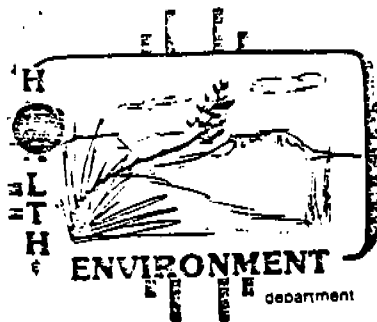


Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources*. AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

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



STATE OF NEW MEXICO

ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 827-5271
Thomas E. Baca, M.P.H., Director

A-82-39
II-A-101
Bruce King
GOVERNOR

George S. Goldstein, Ph.D.
SECRETARY

Larry J. Gordon, M.S., M.P.H.
DEPUTY SECRETARY

AIR QUALITY SOURCE SAMPLING REPORT #216

AP-42 Section 11.30
Reference 6
Report Sect. 4
Reference 3

GREFCO, INC.
PERLITE MILL
SOCORRO, NEW MEXICO

ABSTRACT

EPA Method 5 particulate tests performed at Grefco Perlite Mill on January 5 and 6, 1982 show the plant to be emitting an average of 4.21 lb/hr. of total particulate to the atmosphere. Air Quality Control Regulation 505 allows up to 32.0 lb/hr. to be emitted to the atmosphere.

Report Prepared By

Jimmy F. Romero
Environmental Scientist III

Report Reviewed By

Deodat Bhagwandin
Environmental Engineer

TABLE OF CONTENTS

Introduction	1
Test Procedures.	1
Process Description.	2
Results.	2
Nomenclature	3
Calculations	5
Figures and Tables	6
Appendix A - Field Notes	9
Appendix B - Lab Results	18
Appendix C - Calibrations.	21
Appendix D - Personnel Resumes	23

INTRODUCTION

1. Company Name and Address

Grefco, Inc.
3450 Wilshire Blvd.
Los Angeles, California 90010
Phone (213) 381-5081

2. Location of Plant Tested

1.5 miles southwest of Highway 60 near Socorro, New Mexico

Contact: Claude Wallace, Plant Manager
Phone 835-2892

3. Dates of Testing

January 5 and 6, 1982

TEST PROCEDURES

1. Sample Collection and Analysis

Figure 3 shows a schematic of the sampling train. The procedures followed EPA Methods 1, 2 and 5 as described in 40 CFR, Part 60, Appendix A. Method 1 was used for determining the number of traverse points across the duct. Method 2 was used in measuring the velocity of the stack gases and Method 5 was used in the collection of the particulate samples. In the procedures, particulate matter is withdrawn isokinetically from the source and collected on a glass fiber filter. The particulate mass which includes any material that condenses at or above the filtration temperature is determined gravimetrically after removal of uncombined water. Filters from the tests were desiccated and then weighed on a balance which measures accurately to the .0001 gram level. The particulate collected in the nozzle, probe and glassware prior to the filter are rinsed and the washings are analyzed at the Scientific Laboratory Division in Albuquerque, New Mexico. Analyses there includes evaporation of the liquid and weighing of the particulate residue.

2. Description of Test Location

Figure 2 shows a schematic of the test location and traverse points selected. The ports are located 1.1 stack diameters upstream and .67 diameters downstream from the nearest disturbance to the flow. The location did not meet the minimum criteria for EPA Method 1, requiring 48 traverse points. The number of traverse points selected was 50.

3. Deviations from the methods were as follows:

The minimum criteria for selection of the sampling site as described in Method 1 were not met.

4. Personnel Conducting or Observing Tests

EID Personnel

Jimmy T. Romero - Environmental Scientist III (Supervisor)
Tim Booker - Environmental Technician III
Mario Romero - Environmental Technician III

Plant Personnel

None

PROCESS DESCRIPTION

Figure 1 shows a schematic diagram of the perlite mill near Socorro. The process consists of milling, sizing and drying the material until the desired size and moisture content is obtained. The material is then shipped out of the state for further processing by expansion. The perlite ore is passed through a grizzly separator and then undergoes primary and secondary crushing and then fed to one horizontal rotary dryer. After drying, the material undergoes tertiary screening and grinding until the final sizes are obtained. The material is then stored in bins until shipment.

Particulate emissions result from the drying and screening of the material. The emissions are collected in a Sly baghouse. Fugitive emissions from the disposal pit can become excessive during moderate winds. A rented water truck from the city waters the road and plant location down, when excessive dust is raised by high winds.

RESULTS

Test Number	I	II	III
Date	1-5-82	1-6-82	1-6-82
Process Rate ton/hr.	38	38	38
Allowable Emission Rate lb/hr.	32.0	32.0	32.0
Measured Emission Rate lb/hr.	4.45	3.09	5.08
Percent Isokinetic Testing	98.75	101.1	95.65

The process rate was determined from the shift log kept by the company. The maximum design process rate for the plant is 65 tons/hr.

The location of the test ports should be evaluated and the location changed so that it meets the minimum criteria of Method 1. The velocity traverse profile did not show a significant variation in flow pattern, however, the location should be changed to conform to the standard methods.

NOMENCLATURE

A	=	Area of stack (ft. ²)
C _p	=	S-type pitot tube correction factor
D _n	=	Sampling nozzle diameter, inches
D _s	=	Stack diameter, feet
F	=	Mole fraction of dry gas
ΔH	=	Pressure drop across the orifice, inches H ₂ O
I	=	Percent isokinetic sampling, %
M _{cf}	=	Meter correction factor
M _d	=	Dry molecular weight of the stack gas, lb./lb. mole
M _w	=	Wet molecular weight of the stack gas, lb./lb. mole
ΔP	=	Velocity head, inches H ₂ O
P _b	=	Barometric pressure, inches Hg
P _g	=	Static stack pressure
P _s	=	Absolute stack pressure, inches Hg
Q	=	Stack gas flow rate at stack conditions, acfm
Q(std)	=	Stack gas flow rate at STP (68°F, 29.92 inches Hg), scfm (dry)
t	=	Sampled time, minutes
T _m	=	Meter temperature, °F
T _s	=	Stack gas temperature, °F
V	=	Meter volume of gas at meter conditions, acf
V _s	=	Velocity of stack gas, fpm
V(std)	=	Meter volume of gas at STP (68°F, 29.92 inches Hg), scf (dry)
V _{wf}	=	Volume of water collected in impingers and silica gel, milliliters
V _{wv}	=	Volume of water vapor collected at STP (68°F, 29.92 inches Hg), scf
W	=	Weight of the collected particulate, milligrams
W _{g(std)}	=	Stack gas particulate at STP (68°F, 29.92 inches Hg), grains/scf (dry)
E	=	Emissions, lb./hr.
% CO ₂	=	Percent carbon dioxide by volume, %
% H ₂ O	=	Percent moisture in stack gas by volume, %
% N ₂	=	Percent nitrogen in stack gas by volume, %
% O ₂	=	Percent oxygen in stack gas by volume, %

Volume of gas sampled:

$$V_{(std)} = \frac{17.65 (V) (Mcf) (Pb + \frac{\Delta H}{13.6})}{Tm + 460} = \text{scf (dry)}$$

