

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

October 18, 1983

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. T. H. Traylor
Vice President & General Manager
International Minerals and
Chemical Corporation
New Wales Operations
P. O. Box 1035
Mulberry, Florida 33860

Dear Mr. Traylor:

The Department has made a preliminary review of your application for a permit to construct/modify a AFI Granulation Plant to also produce DAP. At this time the application is deemed incomplete. Before the application can be processed we need the information requested below.

1. Average and maximum raw material process input rate and product weight for AFI production
2. Average and maximum raw material process input rate and product weight for DAP production *39 TPH → 80 TPH*
3. Weight of P₂O₅ in the process input for AFI and DAP production
4. Actual Hourly Emissions of Particulates, F- and SO₂ from AFI Production
5. Actual Hourly Emissions of Particulates, F- and SO₂ for DAP production from the August 1983 trial run
6. Scrubber efficiency and basis for efficiency for F-removal *Unknown Tests show meeting NSPS*
7. Scrubber Type and pressure drop across the scrubber

Teller type crossflow 2-4 in WG drop

9/19/83 10/17/83
F- .797 .775
2.20 2.34
Partic. 15.54 18.07
34.54 34.9
SO₂ - -
Feed 36.775 39.780

Mr. T. H. Traylor
October 18, 1983
Page Two

8. Based on your answers to the above questions, calculate the potential emissions of all regulated pollutants associated with the modification. If the net emissions increase of any pollutant is greater than the applicable significant emission rate in Table 500-2, submit all information required under Rule 17-2.500, Prevention of Significant Deterioration. Also, if the net emissions increase of particulate matter is greater than 25 tons/year, submit all information required under Rule 17-2.510, New Source Review, for Nonattainment Areas or demonstrate that the emissions increase would not significantly impact the Tampa particulate nonattainment area.

When the requested information is received, we will resume processing your application. If you have any questions on its status, please call Edward Svec, Review Engineer, at (904)488-1344.

Sincerely,



C. H. Fancy, P. E.
Deputy Bureau Chief
Bureau of Air Quality Management

CHF/ES/s

cc: Craig A. Pflaum, IMC New Wales Operations
Bill Thomas, DER SW District
Ed Svec, DER BAQM



INTERNATIONAL MINERALS & CHEMICAL CORPORATION

December 19, 1983

DER

DEC 21 1983

BAQM

Mr. Edward Svec
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blairstone Rd.
Tallahassee, FL 32301

Dear Ed:

Thanks for the time spent with me by phone on 12/15/83. Based on our conversation, I hope the following responses to your questions and the attachments will constitute a complete application.

1. Average and maximum input rates are normally the same, production rates based on normal recovery rates are 95% of raw material feed rates, see permit application.
2. DAP feed rates will normally be 39.0 tph, with a production rate of 80 tph of finished product.
3. P₂O₅ feed rates are as follows by product:

<u>PRODUCT</u>	<u>P₂O₅ FEED TPH</u>	<u>PRODUCTION RATE TPH</u>
Dynafos	46.0	100
Biofos	31.2	60
Monofos	43.8	60
Duofos	29.8	60
DAP	39.0	80

4. See stack tests for F and Particulate, SO₂ emissions have not been tested for.

5. Same as item 4, see enclosed tests.

-2-


6. Scrubber efficiency unknown, testing shows scrubber will meet NSPS.

7. Scrubbers are Teller type crossflow, with 2 to 4 inches WG pressure drop.

8. Particulate emissions will not exceed current allowables and Fluoride emissions based on the 0.06 rule will not exceed the 3.0 TPY DeMinimus level based on a maximum DAP production of 14 weeks per year.

I hope this information will suffice, if not, please let me know.

Sincerely,



A. L. Girardin, III

ALG:rc

Enclosure:

cc: J. M. Baretincic
D. K. Larsen
W. C. Thomas, P.E.

A. J. Serrano

DEPARTMENT OF ENVIRONMENTAL REGULATION



BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

WILLIAM K. HENNESSEY
DISTRICT MANAGER

SOUTHWEST DISTRICT

7601 HIGHWAY 301 NORTH
TAMPA, FLORIDA 33610-9544

RECEIVED BY
J. M. BARETINCIC

September 28, 1983

SEP 29 1983

Mr. J. M. Baretincic
International Minerals &
Chemicals Corporation
Post Office Box 1035
Mulberry, FL 33860

Copies _____
Route to _____

Re: DAP Production in AFI Plant, IMCC Letter 9/21/83

Dear Mr. Baretincic:

This is to authorize IMCC-New Wales to produce DAP in the AFI plant during the period October 10-30, 1983, as requested in the above subject letter. During the run, IMCC must comply with applicable DER rules.

Fluoride emissions shall not exceed .06 lbs. of F per ton of P₂O₅ input or 2.23 lbs. of F per hour. Particulate emissions shall not exceed 36.1 lbs. per hour. Visible emissions shall not exceed 20% opacity. One compliance test is required for fluorides, particulates and opacity.

Your application for a construction modification permit to produce DAP in the AFI plant is being forwarded to CAPS in Tallahassee for processing.

Please contact me if you have any questions.

Sincerely,

W. C. Thomas, P.E.
District Engineer
Air Programs

WCT/scm

cc: CAPS



STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHWEST DISTRICT
7601 HIGHWAY 301 NORTH
TAMPA, FLORIDA 33610

REUBIN O'D. ASKEW
GOVERNOR

August 22, 1978

JOSEPH W. LANDERS, JR.
SECRETARY

IMC
AFI - Granulation Plant
Polk County - AP

P. David Puchaty
District Manager

29
Mr. Thomas L. Craig
Vice President & General Manager
International Minerals & Chemical Corporation
P.O. Box 1035
Mulberry, Fla. 33860

Dear Mr. Craig,

Pursuant to Section 403.061(16), Florida Statutes, your application has been approved by the Department and, therefore, we are issuing to you the enclosed permit no. A053-7025 which will expire on August 15, 1983.

This permit is not effective unless you accept it, including any and all of the conditions contained therein. If you do not choose to accept it, you must file an appropriate petition for a hearing pursuant to the provisions of Section 120.57, Florida Statutes.

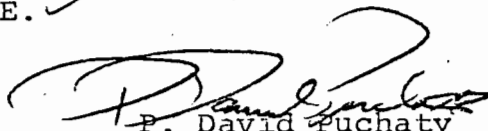
A petition for a hearing must comply with the requirements of Florida Administrative Code, Section 28-5.15 and be filed (postmarked) with the Secretary of the Department of Environmental Regulation at Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida 32301, with a copy to this office within fourteen (14) days from receipt of this letter. Petitions which are not filed in accordance with the above provisions may be subject to dismissal.

Any time limits imposed in the permit are a condition to this permit and are enforceable under Section 403.061, Florida Statutes. You are hereby placed on notice that the Department will review this permit to check for compliance and will initiate enforcement action for violations of the conditions and requirements of this permit.

Your continued cooperation in this matter is appreciated. Please refer to your assigned permit number in all future communications.

cc: Central Files
Craig A. Pflaum, P.E. ✓

Sincerely,


P. David Puchaty
District Manager

Enclosures

RULES OF THE ADMINISTRATION COMMISSION
MODEL RULES OF PROCEDURE
CHAPTER 28-5
DECISIONS DETERMINING SUBSTANTIAL INTERESTS

28-5.15 Requests for Formal and Informal Proceedings

- (1) Requests for proceedings shall be made by petition to the agency involved. Each petition shall be printed, typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.
- (2) All petitions filed under these rules should contain:
 - (a) The name and address of each agency affected and each agency's file or identification number, if known;
 - (b) The name and address of the petitioner or petitioners;
 - (c) All disputed issues of material fact. If there are none, the petition must so indicate;
 - (d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;
 - (e) A statement summarizing any informal action taken to resolve the issues, and the results of that action;
 - (f) A demand for the relief to which the petitioner deems himself entitled; and,
 - (g) Such other information which the petitioner contends is material.

NOTE: At a formal hearing all parties shall have an opportunity to present evidence and argument on all issues involved, to conduct cross-examination and submit rebuttal evidence, to submit proposed findings of fact and orders, to file exceptions to any order or hearing officer's recommended order, and to be represented by counsel.

STATE OF FLORIDA
DEPARTMENT OF
ENVIRONMENTAL REGULATION

NEDS No. 0059
Point ID. 27

POLK COUNTY

OPERATION PERMIT

FOR International Minerals & Chemical Corp.

P. O. Box 1035
Mulberry, Fla. 33860

PERMIT NO. A053-7025 DATE OF ISSUE August 22, 1978

PURSUANT TO THE PROVISIONS OF SECTIONS 403.061 (16) AND 403.707 OF CHAPTER 403, FLORIDA STATUTES AND CHAPTERS 17-4 AND 17-7 FLORIDA ADMINISTRATIVE CODE, THIS PERMIT IS ISSUED TO: Mr. Thomas L. Craig, Vice President and General Manager

FOR THE OPERATION OF THE FOLLOWING: 120 TPH granulation plant with 3 Davy Powergas scrubbers manifolded to a common stack subject to the attached condition nos. 1, 2, 3, 5, 6, 7 and 9.

LOCATED AT So. of Nichols, Polk County

UTM: 7396700 E and 3079400 N

IN ACCORDANCE WITH THE APPLICATION DATED July 25, 1978

ANY CONDITIONS OR PROVISOS WHICH ARE ATTACHED HERETO ARE INCORPORATED INTO AND MADE A PART OF THIS PERMIT AS THOUGH FULLY SET FORTH HEREIN. FAILURE TO COMPLY WITH SAID CONDITIONS OR PROVISOS SHALL CONSTITUTE A VIOLATION OF THIS PERMIT AND SHALL SUBJECT THE APPLICANT TO SUCH CIVIL AND CRIMINAL PENALTIES AS PROVIDED BY LAW.

THIS PERMIT SHALL BE EFFECTIVE FROM THE DATE OF ISSUE UNTIL August 15, 1983

OR UNLESS REVOKED OR SURRENDERED AND SHALL BE SUBJECT TO ALL LAWS OF THE STATE AND THE RULES AND REGULATIONS OF THE DEPARTMENT.

J. H. Kerns
DISTRICT ENGINEER

Joseph W. Landers, Jr.
JOSEPH W. LANDERS, JR.
SECRETARY
Robert...
DISTRICT MANAGER

