATION SETUP

CONNECT THE COMPONENTS AS SHOWN IN THE FIGURE. RUN THE PUMP FOR ABOUT 15 MINUTES WITH THE ORIFICE MANOMETER SET AT ABOUT 5 IN. H₂O. THIS WILL ALLOW THE INTERIOR SURFACE OF THE WET TEST METER TO BE WETTED. GATHER THE INFORMATION AS REQUESTED ON THE DATA SHEET.

[illegible]

95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

92
92
94
94
96
96
96

2019

BAROMETRIC PRESSURE, IN 30.00 in. Hg

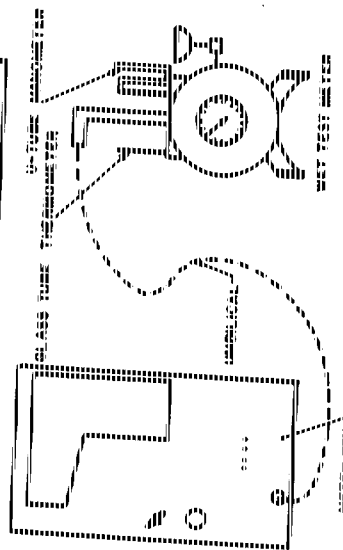
8
9
10
11
12
13
14

195	273
195	273

[illegible]

ΔH	$\frac{\Delta H}{13.6}$	γ	$\Delta H \gamma$
		$\frac{V_w P_b (t_d + 460)}{V_a \left(P_b + \frac{\Delta H}{13.6} \right) (t_w + 460)}$	$\frac{.0317 \Delta H}{P_b (t_d + 460)} \left[\frac{t_w + 460}{V_w} \right]^2$
-5	-.036	.9952	
1.0	-.073	.9727	1.684
2.0	-.147	.9810	1.933
3.0	-.220	.9426	2.021
$\gamma =$	RATIO OF	BEAM	

Y	=	15420	RATIO OF READINGS OF WET TEST METER TO DRY TEST METER; TOLERANCE FOR INDIVIDUAL VALUES ± 0.02 FROM AVERAGE.
HQ	=	2.175	ORFICE PRESSURE DIFFERENTIAL THAT EQUATES TO 0.75 CFM OF AIR @ 99°F AND 29.92 INCHES OF MERCURY. IN H ₂ O, TOLERANCE FOR INDIVIDUAL VALUES ± 0.20 FROM AVERAGE.



2000

CONNECT THE COMPONENTS AS SHOWN IN THE FIGURE. RUN THE PUMP FOR ABOUT 15 MINUTES WITH THE ORIFICE MANOMETER SET AT ABOUT 5 IN H₂O. THIS WILL ALLOW THE SURFACE OF THE TEST TEST METER TO BE WETTER. GATHER THE INFORMATION AS REQUESTED ON THE DATA SHEET.

NOZZLE CALIBRATION DATA SHEET

DATE OF CAL: 8/1/90

NOZZLE IDENTIFIER: A 2

TECHNICIAN: MRS

NOZZLE ROTATED BY 120 DEGREE INCREMENTS AND DIAMETER MEASURED TO NEAREST
0.001 INCH. OBSERVED READINGS AND AVERAGE:

POSITION	DIAMETER (INCHES)
1	.187
2	.187
3	.186
AVERAGE	.187

NOZZLE CALIBRATION DATA SHEET

DATE OF CAL: 8/1/90

NOZZLE IDENTIFIER: B 4

TECHNICIAN: NRS

NOZZLE ROTATED BY 120 DEGREE INCREMENTS AND DIAMETER MEASURED TO NEAREST 0.001 INCH OBSERVED READINGS AND AVERAGE:

POSITION	DIAMETER (INCHES)
1	.247
2	.247
3	.246
AVERAGE	.247

TEMPERATURE MEASUREMENT
CALIBRATION CHECK

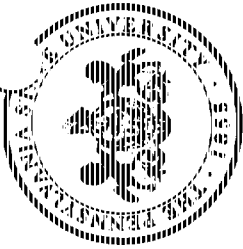
DATE: 8/3/90

OPERATOR: BKS

FIELD INSTRUMENT DESCRIPTION: Micro Mite #3

REFERENCE INSTRUMENT DESCRIPTION: Digimite S/N 2752

<u>REFERENCE</u> <u>INSTRUMENT, °F</u>	<u>FIELD</u> <u>INSTRUMENT, °F</u>
50	50
100	100
150	150
200	200
250	250
300	300
350	350
400	400
450	450
500	500



The Pennsylvania State University

Continuing Education

this certifies that
Lon Refner
has completed

VISIBLE EMISSIONS EVALUATION PROGRAM

From-To	Continued	From-To	Recertified	From-To
Robert J. Libera	10/24/79 - 10/24/80	Robert J. Libera	10/24/79 - 10/24/80	
Robert J. Libera	10/24/80 - 9/01/81			
Robert J. Libera	10/24/80 - 9/01/81			

Robert J. Libera

Project Director of Visible Emissions
Training Program
Center for Air Environment Studies

RECEIVED
OCT 11 1990
DER-HBG. REGION
AIR QUALITY CONTROL

Robert J. Libera

Director of Continuing Education