Weight of particulate in stack gas:

$$Wg_{(std)} = .0154 \frac{W}{V_{(std)}} = \text{grains/scf (dry)}$$

Volume of moisture collected, if expressed as a vapor:

$$V_{wv} = .0474 (V_{wf}) = \text{scf}$$

Portion of stack gas volume which is moisture:

$$\% H_2O = \frac{100 (V_{wv})}{V_{(std)} + V_{wv}} = \%$$

Fraction of stack gas volume which is dry:

$$F = \frac{100 - \% H_2O}{100} =$$

Molecular weight of dry stack gas:

$$M_d = \% CO_2 (.44) + \% O_2 (.32) + \% N_2 (.28) = \text{lb./lb./mole}$$

Molecular weight of wet stack gas:

$$M_w = M_d (F) + 18 (1-F) = \text{lb./lb. mole}$$

Absolute stack pressure:

$$P_s = P_b + \frac{P_g}{13.6} = \text{"Hg}$$

Velocity of the stack gas:

$$V_s = 5124 C_D \sqrt{\Delta P} \sqrt{\frac{T_s + 460}{P_s M_w}} = \text{fpm}$$

Stack gas flow rate

$$Q = V_s (A) = \text{acfm}$$

$$Q_{(std)} = \frac{17.65 (V_s) (A) (F) (P_s)}{T_s + 460} = \text{scfm (dry)}$$

Isokinetic sampling validation expression:

$$I = \frac{1039 (T_s + 460) V_{(std)}}{V_s (r) (P_s) (F) (D_n)^2} = \%$$

Particulate emission rate:

$$E = 308.6 \times 10^{-3} [Wg_{(std)}] [Q_{(std)}] = \text{lb./hr.}$$

TEST DATA

Test No.

V.....	Actual metered sample volume (CF)	61.23	57.97	57.7
Pb.....	Barometric pressure (Hg")	29.95	29.97	29.9
Ta.....	Average dry gas meter temp. (°F)	82.18	77.85	90.2
ΔP.....	Average pressure drop across orifice (H ₂ O")	.922	.85	.82
Kcf.....	Meter correction factor	.99	.99	.99
W.....	Total particulate collected (mg)	22.54	21.27	33.7
Vwf.....	Total H ₂ O collected from impingers (ML)	33.50	42.5	49.1
%CO ₂	Percent carbon dioxide in stack gas (dry)	0	0	0
%O ₂	Percent oxygen in stack gas (dry)	19.5	20.0	20.0
%N ₂	Percent nitrogen in stack gas (dry)	80.5	80.0	80.0
Pg.....	Stack pressure in stack	-2.5	-2.0	-2.0
Ts.....	Average stack gas temperature (°F)	115.5	115.3	129.5
Cp.....	S-type pitot tube correction factor	.82	.82	.82
√ΔP.....	Average square roots of velocity heads	.883	.88	.86
A.....	Area of stack (ft. ²)	21.005	21.005	21.00
t.....	Sample time (minutes)	100	100	100
Dn.....	Sampling nozzle diameter (inches)	.187	.187	.188

CALCULATED RESULTS

Pa.....	Absolute stack pressure ("Hg)	29.746	29.823	29.82
V _(std)	Corrected metered volume (SCF)	46.48	47.117	42.8
W _(std)	Weight of particulate in stack gas (grains/SCF)	.010	.007	.012
Vwv.....	Volume of water vapor collected (SCF)	1.59	2.015	2.0
%H ₂ O.....	Percent H ₂ O in stack gas by volume	3.0	4.1	4.7
F.....	Mole fraction of stack gas (dry)	.967	.959	.953
Md.....	Dry molecular wt. of stack gas (lb/lb-mole)	28.780	28.80	28.8
Mw.....	Wet molecular wt. of stack gas (lb/lb-mole)	28.37	28.357	28.2
Vs.....	Velocity of stack gas (FPM)	3352.35	3342.686	3310
Q.....	Actual stack volumetric flow (ACFM)	70529.5	70213.119	69538
Q _(std)	Stack volumetric flow (SCFM)	51727.4	51250.2	49225
I.....	Percent isokinetics	98.75	101.1	95.6
E.....	Particulate emission rate (lb/hr.)	4.953	3.085	5.08