This permit replaces AC53-5043

State of Florida
Department of Environmental Regulation

OPERATION PERMIT CONDITIONS
FOR AIR POLLUTION SOURCES

Permit No.: A053-7025

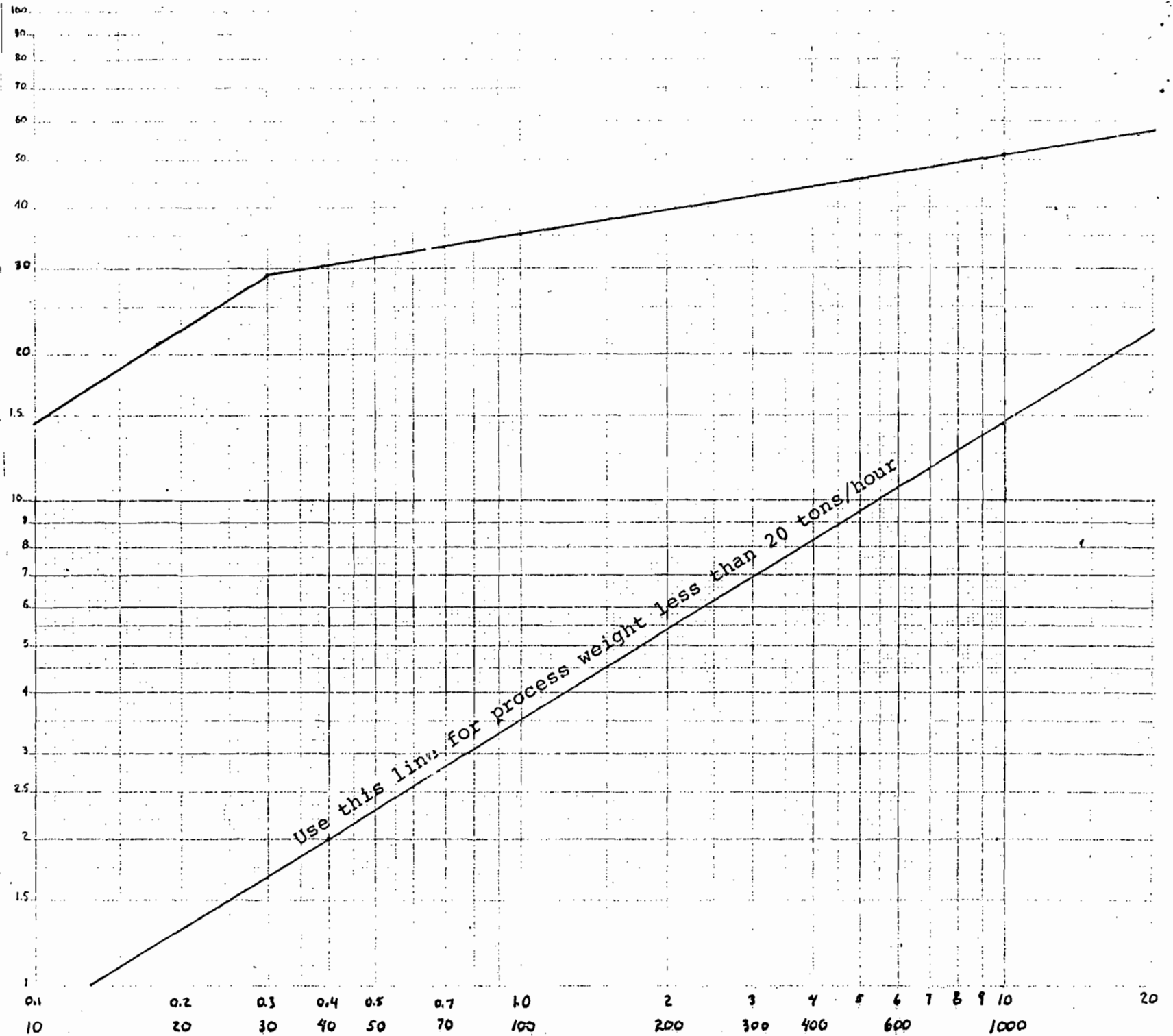
Date: August 22, 1978

An (X) indicates applicable conditions

- (X) 1. The permit holder must comply with Florida Statute, Chapter 403 and the applicable Chapters of the Department of Environmental Regulation in addition to the conditions of this permit (Chapter 403.161(1)(b), Florida Statutes).
- (X) 2. Test the emissions for the following pollutant(s) at intervals of six months from the date of this permit and submit a copy of test data to the District Engineer of this agency within fifteen days of such testing (Chapter 17-2.07(1), Florida Administrative Code (F.A.C.)).
- | | |
|--|---|
| <input checked="" type="checkbox"/> Particulates | <input type="checkbox"/> Sulfur Oxides |
| <input type="checkbox"/> Fluorides | <input type="checkbox"/> Nitrogen Oxides |
| <input type="checkbox"/> Plume Density | <input type="checkbox"/> Hydrocarbons |
| | <input type="checkbox"/> Total Reduced Sulfur |
- (X) 3. Testing of emissions must be accomplished at approximately the rates as stated in the application. Failure to submit the input rates or operation at conditions which do not reflect actual operating conditions may invalidate the data (Chapter 403.161(1)(c), Florida Statutes).
- () 4. Submit for this source quarterly reports showing the type and monthly quantities of fuels used in the operation of this source. Also state the sulfur content of each fuel (Chapter 17-4.14, F.A.C.).
- (X) 5. Submit for this facility, each calendar year, on or before March 1, an emission report for the preceding calendar year containing the following information as per Chapter 17-4.14, F.A.C.
- | |
|---|
| (A) Annual amount of materials and/or fuels utilized. |
| (B) Annual emissions (note calculation basis). |
| (C) Any changes in the information contained in the permit application. |

- (X) 6. In the event the permittee is temporarily unable to comply with any of the conditions of the permit, the permittee shall immediately notify the District Office of the D.E.R. as per Chapter 17-4.13, F.A.C. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement actions by the Department.
- (X) 7. According to the Process Weight Table within Chapter 17-2.04(2), F.A.C., the maximum allowable emission rate of particulate matter for a process rate of 120 tons/hour is 36.8 pounds/hour. At lesser process rates, the allowable emission rates can be determined from the graph.
- () 8. This permit is associated with a Development of Regional Impact (D.R.I.). It does not waive any other permits that may be required from this or any other state, federal, or local agency.
- (X) 9. Issuance of this permit does not indicate an endorsement or approval of any other required permits by this Department.

POUNDS OF PARTICULATES



PROCESS WEIGHT TABLE

PROCESS WEIGHT TONS/HOUR

17-28-78 RC
17053-7025



JUL 23 1978
SOUTHWEST DISTRICT
TAMPA

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

Source Type: Air Pollution Incinerator
Application Type: Construction Operation Modification Renewal of DER Permit No. _____
Company Name: INTERNATIONAL MINERALS & CHEMICAL CORP. County: POLK
Identify the specific emission point source(s) addressed in this application (i.e.: Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired): AFI PLANT WITH 3 DPG VENTURI/CROSSFLOW SCRUBBERS VENTING INTO COMMON STACK.
Source Location: Street: P. O. BOX 1035 City: MULBERRY, FL. 33860
UTM: East 396.7 North 3079.4
Latitude: _____ ° _____ ' _____ "N. Longitude: _____ ° _____ ' _____ "W.
Appl. Name and Title: THOMAS L. CRAIG, VICE PRESIDENT & GENERAL MANAGER
Appl. Address: P. O. BOX 1035, MULBERRY, FL. 33860

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative of INTERNATIONAL MINERALS & CHEMICAL CORP.
I certify that the statements made in this application for a OPERATION permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provisions of Chapter 403, Florida Statutes, and all the rules and regulations of the Department and revisions thereof. I also understand that a permit, if granted by the Department, will be nontransferable and I will promptly notify the Department upon sale or legal transfer of the permitted establishment.

THOMAS L. CRAIG
Name of Person Signing (please Type or Print)

Thomas L. Craig VICE PRES. & GEN. MGR.
Signature of the Owner or Authorized Representative and Title
Date: 7-25-78 Telephone No.: 813-428-2531

*Attach a letter of authorization.

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgement, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the Department. It is also agreed that the undersigned will furnish the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signature: Craig A. Pflaum
Name: CRAIG A. PFLAUM
(Please Type)

Mailing Address: P. O. Box 1035
MULBERRY, FL. 33860
Telephone No.: 1-813-428-2531
Date: 7-25-78

Company Name: INT'L. MIN. & CHEM. CORP.
Florida Registration Number: 18595
(Affix Seal)

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES

(other than incinerators)

A. Raw Materials and Chemicals Used in Your Process:

Description	Utilization Rate lbs./hr.	Relate to Flow Diagram
PHOSPHORIC ACID AND LIMESTONE	120 TPH	GRANULATOR
PHOSPHORIC ACID AND AMMONIA	65 TPH	GRANULATOR

B. Process Rate:

- 1) Total Process Input Rate (lbs./hr.): 120 TPH
- 2) Product Weight (lbs/hr): 120 TPH

C. Airborne Contaminants Discharged:

Name of Contaminant	Actual Discharge*		Allowed Discharge: Rate Per Ch. 17-2, F.A.C.**	Allowable Discharge*** (lbs./hr.)	Relate to Flow Diagram
	lbs./hr.	T/yr.			
PARTICULATES	23.0		PROCESS WT.	36.8	STACK
SO2	300	---	-----	---	STACK

D. Control Devices:

Name and Type (Model and Serial No.)	Contaminant	Efficiency†	Range of Particles Size Collected (in microns)	Basis for Efficiency††
DPG VENTURI/CROSS- FLOW SCRUBBERS	PARTICULATES	99	3-5	DESIGN

*Estimate only if this is an application to construct.

**Specify units in accordance with emission standards prescribed within Section 17-2.04, F.A.C. (e.g. Section 17-2.04(5)(a)1.a. specifies that new fossil fuel steam generators are allowed to emit particulate matter at a rate of 0.1 lbs. per million BTU heat input computed as a maximum 2-hour average.)

***Using above example for a source with 260 million BTU per hour heat input: $\frac{0.1 \text{ lbs.} \times 260 \text{ MMBTU}}{\text{MMBTU hr.}} = 26 \text{ lbs./hr.}$

†See Supplemental Requirements, page 5, number 2.

††Indicate whether the efficiency value is based upon performance testing of the device or design data.

	Volume (ft.) ³	Heat Release (BTU/hr.)	Fuel		Temp. (°F)
			Type	BTU/hr.	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diameter: _____ Stack Temp.: _____ °F

Gas Flow Rate: _____ ACFM _____ DSCFM*

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of Pollution Control Device: Cyclone Wet Scrubber Afterburner
 Other (Specify): _____

Brief Description of Operating Characteristics of Control Device: _____

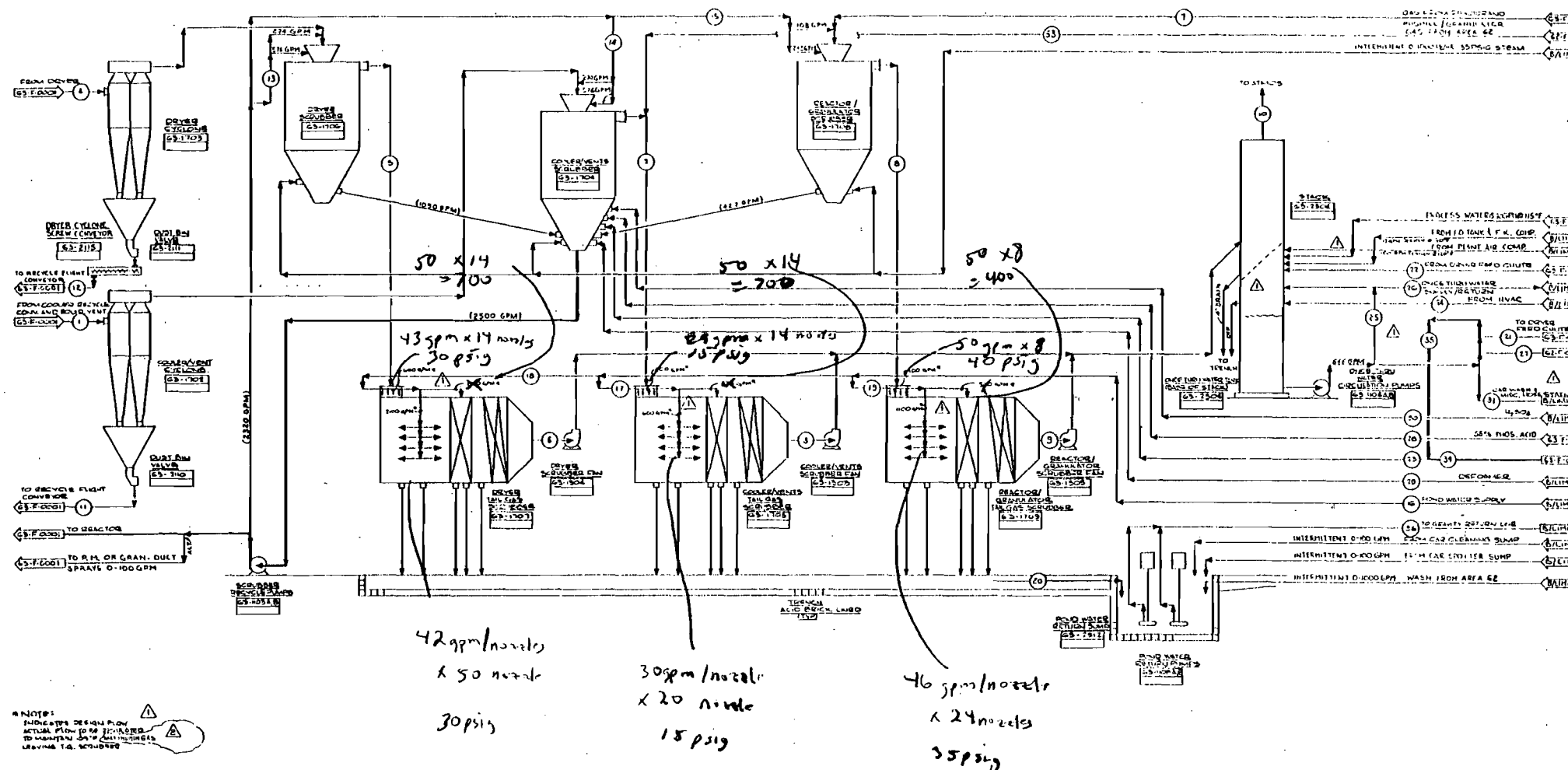
Ultimate Disposal of Any Effluent Other Than That Emitted From the Stack (scrubber water, ash, etc.): _____

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please Provide the Following Supplements Required For All Pollution Sources:

1. Total process input rate and product weight - show derivation.
2. Efficiency estimation of control device(s) - show derivation. Include pertinent test and/or design data.
3. An 8½" x 11" flow diagram, which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
4. An 8½" x 11" plot plan of facility showing the exact location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.
5. An 8½" x 11" plot plan showing the exact location of the establishment, and points of airborne emissions in relation to the surrounding area, residences and other permanent structures and roadways. (Example: Copy of USGS topographic map.)
6. Description and sketch of storm water control measures taken both during and after construction.
7. An application fee of \$20.00, unless exempted by Chapter 17-4.05(3), FAC, made payable to the Department of Environmental Regulation.
8. With construction permit application, include design details for control device(s). Example: for baghouse, include cloth to air ratio; for scrubber, include cross-sectional sketch; etc.
9. Certification by the P.E. with the operation permit application that the source was constructed as shown in the construction permit application.

