



CCM

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

RECEIVED
October 11 1995
OCT 11 1995

Mr. W. C. Thomas, P. E.
Air Program Administrator
Florida Department of
Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619-8318

Department of Environmental Protection
SOUTHWEST DISTRICT
BY _____

**RE: Sulfuric Acid Plant No. 1
Permit No. AO53-204057
AIRS ID No. 1050059
Unit ID No. 002
New Wales Plant**

Dear Mr. Thomas:

Enclosed are the results of the compliance test for the above referenced permit.

If you should have any questions, please contact me.

Sincerely,

J. M. Baretincic
Director
Environmental Services

Enclosures

xc: E. M. Newberg

cwk
(test ltrs 95)

I HAVE REVIEWED THIS REPORT AND IT DOES
DOES NOT INDICATE COMPLIANCE WITH THE
PERMIT FOR THIS SOURCE.

DATE 12/27/95 BY J. Smith

SUMMARY OF EMISSION MEASUREMENTS
Sulfuric Acid Plant No. 1
IMC - AGRICO Co.
NEW WALES CHEMICAL PLANT
POLK COUNTY, FLORIDA

October 9, 1995

To the best of my knowledge, all applicable field and analytical procedures comply with FDEP requirements and all test data and plant operating data are true and correct.

JMB for JMB

SIGNATURE, OWNER or AUTHORIZED REPRESENTATIVE

J. M. Baretincic - Director Environmental Services

NAME and TITLE

P.O. Box 2000

ADDRESS

Mulberry,

Fl

33860

CITY

STATE

ZIP

October 9, 1995

(813) 428-2500

DATE

TELEPHONE NO.

Compliance report

ACTUAL-ALLOWABLE DATA SHEET.

PLANT : 01 Sulfuric acid New Wales

PERMIT # : A053-204057

TEST DATE : 15-sep-95

PROCESS RATE : 2708TPD

TEST AVERAGES

ACTUAL - ALLOWABLE

FLUORIDE : N/A N/A

PARTICULATE : N/A N/A

SO2 : (POUNDS PER TON) 3.31 4

ACID MIST : (POUNDS PER TON) 0.04 0.15

VISIBLE EMISSIONS : (% OPACITY 6 MIN. AVERAGE) 0 10

REPORT DATE : 9-oct-95

SUMMATION OF SULFURIC PLANT RATES AND COMPLIANCE RESULTS

EMISSION RATE CALCULATIONS FROM 40 CFR 60.84 & 60.85

$$E \text{ SO}_2/\text{MIST} = C \text{ SO}_2/\text{MIST} \times S/0.265 - (0.0126 \times O_2)$$

E SO₂/MIST = SO₂/MIST EMISSION RATE, LBS/TON ACID

C SO₂/MIST = SO₂/MIST CONCENTRATION, LBS/DSCF OF SAMPLE

S = 11800 DSCF/TON ACID

O₂ = OXYGEN CONCENTRATION OF STACK GAS

PLANT	01	DATE	15-Sep-95			
RUN #	DSCF	MG SO ₂	MG MIST	% O ₂		
1	40.79	711	10.8	4.20		
2	40.71	980	18.4	4.20		
3	40.71	1622	8.6	4.10		
	LBS/TON		LBS/TON		LBS/HR SO ₂	LBS/HR MIST
RUN 1	SO ₂ 2.14	MIST 0.03			241	4
RUN 2	SO ₂ 2.95	MIST 0.06			333	6
RUN 3	SO ₂ 4.85	MIST 0.03			548	3
AVG.	3.31	0.04			374	4
PLANT PRODUCTION RATE		<u>2708</u>	TPD			

TEST SUMMARY

The New Wales Plant of IMC - Agrico Co. is a phosphate fertilizer facility located in western Polk County, FL. At this facility phosphoric acid is produced as an intermediate product in the production of phosphate fertilizer products. This report details compliance sampling conducted for the following source:

Source: Sulfuric Acid Plant No. 1
Permit: A053-204057

Test Dates:	Run	1	2	3
	Date	9-15-95	9-15-95	9-15-95
	Time Start	920	1110	1245
	Time End	1036	1222	1358

Results:	Emission	Allowable
S02	373.6	483.3 lb/hr
H2S04 Mist	0.2	18.1 lb/hr

Visible Emission 0% 10%

Production Rate: 2708.0 tpd acid
Determined by plant totalizers.