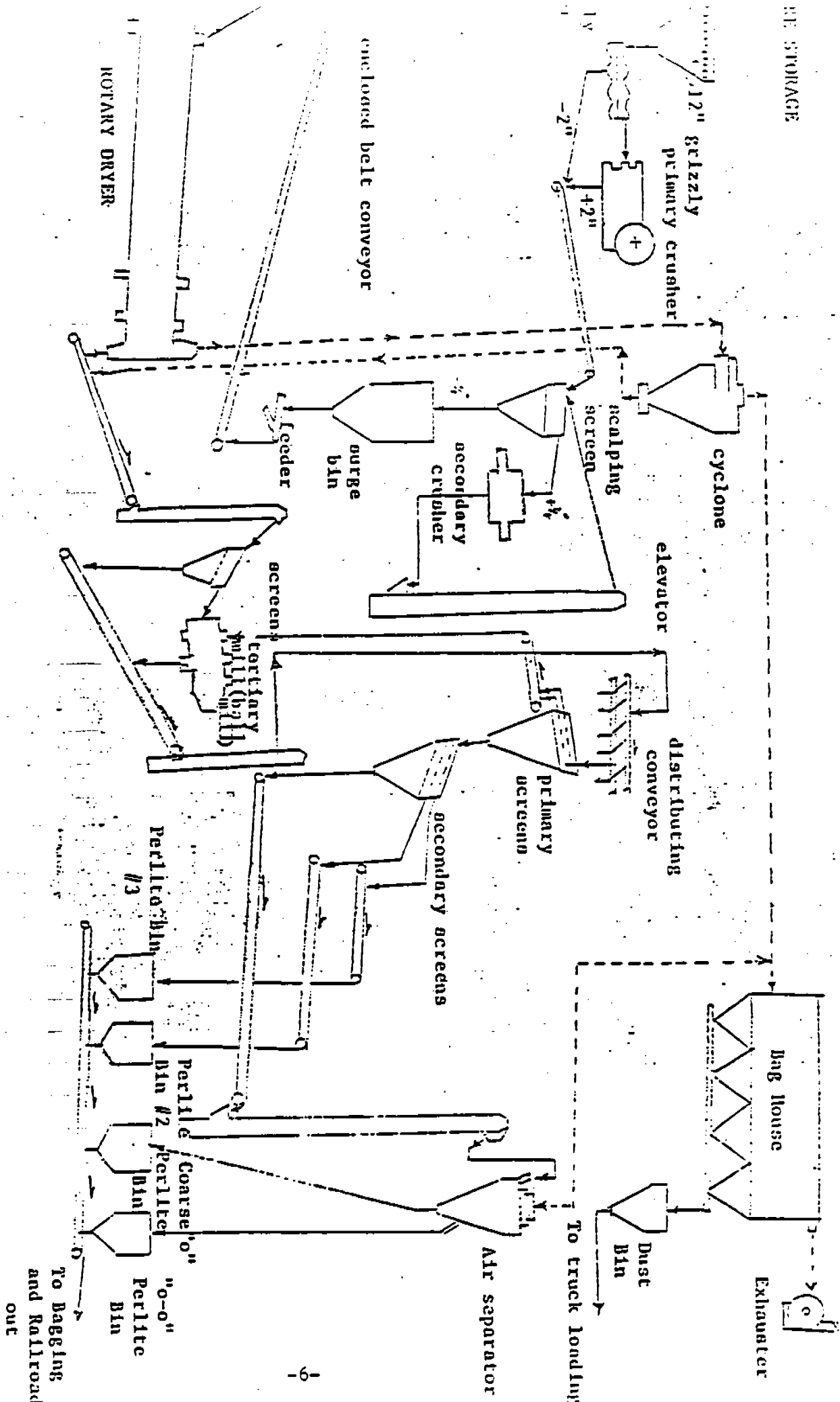
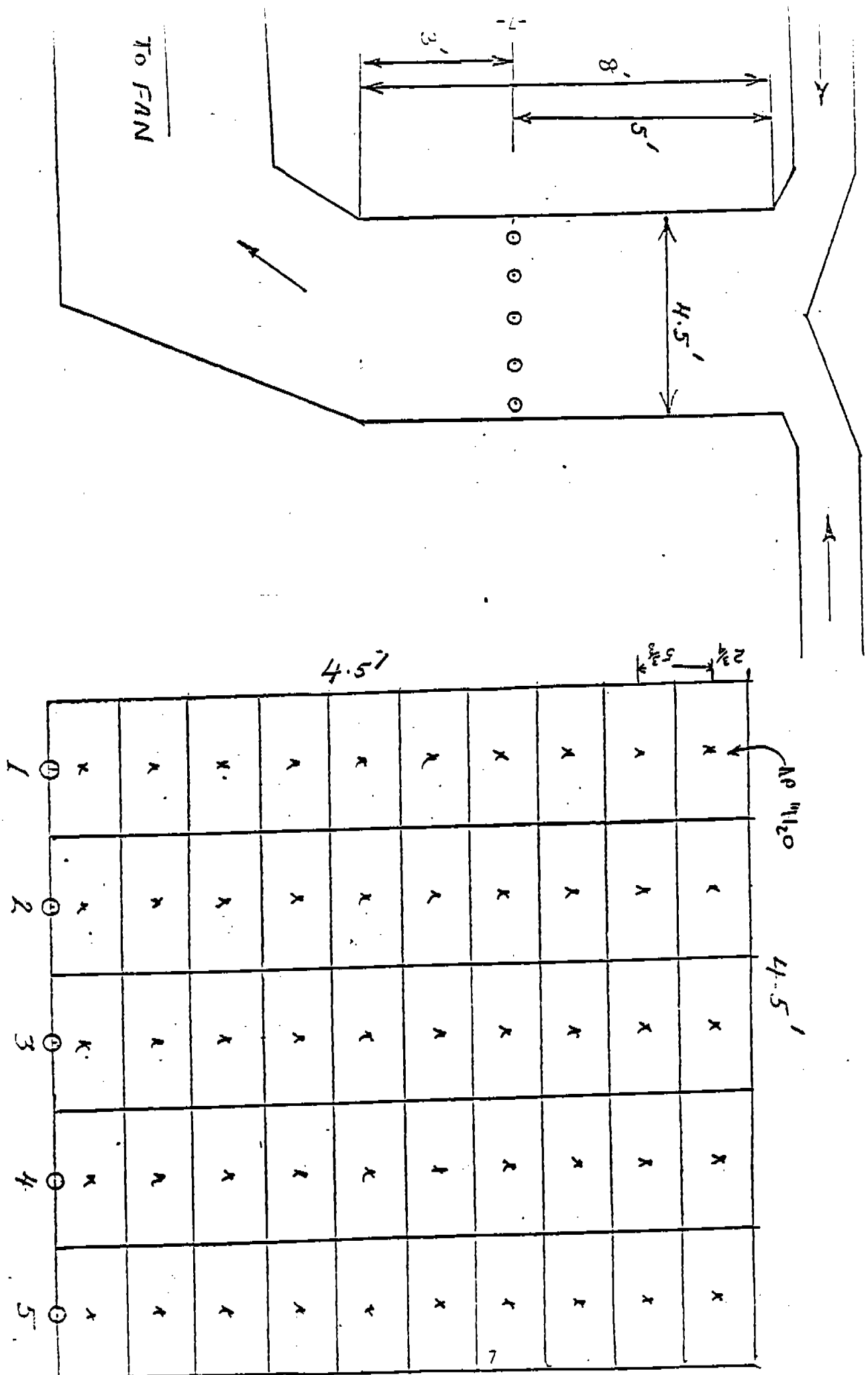
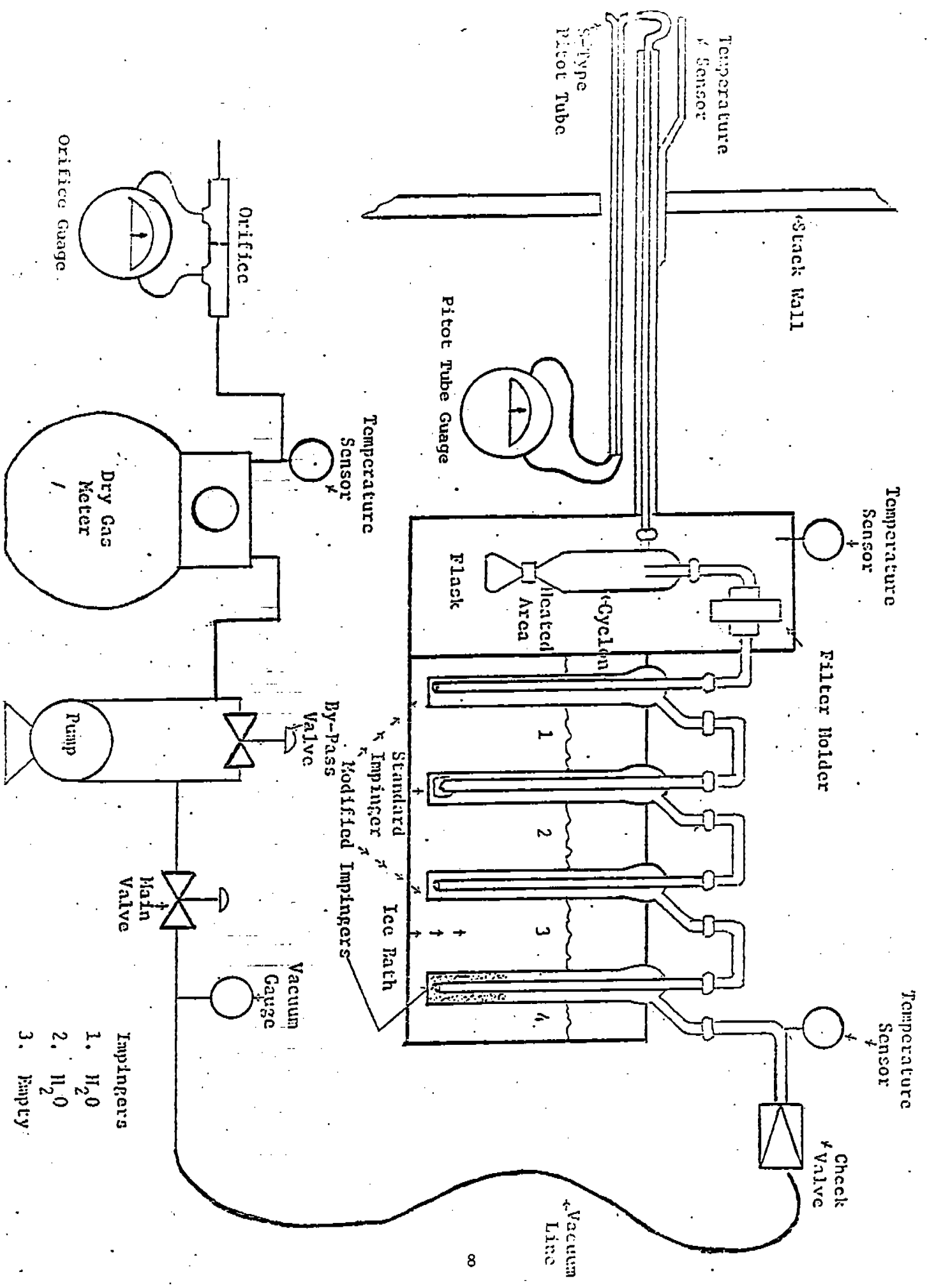


FIGURE 1 - Schematic Diagram of the Greco Perlite Mill at Socorro, New Mexico

FIGURE 2. - Ports Location and 30 Point Velocity Traverse





1. H_2O
 2. H_2O
 3. Empty
 4. Silica gel desiccant

PROBULATE FIELD DATA

Station: El Estero, N.M. Ambient Temperature: 28°C
 Date: 1/5/82 Barometric Pressure: 29.95
 Location: Sacramento, New Mexico Static Pressure: -25
 Operator: Ramiro, T. Booker, M. Romero Pitot Tube Coeff: .82
 Stack No.: Proble Port Identif: Start (G) Probe Length, in.: 72
 Run No. or Test: Total Particulate I Process Weight Rate: 30 Ton/hr
 Type of Test: Total Particulate Time Test Started: 2:15 P.M.
 Probe Diameter, in.: 55" x 55" Time Test Ended: _____
 Meter Box No.: I Plant Arrival: 8:30 A.M.
 Probe No.: 102 Gmes Plant Contact: Mr. Claude Wallace

Reverse Point Number	Sampling Time in Min.	Velocity Head (ft/s) (m/s)	Pressure Differential Across Orifice Meter (in) "H ₂ O	Gas Sample Volume (Nm) Sc.3	Stack Temperature (°F) (°C)	Temperature Probe °F	Box °F	Temperature Ingringer Out °F	In °F	Temperature Meter Out IN °F	°F	Pump Vacuum in Hg Gauge
1	2	9.5 983	1.5	0998.33	100	325	220	55	150	60	75	7.0
2	4	9.5 973	1.5		100	320	220	55	150	60	75	7.0
3	6	9.0 949	1.0	1003.0	101	300	270	50	180	60	76	7.0
4	8	1.1 1.05	1.25		102	300	265	50	180	60	78	7.5
5	10	1.2 1.10	1.4		102	300	260	50	200	60	78	8.0
6	12	1.25 1.12	1.75	1007.5	102	300	260	50	203	60	78	8.0
7	14	1.1 1.05	1.25		103	320	275	53	212	62	79	8.0
8	16	1.0 1.00	1.1	1009.7	103	320	275	50	219	62	79	8.0
	18	.90 949	1.0		103	340	248	55	219	63	80	7.0
10	20	1.0 1.05	1.25	1007.0	106	339	276	55	223	64	82	9.0
11	2	.75 .866	.82		105	348	269	60	131	66	79	6.0
12	4	.85 .922	.95	1014.5	105	348	270	57	130	67	81	7.0
13	6	.45 .671	.50		109	347	271	56	137	68	82	4.5
14	8	.60 .725	.62	1017.0	112	347	271	55	138	68	82	5.0
15	10	.80 .894	.89		113	349	274	55	169	70	86	6.0
16	12	.80 .894	.89	1019.0	114	349	274	55	169	70	86	6.0
17	14	1.0 1.0	1.1		115	346	277	54	192	72	89	7.5
18	16	.90 .949	1.0	1022.0	115	346	279	54	218	75	90	7.0
19	18	.70 .837	.78		115	346	279	54	218	75	90	7.5
20	20	1.0 1.0	1.1	1024.0	115	346	279	54	218	75	93	8.0
					61.23CF							
						Dens Strip @ 15" N/A						

VOLUME OF LIQUID WATER COLLECTED	INGRINGER VOLUME (ml)				SILICA GEL WEIGHT (g)
	1	2	3	4	
FINAL	173	49	1	-	679.2
INITIAL	106	100	0	-	668.7
COLLECTED	73	51	1	-	10.5
TOTAL VOLUME COLLECTED	335				

TYPE OF ORS MEASUREMENT

TIME	CO	CO ₂	CO	N ₂
1	9.00	19.5	0.0	
2		19.5	0.0	
3		19.5	0.0	

OPACITY → 0%

Dead Stop @ 15" Neg
Initial Leak Check: 1 minute

Final Leak Check: Dead Stop

13.5 house pressure drops.
 4" 5.5" 3.75" 4" 140

Millardum fill. 4:20 run due
 to electric shorts on elevation
 meter wiring.

GRECO PERLITE MILL

I

01/05/92

Pressure Drop across Orifice Meter #1-4.5" #2-3.5" #3-3.5" #4-4.0"													
Test	Sampling Time in Min.	Velocity Head (FPS) (MPS)		Pressure Differential Across Orifice Meter (IN) "H ₂ O"	Gas Sample Volume (CUB) FT. ³	Stack Temperature (TS) °F	Temperature Probe °F		Temperature Impinger °F		Temperature Water °F		Pump Vacuum in Hg Gauge
1	2	.80	.899	.98	1025.2	110	358	280	61	218	76	87	5.0
2	4	.35	.592	.39		110	359	282	62	219	77	87	3.5
3	6	.30	.598	.33	1026.3	110	358	282	63	219	77	87	3.5
4	8	.90	.632	.45		120	361	282	59	220	77	89	4.0
5	10	.65	.806	.73	1029.0	120	362	284	57	222	78	90	5.0
6	12	.80	.899	.90		121	361	284	53	220	79	92	5.5
7	14	.75	.866	.84	1031.5	120	358	285	53	227	79	93	5.5
8	16	.70	.837	.78		120	355	284	53	227	79	93	5.5
9	18	.85	.922	.95	1039.0	120	309	285	53	233	80	95	6.0
10	20	.85	.922	.95		120	304	285	53	233	80	95	6.0
1	2	.55	.742	.61	1036.10	120	326	279	60	197	81	90	4.5
2	4	.30	.598	.33		120	331	279	59	190	81	91	3.5
3	6	.30	.598	.37	1038.0	120	275	275	55	190	81	91	3.5
4	8	.90	.632	.95		120	285	277	56	173	82	93	4.0
5	10	.75	.866	.84	1039.7	122	285	277	56	173	82	93	5.5
6	12	.85	.922	.95		124	307	277	59	184	82	96	6.0
7	14	.85	.922	.95	1042.0	129	307	277	54	184	82	96	6.0
8	16	.65	.806	.73		123	290	276	59	209	83	98	5.0
9	18	.60	.775	.67	1045	123	290	276	59	209	83	98	5.0
10	20	.65	.806	.73		123	275	277	55	218	84	99	5.0
1	2	1.1	1.05	1.22	1046.5	120	320	277	60	189	84	91	8.0
2	4	.70	.837	.78		120	295	276	55	211	84	92	5.5
3	6	.80	.899	.90	1049.0	125	260	276	53	218	84	94	7.0
4	8	.95	.975	1.05		126	250	276	52	224	84	96	7.0
5	10	1.1	1.05	1.22	1052.0	126	250	276	50	226	84	97	7.5
6	12	1.1	1.05	1.22		126	250	276	50	226	84	97	7.5
7	14	1.1	1.05	1.22	1059.7	126	275	272	53	228	84	99	7.5
8	16	1.0	1.00	1.1		126	276	272	53	228	84	99	7.5
9	18	.75	.866	.83	1056.4	125	295	273	59	229	85	100	5.5
10	20	.80	.899	.90		125	245	273	59	229	85	100	5.5
		avg	.883	Final Reading	1059.56						75.29	89.18	

Started recycling material which would indicate finer and more polished
 Dial stuck at 115°F

Station: C. F. P. 111
 Date: 01/06/82
 Location: Source Hill
Store: R. 111, T. 111, R. 111
 Stock No.: None Port Identif: _____
 Run No. or Test: II
 Type of Test: Total Part. wintc
 Probe Diameter, in.: 54" x 54"
 Meter Box No.: V
 Probe No.: 102 C-155

Ambient Temperature: 28.5 F
 Barometric Pressure: 29.92
 Static Pressure: -30"
 Pitot Tube Coeff: .82
 Probe Length, in.: 72
 Process Weight Rate: 35-40 T/hr
 Time Test Started: 4:37 A.M.
 Time Test Ended: 11:35 A.M.
 Plant Arrival: 8:15 A.M.
 Plant Contact: Mr. Claude Wallace

1. Moisture in: 1.66 100%
2. Moisture to: 4.1%
3. Motor Temperature: 278°
4. PS/Em: .99
5. Temperature of Stack: 1153
6. Average $\bar{u}$: 82
7. Actual Nozzle Diameter: .187
8. Average ΔH : .85

Reverse Pump Number	Sampling Time in Min.	Velocity Head (FPS) (MPS)		Pressure Differential Across Orifice Meter (IN) "H ₂ O	Gas Sample Volume (CM) cc. 3	Stack Temperature (°S) °F	Temperature Probe Box °F		Temperature Ingringer Out In °F		Temperature Meter Get Out °F		Pump Vacuum in Hg Gauge
1	2	1.25	1.12	1.32	1060.07	97	350	286	60	179	52	55	8.0
2	4	1.0	1.00	1.05		100	350	286	60	179	52	55	7.0
3	6	.95	.97	1.02	1063.0	100	282	281	45	171	53	61	6.5
4	8	1.1	1.05	1.17		100	282	281	45	171	53	61	7.5
5	10	1.15	1.07	1.22	1066.0	100	230	276	46	190	55	68	7.5
6	12	1.2	1.10	1.28		100	195	275	46	194	55	70	8.0
7	14	1.1	1.05	1.17	1068.6	103	228	274	47	198	56	72	8.0
8	16	.95	.97	1.02		105	228	274	47	198	56	72	8.0
	18	.95	.97	1.02	1071.3	105	278	275	48	209	59	76	8.0
10	20	1.05	1.02	1.12		105	278	275	48	209	59	76	8.0
1	2	1.2	1.10	1.27	1079.0	105	256	281	54	195	62	76	8.0
2	4	.50	.71	.53		105	260	281	54	195	62	76	8.0
3	6	.45	.67	.48	1076.0	110	279	283	51	212	64	78	4.5
4	8	.55	.79	.58		110	300	287	51	214	65	80	5.0
5	10	.75	.87	.80	1078.0	110	300	287	51	214	65	80	6.0
6	12	.90	.95	.96		110	281	289	50	220	66	83	6.0
7	14	.90	.95	.96	1080.0	110	281	289	50	220	66	83	6.0
8	16	.80	.89	.85		115	281	289	50	220	66	83	6.0
9	18	.75	.87	.80	1082.7	115	264	290	50	227	69	86	5.5
10	20	.90	.95	.96		115	264	290	50	227	69	86	6.0

15" 1/4" Fan (1)
Tactical Leak Check:

Final Leak Check: 0.05 in

VOLUME OF LIQUID WATER COLLECTED	FINGER VOLUME (ml)				SILICA GEL WEIGHT (g)
	1	2	3	4	
FINAL	125	100	1	-	68.77
INITIAL	100	100	0	-	67.72
WATER COLLECTED	25	0	1	-	10.5
WATER VOLUME					

FYRITE OR <u>CRSLD</u> MEASUREMENT	TIME	CO ₂	O ₂	CO	N ₂
1	10:23 AM	0	20.0		
2		0	20.0		
3		0	20.0		

Furze &

opacity $\rightarrow$ C%

REFCO PERLITE MILL

TEST NUMBER

DATE:

II

01/06/82

Series Test No.	Sampling Time in Min.	Velocity Head (ft/s) (m/s)		Pressure Differential Across Orifice Meter (in) H ₂ O	Gas Sample Volume (ft ³) (m ³)	Stack Temperature (°F) (°C)	Temperature Probe °F °C		Temperature Impinger Out °F In °F		Temperature Water Wet In °F Out °F			Pump Vacuum in Hg gauge
1	2	.90	.95	.96	1085.0	115	245	283	57	209	71	84		6.0
2	4	.30	.55	.32		115	245	283	57	209	71	84		6.0
3	6	.30	.55	.32	1086.8	115	240	272	55	217	72	85		3.5
4	8	.40	.63	.43		115	266	274	53	215	73	86		4.0
5	10	.65	.81	.69	1084.2	120	275	273	52	217	74	88		5.0
6	12	.80	.89	.83		120	275	273	52	217	74	88		5.0
7	14	.75	.87	.86	1091.0	120	275	272	51	220	75	91		5.5
8	16	.65	.81	.69		120	275	272	51	220	75	91		5.0
9	18	.65	.81	.69	1063.0	120	284	270	52	219	76	92		5.0
10	20	.85	.92	.90		120	284	270	52	219	76	92		6.0
* 1	2	.70	.84	.74	1095.1	120	228	269	50	211	77	90		5.0
2	4	.70	.84	.74		120	228	269	50	211	77	90		5.0
3	6	.30	.55	.34	1097.0	120	250	269	50	210	78	90		3.5
	8	.40	.63	.43		120	249	269	51	210	78	91		4.0
5	10	.75	.87	.80	1099.0	120	289	269	51	210	78	91		5.5
6	12	.80	.89	.85		120	251	268	51	217	79	93		6.0
7	14	.80	.89	.85	1101.0	120	251	268	51	217	79	93		6.0
8	16	.60	.77	.64		125	267	268	50	218	79	94		5.0
9	18	.60	.77	.64	1103.0	125	287	267	51	219	86	95		4.0
10	20	.60	.77	.64		125	287	267	51	219	86	95		4.0
1	2	.90	.95	.96	1105.5	125	277	268	50	196	81	91		6.0
2	4	.70	.84	.74		125	277	268	50	198	82	92		5.0
3	6	.70	.84	.74	1108.0	125	274	267	52	217	81	93		5.0
4	8	.90	.95	.96		125	270	266	51	218	81	95		6.5
5	10	1.05	1.02	1.1	1111.0	125	250	265	51	219	81	97		7.0
6	12	1.1	1.05	1.15		125	254	265	51	220	82	98		8.0
7	14	1.1	1.05	1.15	1113.2	125	254	265	51	220	82	98		8.0
8	16	.95	.97	1.02		125	260	268	52	220	83	99		7.5
9	18	.85	.92	.91	1116.0	125	260	268	52	220	83	99		7.5
	20	.75	.87	.8		125	260	260	52	220	83	99		5.5
Final Reading					1118.04					avg	76.9	84.8		

PARTICULATE FIELD DATA

Date: 01/06/82
 Location: Secaucus Union
 Operators: J. Ramirez, T. Becker, M. Rana
 Stack No.: Dryer Port Identif: 4.5" V.M.
 Pkg. No. or Test: ITC
 Type of Test: Telco Particulate
 Stack Diameter, in.: 54" X 54"
 Water Box No.: I
 Probe No.: 102 G-185

Ambient Temperature: 50°
 Barometric Pressure: 24.97
 Static Pressure: -2.0
 Pitot Tube Coeff.: .82
 Probe Length, in.: 72
 Process Weight Rate: 38-40 T/H
 Time Test Started: 12:00 P.M.
 Time Test Ended: 2:05 P.M.
 Plant Arrival: 8:15 A.M.
 Plant Contact: M. Claude Wallace

1. Water Flow: 1.66 MCF .55
 2. Moisture in: 4.7%
 3. Water Temperature: 50.35
 4. Ps/Pm: .99
 5. Temperature of Stack: 129.5
 6. Average TP: 70
 7. Actual Nozzle Diameter: 1.68
 8. Average AM: .82

Reverse Point Number	Sampling Time in Min.	Velocity Head (FPS) (MPS)		Pressure Differential Across Orifice Meter (IN) (MM H ₂ O)	Gas Sample Volume (CM) (L)	Stack Temperature (TS) (OF)	Temperature Probe OF		Temperature Impinger Out OF In OF		Temperature Water Gm. IN OF OUT		Pump Vacuum in Hg Gauge
1	2	.80	.89	.85	1118.67	125	269	254	60	198	79	89	5.0
2	4	.58	.74	.59		130	280	275	53	178	79	85	4.0
3	6	.75	.87	.80	1121.0	130	280	275	52	199	79	88	5.0
4	8	.75	.87	.80		130	280	275	52	199	79	88	5.0
5	10	1.05	1.02	1.1	1123.5	130	271	288	51	199	80	91	7.0
6	12	1.15	1.07	1.2		130	271	288	51	199	81	92	7.5
7	14	1.15	1.07	1.2	1124.0	130	271	288	51	199	81	92	7.0
8	16	.90	.95	.96		130	280	272	53	208	81	96	6.0
	18	.85	.92	.90	1128.7	130	250	273	55	211	82	96	6.0
10	20	.80	.89	.85		130	250	273	55	211	82	96	6.0
1	2	.36	.55	.34	1131.0	130	250	273	55	201	82	96	3.0
2	4	.25	.50	.265		130	245	266	60	199	83	92	3.0
3	6	.25	.50	.265	1132.6	130	240	269	58	179	83	93	3.0
4	8	.35	.59	.37		130	253	269	56	200	83	94	3.0
5	10	.70	.84	.74	1134.0	130	253	269	56	200	83	94	5.0
6	12	.80	.89	.85		130	258	266	53	213	84	97	5.0
7	14	.80	.89	.85	1136.0	130	250	263	52	216	84	98	5.0
8	16	.65	.81	.69		130	245	262	52	217	84	98	5.0
9	18	.65	.81	.69	1138.5	130	255	262	52	218	84	98	5.0
10	20	.65	.81	.69		130	255	262	52	218	84	98	5.0

VOLUME OF LIQUID WATER COLLECTED	IMPINGER VOLUME (ml)				SILICA GEL WEIGHT (g)
	1	2	3	4	
FINAL	125	107	1	-	660.4
INITIAL	100	100	0	-	649.3
TO BE COLLECTED	25	7	1	-	11.1

TYPE OR ORIGIN MEASUREMENT	TIME	CO ₁	CO ₂	CO ₃	SO ₂
7.3.	1	130	0	200	
	2	-	0	200	
	3	-	0	200	

Initial Leak Check: 2.00 20.0 10.18%
 Final Leak Check:

TOTAL VOLUME COLLECTED Pressure duap across baghouse
 number = 1 = 2 = 3 = 4
 4.0" 5.0" 4.0" 4.5"

Capacity → C%

C-REFLO PERLITE mill

TEST NUMBER

III

DATE:

01/06/82

Reverse Pulse Number	Sampling Time in Min.	Velocity Head (LPS) (FPS)	Pressure Differential Across Orifice Meter (IN) (H ₂ O)	Gas Sample Volume (Nm) (ft ³)	Stack Temperature (Ts) (F)	Temperature Probe In F	Temperature Box In F	Temperature Impinger Out In F	Temperature Meter Out In F	Pump Vacuum in Hg Gauge
1	2	.80 .89	.85	1240.0	120	263	270	61 207	86 96	5.0
2	4	.35 .59	.37	1142.0	120	250	263	55 219	86 96	3.0
3	6	.35 .59	.37		130	255	263	56 220	86 96	3.0
4	8	.35 .59	.37	1143.5	130	270	269	56 220	86 97	3.0
5	10	.65 .81	.69		130	270	269	56 220	86 97	5.0
6	12	.80 .89	.85	1145.0	130	245	269	54 222	86 99	5.0
7	14	.80 .89	.85		130	245	269	54 222	86 99	5.0
8	16	.65 .81	.69	1148.0	130	260	269	53 224	86 100	5.0
9	18	.70 .84	.74		130	260	269	53 224	86 100	5.0
10	20	.85 .92	.90	1150.0	130	250	265	54 225	87 102	5.5
1	2	.80 .89	.85	1151.2	130	250	265	54 215	87 97	5.0
2	4	.45 .67	.47		130	254	267	56 225	86 97	4.0
3	6	.45 .67	.47	1155.7	130	254	267	56 225	86 98	4.0
	8	.60 .77	.64		130	254	270	56 226	86 98	4.5
5	10	.85 .92	.90	1155.4	130	274	271	55 227	86 99	5.0
6	12	1.0 1.0	1.05		130	275	270	55 227	86 99	6.0
7	14	1.0 1.0	1.05	1157.7	130	278	272	54 237	87 101	6.0
8	16	.85 .92	.90		130	278	271	54 232	87 101	6.0
9	18	.75 .87	.80	1160.3	130	275	273	56 233	87 102	5.0
10	20	.90 .95	.96		130	275	273	56 233	87 102	6.0
1	2	.85 .97	.90	1162.8	130	278	274	60 227	87 98	5.5
2	4	1.0 1.0	1.05		130	278	274	55 227	87 99	6.0
3	6	1.05 1.07	1.1	1168.7	130	250	274	56 234	87 100	6.5
4	8	1.1 1.05	1.17		130	250	272	55 236	87 102	7.5
5	10	1.2 1.10	1.27	1169.0	130	248	272	55 236	87 102	7.5
6	12	1.2 1.10	1.27		130	249	272	56 236	87 102	7.5
7	14	1.1 1.05	1.17	1171.0	130	258	272	57 236	88 103	7.0
8	16	1.05 1.07	1.1		130	258	272	57 236	88 103	7.0
9	18	.95 .97	1.02	1173.8	130	264	273	58 236	88 104	7.0
	20	1.1 1.05	1.17		130	250	255	58 237	88 104	7.0
			Final Reading	1176.40						
		avg .80 .87							84.7 92.8	

Ball mill is not used. It has illuminated from the milling operations
No visible plume could be seen from the stack exit

1/5/52

[illegible]