STREAM NUMBER	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	33	34	35			
DESCRIPTION	GAS TO COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS	GAS FROM COOLERS			
NO MATERIAL FLOW	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM			
FLOW RATE (GPM)	71,500	77,000	15,000	82,000	74,000	53,100	27,500	23,500	20,400	143,500	181	197	250	250	360	6217	1117	3500	1500	2000	7000	7000	700	700	0	52	0	261	215	0	0-15	0	0-10	2000	110	710	
TEMPERATURE (°F)	125	117	105	150	150	105	185	160	108	110	150	140	140	140	90	90	30	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
DESIGN FLOW	71,500	77,000	15,000	82,000	74,000	53,100	27,500	23,500	20,400	143,500	181	197	250	250	360	6217	1117	3500	1500	2000	7000	7000	700	700	0	52	0	261	215	0	0-15	0	0-10	2000	110	710	



NO.	TITLE	NO.	DESCRIPTION	ZONE	DATE	NO.	DESCRIPTION	ZONE	DATE	NO.	DESCRIPTION	ZONE	DATE	NO.	DESCRIPTION	ZONE	DATE
1	DESIGN	1	DESIGN	1	1970	1	DESIGN	1	1970	1	DESIGN	1	1970	1	DESIGN	1	1970

NO.	TITLE	NO.	DESCRIPTION	ZONE	DATE	NO.	DESCRIPTION	ZONE	DATE	NO.	DESCRIPTION	ZONE	DATE	NO.	DESCRIPTION	ZONE	DATE
1	DESIGN	1	DESIGN	1	1970	1	DESIGN	1	1970	1	DESIGN	1	1970	1	DESIGN	1	1970

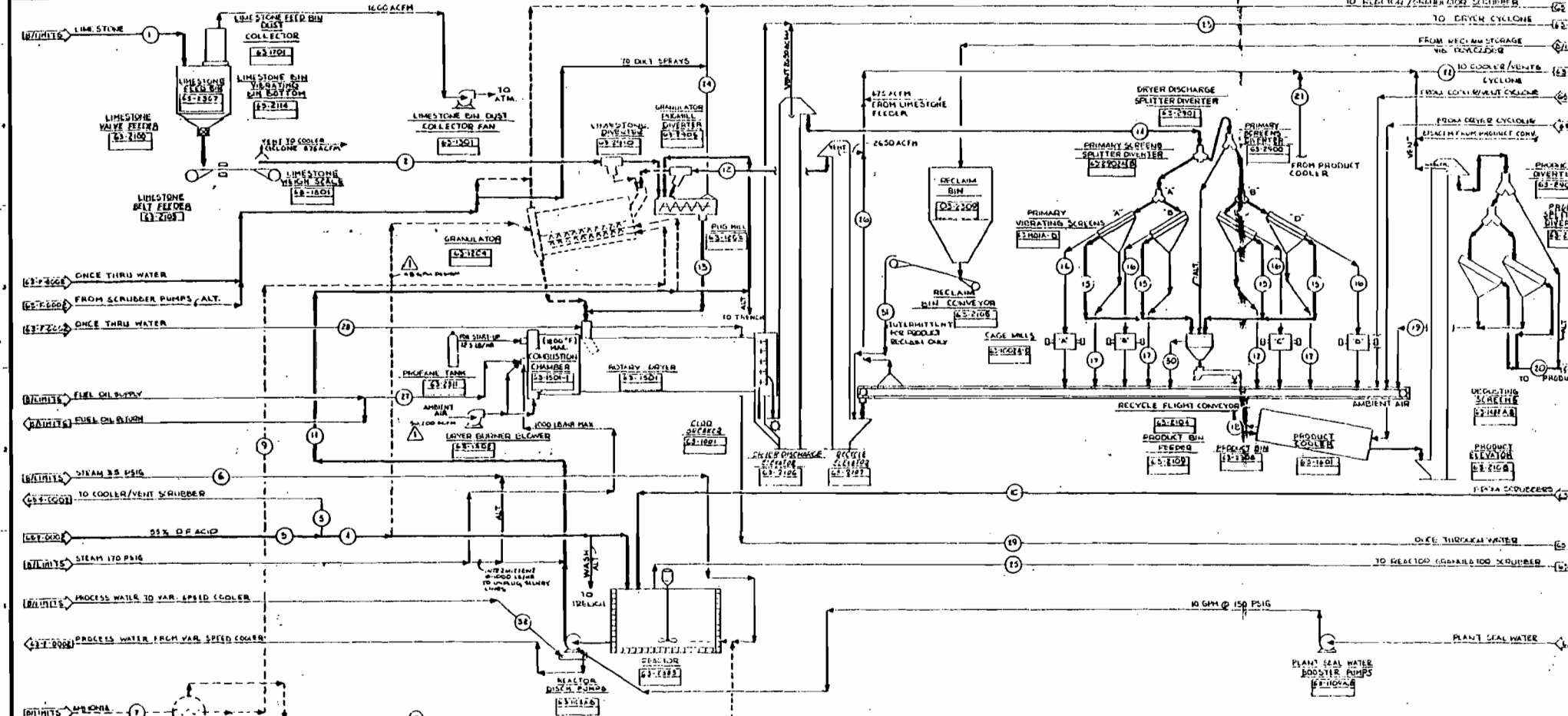
Davy Powergas, Inc.
INTERNATIONAL MINERALS & CHEMICAL CORP.
ANIMAL FEED INGREDIENTS FACILITY - NEW WALES, TEXAS
BIOPROCESSING SCRUBBER PROCESS FLOW DIAGRAM

SCALE: 1" = 10'-0"

4241-63-F-0002

BEST AVAILABLE COPY

STREAM N°	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				
DESCRIPTION	LIMESTONE TO FEED BIN	LIMESTONE TO FUSMILL	TOTAL FUSING DIC ACID FEED	NO. 1 OIL TO REACTOR	NO. 2 OIL TO REACTOR	LIMESTONE TO REACTOR	TOTAL AMMONIA FEED	AMMONIA TO REACTOR	AMMONIA TO GRANULATOR	LIME LIQUOR TO REACTOR	SALARY TO FUSMILL	RECYCLE TO FUSMILL	PURCHASE RESIDUE	LAYER LIMEWORK	RESIDUE TO PRIMARY SCREEN	THRESHOLD PRIMARY SCREEN	PRODUCT TO COOLER	FINES FROM FINISHING SCREENS	RECYCLE TO FINISHING SCREENS	GASES FROM COOLER	GASES TO VENT/SCRUBBER	GASES TO LAYER CYCLONE	GASES FROM FUSMILL	GASES FROM REACTOR	GASES FROM REACTOR TO RECYCLE	NO. 1 OIL TO DRYER	NO. 2 OIL TO DRYER	NO. 3 OIL TO DRYER	NO. 4 OIL TO DRYER	NO. 5 OIL TO DRYER	NO. 6 OIL TO DRYER	NO. 7 OIL TO DRYER				
INDICATE MATERIAL FLOW	271M	271M	271M	118	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
RIO-005 (20% IN CO)	60	250	118	118	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
CONCENTRATION	25.0	25.0	25.0	25.0	25.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1/10 (FREE)	0.3	0.3	0.3	0.3	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1/10 (FREE)	0.3	0.3	0.3	0.3	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PREHEAT (300/100)	ATH	ATH	ATH	ATH	ATH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TEMPERATURE (°F)	150	150	150	150	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOISTURE (1.5/1.0)	180	180	180	180	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOISTURE (1.5/1.0)	180	180	180	180	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEGRATE/NO. 2 FLOW	60	60	180	180	59	3000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



NOTE:
 1) DRYER DESIGNED FOR 100% MOISTURE
 2) DRYER DESIGNED FOR 100% MOISTURE
 3) USED FOR NH₃ GRADE ONLY

NO.	TITLE	NO.	DESCRIPTION	ZONE	DATE	NO.	TITLE	NO.	DESCRIPTION	ZONE	DATE	NO.	TITLE	NO.	DESCRIPTION	ZONE	DATE
1	DESIGN & CONSTRUCTION					1	DESIGN & CONSTRUCTION					1	DESIGN & CONSTRUCTION				
2	FOR CLIENT APPROVAL					2	FOR CLIENT APPROVAL					2	FOR CLIENT APPROVAL				
3	FOR CLIENT APPROVAL					3	FOR CLIENT APPROVAL					3	FOR CLIENT APPROVAL				
4	FOR CLIENT APPROVAL					4	FOR CLIENT APPROVAL					4	FOR CLIENT APPROVAL				

Davy Powergas, Inc.
 INTERNATIONAL MINERALS & CHEMICAL CORPORATION
 ANNUAL FELD INGREDIENTS FACILITY - NEW WALES, PA.
 PROCESS FLOW DIAGRAM
 DRAWING NO. 63-F0001

COMPLIANCE REPORT

PLANT: AFI

PERMIT NO.: A053-68867

TEST DATE: AUGUST 15, 1983

PLANT RATE: PROCESS WEIGHT: 75 TONS/HOUR *DAP*
P2O5 FEED RATE: 36.7 TONS/HOUR

TEST AVERAGE, LBS.\HR. (WHERE APPLICABLE)	ACTUAL - ALLOWABLE
FLUORIDE:	.497 - 2.20
PARTICULATE:	15.54 - 34.54
SO2:	-
ACID MIST:	-
OPACITY:	19.42% - 20.00%
REPORT DATE:	08-17-83

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
SOURCE SAMPLING CALCULATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 081583

DATA SUMMATIONS

PARAMETER	UNITS	RUN 1	RUN 2	RUN 3
BAROMETER PRESSURE	IN OF HG	29.95	29.98	29.98
STATIC PRESSURE	IN OF HOH	.45	.31	.31
STACK PRESSURE	IN OF HG	29.9831	30.0028	30.0028
AVERAGE SQR. DELTA P IN HOH/2		.804141	.809764	.807571
AVERAGE DELTA H	IN OF HOH	1.5125	1.60938	1.60125
METER TEMP.	DEGREES R	570.5	557.25	568.75
AVERAGE STACK TEMP.	DEGREES R	600	596	596
METERED SAMPLE VOL.	CUBIC FT.	45.41	47.73	47.75
PITOT COEFFICIENT	UNITY	.83	.83	.83
NOZZLE DIAMETER	IN	.235	.235	.235
STACK AREA	SQUARE FT	50.2654	50.2654	50.2654
TRAVERSE POINTS	UNITY	16	16	16
SAMPLING TIME	MINUTES	64	64	64
MOLE WT. OF GAS	LB/LB-MOLE	29.0	29.0	29.0
ACT. STK. VELOCITY	FT/SEC	48.585	48.5773	48.4457
ACT. STK. GAS FLOW	CU-FT/MIN	146529	146506	146109
STD. GAS FLOW	CU-FT/MIN.	112660	115734	115421
STD. STK. VELOCITY	FT/SEC	42.2218	45.476	44.5743
PART. EMISSION	LB/DAY	503.597	337.434	277.619
SO2 EMISSION	LB/DAY	0	0	0
H2SO4 EMISSION	LB/DAY	0	0	0
FLUORIDE EMISSION	LB/DAY	21.1595	8.07259	6.57087
AMMONIA EMISSION	LB/DAY	0	0	0
ISOKINETIC RATE	%	97.1543	101.863	100.114