Port Location: 43 ft 3 in Upstream
 74 ft 3 in Downstream
 102 in Diameter
 12 Traverse Points
Port and traverse point locations shown in included diagram.

Test Methods:
EPA Method 1 No deviations.
EPA Method 2 Pitot Coefficient assumed = 0.84.
EPA Method 3 Air dry molecular weight assumed.
EPA Method 4 Moisture assumed to be zero.
EPA Method 8 Stainless steel liner used; probe connected to train with teflon tubing.

IMC Agrico Co.
Source Sampling Calculation Report

Sulfuric Acid Plant No. 1
At New Wales Chemical Plant
Conducted: 9-15-95

Data Summations

Parameter	Unit	Run 1	Run 2	Run 3
Barometric Pressure	Inch Hg	29.99	29.99	29.99
Static Pressure	Inch HOH	0.35	0.35	0.35
Stack Pressure	Inch Hg	30.02	30.02	30.02
Average Sqrt Delta P	In HOH 1/2	0.62	0.63	0.63
Average Delta H	Inch HOH	1.33	1.37	1.38
Average Meter Temp.	Degrees F	92	102	102
Average Stack Temp.	Degrees F	166	173	171
Metered Sample Volume	Cubic Ft.	42.45	43.07	43.11
Std. Meter Volume	Cubic Ft.	40.79	40.71	40.71
Pitot Coefficient	Unity	0.84	0.84	0.84
Nozzle Diameter	Inch	0.250	0.250	0.250
Stack Area	Square Ft.	56.74	56.74	56.74
Traverse Points	Unity	12	12	12
Sampling Time	Minutes	60	60	60
Mol. Wt. of Gas	Lb/lb-mole	28.3	28.3	28.3
Act. Stack Velocity	Ft/sec	38.4	39.0	39.0
Actual Stack Gas Flow	Acfm	131000	133000	133000
Standard Gas Flow	Scfm	110000	111000	111000
Isokinetic Rate	%	102	102	102
SO2 Emission	Lb/hour	241.0	333.1	546.8
H2SO4 Mist Emission	Lb/hour	3.7	6.3	2.9

PLANT-----NEW WALES 01 SULFURIC
 ID # ----- 1130
 DATE ----- 9-15-95
 TIME START --- 920 END ----- 1036
 RUN # ----- 1
 NUMBER OF TRAVERSE POINTS ----- 12
 MOLECULAR WEIGHT (Md) ----- 29
 DIAMETER(D) IN FEET ----- 8.5
 AREA(A)= PI(D^2)/4 ----- 56.74
 STACK TEMP IN DEGREES F ----- 166

Bwo ----- 1
 Ms ----- 28.32

 Pb (" Hg) ----- 29.99
 Pv (" H2O) ----- .35
 Ps (" Hg)= PB + (PV/13.6) ----- 30.02
 DELTA H (" H2O) ----- 1.33
 Pm ("H2O)= PB + (DELTA H/13.6) ----- 30.09
 Ts= STACK TEMP + 460 ----- 626
 Tm= METER TEMP + 460 ----- 552
 AVG. SQRT DELTA P ----- .623
 METER VOLUME(Vm) ----- 42.45
 Cp ----- .84

Vs(FT./SEC.)= 85.48 (Cp) (AVG. SQRT DELTA P) (SQRT(Ts/(Ps Ms))) 38.36
 Qa(ACFM)= 60 (A) (Vs) ---- 130,603
 Qs(DSCFM)=17.64 (Qa) (Ps/Ts) (1-Bwo) 110,465
 Vms= 17.64 (Vm) (Pm/Tm) --- 40.79