2

17

6/6/82

2 PM

1 PM

10 AM

11 AM

10 AM

2 AM

7 AM

ENVIRONMENTAL IMPROVEMENT DIVISION
 RECORD OF VISUAL DETERMINATION OF OPACITY



STATE OF NEW MEXICO

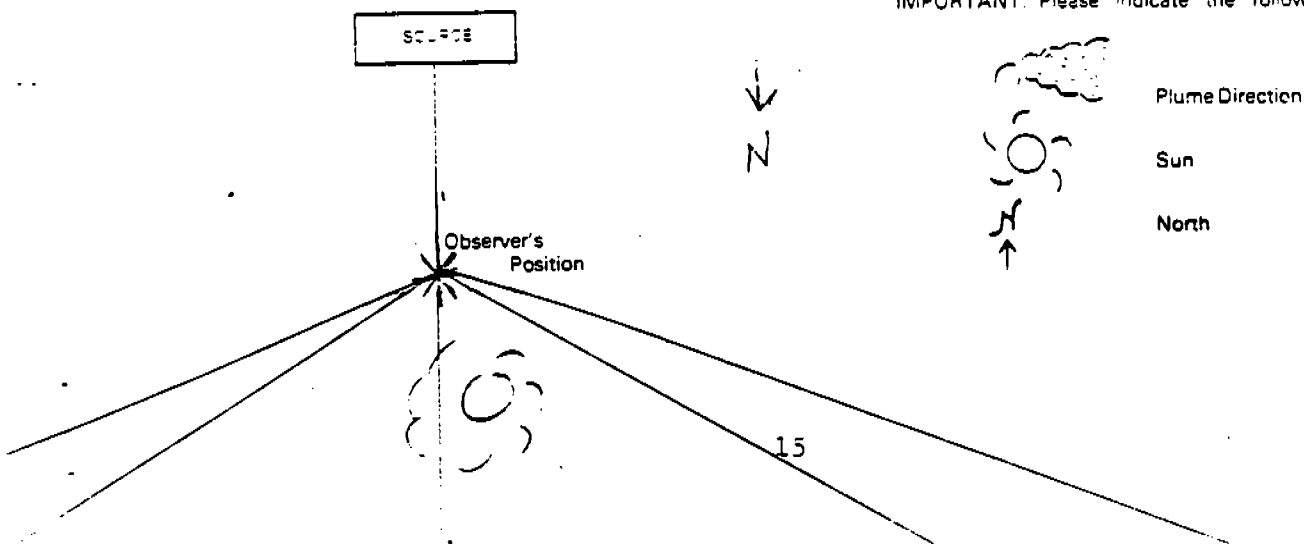
Company: Enbridge Pipeline
 Station: Sugar Observer: Tim Becker
 Test Number: 1 Observer Certification Date: 10-27-81
 Date: 1-5-81 Observer Affiliation: N.M. HSEU
 Type of Facility: Enbridge Point of Emission: stack
 Control Device: Baghouse Height of Discharge Point: 15'

	Initial	Final	Record Opacity in % 5% Smallest Division				OPACITY AVERAGE
			sec min	0	15	30	
Clock Time	3:00 pm	3:10 pm					Sum of No. Recorded
Observer Location							
Distance to Discharge	70'	70'	1	0	0	0	0
Direction from Discharge	N	N	2	0	0	0	
Height of Observation Pt.	ground	ground	3	0	0	0	Sum No. of Readings
Background Description	Storage bins	"	4	0	0	0	40
Weather Conditions			5	0	0	0	Average Opacity
Wind Direction	NE	"	6	0	0	0	0
Wind Speed	0-5	"	7	0	0	0	
Ambient Temperature	45°F	"	8	0	0	0	Opacity Range
Sky Condition (clear, over- cast, etc.)	overcast	"	9	0	0	0	0 % to 0 %
Plume Description			10	0	0	0	
Color	0	"					
Distance Visible	0	"					
Other Information							
Comments:							

Tim Becker
 Observer's Signature

Owner or Manager of Operation

IMPORTANT: Please indicate the following by sketch:



SUCURRO MINE SITE
MILL SHIFT REPORT
WORK SAFETY INSPECTION

Date: JAN 5, 1988
Shift: DAY

Weather: cloudy
Temp. High: _____ Low: _____

CRUSHING & SCREENING PLANT

Start	Stop	Run	Lost	Explanation and/or Remarks
200	8:00		6:00	MILL DOWN FOR MAINT. HAD TO RUN 11 AM. MAINT. CHANGED PRESET OF MILL FEED. MILL IN OPERATION AT 2:00 P.M. 5 gal oil in feed mill
Total Hours				Meter: Begin <u>000</u> End _____ Total Tons: <u>528</u>

SECONDARY MILL

Ball Mill			Hammer Mill			Rod Mill			JAW CRUSHER					
Start	Stop	Run	Start	Stop	Run	Start	Stop	Run	Start	Stop	Run	Start	Stop	Run
	8:00			8:00			8:00							
Total Hours			Total Hours			Total Hours			Total			Total		

DRYER FUEL INVENTORY

	Heavy # 6 Fuel	#2 Diesel
Shift Start		
Shift End	<u>30%</u>	<u>15 1/2</u>
Used		

Stock Pile Moisture Content _____
Jaw Crusher feed ran _____ %
operating hours.

BIN PRODUCT INVENTORY & DISPOSITION

Bin Probe	00	CO	2	3	7	BH	Remarks
Loads to Stockpile							
Loads to Dump							
Reject							
Refeed							
Bin Probe	<u>8:00</u>						
	<u>10:00</u>						
	<u>12:00</u>						
	<u>2:00</u>	<u>7'</u>	<u>8'5"</u>	<u>18'5"</u>	<u>23'6"</u>	<u>4'6"</u>	
	<u>4:00</u>	<u>6'1"</u>	<u>7'4"</u>	<u>14'8"</u>	<u>20'8"</u>	<u>9'6"</u>	

GENERAL WORK AREA INSPECTION

Dust Leaks:	
Spills:	
Unsafe Equipment:	
Hazards:	
Electrical - Lighting:	
Panels:	
Motors:	

SUCURRO MINE SITE
MILL SHIFT REPORT
WORK SAFETY INSPECTION

Date: _____
Shift: _____

Weather: _____
Temp. High: _____ Low: _____

CRUSHING & SCREENING PLANT

Start	Stop	Run	Lost	Explanation and/or Remarks
0:30				mill down to check for over the conveyor & 2 D.
				started mill
	2:00			
Total Hours	4 1/4	3 1/2		Meter: Begin 00000 End _____ Total Tons: _____

SECONDARY MILL

Ball Mill			Hammer Mill			Rod Mill			JAW CRUSHER					
Start	Stop	Run	Start	Stop	Run	Start	Stop	Run	Start	Stop	Run	Start	Stop	Run
0:00			7:00			9:00			6:00	2:00	9:05			
Total Hours			Total Hours			Total Hours			Total			Total		

DRYER FUEL INVENTORY 26" at 11:44 Hvy Fuel

	Heavy # 6 Fuel	#2 Diesel
Shift Start	2:00	
Shift End		
Used		

Stock Pile Moisture Content _____
Jaw Crusher feed ran _____ % of operating hours.

W Bin 3

BIN PRODUCT INVENTORY & DISPOSITION

Bin Probe	00	C0	2	3	7	BH	Remarks
Loads to Stockpile							
Loads to Dump	116 Tons	75 Tons	40 Tons	30 Tons		2	116 Tons 75 Tons 40 Tons 30 Tons
Reject							
Refeed							OVER 25% CHECK
Bin Probe	9:00 9'	F	18 8'	22 2'	1'		OK
	10:00 7'	7'	13'	21'	15'		OK
	12:00 6'	4'	6'	11'	0'		OK
	2:00 3'	F	F	3'	F		

GENERAL WORK AREA INSPECTION

Dust Leaks:	1000 ft - 1000 ft - 1000 ft
Spills:	Return line on west side of Rodmill is plugged
Unsafe Equipment:	
Hazards:	Adjusted KSRR K17
Electrical - Lighting:	
Panels:	
Motors:	

Signed: _____

SCIENTIFIC LABORATORY SYSTEM
 700 Camino de Salud, NE
 Albuquerque, New Mexico 87106

DATE RECEIVED 1-17-82

LABORATORY NUMBER 2762-104
2765

CHEMICAL ANALYSES OF STATIONARY SOURCE EMISSIONS IN AIR

COLLECTION DATE 01/5-6/82

SOURCE Grebe Parlite mill

COLLECTED BY J. Romero, T. Bocken, M. Romero

SOURCE LOCATION Socorro N. Mex.