STACK CALCULATION - DATA SHEET

Stack AFI

Date 081583

Time 1430

RUN # 1

ORSAT %CO2
 %CO
 %O2
 %N2

$MD = 0.44 (\%CO2) + 0.32 (\%O2) + 0.28 (\%N2 + \%CO) = 29.0$

D 8 FT. Diameter, $A = 3.14159 D^2 / 4 = 50.2654 \text{ FT.}^2$ AREA

DRY BULB TEMP. = 140 F

WET BULB TEMP. = 128 F

M = .1012 #H2O/#Dry air from Psychrometer Chart

$BWO = M / (M + (18/MD)) = .140188$

Actual: BWO = .127787

$MS = 18 (BWO) + MD (1 - BWO) = 27.4579$

MS = 27.5943

PB = 29.95 HG

PV = .45 H2O

$PS = PB + (-) (PV/13.6) = 29.9831 \text{ HG}$

DELTA H = 1.5125 H2O

$PM = PB + (DELTA H/13.6) = 30.0706 \text{ HG}$

TS = 600 R

W1 .0595 G. PARTICULATES

TM = 570.5 R

W2 0 G. SO2

SQR. DELTA P = .804141

W3 0 G. H2SO4

VM = 45.41 CF

W4 .0025 G. F

CP = .83

W5 0 G. NH3

$VS = 85.48 (CP) (AVG. \text{ SQR. DELTA P}) (SQR. (TS/PS * MS)) = 48.585 \text{ FPS}$

$QA = 60 (A) (VS) = 146529 \text{ ACFM}$

$QS = 17.64 (QA) (PS/TS) (1 - BWO) = 112660 \text{ DSCFM}$

$VMS = 17.64 (VM) (PM/TM) = 42.2218 \text{ SCF}$

$E = 3.172 (QS/VMS) = 8463.81$

E1 = 503.597 #/DAY PARTICULATES

E2 = 0 #/DAY SO2

E3 = 0 #/DAY H2SO4

E4 = 21.1595 #/DAY F

E5 = 0 #/DAY NH3

PLANT RATE PROCESS WEIGHT: 75 TONS/HOUR

%ISOKENTIC = 97.1543

COMMENTS

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
SOURCE SAMPLING DATA VERIFICATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 081583

-----RUN #1-----								
ELAP TIME (MIN)	METER VOLUME	DEL P	DEL H	STK T	METER T IN OUT	STK VELOCITY (FT/SEC)	ISOKINETIC RATE (PERCENT)	
0	802.93	0	0	600	0 0	0	0	
4	805.82	.66	1.54	600	98 98	49.0842	99.493	
8	808.68	.65	1.52	600	100 100	48.711	98.8545	
12	811.48	.62	1.45	600	102 102	47.5736	98.725	
16	814.3	.63	1.47	600	104 104	47.9557	98.2936	
20	817.16	.65	1.52	600	105 105	48.711	97.9818	
24	819.91	.6	1.4	600	107 107	46.8	97.6819	
28	822.77	.65	1.52	600	109 109	48.711	97.293	
32	825.74	.7	1.52	600	111 111	50.5498	97.0182	
36	828.6	.65	1.52	600	111 111	48.711	96.9481	
40	831.44	.64	1.5	600	113 113	48.3348	96.6815	
44	834.26	.63	1.47	600	115 115	47.9557	96.409	
48	837.08	.63	1.47	600	116 116	47.9557	96.2458	
52	839.92	.64	1.5	600	117 117	48.3348	96.0112	
56	842.78	.65	1.52	600	119 119	48.711	95.6085	
60	845.64	.65	1.52	600	120 120	48.711	95.4477	
64	848.61	.7	1.64	600	121 121	50.5498	95.3744	

STACK CALCULATION - DATA SHEET

Stack AFI

Date: 081683

RUN # 2

Time 1100

ORSAT %CO2
 %CO
 %O2
 %N2

$MD = 0.44 (\%CO2) + 0.32 (\%O2) + 0.28 (\%N2 + \%CO) = 29.0$

D 8 FT. Diameter, $A = 3.14159 D^2 / 4 = 50.2654 \text{ FT.}^2$ AREA

DRY BULB TEMP. = 136 F

WET BULB TEMP. = 120 F

M = .07703 #H2O/#Dry air from Psychrometer Chart

$BWO = M / (M + (18/MD)) = .110403$ Actual: BWO = 0

$MS = 18 (BWO) + MD (1 - BWO) = 27.7856$ MS = 0

PB = 29.98 HG

PV = .31 H2O

$PS = PB + (-) (PV / 13.6) = 30.0028 \text{ HG}$

DELTA H = 1.60938 H2O

$PM = PB + (DELTA H / 13.6) = 30.0983 \text{ HG}$

TS = 596 R

TM = 557.25 R

SQR. DELTA P = .809764

VM = 47.73 CF

CP = .83

W1 .0418 G. PARTICULATES

W2 0 G. SO2

W3 0 G. H2SO4

W4 .001 G. F

W5 0 G. NH3

$VS = 85.48 (CP) (AVG. \text{ SQR. DELTA P}) (SQR. (TS/PS * MS)) = 48.5773 \text{ FPS.}$

$QA = 60 (A) (VS) = 146506 \text{ ACFM}$

$QS = 17.64 (QA) (PS/TS) (1 - BWO) = 115734 \text{ DSCEM}$

$VMS = 17.64 (VM) (PM/TM) = 45.476 \text{ SCF}$

$E = 3.172 (QS/VMS) = 8072.59$

E1 = 337.434 #/DAY PARTICULATES

E2 = 0 #/DAY SO2

E3 = 0 #/DAY H2SO4

E4 = 8.07259 #/DAY F

E5 = 0 #/DAY NH3

PLANT RATE PROCESS WEIGHT: 75 TONS/HOUR; P2O5 FEED RATE: 36.7 TONS/HOUR

%ISOKENTIC = 101.863

COMMENTS

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
SOURCE SAMPLING DATA VERIFICATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 081683

-----RUN #2-----								
ELAP TIME (MIN)	METER VOLUME	DEL. P	DEL. H	STK T	METER T IN	METER T OUT	STK VELOCITY (FT/SEC)	ISOKINETIC RATE (PERCENT)
0	848.71	0	0	596	0	0	0	0
4	851.6	.54	1.32	596	87	87	44.0831	110.039
8	854.28	.64	1.57	596	88	88	47.9916	93.6181
12	857.5	.7	1.7	596	89	89	50.1908	107.392
16	860.49	.65	1.59	596	91	91	48.3651	103.083
20	863.41	.62	1.52	596	92	92	47.2358	102.868
24	866.42	.66	1.62	596	94	94	48.7357	102.434
28	869.61	.74	1.82	596	96	96	51.6049	102.201
32	872.69	.69	1.69	596	97	97	49.831	101.978
36	875.44	.55	1.35	596	98	98	44.4894	101.714
40	878.33	.61	1.5	596	100	100	46.8533	101.17
44	881.47	.72	1.77	596	101	101	50.9028	101.069
48	884.5	.69	1.7	596	102	102	49.831	99.4288
52	887.56	.66	1.6	596	103	103	48.7357	102.462
56	890.66	.7	1.7	596	105	105	50.1908	100.463
60	893.74	.69	1.7	596	106	106	49.831	100.359
64	896.73	.65	1.6	596	107	107	48.3651	100.173

STACK CALCULATION - DATA SHEET

Stack AFI

Date 081683

Time 1230

RUN # 3

ORSAT %CO2
 %CO
 %O2
 %N2

$MD = 0.44 (\%CO2) + 0.32 (\%O2) + 0.28 (\%N2 + \%CO) = 29.0$

$D = 8 \text{ FT. Diameter, } A = 3.14159D^2/4 = 50.2654 \text{ FT.}^2 \text{ AREA}$

DRY BULB TEMP. = 136 F

WET BULB TEMP. = 120 F

$M = .07703 \text{ \#H2O/\#Dry air from Psychrometer Chart}$

$BWO = M / (M + (18/MD)) = .110403$

Actual: BWO = 0

$MS = 18(BWO) + MD(1-BWO) = 27.7856$

MS = 0

PB = 29.98 HG

PV = .31 H2O

$PS = PB + (-) (PV/13.6) = 30.0028 \text{ HG}$

DELTA H = 1.60125 H2O

$PM = PB + (DELTA H/13.6) = 30.0977 \text{ HG}$

TS = 596 R

W1 .0338 G. PARTICULATES

TM = 568.75 R

W2 0 G. SO2

SQR. DELTA P = .807571

W3 0 G. H2SO4

VM = 47.75 CF

W4 .0008 G. F

CP = .83

W5 0 G. NH3

$VS = 85.48 (CP) (AVG. SQR. DELTA P) (SQR. (TS/PS * MS)) = 48.4457 \text{ FPS}$

$QA = 60 (A) (VS) = 146109 \text{ ACFM}$

$QS = 17.64 (QA) (PS/TS) (1-BWO) = 115421 \text{ DSCFM}$

$VMS = 17.64 (VM) (PM/TM) = 44.5743 \text{ SCF}$

$E = 3.172 (QS/VMS) = 8213.58$

E1 = 277.619 #/DAY PARTICULATES

E2 = 0 #/DAY SO2

E3 = 0 #/DAY H2SO4

E4 = 6.57087 #/DAY F

E5 = 0 #/DAY NH3

PLANT RATE PROCESS WEIGHT: 75 TONS/HOUR; P2O5 FEED RATE: 36.7 TONS/HOUR

%ISOKENTIC = 100.114

COMMENTS

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
SOURCE SAMPLING DATA VERIFICATION REPORT

TEST ON STACK AFF STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 081683

-----RUN #3-----								
ELAP TIME (MIN)	METER VOLUME	DEL P	DEL H	STK T	METER T IN	METER T OUT	STK VELOCITY (FT/SEC)	ISOKINETIC RATE (PERCENT)
0	896.94	0	0	596	0	0	0	0
4	899.69	.55	1.35	596	103	103	44.4894	100.811
8	902.61	.62	1.52	596	104	104	47.2358	100.679
12	905.71	.7	1.7	596	105	105	50.1908	100.461
16	908.69	.65	1.59	596	106	106	48.3651	100.018
20	911.63	.63	1.55	596	107	107	47.6152	100.037
24	914.59	.64	1.57	596	108	108	47.9916	99.7593
28	917.73	.72	1.77	596	109	109	50.9028	99.6446
32	920.79	.68	1.67	596	110	110	49.4686	99.7248
36	923.54	.55	1.35	596	110	110	44.4894	99.5726
40	926.46	.62	1.52	596	110	110	47.2358	99.6195
44	929.56	.7	1.7	596	110	110	50.1908	99.5793
48	932.57	.66	1.62	596	110	110	48.7357	99.5588
52	935.63	.68	1.67	596	111	111	49.4686	99.5482
56	938.75	.71	1.75	596	112	112	50.5481	99.1783
60	941.97	.68	1.67	596	112	112	49.4686	104.571
64	944.98	.66	1.62	596	113	113	48.7357	99.0336

BEST AVAILABLE COPY

OPACITY OBSERVATION DATA EPA METHOD 9

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

Plant AFI
 Stack# A053-68867
 Location New Wales
 Technician John Baucom
 Certification# 212217
 Date 8/16/83
 Time Start 11:00
 Time Finish 12:00
 Distance to Stack .120 Meter
 Wind Direction SW
 Wind Velocity 0-5 mph
 Sum of Numbers Recorded 4660
 Total Number of Readers 240
 Opacity = $\frac{\text{Sum of nos.}}{\text{Total no.}}$
 Recorded Reading = 19.42