Percent O2 ----- 4.2
 Production Rate -- 2708 TPD

MG SO2 ----- 711 #/TON SO2 ----- 2.14 #/HR SO2- 241
 MG H2SO4 ----- 10.84 #/TON MIST----- .03 #/HR MIST 3.67

PERCENT ISOKINETIC 102.48

RECEIVED

OCT 11 1995

Department of Environmental Protection
SOUTHWEST DISTRICT

BY _____

PLANT ---NEW WALES 01 SULFURIC
 DATE ---- 9-15-95
 TIME ---- 920
 RUN # --- 1

MINUTES PER POINT ----- 5 . DIAMETER 8.5
 NOZZLE DIAMETER ----- .25 Pb ----- 29.99
 METER DELTA Ha ----- 1.62 STATIC -- .35
 METER CORRECTION FACTOR .9635 Cp ----- .84

POINT	TIME	METER VOLUME	DELTA P	DELTA H	METER TEMP	STACK TEMP	PUMP VAC	% O2	IMPINGER TEMP
	0	562.016							
1	5	565.72	.38	1.30	82	153	4	4.2	67
2	10	569.32	.35	1.20	83	152	4	4	62
3	15	572.38	.34	1.20	85	152	4	4.5	60
4	20	576.09	.42	1.40	88	160	5	4.2	60
5	25	579.67	.37	1.20	90	170	3	4.2	60
6	30	583.601	.43	1.50	92	170	3	4.2	62
7	35	587.32	.41	1.40	94	170	3	4.2	60
8	40	591.26	.45	1.50	95	174	3	4.3	60
9	45	594.911	.37	1.30	98	173	3	4.2	61
10	50	598.71	.42	1.40	99	173	3	4	57
11	55	602.24	.37	1.30	100	175	3	4.2	60
12	60	606.072	.35	1.20	101	170	3	4.2	61
			.00						

PLANT-----NEW WALES 01 SULFURIC
 ID # ----- 1130
 DATE ----- 9-15-95
 TIME START --- 1110 END ----- 1222
 RUN # ----- 2
 NUMBER OF TRAVERSE POINTS ----- 12
 MOLECULAR WEIGHT (Md) ----- 29
 DIAMETER(D) IN FEET ----- 8.5
 AREA(A)= PI(D^2)/4 ----- 56.74
 STACK TEMP IN DEGREES F ----- 173

Bwo ----- 1
 Ms ----- 28.32

Pb (" Hg) ----- 29.99
 Pv (" H2O) ----- .35
 Ps (" Hg)= PB + (PV/13.6) ----- 30.02
 DELTA H (" H2O) ----- 1.37
 Pm ("H2O)= PB + (DELTA H/13.6) ----- 30.09
 Ts= STACK TEMP + 460 ----- 633
 Tm= METER TEMP + 460 ----- 562
 AVG. SQRT DELTA P ----- .629
 METER VOLUME(Vm) ----- 43.07
 Cp ----- .84

Vs(FT./SEC.)= 85.48 (Cp) (AVG. SQRT DELTA P) (SQRT(Ts/(Ps Ms))) 38.97
 Qa(ACFM)= 60 (A) (Vs) ---- 132,697
 Qs(DSCFM)=17.64 (Qa) (Ps/Ts) (1-Bwo) 110,981
 Vms= 17.64 (Vm) (Pm/Tm) --- 40.71

Percent O2 ----- 4.2
 Production Rate -- 2708 TPD

MG S02 ----- 980 #/TON S02 ----- 2.95 #/HR S02- 333.0749
 MG H2S04 ----- 18.41 #/TON MIST----- .06 #/HR MIST 6.257049

PERCENT ISOKINETIC 101.78

PLANT ----NEW WALES 01 SULFURIC
 DATE ---- 9-15-95
 TIME ---- 1110
 RUN # --- 2

MINUTES PER POINT ----- 5 DIAMETER 8.5
 NOZZLE DIAMETER ----- .25 Pb ----- 29.99
 METER DELTA Ha ----- 1.62 STATIC -- .35
 METER CORRECTION FACTOR .9635 Cp ----- .84