REPORT TO Jimmy Romero, Env. Scientist III

OTHER INFORMATION —

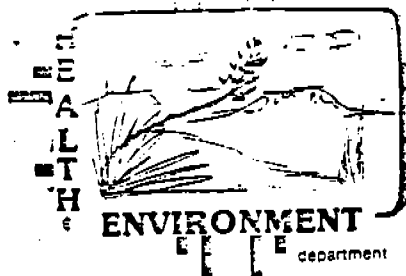
ADDRESS E.I.D. - Air Quality Bureau

P. O. Box 968 - Crown Bldg.
 Santa Fe, NM 87503

SAMPLE DESCRIPTION AND NUMBER	SAMPLE VOLUME (ml)	TOTAL PARTICULATE (mg)	OXIDES OF NITROGEN (ug)	SULFUR DIOXIDE		OTHER ANALYSES	NOTES
				VOLUME TITRATED V_a (ml)	VOLUME TITRANT V_t (ml)		
Test #1 pneum 2762	~150ml	21.1mg					
Test #2 pneum 2763	~150ml	15.5mg					
Test #3 pneum 2764	~125ml	26.0mg					
acetone BLANK 2765	~250ml	0.0mg					

DATE ANALYSED 1/18/82

ANALYST Matthew J. V. [signature]



STATE OF NEW MEXICO

SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE, Albuquerque, New Mexico 87106
(505) 843-9240

DATE RECEIVED 1/6/82 - LAB No. _____ SLD USER CODE NO. _____

MISCELLANEOUS - CHEMICAL & PHYSICAL ANALYSES

COLLECTION DATE: 4/5-6/82 TYPE OF SAMPLE: AIR - Total Particulate

COLLECTED BY: J. Romero, J. Barker, M. Rios PHONE: 827-5230

CLIENT: Graco Perlite Mill PHONE: _____

ANALYSIS REQUEST (BE SPECIFIC) Total Particulate

CLIENT REMARKS:

MAIL REPORT TO: Jimmy T. Romero

ADDRESS: P.O. Box 968 Crown bldg.

CITY: Santa Fe ZIP: 87501

LABORATORY ANALYSIS REPORT

See Attached

Jane Holmes 1/7/82

DATE 1/18/82

ANALYST MR.

REVIEWED BY MSL

SLD (713) (Rev. 4/81)

REMARKS _____

FILTER WEIGHT RECORD

Facility Greene County Testing Dates 1/5-6/82

Date of Tare Weighing 12/30/98 Weighed By Mario Ramirez

Date of Final Weighing 11/13/82 Weighed By Mark Komers

Type of Test: ☒ EPA Particulate

ASME Aluminum Thimble

 Rader

Other	
-------	--

Type of Filter _____

[illegible]

Magnehelics Calibration 12/8/81 - 12/9/81 T. Booker

<u>Number</u>	<u>Range</u>	<u>Avg. Dev.</u>
M-1	0-1	.033
M-2	0-2	.01
M-3	0-1	0
M-5	0-2	0
M-6	0-4	0
M-7	0-5	0
M-8	0-2	0
M-9	0-3	0
M-10	0 - .25	.025
M-11	0 - .5	.01
M-12	0 - .5	0
M-13	0 - 1	.013
M-14	0 - 2	0
M-17	0 - 4	.036
M-19	0 - 3	0
M-20	0 - 1	0
M-22	.5 - 0 - .5	0
M-23	15 - 0 - 15	0
M-24	15 - 0 - 15	0
M-30	0 - 3	0
M-33	0 - 1	0
M-34	0 - 2	.026

Greco Perlite Mill - Socorro, New Mexico

1-4-82 Total Particulate

<u>EPA Box</u>	<u>MCF</u>	<u>Δh@</u>	<u>Date</u>	<u>By</u>
5	.99	1.66	12-28-81	S. Kerchner
1	.99	1.62	12-08-81	M. Romero

<u>Pitot tube</u>	<u>Cp alone</u>	<u>Cp w/nozzle</u>	<u>Date</u>	<u>By</u>
104	.83	.82	12-30-81	S. Kerchner
101	.83	.83	04-08-81	T. Booker

<u>Probe Temp. Sensor</u>	<u>Avg. Dev.</u>	<u>Date</u>	<u>By</u>
104	+ 0.5	10-27-81	T. Booker
101	defective		

<u>Box Temp. Sensor</u>	<u>Avg. Dev.</u>	<u>Date</u>	<u>By</u>
1	- 1.0	12-10-81	T. Booker
5	0 m.o.	11-24-81	T. Booker
	- 0.25 m.i.		

<u>Pitot tube</u>	<u>Cp alone</u>	<u>Cp w/3/8" nozzle</u>	<u>Date</u>	<u>By</u>
102	.825	.82	12-09-81	T. Booker
107	.83	.82	01-17-80	D. Bhagwar

<u>Probe Temp. Sensor</u>	<u>Avg. Dev.</u>	<u>Date</u>	<u>By</u>
102	4.75	11-24-81	T. Booker
107	- 8.25	12-10-81	T. Booker

<u>Nozzle Size</u>	<u>Actual Size</u>	<u>Date</u>	<u>By</u>
3/16	.187	01-05-82	J. Romero
3/16	.188	01-06-82	J. Romero

RESUME OF STACK SAMPLING PERSONNEL

Jimmy T. Romero

Environmental Scientist III
HED/EID/Air Quality Bureau

Education: B.S. 1974, Biology and Chemistry
New Mexico Highlands University, Las Vegas, NM

Certification: Certificate in Propulsion Engineering School
U.S.N. 1969

Training: Air Pollution Training Institute, EPA Course #431
Air Pollution Control Technology
Air Pollution Training Institute, EPA Course #450
Source Sampling for Particulate Pollutants
Air Pollution Training Institute, EPA Course #468
Source Sampling and Analysis for Gaseous Pollutants
Air Pollution Training Institute, EPA Course
Supervisor and Management Training
Course in Method "9", Visible Emissions and Certification

Experience: 6 years stack sampling with the State of New Mexico
HED/EID/Air Quality Bureau

Tim Becker

Environmental Technician III
HED/EID/Air Quality Bureau

Education: B.A. 1977, Biology and Psychology
New Mexico Highlands University, Las Vegas, NM

Training: Air Pollution Training Institute, EPA Course #450
Source Sampling for Particulate Pollutants
Visible Emission Evaluation Certificate, Method "9"

Experience: 3 years stack sampling with the State of New Mexico
HED/EID/Air Quality Bureau

Mario Romero

Environmental Technician III
HED/EID/Air Quality Bureau

Education: High School Diploma, 1968

Training: Registered with the New Mexico Department of Agriculture
as a pesticide applicator
Visible Emission Evaluation Certificate, Method "9"

Experience: 6 years with the State of New Mexico, Environmental Improvement
Agency in Taos as an Environmental Technician under the CETA
Program: 3 ½ years stack sampling with the State of New Mexico
HED/EID/Air Quality Bureau