 STATE OF FLORIDA
 DEPARTMENT OF ENVIRONMENTAL REGULATION

THIS IS TO CERTIFY THAT
John R. Baucom has completed
 the STATE OF FLORIDA visible emissions evaluation training
 and is a qualified observer of visible emissions as specified by
 EPA reference method 9.
 This certificate expires on Sept. 15, 1983
Judi Sears
 Certification Officer Bearer's Signature
 DER Form PERM 5-9 (Jun 79)

COMPLIANCE REPORT

PLANT: AFI

PERMIT NO.: A053-68867

TEST DATE: AUGUST 19, 1983

PLANT RATE: PROCESS WEIGHT: 75 TONS/HOUR *OAP*
P205 FEED RATE: 36.7 TONS/HOUR

TEST AVERAGE, LBS.\HR. (WHERE APPLICABLE)	ACTUAL - ALLOWABLE
FLUORIDE:	-
PARTICULATE:	-
NITROGEN	58.05 - N/A
ACID MIST:	-
OPACITY:	20.00% - 20.00%
REPORT DATE:	08-19-83

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
SOURCE SAMPLING CALCULATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 081983

DATA SUMMATIONS

PARAMETER	UNITS	RUN 1	RUN 2	RUN 3
BAROMETER PRESSURE	IN OF HG	30.08	30.08	0
STATIC PRESSURE	IN OF HOH	.36	.36	0
STACK PRESSURE	IN OF HG	30.1065	30.1065	0
AVERAGE SQR. DELTA P	IN HOH1/2	.856111	.858681	0
AVERAGE DELTA H	IN OF HOH	1.77688	1.7875	0
METER TEMP.	DEGREES R	562.063	564.313	0
AVERAGE STACK TEMP.	DEGREES R	595	595	0
METERED SAMPLE VOL.	CUBIC FT.	49.81	50	0
PITOT COEFFICIENT	UNITY	.83	.83	0
NOZZLE DIAMETER	IN	.235	.235	0
STACK AREA	SQUARE FT	50.2654	50.2654	0
TRAVERSE POINTS	UNITY	16	16	16
SAMPLING TIME	MINUTES	64	64	0
MOLE WT. OF GAS	LB/LB-MOLE	29.0	29.0	29.0
ACT. STK. VELOCITY	FT/SEC	51.4285	51.5826	0
ACT. STK. GAS FLOW	CU-FT/MIN	155104	155569	0
STD. GAS FLOW	CU-FT/MIN.	120410	120775	0
STD. STK. VELOCITY	FT/SEC	47.2262	47.2197	0
PART. EMISSION	LB/DAY	0	0	0
SO2 EMISSION	LB/DAY	0	0	0
H2SO4 EMISSION	LB/DAY	0	0	0
FLUORIDE EMISSION	LB/DAY	0	0	0
NITROGEN EMISSION	LB/DAY	1382.96	1403.57	0
ISOKINETIC RATE	%	101.675	101.354	0

Stack AFI

Date 081983

Time 0940

RUN # 1

ORSAT %CO2
%CO
%O2
%N2

$MD = 0.44 (\%CO2) + 0.32 (\%O2) + 0.28 (\%N2 + \%CO) = 29.0$

$D = 8 \text{ FT. Diameter, } A = 3.14159 D^2 / 4 = 50.2654 \text{ FT.}^2 \text{ AREA}$

DRY BULB TEMP. = 135 F

WET BULB TEMP. = 122 F

M = .08306 #H2O/#Dry air from Psychrometer Chart

$BWO = M / (M + (18/MD)) = .118025$

Actual: BWO = .130242

$MS = 18 (BWO) + MD (1 - BWO) = 27.7017$

MS = 27.5673

PB = 30.08 HG

PV = .36 H2O

$PS = PB + (-) (PV / 13.6) = 30.1065 \text{ HG}$

DELTA H = 1.77688 H2O

$PM = PB + (DELTA H / 13.6) = 30.2101 \text{ HG}$

TS = 595 R

TM = 562.063 R

SQR. DELTA P = .856111

VM = 49.81 CF

CP = .83

W1 0 G. PARTICULATES

W2 0 G. SO2

W3 0 G. H2SO4

W4 0 G. F

W5 .171 G. NH3

$VS = 85.48 (CP) (AVG. \text{ SQR. DELTA P}) (SQR. (TS/PS * MS)) = 51.4285 \text{ FPS}$

$QA = 60 (A) (VS) = 155104 \text{ ACFM}$

$QS = 17.64 (QA) (PS/TS) (1 - BWO) = 120410 \text{ DSCFM}$

$VMS = 17.64 (VM) (PM/TM) = 47.2262 \text{ SCF}$

$E = 3.172 (QS/VMS) = 8087.5$

E1 = 0 #/DAY PARTICULATES

E2 = 0 #/DAY SO2

E3 = 0 #/DAY H2SO4

E4 = 0 #/DAY F

E5 = 1382.96 #/DAY NH3

PLANT RATE PROCESS WEIGHT: 75 TONS/HOUR; P2O5 FEED RATE: 36.7 TONS/HOUR

%ISOKENTIC = 101.675

COMMENTS

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
SOURCE SAMPLING DATA VERIFICATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 081983

-----RUN #1-----								
ELAP TIME (MIN)	METER VOLUME	DEL P	DEL H	STK T	METER T IN OUT	STK VELOCITY (FT/SEC)	ISOKINETIC RATE (PERCENT)	
0	968.66	0	0	595	0 0	0	0	
4	971.81	.74	1.79	595	88 88	51.6761	104.387	
8	974.98	.75	1.82	595	90 90	52.0241	103.978	
12	978.12	.74	1.79	595	92 92	51.6761	103.304	
16	981.2	.71	1.72	595	95 95	50.6178	102.872	
20	984.24	.69	1.67	595	98 98	49.8998	102.431	
24	987.47	.78	1.89	595	100 100	53.0544	102.049	
28	990.62	.74	1.79	595	102 102	51.6761	101.787	
32	993.7	.71	1.72	595	105 105	50.6178	101.051	
36	996.83	.73	1.77	595	105 105	51.3257	101.285	
40	999.99	.75	1.82	595	106 106	52.0241	100.722	
44	1003.16	.75	1.82	595	107 107	52.0241	100.857	
48	1006.22	.7	1.7	595	108 108	50.26	100.572	
52	1009.28	.7	1.7	595	108 108	50.26	100.568	
56	1012.47	.76	1.84	595	109 109	52.3698	100.478	
60	1015.64	.75	1.82	595	110 110	52.0241	100.328	
64	1018.77	.73	1.77	595	110 110	51.3257	100.398	

BEST AVAILABLE COPY

Stack AFI

Date 081983

Time 1110

RUN # 2

ORSAT %CO2
 %CO
 %O2
 %N2

$MD = 0.44 (\%CO2) + 0.32 (\%O2) + 0.28 (\%N2 + \%CO) = 29.0$

$D = 8 \text{ FT. Diameter, } A = 3.14159 D^2 / 4 = 50.2654 \text{ FT.}^2 \text{ AREA}$

DRY BULB TEMP. = 135 F

WET BULB TEMP. = 122 F

M = .08306 #H2O/#Dry air from Psychrometer Chart

$BWO = M / (M + (18 / MD)) = .118025$

Actual: BWO = .130213

$MS = 18 (BWO) + MD (1 - BWO) = 27.7017$

MS = 27.5677

PB = 30.08 HG

PV = .36 H2O

$PS = PB + (-) (PV / 13.6) = 30.1065 \text{ HG}$

DELTA H = 1.7875 H2O

$PM = PB + (DELTA H / 13.6) = 30.2116 \text{ HG}$

TS = 595 R

W1 0 G. PARTICULATES

TM = 564.313 R

W2 0 G. SO2

SQR. DELTA P = .858681

W3 0 G. H2SO4

VM = 50 CF

W4 0 G. F

CP = .83

W5 .173 G. NH3

$VS = 85.48 (CP) (AVG. \text{ SQR. DELTA P}) (SQR. (TS / PS * MS)) = 51.5826 \text{ FPS}$

$QA = 60 (A) (VS) = 155569 \text{ ACFM}$

$QS = 17.64 (QA) (PS / TS) (1 - BWO) = 120775 \text{ DSCFM}$

$VMS = 17.64 (VM) (PM / TM) = 47.2197 \text{ SCF}$

$E = 3.172 (QS / VMS) = 8113.13$

E1 = 0 #/DAY PARTICULATES

E2 = 0 #/DAY SO2

E3 = 0 #/DAY H2SO4

E4 = 0 #/DAY F

E5 = 1403.57 #/DAY NH3

PLANT RATE PROCESS WEIGHT: 75 TONS/HOUR; P2O5 FEED RATE: 36.7 TONS/HOUR

%ISOKENTIC = 101.354

COMMENTS

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
SOURCE SAMPLING DATA VERIFICATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 081983

-----RUN #2-----								
ELAP TIME (MIN)	METER VOLUME	DEL P	DEL H	STK T	METER T IN	METER T OUT	STK VELOCITY (FT/SEC)	ISOKINETIC RATE (PERCENT)
0	1019	0	0	595	0	0	0	0
4	1022.2	.74	1.79	595	93	93	51.6758	105.084
8	1025	.74	1.79	595	95	95	51.6758	91.6167
12	1028.12	.75	1.82	595	97	97	52.0238	101.048
16	1031.6	.73	1.77	595	99	99	51.3254	113.818
20	1034.79	.7	1.7	595	100	100	50.2598	106.339
24	1037.85	.79	1.92	595	102	102	53.3931	95.7254
28	1040	.75	1.82	595	104	104	52.0238	68.769
32	1044.56	.72	1.74	595	104	104	50.9727	148.829
36	1047.77	.73	1.77	595	106	106	51.3254	103.692
40	1050.42	.74	1.79	595	107	107	51.6758	84.8747
44	1053.55	.76	1.84	595	108	108	52.3695	98.7575
48	1056.66	.71	1.72	595	109	109	50.6175	101.31
52	1059.9	.7	1.7	595	110	110	50.2598	106.113
56	1063	.75	1.82	595	110	110	52.0238	98.1097
60	1066	.75	1.82	595	112	112	52.0238	94.6136
64	1069.3	.74	1.79	595	113	113	51.6758	104.587

COMPLIANCE REPORT

PLANT: AFI

PERMIT NO.: A053-68867

TEST DATE: AUGUST 24, 1983

PLANT RATE: PROCESS WEIGHT: 75 TONS/HOUR *DAP*
P2O5 FEED RATE: 36.7 TONS/HOUR

TEST AVERAGE, LBS.\HR. (WHERE APPLICABLE)	ACTUAL - ALLOWABLE
FLUORIDE:	1.127 - 2.20
PARTICULATE:	21.14 - 34.54
SO2:	-
ACID MIST:	-
OPACITY:	20.00% - 20.00%
REPORT DATE:	08-24-83

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
SOURCE SAMPLING CALCULATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 082483

DATA SUMMATIONS

PARAMETER	UNITS	RUN 1	RUN 2	RUN 3
BAROMETER PRESSURE	IN OF HG	30.02	30.02	29.87
STATIC PRESSURE	IN OF HOH	.45	.45	.4
STACK PRESSURE	IN OF HG	30.0531	30.0531	29.8994
AVERAGE SQ. DELTA P	IN HOH1/2	.867287	.868333	.831653
AVERAGE DELTA H	IN OF HOH	1.77188	1.77563	1.66313
METER TEMP.	DEGREES R	567.375	567.906	568.031
AVERAGE STACK TEMP.	DEGREES R	590	590	586
METERED SAMPLE VOL.	CUBIC FT.	53.78	54.11	52.24
PITOT COEFFICIENT	UNITY	.83	.83	.83
NOZZLE DIAMETER	IN	.24	.24	.24
STACK AREA	SQUARE FT	50.2654	50.2654	50.2654
TRAVERSE POINTS	UNITY	16	16	16
SAMPLING TIME	MINUTES	64	64	64
MOLE WT. OF GAS	LB/LB-MOLE	29.0	29.0	29.0
ACT. STK. VELOCITY	FT/SEC	51.8513	51.909	49.7184
ACT. STK. GAS FLOW	CU-FT/MIN	156380	156554	149947
STD. GAS FLOW	CU-FT/MIN.	123235	123438	117831
STD. STK. VELOCITY	FT/SEC	50.4113	50.6683	48.644
PART. EMISSION	LB/DAY	514.881	484.522	522.481
SO2 EMISSION	LB/DAY	0	0	0
H2SO4 EMISSION	LB/DAY	0	0	0
FLUORIDE EMISSION	LB/DAY	30.24	30.1378	20.7456
AMMONIA EMISSION	LB/DAY	0	0	0
ISOKINETIC RATE	%	104.332	104.691	105.291