POINT	TIME	METER VOLUME	DELTA P	DELTA H	METER TEMP	STACK TEMP	PUMP VAC	% O2	IMPINGER TEMP
	0	608.785							
1	5	612.57	.42	1.40	96	170	3	4.2	67
2	10	616.41	.43	1.50	97	175	3	4.8	65
3	15	620.083	.38	1.30	98	175	3	4	62
4	20	623.83	.41	1.40	99	173	3	4.2	60
5	25	627.7	.43	1.50	100	174	3	4.2	60
6	30	631.472	.39	1.30	102	173	3	4	58
7	35	635.19	.37	1.30	102	172	3	4	59
8	40	638.78	.35	1.20	104	174	3	4.5	60
9	45	642.051	.31	1.10	104	173	2	4	60
10	50	645.71	.41	1.40	105	170	3	4.2	62
11	55	649.57	.47	1.60	106	175	3	4.2	62
12	60	653.484	.39	1.40	106	173	3	4.2	60
			.00						

PLANT-----NEW WALES 01 SULFURIC
 ID # ----- 1130
 DATE ----- 9-15-95
 TIME START --- 1245 END ----- 1358
 RUN # ----- 3
 NUMBER OF TRAVERSE POINTS ----- 12
 MOLECULAR WEIGHT (Md) ----- 29
 DIAMETER(D) IN FEET ----- 8.5
 AREA(A)= PI(D^2)/4 ----- 56.74
 STACK TEMP IN DEGREES F ----- 171

Bwo ----- 1
 Ms ----- 28.32

Pb (" Hg) ----- 29.99
 Pv (" H2O) ----- .35
 Ps (" Hg)= PB + (PV/13.6) ----- 30.02
 DELTA H (" H2O) ----- 1.38
 Pm ("H2O)= PB + (DELTA H/13.6) ----- 30.09
 Ts= STACK TEMP + 460 ----- 631
 Tm= METER TEMP + 460 ----- 562
 AVG. SQRT DELTA P ----- .630
 METER VOLUME(Vm) ----- 43.11
 Cp ----- .84

Vs(FT./SEC.)= 85.48 (Cp) (AVG. SQRT DELTA P) (SQRT(Ts/(Ps Ms))) 38.96
 Qa(ACFM)= 60 (A) (Vs) ---- 132,650
 Qs(DSCFM)=17.64 (Qa) (Ps/Ts) (1-Bwo) 111,234
 Vms= 17.64 (Vm) (Pm/Tm) --- 40.71

Percent O2 ----- 4.1
 Production Rate -- 2705 TPD

MG S02 ----- 1622 #/TON S02 ----- 4.85 #/HR S02- 546.8317
 MG H2S04 ----- 8.62 #/TON MIST----- .03 #/HR MIST 2.906097

PERCENT ISOKINETIC 101.56

PLANT ---NEW WALES 01 SULFURIC
 DATE ---- 9-15-95
 TIME ---- 1245
 RUN # --- 3

MINUTES PER POINT ----- 5 DIAMETER 8.5
 NOZZLE DIAMETER ----- .25 Pb ----- 29.99
 METER DELTA Ha ----- 1.62 STATIC -- .35
 METER CORRECTION FACTOR .9635 Cp ----- .84

POINT	TIME	METER VOLUME	DELTA P	DELTA H	METER TEMP	STACK TEMP	PUMP VAC	% O2	IMPINGER TEMP
	0	654.36							
1	5	658.31	.41	1.60	100	170	3	4	67
2	10	661.92	.38	1.30	100	170	3	4	65
3	15	665.591	.39	1.30	101	170	3	4.2	65
4	20	669.43	.43	1.50	101	170	3	4.2	65
5	25	672.99	.37	1.30	101	171	3	4.2	65
6	30	676.9	.38	1.30	102	170	3	4	60
7	35	680.54	.39	1.30	102	174	3	4	60
8	40	684.09	.37	1.30	103	173	3	4.2	61
9	45	688.02	.45	1.50	103	172	3	4	60
10	50	691.79	.41	1.40	104	172	3	4.1	60
11	55	695.4	.38	1.30	104	172	3	4.2	62
12	60	699.101	.40	1.40	104	173	3	4	60

IMC-AGRIDO COMPANY
Environmental Department

Special Sample Analysis Request

Sample Source: New Wales
 Sample Location: 01 Sulfuric
 Date Submitted: 9/15/95
 Cost Center Charge: 2091
 Technician: HJ FEB / RS

Analyzed By: David W. Aweitt
 Date: 9/15/95

Sample Identification	Volume (ml)	Analysis Requested (Total mg)			
		SO ₂	Mist		
Run # 1 H ₂ SO ₄	500	10.84	10.84		
Run # 2 H ₂ SO ₄	500	18.41	18.41		
Run # 3 H ₂ SO ₄	500	8.62	8.62		
Run # 1 SO ₂	1000	711	711		
Run # 2 SO ₂	1000	980	980		
Run # 3 SO ₂	1000	1622	1622		

VISIBLE EMISSION OBSERVATION FORM

SOURCE NAME
IMC Agr. CO. NEW WALES

ADDRESS
3095 C.R. 640 WEST

P.O. Box 2000

CITY *Malbury* STATE *FL* ZIP *33860*

PHONE *813-428-7152* SOURCE ID NUMBER *A053-204057*

PROCESS EQUIPMENT *Cl Self-Feed Acid Plant* OPERATING MODE *2708*

CONTROL EQUIPMENT *Double Absorption Towers* OPERATING MODE *NORMAL*

DESCRIBE EMISSION POINT *Stack*

START *Easternmost* STOP *of 3 stacks*

HEIGHT ABOVE GROUND LEVEL START *200* STOP *200* HEIGHT RELATIVE TO OBSERVER START *200* STOP *200*

DISTANCE FROM OBSERVER START *600* STOP *600* DIRECTION FROM OBSERVER START *EAST* STOP *EAST*

DESCRIBE EMISSIONS

START *none* STOP *none*

EMISSION COLOR START *clear* STOP *clear* PLUME TYPE *CONTINUOUS*

FUGITIVE *N/A* INTERMITTENT

WATER DROPLETS PRESENT NO. *NO* YES

IS WATER DROPLET PLUME ATTACHED *N/A* DETACHED

POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START *Immediate Exit* STOP *Immediate Exit*

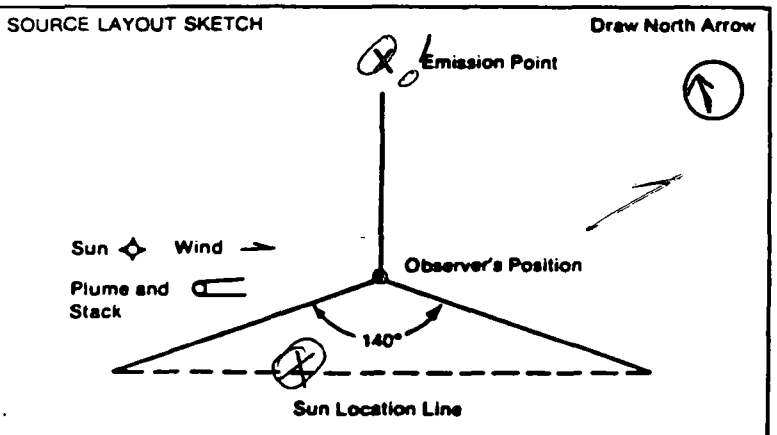
DESCRIBE BACKGROUND

START *SKY* STOP *SKY*

BACKGROUND COLOR START *Blue-gray* STOP *Blue-gray* SKY CONDITIONS START *broken* STOP *broken*