STACK CALCULATION - DATA SHEET

Stack AFI

Date 082483

Time 1000

RUN # 1

ORSAT %CO2
 %CO
 %O2
 %N2

$MD = 0.44 (\%CO2) + 0.32 (\%O2) + 0.28 (\%N2 + \%CO) = 29.0$

D 8 FT. Diameter, $A = 3.14159D^2/4 = 50.2654 \text{ FT.}^2 \text{ AREA}$

DRY BULB TEMP. = 130 F

WET BULB TEMP. = 114 F

$M = .06314 \text{ \#H}_2\text{O/\#Dry air from Psychrometer Chart}$

$BWO = M / (M + (18/MD)) = .0923329$

Actual: BWO = .122963

$MS = 18 (BWO) + MD (1 - BWO) = 27.9843$

MS = 27.6474

PB = 30.02 HG

PV = .45 H2O

$PS = PB + (-) (PV/13.6) = 30.0531 \text{ HG}$

DELTA H = 1.77188 H2O

$PM = PB + (DELTA H/13.6) = 30.1494 \text{ HG}$

TS = 590 R

TM = 567.375 R

SQR. DELTA P = .867287

VM = 53.78 CF

CP = .83

W1 .0664 G. PARTICULATES

W2 0 G. SO2

W3 0 G. H2SO4

W4 .0039 G. F

W5 0 G. NH3

$VS = 85.48 (CP) (AVG. \text{ SQR. DELTA P}) (SQR. (TS/PS * MS)) = 51.8513 \text{ FPS}$

$QA = 60 (A) (VS) = 156380 \text{ ACFM}$

$QS = 17.64 (QA) (PS/TS) (1 - BWO) = 123235 \text{ DSCFM}$

$VMS = 17.64 (VM) (PM/TM) = 50.4113 \text{ SCF}$

$E = 3.172 (QS/VMS) = 7754.23$

E1 = 514.881 #/DAY PARTICULATES

E2 = 0 #/DAY SO2

E3 = 0 #/DAY H2SO4

E4 = 30.24 #/Day F

E5 = 0 #/DAY NH3

PLANT RATE PROCESS WEIGHT: 75 TONS/HOUR: P205 FEED RATE: 36.7 TONS/HOUR

%ISOKENTIC = 104.332

COMMENTS

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
SOURCE SAMPLING DATA VERIFICATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 082483

-----RUN #1-----								
ELAP TIME (MIN)	METER VOLUME	DEL P	DEL H	STK T	METER T IN	METER T OUT	STK VELOCITY (FT/SEC)	ISOKINETIC RATE (PERCENT)
0	97.41	0	0	590	0	0	0	0
4	100.66	.73	1.72	590	109	81	51.0809	106.766
8	104.12	.83	1.95	590	116	84	54.4673	105.706
12	107.6	.84	1.97	590	120	85	54.7945	105.217
16	110.93	.77	1.81	590	123	87	52.4617	104.653
20	114.18	.73	1.72	590	125	89	51.0809	104.507
24	117.36	.7	1.65	590	126	92	50.0203	104.039
28	120.54	.7	1.65	590	126	92	50.0203	104.039
32	123.79	.73	1.72	590	122	93	51.0809	104.415
36	127.06	.74	1.74	590	130	94	51.4296	103.529
40	130.46	.8	1.88	590	131	95	53.4739	103.384
44	133.96	.85	2	590	131	96	55.1196	103.188
48	137.36	.8	1.88	590	130	97	53.4739	103.294
52	140.54	.7	1.65	590	124	97	50.0203	103.766
56	143.67	.68	1.6	590	120	97	49.3005	103.977
60	146.85	.7	1.65	590	116	97	50.0203	104.499
64	150.14	.75	1.76	590	114	97	51.7759	104.66

STACK CALCULATION - DATA SHEET

Stack AFI

Date 082483

Time 1130

RUN # 2

ORSAT %CO2
 %CO
 %O2
 %N2

$$MD = 0.44 (\%CO_2) + 0.32 (\%O_2) + 0.28 (\%N_2 + \%CO) = 29.0$$

$$D \text{ 8 FT. Diameter, } A = 3.14159D^2/4 = 50.2654 \text{ FT.}^2 \text{ AREA}$$

$$\text{DRY BULB TEMP.} = 130 \text{ F}$$

$$\text{WET BULB TEMP.} = 114 \text{ F}$$

$$M = .06314 \text{ \#H}_2\text{O/\#Dry air from Psychrometer Chart}$$

$$BWO = M / (M + (18/MD)) = .0923329$$

$$\text{Actual: BWO} = .122495$$

$$MS = 18 (BWO) + MD (1 - BWO) = 27.9843$$

$$MS = 27.6526$$

$$PB = 30.02 \text{ HG}$$

$$PV = .45 \text{ H}_2\text{O}$$

$$PS = PB + (-) (PV/13.6) = 30.0531 \text{ HG}$$

$$\text{DELTA H} = 1.77563 \text{ H}_2\text{O}$$

$$PM = PB + (\text{DELTA H}/13.6) = 30.1465 \text{ HG}$$

$$TS = 590 \text{ R}$$

$$TM = 567.906 \text{ R}$$

$$\text{SQR. DELTA P} = .868333$$

$$VM = 54.11 \text{ CF}$$

$$CP = .83$$

$$W1 \text{ .0627 G. PARTICULATES}$$

$$W2 \text{ 0 G. SO}_2$$

$$W3 \text{ 0 G. H}_2\text{SO}_4$$

$$W4 \text{ .0039 G. F}$$

$$W5 \text{ 0 G. NH}_3$$

$$VS = 85.48 (CP) (\text{AVG. SQR. DELTA P}) (\text{SQR. } (TS/PS * MS)) = 51.909 \text{ FPS}$$

$$QA = 60 (A) (VS) = 156554 \text{ ACFM}$$

$$QS = 17.64 (QA) (PS/TS) (1 - BWO) = 123438 \text{ DSCFM}$$

$$VMS = 17.64 (VM) (PM/TM) = 50.6683 \text{ SCF}$$

$$E = 3.172 (QS/VMS) = 7727.63$$

$$E1 = 484.522 \text{ \#/DAY PARTICULATES}$$

$$E2 = 0 \text{ \#/DAY SO}_2$$

$$E3 = 0 \text{ \#/DAY H}_2\text{SO}_4$$

$$E4 = 30.1378 \text{ \#/DAY F}$$

$$E5 = 0 \text{ \#/DAY NH}_3$$

PLANT RATE PROCESS WEIGHT: 75 TONS/HOUR; P2O5 FEED RATE: 36.7 TONS/HOUR

$$\% \text{ISOKENTIC} = 104.691$$

COMMENTS

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
SOURCE SAMPLING DATA VERIFICATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 082483

-----RUN #2-----								
ELAP TIME (MIN)	METER VOLUME	DEL P	DEL H	STK T	METER T IN	METER T OUT	STK VELOCITY (FT/SEC)	ISOKINETIC RATE (PERCENT)
0	150.34	0	0	590	0	0	0	0
4	153.65	.75	1.76	590	110	82	51.7711	107.048
8	157.07	.8	1.88	590	117	84	53.4689	106.265
12	160.59	.85	2	590	119	85	55.1145	105.854
16	164.01	.8	1.88	590	124	88	53.4689	105.232
20	167.27	.73	1.72	590	126	90	51.0761	112.628
24	170.42	.68	1.6	590	126	91	49.2959	97.7201
28	173.61	.7	1.65	590	125	93	50.0156	104.32
32	176.85	.72	1.69	590	123	93	50.7251	104.668
36	180.11	.73	1.72	590	131	93	51.0761	103.866
40	183.59	.83	1.95	590	132	93	54.4622	103.949
44	187.11	.85	2	590	131	96	55.1145	103.732
48	190.48	.78	1.83	590	130	98	52.7963	103.539
52	193.79	.75	1.76	590	125	98	51.7711	104.145
56	196.98	.7	1.65	590	123	97	50.0156	104.137
60	200.13	.68	1.6	590	120	98	49.2959	104.503
64	203.39	.73	1.72	590	115	98	51.0761	104.874

STACK CALCULATION - DATA SHEET

Stack AFI

Date 082583

Time 0945

RUN # 3

ORSAT %CO2
 %CO
 %O2
 %N2

$MD = 0.44 (\%CO2) + 0.32 (\%O2) + 0.28 (\%N2 + \%CO) = 29.0$

D 8 FT. Diameter, $A = 3.14159D^2/4 = 50.2654 \text{ FT.}^2$ AREA

DRY BULB TEMP. = 126 F

WET BULB TEMP. = 112 F

M = .05958 #H2O/#Dry air from Psychrometer Chart

$BWO = M / (M + (18/MD)) = .0875829$

Actual: BWO = .126914

$MS = 18 (BWO) + MD (1 - BWO) = 28.0366$

MS = 27.604

PB = 29.87 HG

PV = .4 H2O

$PS = PB + (-) (PV/13.6) = 29.8994 \text{ HG}$

DELTA H = 1.66313 H2O

$PM = PB + (DELTA H/13.6) = 29.9847 \text{ HG}$

TS = 586 R

W1 .068 G. PARTICULATES

TM = 568.031 R

W2 0 G. SO2

SQR. DELTA P = .831653

W3 0 G. H2SO4

VM = 52.24 CF

W4 .0027 G. F

CP = .83

W5 0 G. NH3

$VS = 85.48 (CP) (AVG. \text{ SQR. DELTA P}) (SQR. (TS/PS * MS)) = 49.7184 \text{ FPS}$

$QA = 60 (A) (VS) = 149947 \text{ ACFM}$

$QS = 17.64 (QA) (PS/TS) (1 - BWO) = 117831 \text{ DSCEM}$

$VMS = 17.64 (VM) (PM/TM) = 48.644 \text{ SCF}$

$E = 3.172 (QS/VMS) = 7683.55$

E1 = 522.481 #/DAY PARTICULATES

E2 = 0 #/DAY SO2

E3 = 0 #/DAY H2SO4

E4 = 20.7456 #/DAY F

E5 = 0 #/DAY NH3

PLANT RATE PROCESS WEIGHT: 75 TONS/HOUR; P205 FEED RATE: 36.7 TONS/HOUR

%ISOKENTIC = 105.291

COMMENTS

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
SOURCE SAMPLING DATA VERIFICATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 082583

-----RUN #3-----								
ELAP TIME (MIN)	METER VOLUME	DEL P	DEL H	STK T	METER T IN OUT	STK VELOCITY (FT/SEC)	ISOKINETIC RATE (PERCENT)	
0	253.01	0	0	586	0 0	0	0	
4	255.99	.6	1.44	586	122 90	46.3074	105.589	
8	259.35	.76	1.83	586	123 90	52.1172	105.79	
12	262.75	.78	1.87	586	125 90	52.7985	105.492	
16	266.02	.72	1.73	586	126 91	50.7272	105.379	
20	269.24	.7	1.68	586	125 91	50.0177	105.32	
24	272.46	.7	1.68	586	125 92	50.0177	105.228	
28	275.54	.64	1.54	586	123 92	47.826	105.412	
32	278.64	.65	1.56	586	125 92	48.1982	105.099	
36	281.77	.66	1.59	586	127 93	48.5676	105.04	
40	284.87	.65	1.56	586	128 93	48.1982	104.731	
44	288.25	.77	1.85	586	129 93	52.459	104.898	
48	291.52	.72	1.73	586	129 93	50.7272	104.918	
52	294.74	.7	1.68	586	128 93	50.0177	104.858	
56	297.96	.7	1.68	586	120 93	50.0177	105.6	
60	301.13	.68	1.63	586	120 93	49.298	105.463	
64	304.23	.65	1.56	586	110 93	48.1982	106.409	

COMPLIANCE REPORT

PLANT: AFI

PERMIT NO.: A053-68867

TEST DATE: AUGUST 25, 1983

PLANT RATE: PROCESS WEIGHT: 75 TONS/HOUR *DAP*
P205 FEED RATE: 36.7 TONS/HOUR

TEST AVERAGE, LBS.\HR. (WHERE APPLICABLE)	ACTUAL - ALLOWABLE
FLUORIDE:	-
PARTICULATE:	-
NITROGEN	19.12 - N/A
ACID MIST:	-
OPACITY:	20.00% - 20.00%
REPORT DATE:	08-25-83

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
SOURCE SAMPLING CALCULATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 082583

DATA SUMMATIONS

PARAMETER	UNITS	RUN 1	RUN 2	RUN 3
BAROMETER PRESSURE	IN OF HG	29.87	29.97	0
STATIC PRESSURE	IN OF HOH	.4	.45	0
STACK PRESSURE	IN OF HG	29.8994	30.0031	0
AVERAGE SQR. DELTA P	IN HOH1/2	.83406	.842403	0
AVERAGE DELTA H	IN OF HOH	1.66313	1.5725	0
METER TEMP.	DEGREES R	564.563	568.031	0
AVERAGE STACK TEMP.	DEGREES R	586	590	0
METERED SAMPLE VOL.	CUBIC FT.	52.21	50.22	0
PITOT COEFFICIENT	UNITY	.83	.83	0
NOZZLE DIAMETER	IN	.24	.24	0
STACK AREA	SQUARE FT	50.2654	50.2654	0
TRAVERSE POINTS	UNITY	16	16	16
SAMPLING TIME	MINUTES	64	64	0
MOLE WT. OF GAS	LB/LB-MOLE	29.0	29.0	29.0
ACT. STK. VELOCITY	FT/SEC	49.857	50.486	0
ACT. STK. GAS FLOW	CU-FT/MIN	150365	152262	0
STD. GAS FLOW	CU-FT/MIN.	118230	118697	0
STD. STK. VELOCITY	FT/SEC	48.9112	46.8995	0
PART. EMISSION	LB/DAY	0	0	0
SO2 EMISSION	LB/DAY	0	0	0
H2SO4 EMISSION	LB/DAY	0	0	0
FLUORIDE EMISSION	LB/DAY	0	0	0
NITROGEN EMISSION	LB/DAY	424.778	492.916	0
ISOKINETIC RATE	%	105.512	100.774	0

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Stack AFI

Date 082583

Time 0830

RUN # 1

ORSAT %CO2
%CO
%O2
%N2

MD=0.44 (%CO2)+0.32 (%O2)+0.28 (%N2+%CO)=29.0

D 8 FT. Diameter, A=3.14159D²/4= 50.2654 FT.² AREA.

DRY BULB TEMP.= 126 F
WET BULB TEMP.= 112 F

M= .05958 #H2O/#Dry air from Psychrometer Chart

BWO=M/(M+(18/MD))= .0875829 Actual:BWO= .126392

MS=18(BWO)+MD(1-BWO)= 28.0366 MS= 27.6097

PB= 29.87 HG

PV= .4 H2O

PS=PB+(-)(PV/13.6)= 29.8994 HG

DELTA H= 1.66313 H2O

PM=PB+(DELTA H/13.6)= 29.9825 HG

TS= 586 R

W1 0 G. PARTICULATES

TM= 564.563 R

W2 0 G. SO2

SQR. DELTA P= .83406

W3 0 G. H2SO4

VM= 52.21 CF

W4 0 G. F

CP= .83

W5 .0554 G. NH3

VS=85.48(CP)(AVG. SQR. DELTA P)(SQR.(TS/PS*MS))= 49.857 FPS

QA=60(A)(VS)= 150365 ACFM

QS=17.64(QA)(PS/TS)(1-BWO)= 118230 DSCFM

VMS=17.64(VM)(PM/TM)= 48.9112 SCF

E=3.172(QS/VMS)= 7667.48

E1= 0 #/DAY PARTICULATES

E2= 0 #/DAY SO2

E3= 0 #/DAY H2SO4

E4= 0 #/DAY F

E5= 424.778 #/DAY NH3

PLANT RATE PROCESS WEIGHT: 75 TONS/HOUR; P205 FEED RATE

%ISOKENTIC= 105.512

COMMENTS

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
 SOURCE SAMPLING DATA VERIFICATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 082583

-----RUN #1-----								
ELAP TIME (MIN)	METER VOLUME	DEL P	DEL H	STK T	METER T IN OUT	STK VELOCITY (FT/SEC)	ISOKINETIC RATE (PERCENT)	
0	200.65	0	0	586	0 0	0	0	
4	203.62	.6	1.43	586	106 80	46.3026	107.653	
8	206.94	.75	1.79	586	112 81	51.7678	107.052	
12	210.3	.77	1.84	586	116 83	52.4535	106.366	
16	213.55	.72	1.72	586	119 84	50.7219	105.986	
20	216.76	.7	1.67	586	122 85	50.0125	105.777	
24	219.95	.69	1.65	586	124 87	49.654	105.496	
28	223.04	.65	1.55	586	125 88	48.1932	105.075	
32	226.16	.65	1.55	586	125 88	48.1932	106.096	
36	229.18	.62	1.48	586	125 88	47.0679	105.132	
40	232.57	.78	1.86	586	126 88	52.793	105.219	
44	235.99	.8	1.91	586	126 89	53.4656	104.736	
48	239.31	.75	1.79	586	126 89	51.7678	104.978	
52	242.52	.7	1.67	586	126 90	50.0125	104.938	
56	245.68	.68	1.62	586	126 90	49.2928	104.8	
60	248.77	.65	1.55	586	126 90	48.1932	104.797	
64	251.84	.64	1.53	586	126 90	47.8211	104.925	

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Stack AFI

Date 082683

Time 1430

RUN # 2

ORSAT %CO2
 %CO
 %O2
 %N2

$$MD=0.44 (\%CO2)+0.32 (\%O2)+0.28 (\%N2+\%CO)=29.0$$

$$D \ 8 \text{ FT. Diameter, } A=3.14159D^2/4= 50.2654 \text{ FT.}^2 \text{ AREA}$$

$$\text{DRY BULB TEMP.} = 130 \text{ F}$$

$$\text{WET BULB TEMP.} = 115 \text{ F}$$

$$M = .06554 \text{ \#H}_2\text{O/\#Dry air from Psychrometer Chart}$$

$$BWO=M/(M+(18/MD)) = .0955074$$

$$\text{Actual: BWO} = .130969$$

$$MS=18(BWO)+MD(1-BWO) = 27.9494$$

$$MS = 27.5593$$

$$PB = 29.97 \text{ HG}$$

$$PV = .45 \text{ H}_2\text{O}$$

$$PS=PB+(-)(PV/13.6) = 30.0031 \text{ HG}$$

$$\text{DELTA H} = 1.5725 \text{ H}_2\text{O}$$

$$PM=PB+(\text{DELTA H}/13.6) = 30.0722 \text{ HG}$$

$$TS = 590 \text{ R}$$

$$W1 \ 0 \ \text{G. PARTICULATES}$$

$$TM = 568.031 \text{ R}$$

$$W2 \ 0 \ \text{G. SO}_2$$

$$\text{SQR. DELTA P} = .842403$$

$$W3 \ 0 \ \text{G. H}_2\text{SO}_4$$

$$VM = 50.22 \text{ CF}$$

$$W4 \ 0 \ \text{G. F}$$

$$CP = .83$$

$$W5 \ .0614 \ \text{G. NH}_3$$

$$VS=85.48(CP)(\text{AVG. SQR. DELTA P})(\text{SQR.}(TS/PS*MS)) = 50.486 \text{ FPS}$$

$$QA=60(A)(VS) = 152262 \text{ ACFM}$$

$$QS=17.64(QA)(PS/TS)(1-BWO) = 118697 \text{ DSCFM}$$

$$VMS=17.64(VM)(PM/TM) = 46.8995 \text{ SCF}$$

$$E=3.172(QS/VMS) = 8027.95$$

$$E1 = 0 \ \text{\#/DAY PARTICULATES}$$

$$E2 = 0 \ \text{\#/DAY SO}_2$$

$$E3 = 0 \ \text{\#/DAY H}_2\text{SO}_4$$

$$E4 = 0 \ \text{\#/DAY F}$$

$$E5 = 492.916 \ \text{\#/DAY NH}_3$$

PLANT RATE PROCESS RATE: 75 TONS/HOUR; P2O5 FEED RATE: 36.7 TONS/HOUR

%ISOKENTIC = 100.774

COMMENTS

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
 SOURCE SAMPLING DATA VERIFICATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 082683

-----RUN #2-----								
ELAP TIME (MIN)	METER VOLUME	DEL P	DEL H	STK T	METER T IN OUT	STK VELOCITY (FT/SEC)	ISOKINETIC RATE (PERCENT)	
0	304.3	0	0	590	0 0	0	0	
4	307.27	.65	1.44	590	108 80	48.3179	104.215	
8	310.44	.74	1.64	590	116 85	51.5546	103.091	
12	313.7	.78	1.73	590	121 86	52.9296	102.736	
16	316.85	.73	1.61	590	124 88	51.205	102.129	
20	320	.73	1.61	590	124 89	51.205	102.039	
24	323.06	.69	1.53	590	126 93	49.7824	101.4	
28	326.03	.65	1.44	590	126 93	48.3179	101.378	
32	329	.65	1.44	590	123 93	48.3179	101.646	
36	332.09	.7	1.55	590	126 94	50.1418	101.576	
40	335.35	.78	1.73	590	129 95	52.9296	101.21	
44	338.65	.8	1.77	590	131 96	53.6039	100.907	
48	341.89	.77	1.7	590	131 97	52.5892	100.879	
52	344.55	.72	1.59	590	131 97	50.8531	85.6253	
56	347.64	.7	1.55	590	125 96	50.1418	101.487	
60	350.61	.65	1.44	590	123 96	48.3179	101.379	
64	353.54	.63	1.39	590	119 96	47.5687	101.932	

COMPLIANCE REPORT

PLANT: AFI

PERMIT NO.:A053-68867

TEST DATE:OCTOBER 12,1983

PLANT RATE: 80 TPH PROCESS RATE; 39 TPH P2O5 FEED RATE *DAP*

TEST AVERAGE, LBS.\HR (WHERE APPLICABLE) ACTUAL - ALLOWABLE

FLUORIDE:

0.775 - 2.34

PARTICULATE:

18.07 - 34.90

SO2

-

ACID MIST:

-

OPACITY:

55.88% - 20.00%

REPORT DATE:

10-17-83

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
SOURCE SAMPLING CALCULATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 101283

DATA SUMMATIONS

PARAMETER	UNITS	RUN 1	RUN 2	RUN 3
BAROMETER PRESSURE	IN OF HG	29.87	29.87	29.87
STATIC PRESSURE	IN OF HOH	.45	.45	.45
STACK PRESSURE	IN OF HG	29.9031	29.9031	29.9031
AVERAGE SQR. DELTA P	IN HOH ^{1/2}	.854111	.856782	.85903
AVERAGE DELTA H	IN OF HOH	1.39938	1.4325	1.43813
METER TEMP.	DEGREES R	565.625	569.75	575.313
AVERAGE STACK TEMP.	DEGREES R	589	589	589
METERED SAMPLE VOL.	CUBIC FT.	47.52	48.33	48.5
PITOT COEFFICIENT	UNITY	.83	.83	.83
NOZZLE DIAMETER	IN	.23	.23	.23
STACK AREA	SQUARE FT	50.2654	50.2654	50.2654
TRAVERSE POINTS	UNITY	16	16	16
SAMPLING TIME	MINUTES	64	64	64
MOLE WT. OF GAS	LB/LB-MOLE	29.0	29.0	29.0
ACT. STK. VELOCITY	FT/SEC	50.7056	50.8639	50.9976
ACT. STK. GAS FLOW	CU-FT/MIN	152924	153402	153805
STD. GAS FLOW	CU-FT/MIN.	126148	126545	126875
STD. STK. VELOCITY	FT/SEC	44.4197	44.863	44.5766
PART. EMISSION	LB/DAY	459.419	458.101	383.699
SO2 EMISSION	LB/DAY	0	0	0
H2SO4 EMISSION	LB/DAY	0	0	0
FLUORIDE EMISSION	LB/DAY	27.0247	14.3156	14.4451
AMMONIA EMISSION	LB/DAY	0	0	0
ISOKINETIC RATE	%	97.7874	98.4534	97.5708

STACK CALCULATION - DATA SHEET

Stack AFI

Date 101283

Time 0940 HRS

RUN # 1

ORSAT %CO2
 %CO
 %O2
 %N2

$MD = 0.44 (\%CO2) + 0.32 (\%O2) + 0.28 (\%N2 + \%CO) = 29.0$

$D = 8 \text{ FT. Diameter, } A = 3.14159 D^2 / 4 = 50.2654 \text{ FT.}^2 \text{ AREA}$

DRY BULB TEMP. = 129 F

WET BULB TEMP. = 119 F

$M = .05317 \text{ \#H2O/\#Dry air from Psychrometer Chart}$

$BWO = M / (M + (18/MD)) = .0789037$

Actual: BWO = 0

$MS = 18 (BWO) + MD (1 - BWO) = 28.1321$

MS = 0

PB = 29.87 HG

PV = .45 H2O

$PS = PB + (-) (PV / 13.6) = 29.9031 \text{ HG}$

DELTA H = 1.39938 H2O

$PM = PB + (DELTA H / 13.6) = 29.9729 \text{ HG}$

TS = 589 R

W1 .051 G. PARTICULATES

TM = 565.625 R

W2 0 G. SO2

SQR. DELTA P = .854111

W3 0 G. H2SO4

VM = 47.52 CF

W4 .003 G. F

CP = .83

W5 0 G. NH3

$VS = 85.48 (CP) (AVG. \text{ SQR. DELTA P}) (SQR. (TS/PS * MS)) = 50.7056 \text{ FPS}$

$QA = 60 (A) (VS) = 152924 \text{ ACFM}$

$QS = 17.64 (QA) (PS/TS) (1 - BWO) = 126148 \text{ DSCFM}$

$VMS = 17.64 (VM) (PM/TM) = 44.4197 \text{ SCF}$

$E = 3.172 (QS/VMS) = 9008.22$

E1 = 459.419 #/DAY PARTICULATES

E2 = 0 #/DAY SO2

E3 = 0 #/DAY H2SO4

E4 = 27.0247 #/DAY F

E5 = 0 #/DAY NH3

PLANT RATE 80 TPH (39 TPH INPUT P205)

%ISOKINETIC = 97.7874

COMMENTS NONE

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
SOURCE SAMPLING DATA VERIFICATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 101283

-----RUN #1-----								
ELAP TIME (MIN)	METER VOLUME	DEL P	DEL H	STK T	METER T IN OUT	STK VELOCITY (FT/SEC)	ISOKINETIC RATE (PERCENT)	
0	276	0	0	589	0 0	0	0	
4	278.75	.65	1.24	589	106 77	47.8628	100.307	
8	281.8	.8	1.53	589	112 80	53.099	99.5375	
12	284.91	.83	1.58	589	116 82	54.0855	99.1227	
16	287.76	.7	1.34	589	117 83	49.6696	98.6767	
20	290.51	.65	1.24	589	119 85	47.8628	98.4327	
24	293.32	.68	1.3	589	120 87	48.9549	98.0891	
28	296.33	.78	1.49	589	119 88	52.4311	98.1505	
32	299.32	.77	1.47	589	117 90	52.0939	98.1239	
36	302.64	.95	1.81	589	128 91	57.8633	97.1373	
40	305.98	.96	1.83	589	129 91	58.1671	97.1331	
44	308.93	.75	1.43	589	129 92	51.4129	96.8802	
48	311.68	.65	1.24	589	130 93	47.8628	96.7964	
52	314.32	.6	1.15	589	130 93	45.9851	96.6981	
56	317.03	.63	1.2	589	130 94	47.1207	96.7962	
60	319.84	.68	1.3	589	131 95	48.9549	96.4629	
64	322.59	.65	1.24	589	131 95	47.8628	96.543	

STACK CALCULATION - DATA SHEET

Stack AFI

Date 101283

Time 1055 HRS

RUN # 2

ORSAT %CO2
 %CO
 %O2
 %N2

$MD = 0.44 (\%CO_2) + 0.32 (\%O_2) + 0.28 (\%N_2 + \%CO) = 29.0$

$D = 8 \text{ FT. Diameter, } A = 3.14159 D^2 / 4 = 50.2654 \text{ FT.}^2 \text{ AREA}$

DRY BULB TEMP. = 129 F

WET BULB TEMP. = 119 F

$M = .0761 \text{ \#H}_2\text{O/\#Dry air from Psychrometer Chart}$

$BWO = M / (M + (18/MD)) = .109215$

Actual: $BWO = .0788803$

$MS = 18 (BWO) + MD (1 - BWO) = 27.7986$

$MS = 28.1323$

PB = 29.87 HG

PV = .45 H2O

$PS = PB + (-) (PV / 13.6) = 29.9031 \text{ HG}$

DELTA H = 1.4325 H2O

$PM = PB + (DELTA H / 13.6) = 29.9818 \text{ HG}$

TS = 589 R

W1 .0512 G. PARTICULATES

TM = 569.75 R

W2 0 G. SO2

SQR. DELTA P = .856782

W3 0 G. H2SO4

VM = 48.33 CF

W4 .0016 G. F

CP = .83

W5 0 G. NH3

$VS = 85.48 (CP) (AVG. \text{ SQR. DELTA P}) (SQR. (TS/PS * MS)) = 50.8639 \text{ FPS}$

$QA = 60 (A) (VS) = 153402 \text{ ACFM}$

$QS = 17.64 (QA) (PS/TS) (1 - BWO) = 126545 \text{ DSCFM}$

$VMS = 17.64 (VM) (PM/TM) = 44.863 \text{ SCF}$

$E = 3.172 (QS/VMS) = 8947.28$

E1 = 458.101 #/DAY PARTICULATES

E2 = 0 #/DAY SO2

E3 = 0 #/DAY H2SO4

E4 = 14.3156 #/DAY F

E5 = 0 #/DAY NH3

PLANT RATE 80 TPH (39 TPH INPUT P205)

%ISOKINETIC = 98.4534

COMMENTS NONE

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
 SOURCE SAMPLING DATA VERIFICATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 101283

-----RUN #2-----								
ELAP TIME (MIN)	METER VOLUME	DEL P	DEL H	STK T	METER T IN OUT	STK VELOCITY (FT/SEC)	ISOKINETIC RATE (PERCENT)	
0	322.65	0	0	589	0 0	0	0	
4	326.04	.96	1.87	589	128 95	58.1668	98.3348	
8	329.43	.96	1.87	589	129 95	58.1668	98.2497	
12	332.42	.75	1.46	589	129 95	51.4127	97.9418	
16	335.23	.66	1.28	589	129 95	48.2294	98.0789	
20	337.97	.63	1.22	589	128 95	47.1205	97.9561	
24	340.71	.63	1.22	589	127 95	47.1205	98.043	
28	343.56	.68	1.32	589	124 95	48.9547	98.4393	
32	346.37	.66	1.28	589	120 95	48.2294	98.8556	
36	349.16	.65	1.26	589	120 95	47.8626	98.8996	
40	352.27	.81	1.57	589	130 95	53.4296	97.9676	
44	355.42	.83	1.61	589	129 96	54.0852	98.0347	
48	358.31	.7	1.36	589	127 96	49.6694	98.0512	
52	361.1	.65	1.26	589	124 95	47.8626	98.5523	
56	363.99	.7	1.36	589	118 96	49.6694	98.8284	
60	366.98	.75	1.46	589	114 96	51.4127	99.1562	
64	370.03	.78	1.52	589	112 95	52.4308	99.4593	

STACK CALCULATION - DATA SHEET

Stack AFI

Date 101283

Time 1210 HRS

RUN # 3

ORSAT %CO2
 %CO
 %O2
 %N2

$MD = 0.44 (\%CO2) + 0.32 (\%O2) + 0.28 (\%N2 + \%CO) = 29.0$

D 8 FT. Diameter, $A = 3.14159D^2/4 = 50.2654 \text{ FT.}^2 \text{ AREA}$

DRY BULB TEMP. = 129 F

WET BULB TEMP. = 119 F

M = .05317 #H2O/#Dry air from Psychrometer Chart

$BWO = M / (M + (18/MD)) = .0789037$

Actual: BWO = 0

$MS = 18 (BWO) + MD (1 - BWO) = 28.1321$

MS = 0

PB = 29.87 HG

PV = .45 H2O

$PS = PB + (-) (PV/13.6) = 29.9031 \text{ HG}$

DELTA H = 1.43813 H2O

$PM = PB + (DELTA H/13.6) = 29.9757 \text{ HG}$

TS = 589 R

W1 .0425 G. PARTICULATES

TM = 575.313 R

W2 0 G. SO2

SQR. DELTA P = .85903

W3 0 G. H2SO4

VM = 48.5 CF

W4 .0016 G. F

CP = .83

W5 0 G. NH3

$VS = 85.48 (CP) (AVG. \text{ SQR. DELTA P}) (SQR. (TS/PS * MS)) = 50.9976 \text{ FPS}$

$QA = 60 (A) (VS) = 153805 \text{ ACFM}$

$QS = 17.64 (QA) (PS/TS) (1 - BWO) = 126875 \text{ DSCFM}$

$VMS = 17.64 (VM) (PM/TM) = 44.5766 \text{ SCF}$

$E = 3.172 (QS/VMS) = 9028.21$

E1 = 383.699 #/DAY PARTICULATES

E2 = 0 #/DAY SO2

E3 = 0 #/DAY H2SO4

E4 = 14.4451 #/DAY F

E5 = 0 #/DAY NH3

PLANT RATE 80 TPH (39 TPH INPUT P205)

%ISOKINETIC = 97.5708

COMMENTS NONE

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
SOURCE SAMPLING DATA VERIFICATION REPORT

TEST ON STACK AFI STACK

AT NEW WALES PLANT, FLA.

CONDUCTED ON 101283

-----RUN #3-----								
ELAP TIME (MIN)	METER VOLUME	DEL P	DEL H	STK T	METER T IN OUT	STK VELOCITY (FT/SEC)	ISOKINETIC RATE (PERCENT)	
0	370.24	0	0	589	0 0	0	0	
4	373.03	.65	1.26	589	119 95	47.8628	98.9889	
8	376.12	.8	1.55	589	130 96	53.099	97.8561	
12	379.29	.84	1.63	589	132 96	54.4103	97.8183	
16	382.23	.72	1.4	589	133 97	50.3742	97.766	
20	385.02	.65	1.26	589	133 98	47.8628	97.5258	
24	387.87	.68	1.32	589	133 97	48.9549	97.5008	
28	390.96	.8	1.55	589	133 97	53.099	97.5167	
32	394	.77	1.49	589	133 98	52.0939	97.689	
36	397.37	.95	1.84	589	133 98	57.8633	97.5799	
40	400.76	.96	1.87	589	133 98	58.1671	97.6542	
44	403.76	.75	1.46	589	135 99	51.4129	97.4201	
48	406.59	.67	1.3	589	136 99	48.5936	97.1088	
52	409.38	.65	1.26	589	136 99	47.8628	97.1891	
56	412.13	.63	1.22	589	136 99	47.1207	97.2935	
60	414.98	.68	1.32	589	135 100	48.9549	97.0787	
64	417.79	.66	1.28	589	135 99	48.2296	97.23	

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OPACITY OBSERVATION DATA EPA METHOD 9

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

Plant AFI
 Stack# A053-68867
 Location New Wales Chemicals
 Technician J. D. Curtis
 Certification# _____
 Date OCT. 12, 1983
 Time Start 1000
 Time Finish 1100
 Distance to Stack 50 Meter
 Wind Direction SE
 Wind Velocity 5-10 mph
 Sum of Numbers Recorded 13,410
 Total Number of Readers 240
 Opacity = $\frac{\text{Sum of nos.}}{\text{Total no.}}$
 Recorded Reading = 55.88% Opacity