WIND SPEED START *3-5* STOP *3-5* WIND DIRECTION START *West* STOP *West*

AMBIENT TEMP START *90* STOP *90* WET BULB TEMP *80* RH, percent *64%*



COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS

SIGNATURE

TITLE

DATE

OBSERVATION DATE		START TIME				STOP TIME					
9/15/95		1400				1500					
MIN	SEC	0	15	30	45	MIN	SEC	0	15	30	45
1		0	0	0	0	31		0	0	0	0
2		0	0	0	0	32		0	0	0	0
3		0	0	0	0	33		0	0	0	0
4		0	0	0	0	34		0	0	0	0
5		0	0	0	0	35		0	0	0	0
6		0	0	0	0	36		0	0	0	0
7		0	0	0	0	37		0	0	0	0
8		0	0	0	0	38		0	0	0	0
9		0	0	0	0	39		0	0	0	0
10		0	0	0	0	40		0	0	0	0
11		0	0	0	0	41		0	0	0	0
12		0	0	0	0	42		0	0	0	0
13		0	0	0	0	43		0	0	0	0
14		0	0	0	0	44		0	0	0	0
15		0	0	0	0	45		0	0	0	0
16		0	0	0	0	46		0	0	0	0
17		0	0	0	0	47		0	0	0	0
18		0	0	0	0	48		0	0	0	0
19		0	0	0	0	49		0	0	0	0
20		0	0	0	0	50		0	0	0	0
21		0	0	0	0	51		0	0	0	0
22		0	0	0	0	52		0	0	0	0
23		0	0	0	0	53		0	0	0	0
24		0	0	0	0	54		0	0	0	0
25		0	0	0	0	55		0	0	0	0
26		0	0	0	0	56		0	0	0	0
27		0	0	0	0	57		0	0	0	0
28		0	0	0	0	58		0	0	0	0
29		0	0	0	0	59		0	0	0	0
30		0	0	0	0	60		0	0	0	0

AVERAGE OPACITY FOR HIGHEST PERIOD *0%* NUMBER OF READINGS ABOVE *5* % WERE *0*

RANGE OF OPACITY READINGS MINIMUM *0%* MAXIMUM *0%*

OBSERVER'S NAME (PRINT) *JOHN T BARNES*

OBSERVER'S SIGNATURE *John Barnes* DATE *9/15/95*

ORGANIZATION *IMC-Agr. CO*

CERTIFIED BY *ETA* DATE *8-29-95*

VERIFIED BY DATE

IMC-AGRICO CO.

Environmental Department

NOZZLE CALIBRATION

SAMPLE POINT LOCATIONS

Date: 9/15/95 by: A. Johnson

Plant: New Wales
 Source: Oil Sulphuric
 Date: 9/15/95
 Duct Dia.: 4.5'

Nozzle ID	Run no.	D ₁ (in.)	D ₂ (in.)	D ₃ (in.)	ΔD (in.)	D _a (in.)
28	1,2,3	.249	.250	.251	.001	.250

Point no.	Distance from Duct wall (in.)
1	4.5
2	15.0
3	30.1

where:

- D₁, D₂, D₃ = nozzle diameter measured on a different diameter (in.)
Tolerance = 0.001 in.
- ΔD = maximum difference in any two measurements (in.)
Tolerance = 0.004 in.
- D_a = average of D₁, D₂, and D₃

IMC-AGRICO CO. NEW WALES PLANT

Environmental Department

DRY GAS METER CALIBRATION FORM

Meter Box Number: 001 STD TEST METER #: 693497

Date: 8/2/95

Barometric Pressure, Pb: 29.93

Harry J. Johnson

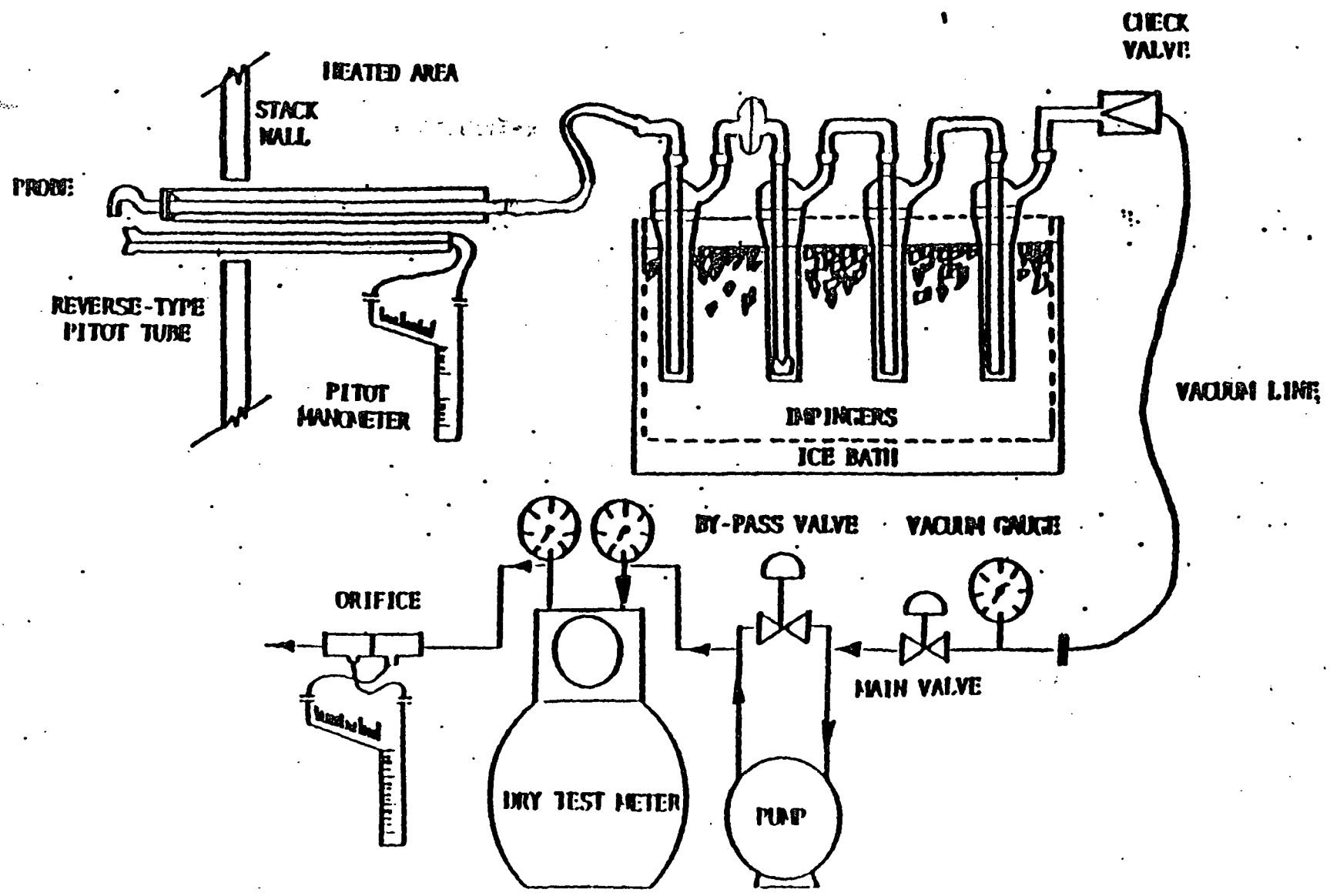
Orifice Manometer setting (Delta H) in. H2O	Gas volume		Temperature		Time (Theta) min	Yi	Delta H in. H2O
	Std Test Meter (Vw) ft. ³	Dry Gas Meter (Vd) ft. ³	Std Test Meter (Tw) Deg F	Dry Gas Meter (Td) Deg F			
0.50	15.039	15.337	73.75	85.5	12.13	1.9638	11.603
1.00	15.261	15.556	74.75	86	19.0	1.9645	11.623
1.50	110.250	110.809	75	86	14.25	1.9682	11.610
2.00	110.316	110.856	75	87	12.50	1.9651	11.627
3.00	110.400	110.909	75	88.5	10.25	1.9473	11.610
4.00	110.427	110.912	75	89.5	9.0	1.9719	11.644
AVG						1.9635	11.620

$$Yi = \frac{Vw \text{ Pb } (td + 460)}{Vd \text{ (Pb + Delta H/13.6) } (Tw + 460)}$$

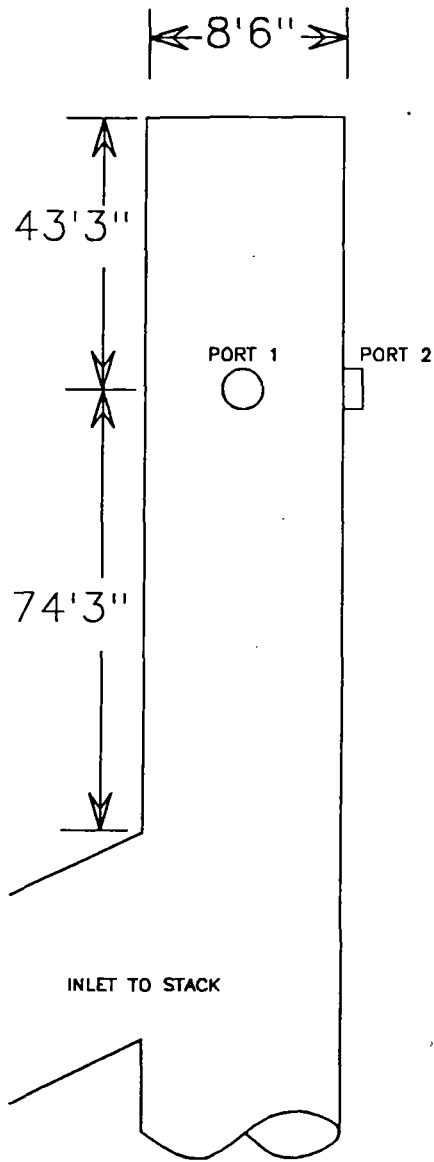
$$\text{Delta H} = \frac{.0317 \text{ (Delta H)}^2}{\text{Pb (td+460)} \left[\frac{(tw+460) \text{ (theta)}}{Vw} \right]}$$

- where:
- Vw = Gas Volume passing through the std test meter, ft.³.
 - Vd = Gas Volume passing through the dry gas meter, ft.³
 - Tw = Temperature of the gas in the std test meter, deg. F.
 - Td = Average temperature of the gas in the dry gas meter, Deg F.
 - Delta H = Pressure differential across orifice, in. H2O.
 - Yi = Ratio of accuracy of std test meter to dry gas meter for each run.
 - Y = Average ratio of accuracy of std test meter to dry gas meter.
 - Pb = Barometric pressure, in. Hg.
 - Theta = Time of calibration run, min.

**DIAGRAM OF EQUIPMENT
(LEAN-STEELER)**



SAMPLE PORT LOCATION
 IMC NEW WALES OPERATIONS
 01 SULFURIC ACID



<u>POINT NO.</u>	<u>INCHES INSIDE STACK WALL</u>
1	4.5
2	15.0
3	30.1

PREPARED: EBT	TITLE: TRAVERSE POINT LOCATION		
DATE:	TOTAL OF 4 PORTS.	LOCATION: NEW WALES	FILE:
REVISED:		SCALE:	DRAWING NO.: