file !
USS Agri-Chemicals permit

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHWEST DISTRICT

7601 HIGHWAY 301 NORTH
TAMPA, FLORIDA 33610

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

WILLIAM K. HENNESSEY
DISTRICT MANAGER

July 30, 1981

AUG 1981
AOM

Mr. Basil Powell
USS Agri-Chemicals
P.O. Box 150
Bartow, Fla. 33830

RE: Aux. Boiler Permit
AC53-33822

Dear Mr. Powell:

With reference to your letter of 3/27/81 to Dan Williams of this Dept., the District is in agreement to eliminate the NO_x test on the auxiliary boiler, to allow fuel analysis for SO_2 emission determination, and establish by a stack test the particulate emissions. With the use of a good grade of fuel, the visible emissions should not exceed 5% opacity for normal running operations (exclusive of startup) but if the VE test shows an approach to the 20%, we would insist on stack tests.

Since this permit was issued by CAPS in Tallahassee, any formal change to permit conditions would be their responsibility. I have talked to Willard Hanks about your request and he agrees with the above modification. I will forward your request with this letter to him.

Sincerely yours,

Robert R Garrett

Robert R. Garrett, P.E.
Air Engineer

RRG/rkt

cc: Willard Hanks CAPS ✓

Garrett,
If you are agreeable, please draft a permit modification along these lines.
Dan

USS
Agri-Chemicals
Division of United States Steel Corporation

MAIL: P. O. BOX 150
BARTOW, FLORIDA 33830
813 - 533-0471

31 1981
SOUTHWEST DISTRICT
TAMPA

March 27, 1981

Mr. Dan Williams
Florida Department of Environmental Regulation
7601 Highway 301 North
Tampa, Florida 33610

Re: Construction Permit-Auxiliary Boiler
AC53-33822

Dear Mr. Williams:

From our telephone conversation of March 25, 1981, I understand that the Specific Conditions of the referenced permit are amended as follows:

Condition No. 5 - Delete NO_x pollutant and standard.

Condition No. 6 - Add the following two sentences.
The State approves the method of determining SO_2 emissions by calculations based on analysis of the fuel oil.

One stack test for particulate is required. Additional tests for particulate will be requested only if visible emission tests indicate verification is needed.

We would appreciate a letter of confirmation to this understanding.

Very truly yours,

USS AGRI-CHEMICALS

Basil Powell

Basil Powell

BP:myv

8-4-81
Told Basil Powell:
DER Requires VE and SO_2 (test or certified fuel analysis for S)
No requirement for PM or NO_x test
Test could be required for PM if VE greater 5% opacity.
Recommended he not install permanent test facilities.

[illegible]

PERMIT NO.: AC 53-33822
APPLICANT: U.S.S. Agri-Chemicals

Specific Conditions

Auxiliary Boiler

1. Auxiliary boiler operation is limited to 840 hours/year when burning no. 2 fuel oil.

2. The fuel used to fire the boiler will be natural gas or No. 2 fuel oil with a sulfur content of 0.5% S. Maximum.

3. The Department will be notified if the auxiliary boiler operates more than 840 hours/year while burning No. 2 fuel oil.

4. Visible emissions shall be 20 percent opacity except for up to 27% opacity for one 6 minute period per hour.

5. The maximum amount of emissions emitted from the boiler stack will be:

Pollutant	Fuel	Emission Rate
SO_2		0.51 lbs. SO_2/MMBTU
NO_x	Fuel oil No. 2	0.3 lbs. NO_x/MMBTU
Particulate		0.2 lbs. particulate/MMBTU
Visible Emission		Opacity (Maximum 20%)

6. Before the construction permit expires, the boiler will be tested for sulfur dioxide and visible emissions. Test procedures will be EPA reference methods 1, 2, 3, 6 and 9 as published in 40 CFR 60, Appendix A, dated July 1, 1978, or by any other State approved method. DER will be notified 30 days in advance of the compliance test. The test will be conducted at permitted production capacity ±10%.

7. Reasonable precautions to prevent fugitive particulate emissions during construction such as coating or spraying roads and construction sites used by contractors, will be taken by the Permittee.

8. Construction should reasonably conform to the plans submitted in the application.

9. The applicant should report any delay in construction and completion.

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

December 12, 1980

Mr. George W. Beck, Manager
U.S.S. Agri-Chemicals
P.O. Box 150
Bartow, Florida 33830

40/53/0050
1050051-NA-AC

Dear Mr. Beck:

AC 53-33818
AC 53-33819
AC 53-33820
AC 53-33821
AC 53-33822
AC 53-33868

Enclosed is Permit Numbers AC 53-33868, dated December 24, 1980 to U.S.S. Agri-Chemicals Company issued pursuant to Section 403, Florida Statutes.

Acceptance of the permit constitutes notice and agreement that the Department will periodically review this permit for compliance, including site inspections where applicable, and may initiate enforcement actions for violation of the conditions and requirements thereof.

Sincerely,

Lawrence A. George /for

Steve Smallwood, Chief
Bureau of Air Quality Management

SS:caa

DER Form 17-1.122(65)

Final Determination

U.S.S. Agri-Chemicals Company's applications for permits to construct two sulfuric acid plants an auxiliary boiler, two phosphoric acid plants and a scrubber to serve the phosphoric acid plant storage area in Polk County have been reviewed by the Bureau of Air Quality Management. Public notice of the Department's Intent to Issue the construction permit was published in the Lakeland Ledger on November 22, 1980.

Copies of the preliminary determination have been available for public inspection at the Department's Southwest District Office in Tampa and the Bureau of Air Quality Management in Tallahassee.

Comments on the proposed construction permits were received from U.S.S. Agri-Chemicals Company.

U.S.S. Agri-Chemicals Company requested that operation of the auxiliary boiler on natural gas should not be time limited as it is a clean fuel. They had no objection to a time limit when using Fuel No. 2 oil.

For the phosphoric acid plant permits the applicant objected to the particulate matter emission limit of 5.9 lb./hr. per train entered in the permit as a specified condition. They also noted some typographical errors.

The Department has considered their request and made the changes described below to the special conditions of the permit.

The auxiliary boiler operation schedule of 840 hrs./year is to apply only to the use of Fuel oil No. 2.

Restriction on the particulate matter emission limit of 5.9 lb./hr. per train has been removed since phosphoric acid plants are not considered a source of particulate matter.

The typographical errors were corrected.

The final action by the Department should be to issue the permits with the changes noted above.

Final Determination

U.S.S. Agri Chemicals Company

Polk County, Florida

Construction Permit
Application Numbers:

AC 53-33818
AC 53-33819
AC 53-33820
AC 53-33821
AC 53-33822
AC 53-38868

Florida Department of Environmental Regulation

Bureau of Air Quality Management

Central Air Permitting

December 23, 1980

pmt # 16

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

CONSTRUCTION PERMIT

NO. AC 53-33818

U.S.S. AGRI-CHEMICALS
BARTOW, FLORIDA
SULFURIC ACID PLANT (No. 1 Train)

DATE OF ISSUANCE

December 24, 1980

Victoria Tschinkel / for
JACOB D. VARN,
SECRETARY

DATE OF EXPIRATION

SEPTEMBER 30, 1983

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICANT: U.S.S. Agri-Chemicals
P. O. Box 150
Bartow, Florida 33830

PERMIT/CERTIFICATION
NO. AC 53- 33818

COUNTY: Polk

PROJECT: Sulfuric Acid Plant

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 and 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

For the construction of a 2,200 ton per day sulfuric acid plant located on Highway 630 West in Ft. Meade, Polk County, Florida. The UTM coordinates of the proposed plant are 416.26 (Zone 17)E and 3068.79 N.

Construction shall be in accordance with the attached permit application, and plans, documents and drawings except as otherwise noted in "Specific Conditions".

Attachments are as follows:

1. Application to Construct Air Pollution Sources, DER Form 17-1.122(16).

2. U.S.S. Agri-Chemicals Company, Responses to Technical Discrepancies, September 25, 1980.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions:, and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby placed

PERMIT NO.: AC 53-33818
APPLICANT: USS Agri-Chemicals

on notice that the department will review this permit periodically and may initiate court action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.111, F.S.

7. In the case of an operation permit, permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalities therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

13. This permit also constitutes:

[x] Determination of Best Available Control Technology (BACT)
[x] Determination of Prevention of Significant Deterioration (PSD)
[ ] Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

SPECIFIC CONDITIONS:

PERMIT NO.: AC 53-33818
APPLICANT: U.S.S. Agri-Chemicals

Specific Conditions

Sulfuric Acid Plant

1. Operation time will be 24 hrs./day; 7 days/wk; 52 wks./year.

2. Maximum production rate will be 2200 tons of 100 percent H_2SO_4 per day for each sulfuric acid plant.

3. The maximum amount of sulfur dioxide emitted will be 4 lbs. SO_2/Ton 100% H_2SO_4 and 367 lbSO_2/hr. per train.

4. The amount of H_2SO_4 mist emitted will be a maximum of 0.15 lb. acid mist/Ton 100% H_2SO_4 and 13.8 lb/hr mist per train.

5. A continuous monitoring system for the measurement of sulfur dioxide shall be installed, calibrated, maintained, and operated by the applicant. The pollutant gas used to prepare calibration gas mixture under paragraph 2.1 Performance Specification 2 and for calibration checks under 60.13(d) to this part, shall be sulfur dioxide (SO_2). Reference Method 8 shall be used for conducting monitoring system performance evaluations under 60.13(c) except that only the sulfur dioxide portion of the Method 8 results shall be used. The span shall be set at 1000 ppm of sulfur dioxide.

6. The applicant shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/short ton). The conversion factor shall be determined, as a minimum, three times daily by measuring the concentration of sulfur dioxide entering the converter using suitable methods and calculating the appropriate conversion factor for each eight hour period as follows:

$$CF = K\left(\frac{1.000 - 0.015r}{r-s}\right)$$

7. The applicant shall record all conversion factors and values under paragraph (b) as set forth in 60.84 Subpart H - Standards of Performance for Sulfuric Acid Plant.

8. For the purpose of reports under 60.7(c), periods of excess emission shall be all three-hour periods (or the arithmetic average of three consecutive one-hour periods) during which the integrated average sulfur dioxide emissions exceed the applicable standards under 60.82.

PERMIT NO.: AC 53-33818
APPLICANT: U.S.S. Agri-Chemicals

9. Existing sulfuric acid plants permit no. AO 53-4528 will be shut down and any permits for these sources returned to the Department within 3 months after written notification from DER that the compliance tests on the new sulfuric acid plants are acceptable.

10. Reasonable precautions to prevent fugitive particulate emissions during construction such as coating or spraying roads and construction sites used by contractors, will be taken by the Permittee.

11. Construction should reasonably conform to the plans submitted in the application.

12. The applicant should report any delays in construction and completion.

13. Before the construction permit expires the sulfuric acid plant will be tested for sulfur dioxide and sulfuric acid mist. Test procedures will be EPA reference methods 1, 2, 3, 8, and 9 as published in 40 CFR 60, Appendix A, dated July 1, 1978 or by any other State approved method. Minimum sample volume and time per run will be as defined in the applicable NSPS. DER will be notified 30 days in advance of the compliance test. The test will be conducted at permitted production capacity ±10%.

14. The applicant will demonstrate compliance with the condition of the construction permit and submit a complete application for an operating permit to the Tampa District office prior to 90 days of the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until the expiration date or issuance of an operating permit.

15. Upon obtaining an operating permit, the applicant will be required to submit periodic test reports on the actual operation and emissions of the facility.

16. Stack sampling facilities will include the eyebolt and angle described in the attached figures.

17. Visible emission shall be 10% opacity.

Victoria Tschinkel / for
Jacob D. Varn, Secretary

Expiration Date: September 30, 1983

Issued this 24 day of December, 1980

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

Pmt #17

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

CONSTRUCTION PERMIT

NO. AC 53-33819

U.S.S. AGRI-CHEMICALS
BARTON, FLORIDA
SULFURIC ACID PLANT (No 2 Train)

DATE OF ISSUANCE

December 24, 1980

JACOB D. VARN,
SECRETARY

DATE OF EXPIRATION

SEPTEMBER 30, 1983

DER FORM PERM 11-42

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICANT: U.S.S. Agri-Chemicals
P. O. Box 150
Bartow, Florida 33830

PERMIT/CERTIFICATION
NO. AC 53 - 33819

COUNTY: Polk

PROJECT: Sulfuric Acid Plant

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 and 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

For the construction of a 2,200 ton per day sulfuric acid plant located on Highway 630 West in Ft. Meade, Polk County, Florida. The UTM coordinates of the proposed plant are 416. 26 (Zone 17)E and 3068.71 N.

Construction shall be in accordance with the attached permit application, and plans, documents and drawings except as otherwise noted in "Specific Conditions".

Attachments are as follows:

1. Application to Construct Air Pollution Sources, DER Form 17-1.122(16).
2. U.S.S. Agri-Chemicals Company, Responses to Technical Discrepancies, September 25, 1980.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions:, and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby placed

on notice that the department will review this permit periodically and may initiate court action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.111, F.S.

7. In the case of an operation permit, permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalities therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

13. This permit also constitutes:

- [X] Determination of Best Available Control Technology (BACT)
- [x] Determination of Prevention of Significant Deterioration (PSD)
- [ ] Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

SPECIFIC CONDITIONS:

PERMIT NO.: AC 53-33819
APPLICANT: U.S.S. Agri-Chemicals

Specific Conditions

Sulfuric Acid Plant

1. Operation time will be 24 hrs./day, 7 days/wk; 52 wks/year.

2. Maximum production rate will be 2200 tons of 100 percent H_2SO_4 per day for each sulfuric acid plant.

3. The maximum amount of sulfur dioxide emitted will be 4 lbs. SO_2/Ton 100% H_2SO_4 and 367 lbSO_2/hr. per train.

4. The amount of H_2SO_4 mist emitted will be a maximum of 0.15 lb. acid mist/Ton 100% H_2SO_4 and 13.8 lb/hr mist per train.

5. A continuous monitoring system for the measurement of sulfur dioxide shall be installed, calibrated, maintained, and operated by the applicant. The pollutant gas used to prepare calibration gas mixture under paragraph 2.1 Performance Specification 2 and for calibration checks under 60.13(d) to this part, shall be sulfur dioxide (SO_2). Reference Method 8 shall be used for conducting monitoring system performance evaluations under 60.13(c) except that only the sulfur dioxide portion of the Method 8 results shall be used. The span shall be set at 1000 ppm of sulfur dioxide.

6. The applicant shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/short ton). The conversion factor shall be determined, as a minimum, three times daily by measuring the concentration of sulfur dioxide entering the converter using suitable methods and calculating the appropriate conversion factor for each eight hour period as follows:
$$CF = K \left(\frac{1.000 - 0.015r}{r-s}\right)$$

7. The applicant shall record all conversion factors and values under paragraph (b) as set forth in 60.84 Subpart H - Standards of Performance for Sulfuric Acid Plant.

8. For the purpose of reports under 60.7(c), periods of excess emission shall be all three-hour periods (or the arithmetic average of three consecutive one-hour periods) during which the integrated average sulfur dioxide emissions exceed the applicable standards under 60.82.

PERMIT NO.: AC 53-33819
APPLICANT: U.S.S. Agri-Chemicals

9. Existing sulfuric acid plants permit no. AO 53-4528 will be shut down and any permits for these sources returned to the Department within 3 months after written notification from DER that the compliance tests on the new sulfuric acid plants are acceptable

10. Reasonable precautions to prevent fugitive particulate emissions during construction such as coating or spraying roads and construction sites used by contractors, will be taken by the Permittee.

11. Construction should reasonably conform to the plans submitted in the application.

12. The applicant should report any delays in construction and completion.

13. Before the construction permit expires the sulfuric acid plant will be tested for sulfur dioxide and sulfuric acid mist. Test procedures will be EPA reference methods 1, 2, 3, 8, and 9 as published in 40 CFR 60, Appendix A, dated July 1, 1978 or by any other State approved method. Minimum sample volume and time per run will be as defined in the applicable NSPS. DER will be notified 30 days in advance of the compliance test. The test will be conducted at permitted production capacity $\pm 10\%$.

14. The applicant will demonstrate compliance with the condition of the construction permit and submit a complete application for an operating permit to the Tampa District office prior to 90 days of the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until the expiration date or issuance of an operating permit.

15. Upon obtaining an operating permit, the applicant will be required to submit periodic test reports on the actual operation and emissions of the facility.

16. Stack sampling facilities will include the eyebolt and angle described in the attached figures.

17. Visible emission shall be 10% opacity.

Victoria [illegible] for
Jacob D. Varn, Secretary

Expiration Date: September 30, 1983

Issued this 24 day of December, 1980

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

[PNT # 18]

STATE OF FLORIDA
DEPARTMENT OF
ENVIRONMENTAL REGULATION

CONSTRUCTION PERMIT

NO. AC 53-33822

U.S.S. AGRI-CHEMICALS
BARTOW, FLORIDA
AUXILIARY BOILER

DATE OF ISSUANCE

December 24, 1980

Victoria J. Tschinkel for
JACOB D. VARN,
SECRETARY

DATE OF EXPIRATION

SEPTEMBER 30, 1983

DER FORM PERM 11-42

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICANT: U.S.S. Agri-Chemicals
P. O. Box 150
Bartow, Florida 33830

PERMIT/CERTIFICATION
NO. AC 53-33822

COUNTY: Polk

PROJECT: Auxiliary Boiler

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 and 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

For the construction of an auxiliary boiler to serve two identical sulfuric acid plants located on Highway 630 West of the Ft Meade, Polk County, Florida. The UTM coordinates of the proposed plant are 416.19 (Zone 17) and 3068.65N.

Construction shall be in accordance with the attached permit application, and plans, documents and drawings except as otherwise noted on page 3 "Specific Conditions".

Attachments are as follows:

1. Application to Construct Air Pollution Sources, DER Form 17-1.122(16).

2. U.S.S. Agri-Chemicals, Company, Responses to Technical Discrepancies, September 25, 1980.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions:, and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby placed

on notice that the department will review this permit periodically and may initiate court action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.111, F.S.

7. In the case of an operation permit, permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalities therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

13. This permit also constitutes:

[x] Determination of Best Available Control Technology (BACT)
[x] Determination of Prevention of Significant Deterioration (PSD)
[x] Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

SPECIFIC CONDITIONS:

PERMIT NO.: AC 53-33822
APPLICANT: U.S.S. Agri-Chemicals

Specific Conditions

Auxiliary Boiler

1. Auxiliary boiler operation is limited to 840 hours/year when burning no. 2 fuel oil.

2. The fuel used to fire the boiler will be natural gas or No. 2 fuel oil with a sulfur content of 0.5% S. Maximum.

3. The Department will be notified if the auxiliary boiler operates more than 840 hours/year while burning No. 2 fuel oil.

4. Visible emissions shall be 20 percent opacity except for up to 27% opacity for one 6 minute period per hour.

5. The maximum amount of emissions emitted from the boiler stack will be:

Pollutant	Fuel	Emission Rate
SO_2		0.51 lbs. SO_2/MMBTU
NO_x	Fuel oil No. 2	0.3 lbs. NO_x/MMBTU
Particulate		0.2 lbs. particulate/MMBTU
Visible Emission		Opacity (Maximum 20%)

6. Before the construction permit expires, the boiler will be tested for sulfur dioxide and visible emissions. Test procedures will be EPA reference methods 1, 2, 3, 6 and 9 as published in 40 CFR 60, Appendix A, dated July 1, 1978, or by any other State approved method. DER will be notified 30 days in advance of the compliance test. The test will be conducted at permitted production capacity ±10%.

7. Reasonable precautions to prevent fugitive particulate emissions during construction such as coating or spraying roads and construction sites used by contractors, will be taken by the Permittee.

8. Construction should reasonably conform to the plans submitted in the application.

9. The applicant should report any delay in construction and completion.

PERMIT NO.: AC 53-33822
APPLICANT: U.S.S. Agri-Chemicals

10. The applicant will demonstrate compliance with the condition of the construction permit and submit a complete application for an operating permit to the Tampa District office prior to 90 days of the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms to operate in compliance with all terms of the construction permit until the expiration date or issuance of an operating permit.

11. Upon obtaining an operating permit, the applicant will be required to submit periodic reports on the actual operation and emission of the facility. These reports will give emission test data, emission test results and hours of production.

Victoria Tschinkel for
Jacob D. Varn, Secretary

Expiration Date: September 30, 1983

Issued this 24 day of December, 1980.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

ANT #19

STATE OF FLORIDA
DEPARTMENT OF
ENVIRONMENTAL REGULATION

CONSTRUCTION
PERMIT

NO. AC 53-33821

U.S.S. AGRI-CHEMICALS
BARTOW, FLORIDA
PHOSPHORIC ACID PLANT (Train A)

DATE OF ISSUANCE

December 24, 1980

Victoria Tschinkel / for
JACOB D. VARN,
SECRETARY

DATE OF EXPIRATION

SEPTEMBER 30, 1983

DER FORM PERM 11-42

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICANT: U.S.S. Agri-Chemicals
P. O. Box 150
Bartow, Florida 33830

PERMIT/CERTIFICATION
NO. AC 53- 33821

COUNTY: Polk

PROJECT: Phosphoric Acid Plan

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 and 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

For the construction of a Phosphoric Acid Plant to be located on Highway 630 West of Ft. Meade, Polk County, Florida. The UTM Coordinates of the proposed plant are 416.07(Zone 17) and 3068.78N.

Construction shall be in accordance with the attached permit application, and plans, documents and drawings except as otherwise noted on pages 3 and 4, "Specific Conditions".

Attachments are as follows:

1. Application to Construct Air Pollution Sources, DER Form 17-1.122(16).

2. U.S.S. Agri-Chemicals, Company, Responses to Technical Discrepancies, September 25, 1980.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions:, and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby placed

on notice that the department will review this permit periodically and may initiate court action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.111, F.S.

7. In the case of an operation permit, permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalities therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

13. This permit also constitutes:

- [X] Determination of Best Available Control Technology (BACT)
- [X] Determination of Prevention of Significant Deterioration (PSD)
- [ ] Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

SPECIFIC CONDITIONS:

PERMIT NO.: AC 53-33821
APPLICANT: USS Agri-Chemicals

Specific Conditions

1. Maximum production rate will be 770 tons of P_2O_5 per day for each phosphoric acid plant (1,540 tons of P_2O_5 per day for both phosphoric acid plants).

2. Operation time will be 24 hrs./day; 7 days/wk; 52 wks/year.

3. Fugitive emissions in the Phosphoric Acid Plant will be controlled by sealing and venting all fumes from the process and conveying equipment to pollution control equipment.

4. Reasonable precautions to prevent fugitive particulate emissions during construction such as coating or spraying roads and construction sites used by contractors will be taken by the Permittee.

5. Construction should reasonably conform to the plans submitted in the application.

6. The applicant should report any delays in construction and completion.

7. Before the construction permit expires,the Phosphoric Acid Plant will be sampled for particulate and total fluoride. Test procedures will be EPA reference methods 1, 2, 3, 4, 5, and 13A or 13B as published in 40 CFR 60, Appendix A, dated July 1, 1978, or by any other State approved methods. DER will be notified 30 days in advance of the compliance test. The test will be conducted at permitted production capacity $\pm 10\%$. Flow of the scrubber water (GPM), water pressure and pressure drop across the scrubbers, will be as normally operated and reported, along with the test data and results, to DER. Test results will be the average of 3 valid runs.

   Minimum sample time and volume per run will be as defined in the applicable NSPS.

8. The applicant will demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit to the Tampa District office prior to 90 days of the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until the expiration date or issuance of an operating permit.

PERMIT NO.: AC 53-33821
APPLICANT: USS Agri-Chemicals

9. Upon obtaining an operating permit, the applicant will be required to submit periodic test reports on the actual operation and emission of the facility. These reports will give emission test data, emission test results, scrubber parameters (pressure drop and water flow) and phosphoric acid production.

10. Stack sampling facilities will include the eyebolt and angle described in the attached figure.

11. The maximum amount of total fluoride emitted will be 0.02 lb. F/TP_2O_5 feed and 0.53 lbs. F/hr. from each reactor stack and 0.36 lb./hr. from the clarification and storage stack.

12. The existing phosphoric acid plants permit no. AO 53-4563 will be shut down and any operation permit for them returned to the Department within 3 months after written notification from DER that the compliance tests on the new phosphoric acid plants are acceptable.

13. The applicant shall install, calibrate, maintain, and operate a monitoring device which can be used to determine the mass flow of phosphorus-bearing feed material to the process. The monitoring device shall have an accuracy of ± 5 percent over its operating range.

14. The applicant shall maintain a daily record of equivalent P_2O_5 feed by first determining the total mass rate in ton/hr. of phosphorus bearing feed using a monitoring device for measuring mass flow rate which meets the requirements of the above paragraph (14) and then by proceeding according to 60.204(d)(2) Subpart T, Standards of Performance for the Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plant.

15. The applicant shall install, calibrate, maintain, and operate a monitoring device which continuously measures and permanently records the total pressure drop across the process scrubbing system. The monitoring device shall have an accuracy of ± 5 percent over its operating range.

Victoria [illegible] for
Jacob D. Varn, Secretary

Expiration Date: September 30, 1983

issued this 24 day of December, 19 80

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PNT# 20

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

CONSTRUCTION PERMIT

NO. AC 53-33820

U.S.S. AGRI-CHEMICALS
BARTOW, FLORIDA
PHOSPHORIC ACID PLANT (Train B)

DATE OF ISSUANCE

December 24, 1980

Victoria [illegible] for
JACOB D. VARN,
SECRETARY

DATE OF EXPIRATION

SEPTEMBER 30, 1983

DER FORM PERM 11-42

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICANT: U.S.S. Agri-Chemicals
P. O. Box 150
Bartow, Florida 33830

PERMIT/CERTIFICATION NO. AC 53- 33820

COUNTY: Polk

PROJECT: Phosphoric Acid Plant

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 and 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

For the construction of a Phosphoric Acid Plant to be located on Highway 630 West of Ft. Meade, Polk County, Florida. The UTM Coordinates of the proposed plant are 416.07(Zone 17) and 3068.70N.

Construction shall be in accordance with the attached permit application, and plans, documents and drawings except as otherwise noted on pages 3 and 4, "Specific Conditions".

Attachments are as follows:

1. Application to Construct Air Pollution Sources, DER Form 17-1.122(16).

2. U.S.S. Agri-Chemicals, Company, Responses to Technical Discrepancies, September 25, 1980.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions:, and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby placed

PERMIT NO.: AC 53-33820
APPLICANT: USS Agri-Chemicals

on notice that the department will review this permit periodically and may initiate court action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.111, F.S.

7. In the case of an operation permit, permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalities therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

13. This permit also constitutes:

[x] Determination of Best Available Control Technology (BACT)
[x] Determination of Prevention of Significant Deterioration (PSD)
[ ] Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

SPECIFIC CONDITIONS:

PERMIT NO.: AC 53-33820
APPLICANT: USS Agri-Chemicals

Specific Conditions

1. Maximum production rate will be 770 tons of P_2O_5 per day for each phosphoric acid plant (1,540 tons of P_2O_5 per day for both phosphoric acid plants).

2. Operation time will be 24 hrs./day, 7 days/wk., 52 wks./year.

3. Fugitive emissions in the Phosphoric Acid Plant will be controlled by sealing and venting all fumes from the process and conveying equipment to pollution control equipment.

4. Reasonable precautions to prevent fugitive particulate emissions during construction such as coating or spraying roads and construction sites used by contractors will be taken by the Permittee.

5. Construction should reasonably conform to the plans submitted in the application.

6. The applicant should report any delays in construction and completion.

7. Before the construction permit expires, the Phosphoric Acid Plant will be sampled for particulate and total fluoride. Test procedures will be EPA reference methods 1, 2, 3, 4, 5, and 13A or 13B as published in 40 CFR 60, Appendix A, dated July 1, 1978, or by any other State approved methods. DER will be notified 30 days in advance of the compliance test. The test will be conducted at permitted production capacity $\pm 10\%$. Flow of the scrubber water (GPM), water pressure and pressure drop across the scrubbers, will be as normally operated and reported, along with the test data and results, to DER. Test results will be the average of 3 valid runs.

   Minimum sample time and volume per run will be as defined in the applicable NSPS.

8. The applicant will demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit to the Tampa District office prior to 90 days of the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until the expiration date or issuance of an operating permit.

PERMIT NO.: AC 53-33820
APPLICANT: USS Agri-Chemicals

9. Upon obtaining an operating permit, the applicant will be required to submit periodic test reports on the actual operation and emission of the facility. These reports will give emission test data, emission test results, scrubber parameters (pressure drop and water flow) and phosphoric acid production.

10. Stack sampling facilities will include the eyebolt and angle described in the attached figure.

11. The maximum amount of total fluoride emitted will be 0.02 lb. F/TP_2O_5 feed and 0.53 lbs. F/hr. from each reactor stack and 0.36 lb./hr. from the clarification and storage stack.

12. The existing phosphoric acid plants permit no. AO 53-4563 will be shut down and any operation permit for them returned to the Department within 3 months after written notification from DER that the compliance tests on the new phosphoric acid plants are acceptable.

13. The applicant shall install, calibrate, maintain, and operate a monitoring device which can be used to determine the mass flow of phosphorus-bearing feed material to the process. The monitoring device shall have an accuracy of ± 5 percent over its operating range.

14. The applicant shall maintain a daily record of equivalent P_2O_5 feed by first determining the total mass rate in ton/hr. of phosphorus bearing feed using a monitoring device for measuring mass flow rate which meets the requirements of the above paragraph (14) and then by proceeding according to 60.204(d)(2) Subpart T, Standards of Performance for the Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plant.

15. The applicant shall install, calibrate, maintain, and operate a monitoring device which continuously measures and permanently records the total pressure drop across the process scrubbing system. The monitoring device shall have an accuracy of ± 5 percent over its operating range.

Victoria Tschinkel
Jacob D. Varn, Secretary

Expiration Date: September 30, 1983

Issued this 24 day of December 1980

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PNT#21

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

CONSTRUCTION PERMIT

NO. AC 53-33868

U.S.S. AGRI-CHEMICALS
BARTOW, FLORIDA
PHOSPHORIC ACID PLANT STORAGE AREA

DATE OF ISSUANCE

December 24, 1980

Victoria [illegible] /for
JACOB D. VARN,
SECRETARY

DATE OF EXPIRATION

SEPTEMBER 30, 1983

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICANT: U.S.S. Agri-Chemicals
P. O. Box 150
Bartow, Florida 33830

PERMIT/CERTIFICATION NO. AC 53-33868

COUNTY: Polk

PROJECT: Phosphoric Acid Plant Storage Area

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 and 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

For the construction of a scrubber to serve the Phosphoric Acid Plant storage area which is located on Highway 630 West of Ft. Meade, Polk County, Florida. The UTM Coordinates of the proposed plant are 416.07 (Zone 17)E and 3068.78N.

Construction shall be in accordance with the attached permit application, and plans, documents and drawings except as otherwise noted on page 3, "Specific Conditions".

Attachments are as follows:

1. Application to Construct Air Pollution Sources, DER Form 17-1.122(16).

2. USS Agri-Chemicals Company, Responses to Technical Discrepancies, September 25, 1980.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions:, and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby placed

PERMIT NO.: AC 53-33868
APPLICANT: U.S.S. Agri-Chemicals

on notice that the department will review this permit periodically and may initiate court action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.111, F.S.

7. In the case of an operation permit, permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalities therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

13. This permit also constitutes:

[X] Determination of Best Available Control Technology (BACT)
[X] Determination of Prevention of Significant Deterioration (PSD)
[ ] Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

SPECIFIC CONDITIONS:

PERMIT NO.: AC 53-33868
APPLICANT: U.S.S. Agri-Chemicals

Specific Conditions

1. Maximum fluoride emissions from the storage area will be 0.36 lb/hr. for both trains.

2. Reasonable precautions to prevent fugitive particulate emissions during construction such as coating or spraying roads and construction sites by contractors will be taken by the Permittee.

3. Construction should reasonably conform to the plans submitted in the application.

4. The applicant should report any delays in construction and completion.

5. Before the construction permit expires, the phosphoric acid plant storage area scrubber will be sampled for fluoride. Test procedures will be EPA reference methods 1, 2, 3, 4, 13A or 13B as published in 40 CFR 60, Appendix A, dated July 1, 1978 or by any other State approved methods. DER will be notified 30 days in advance of the compliance test. The test will be conducted at permitted production capacity $\pm 10\%$.

6. The applicant will demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit to the Tampa District office prior to 90 days of the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until the expiration date or issuance of an operating permit.

7. Upon obtaining an operating permit, the applicant will be required to submit periodic test reports on the actual operation and emissions of the facility. These reports will give emission test data, emission test results, scrubber parameters (pressure drop and water flow) and phosphoric acid production.

Victoria Tschinkel for
Jacob D. Varn, Secretary

Expiration Date: September 30, 1980

Issued this 24 day of December, 1980.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

USS
Agri-Chemicals
Division of United States Steel Corporation

MAIL: P. O. BOX 150
BARTOW, FLORIDA 33830
813-533-0471

December 8, 1980

Mr. Willard Hanks
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

Dear Mr. Hanks:

Re: Fort Meade Chemical Plant
Construction Permits

AC 53-33818	Sulfuric Acid No. 1
33819	Sulfuric Acid No. 2
33820	Phosphoric Acid Train A
33821	Phosphoric Acid Train B
33822	Auxiliary Boiler
33868	Phos. Acid Storage Area

Attached are USS Agri-Chemicals' comments on the proposed conditions for construction permits for the above-referenced plants. We are primarily concerned about the time limitation placed on operation of the Auxiliary Boiler and BACT determination of particulate emissions from the phosphoric acid plant scrubbers, which appears to have been set with inadequate foundations.

I appreciate the opportunity given USSAC's representatives on December 2 for discussions prior to written comments, and believe this may have given DER a fuller understanding of our concerns.

Very truly yours,

USS AGRI-CHEMICALS

GWBeck (WRB)

G. W. Beck, General Manager,
Florida Phosphate Operations

GWB:cbr

Attachments

USS AGRI-CHEMICALS

FORT MEADE CHEMICAL PLANT

COMMENTS ON PROPOSED CONDITIONS FOR CONSTRUCTION PERMITS

SULFURIC ACID PLANT, AC53-33818 & 19

1. Stack Locations

   Please recheck the stack locations coordinates for conformity to the permit application.

2. Conversion Factor, item 6 of Specific Conditions

   The formula contains a typographical error. The number should be 1.000 not 1,000.

3. Shutdown of Existing Plants

   USSAC believes that as written item 9 of the Special Conditions is not sufficiently definitive, and requests that the item be modified as follows:

   "......within 3 months after written notification from DER that the compliance tests on the new sulfuric acid plants are acceptable."

4. Typographical Error

   See item 15. of Special Conditions.

PHOSPHORIC ACID PLANTS, AC53-33820 & 21

1. Stack Location Coordinates

   Same comment as for sulfuric acid plants.

2. Shutdown of Existing Plants

   Same comment as for Sulfuric Acid plants.

3. Limitation of Particulates

   Since particulate emissions from existing phosphoric acid plant stacks are not regulated, USSAC nor the phosphate industry does not have a background history of performance and proven design information. According to our investigations the limit of 5.9 pounds per hour per train appears to be achievable. However, it is well known and often experienced that actual performance from unproven designs fails to meet the expectancy. For this reason the permit application requested that the final emission limit be deferred pending actual performance testing, at which time a more sound foundation for the BACT limit would be established.

AUXILIARY BOILER, AC53-33822

1. Stack Location Coordinates

   Same comment as for Sulfuric Acid plants.

2. Limitation on Operating Time

   As stated in the permit application USSAC estimates that operation of the auxiliary boiler will normally not be required more than five weeks a year. Emergencies may arise which require operation for longer periods of time. When operating on natural gas, which contains only a trace amount of sulfur if any, atmospheric contamination from the boiler stack is negligible. USSAC, therefore, requests that operation of the auxiliary boiler on natural gas should not be time limited, since such a limitation would not give further protection to the environment but could cause hardship to plant operation.

PHOSPHORIC ACID STORAGE AREA, AC53-33868

1. Typographical error.

   See item 7. of Special Conditions.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee		
To:	Loctn.:	
To:	Loctn.:	
To:	Loctn.:	
From:	Date:	
Reply Optional [ ]	Reply Required [ ]	Info. Only [ ]
Date Due:	Date Due:	

TO: District, Subdistrict and Local Program Air Engineers

FROM: Ed Palagyi EP

DATE: November 12, 1980

SUBJ: B.A.C.T. as determined for USS Agri-Chemicals Phosphate Fertilizer Complex for a Sulfuric and Phosphoric Acid Plant plus Auxiliary Boiler, Ft. Meade, Polk County, Florida

Attached please find one copy of the BACT as determined by the Florida Department of Environmental Regulation, for the subject plant.

Should you have any questions regarding this determination, please contact me at (904) 488-1344, or Suncom 278-1344.

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee	
To:	Loctn.:
To:	Loctn.:
To:	Loctn.:
From:	Date:

TO: Jacob D. Varn

FROM: Steve Smallwood

DATE: November 5, 1980

SUBJ: BACT-USS Agri-Chemicals Phosphate Fertilizer Plant Modernization.

Facilities: USS Agri-Chemicals Phosphate Fertilizer complex near Ft. Meade, Florida consists of a phosphate rock drying and grinding system, 2 sulfuric acid plants, an auxiliary boiler, 2 phosphoric acid plants, 2 GTSP plants, along with storage and shipping facilities. The company proposes to replace the 2 sulfuric acid plants, the auxiliary boiler and the 2 phosphoric acid plants with new plants.

BACT Determination Requested by the Applicant:

Plant	Pollutant	Standard
Sulfuric Acid	SO_2	4 lb/ton 100% H_2SO_4
	H_2SO_4 Mist	0.15 lb/ton 100% H_2SO_4
Auxiliary Boiler	SO_2 (oil fuel)	0.51 lb/MM BTU
	NO_x (oil fuel)	0.3 lb/MM BTU
	NO_x (gas fuel)	0.2 lb/MM BTU
Phosphoric Acid	Fluoride	0.02 lb F/ton P_2O_5 feed

Date of Receipt of a BACT Application:

September 29, 1980

Date of Publication in the Florida Administrative Weekly:

October 31, 1980

Study Group Members:

Bob Garrett, Southwest District
Teresa Heron, Bureau of Air Quality Management
Bob King, Bureau of Air Quality Management

H6 - Rev 7/76

Study Group Recommendations:

	Sulfur Acid Plant	Auxiliary Boiler	Phosphoric Acid Plant
Garrett	4 lb. SO_2/ton 100% H_2SO_4 0.15 lb. Acid Mist/ton 100% H_2SO_4	Max. 0.5% S in oil 0.51 lb. SO_2/MMBTU	$\frac{\text{0.02 lb. fluoride}}{\text{ton } P_2O_5 \text{ input}}$
	10% maximum opacity	0.3 lbs. NO_x/MMBTU less than 0.2 lbs. CO, HC, & TSP/MMBTU	Particulate-deferred
Heron	4 lb. SO_2/ton 100% H_2SO_4 0.15 lb. acid mist/ton 100% H_2SO_4	Use of low sulfur (0.5% S) no. 2 fuel oil	$\frac{\text{0.02 lbs. F}}{\text{ton } P_2O_5}$
King	4 lb SO_2/T 100% H_2SO_4 0.15 lb. acid mist/ton 100% H_2SO_4	0.51 $\frac{\text{lb. } SO_2}{\text{MMBTU}}$ 0.3 lb. $\frac{NO_x}{\text{MMBTU}}$ (oil) $\frac{\text{0.2 lb}}{\text{MMBTU}}$ NO_x (gas)	$\frac{\text{0.02 lbs. F}}{\text{ton } P_2O_5}$ feed

BACT Determination by DER:

	Pollutant	BACT Standard		
Sulfuric Acid Plants	SO_2	4 lb. SO_2/ton 100% H_2SO_4 and 367 lb. SO_2/hr. per train		
	acid mist	0.15 lb. acid mist/T 100% H_2SO_4 and/ and $\frac{13.8}{\text{hr.}}$ lb. mist per train		
	visible emissions	10% maximum opacity		
Auxiliary Boiler	SO_2	0.51 lb. SO_2/MMBTU	or	Use of low sulfur fuel (max. 0.5%S) and 20% opacity
	NO_x	0.3 lb. NO_x/MMBTU		
	Particulate	0.2 lb. particulate/ MMBTU		

	Pollutant	BACT Standard
Phosphoric Acid Plants		
reaction area	total fluoride	$\frac{0.02\ \text{lbs.}}{\text{ton } P_2O_5}$ and 0.53 $\frac{\text{lbs.}}{\text{hr.}}$/train
	particulate	5.9 $\frac{\text{lbs.}}{\text{hr.}}$ per train
Storage area	total fluoride	0.36 $\frac{\text{lbs.}}{\text{hr.}}$ for both trains

Compliance will be determined by reference methods 1, 2, 3, 4, 5, 8, 9, 13A or 13 B. Minimum sample volume per run will be 30 SCF and minimum sample time per run will be 1 hour.

Justification of DER Determination:

NSPS was selected as BACT for the sulfuric and phosphoric acid plants; Control equipment is available to meet these standards. The applicant's proposals were accepted for the BACT standards on the auxiliary boiler and phosphoric acid storage area.

Details of the Determination:

Details of the Determination may be obtained by contacting:

Willard Hanks
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301

Recommendation from the Bureau of Air Quality Management:

By: W. Thomas
for Steve Smallwood

Date: 11/7/80

Department of Environmental Regulation Approval:

By: Jacob D. Varn
Jacob D. Varn

Date: 10 NOV. 80

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

MEMORANDUM

TO: Mr. G. W. Beck, U.S.S. Agri-Chemicals
Mr. William Hennessey, DER, Southwest District

BT for

FROM: Steve Smallwood, DER, Bureau of Air Quality Management

DATE: November 10, 1980

SUBJ: U.S.S. Agri-Chemicals Application for Permit to Construct two sulfuric acid plants and auxiliary boiler, two phosphoric acid plants and a scrubber for the phosphoric acid storage area.

Attached is one copy of the application, Technical Evaluation and Preliminary Determination, BACT Determination and proposed permit to construct two sulfuric acid plants, one auxiliary boiler, two phosphoric acid plants and a scrubber for the phosphoric acid storage area.to be located on Highway 630 West in Ft. Meade, Polk County, Florida.

Please send any comments which you wish to be considered concerning this action, in writing, to Willard Hanks of the Bureau of Air Quality Management.

SS:caa

Attachments

CONSTRUCTION NOTICE

The Florida Department of Environmental Regulation (DER) has received applications from and intends to issue Construction Permits to U.S.S. Agri-Chemicals Company for the construction of two sulfuric acid plants, one Auxiliary boiler and two phosphoric acid plants to be located on Highway 630 West of Ft. Meade, Polk County, Florida. A determination of Best Available Control Technology was required. Copies of the application, BACT Determination, Technical Evaluation, and Departmental Intent are available for inspection at the following offices:

DER, Southwest District	DER, Bureau of Air Quality Management
7601 Highway 301 North	2600 Blair Stone Road
Tampa, Florida 33601	Tallahassee, Florida 32301

Procedure for filing comments or requesting a hearing on this action are described in the Technical Evaluation.

Technical Evaluation

and

Preliminary Determination

U.S.S. Agri-Chemical Company

Ft. Meade Facility

Polk County, Florida

Construction Permit

Application Numbers

AC 53-33818
AC 53-33819
AC 53-33820
AC 53-33821
AC 53-33822
AC 53-33868

Florida Department of Environmental Regulation

Bureau of Air Quality Management

Central Air Permitting

November 4, 1980

I. PROPOSED DEPARTMENT ACTION:

The Department intends to issue the requested permits to USS Agri-Chemicals for the construction of two Sulfuric acid Plants, one auxiliary boiler, two phosphoric acid plants, and a scrubber for the phosphoric acid storage area at its complex located on Highway 630 West of Ft. Meade, Polk County, Florida. The permits will include conditions to assure compliance with Chapter 17-2, FAC.

Any person wishing to comment on this proposed action may do so by submitting such comments in writing to:

Willard Hanks
Florida Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

Any person whose substantial interest would be affected by the issuance of this permit may request an administrative hearing by filing a petition for hearing as set forth in Section 28-5.15 (copy attached). Such petition must be filed within 14 days of the date this notice is published. Such petition is to be filed with:

Mary Clark
Office of General Counsel
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301

II. SUMMARY OF EMISSIONS AND AIR QUALITY ANALYSIS:

a. The proposed construction location, on Highway 630 West in Ft. Meade, Polk County, is approximately 47 kms. south east of the boundary of the Hillsborough County particulate nonattainment area. This places the proposed source within the area of influence of that nonattainment area. The location is "unclassifiable" for the criteria pollutant particulate and attainment for the remaining criteria pollutants.

b. The sources will emit fluoride, particulate, sulfuric acid mist and sulfur dioxide.

c. Best Available Control Technology. BACT for the phosphoric acid plants was determined to be 0.02 lb F/ton P_2O_5/train and 5.9 lbs. particulate/hr./train when using venturi cyclone scrubbers as a control device.

BACT for the sulfuric acid plant are 4 lb SO_2/ton H_2SO_4 and 0.15 lbs. acid mist/ton H_2SO_4 proposed by the Company.

BACT for the auxiliary boiler are 0.51 lb. SO_2/MMBTU, 0.3 lbs. NO_x/MMBTU and 0.2 lb. particulate/MMBTU.

BACT for the phosphoric acid storage area is 0.36 lb F/hr. This standard is met with a ejector venturi scrubber.

b. The proposed plants are a major emitting facilities for fluoride and sulfur dioxide as defined in 17-2.02(70) FAC because the potential emissions exceed 100 TPY.

c. Modeling results indicate that no violation of sulfur dioxide PSD increment and ambient air quality standard will occur.

III. SYNOPSIS OF APPLICATIONS:

a. Name and Address of Applicant:

U.S.S. Agri-Chemicals
P. O. Box 150
Bartow, Florida 33830

b. Description of Project and Controls:

The proposed project involves the construction of two identical double absorption sulfuric acid plants, one auxiliary boiler and two wet phosphoric acid plants to replace the old plants.

In the sulfuric acid plants, emissions of sulfur dioxide and sulfuric acid mist will be controlled with a double absorption system and mist eliminator.

In the phosphoric acid plants, a venturi cyclone scrubber will be used to remove particulate and fluoride emissions.

c. A ejector venturi scrubber will be used to control emissions from the phosphoric acid storage area.

Low sulfur No. 2 fuel oil will be used to control emissions from the auxiliary boiler.

d. Descriptions of Processes, Proposed Processes Rates and Emissions Rates:

Sulfuric Acid Plants:

The principal steps in the process consist of burning sulfur (S) in air to form sulfur dioxide (SO_2), combining the sulfur dioxide with oxygen (O_2) to form sulfur trioxide (SO_3), and absorbing the sulfur trioxide in water (H_2O) to form sulfuric acid (H_2SO_4).

The chemical reaction are:

$$S + O_2 \longrightarrow SO_2$$
$$SO_2 + \tfrac{1}{2}\, O_2 \longrightarrow SO_3$$
$$SO_3 + H_2O \longrightarrow H_2SO_x$$

The new sulfuric acid plants will have a combined production capacity of up to 4,400 tons of 100 per H_2SO_4 per day.

The boiler will provide an independent supply of steam to start up the sulfuric acid plants. It may be used as an auxiliary steam supply in event of an unscheduled shut down of one or both of the sulfuric acid plant.

Wet Phosphoric Acid Plants:

Phosphoric acid is produced by reacting ground phosphate rock with sulfuric acid. This reaction produces phosphoric acid and gypsum.

$$Ca_3(PO_4)_2 + 3H_2SO_4 + 6H_2O \longrightarrow 3(CaSO_4.2H_2O) + 2H_3PO_4$$

The new plants will use wet rock grinding which is more environmentally favorable and energy conservative than dry rock grinding. Each plant consists of a reactor along with filters, storage, and clarification area and a fluorosilicic acid recovery system.

The maximum production rate is 1,540 ton/day for the phosphoric acid plants.

The following table outlines the proposed emission rates for the new sources:

Pollutant	Sulfuric Acid Plant (per train)	Phosphoric Acid Plant and Storage Area (per train)	Boiler
Particulate	N/A	5.9 lb/hr.	
Fluoride	N/A	0.71 lb/hr.	
SO_2	367 lb/hr.	N/A	
H_2SO_4 mist	13.75 lb/hr.	N/A	N/A
NO_2 fuel oil	N/A	N/A	0.3 $lb/10^6$ BTU
NO_2 natural gas	N/A	N/A	0.2 $lb/10^6$ BTU
HC	N/A	N/A	< 1 ton/year
CO	N/A	N/A	< 1 ton/year

The stack parameters are as follows:

	Sulfuric Acid Plant	Phosphoric Acid Plant Reactor & Filtration	Phosphoric Acid Plant Clarification and Storage	Boiler	Unit
Stack Height	175	75	62	70	ft.
Gas Flow rate	112123	18000	6000	31700	ACFM
Water Vapor Content	nil	Saturated		18	%
Stack Diameter	8.5	3.4	3.0	3.67	ft.
Gas Exit Temperature	180	100	105	400	^{o}F
Velocity	34	33.3	14.2	50	FPS

The attached drawings shows the processes and pollution abatement equipments.

IV. RULE APPLICABILITY:

The sources are a major emitting facilities for fluoride and sulfur dioxide as defined in 17-2.02(70) FAC because the potential emission exceed 100 TPY. The projects are subject to provisions of 17-2.05(6) Table II, item B(2) for sulfuric acid plants, item C(1) (a) for the wet phosphoric acid plant and item E(2) which requires the use of best and latest technology on Fossil Fuel Steam Generators.

Therefore, the applications are subject to 17-2.03 BACT which was determined by D.E.R.

Mathematical modeling for determination of maximum sulfur dioxide emission impact on the ambient air concentration, as required under the Prevention of Significant Deterioration (PSD) results indicate that no violations of the sulfur dioxide PSD increment and ambient air standard will occur.

V. FINDING:

Best Available Control Technology (BACT) has been determined, as required by 17-2.03 F.A.C. for Fluoride, Particulate, Sulfur Dioxide, Sulfuric Acid mist and nitrogen dioxide emissions from the proposed sources.

The standards selected as BACT, which are the permitted emissions through the stacks, are listed below:

	Pollutant	Emission Standard
Sulfuric Acid Plants	SO_2	4 lbs. SO_2/T 100% H_2SO_4
	acid mist	0.15 lbs. acid mist/T 100% H_2SO_4
	visible emissions	10% maximum opacity
Auxiliary Boiler	SO_2	0.51 lbs. SO_2/MMBTU
	NO_x	0.3 lbs. NO_x/MMBTU
	Particulate	0.2 lbs. particu- late/ MMBTU <u>or</u> Use of low sulfur fuel (max. 0.5% S) and 20% opacity
Phosphoric Acid Plants		
Reaction area	total fluoride	$\frac{0.02 \text{ lb.}}{TP_2O_5 \text{ feed}}$ and 0.53 $\frac{\text{lb.}}{\text{hr.}}$ per train
	particulate	5.9 $\frac{\text{lb.}}{\text{hr.}}$ per train
Storage area	total fluoride	0.36 $\frac{\text{lb.}}{\text{hr.}}$ for both trains

Sulfuric Acid Plants:

1. The proposed facilities are a major sulfur dioxide emitting facilities because the potential sulfur dioxide emissions are more than 100 tons per year/plant.

2. The proposed facilities are not a major emitting facilities for nitrogen oxides, particulate, HC, CO, as listed in definition 17-2.02(70) FAC, and will not have uncontrolled emissions greater than 100 tons per year/plant.

3. Modeling results conclude no violations of the PSD or ambient air standards for SO_2 will occur.

4. The installation of the double absorption system and mist eliminator will minimize the discharge of sulfur dioxide and sulfuric acid mist.

5. Cooling tower blowdown, boiler blowdown, and feedwater treatment unit blowdown are non-process effluents and will be discharged to the plant outfall.

Auxiliary Boiler:

1. The auxiliary boiler will be a conventional dual fired, water tube, package boiler, with a maximum input rating at 100×10^6 BTU per hour, generating saturated steam at 250 psg pressure.

2. The boiler is designed to use natural gas or No. 2 fuel oil. Natural gas will be used whenever available which is expected to be about 50 percent of the time.

3. The new auxiliary boiler is a replacement for an existing auxiliary boiler and does not represent a net change in emissions.

4. Emission estimates of the boiler are based on expected operation time of 840 hours/year, when burning No. 2 fuel oil.

5. The existing sulfuric acid plants and auxiliary boiler will be shut down within 3 months after the new plants will be tested for service.

Phosphoric Acid Plants:

1. Based on the data presented in the application, the total emissions are projected to be equal to or less than amounts set forth in the following table:

Pollutant	lb/TP_2O_5/train	lb/hr./train
Particulate		5.9
		0.53 Reaction area
Total Fluoride	0.02 lbF/ton P_2O_5	0.18 Storage Area

2. No fluoride compounds are in the gases exhausting from the Reactor and filter vacuum pumps.

3. The proposed facilites are a major fluoride emitting facilities since the potential fluoride emissions are more than 100 ton/year/train.

4. The proposed facilites are not a major emitting facilites for particulate, as listed in definition 17-2.02(70) FAC, and will not have uncontrolled emissions greater than 100 ton/year/train.

5. The plants control system includes fans and ducts which draw ambient air into the process and storage equipment where it mixes with contaminated fumes and conveys the contaminants to the scrubbers for removal.

6. Emission of particulate matter are expected to be no greater than 20 tons per year per train, or 40 tons per year for both trains combined.

7. Fugitive particulate emissions will decrease, as a result of the switch to a wet rock process.

8. The new phosphoric acid plants will not be a source of sulfur dioxide (SO_2). Therefore, PSD provisions in FAC 17-2.04 related SO_2 do not apply.

9. The existing plants will be shut down within 3 months after the new plants will be tested for service.

VI. <u>PROPOSED ALLOWABLE EMISSIONS AND PERMIT CONDITIONS:</u>

See Draft Permit.

RULES OF THE ADMINISTRATIVE 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;

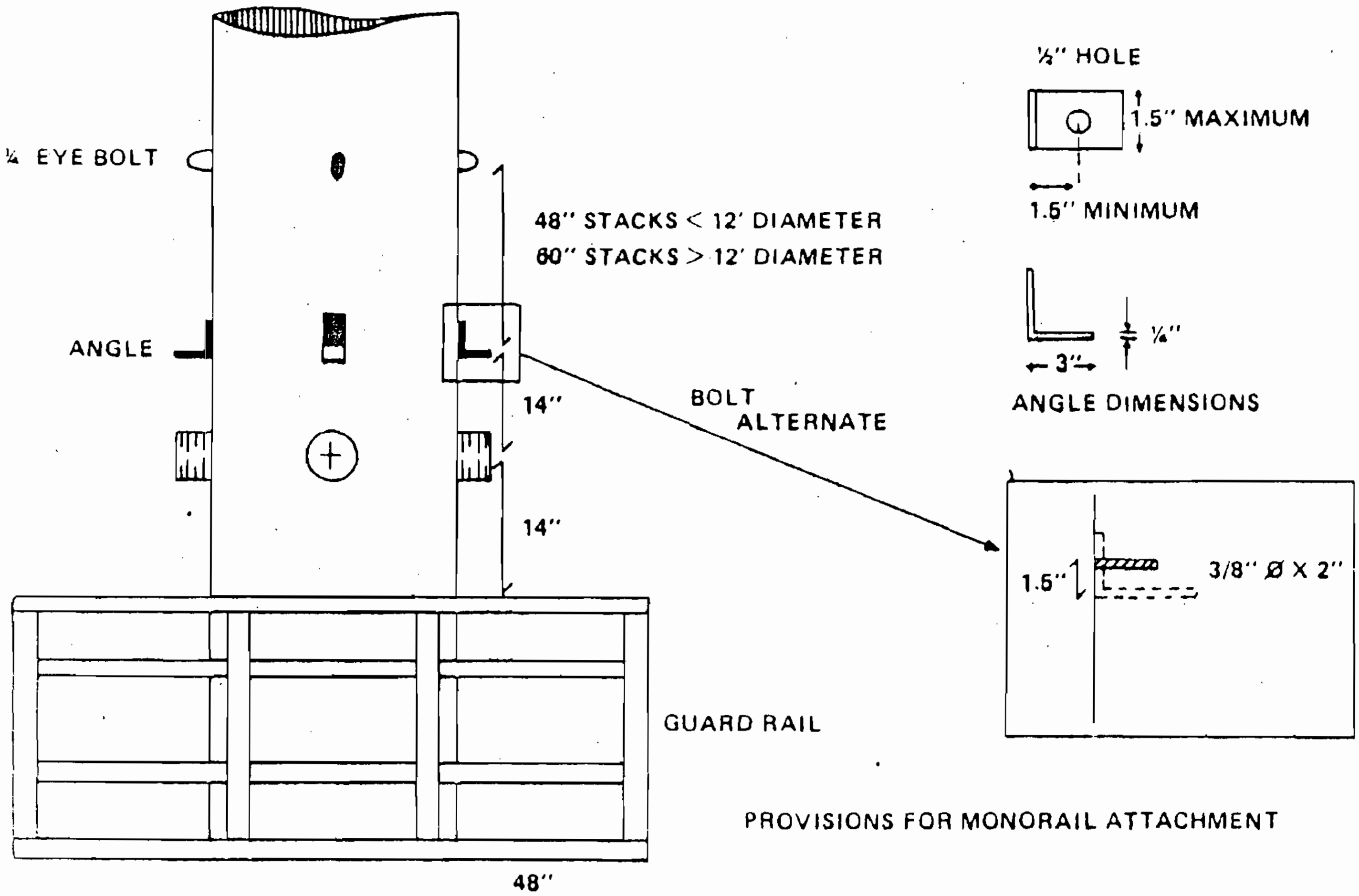
(d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;

(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.

AN EYEBOLT AND ANGLE SHALL BE ATTACHED DIRECTLY ABOVE EACH PORT OF VERTICAL STACKS AND ABOVE EACH VERTICAL SET OF PORTS FOUND ON THE SIDES OF HORIZONTAL DUCTWORK 1.8 WORKING PLATFORMS. THE DIMENSIONS AND PLACEMENT OF THESE FIXTURES ARE SHOWN IN FIGURE 1-1.



PROVISIONS FOR MONORAIL ATTACHMENT

IF EYEBOLT IS MORE THAN 120 INCHES ABOVE THE PLATFORM A PIECE OF CHAIN SHOULD BE ATTACHED TO IT TO BRING THE POINT OF ATTACHMENT WITHIN SAFE REACH. THE EYEBOLT SHOULD BE CAPABLE OF SUPPORTING A 500 POUND WORKING LOAD.

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICANT: U.S.S. Agri-Chemicals
P. O. Box 150
Bartow, Florida 33830

PERMIT/CERTIFICATION
NO. AC 53- 33818

COUNTY: Polk

PROJECT: Sulfuric Acid Plant

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 and 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

For the construction of a 2,200 ton per day sulfuric acid plant located on Highway 630 West in Ft. Meade, Polk County, Florida. The UTM coordinates of the proposed plant are 416.17 (Zone 17)E and 3068.79 N.

Construction shall be in accordance with the attached permit application, and plans, documents and drawings except as otherwise noted in "Specific Conditions".

Attachments are as follows:

1. Application to Construct Air Pollution Sources, DER Form 17-1.122(16).

2. U.S.S. Agri-Chemicals Company, Responses to Technical Discrepancies, September 25, 1980.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions:, and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby placed

PERMIT NO.:
APPLICANT:

on notice that the department will review this permit periodically and may initiate court action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.111, F.S.

7. In the case of an operation permit, permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalities therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

13. This permit also constitutes:

[ ] Determination of Best Available Control Technology (BACT)
[ ] Determination of Prevention of Significant Deterioration (PSD)
[ ] Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

SPECIFIC CONDITIONS:

PERMIT NO.: AC 53-33818
APPLICANT: U.S.S. Agri-Chemicals

Specific Conditions

Sulfuric Acid Plant

1. Operation time will be 8,736 hours per year.

2. Maximum production rate will be 2200 tons of 100 percent H_2SO_4 per day for each sulfuric acid plant.

3. The maximum amount of sulfur dioxide emitted will be 4 lbs. SO_2/Ton 100% H_2SO_4 and 367 lbSO_2/hr. per train.

4. The amount of H_2SO_4 mist emitted will be a maximum of 0.15 lb. acid mist/Ton 100% H_2SO_4 and 13.8 lb/hr mist per train.

5. A continuous monitoring system for the measurement of sulfur dioxide shall be installed, calibrated, maintained, and operated by the applicant. The pollutant gas used to prepare calibration gas mixture under paragraph 2.1 Performance Specification 2 and for calibration checks under 60.13(d) to this part, shall be sulfur dioxide (SO_2). Reference Method 8 shall be used for conducting monitoring system performance evaluations under 60.13(c) except that only the sulfur dioxide portion of the Method 8 results shall be used. The span shall be set at 1000 ppm of sulfur dioxide.

6. The applicant shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/short ton). The conversion factor shall be determined, as a minimum, three times daily by measuring the concentration of sulfur dioxide entering the converter using suitable methods and calculating the appropriate conversion factor for each eight hour period as follows:

$$CF = K \left(\frac{1{,}000 - 0.015r}{r-s}\right)$$

7. The applicant shall record all conversion factors and values under paragraph (b) as set forth in 60.84 Subpart H - Standards of Performance for Sulfuric Acid Plant.

8. For the purpose of reports under 60.7(c), periods of excess emission shall be all three-hour periods (or the arithmetic average of three consecutive one-hour periods) during which the integrated average sulfur dioxide emissions exceed the applicable standards under 60.82.

PERMIT NO.: AC 53-33818
APPLICANT: U.S.S. Agri-Chemicals

9. Existing sulfuric acid plants permit no. AO 53-4528 will be shut down and any permits for these sources returned to the Department within 3 months of test of the new sulfuric acid plants.

10. Reasonable precautions to prevent fugitive particulate emissions during construction such as coating or spraying roads and construction sites used by contractors, will be taken by the Permittee.

11. Construction should reasonably conform to the plans submitted in the application.

12. The applicant should report any delays in construction and completion.

13. Before the construction permit expires the sulfuric acid plant will be tested for sulfur dioxide and sulfuric acid mist. Test procedures will be EPA reference methods 1, 2, 3, 8, and 9 as published in 40 CFR 60, Appendix A, dated July 1, 1978 or by any other State approved method. Minimum sample volume and time per run will be as defined in the applicable NSPS. DER will be notified 30 days in advance of the compliance test. The test will be conducted at permitted production capacity $\pm 10\%$.

14. The applicant will demonstrate compliance with the condition of the construction permit and submit a complete application for an operating permit to the Tampa District office prior to 90 days of the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until the expiration date or issuance of an operating permit.

15. Upon obtaining and operating permit, the applicant will be required to submit periodic test reports on the actual operation and emissions of the facility.

16. Stack sampling facilities will include the eyebolt and angle described in the attached figures.

17. Visible emission shall be 10% opacity.

Expiration Date: September 1983

Issued this ______ day of ____________________, 19 ______.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICANT: U.S.S. Agri-Chemicals
P. O. Box 150
Bartow, Florida 33830

PERMIT/CERTIFICATION
NO. AC 53 - 33819

COUNTY: Polk

PROJECT: Sulfuric Acid Plant

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 and 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

For the construction of a 2,200 ton per day sulfuric acid plant located on Highway 630 West in Ft. Meade, Polk County, Florida. The UTM coordinates of the proposed plant are 416.17 (Zone 17)E and 3068.79 N.

Construction shall be in accordance with the attached permit application, and plans, documents and drawings except as otherwise noted in "Specific Conditions".

Attachments are as follows:

1. Application to Construct Air Pollution Sources, DER Form 17-1.122(16).

2. U.S.S. Agri-Chemicals Company, Responses to Technical Discrepancies, September 25, 1980.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions:, and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby placed

PERMIT NO.:
APPLICANT:

on notice that the department will review this permit periodically and may initiate court action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.111, F.S.

7. In the case of an operation permit, permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalities therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

13. This permit also constitutes:

[ ] Determination of Best Available Control Technology (BACT)
[ ] Determination of Prevention of Significant Deterioration (PSD)
[ ] Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

SPECIFIC CONDITIONS:

PERMIT NO.: AC 53-33819
APPLICANT: U.S.S. Agri-Chemicals

Specific Conditions

Sulfuric Acid Plant

1. Operation time will be 8,736 hours per year.

2. Maximum production rate will be 2200 tons of 100 percent H_2SO_4 per day for each sulfuric acid plant.

3. The maximum amount of sulfur dioxide emitted will be 4 lbs. SO_2/Ton 100% H_2SO_4 and 367 lbSO_2/hr. per train.

4. The amount of H_2SO_4 mist emitted will be a maximum of 0.15 lb. acid mist/Ton 100% H_2SO_4 and 13.8 lb/hr mist per train.

5. A continuous monitoring system for the measurement of sulfur dioxide shall be installed, calibrated, maintained, and operated by the applicant. The pollutant gas used to prepare calibration gas mixture under paragraph 2.1 Performance Specification 2 and for calibration checks under 60.13(d) to this part, shall be sulfur dioxide (SO_2). Reference Method 8 shall be used for conducting monitoring system performance evaluations under 60.13(c) except that only the sulfur dioxide portion of the Method 8 results shall be used. The span shall be set at 1000 ppm of sulfur dioxide.

6. The applicant shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/short ton). The conversion factor shall be determined, as a minimum, three times daily by measuring the concentration of sulfur dioxide entering the converter using suitable methods and calculating the appropriate conversion factor for each eight hour period as follows:

$$CF = K \left(\frac{1,000 - 0.015r}{r-s}\right)$$

7. The applicant shall record all conversion factors and values under paragraph (b) as set forth in 60.84 Subpart H - Standards of Performance for Sulfuric Acid Plant.

8. For the purpose of reports under 60.7(c), periods of excess emission shall be all three-hour periods (or the arithmetic average of three consecutive one-hour periods) during which the integrated average sulfur dioxide emissions exceed the applicable standards under 60.82.

PERMIT NO.: AC 53-33819
APPLICANT: U.S.S. Agri-Chemicals

9. Existing sulfuric acid plants permit no. AO 53-4528 will be shut down and any permits for these sources returned to the Department within 3 months of test of the new sulfuric acid plants.

10. Reasonable precautions to prevent fugitive particulate emissions during construction such as coating or spraying roads and construction sites used by contractors, will be taken by the Permittee.

11. Construction should reasonably conform to the plans submitted in the application.

12. The applicant should report any delays in construction and completion.

13. Before the construction permit expires the sulfuric acid plant will be tested for sulfur dioxide and sulfuric acid mist. Test procedures will be EPA reference methods 1, 2, 3, 8, and 9 as published in 40 CFR 60, Appendix A, dated July 1, 1978 or by any other State approved method. Minimum sample volume and time per run will be as defined in the applicable NSPS. DER will be notified 30 days in advance of the compliance test. The test will be conducted at permitted production capacity $\pm$10%.

14. The applicant will demonstrate compliance with the condition of the construction permit and submit a complete application for an operating permit to the Tampa District office prior to 90 days of the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until the expiration date or issuance of an operating permit.

15. Upon obtaining and operating permit, the applicant will be required to submit periodic test reports on the actual operation and emissions of the facility.

16. Stack sampling facilities will include the eyebolt and angle described in the attached figures.

17. Visible emission shall be 10% opacity.

Expiration Date: September 1983

Issued this ______ day of ____________________, 19 ______.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICANT: U.S.S. Agri-Chemicals
P. O. Box 150
Bartow, Florida 33830

PERMIT/CERTIFICATION NO. AC 53- 33820
COUNTY: Polk
PROJECT: Phosphoric Acid Plant

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 and 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

For the construction of a Phosphoric Acid Plant to be located on Highway 630 West of Ft. Meade, Polk County, Florida. The UTM Coordinates of the proposed plant are 416.07(Zone 17) and 3068.70N.

Construction shall be in accordance with the attached permit application, and plans, documents and drawings except as otherwise noted on pages 3 and 4, "Specific Conditions".

Attachments are as follows:

1. Application to Construct Air Pollution Sources, DER Form 17-1.122(16).

2. U.S.S. Agri-Chemicals, Company, Responses to Technical Discrepancies, September 25, 1980.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions:, and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby placed

PERMIT NO.:
APPLICANT:

on notice that the department will review this permit periodically and may initiate court action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.111, F.S.

7. In the case of an operation permit, permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalities therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

13. This permit also constitutes:

[ ] Determination of Best Available Control Technology (BACT)
[ ] Determination of Prevention of Significant Deterioration (PSD)
[ ] Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

SPECIFIC CONDITIONS:

PERMIT NO.: AC 53-33820
APPLICANT: USS Agri-Chemicals

Specific Conditions

1. Maximum production rate will be 770 tons of P_2O_5 per day for each phosphoric acid plant (1,540 tons of P_2O_5 per day for both phosphoric acid plants).

2. Operation time will be 8,736 hours per year.

3. Fugitive emissions in the Phosphoric Acid Plant will be controlled by sealing and venting all fumes from the process and conveying equipment to pollution control equipment.

4. Reasonable precautions to prevent fugitive particulate emissions during construction such as coating or spraying roads and construction sites used by contractors will be taken by the Permittee.

5. Construction should reasonably conform to the plans submitted in the application.

6. The applicant should report any delays in construction and completion.

7. Before the construction permit expires, the Phosphoric Acid Plant will be sampled for particulate and total fluoride. Test procedures will be EPA reference methods 1, 2, 3, 4, 5, and 13A or 13B as published in 40 CFR 60, Appendix A, dated July 1, 1978, or by any other State approved methods. DER will be notified 30 days in advance of the compliance test. The test will be conducted at permitted production capacity $\pm 10\%$. Flow of the scrubber water (GPM), water pressure and pressure drop across the scrubbers, will be as normally operated and reported, along with the test data and results, to DER. Test results will be the average of 3 valid runs.

   Minimum sample time and volume per run will be as defined in the applicable NSPS.

8. The applicant will demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit to the Tampa District office prior to 90 days of the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until the expiration date or issuance of an operating permit.

PERMIT NO.: AC 53- 33820
APPLICANT: USS Agri-Chemicals

9. Upon obtaining an operating permit, the applicant will be required to submit periodic test reports on the actual operation and emission of the facility. These reports will give emission test data, emission test results, scrubber parameters (pressure drop and water flow) and phosphoric acid production.

10. Stack sampling facilities will include the eyebolt and angle described in the attached figures.

11. The maximum amount of particulate will be 5.9 lbs./hr. for each train.

12. The maximum amount of total fluoride emitted will be 0.02 lb. F/TP$_2$O$_5$ feed and 0.53 lbs. F/hr. from each reactor stack and 0.36 lb./hr. from the clarification and storage stack.

13. The existing phosphoric acid plants (permit no. AO 53-4563 will be shut down and any operation permit for them returned to the Department within 3 months of start up of the new phosphoric acid plants.

14. The applicant shall install,calibrate, maintain, and operate a monitoring device which can be used to determine the mass flow of phosphorus-bearing feed material to the process. The monitoring device shall have an accuracy of ± 5 percent over its operating range.

15. The applicant shall maintain a daily record of equivalent P_2O_5 feed by first determining the total mass rate in ton/hr. of phosphorus bearing feed using a monitoring device for measuring mass flow rate which meets the requirements of the above paragraph (14) and then by proceeding according to 60.204(d)(2) Subpart T, Standards of Performance for the Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plant.

16. The applicant shall install, calibrate, maintain, and operate a monitoring device which continuously measures and permanently records the total pressure drop across the process scrubbing system. The monitoring device shall have an accuracy of ± 5 percent over its operating range.

Expiration Date: September 1983

Issued this ______ day of ________________, 19 ____.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICANT: U.S.S. Agri-Chemicals
P. O. Box 150
Bartow, Florida 33830

PERMIT/CERTIFICATION
NO. AC 53- 33821

COUNTY: Polk

PROJECT: Phosphoric Acid Plant

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 and 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

For the construction of a Phosphoric Acid Plant to be located on Highway 630 West of Ft. Meade, Polk County, Florida. The UTM Coordinates of the proposed plant are 416.07(Zone 17) and 3068.78N.

Construction shall be in accordance with the attached permit application, and plans, documents and drawings except as otherwise noted on pages 3 and 4, "Specific Conditions".

Attachments are as follows:

1. Application to Construct Air Pollution Sources, DER Form 17-1.122(16).

2. U.S.S. Agri-Chemicals, Company, Responses to Technical Discrepancies, September 25, 1980.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions:, and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby placed

PERMIT NO.:
APPLICANT:

on notice that the department will review this permit periodically and may initiate court action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.111, F.S.

7. In the case of an operation permit, permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalities therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

13. This permit also constitutes:

- [ ] Determination of Best Available Control Technology (BACT)
- [ ] Determination of Prevention of Significant Deterioration (PSD)
- [ ] Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

SPECIFIC CONDITIONS:

PERMIT NO.: AC 53-33821
APPLICANT: USS Agri-Chemicals

Specific Conditions

1. Maximum production rate will be 770 tons of P_2O_5 per day for each phosphoric acid plant (1,540 tons of P_2O_5 per day for both phosphoric acid plants).

2. Operation time will be 8,736 hours per year.

3. Fugitive emissions in the Phosphoric Acid Plant will be controlled by sealing and venting all fumes from the process and conveying equipment to pollution control equipment.

4. Reasonable precautions to prevent fugitive particulate emissions during construction such as coating or spraying roads and construction sites used by contractors will be taken by the Permittee.

5. Construction should reasonably conform to the plans submitted in the application.

6. The applicant should report any delays in construction and completion.

7. Before the construction permit expires, the Phosphoric Acid Plant will be sampled for particulate and total fluoride. Test procedures will be EPA reference methods 1, 2, 3, 4, 5, and 13A or 13B as published in 40 CFR 60, Appendix A, dated July 1, 1978, or by any other State approved methods. DER will be notified 30 days in advance of the compliance test. The test will be conducted at permitted production capacity $\pm$10%. Flow of the scrubber water (GPM), water pressure and pressure drop across the scrubbers, will be as normally operated and reported, along with the test data and results, to DER. Test results will be the average of 3 valid runs.

   Minimum sample time and volume per run will be as defined in the applicable NSPS.

8. The applicant will demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit to the Tampa District office prior to 90 days of the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until the expiration date or issuance of an operating permit.

PERMIT NO.: AC 53-33821
APPLICANT: USS Agri-Chemicals

9. Upon obtaining an operating permit, the applicant will be required to submit periodic test reports on the actual operation and emission of the facility. These reports will give emission test data, emission test results, scrubber parameters (pressure drop and water flow) and phosphoric acid production.

10. Stack sampling facilities will include the eyebolt and angle described in the attached figures.

11. The maximum amount of particulate will be 5.9 lbs./hr. for each train.

12. The maximum amount of total fluoride emitted will be 0.02 lb. F/TP_2O_5 feed and 0.53 lbs. F/hr. from each reactor stack and 0.36 lb./hr. from the clarification and storage stack.

13. The existing phosphoric acid plants permit no. AO 53-4563 will be shut down and any operation permit for them returned to the Department within 3 months of start up of the new phosphoric acid plants.

14. The applicant shall install, calibrate, maintain, and operate a monitoring device which can be used to determine the mass flow of phosphorus-bearing feed material to the process. The monitoring device shall have an accuracy of $\pm$ 5 percent over its operating range.

15. The applicant shall maintain a daily record of equivalent P_2O_5 feed by first determining the total mass rate in ton/hr. of phosphorus bearing feed using a monitoring device for measuring mass flow rate which meets the requirements of the above paragraph (14) and then by proceeding according to 60.204(d)(2) Subpart T, Standards of Performance for the Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plant.

16. The applicant shall install, calibrate, maintain, and operate a monitoring device which continuously measures and permanently records the total pressure drop across the process scrubbing system. The monitoring device shall have an accuracy of $\pm$ 5 percent over its operating range.

Expiration Date: September 1983

Issued this ______ day of ________________, 19 ______.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICANT: U.S.S. Agri-Chemicals
P. O. Box 150
Bartow, Florida 33830

PERMIT/CERTIFICATION
NO.AC 53-33822

COUNTY: Polk

PROJECT: Auxiliary Boiler

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 and 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

For the construction of an auxiliary boiler to serve two identical sulfuric acid plants located on Highway 630 West of the Meade, Polk County, Florida. The UTM coordinates of the proposed plant are 416.7 (Zone 17) and 3068.65N.

Construction shall be in accordance with the attached permit application, and plans, documents and drawings except as otherwise noted on page 3 "Specific Conditions".

Attachments are as follows:

1. Application to Construct Air Pollution Sources, DER Form 17-1.122(16).
2. U.S.S. Agri-Chemicals, Company, Responses to Technical Discrepancies, September 25, 1980.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions:, and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby placed

on notice that the department will review this permit periodically and may initiate court action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.111, F.S.

7. In the case of an operation permit, permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalities therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

13. This permit also constitutes:

[ ] Determination of Best Available Control Technology (BACT)
[ ] Determination of Prevention of Significant Deterioration (PSD)
[ ] Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

SPECIFIC CONDITIONS:

PERMIT NO.: AC 53-33822
APPLICANT: U.S.S. Agri-Chemicals

Specific Conditions

Auxiliary Boiler

1. Auxiliary boiler operation is limited to 24 hours per day, 7 days a week and 5 weeks per year.

2. The fuel used to fire the boiler will be natural gas or No. 2 fuel oil with a sulfur content of 0.5% S. Maximum.

3. The Department will be notified if the auxiliary boiler operates more than 840 hour/year.

4. Visible emissions shall be 20 percent opacity except for up to 27% opacity for one 6 minute period per hour.

5. The maximum amount of emissions emitted from the boiler stack will be:

Pollutant	Fuel	Emission Rate
SO_2		0.51 lbs. SO_2/MMBTU
NO_x	Fuel oil No. 2	0.3 lbs. NO_x/MMBTU
Particulate		0.2 lbs. particulate/MMBTU
Visible Emission		Opacity (Maximum 20%)

6. Before the construction permit expires, the boiler will be tested for sulfur dioxide and visible emissions. Test procedures will be EPA reference methods 1, 2, 3, 6 and 9 as published in 40 CFR 60, Appendix A, dated July 1, 1978, or by any other State approved method. DER will be notified 30 days in advance of the compliance test. The test will be conducted at permitted production capacity ±10%.

7. Reasonable precautions to prevent fugitive particulate emissions during construction such as coating or spraying roads and construction sites used by contractors, will be taken by the Permittee.

8. Construction should reasonably conform to the plans submitted in the application.

9. The applicant should report any delay in construction and completion.

PERMIT NO.: AC 53-33822
APPLICANT: U.S.S. Agri-Chemicals

10. The applicant will demonstrate compliance with the condition of the construction permit and submit a complete application for an operating permit to the Tampa District office prior to 90 days of the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms to operate in compliance with all terms of the construction permit until the expiration date or issuance of an operating permit.

11. Upon obtaining an operating permit, the applicant will be required to submit periodic reports on the actual operation and emission of the facility. These reports will give emission test data, emission test results and hours of production.

Expiration Date: September 1983

Issued this ______ day of ______________, 19 ____.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICANT: U.S.S. Agri-Chemicals
P. O. Box 150
Bartow, Florida 33830

PERMIT/CERTIFICATION
NO. AC 53-33868

COUNTY: Polk

PROJECT: Phosphoric Acid Plant Storage Area

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 and 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

For the construction of a scrubber to serve the Phosphoric Acid Plant storage area which is located on Highway 630 West of Ft. Meade, Polk County, Florida. The UTM Coordinates of the proposed plant are 416.07 (Zone 17)E and 3068.78N.

Construction shall be in accordance with the attached permit application, and plans, documents and drawings except as otherwise noted on page 3, "Specific Conditions".

Attachments are as follows:

1. Application to Construct Air Pollution Sources, DER Form 17-1.122(16).

2. USS Agri-Chemicals Company, Responses to Technical Discrepancies, September 25, 1980.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions:, and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby placed

PERMIT NO.: AC 53-33868
APPLICANT: U.S.S. Agri-Chemicals

on notice that the department will review this permit periodically and may initiate court action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.111, F.S.

7. In the case of an operation permit, permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalities therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

13. This permit also constitutes:

[ ] Determination of Best Available Control Technology (BACT)
[ ] Determination of Prevention of Significant Deterioration (PSD)
[ ] Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

SPECIFIC CONDITIONS:

PERMIT NO.: AC 53-33868
APPLICANT: U.S.S. Agri-Chemicals

Specific Conditions

1. Maximum fluoride emissions from the storage area will be 0.36 lb/hr. for both trains.

2. Reasonable precautions to prevent fugitive particulate emissions during construction such as coating or spraying roads and construction sites by contractors will be taken by the Permittee.

3. Construction should reasonably conform to the plans submitted in the application.

4. The applicant should report any delays in construction and completion.

5. Before the construction permit expires, the phosphoric acid plant storage area scrubber will be sampled for fluoride. Test procedures will be EPA reference methods 1, 2, 3, 4, 13A or 13B as published in 40 CFR 60, Appendix A, dated July 1, 1978 or by any other State approved methods. DER will be notified 30 days in advance of the compliance test. The test will be conducted at permitted production capacity $\pm$10%.

6. The applicant will demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit to the Tampa District office prior to 90 days of the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until the expiration date or issuance of an operating permit.

7. Upon obtaining and operating permit, the applicant will be required to submit periodic test reports on the actual operation and emissions of the facility. These reports will give emission test data, emission test results, scrubber parameters (pressure drop and water flow) and phosphoric acid production.

Expiration Date: September 1983

Issued this ______ day of ____________________, 19 ____.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee	
To:	Loctn.:
To:	Loctn.:
To:	Loctn.:
From:	Date:

TO: Willard Hanks

FROM: Bob King B. King

DATE: October 24, 1980

SUBJ: BACT Determination - USS Agri-Chemicals.

1. For the phosphoric acid plant, I agree with the applicant's proposal, 0.02 lbs. fluorides per ton of equivalent P_2O_5 feed, which is the NSPS standard for this type of source.

2. For the sulfuric acid plant, EPA has declared NSPS and the best available control technology for this class of source as follows:

SO_2	4 lb/ton 100% H_2SO_4 Produced
H_2SO_4 Mist	0.15 lb/ton 100% H_2SO_4 Produced

I agree with the applicant and proposed the same emission rate as BACT.

3. For the 100 million BTU/hr heat input auxiliary boiler, the applicant proposed and NSPS are as follows:

Proposed	NSPS*
0.051 lb $SO_2/10^6$BTU	0.8 lb $SO_2/10^6$BTU (Fuel Oil)
0.3 lb NO_x / 10^6 BTU	0.3 lb $NO_x/10^6$BTU (Fuel Oil)
0.2 lb NO_x / 10^6 BTU	0.2 lb $NO_x/10^6$BTU (Natural Gas)

I agree with the applicant's proposal.

* The NSPS is for boilers larger than 250 million BTU/hr. no NSPS for smaller boilers.

BK:dav

H6 - Rev 7/76

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee	
To:	Loctn.:
To:	Loctn.:
To:	Loctn.:
From:	Date:

TO: Mark G. Hodges, BAQM, Tall.

FROM: Bob Garrett, S.W. District RRJ

DATE: October 20, 1980

OCT 1980 RECEIVED BUREAU AQM

SUBJECT: BACT Recommendations - USS Agri-Chem, Ft. Meade Air Construction Permit Applications

1. New sulfuric acid plants (replacement no. 1 and 2 train)
   NSPS Standards: 4 lbs SO_2/ton of 100% H_2SO_4 produced
   0.15 lbs Acid Mist/ton of 100% H_2SO_4
   Limit of 10% maximum opacity

   The replacement of the existing plants and common limerock scrubber wikl solve this Districts enforcement problems of frequent existing breakdowns.

2. Rock dryer (existing on A053-5823)
   *140 lbs/hr SO_2 when burning fuel oil
   *25 lbs/hr TSP

3. GTSP Plant (existing on permits A053-4560, 4561, & 4558)
   *75 lbs/hr SO_2 each plant
   0.15 lbs F/ton P_2O_5 each plant (NSPS)
   *TSP, 32 lbs/hr

4. New phosphoric acid plants (replacement, train A & B)
   0.02 lbs F/ton P_2O_5 (NSPS)
   TSP (deferred**)

   **Particulate emissions from phos acid scrubbers are historically deminimus and we have removed this test requirement from a majority of our District wet process plants.

5. Auxiliary boiler - burning oil, limit of 0.5% sulfur
   0.51 lbs $SO_2/10^6$ BTU
   0.3 lbs $NO_x/10^6$ BTU
   less than 0.2 lbs CO, HC, & $TSP/10^6$ BTU

*Should modeling require restriction of these emissions other than "as permitted".

RRT/rkt

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee	
To:	Loctn.:
To:	Loctn.:
To:	Loctn.:
From:	Date:

TO: Willard Hanks

FROM: Bob King B. King

DATE: October 24, 1980

SUBJ: BACT Determination - USS Agri-Chemicals.

1. For the phosphoric acid plant, I agree with the applicant's proposal, 0.02 lbs. fluorides per ton of equivalent P_2O_5 feed, which is the NSPS standard for this type of source.

2. For the sulfuric acid plant, EPA has declared NSPS and the best available control technology for this class of source as follows:

SO_2	4 lb/ton 100% H_2SO_4 Produced
H_2SO_4 Mist	0.15 lb/ton 100% H_2SO_4 Produced

I agree with the applicant and proposed the same emission rate as BACT.

3. For the 100 million BTU/hr heat input auxiliary boiler, the applicant proposed and NSPS are as follows:

Proposed	NSPS*
0.51 lb $SO_2/10^6$ BTU	0.8 lb $SO_2/10^6$ BTU (Fuel Oil)
0.3 lb NO_x / 10^6 BTU	0.3 lb $NO_x/10^6$ BTU (Fuel Oil)
0.2 lb NO_x / 10^6 BTU	0.2 lb $NO_x/10^6$ BTU (Natural Gas)

I agree with the applicant's proposal.

* The NSPS is for boilers larger than 250 million BTU/hr. no NSPS for smaller boilers.

BK:dav

H6 - Rev 7/76

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee	
To:	Loctn.:
To:	Loctn.:
To:	Loctn.:
From:	Date:

TO: Willard Hanks

FROM: Teresa Heron T.H.

DATE: October 28, 1980

SUBJ: BACT Recommendation - U.S.S. Agri-Chemicals

This project consists of two identical phosphoric acid plants as well as two double absorption sulfuric acid plants and a boiler.

Fluoride emissions from the phosphoric acid plants will be controlled by two Venturi Cyclone Scrubbers and a Fluoride Recovery System.

The installation of the double absorption system and mist eliminator is considered to be the best method available to minimize emissions of sulfur dioxide and acid sulfuric mist from sulfuric acid plants.

I recommend that the applicant proposed NSPS limits as set forth in 17-2.05(6) B (2) and 17-2.05 (6) C(1)(a) be adopted as BACT for the above sources.

In regard to the auxiliary boiler the proposed control technology of low-sulfur fuel No. 2 (0.5% S) should be considered as BACT.

The emission limitations decided to constitute BACT are as follows:

Unit	Pollutant	Emission Rate
Boiler	SO_2- fuel oil	0.51 lb/10^6 BTU
Boiler	NO_2- fuel oil	0.3 lb/10^6 BTU
Boiler	NO_2- Natural Gas	0.2 lb/10^6 BTU
Sulfuric Acid Plant	SO_2	4 lbSO_2/ton H_2SO_4
Sulfuric Acid Plant	H_2SO_4Mist	0.15 lb mist/ ton H_2SO_4
Phosphoric Acid Plant	Fluoride	0.02 lb F/ton P_2O_5
Phosphoric Acid Plant	Particulate	5.9 lb/hr

TH:dav

EXHIBIT A

ANCHORAGE · ATLANTA · BOCA RATON · BOSTON · CHICAGO · CINCINNATI · CRANFORD · DENVER · HONOLULU · HOUSTON · LEXINGTON, KY · LOS ANGELES · NEW YORK · PHOENIX · PORTLAND · SALT LAKE CITY · SAN FRANCISCO · SANTA BARBARA · SEATTLE · SYRACUSE · WASHINGTON, D.C. · WHITE PLAINS

DAMES & MOORE

CONSULTANTS IN THE ENVIRONMENTAL AND APPLIED EARTH SCIENCES

JAKARTA · KUWAIT · LONDON · MADRID · PERTH · RIYADH · SINGAPORE · SYDNEY · TEHRAN · TOKYO · TORONTO · VANCOUVER

SUITE 200, 455 EAST PACES FERRY ROAD · ATLANTA, GEORGIA 30363 · (404) 262-2915
CABLE: DAMEMORE
TWX: 810-751-8218

September 24, 1980

USS Agri-Chemicals
Post Office Box 150
Bartow, Florida 33830

Attention: Mr. Basil Powell

Re: Evaluation of Ambient Sulfur Dioxide Concentrations Attributable to All USSAC Emission Sources After Proposed Modifications Are Completed

Gentlemen:

As requested by the Florida Department of Environmental Regulation, attached is a modeling evaluation of ambient sulufur dioxide concentrations resulting from simultaneous operation of the propoed new sulfuric acid plant and existing emission sources. Concentrations predicted are shown in comparison with applicable ambient air quality standards.

Please call if there are any questions regarding this report.

Yours very truly,

DAMES & MOORE

James W. Little

James W. Little
Senior Air Quality Analyst

JWL:ht

USS
Agri-Chemicals
Division of United States Steel Corporation

MAIL: P. O. BOX 150
BARTOW, FLORIDA 33830
813 - 533-0471

September 25, 1980

RECEIVED
SEP 1980
BUREAU
AQM

Mr. Steve Smallwood
Florida Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

Re: Construction Permits, Air Sources
Ft. Meade Phosphate Chemical Complex

Dear Mr. Smallwood:

In response to your letter of August 29, 1980, received September 12, please refer to enclosed Exhibits A through D which provide the additional information requested by the Bureau.

We trust you will find this is satisfactory to your requirements and that the construction permits will issue in the near future.

Very truly yours,

USS AGRI-CHEMICALS

G. W. Beck, Manager
Florida Phosphate Operations

GWB:BP:myv

Encls.

EXHIBIT-A

FLORIDA AMBIENT AIR QUALITY STANDARDS FOR SO_2

Herewith, as EXHIBIT-A, is a report from USSAC's consultant, Dames & Moore, which addresses the question raised by DER's letter of August 29, 1980 concerning ambient air quality.

In summary, the modeling evaluation concludes that ambient air quality standards will not be violated with operation of the new sulfuric acid plant along with the existing rock dryer and existing GTSP plant. Numerical comparisons to Florida Standards are shown Table 2, page 8. Details are included elsewhere in the report.

BEST AVAILABLE COPY

EXHIBIT A

DAMES & MOORE

September 24, 1980

USS Agri-Chemicals
Post Office Box 150
Bartow, Florida 33830

Attention: Mr. Basil Powell

Re: Evaluation of Ambient Sulfur Dioxide Concentrations Attributable to All USSAC Emission Sources After Proposed Modifications Are Completed

Gentlemen:

As requested by the Florida Department of Environmental Regulation, attached is a modeling evaluation of ambient sulufur dioxide concentrations resulting from simultaneous operation of the propoed new sulfuric acid plant and existing emission sources. Concentrations predicted are shown in comparison with applicable ambient air quality standards.

Please call if there are any questions regarding this report.

Yours very truly,

DAMES & MOORE

James W. Little

James W. Little
Senior Air Quality Analyst

JWL:ht

EVALUATION OF AMBIENT SULFUR DIOXIDE CONCENTRATIONS ATTRIBUTABLE TO ALL USS AGRI-CHEMICALS EMISSION SOURCES AFTER PROPOSED MODIFICATIONS ARE COMPLETED

1. INTRODUCTION

USS Agri-Chemicals (USSAC) is proposing to replace an existing sulfuric acid plant at its Fort Meade Phosphate Chemical Complex with a new sulfuric acid plant. This new plant will have a greater production capacity than the existing plant, but at the same time will be able to achieve a much lower sulfur dioxide (SO_2) emission rate on a pounds per ton basis. In fact, annual average SO_2 emissions from the new plant are expected to be less than those from the existing plant even though sulfuric acid production will substantially increase.

On a short-term basis, however, SO_2 emissions from the new plant can exceed those from the existing plant. At its permitted production rate of 1500 tons per day (100 percent H_2SO_4), the existing plant is allowed to emit and frequently does emit SO_2 at the rate of 10 pounds per ton (lb/ton), which is equivalent to a rate of 625 pounds per hour (lb/h) or 15,000 pounds per day (lb/d). In comparison, the new plant is expected to be able to achieve a daily production rate of up to 4,400 tons. At the maximum allowable SO_2 emission rate of 4 lb/ton, maximum short-term SO_2 emissions from the new plant would be 733 lb/h and 17,600 lb/d.

In a previous modeling evaluation submitted to DER, it was shown that replacement of the existing sulfuric acid plant by the new plant should result in only a very minor increase in ambient SO_2 concentrations (less than the EPA significance levels), even under the worst dispersion conditions. Although increases in ambient SO_2 concentrations (if any) will apparently be very minor when the existing sulfuric plant is replaced, DER has requested an evaluation to determine if total SO_2 concentrations resulting from the combined contribution of new emission sources and existing emission sources which will continue in operation will be in compliance with ambient air quality standards. That is the purpose of this report.

2. DESCRIPTION OF EMISSION SOURCES

After the proposed changes have been completed, major SO_2 emission sources at the Fort Meade Phosphate Chemical Complex will consist of the new sulfuric acid plant, the existing rock dryer, and the existing granular triple superphosphate (GTSP) plant which involves a product drying operation. There will also be a new auxiliary boiler associated with the new sulfuric acid plant. However, this new boiler will merely be a replacement for an existing boiler of about the same size, it will only operate about 5 weeks a year, and it will use natural gas as a preferred fuel whenever available. This new boiler will have a stack height of 70 ft and will not be as prone to stack downwash as are some small boilers with a lower stack. Moreover, the purpose of the auxiliary boiler is to supply steam when one or both trains of the sulfuric plant are inoperative. Hence, there would be no need to operate the boiler when the sulfuric acid plant was operating at capacity as assumed in this evaluation. In light of these considerations, the new auxiliary boiler has not been included in the modeling analysis.

Existing Rock Dryer

The existing rock dryer can operate on both fuel oil or natural gas. Use of fuel oil of course results in greatest SO_2 emissions. Although the simplest method of estimating SO_2 emissions is to assume that all fuel oil sulfur is converted to SO_2 and released to the atmosphere, this is not an accurate method. Sulfur removal can occur through retention in the material being dried and through absorption in the wet scrubber used for particulate control.

A recent test involving both dryer stacks was run to compare fuel oil sulfur content with sulfur emissions. During this test, No. 6 oil was burned at a rate of 8.5 gal/min. This fuel contained 2.2 percent sulfur by weight and had a density of 8.155 lb/gal. Therefore, if all fuel oil sulfur had been emitted as SO_2, the emission rate would have been 183 lb/h. The actual measured emission rate, however, was 58.0 lb/h from one stack and 67.3 lb/h from the other stack, for a total of

125.3 lb/h. Therefore, approximately 31 percent of the original sulfur present in the fuel was removed.

The rock drying rate during the test was 235 ton/h compared to the allowable rate of 250 ton/h. For modeling purposes, the measured SO_2 emission rate and the measured volumetric flow were scaled upward to reflect the amount of fuel oil which would be used at the allowable drying rate. Resulting emission characteristics are shown in Table 1. (It should be noted that 24-hour and annual modeling results based on allowable hourly drying rates are probably conservative because actual average drying rates are less than allowable and the dryer does not run 24 hours per day.)

<u>Existing GTSP Plant</u>

The existing GTSP plant includes dryers which use natural gas as a fuel when available and fuel oil otherwise. SO_2 emissions during fuel oil combustion can be calculated based on fuel sulfur content; but, as is the case with the rock dryer, this is not the most accurate method because sulfur removal is possible before combustion products are released to the atmosphere. Removal can occur through retention on the product being dryed and through absorption in the scrubber used for control of other emissions.

To determine sulfur removal efficiency, a recent test was run on one of the GTSP production trains. (The two trains are identical, so it is assumed that a test run on one train will be valid for both.) No. 6 fuel oil was burned at a rate of 3.1 gal/min during the test. This fuel contained 2.48 percent sulfur by weight and had a density of 8.155 lb/gal. If all the sulfur in the fuel had been emitted as SO_2, the resultant emission rate would have been 75.2 lb/h. The actual measured emission rate, however, was 72.5 lb/h, representing a sulfur removal efficiency of a little more than 3 percent. The large difference in sulfur removal efficiency between the GTSP plant and the rock dryer can be attributed primarily to differences in the pH of scrubber water. The GTSP plant scrubber uses recycled acid pond water with a pH of 4 or less, whereas the pH of rock dryer scrubber water is about 7.

Meteorological Input

The meteorological observation station typically used for central Florida modeling studies is the Tampa National Weather Service station. Following this typical practice, Tampa surface and upper air data were used for the present analysis. Although several years of Tampa data are available in the correct format for the CRSTER Model, only a single year was used. The year 1972 was selected because of the high 24-hour concentrations typically resulting from use of this data set.

Receptor Grid

A point centered between the locations of the new sulfuric acid plant, the existing rock dryer, and the existing GTSP plant was selected as the point from which SO_2 emissions originate. This point is at least 0.6 km from the nearest USSAC property line (State Road 630 to the north), and in most directions is even further away from the boundaries of USSAC-owned property. Therefore, the receptor distances evaluated through the CRSTER Model begin at 0.6 km and continue outward. (The CRSTER Model establishes a polar coordinate receptor grid so that it is only necessary to specify radial distances and calculations are automatically made at ten-degree direction increments for each distance selected.)

The following distances were evaluated using the entire year of meteorological data: 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.3, 1.5, and 2.0 km. It was unnecessary to go beyond 2.0 km to determine that distances of maximum concentration had been reached for all averaging periods, as can be seen in the attached computer printouts.

4. MODELING RESULTS

Modeling results are summarized in Table 2 and presented in detail in Attachments B and C. Table 2 shows highest predicted 3-hour, 24-hour, and annual average SO_2 concentrations in comparsion with Florida and national ambient air quality standards.

As can be seen, highest predicted 3-hour and annual average concentrations are less than 50 percent of applicable standards. Also, it should be noted that annual concentrations were calculated assuming continuous operation of emission sources at maximum production rates. If average emission rates had been used, the predicted highest annual concentration would be less than that shown.

The highest predicted 24-hour concentration is 251 $\mu g/m^3$, slightly less than the Florida standard of 260 $\mu g/m^3$ and considerably less than the national standard of 365 $\mu g/m^3$. This highest concentration (and several of the next highest concentrations as well) is associated with an unusual meteorological episode of very persistent westerly winds which occurred in the aftermath of Hurricane Agnes. If this episode is excluded, then the highest predicted 24-hour concentration is 180 $\mu g/m^3$ as shown in Table 2.

The SO_2 concentrations which have been calculated are solely attributable to emissions from the Fort Meade Phosphate Chemical Complex. They do not include any allowance for background SO_2 levels, nor do they include contributions from other point sources in the general region. Background SO_2 concentrations in rural areas of Florida are normally very low, often below the detection limit of standard monitoring instruments. Therefore, addition of a background concentration would not significantly increase the predicted concentrations reported in Table 2. Regarding possible interaction with other emission sources, there are no other large existing SO_2 sources in the immediate vicinity of the Fort Meade Phosphate Chemical Complex, and thus there is little likelihood of significant interaction at points of highest concentration attributable to USSAC emissions during the specific meteorological conditions associated with highest predicted concentrations.

The conclusion is reached, therefore, that operation of the new sulfuric acid plant along with operation of the existing rock dryer and existing GTSP plant should result in compliance with ambient SO_2 standards.

TABLE 1

USS Agri-Chemicals Emission Source Characteristics

Source	SO_2 Emission Rate As Measured In Recent Stack Test (lb/h)	SO_2 Emission Rate Scaled Up To Allowable Production Levels (lb/h)	Volumetric Flow As Measured In Recent Stack Test (ft^3/min)	Volumetric Flow Scaled Up To Allowable Production Levels (ft^3/min)	Stack Height (ft)	Stack Diameter (ft)	Exit Temperature (°F)
Rock Dryer							
East Stack	58.0	--	65,300	--	52	6	136
West Stack	67.3	--	64,200	--	52	6	142
Composite[a]	--	133.3	--	68,900	52	6	139
GTSP Plant							
Stack 11X	72.5	--	72,600	--	93	5	122
Stack 11Y	72.5[b]	--	72,600[b]	--	93	5	122
Composite[a]	--	148.0	--	74,200	93	5	122
New Sulfuric Acid Plant							
Composite[a,c]	--	733	--	105,500[d]	175	8.5	180

[a] For modeling purposes, a single composite stack was used with an emission rate equal to the total for both stacks.
[b] A stack test was not actually performed on Stack 11Y. Stack 11Y characteristics are assumed to be the same as those for Stack 11X.
[c] The new sulfuric acid plant will have two identical stacks.
[d] The most recent design volumetric flow rate is slightly higher than this rate (see permit application). This lower, more conservative value was used in the previous PSD modeling analysis and is used again here for consistency.

TABLE 2

SO_2 Modeling Results

Averaging Period	Highest Predicted Concentration ($\mu g/m^3$)	Distance and Direction to Highest Concentration From Point of Emissions	Florida Ambient Standards ($\mu g/m^3$)	National Ambient Standards ($\mu g/m^3$)
3-Hour	644	0.6 km, 100°	1300	1300
24-Hour	251[a] 180[b]	0.8 km, 90° 0.9 km, 280°	260	365
Annual	23[c]	0.6 km, 90°	60	80

[a] Highest concentration based on entire 1972 Tampa meteorological data set.

[b] Highest concentration excluding Days 173 through 178 of 1972 Tampa meteorological data set.

[c] Highest annual concentration based on continuous emission at maximum hourly rates.

ATTACHMENT A

Emission Source Characteristics
Used in All Modeling Runs

STACK # 1--SULFURIC ACID PLANT
STACK # 2--ROCK DRIER
STACK # 3--GTSP PLANT

STACK	MONTH	EMISSION RATE (GMS/SEC)	HEIGHT (METERS)	DIAMETER (METERS)	EXIT VELOCITY (M/SEC)	TEMP (DEG.K)	VOLUMETRIC FLOW (M**3/SEC)
1	ALL	92.3600	53.30	2.59	9.45	355.00	49.79
2	ALL	16.8000	15.80	1.83	12.40	332.00	32.61
3	ALL	18.6000	28.30	1.52	19.20	323.00	34.84

The total GTSP production rate (both trains combined) during the stack test period was 21.2 ton/h on a P_2O_5 basis. This is equivalent to 509 tons of P_2O_5 per day, compared to the allowable total P_2O_5 production rate of 519 ton/d. For modeling purposes, the measured SO_2 emission rate and the measured volumetric flow were scaled upward to reflect the amount of fuel oil which would be used at the allowable production rate. Resulting emission characteristics are shown in Table 1.

New Sulfuric Acid Plant

The new sulfuric acid plant will consist of two identical trains with a combined production capacity of up to 4,400 tons of 100 percent H_2SO_4 per day. Emission characteristics used for modeling purposes are listed in Table 1. The SO_2 emission rate shown is based on the allowable level of 4 lb SO_2 per ton 100 percent H_2SO_4.

3. ANALYSIS PROCEDURES

Model

EPA's single-source CRSTER Model was used to assess 3-hour, 24-hour, and annual average SO_2 concentrations.

Emission Characteristics

Specific emission source characteristics used for modeling purposes are discussed above, and are listed in Attachment A (a copy from one of the modeling run printouts). The two stacks of each production unit were treated as a single stack in the usual conservative fashion of considering total SO_2 emissions to be released with the dispersion characteristics (stack height, stack diameter, exit velocity, exit temperature) of one of the two stacks. In addition, all three emission sources were considered to be located at the same point even though in reality they are separated by distances of several hundred feet. This adds to the conservatism of the modeling analysis, especially at receptor points located relatively close to the emission source point.

ATTACHMENT B

Concentrations at Distances of 0.6, 0.8, 1.0, 1.5, and 2.0 km Using Entire 1972 Meteorological Data Set

PLANT NAME: USS AGRI-CHEMICALS POLLUTANT: EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

MAXIMUM MEAN CONC= 2.3044E-05 DIRECTION= 9 DISTANCE= .6 KM

ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR

RANGE DIR	.6 KM	.8 KM	1.0 KM	1.5 KM	2.0 KM
1	7.21257E-06	7.38545E-06	7.01341E-06	5.54029E-06	4.45748E-06
2	9.34694E-06	9.67064E-06	9.24435E-06	7.35614E-06	5.94374E-06
3	8.41691E-06	8.40231E-06	7.85451E-06	6.06429E-06	4.81634E-06
4	7.19796E-06	6.91568E-06	6.28644E-06	4.69330E-06	3.71811E-06
5	8.54045E-06	8.08641E-06	7.27821E-06	5.36873E-06	4.22796E-06
6	1.00808E-05	9.53316E-06	8.56373E-06	6.23197E-06	4.76610E-06
7	1.12692E-05	1.05928E-05	9.44444E-06	6.78694E-06	5.17023E-06
8	1.53909E-05	1.44503E-05	1.28520E-05	9.14846E-06	6.86748E-06
9	2.30435E-05	2.24179E-05	2.05773E-05	1.54989E-05	1.20775E-05
10	1.57522E-05	1.52267E-05	1.39042E-05	1.03703E-05	8.03905E-06
11	8.35690E-06	8.39111E-06	7.95128E-06	6.38252E-06	5.24948E-06
12	5.57181E-06	5.77293E-06	5.60691E-06	4.68616E-06	3.98099E-06
13	5.63851E-06	6.06765E-06	6.04578E-06	5.23988E-06	4.54838E-06
14	5.17672E-06	5.70274E-06	5.75653E-06	5.15297E-06	4.65288E-06
15	5.09149E-06	5.73840E-06	5.87276E-06	5.28509E-06	4.69549E-06
16	4.57963E-06	5.04065E-06	5.04941E-06	4.37606E-06	3.78819E-06
17	4.56597E-06	4.95481E-06	4.90806E-06	4.13966E-06	3.50478E-06
18	4.85514E-06	5.42059E-06	5.47593E-06	4.77517E-06	4.16108E-06
19	3.88740E-06	4.21382E-06	4.18949E-06	3.60402E-06	3.13376E-06
20	3.77076E-06	3.99775E-06	3.94525E-06	3.36106E-06	2.89702E-06
21	5.37556E-06	5.85280E-06	5.86017E-06	5.08277E-06	4.46892E-06
22	7.60621E-06	8.21623E-06	8.16823E-06	6.94798E-06	5.92603E-06
23	9.83125E-06	1.07582E-05	1.08555E-05	9.63474E-06	8.61778E-06
24	1.06383E-05	1.16503E-05	1.17939E-05	1.05341E-05	9.43468E-06
25	1.07541E-05	1.16988E-05	1.18394E-05	1.06667E-05	9.72075E-06
26	1.20145E-05	1.30038E-05	1.30724E-05	1.15726E-05	1.03511E-05
27	1.56308E-05	1.72239E-05	1.75073E-05	1.57730E-05	1.42100E-05
28	1.26144E-05	1.35582E-05	1.34719E-05	1.16222E-05	1.01346E-05
29	9.42521E-06	1.00527E-05	9.97460E-06	8.62270E-06	7.55895E-06
30	8.39202E-06	8.94485E-06	8.83513E-06	7.62622E-06	6.71654E-06
31	7.53232E-06	8.01430E-06	7.90124E-06	6.72825E-06	5.80427E-06
32	7.25560E-06	7.64512E-06	7.41745E-06	6.06343E-06	5.01805E-06
33	7.61883E-06	8.06467E-06	7.86607E-06	6.52722E-06	5.51685E-06
34	6.15305E-06	6.59618E-06	6.45156E-06	5.30661E-06	4.37950E-06
35	4.31158E-06	4.60475E-06	4.51851E-06	3.77964E-06	3.18949E-06
36	6.18459E-06	6.59263E-06	6.47503E-06	5.43413E-06	4.58115E-06

PLANT NAME: USS AGRI-CHEMICALS   POLLUTANT: EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 24-HOUR CONC= 2.5144E-04 DIRECTION= 9 DISTANCE= .8 KM DAY=175

HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.6 KM	.8 KM	1.0 KM	1.5 KM	2.0 KM
1	9.0688E-05 (113)	8.1982E-05 (113)	7.3156E-05 (330)	6.4474E-05 (65)	5.9170E-05 (65)
2	1.1629E-04 (55)	1.1618E-04 (55)	1.0620E-04 (55)	7.8537E-05 (89)	6.6352E-05 (89)
3	1.1829E-04 (76)	1.2923E-04 (76)	1.2992E-04 (76)	1.1211E-04 (76)	9.3956E-05 (76)
4	7.6933E-05 (135)	6.8984E-05 (135)	6.0285E-05 (269)	5.9532E-05 (125)	5.5756E-05 (125)
5	1.0204E-04 (211)	8.7444E-05 (211)	7.2131E-05 (211)	5.0659E-05 (98)	4.4138E-05 (98)
6	9.9099E-05 (261)	8.9197E-05 (210)	8.0860E-05 (210)	6.1047E-05 (210)	4.9112E-05 (210)
7	9.4576E-05 (316)	1.0389E-04 (220)	1.0255E-04 (220)	8.6865E-05 (220)	7.4216E-05 (220)
8	1.6456E-04 (177)	1.7465E-04 (177)	1.7287E-04 (177)	1.4715E-04 (177)	1.2283E-04 (177)
9	2.3998E-04 (175)	2.5144E-04 (175)	2.4456E-04 (175)	2.0202E-04 (175)	1.6577E-04 (175)
10	1.6079E-04 (183)	1.4446E-04 (183)	1.2911E-04 (178)	1.0790E-04 (178)	8.8937E-05 (178)
11	9.8410E-05 (143)	9.6237E-05 (143)	9.0988E-05 (183)	7.8207E-05 (44)	6.8404E-05 (183)
12	7.3998E-05 (143)	7.5721E-05 (245)	7.6170E-05 (245)	6.1538E-05 (245)	4.9252E-05 (245)
13	8.4480E-05 (146)	7.8507E-05 (50)	7.6036E-05 (50)	6.5547E-05 (91)	5.9643E-05 (91)
14	6.5870E-05 (281)	6.8148E-05 (281)	6.6631E-05 (281)	5.5562E-05 (281)	4.8745E-05 (325)
15	1.0314E-04 (50)	1.1874E-04 (50)	1.2280E-04 (50)	1.0892E-04 (50)	9.2482E-05 (50)
16	6.9743E-05 (263)	6.4383E-05 (51)	6.7276E-05 (6)	6.2645E-05 (6)	5.5357E-05 (6)
17	8.8012E-05 (263)	9.5640E-05 (326)	1.0143E-04 (326)	9.0209E-05 (326)	7.5805E-05 (326)
18	9.0737E-05 (326)	1.1131E-04 (326)	1.1682E-04 (326)	1.0176E-04 (326)	8.5384E-05 (326)
19	7.8498E-05 (35)	9.7420E-05 (35)	1.0426E-04 (35)	9.5971E-05 (35)	8.3605E-05 (35)
20	6.1220E-05 (252)	6.1985E-05 (336)	5.8434E-05 (336)	4.3500E-05 (40)	3.7025E-05 (40)
21	8.5224E-05 (252)	7.4112E-05 (252)	6.6707E-05 (16)	5.9228E-05 (16)	5.0216E-05 (338)
22	9.5621E-05 (69)	1.0525E-04 (69)	1.0608E-04 (69)	9.1149E-05 (69)	7.5946E-05 (69)
23	1.1243E-04 (117)	1.2140E-04 (117)	1.2043E-04 (117)	1.0258E-04 (69)	8.8545E-05 (353)
24	1.2890E-04 (42)	1.4772E-04 (42)	1.4926E-04 (42)	1.2625E-04 (42)	1.0415E-04 (42)
25	1.2048E-04 (156)	1.1250E-04 (156)	1.0700E-04 (100)	9.0799E-05 (100)	7.7281E-05 (311)
26	1.3313E-04 (265)	1.2803E-04 (265)	1.1524E-04 (265)	8.5522E-05 (284)	7.0286E-05 (203)
27	1.5257E-04 (306)	1.6697E-04 (306)	1.6840E-04 (306)	1.5054E-04 (306)	1.3450E-04 (306)
28	1.5884E-04 (133)	1.7830E-04 (133)	1.8003E-04 (133)	1.5519E-04 (133)	1.3078E-04 (133)
29	1.1954E-04 (101)	1.2205E-04 (101)	1.1540E-04 (101)	9.1272E-05 (119)	7.3867E-05 (119)
30	8.0975E-05 (347)	8.4163E-05 (347)	8.0973E-05 (347)	6.5447E-05 (347)	5.7297E-05 (324)
31	7.8708E-05 (318)	8.2484E-05 (318)	7.8537E-05 (318)	6.0936E-05 (318)	5.0093E-05 (213)
32	9.1448E-05 (61)	9.1397E-05 (301)	9.6759E-05 (301)	9.0005E-05 (301)	8.0269E-05 (301)
33	9.9749E-05 (301)	1.1656E-04 (12)	1.2100E-04 (12)	1.0651E-04 (12)	9.2528E-05 (12)
34	6.6541E-05 (210)	7.0556E-05 (236)	7.4684E-05 (236)	6.5241E-05 (236)	5.7823E-05 (237)
35	4.8774E-05 (236)	5.6386E-05 (236)	5.7365E-05 (309)	5.1542E-05 (309)	4.2914E-05 (309)
36	8.1131E-05 (171)	8.5317E-05 (14)	9.4059E-05 (14)	9.0254E-05 (14)	8.1521E-05 (14)

PLANT NAME: USS AGRI-CHEMICALS POLLUTANT: EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 24-HOUR CONC= 2.3862E-04 DIRECTION= 9 DISTANCE= .8 KM DAY=173

SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.6 KM	.8 KM	1.0 KM	1.5 KM	2.0 KM
1	7.7711E-05 (171)	7.2352E-05 (330)	7.0699E-05 (113)	6.3531E-05 (330)	5.3580F-05 (330)
2	9.4565E-05 (57)	9.4552E-05 (89)	9.3114E-05 (69)	7.6051E-05 (55)	6.4909F-05 (22)
3	1.0144E-04 (129)	1.0269E-04 (129)	9.6803E-05 (129)	8.1629E-05 (89)	7.2341F-05 (89)
4	7.4298E-05 (269)	6.8921E-05 (269)	5.8673E-05 (135)	4.0037E-05 (269)	3.2994F-05 (104)
5	9.5651E-05 (261)	7.9003E-05 (261)	6.5258E-05 (233)	4.7071E-05 (172)	3.8125F-05 (172)
6	9.3716E-05 (210)	8.4426E-05 (261)	7.2937E-05 (107)	5.9121E-05 (107)	4.8667F-05 (107)
7	9.4573E-05 (309)	9.5075E-05 (316)	8.7601E-05 (316)	6.3521E-05 (316)	5.0803F-05 (177)
8	1.1695E-04 (219)	1.1036E-04 (153)	1.0882E-04 (153)	8.8682E-05 (153)	7.6599F-05 (180)
9	2.2858E-04 (173)	2.3862E-04 (173)	2.3392E-04 (173)	1.9604E-04 (173)	1.6245F-04 (174)
10	1.4638E-04 (242)	1.3809E-04 (182)	1.2883E-04 (182)	9.4730E-05 (182)	7.1595F-05 (182)
11	9.4554E-05 (183)	9.5116E-05 (183)	8.9807E-05 (143)	7.6807E-05 (183)	6.6183F-05 (44)
12	7.1666E-05 (184)	7.3927E-05 (143)	6.9079E-05 (143)	5.3777E-05 (143)	4.7312F-05 (142)
13	7.7894E-05 (50)	7.5293E-05 (146)	7.1810E-05 (44)	6.3598E-05 (44)	5.4132F-05 (44)
14	6.0573E-05 (280)	6.3722E-05 (280)	6.2595E-05 (280)	5.2622E-05 (280)	4.5646F-05 (281)
15	5.8413E-05 (259)	6.3031E-05 (6)	7.4075E-05 (6)	7.6687E-05 (6)	7.2791F-05 (6)
16	5.6037E-05 (51)	6.2387E-05 (6)	6.6861E-05 (51)	5.9641E-05 (51)	5.0895F-05 (51)
17	7.6307E-05 (326)	8.5654E-05 (6)	8.8666E-05 (6)	7.8503E-05 (6)	6.6669F-05 (6)
18	6.3880E-05 (35)	7.6215E-05 (320)	8.6104E-05 (328)	8.8153E-05 (328)	8.2935F-05 (328)
19	4.4576E-05 (239)	5.3270E-05 (16)	5.7050E-05 (16)	5.2399E-05 (16)	5.2237F-05 (236)
20	5.9095E-05 (336)	4.9387E-05 (252)	4.8649E-05 (40)	4.3311E-05 (336)	3.1935F-05 (336)
21	6.4778E-05 (189)	6.4055E-05 (16)	6.4804E-05 (92)	5.6800E-05 (92)	5.0128F-05 (16)
22	8.5523E-05 (191)	9.0120E-05 (191)	9.0362E-05 (66)	8.1277E-05 (329)	7.3481F-05 (329)
23	1.0411E-04 (69)	1.1937E-04 (69)	1.1991E-04 (69)	1.0218E-04 (117)	8.5582F-05 (117)
24	1.1207E-04 (294)	1.1369E-04 (271)	1.1004E-04 (294)	9.0000E-05 (294)	7.3318F-05 (100)
25	9.9252E-05 (100)	1.0728E-04 (100)	1.0430E-04 (156)	8.6053E-05 (311)	7.5054F-05 (100)
26	1.1118E-04 (257)	1.0733E-04 (284)	1.0377E-04 (284)	8.2971E-05 (203)	7.0127F-05 (284)
27	1.3335E-04 (268)	1.4244E-04 (268)	1.3865E-04 (268)	1.1801E-04 (202)	1.0268F-04 (202)
28	1.4250E-04 (121)	1.6065E-04 (121)	1.6353E-04 (121)	1.4364E-04 (121)	1.2255F-04 (121)
29	1.1242E-04 (119)	1.1610E-04 (119)	1.1210E-04 (119)	8.9730E-05 (101)	7.0607F-05 (101)
30	8.0697E-05 (185)	7.4138E-05 (185)	6.9496E-05 (324)	6.4861E-05 (324)	5.3382F-05 (347)
31	7.7327E-05 (269)	7.5065E-05 (269)	7.1948E-05 (332)	5.6455E-05 (213)	4.7486F-05 (318)
32	7.6630E-05 (364)	9.1073E-05 (61)	8.4023E-05 (61)	6.1832E-05 (61)	4.9022F-05 (1)
33	9.9478E-05 (12)	1.1379E-04 (301)	1.1587E-04 (301)	1.0130E-04 (301)	8.6131F-05 (301)
34	5.7686E-05 (236)	6.7068E-05 (210)	6.2929E-05 (237)	6.4003E-05 (237)	5.4848F-05 (236)
35	4.7650E-05 (319)	5.4557E-05 (309)	5.6712E-05 (236)	4.6448E-05 (236)	3.7157F-05 (236)
36	6.9241E-05 (301)	7.8280E-05 (171)	7.5959E-05 (301)	6.5356E-05 (301)	5.4955F-05 (301)

PLANT NAME: USS AGRI-CHEMICALS   POLLUTANT: EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM   3-HOUR CONC= 6.4412E-04 DIRECTION= 10 DISTANCE= .6 KM DAY=209 TIME PERIOD= 6

HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.6 KM	.8 KM	1.0 KM	1.5 KM	2.0 KM
1	4.0385E-04 (107, 4)	3.7050E-04 (107, 4)	3.6108E-04 (330, 7)	3.2418E-04 (330, 7)	2.7974E-04 (330, 7)
2	4.6720E-04 (55, 5)	4.2194E-04 (55, 5)	4.0684E-04 (237, 6)	3.8459E-04 (237, 6)	3.1505E-04 (237, 6)
3	3.7473E-04 (135, 5)	3.4508E-04 (57, 5)	3.2855E-04 (5, 5)	2.8711E-04 (76, 7)	2.4361E-04 (76, 7)
4	4.1862E-04 (110, 5)	3.8988E-04 (269, 6)	3.5848E-04 (269, 6)	2.5481E-04 (269, 6)	1.8766E-04 (125, 1)
5	4.2357E-04 (233, 4)	3.7997E-04 (233, 4)	3.3322E-04 (211, 6)	2.5403E-04 (130, 3)	2.3242E-04 (176, 8)
6	5.1161E-04 (210, 6)	4.5767E-04 (210, 6)	3.8798E-04 (210, 6)	2.6929E-04 (244, 4)	2.4780E-04 (350, 6)
7	5.7655E-04 (309, 5)	5.2270E-04 (309, 5)	4.4571E-04 (309, 5)	3.0627E-04 (220, 2)	2.6859E-04 (220, 2)
8	4.8874E-04 (220, 4)	4.3787E-04 (220, 4)	3.7096E-04 (153, 4)	3.0781E-04 (175, 7)	2.7133E-04 (175, 7)
9	5.6807E-04 (207, 4)	5.3271E-04 (207, 6)	4.9310E-04 (207, 6)	3.5223E-04 (207, 6)	3.0386E-04 (152, 7)
10	6.4412E-04 (209, 6)	6.1617E-04 (209, 6)	5.5128E-04 (209, 6)	3.7584E-04 (209, 6)	2.6603E-04 (96, 6)
11	3.8560E-04 (144, 6)	3.9382E-04 (144, 6)	3.8394E-04 (144, 6)	3.2170E-04 (144, 6)	2.6549E-04 (144, 6)
12	5.7310E-04 (184, 4)	4.8068E-04 (184, 4)	4.2333E-04 (245, 6)	3.3343E-04 (245, 6)	2.5864E-04 (245, 6)
13	3.7512E-04 (146, 4)	4.1435E-04 (226, 6)	4.2820E-04 (226, 6)	3.6977E-04 (226, 6)	2.9460E-04 (226, 6)
14	4.6699E-04 (249, 6)	4.5390E-04 (249, 6)	4.0942E-04 (249, 6)	3.5739E-04 (65, 6)	3.2101E-04 (65, 6)
15	2.7813E-04 (109, 6)	2.9761E-04 (50, 1)	3.1132E-04 (50, 1)	3.0843E-04 (6, 3)	2.8576E-04 (6, 3)
16	4.3444E-04 (263, 4)	3.5728E-04 (263, 4)	2.7995E-04 (263, 4)	2.2075E-04 (148, 6)	1.9108E-04 (148, 6)
17	5.6465E-04 (263, 4)	4.9479E-04 (263, 4)	4.1287E-04 (263, 4)	2.5773E-04 (263, 4)	1.9786E-04 (326, 2)
18	3.5896E-04 (147, 4)	3.7160E-04 (147, 4)	3.5323E-04 (147, 4)	3.1685E-04 (15, 4)	2.8334E-04 (15, 4)
19	3.2047E-04 (208, 5)	3.4217E-04 (208, 5)	3.3539E-04 (236, 6)	3.8464E-04 (236, 6)	3.6948E-04 (236, 6)
20	2.6987E-04 (336, 5)	2.7376E-04 (336, 5)	2.6799E-04 (31, 4)	2.4288E-04 (31, 4)	2.1019E-04 (31, 4)
21	4.0033E-04 (256, 5)	3.6998E-04 (256, 5)	3.1761E-04 (288, 5)	2.1523E-04 (329, 1)	2.0856E-04 (329, 1)
22	3.6260E-04 (122, 5)	3.4486E-04 (122, 5)	3.1493E-04 (69, 2)	2.7887E-04 (69, 2)	2.3699E-04 (69, 2)
23	3.9763E-04 (283, 4)	3.4483E-04 (283, 4)	3.1200E-04 (70, 1)	2.9610E-04 (17, 8)	2.6483E-04 (17, 8)
24	3.7042E-04 (158, 5)	4.1236E-04 (267, 6)	4.0826E-04 (267, 6)	3.3555E-04 (267, 6)	2.7487E-04 (267, 6)
25	5.2442E-04 (86, 5)	4.9347E-04 (86, 5)	4.1917E-04 (86, 5)	2.9051E-04 (203, 3)	2.4553E-04 (101, 1)
26	4.9723E-04 (257, 4)	4.3987E-04 (257, 4)	4.1903E-04 (164, 3)	3.2939E-04 (66, 6)	2.8793E-04 (66, 6)
27	4.4576E-04 (306, 5)	4.3806E-04 (306, 5)	4.1419E-04 (306, 6)	3.6469E-04 (306, 6)	3.1795E-04 (268, 8)
28	6.1776E-04 (230, 4)	6.0019E-04 (230, 4)	5.3940E-04 (230, 4)	3.6975E-04 (230, 4)	2.9372E-04 (133, 7)
29	2.9794E-04 (185, 4)	2.9570E-04 (101, 6)	2.8186E-04 (101, 6)	2.6919E-04 (47, 2)	2.6582E-04 (47, 2)
30	4.7236E-04 (185, 4)	4.3086E-04 (1, 4)	3.8778E-04 (1, 4)	3.4017E-04 (324, 3)	3.0256E-04 (324, 3)
31	3.6636E-04 (269, 4)	3.6029E-04 (269, 4)	3.3150E-04 (269, 4)	2.4884E-04 (269, 4)	2.0954E-04 (1, 6)
32	4.7052E-04 (364, 5)	4.7474E-04 (364, 5)	4.3641E-04 (364, 5)	3.1237E-04 (301, 2)	2.7920E-04 (301, 2)
33	5.4250E-04 (1, 5)	5.2474E-04 (1, 5)	4.6925E-04 (1, 5)	3.1759E-04 (1, 5)	2.4091E-04 (301, 8)
34	4.0966E-04 (210, 3)	4.2548E-04 (210, 3)	4.0297E-04 (210, 3)	3.0418E-04 (210, 3)	2.2916E-04 (210, 3)
35	2.9394E-04 (213, 5)	3.3298E-04 (309, 3)	3.7653E-04 (309, 3)	3.6791E-04 (309, 3)	3.1725E-04 (309, 3)
36	3.5630E-04 (136, 4)	3.2057E-04 (64, 4)	3.0423E-04 (91, 1)	2.5766E-04 (357, 3)	2.2752E-04 (357, 3)

PLANT NAME: USS AGRI-CHEMICALS   POLLUTANT: EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM   3-HOUR CONC= 5.5573E-04 DIRECTION= 9 DISTANCE= .6 KM DAY=124   TIME PERIOD= 4

SECOND HIGHEST   3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.6 KM	.8 KM	1.0 KM	1.5 KM	2.0 KM
1	3.6412E-04 (113, 5)	3.4875E-04 (330, 7)	3.1795E-04 (107, 4)	2.5775E-04 (38, 2)	2.4082E-04 (38, 2)
2	3.7852E-04 (57, 4)	3.6550E-04 (237, 6)	3.5465E-04 (55, 5)	3.1138E-04 (5, 6)	2.7990E-04 (5, 6)
3	3.7088E-04 (57, 5)	3.2973E-04 (5, 5)	3.2644E-04 (76, 7)	2.8199E-04 (5, 5)	2.3637E-04 (5, 5)
4	3.9598E-04 (269, 6)	3.5674E-04 (245, 5)	3.3199E-04 (245, 5)	2.4828E-04 (245, 5)	1.8468E-04 (76, 8)
5	4.1841E-04 (150, 4)	3.7041E-04 (211, 6)	3.1909E-04 (233, 4)	2.3212E-04 (55, 4)	2.2815E-04 (130, 3)
6	4.3484E-04 (261, 5)	4.0132E-04 (85, 4)	3.6421E-04 (85, 4)	2.6091E-04 (85, 4)	2.3126E-04 (366, 5)
7	5.1979E-04 (298, 5)	4.3829E-04 (298, 5)	3.7680E-04 (150, 6)	2.8346E-04 (309, 5)	2.0874E-04 (104, 6)
8	4.3919E-04 (153, 4)	4.1859E-04 (153, 4)	3.7027E-04 (220, 4)	2.9152E-04 (177, 6)	2.4074E-04 (177, 6)
9	5.5573E-04 (124, 4)	5.0109E-04 (182, 4)	4.3194E-04 (75, 6)	3.4811E-04 (152, 7)	2.7290E-04 (173, 7)
10	5.3391E-04 (183, 5)	4.4044E-04 (214, 5)	3.8081E-04 (214, 5)	3.1736E-04 (96, 6)	2.5728E-04 (209, 6)
11	3.5262E-04 (248, 5)	3.2536E-04 (131, 6)	2.8954E-04 (44, 6)	2.5144E-04 (44, 6)	2.2432E-04 (77, 3)
12	3.6427E-04 (245, 6)	4.2403E-04 (245, 6)	4.0271E-04 (184, 4)	2.7127E-04 (184, 4)	2.1487E-04 (5, 8)
13	3.5816E-04 (184, 4)	3.3911E-04 (146, 4)	2.8853E-04 (146, 4)	2.2114E-04 (262, 6)	1.9015E-04 (262, 6)
14	3.6578E-04 (281, 4)	3.6644E-04 (281, 4)	3.7466E-04 (65, 6)	2.9994E-04 (322, 5)	2.5744E-04 (322, 5)
15	2.6335E-04 (259, 6)	2.9357E-04 (259, 6)	3.0649E-04 (6, 3)	2.8114E-04 (50, 1)	2.4183E-04 (50, 1)
16	2.6533E-04 (259, 6)	2.6825E-04 (259, 6)	2.4761E-04 (259, 6)	2.0550E-04 (313, 4)	1.7178E-04 (313, 4)
17	2.6752E-04 (279, 5)	2.7383E-04 (23, 4)	2.6743E-04 (23, 4)	2.1934E-04 (326, 2)	1.9411E-04 (351, 8)
18	3.1874E-04 (260, 4)	3.2855E-04 (326, 4)	3.3841E-04 (15, 4)	2.6739E-04 (48, 1)	2.4541E-04 (351, 7)
19	2.4428E-04 (313, 5)	2.6782E-04 (236, 6)	3.2399E-04 (208, 5)	2.3683E-04 (208, 5)	2.0325E-04 (16, 2)
20	2.4743E-04 (256, 5)	2.5434E-04 (31, 4)	2.5036E-04 (336, 5)	2.0111E-04 (40, 7)	1.7222E-04 (40, 7)
21	3.5259E-04 (157, 6)	3.4914E-04 (288, 5)	3.1569E-04 (256, 5)	2.1189E-04 (288, 5)	2.0475E-04 (338, 5)
22	2.9903E-04 (283, 4)	3.0642E-04 (69, 2)	3.0663E-04 (122, 5)	2.4333E-04 (16, 7)	2.2763E-04 (244, 6)
23	3.3511E-04 (122, 5)	3.2205E-04 (122, 5)	3.0870E-04 (17, 8)	2.9051E-04 (70, 1)	2.5465E-04 (70, 1)
24	3.6985E-04 (267, 6)	3.2584E-04 (18, 4)	3.0956E-04 (118, 3)	2.6420E-04 (118, 3)	2.4785E-04 (118, 3)
25	3.8799E-04 (226, 4)	3.7289E-04 (203, 3)	3.6327E-04 (203, 3)	2.8506E-04 (100, 5)	2.3992E-04 (100, 5)
26	4.2399E-04 (247, 4)	4.3598E-04 (164, 3)	3.6664E-04 (257, 4)	3.2569E-04 (164, 3)	2.4875E-04 (164, 3)
27	4.1155E-04 (18, 5)	4.3110E-04 (18, 5)	4.1017E-04 (18, 5)	3.5987E-04 (268, 8)	3.1232E-04 (306, 6)
28	4.4404E-04 (168, 5)	4.2345E-04 (168, 5)	3.9214E-04 (133, 7)	3.4465E-04 (133, 7)	2.6684E-04 (119, 8)
29	2.9655E-04 (119, 5)	2.8967E-04 (253, 4)	2.7251E-04 (253, 4)	2.6371E-04 (346, 4)	2.4579E-04 (346, 4)
30	4.3983E-04 (1, 4)	3.9085E-04 (185, 4)	3.6099E-04 (324, 3)	2.8526E-04 (268, 5)	2.3103E-04 (343, 4)
31	3.3373E-04 (209, 3)	3.3225E-04 (332, 5)	3.0791E-04 (332, 5)	2.3590E-04 (1, 6)	1.9426E-04 (366, 4)
32	3.6397E-04 (61, 4)	3.4102E-04 (61, 4)	3.3092E-04 (301, 2)	3.0565E-04 (364, 5)	2.4501E-04 (135, 1)
33	4.1866E-04 (229, 4)	4.1299E-04 (12, 4)	3.7672E-04 (12, 4)	2.7123E-04 (301, 4)	2.3627E-04 (12, 2)
34	3.8197E-04 (211, 3)	3.6973E-04 (308, 3)	3.4148E-04 (308, 3)	2.7407E-04 (161, 4)	2.1567E-04 (161, 4)
35	2.5580E-04 (236, 4)	2.8113E-04 (236, 4)	2.7004E-04 (236, 4)	2.3599E-04 (274, 3)	2.1944E-04 (274, 3)
36	3.5360E-04 (64, 4)	3.1474E-04 (91, 1)	2.8692E-04 (28, 4)	2.4993E-04 (91, 1)	2.1578E-04 (302, 3)

PLANT NAME: USS AGRI-CHEMICALS   POLLUTANT: EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

MAXIMUM DAILY CONCENTRATIONS

DAY	24-HOUR CONCENTRATION	DIRECTION	DISTANCE
175	2.5144E-04	9	.80
173	2.3862E-04	9	.80
174	2.3574E-04	9	.80
178	1.8764E-04	9	.80
133	1.8003E-04	28	1.00
242	1.7739E-04	9	.60
177	1.7465E-04	8	.80
306	1.6840E-04	27	1.00
121	1.6353E-04	28	1.00
183	1.6079E-04	10	.60
180	1.5767E-04	9	.60
176	1.5745E-04	9	.80
182	1.4956E-04	9	.60
42	1.4926E-04	24	1.00
207	1.4893E-04	9	.60
219	1.4502E-04	9	.60
124	1.4371E-04	9	.60
268	1.4244E-04	27	.80
152	1.4064E-04	9	1.00
181	1.4015E-04	10	.60
265	1.3313E-04	26	.60
202	1.3045E-04	27	1.00
76	1.2992E-04	3	1.00
170	1.2869E-04	27	.80
254	1.2765E-04	27	.60
169	1.2672E-04	27	.80
179	1.2498E-04	9	.60
230	1.2426E-04	28	.60
165	1.2369E-04	28	1.00
50	1.2280E-04	15	1.00
101	1.2205E-04	29	.80
117	1.2140E-04	23	.80
12	1.2100E-04	33	1.00
156	1.2048E-04	25	.60
69	1.1991E-04	23	1.00
326	1.1682E-04	18	1.00
220	1.1663E-04	9	.60
55	1.1629E-04	2	.60
119	1.1610E-04	29	.80
301	1.1587E-04	33	1.00
144	1.1562E-04	9	.60
168	1.1546E-04	28	.60
225	1.1525E-04	9	.60
103	1.1439E-04	10	.60
271	1.1369E-04	24	.80
294	1.1367E-04	24	.80
257	1.1118E-04	26	.60
153	1.1036E-04	8	.80
127	1.0939E-04	28	.80
70	1.0915E-04	23	1.00

PLANT NAME: USS AGRI-CHEMICALS POLLUTANT: EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

MAXIMUM 3-HOURLY CONCENTRATIONS

DAY	3-HOUR CONCENTRATION	DIRECTION	DISTANCE	TIME PERIOD
209	6.4412E-04	10	.60	6
230	6.1776E-04	28	.60	4
209	6.1617E-04	10	.80	6
230	6.0019E-04	28	.80	4
309	5.7655E-04	7	.60	5
184	5.7310E-04	12	.60	4
207	5.6807E-04	9	.60	4
263	5.6485E-04	17	.60	4
124	5.5573E-04	9	.60	4
209	5.5128E-04	10	1.00	6
182	5.4880E-04	9	.60	4
1	5.4250E-04	33	.60	5
183	5.4195E-04	9	.60	4
230	5.3940E-04	28	1.00	4
183	5.3391E-04	10	.60	5
207	5.3271E-04	9	.80	6
207	5.3255E-04	9	.60	6
1	5.2474E-04	33	.80	5
86	5.2442E-04	25	.60	5
309	5.2270E-04	7	.80	5
298	5.1979E-04	7	.60	5
210	5.1161E-04	6	.60	6
242	5.0547E-04	9	.60	4
182	5.0109E-04	9	.80	4
257	4.9723E-04	26	.60	4
109	4.9532E-04	9	.60	5
263	4.9479E-04	17	.80	4
86	4.9347E-04	25	.80	5
207	4.9310E-04	9	1.00	6
220	4.8874E-04	8	.60	4
60	4.8465E-04	9	.60	5
184	4.8068E-04	12	.80	4
214	4.7751E-04	10	.60	5
124	4.7733E-04	9	.80	4
242	4.7578E-04	10	.60	4
364	4.7474E-04	32	.80	5
165	4.7236E-04	30	.60	4
180	4.7180E-04	10	.60	4
364	4.7052E-04	32	.60	5
1	4.6925E-04	33	1.00	5
55	4.6720E-04	2	.60	5
249	4.6699E-04	14	.60	6
215	4.5926E-04	10	.60	5
210	4.5767E-04	6	.80	6
183	4.5607E-04	9	.80	4
109	4.5462E-04	9	.80	5
249	4.5390E-04	14	.80	6
242	4.5282E-04	9	.60	5
75	4.4667E-04	9	.60	6
306	4.4576E-04	27	.60	5

ATTACHMENT C

Concentrations at Distances of 0.7, 0.9, 1.1, 1.2, and 1.3 km Using Entire 1972 Meteorological Data Set

PLANT NAME: USS AGRI-CHEMICALS   POLLUTANT: EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

MAXIMUM MEAN CONC= 2.3026E-05 DIRECTION= 9 DISTANCE= .7 KM

ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR

DIR \ RANGE	.7 KM	.9 KM	1.1 KM	1.2 KM	1.3 KM
1	7.41474E-06	7.23022E-06	6.69489E-06	6.38324E-06	6.08540E-06
2	9.66181E-06	9.50357E-06	8.84440E-06	8.44703E-06	8.06356E-06
3	8.52592E-06	8.15667E-06	7.45945E-06	7.07728E-06	6.71580E-06
4	7.14137E-06	6.61274E-06	5.91001E-06	5.56071E-06	5.24205E-06
5	8.40541E-06	7.69067E-06	6.82182E-06	6.40137E-06	6.02012E-06
6	9.91511E-06	9.06017E-06	8.01893E-06	7.51064E-06	7.04380E-06
7	1.10567E-05	1.00283E-05	8.81000E-06	8.22640E-06	7.69651E-06
8	1.50951E-05	1.36654E-05	1.19721E-05	1.11608E-05	1.04220E-05
9	2.30258E-05	2.15453E-05	1.94186E-05	1.83249E-05	1.73069E-05
10	1.56863E-05	1.45943E-05	1.30903E-05	1.23265E-05	1.16190E-05
11	8.48715E-06	8.19191E-06	7.60012E-06	7.26614E-06	6.95195E-06
12	5.75379E-06	5.70979E-06	5.41046E-06	5.21735E-06	5.03135E-06
13	5.94537E-06	6.08575E-06	5.88729E-06	5.72272E-06	5.55804E-06
14	5.54057E-06	5.75707E-06	5.63372E-06	5.50879E-06	5.38597E-06
15	5.52174E-06	5.83769E-06	5.76610E-06	5.65040E-06	5.53013E-06
16	4.90293E-06	5.07357E-06	4.91838E-06	4.78137E-06	4.64364E-06
17	4.84820E-06	4.95988E-06	4.75636E-06	4.59857E-06	4.44109E-06
18	5.23684E-06	5.48330E-06	5.34372E-06	5.20146E-06	5.05683E-06
19	4.12128E-06	4.22395E-06	4.07086E-06	3.94931E-06	3.82964E-06
20	3.94133E-06	3.98931E-06	3.82645E-06	3.70518E-06	3.58584E-06
21	5.70405E-06	5.88951E-06	5.70658E-06	5.54552E-06	5.38524E-06
22	8.04117E-06	8.23694E-06	7.92800E-06	7.67787E-06	7.42788E-06
23	1.04644E-05	1.08598E-05	1.06132E-05	1.03617E-05	1.01117E-05
24	1.13215E-05	1.17783E-05	1.15507E-05	1.12940E-05	1.10353E-05
25	1.13901E-05	1.16213E-05	1.16070E-05	1.13641E-05	1.11228E-05
26	1.26964E-05	1.30971E-05	1.27709E-05	1.24605E-05	1.21537E-05
27	1.66960E-05	1.74494E-05	1.71781E-05	1.68272E-05	1.64709E-05
28	1.32991E-05	1.35800E-05	1.30974E-05	1.27141E-05	1.23362E-05
29	9.88538E-06	1.00581E-05	9.69999E-06	9.41885E-06	9.14222E-06
30	8.80592E-06	8.93053E-06	8.58559E-06	8.33150E-06	8.08383E-06
31	7.89569E-06	7.99505E-06	7.66244E-06	7.41833E-06	7.17845E-06
32	7.57707E-06	7.56948E-06	7.13592E-06	6.85267E-06	6.57696E-06
33	7.97269E-06	8.00593E-06	7.58833E-06	7.30730E-06	7.03374E-06
34	6.49066E-06	6.56311E-06	6.22442E-06	5.98838E-06	5.75346E-06
35	4.53482E-06	4.58571E-06	4.36853E-06	4.21529E-06	4.06441E-06
36	6.49675E-06	6.56659E-06	6.26338E-06	6.04826E-06	5.83640E-06

PLANT NAME: USS AGRI-CHEMICALS POLLUTANT: EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 24-HOUR CONC= 2.4996E-04 DIRECTION= 9 DISTANCE= .7 KM DAY=175

HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.7 KM	.9 KM	1.1 KM	1.2 KM	1.3 KM
1	8.7074E-05 (113)	7.6346E-05 (113)	7.1388E-05 (330)	6.9514E-05 (330)	6.7563E-05 (330)
2	1.1819E-04 (55)	1.1180E-04 (55)	9.9675E-05 (55)	9.3230E-05 (55)	8.7087E-05 (55)
3	1.2604E-04 (76)	1.3022E-04 (76)	1.2663E-04 (76)	1.2316E-04 (76)	1.1955E-04 (76)
4	7.3650E-05 (135)	6.4772E-05 (269)	5.9549E-05 (125)	5.9970E-05 (125)	6.0061E-05 (125)
5	9.5260E-05 (211)	7.9566E-05 (211)	6.5363E-05 (211)	5.9346E-05 (211)	5.4077E-05 (211)
6	9.2439E-05 (210)	8.5109E-05 (210)	7.6117E-05 (210)	7.1756E-05 (210)	6.7804E-05 (210)
7	1.0141E-04 (220)	1.0380E-04 (220)	9.9149E-05 (220)	9.5855E-05 (220)	9.2712E-05 (220)
8	1.7239E-04 (177)	1.7442E-04 (177)	1.6780E-04 (177)	1.6266E-04 (177)	1.5749E-04 (177)
9	2.4996E-04 (175)	2.4897E-04 (175)	2.3571E-04 (175)	2.2698E-04 (175)	2.1843E-04 (175)
10	1.5404E-04 (183)	1.3441E-04 (182)	1.2476E-04 (178)	1.2046E-04 (178)	1.1621E-04 (178)
11	9.8435E-05 (143)	9.3263E-05 (183)	8.7618E-05 (183)	8.5184E-05 (44)	8.2951E-05 (44)
12	7.5097E-05 (143)	7.6851E-05 (245)	7.3753E-05 (245)	7.0814E-05 (245)	6.7680E-05 (245)
13	8.0570E-05 (146)	7.7533E-05 (50)	7.3145E-05 (50)	7.0248E-05 (50)	6.7371E-05 (50)
14	6.7894E-05 (281)	6.7615E-05 (281)	6.4387E-05 (281)	6.2149E-05 (281)	5.9924E-05 (281)
15	1.1331E-04 (50)	1.2158E-04 (50)	1.2061E-04 (50)	1.1805E-04 (50)	1.1519E-04 (50)
16	6.5356E-05 (263)	6.6060E-05 (51)	6.6799E-05 (6)	6.6034E-05 (6)	6.5055E-05 (6)
17	8.8355E-05 (326)	9.9630E-05 (326)	1.0014E-04 (326)	9.8158E-05 (326)	9.5741E-05 (326)
18	1.0339E-04 (326)	1.1540E-04 (326)	1.1476E-04 (326)	1.1193E-04 (326)	1.0866E-04 (326)
19	9.0295E-05 (35)	1.0173E-04 (35)	1.0334E-04 (35)	1.0194E-04 (35)	1.0020E-04 (35)
20	6.1726E-05 (336)	6.0675E-05 (336)	5.5420E-05 (336)	5.2269E-05 (336)	4.9147E-05 (336)
21	8.0416E-05 (252)	6.7369E-05 (252)	6.5579E-05 (16)	6.4213E-05 (16)	6.2667E-05 (16)
22	1.0236E-04 (69)	1.0623E-04 (69)	1.0334E-04 (69)	1.0044E-04 (69)	9.7404E-05 (69)
23	1.1908E-04 (117)	1.2150E-04 (117)	1.1683E-04 (117)	1.1331E-04 (69)	1.0979E-04 (69)
24	1.4175E-04 (42)	1.4965E-04 (42)	1.4505E-04 (42)	1.4049E-04 (42)	1.3577E-04 (42)
25	1.1715E-04 (156)	1.0811E-04 (156)	1.0391E-04 (100)	1.0071E-04 (100)	9.7437E-05 (100)
26	1.3224E-04 (265)	1.2201E-04 (265)	1.0772E-04 (265)	1.0055E-04 (265)	9.3882E-05 (265)
27	1.6264E-04 (306)	1.6842E-04 (306)	1.6489E-04 (306)	1.6127E-04 (306)	1.5764E-04 (306)
28	1.7221E-04 (133)	1.8032E-04 (133)	1.7541E-04 (133)	1.7049E-04 (133)	1.6543E-04 (133)
29	1.2270E-04 (101)	1.1927E-04 (101)	1.0998E-04 (101)	1.0459E-04 (101)	9.9366E-05 (101)
30	8.3881E-05 (347)	8.2952E-05 (347)	7.7772E-05 (347)	7.4535E-05 (347)	7.1370E-05 (347)
31	8.2143E-05 (318)	8.0999E-05 (318)	7.4884E-05 (318)	7.1204E-05 (318)	6.7616E-05 (318)
32	9.2604E-05 (61)	9.4761E-05 (301)	9.5857E-05 (301)	9.4683E-05 (301)	9.3293E-05 (301)
33	1.0994E-04 (12)	1.1994E-04 (12)	1.1878E-04 (12)	1.1595E-04 (12)	1.1284E-04 (12)
34	6.7801E-05 (210)	7.3511E-05 (236)	7.3679E-05 (236)	7.1965E-05 (236)	6.9856E-05 (236)
35	5.3818E-05 (236)	5.7151E-05 (236)	5.6891E-05 (309)	5.5940E-05 (309)	5.4665E-05 (309)
36	6.0274E-05 (171)	9.0607E-05 (14)	9.4095E-05 (14)	9.3621E-05 (14)	9.2768E-05 (14)

PLANT NAME: USS AGRI-CHEMICALS   POLLUTANT: EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 24-HOUR CONC= 2.3710E-04 DIRECTION= 9 DISTANCE= .9 KM DAY=173

SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.7 KM	.9 KM	1.1 KM	1.2 KM	1.3 KM
1	7.5755E-05 (107)	7.3158E-05 (330)	6.5858E-05 (65)	6.5945E-05 (65)	6.5690E-05 (65)
2	9.4612E-05 (57)	9.4293E-05 (89)	9.0089E-05 (89)	8.7072E-05 (89)	8.4129E-05 (89)
3	1.0378E-04 (129)	1.0005E-04 (129)	9.2227E-05 (129)	8.7861E-05 (129)	8.5211E-05 (89)
4	7.2299E-05 (269)	6.3818E-05 (135)	5.5763E-05 (269)	5.1397E-05 (269)	4.7294E-05 (269)
5	6.8020E-05 (261)	7.0112E-05 (261)	6.0538E-05 (233)	5.6103E-05 (233)	5.3331E-05 (98)
6	9.2430E-05 (261)	7.6412E-05 (261)	6.9948E-05 (107)	6.7044E-05 (107)	6.4262E-05 (107)
7	9.6285E-05 (316)	9.1884E-05 (316)	8.2471E-05 (316)	7.7348E-05 (316)	7.2427E-05 (316)
8	1.1397E-04 (220)	1.1053E-04 (153)	1.0486E-04 (153)	1.0070E-04 (153)	9.6549E-05 (153)
9	2.3709E-04 (173)	2.3710E-04 (173)	2.2625E-04 (173)	2.1860E-04 (173)	2.1099E-04 (173)
10	1.4134E-04 (242)	1.3401E-04 (183)	1.2141E-04 (182)	1.1412E-04 (182)	1.0718E-04 (182)
11	9.5942E-05 (183)	9.3161E-05 (143)	8.7268E-05 (44)	8.4490E-05 (183)	8.1647E-05 (183)
12	7.2023E-05 (245)	7.1700E-05 (143)	6.5612E-05 (143)	6.2333E-05 (143)	5.9271E-05 (143)
13	7.8819E-05 (50)	7.1263E-05 (44)	7.0454E-05 (44)	6.8915E-05 (44)	6.7235E-05 (44)
14	6.3149E-05 (280)	6.3393E-05 (280)	6.0559E-05 (280)	5.8537E-05 (280)	5.6536E-05 (280)
15	6.1035E-05 (259)	6.9423E-05 (6)	7.5487E-05 (6)	7.6351E-05 (6)	7.6790E-05 (6)
16	6.1374E-05 (51)	6.5436E-05 (6)	6.5753E-05 (51)	6.4429E-05 (51)	6.2940E-05 (51)
17	8.2300E-05 (263)	8.7790E-05 (6)	8.7023E-05 (6)	8.5124E-05 (6)	8.3038E-05 (6)
18	7.1538E-05 (320)	8.1217E-05 (328)	8.7488E-05 (328)	8.8292E-05 (328)	8.8621E-05 (328)
19	4.9333E-05 (16)	5.5652E-05 (16)	5.6554E-05 (16)	5.5784E-05 (16)	5.4803E-05 (16)
20	5.5716E-05 (252)	4.7899E-05 (40)	4.7899E-05 (40)	4.6967E-05 (40)	4.5900E-05 (40)
21	6.0723E-05 (16)	6.5866E-05 (16)	6.3435E-05 (92)	6.1898E-05 (92)	6.0255E-05 (92)
22	8.6935E-05 (191)	8.9747E-05 (191)	8.8902E-05 (66)	8.7141E-05 (66)	8.5153E-05 (66)
23	1.1638E-04 (69)	1.2026E-04 (69)	1.1670E-04 (69)	1.1314E-04 (117)	1.0945E-04 (117)
24	1.1414E-04 (294)	1.1217E-04 (294)	1.0591E-04 (294)	1.0183E-04 (294)	9.7803E-05 (294)
25	1.0514E-04 (100)	1.0765E-04 (100)	1.0045E-04 (42)	9.6696E-05 (42)	9.2869E-05 (42)
26	1.0947E-04 (257)	1.0585E-04 (284)	1.0010E-04 (284)	9.6383E-05 (284)	9.2678E-05 (284)
27	1.4072E-04 (268)	1.4126E-04 (268)	1.3356E-04 (268)	1.2848E-04 (268)	1.2370E-04 (202)
28	1.5482E-04 (121)	1.6305E-04 (121)	1.5999E-04 (121)	1.5615E-04 (121)	1.5210E-04 (121)
29	1.1607E-04 (119)	1.1451E-04 (119)	1.0775E-04 (119)	1.0347E-04 (119)	9.9278E-05 (119)
30	7.9617E-05 (185)	6.7828E-05 (185)	6.9047E-05 (324)	6.8295E-05 (324)	6.7315E-05 (324)
31	7.7255E-05 (269)	7.3717E-05 (332)	6.8987E-05 (332)	6.5727E-05 (332)	6.2408E-05 (332)
32	8.5553E-05 (301)	6.7950E-05 (61)	7.9162E-05 (61)	7.4420E-05 (61)	6.9922E-05 (61)
33	1.0929E-04 (301)	1.1558E-04 (301)	1.1322E-04 (301)	1.1038E-04 (301)	1.0741E-04 (301)
34	6.5377E-05 (236)	6.5014E-05 (210)	6.4463E-05 (237)	6.5151E-05 (237)	6.5199E-05 (237)
35	5.0669E-05 (309)	5.6585E-05 (309)	5.5056E-05 (236)	5.3034E-05 (236)	5.0848E-05 (236)
36	7.7210E-05 (14)	7.6328E-05 (301)	7.3913E-05 (301)	7.1812E-05 (301)	6.9675E-05 (301)

PLANT NAME: USS AGRI-CHEMICALS POLLUTANT: EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 3-HOUR CONC= 6.3644E-04 DIRECTION= 10 DISTANCE= .7 KM DAY=209 TIME PERIOD= 6

HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE DIR	.7 KM	.9 KM	1.1 KM	1.2 KM	1.3 KM
1	3.9129E-04 (107, 4)	3.5734E-04 (330, 7)	3.5515E-04 (330, 7)	3.4830E-04 (330, 7)	3.4075E-04 (330, 7)
2	4.5024E-04 (55, 5)	3.9151E-04 (237, 6)	4.1300E-04 (237, 6)	4.1204E-04 (237, 6)	4.0596E-04 (237, 6)
3	3.6212E-04 (57, 5)	3.3056E-04 (5, 5)	3.1967E-04 (76, 7)	3.1219E-04 (76, 7)	3.0417E-04 (76, 7)
4	3.9687E-04 (269, 6)	3.7644E-04 (269, 6)	3.3795E-04 (269, 6)	3.1642E-04 (269, 6)	2.9498E-04 (269, 6)
5	4.0636E-04 (233, 4)	3.5364E-04 (211, 6)	3.1117E-04 (211, 6)	2.8895E-04 (211, 6)	2.6746E-04 (211, 6)
6	4.8878E-04 (210, 6)	4.2305E-04 (210, 6)	3.5427E-04 (210, 6)	3.2643E-04 (244, 4)	3.0735E-04 (244, 4)
7	5.5525E-04 (309, 5)	4.8485E-04 (309, 5)	4.0771E-04 (309, 5)	3.7212E-04 (309, 5)	3.3950E-04 (309, 5)
8	4.6865E-04 (220, 4)	4.0393E-04 (220, 4)	3.4420E-04 (153, 4)	3.2660E-04 (175, 7)	3.2081E-04 (175, 7)
9	5.3893E-04 (207, 6)	5.1642E-04 (207, 6)	4.6571E-04 (207, 6)	4.3660E-04 (207, 6)	4.0737E-04 (207, 6)
10	6.3644E-04 (209, 6)	5.8649E-04 (209, 6)	5.1385E-04 (209, 6)	4.7649E-04 (209, 6)	4.4060E-04 (209, 6)
11	3.9424E-04 (144, 6)	3.8988E-04 (144, 6)	3.7131E-04 (144, 6)	3.5875E-04 (144, 6)	3.4626E-04 (144, 6)
12	5.2589E-04 (184, 4)	4.3964E-04 (184, 4)	4.0777E-04 (245, 6)	3.8957E-04 (245, 6)	3.7050E-04 (245, 6)
13	3.8979E-04 (226, 6)	4.2638E-04 (226, 6)	4.2274E-04 (226, 6)	4.1258E-04 (226, 6)	3.9961E-04 (226, 6)
14	4.6684E-04 (249, 6)	4.3342E-04 (249, 6)	3.8277E-04 (249, 6)	3.7180E-04 (65, 6)	3.6803E-04 (65, 6)
15	2.8507E-04 (259, 6)	3.0665E-04 (50, 1)	3.1068E-04 (6, 3)	3.1241E-04 (6, 3)	3.1236E-04 (6, 3)
16	3.9860E-04 (263, 4)	3.1665E-04 (263, 4)	2.4737E-04 (263, 4)	2.3674F-04 (148, 6)	2.3174E-04 (148, 6)
17	5.3429E-04 (263, 4)	4.5322E-04 (263, 4)	3.7524E-04 (263, 4)	3.4092E-04 (263, 4)	3.1001E-04 (263, 4)
18	3.7006E-04 (147, 4)	3.6536E-04 (147, 4)	3.3721E-04 (147, 4)	3.3275E-04 (15, 4)	3.2815E-04 (15, 4)
19	3.3839E-04 (208, 5)	3.3623E-04 (208, 5)	3.5579E-04 (236, 6)	3.6946E-04 (236, 6)	3.7804E-04 (236, 6)
20	2.7663E-04 (336, 5)	2.6410E-04 (336, 5)	2.6437E-04 (31, 4)	2.5984E-04 (31, 4)	2.5465E-04 (31, 4)
21	3.9055E-04 (256, 5)	3.4375E-04 (256, 5)	2.9603E-04 (288, 5)	2.7363E-04 (288, 5)	2.5172E-04 (288, 5)
22	3.5771E-04 (122, 5)	3.2701E-04 (122, 5)	3.0907E-04 (69, 2)	3.0234E-04 (69, 2)	2.9495E-04 (69, 2)
23	3.7729E-04 (283, 4)	3.0871E-04 (283, 4)	3.1010E-04 (70, 1)	3.0766E-04 (17, 8)	3.0483E-04 (17, 8)
24	3.9949E-04 (267, 6)	4.1375E-04 (267, 6)	3.9420E-04 (267, 6)	3.7928E-04 (267, 6)	3.6428E-04 (267, 6)
25	5.1898E-04 (86, 5)	4.5795E-04 (86, 5)	3.8094E-04 (86, 5)	3.4516E-04 (86, 5)	3.1932E-04 (203, 3)
26	4.7312E-04 (257, 4)	4.3059E-04 (164, 3)	4.0136E-04 (164, 3)	3.8234E-04 (164, 3)	3.6301E-04 (164, 3)
27	4.4734E-04 (306, 5)	4.2408E-04 (306, 5)	4.0507E-04 (306, 6)	3.9544E-04 (306, 6)	3.8544E-04 (306, 6)
28	6.1713E-04 (230, 4)	5.7275E-04 (230, 4)	5.0358E-04 (230, 4)	4.6759E-04 (230, 4)	4.3283E-04 (230, 4)
29	2.9471E-04 (101, 6)	2.9044E-04 (101, 6)	2.6917E-04 (101, 6)	2.6759E-04 (346, 4)	2.6721E-04 (346, 4)
30	4.4493E-04 (185, 4)	4.1179E-04 (1, 4)	3.6162E-04 (1, 4)	3.5628E-04 (324, 3)	3.5184E-04 (324, 3)
31	3.6856E-04 (269, 4)	3.4694E-04 (269, 4)	3.1310E-04 (269, 4)	2.9544E-04 (269, 4)	2.7880E-04 (269, 4)
32	4.7980E-04 (364, 5)	4.5896E-04 (364, 5)	4.1029E-04 (364, 5)	3.8294E-04 (364, 5)	3.5587E-04 (364, 5)
33	5.4038E-04 (1, 5)	4.9964E-04 (1, 5)	4.3679E-04 (1, 5)	4.0441E-04 (1, 5)	3.7338E-04 (1, 5)
34	4.2444E-04 (210, 3)	4.1718E-04 (210, 3)	3.8379E-04 (210, 3)	3.6340E-04 (210, 3)	3.4291E-04 (210, 3)
35	2.9266E-04 (309, 3)	3.5978E-04 (309, 3)	3.8245E-04 (309, 3)	3.8348E-04 (309, 3)	3.8080E-04 (309, 3)
36	3.4206E-04 (64, 4)	3.1024E-04 (91, 1)	2.9308E-04 (91, 1)	2.8203E-04 (91, 1)	2.7113E-04 (91, 1)

PLANT NAME: USS AGRI-CHEMICALS   POLLUTANT: EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM   3-HOUR CONC= 5.3010E-04   DIRECTION= 9   DISTANCE= .7 KM   DAY=182   TIME PERIOD= 4

SECOND HIGHEST   3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.7 KM	.9 KM	1.1 KM	1.2 KM	1.3 KM
1	3.5224E-04 (113, 5)	3.4505E-04 (107, 4)	2.9120E-04 (107, 4)	2.6592E-04 (107, 4)	2.6067E-04 (38, 2)
2	3.7673E-04 (57, 4)	3.8871E-04 (55, 5)	3.3957E-04 (355, 5)	3.2823E-04 (355, 5)	3.2116E-04 (5, 6)
3	3.4713E-04 (135, 5)	3.2503E-04 (76, 7)	3.1956E-04 (5, 5)	3.1035E-04 (5, 5)	3.0097E-04 (5, 5)
4	3.8720E-04 (110, 5)	3.4625E-04 (245, 5)	3.1579E-04 (245, 5)	2.9873E-04 (245, 5)	2.8151E-04 (245, 5)
5	3.9298E-04 (150, 4)	3.4974E-04 (233, 4)	2.8987E-04 (233, 4)	2.6548E-04 (130, 3)	2.6223E-04 (130, 3)
6	4.1214E-04 (85, 4)	3.8424E-04 (85, 4)	3.4434E-04 (244, 4)	3.2287F-04 (210, 6)	2.9842E-04 (85, 4)
7	4.8350E-04 (298, 5)	3.9969E-04 (150, 6)	3.5197E-04 (150, 6)	3.2685E-04 (150, 6)	3.2007E-04 (220, 2)
8	4.3386E-04 (153, 4)	3.9656E-04 (153, 4)	3.3843E-04 (220, 4)	3.2480E-04 (177, 6)	3.1359E-04 (177, 6)
9	5.3010E-04 (182, 4)	4.6634E-04 (182, 4)	4.1556E-04 (67, 6)	3.9736E-04 (67, 6)	3.7789E-04 (67, 6)
10	4.8750E-04 (183, 5)	4.1113E-04 (214, 5)	3.5914E-04 (96, 6)	3.4902E-04 (96, 6)	3.3861E-04 (96, 6)
11	3.4122E-04 (131, 6)	3.0506E-04 (131, 6)	2.8275E-04 (44, 6)	2.7542E-04 (44, 6)	2.6767E-04 (44, 6)
12	4.0345E-04 (245, 6)	4.2906E-04 (245, 6)	3.7005E-04 (184, 4)	3.4140E-04 (184, 4)	3.1587E-04 (184, 4)
13	3.6052E-04 (146, 4)	3.1423E-04 (146, 4)	2.6363E-04 (146, 4)	2.4041E-04 (146, 4)	2.3359E-04 (262, 6)
14	3.6922E-04 (281, 4)	3.6209E-04 (65, 6)	3.7417E-04 (65, 6)	3.5694E-04 (249, 6)	3.3259E-04 (249, 6)
15	2.8165E-04 (50, 1)	2.9433E-04 (259, 6)	3.0706E-04 (50, 1)	3.0168E-04 (50, 1)	2.9543E-04 (50, 1)
16	2.7113E-04 (259, 6)	2.5954E-04 (259, 6)	2.4127E-04 (148, 6)	2.2645E-04 (313, 4)	2.1955E-04 (313, 4)
17	2.7420E-04 (279, 5)	2.7308E-04 (23, 4)	2.5835E-04 (23, 4)	2.4709E-04 (23, 4)	2.3463E-04 (23, 4)
18	3.2741E-04 (326, 4)	3.2942E-04 (15, 4)	3.3630E-04 (15, 4)	3.1903E-04 (147, 4)	3.0001E-04 (147, 4)
19	2.4081E-04 (313, 5)	3.0646E-04 (236, 6)	3.0807E-04 (208, 5)	2.9035E-04 (208, 5)	2.7210E-04 (208, 5)
20	2.3730E-04 (31, 4)	2.6342E-04 (31, 4)	2.3463E-04 (336, 5)	2.1834E-04 (336, 5)	2.1159E-04 (40, 7)
21	3.5310E-04 (288, 5)	3.3628E-04 (288, 5)	2.8809E-04 (256, 5)	2.6217E-04 (256, 5)	2.3844E-04 (256, 5)
22	2.9404E-04 (69, 2)	3.1258E-04 (69, 2)	2.8490E-04 (122, 5)	2.6369E-04 (122, 5)	2.5420E-04 (16, 7)
23	3.3231E-04 (122, 5)	3.0740E-04 (122, 5)	3.0908E-04 (17, 8)	3.0670E-04 (70, 1)	3.0215E-04 (70, 1)
24	3.3286E-04 (158, 5)	3.1746E-04 (18, 4)	3.0640E-04 (118, 3)	3.0202E-04 (118, 3)	2.9673E-04 (118, 3)
25	3.7516E-04 (226, 4)	3.7078E-04 (203, 3)	3.4917E-04 (203, 3)	3.3429E-04 (203, 3)	3.1257E-04 (86, 5)
26	4.3138E-04 (164, 3)	4.0319E-04 (257, 4)	3.5515E-04 (66, 6)	3.4995E-04 (66, 6)	3.4379E-04 (66, 6)
27	4.2881E-04 (18, 5)	4.2362E-04 (18, 5)	3.9110E-04 (18, 5)	3.8047E-04 (268, 8)	3.7429E-04 (268, 8)
28	4.3819E-04 (168, 5)	4.0380E-04 (168, 5)	3.8358E-04 (133, 7)	3.7442E-04 (133, 7)	3.6480E-04 (133, 7)
29	2.9031E-04 (119, 5)	2.8430E-04 (253, 4)	2.6660E-04 (346, 4)	2.5735E-04 (47, 2)	2.6306E-04 (47, 2)
30	4.4139E-04 (1, 4)	3.7443E-04 (198, 4)	3.5947E-04 (324, 3)	3.3523E-04 (1, 4)	3.1392E-04 (268, 5)
31	3.3392E-04 (332, 5)	3.2266E-04 (332, 5)	2.9036E-04 (332, 5)	2.7171E-04 (332, 5)	2.5305E-04 (332, 5)
32	3.5667E-04 (61, 4)	3.2741E-04 (209, 3)	3.2956E-04 (301, 2)	3.2668E-04 (301, 2)	3.2270E-04 (301, 2)
33	4.1963E-04 (12, 4)	3.9758E-04 (12, 4)	3.5314E-04 (12, 4)	3.2879E-04 (12, 4)	3.0491E-04 (12, 4)
34	3.7663E-04 (211, 3)	3.5819E-04 (308, 3)	3.2782E-04 (161, 4)	3.1475E-04 (161, 4)	3.0112E-04 (161, 4)
35	2.7827E-04 (213, 5)	2.7883E-04 (236, 4)	2.5727E-04 (236, 4)	2.4562E-04 (274, 3)	2.4259E-04 (274, 3)
36	3.3237E-04 (136, 4)	2.9897E-04 (28, 4)	2.7442E-04 (357, 3)	2.7139E-04 (357, 3)	2.6746E-04 (357, 3)

PLANT NAME: USS AGRI-CHEMICALS   POLLUTANT: EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

MAXIMUM DAILY CONCENTRATIONS

DAY	24-HOUR CONCENTRATION	DIRECTION	DISTANCE
175	2.4996E-04	9	.70
173	2.3710E-04	9	.90
174	2.3473E-04	9	.90
178	1.8772E-04	9	.90
133	1.8032E-04	28	.90
177	1.7442E-04	8	.90
242	1.6909E-04	9	.70
306	1.6842E-04	27	.90
121	1.6305E-04	28	.90
180	1.5700E-04	9	.70
176	1.5677E-04	9	.70
183	1.5404E-04	10	.70
42	1.4965E-04	24	.90
182	1.4857E-04	9	.70
207	1.4382E-04	9	.70
268	1.4126E-04	27	.90
152	1.4118E-04	9	.90
219	1.4096E-04	9	.70
124	1.3803E-04	9	.70
181	1.3767E-04	10	.70
265	1.3224E-04	26	.70
76	1.3022E-04	3	.90
170	1.2977E-04	27	.70
202	1.2859E-04	27	1.10
254	1.2770E-04	27	.70
169	1.2661E-04	27	.70
179	1.2646E-04	9	.70
230	1.2462E-04	28	.70
165	1.2281E-04	28	.90
101	1.2270E-04	29	.70
50	1.2158E-04	15	.90
117	1.2150E-04	23	.90
69	1.2026E-04	23	.90
12	1.1994E-04	33	.90
55	1.1819E-04	2	.70
156	1.1715E-04	25	.70
119	1.1607E-04	29	.70
168	1.1591E-04	28	.70
144	1.1582E-04	9	.70
301	1.1558E-04	33	.90
326	1.1540E-04	18	.90
294	1.1414E-04	24	.70
220	1.1397E-04	8	.70
271	1.1308E-04	24	.70
103	1.1264E-04	10	.70
153	1.1053E-04	8	.90
127	1.1033E-04	28	.70
225	1.1031E-04	9	.70
257	1.0947E-04	26	.70
70	1.0866E-04	23	.90

September 24, 1980

USS Agri-Chemicals
Post Office Box 150
Bartow, Florida 33830

Attention: Mr. Basil Powell

Re: Evaluation of Ambient
Sulfur Dioxide Concentrations
Attributable to All
USSAC Emission Sources
After Proposed Modifications
Are Completed

Gentlemen:

As requested by the Florida Department of Environmental Regulation, attached is a modeling evaluation of ambient sulufur dioxide concentrations resulting from simultaneous operation of the propoed new sulfuric acid plant and existing emission sources. Concentrations predicted are shown in comparison with applicable ambient air quality standards.

Please call if there are any questions regarding this report.

Yours very truly,

DAMES & MOORE

James W. Little

James W. Little
Senior Air Quality Analyst

JWL:ht

PLANT NAME: USS AGRI-CHEMICALS   POLLUTANT: EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

MAXIMUM 3-HOURLY CONCENTRATIONS

DAY	3-HOUR CONCENTRATION	DIRECTION	DISTANCE	TIME PERIOD
209	6.3644E-04	10	.70	6
230	6.1713E-04	28	.70	4
209	5.8649E-04	10	.90	6
230	5.7275E-04	28	.90	4
309	5.5525E-04	7	.70	5
1	5.4038E-04	33	.70	5
207	5.3893E-04	9	.70	6
263	5.3429E-04	17	.70	4
182	5.3010E-04	9	.70	4
184	5.2589E-04	12	.70	4
124	5.2472E-04	9	.70	4
86	5.1898E-04	25	.70	5
207	5.1642E-04	9	.90	6
209	5.1385E-04	10	1.10	6
230	5.0358E-04	28	1.10	4
183	5.0270E-04	9	.70	4
207	5.0057E-04	9	.70	4
1	4.9964E-04	33	.90	5
210	4.8878E-04	6	.70	6
183	4.8750E-04	10	.70	5
309	4.8485E-04	7	.90	5
298	4.8350E-04	7	.70	5
109	4.7992E-04	9	.70	5
364	4.7980E-04	32	.70	5
209	4.7649E-04	10	1.20	6
257	4.7312E-04	26	.70	4
220	4.6865E-04	8	.70	4
230	4.6759E-04	28	1.20	4
249	4.6684E-04	14	.70	6
182	4.6634E-04	9	.90	4
207	4.6571E-04	9	1.10	6
214	4.6484E-04	10	.70	5
364	4.5898E-04	32	.90	5
242	4.5836E-04	9	.70	4
86	4.5795E-04	25	.90	5
60	4.5719E-04	9	.70	5
263	4.5322E-04	17	.90	4
55	4.5024E-04	2	.70	5
180	4.4863E-04	10	.70	4
215	4.4804E-04	10	.70	5
306	4.4734E-04	27	.70	5
158	4.4563E-04	9	.70	6
185	4.4493E-04	30	.70	4
75	4.4311E-04	9	.90	6
1	4.4139E-04	30	.70	4
209	4.4060E-04	10	1.30	6
184	4.3964E-04	12	.90	4
67	4.3845E-04	9	.90	6
166	4.3819E-04	28	.70	5
75	4.3800E-04	9	.70	6

EXHIBIT-B

EXISTING CONTROL TECHNOLOGY

Information requested section VI D of the permit application is given in Construction Permit AC53-2582 for the existing control unit, which is on file with DER. For ready reference a copy is herewith included as EXHIBIT-B.

EXHIBIT – B

STATE OF FLORIDA
DEPARTMENT OF POLLUTION CONTROL
500 EAST CENTRAL AVENUE P.O. BOX 9205
WINTER HAVEN, FLORIDA 33881

PETER P. BALJET
EXECUTIVE DIRECTOR

W. D. FREDERICK, JR.
CHAIRMAN

POLK COUNTY AP
USS AGRI-CHEMICALS (FT. MEADE)

RECEIVED
OCT 2 1974

Mr. George W. Beck
General Manager
USS Agri-Chemicals
P.O. Box 150
Bartow, Florida 33830

Dear Mr. Beck:

Pursuant to your recent application, please find enclosed a permit (No. AC53-2582) dated Oct. 21, 1974 to construct/~~operate~~ the subject pollution source.

This permit will expire on August 21, 1975 and will be subject to the conditions, requirements and restrictions checked or indicated otherwise in the attached sheet "Construction/~~Operation~~ Permit Conditions".

This permit is issued under the authority of Florida Statute 403.061(16). The time limits imposed herein are a condition to this permit and are enforceable under Florida Statute 403.161. You are hereby placed on Notice that the Department will review this permit before the scheduled date of expiry and will seek court action for violation of the conditions and requirements of this permit.

You have ten days from the date of receipt hereof within which to seek a review of the conditions and requirements contained in this permit. Failure to file a written request to review or modify the conditions or requirements contained in this permit shall be deemed a waiver of any objections thereto.

Your continued cooperation in this matter is appreciated and in future communication please refer to your permit number.

Yours very truly,

for J. H. Kerns, P.E.
Regional Engineer
West Central Region

JHK/FW/pm
cc: Nickonovitz

FS3
1-74

STATE OF FLORIDA

DEPARTMENT OF POLLUTION CONTROL

CONSTRUCTION PERMIT

FOR USS Agri-Chemicals
P.O. Box 150
Bartow, Florida 33830

PERMIT NO. AC53-2582 DATE October 21, 1974

PURSUANT TO THE PROVISION OF SECTION 403.061 (16) OF CHAPTER 403, FLORIDA STATUTES AND CHAPTER 17-4, FLORIDA ADMINISTRATIVE CODE, THIS PERMIT IS ISSUED TO:
Mr. George W. Beck, General Manager

FOR THE CONSTRUCTION OF:
A limestone scrubbing process to serve existing sulfuric acid plants

LOCATED AT: Ft. Meade chemical plant, S.R. 630, 3 miles West of Ft. Meade, Polk County UTM 17-416000 East, 3069000 North

IN ACCORDANCE WITH THE APPLICATION DATED September 5, 1974

AND IN CONFORMITY WITH THE STATEMENTS AND SUPPORTING DATA ENTERED THEREIN, ALL OF WHICH ARE FILED WITH THE DEPARTMENT AND ARE CONSIDERED A PART OF THIS PERMIT.

THIS PERMIT SHALL BE EFFECTIVE FROM THE DATE OF ITS ISSUANCE UNTIL Aug. 21, 1975
AND SHALL BE SUBJECT TO ALL APPLICABLE LAWS OF THE STATE AND THE RULES AND REGULATIONS OF THE DEPARTMENT.

CHIEF, BUREAU OF PERMITTING J. H. KERNS, P.E. EXECUTIVE DIRECTOR
WEST CENTRAL REGION

FORM 1-J

STATE OF FLORIDA

DEPARTMENT OF POLLUTION CONTROL

CONSTRUCTION PERMIT PROVISOS

AIR POLLUTION SOURCES

Permit No. AC53-2582 Date: October 21, 1974

(X) 1. Construction of this installation shall be completed by June 30, 1975. Application for Permit to Operate to be submitted by ____________.

(X) 2. This construction permit expires on August 21, 1975 following an initial period of operation for appropriate testing to determine compliance with the Rules of the Florida Pollution Control Board.

(X) 3. All applicable rules of the Department including design discharge limitations specified in the application shall be adhered to. The permit holder may also need to comply with county, municipal, federal, or other state regulations prior to construction.

(X) 4. The applicant shall continue the retention of the engineer of record for the inspection of the construction of this project. Upon completion the engineer shall inspect for conformity to construction permit applications and associated documents. A report of such inspection shall be submitted by the engineer to the Department of Pollution Control for consideration toward the issuance of an operation permit.

(X) 5. This scrubber stack shall be tested* for sulfur dioxide and sulfuric acid mist within 10 days after it is placed in operation. These test results are required prior to our issuance of an operation permit and shall be submitted in duplicate to the DPC West Central Florida Regional Office P.O. Box 9205, Winter Haven, Florida 33880

*FUEL ANALYSIS MAY BE SUBMITTED FOR REQUIRED SULFUR DIOXIDE EMISSION TEST.

( ) 6. The operation of this installation shall be observed for visible emissions in accordance with Method 9 - Visible Determination of the Opacity of Emissions from Stationary Sources (36FR24895; Federal Register, December 23, 1971). The observation results are required prior to our issuance of an operation permit, and shall be submitted in duplicate to the DPC ____________ Florida Regional Office, ____________.

(X) 7. Satisfactory ladders, platforms, and other safety devices shall be provided/available as well as necessary ports to facilitate the carrying out of an adequate sampling program.

( ) 8. There shall be no discharges of liquid effluents or contaminated runoff from the plant site.

( ) 9. All fugitive dust generated at this site shall be adequately controlled.

FS17
1-74

(X) 10. Recognition of the foregoing estimated date of completion shall not be construed as the granting of a variance or the waiver of permittee's responsibility to conduct operations in timely compliance with applicable law.

(X) 11. The compliance schedule for this plant established by permit A053-2144 remains in effect.

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53-493

STATE OF FLORIDA
DEPARTMENT OF POLLUTION CONTROL

APPLICATION TO ~~OPERATE~~/CONSTRUCT POLLUTION ~~SOURCES~~/CONTROL FACILITY

SECTION I – GENERAL INFORMATION FOR ALL POLLUTION SOURCES
I TO BE FILLED IN BY APPLICANT

Source Type: Air Pollution
Type application: [ ] Operation [ ] Temporary Operation [x] Construction
Status Source: [x] New [ ] Existing [ ] Modification

Source Name: Ft. Meade Phosphate Chemical Plant County: Polk

Source Location: Street: 3 miles west of City: Ft. Meade
(Water Source Only) Lat: ___ ° ___ ' ___ " Long: ___ ° ___ ' ___ "
(Air Source Only) UTM: East ~~166.2~~ 17-416000 North ~~377.9~~ 3069000

Appl. Name and Title: G. W. Beck, Manager Florida Phosphate Operations
Appl. Address: c/o USS Agri-Chemicals, P.O.Box 150, Bartow, Florida 33830

II TO BE FILLED IN BY REGION (*BY BUREAU OF PERMITTING)

Control No: Region ___ County ___ Type ___ *Project ___

Type Permit	Date Rec'd	*Permit No.	*Issue Date	*Compl. Date	*Exp. Date

Source Description:
Control Equipment:

Water Permits

Receiving Body Code: ___ Surface Water Code: ___
Station No.: Influent: ___ Effluent: ___

Effluent:	Average	Design	% Reduction
Flow rate, MGD			
BOD, lbs/day			
Susp. Sol., lbs/day			
Other:			

Air Permits

Operating Time: [ ] Continuous [ ] Intermittent
Fuel: Type ___ M-BTU/hr. In Put ___
Incinerator: Capacity, tons/day ___ Type Waste ___
Mfg. & Model ___

Pollutant Emissions, lbs/day	Actual	Design	Allowable
Particulate			
Sulfur Oxides			
Other:			

Implementation: Estimated Appl. Filing Date ___
Estimated Start of Const. ___ Estimated Compliance Date ___

Ft. Meade

DESCRIPTION OF PROPOSED PROJECT

A. Describe the nature and extent of the proposed project. Refer to existing pollution control facilities, DPC permits, conditions, orders and notices, expected improvement in performance of the facilities and state whether the proposed project will result in full compliance of the source. Attach additional sheet if necessary.

The existing sulfuric acid plant is operating under permit no.A053-2144 which expires July 1, 1975. A compliance schedule was submitted to DPC on February 25, 1974. Work is on schedule and, subject to the prior issue of a construction permit, construction is expected to begin on the dates shown below. The Peabody Limestone Scrubbing Process will be used to achieve emissions at the levels required for a compliance with Chapter 17-2 rules. Refer to flow diagram E-65011-0100/A for a further description of the process.

B. Schedule of Project Covered in this Application (Construction Permit Application Only).

Federally or State Financed Projects only:

Planning Complete NA

Financing Program Complete NA

Indicate other local, state and/or federal agency approvals and dates NA

NA-Not applicable

All projects:

Start of Construction On or before 10/31/74

Completion of Construction 6/1/75 to 6/31/75 (Start-up by 6/15/75)

C. Costs of Construction (Show a breakdown of costs for individual components/units of the proposed project serving pollution control purpose only). Information on actual costs shall be furnished with the application for operation permit.

SO_2 Abatement Process Unit	$2,514,000
Disposal Pond	156,000
Supernate Pumping	63,000
Utility Tie-ins	63,000
Total	$2,796,000

D. Indicate any previous DPC permits, issuance dates, and expiration dates.

This construction permit application is for a new facility. No previous permits have been issued.

Ft. Meade

AIR POLLUTION SOURCES & CONTROL DEVICES

A. Identification of Air Contaminants

1) [ ] Particulates
   a) [ ] Dust   b) [ ] Fly Ash   c) [ ] Smoke   d) [ ] Other (Identify)

2) [x] Sulfur Compounds
   a) [x] SO_x as SO_2 b) [ ] Reduced Sulfur as H_2S c) [ ] Other (Identify)

3) [ ] Nitrogen Compounds
   a) [ ] NO_x as NO_2 b) [ ] NH_3 c) [ ] Other (Identify)

4) [ ] Flourides   5) [x] Acid Mist   6) [ ] Odor

7) [ ] Hydrocarbons   8) [ ] Volatile Organic Compounds

9) [ ] Other (Specify): ______

B. Raw Materials and Chemicals Used (Be Specific)

Description	Utilization ~~Tons/day~~ ~~lbs/hr~~ lbs./hr.	Approximate Contaminant Content: Type	Approximate Contaminant Content: % Wt.	Relate to Flow Diagram
Tail gas from an existing 1500 ton/day sulfuric acid plant	609,190	SO_x+ acid mist	0.786	E-65011-0100/A (Stream #1)

C. Process Weight:

1) Total Process Weight Rate NA lbs./hr. [See Sec. 17-2.04(2)]
2) Product Weight NA lb./hr. expressed as NA
3) Normal Operating Time 24 hrs. per day, if seasonal describe: Not seasonal
   NA-Not applicable

D. Airborne Contaminants Discharged:

Name of Contaminant	Design Actual Discharge	Discharge Criteria*	Allowable Discharge*	Relate Location to Flow Diagram
SO_2	10 max.	#/ton H_2SO_4	10	E-65011-0100/A
Acid mist	0.15 max.	#/ton H_2SO_4	0.15	(Stream #4)

* Refer to Chapter 17-2 Florida Administrative Code
(Discharge Criteria: Process Weight Rate, #/ton P_2O_5, #/M BTU/hr etc.)

Ft. Meade

E. Control Devices:

Name	% Eff.	Conditions of Operation, Particle Size Range, etc.	Relate to Flow Diagram
Limestone Scrubbing Unit	86.9	Continuous	E-65011-0100/A

F. Fuels:

Type (Be specific)	Daily Consumption	Heat Input BTU/hr.	Relate to Flow Diagram
None	None	None	----

G. Describe briefly, without revealing trade secrets, the unit processes/operations generating the airborne emissions identified in this application:

The control devices of this construction permit application are to reduce the airborne emissions generated in an existing sulfuric acid plant.

H. Indicate liquid or solid wastes generated and method of disposal.

Slurry discharges to the disposal pond where solids settle to the bottom. The supernate is recycled to the existing rock beneficiation plant. Alternatively the recycle may be recycled to the chemical plant. Disposal pond and recycle system totally contained on company property.

Ft. Meade

STATEMENTS BY APPLICANT AND ENGINEER

A. Applicant

The undersigned owner or authorized representative of * USS Agri-Chemicals is fully aware that the statements made in this application for a construction permit are true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to maintain and operate the pollution 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 or revisions thereof. He also understands that a permit, if granted by the Department, will be non-transferable and he will promptly notify the Department upon sale or legal transfer of the permitted establishment.

Signature of the Owner or Authorized Representative

G. W. Beck, Manager Florida Phosphate Operations
Name and Title (Please Type)

Date: 9-5-74 Telephone No.: (813) 533-1495

* 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 control and discharge of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution source(s) with appropriate control facilities, when properly maintained and operated, will comply 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 installation covered in this application.

Signature Arthur O. Hansen

Mailing Address: P. O. Box 150
Bartow, Florida 33830

Name: Arthur O. Hansen
(please type)

Telephone No.: (813) 533-1495

Florida Registration Number 12237
(Please affix seal)

Date: 9/6/74

AC53-2542

DATE October 21, 1974

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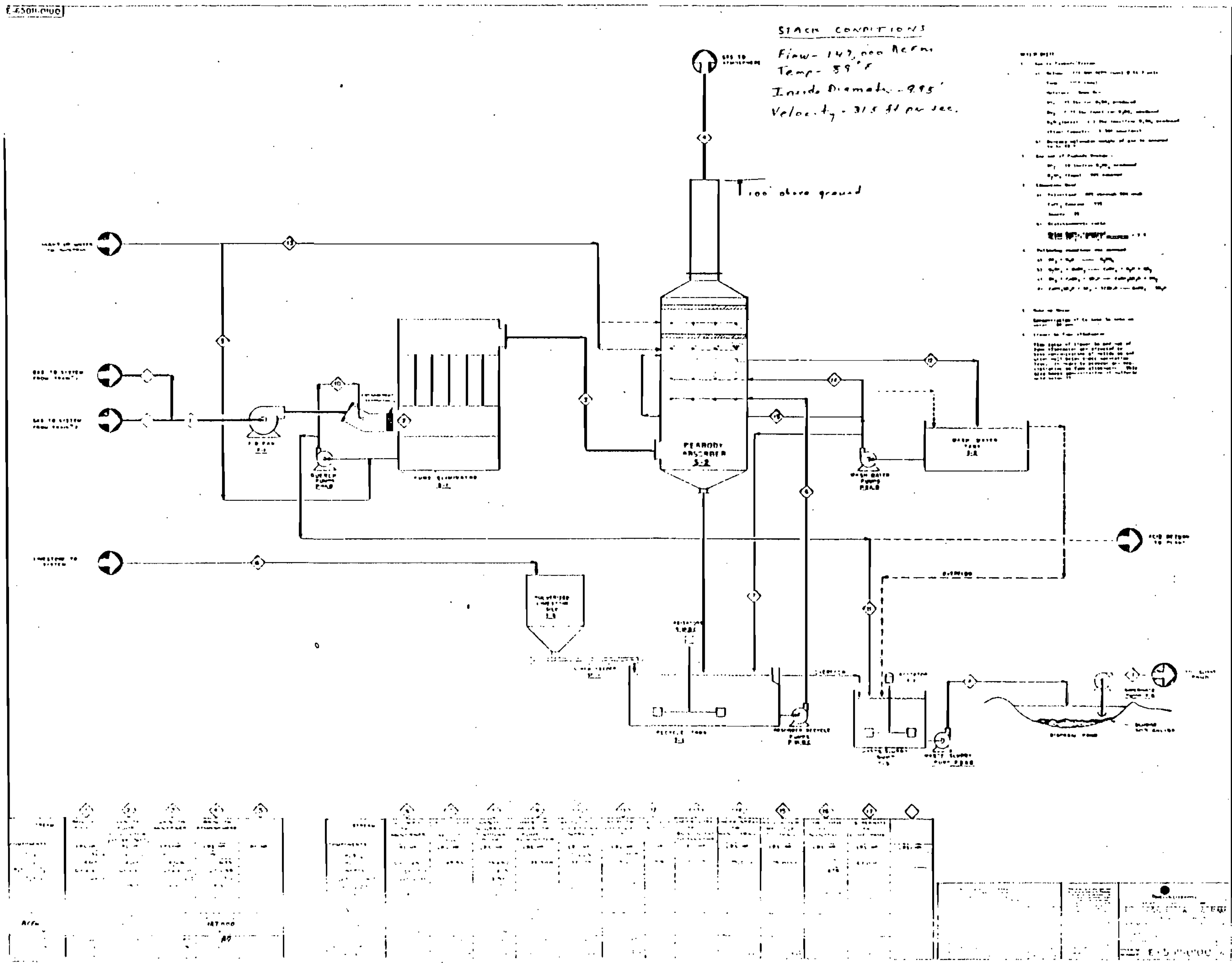

EXHIBIT-C

AVAILABLE CONTROL TECHNOLOGY
(Refer Section VI E of Application)

USS Agri-Chemicals has investigated numerous processes to control SO_2 emissions from sulfuric acid plants. Basically these fall into two groups:

I. HIGH EFFICIENCY PROCESSES

These processes (double absorption and high pressure plants) achieve minimal SO_2 emissions by super high efficiency. Sulfur dioxide control is integrated into the production equipment and sulfur dioxide that would be lost in lower efficiency plants becomes part of the sulfuric acid production. High pressure processes are not feasible for large plants. The double absorption process is most favorable for plants with large capacities.

II. ABSORPTION PROCESSES

These processes utilize absorbers (scrubbers) which are applied to the exhaust gas from low efficiency sulfuric acid processes. It is a common trait that the SO_2 prevented from entry to the atmosphere becomes incorporated into the absorbing solution and ultimately must be disposed of in balance with the rate at which it is being absorbed. This poses a real or potential threat to the ground or water environment. In Group II, USSAC has investigated Limestone Scrubbing, Ammonia Scrubbing, Double Alkali, Sodium Systems (Wellman Lord Process), and Molecular Sieves.

All investigations supported a Double Absorption Sulfuric Acid Plant as the best available technology for a new source. It has the advantage of more acid production per ton of raw material used, and does not introduce any associated pollution threats from the SO_2 control unit to the ground and water environment.

Included herewith for more detailed information on the various available processes is a list of published technical articles which are incorporated by reference into this EXHIBIT-C.

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EXHIBIT - C

REFERENCES

STUDY OF SO_2 SCRUBBERS
NATIONAL AIR POLLUTION CONTROL ADMINISTRATION

1. Aerojet-General Corp., "Applicability of Aqueous Solutions to the Removal of SO_2 from Flue Gases" (Report S-4850-01-2), Contract PH86-68-77

2. Backstrom, H. L. J., "The Chain-Reaction Theory of Negative Catalysis," *Journal of the American Chemical Society*, 49, 1460, 1927

3. Barron, C. H., and O'Hern, H. A., "Reaction Kinetics of Sodium Sulfite Oxidation by the Rapid-Mixing Method," *Chemical Engineering Science*, 21, 397, 1966

4. Bartholomew, W. H., Karow, E. O., Sfat M. R., and Whilhelm, R. H., "Oxygen Transfer and Agitation in Submerged Fermentations," *Industrial and Engineering Chemistry*, 42, 1801, 1950

5. Betz, W. H., and Betz, L. D., "Oxygen Removal with Na_2SO_3," Technical Paper No. 114

6. Cooper, C. M., Fernstrom, G. A., and Miller, S. A., "Performance of Agitated Gas-Liquid Contactors," *Industrial and Engineering Chemistry*, 36, 504, 1944

7. Frankenberg, T. T., "Removal of Sulfur from Products of Combustion," *API* Preprint No. 53-65, May 12, 1965

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EXHIBIT-D

AVERAGE AND MAXIMUM PRODUCTION/EMISSION RATES

The material balance on the contractors drawing, Attachment-E of the permit application, represents nominal design rates under average conditions.

USSAC expects maximum sustainable production rates to be 10% in excess of the nominal design. The application form section III C, first column, specifies emissions to be recorded as "maximum,lbs./hr.", and the numbers entered comply with this specification. For consistency, maxima were also used in section III B.

For further clarification tables have been prepared to summarize average and maximum rates, and are included as part of EXHIBIT-D. See tables IA, IB, IIA, and IIB. Numbers are given in lbs./hr. to be more easily identified with permit application numbers which are also in lbs./hr.

There are no fluoride emissions in streams 22 and 23 on Attachment-E of the permit application. This is verified by the designer/contractor letter which is included with this EXHIBIT-D.

EXHIBIT D

TABLE IA-AVERAGE RAW MATERIAL & PRODUCTION RATES
(Refer Attachment E)

	Pounds Per Hour Train A	Pounds Per Hour Train B	Pounds Per Hour Total	(Tons/Day)
Rock Feed, P_2O_5	61,085	61,085	122,170	(1466)
Production, P_2O_5	58,335	58,335	116,670	(1400)

TABLE IB-FLUORIDE EMISSIONS AT AVERAGE PRODUCTION RATE
(Refer Attachment E)

	Pounds Per Hour Train A	Pounds Per Hour Train B	Pounds Per Hour Total	(Lbs./Day)
Reaction Area, Stream 20	0.45	0.45	0.90	(21.6)
Storage Area, Stream 21	0.16	0.16	0.32*	(7.6)
Other	0	0	0	0
Total	0.61	0.61	1.22	(29.2)

*The storage area scrubber is common to both trains.

TABLE IIA-MAXIMUM RAW MATERIAL & PRODUCTION RATES

	Pounds Per Hour Train A	Pounds Per Hour Train B	Pounds Per Hour Total	(Tons/Day)
Rock Feed, P_2O_5	70,510	70,510	141,020	(1692)
Production, P_2O_5	64,165	64,165	128,330	(1540)

TABLE IIB-FLUORIDE EMISSIONS AT MAXIMUM PRODUCTION RATE

	Pounds Per Hour Train A	Pounds Per Hour Train B	Pounds Per Hour Total	(Lbs./Day)
Reaction Area, Stream 20	0.53	0.53	1.06	(25.4)
Storage Area, Stream 21	0.18	0.18	0.36*	(8.6)
Other	0	0	0	0
Total	0.71	0.71	1.42	(34.0)

*The storage area scrubber is common to both trains.

Badger

EXHIBIT - D

RECEIVED

SEP 18 1980

USS ENG. - FT. MEADE

GULF DESIGN DIVISION

1401 NORTH WESTSHORE BOULEVARD □ P.O. BOX 22317 □ TAMPA, FLORIDA 33622 □ TELEPHONE: 813/879-0715

September 19, 1980
Letter No. GD/USSAC-030L

USS Agri-Chemicals
P.O. Box 150
Bartow, Florida 33830

Attention: Mr. R. T. Lindsay
Project Manager

Subject: Exhaust Gases from Vacuum Pump Silencer
Phosphoric Acid Plant
Fort Meade, Florida
Badger Study No. E-7541

Dear Bob:

In recent discussions, your technical team questioned the nature of gases exhausting from the Reactor and Filter Vacuum Pumps in our phosphoric acid plant. Please be advised that these gases are primarily air, carbon dioxide, and water vapor. We have not detected fluorine compounds in gases leaving these silencers.

Very truly yours,

BADGER AMERICA, INC.

J W Salter

J. W. Salter
Project Manager

JWS:mey

EXHIBIT-E

ERRATA

A numerical error has been found in Attachment-B, paragraph 3, of the permit application.

Attachment-B revised for correction is included as EXHIBIT-E. The error was not reflected elsewhere in the application.

EXHIBIT - E

TRAIN - A

ATTACHMENT B

(For Section V of Application)

1. Total Process Input Rate and Product Weight

P_2O_5 Input	=	70510	lb/h
P_2O_5 in Product	=	64165	lb/h
P_2O_5 Loss to Gypsum Storage	=	6345	lb/h

2. Emission Estimate and Test Methods

(a) Basis of Emission Estimate - performance guarantee from Badger America Inc. (Attachment A) which equates to meeting Federal NSPS and Florida Emission Limiting Standards.

(b) Compliance Test Methods - in accordance with 40 CFR 60, or DER/EPA approved alternate methods.

3. Basis of Potential Discharge

(Refer to Flow Diagram, Attachment E)

Based on guarantees from Bader America, fluoride emissions from the reactor area fume scrubber will be 10.8 pounds per day (lb/d) at a scrubber efficiency of 99%. Fluoride emissions from the storage tank area fume scrubber will be 3.8 lb/d at a scrubber efficiency of 95%. Total potential (uncontrolled) emission rates will be as follows:

Reactor Area	=	10.8 lb/d / 0.01 (effic. factor)	=	1080 ~~2090~~ lb/d ★
Storage Tank Area	=	3.8 ~~7.8~~ lb/d / 0.05 (effic. factor)	=	76 ~~156~~ lb/d ★
TOTAL			=	1156 ~~2246~~ lb/d ★
			=	48 ~~94~~ lb/h ★

4. Design Details of Pollution Control Equipment

Design details are not yet available. Refer to flow diagram in Attachment E for additional information.

★ Revised to correct error - 9/15/80

EXHIBIT - E

TRAIN-B

ATTACHMENT B

(For Section V of Application)

1. Total Process Input Rate and Product Weight

P_2O_5 Input	=	70510	lb/h
P_2O_5 in Product	=	64165	lb/h
P_2O_5 Loss to Gypsum Storage	=	6345	lb/h

2. Emission Estimate and Test Methods

(a) Basis of Emission Estimate - performance guarantee from Badger America Inc. (Attachment A) which equates to meeting Federal NSPS and Florida Emission Limiting Standards.

(b) Compliance Test Methods - in accordance with 40 CFR 60, or DER/EPA approved alternate methods.

3. Basis of Potential Discharge

(Refer to Flow Diagram, Attachment E)

Based on guarantees from Bader America, fluoride emissions from the reactor area fume scrubber will be 10.8 pounds per day (lb/d) at a scrubber efficiency of 99%. Fluoride emissions from the storage tank area fume scrubber will be 3.8 lb/d at a scrubber efficiency of 95%. Total potential (uncontrolled) emission rates will be as follows:

$$\text{Reactor Area} = \frac{10.8 \text{ lb/d}}{0.01 \text{ (effic. factor)}} = \overset{1080}{\cancel{2090}} \text{ lb/d} \star$$

$$\text{Storage Tank Area} = \frac{\overset{3.8}{\cancel{7.8}} \text{ lb/d}}{0.05 \text{ (effic. factor)}} = \overset{76}{\cancel{156}} \text{ lb/d} \star$$

$$\text{TOTAL} = \overset{1156}{\cancel{2246}} \text{ lb/d} \star$$

$$= \overset{48}{\cancel{94}} \text{ lb/h} \star$$

4. Design Details of Pollution Control Equipment

Design details are not yet available. Refer to flow diagram in Attachment E for additional information.

★ Revised to correct error - 9/15/80

DER PERMIT APPLICATION TRACKING SYSTEM MASTER RECORD

FILE#000000033822 COE# DER PROCESSOR:SVEC DER OFFICE:TLH
FILE NAME:USS AGRI-CHEMICALS DATE FIRST REC: 08/14/80 APPLICATION TYPE:AC
APPL NAME:BECK, GEORGE W. APPL PHONE:(813)533-0471 PROJECT COUNTY:53
ADDR:P.O. BOX 150 CITY:BARTOW ST:FLZIP:33830
AGNT NAME:CARROLL, JAMES H. AGNT PHONE:(813)533-0471
ADDR:P.O. BOX 150 CITY:BARTOW ST:FLZIP:33830

ADDITIONAL INFO REQ: / / / / / / REC: / / / / / /
APPL COMPLETE DATE: / / COMMENTS NEC:Y DATE REQ: / / DATE REC: / /
LETTER OF INTENT NEC:Y DATE WHEN INTENT ISSUED: / / WAIVER DATE: / /

HEARING REQUEST DATES: / / / / / /
HEARING WITHDRAWN/DENIED/ORDER -- DATES: / / / / / /
HEARING ORDER OR FINAL ACTION DUE DATE: / / MANUAL TRACKING DESIRED:N
THIS RECORD HAS BEEN SUCESSFULLY ADDED 08/18/80 09:18:19
FEE PD DATE#1:08/14/80 $0020 RECEIPT#00033548 REFUND DATE: / / REFUND $
FEE PD DATE#2: / / $ RECEIPT# REFUND DATE: / / REFUND $
APPL:ACTIVE/INACTIVE/DENIED/WITHDRAWN/TRANSFERRED/EXEMPT/ISSUED:AC DATE:08/14/80
REMARKS:AUXILIARY BOILER. H'WY 630 W. AT FT. MEADE. LAT./ LON. NOT GIVEN.
UTM = 416.19 E. / 3068.65 N.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

Nº 33544

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from USS AGRI-CHEMICALS Date 14 AUGUST 1980

Address H'WAY 630 WEST, BARTOW Dollars $ 120.00 (6 PERMITS)

Applicant Name & Address G.W. BECK, MANAGER

Source of Revenue

Revenue Code 0101 Application Number AC 53 33818 33821 33819 33822 33820

By M G. Hodge

AC 53-33818

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Air Pollution [X] New[1] [ ] Existing[1]

APPLICATION TYPE: [X] Construction [ ] Operation [ ] Modification

COMPANY NAME: USS Agri-Chemicals COUNTY: Polk

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Sulfuric Acid Plant - No. 1 Train

SOURCE LOCATION: Street Highway 630 West City Ft. Meade

UTM: East 416.26 (Zone 17) North 3068.79

Latitude ___ ° ___ ' ___ "N Longitude ___ ° ___ ' ___ "W

APPLICANT NAME AND TITLE: G. W. Beck, Manager, Florida Phosphate Operations

APPLICANT ADDRESS: P.O. Box 150, Bartow, Florida 33830

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of USS Agri-Chemicals

I certify that the statements made in this application for a construction 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 provision 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 non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: [signature]

George W. Beck, Manager, Fla Phosphate Operations
Name and Title (Please Type)

Date: 8/5/80 Telephone No. 813-533-0471

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

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 judgment, 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, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed: [signature]

James H. Carroll
Name (Please Type)

USS Agri-Chemicals
Company Name (Please Type)

P. O. Box 150, Bartow, Fl 33830
Mailing Address (Please Type)

(Affix Seal)

JAMES H. CARROLL CERTIFICATE NO. 19497 STATE OF FLORIDA REGISTERED ENGINEER

Florida Registration No. 19407 Date: 8/5/80 Telephone No. 813-533-0471

[1]See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

This is a double absorption sulfuric acid plant, complete with cooling water tower and boiler feedwater treatment system. Emissions of sulfur dioxide and sulfuric acid mist will be in full compliance with Federal New Source Performance Standards and Florida Emission Limiting Standards.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction March, 1981 Completion of Construction March, 1983

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Second Stage Absorber - $3,100,000

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Operating permit A053-4528, issued 11/2/77, expires 11/2/82, 1500 ton/day sulfuric acid plant. This existing plant will be shut down as soon as the new plant is tested for service.

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ____ Yes X No

F. Normal equipment operating time:* hrs/day 24 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr ____ ;

if seasonal, describe:

*Plant will be shut down only when required for repairs.

G. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No
   a. If yes, has "offset" been applied? ____
   b. If yes, has "Lowest Achievable Emission Rate" been applied? ____
   c. If yes, list non-attainment pollutants. ____
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII. See Attachment H
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? Yes
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

To BT 8-29-80

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

DEPARTMENT OF ENVIRONMENTAL REGULATION
STATE OF FLORIDA

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

August 29, 1980

Mr. George W. Beck, Manager
U.S.S. Agri-Chemicals
P. O. Box 150
Bartow, Florida 33830

Dear Mr. Beck:

The Bureau of Air Quality Management acknowledges receipt of five applications for permits to construct two sulfuric acid plants, one Auxiliary boiler and two phosphoric acid plants at U.S.S. Agri-Chemicals Ft. Meade phosphate fertilizer complex. A preliminary review of the application has been made and the technical staff has concluded that more information will be needed before these applications can be processed.

The PSD analysis has been reviewed and found complete in all but one respect. The question of meeting the Florida AAQS for SO_2 has not been addressed. It is noted that there will be an increase in the 24-hour emission rate for the new sulfuric acid plant as compared to the old one. Your analysis of the ambient impact for the new plant configuration utilized a negative emission rate for the old plant with a positive emission rate from the new plant. Although this analysis is sufficient (in this case) for estimating the PSD increment consumption, it is not sufficient to assess the impact of the new sulfuric acid plant and auxiliary boiler in combination with other SO_2 emitting sources at the facility, for Florida AAQS. We suggest that another (CRSTER) model run be made incorporating the new sulfuric acid plant along with the other SO_2 emitting sources that are present at or proposed for the facility to estimate the sulfur dioxide ambient air quality.

For the application for permits to construct the sulfuric acid plants, please answer or comment on the questions in sections VI D and E. General information may be used to answer these questions. The Bureau is interested in the efficiency being obtained by the controls on the existing plant and if any technology, other than scrubbing or double absorption, was considered for the new plant.

There is some contradiction in the data on P_2O_5 production and fluoride emissions in the application and attachment for the phosphoric acid plants. Please give the average and maximum production in tons of P_2O_5/hour for each phosphoric acid train and the maximum and average fluoride emission from each point, including the storage area, within the plants. Include emission of streams 20, 21, 22 and 23 on the flow diagram drawing and any other equipment or stream in the new plants that emits fluoride and is not vented through the scrubbers.

If you have any questions on the data requested, please contact this office. Tom Rogers should be contacted on any question related to modeling and contact Willard Hanks on the other information requested. We will resume processing your applications as soon as this information is received.

Sincerely,

Steve Smallwood

SS:dav

USS
Agri-Chemicals
Division of United States Steel Corporation

MAIL: P. O. BOX 150
BARTOW, FLORIDA 33830
813-533-0471

August 5, 1980

Florida Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Fl 32301

Attention: Mr. William Thomas

Re: Construction Permits
Ft. Meade Phosphate Chemical Complex

Dear Mr. Thomas:

Enclosed are four copies each of Construction Permit Applications for new Sulfuric Acid and Phosphoric Acid Plants, and an Auxiliary Boiler proposed to be constructed at the Ft. Meade plant site. The applications incorporate suggestions and requests which developed at a meeting with members of USSAC's staff in your Tallahassee offices on May 29, 1980 to discuss "draft" applications which had been submitted for comment. Since that time the new GTSP plant and storage building additions have been deleted from the project. Present plans call for continued operation of the existing GTSP plant and storage facilities.

Separate checks are included as follows for each of the individual applications.

Sulfuric Acid Plant - Train No. 1 --- $20.00
Sulfuric Acid Plant - Train No. 2 --- $20.00
Auxiliary Boiler --- $20.00
Phosphoric Acid Plant - Train A --- $40.00 (two stacks)
Phosphoric Acid Plant - Train B --- $20.00

Also enclosed is a corporate certificate of good standing.

Very truly yours,
USS AGRI-CHEMICALS

G. W. Beck
Manager Florida Phosphate
Operations

GWB/tsw

enclosures

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

This is a double absorption sulfuric acid plant, complete with cooling water tower and boiler feedwater treatment system. Emissions of sulfur dioxide and sulfuric acid mist will be in full compliance with Federal New Source Performance Standards and Florida Emission Limiting Standards.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction March, 1981 Completion of Construction March, 1983

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Second Stage Absorber - $3,100,000

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Operating permit A053-4528, issued 11/2/77, expires 11/2/82, 1500 ton/day sulfuric acid plant. This existing plant will be shut down as soon as the new plant is tested for service.

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ____ Yes X No

F. Normal equipment operating time:* hrs/day 24 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr ____ ;

if seasonal, describe:

*Plant will be shut down only when required for repairs.

G. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No
   a. If yes, has "offset" been applied? ____
   b. If yes, has "Lowest Achievable Emission Rate" been applied? ____
   c. If yes, list non-attainment pollutants. ____
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII. See Attachment H
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? Yes
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Sulfur	S	99.46	60064	Pt. 2 on Atch E

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 60390
2. Product Weight (lbs/hr): 187110 (98% H_2SO_4)

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr *	T/yr	
SO_2	367	1355	4 lb/ton 100% H_2SO_4	367	367	1355	Pt. 5
H_2SO_4 Mist	13.75	51	0.15 lb/ton 100% H_2SO_4	13.75	13.75	51	Atch E
*Emissions control is integral to double absorption process.							

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5]
2nd Stage Absorber*	SO_2	99.7	N/A	See Atch A
Mist Eliminator	H_2SO_4 Mist	99.99+	N/A	See Atch A
*SO_2 control is achieved through components integral to process.				

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 0.1 pounds per million BTU heat input)

[3] Calculated from operating rate and applicable standard

[4] Emission, if source operated without control (See Section V, Item 3)

[5] If Applicable

E. Fuels

Type (Be Specific) **	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: ______ Percent Ash: ______

Density: ______ lbs/gal Typical Percent Nitrogen: ______

Heat Capacity: ______ BTU/lb ______ BTU/gal

Other Fuel Contaminants (which may cause air pollution): ______

F. If applicable, indicate the percent of fuel used for space heating. Annual Average ______ Maximum ______

G. Indicate liquid or solid wastes generated and method of disposal.

Cooling tower blowdown, boiler blowdown, and feedwater treatment unit blowdown are non-process effluents and will be discharged to the plant outfall.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 175 ft. Stack Diameter: 8.5 ft.

Gas Flow Rate: 112,123 ACFM Gas Exit Temperature: 180 °F.

Water Vapor Content: nil % Velocity: 34 FPS

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste ______

Total Weight Incinerated (lbs/hr) ______ Design Capacity (lbs/hr) ______

Approximate Number of Hours of Operation per day ______ days/week ______

Manufacturer ______

Date Constructed ______ Model No. ______

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

Stack Height: ______________ ft. Stack Diameter ______________ Stack Temp. ______________

Gas Flow Rate: ______________ ACFM ______________ DSCFM* Velocity ______________ FPS

*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 devices: ______________

____

____

____

____

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 where required for this application.

1. Total process input rate and product weight — show derivation. (See Attachment B)
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.,) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made. (See Attachment B)
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). (See Attachment B)
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, etc.). (See Attachment B)
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3, and 5 should be consistent: actual emissions = potential (1-efficiency). (See Attachment B)
6. 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. (See Attachment E)
7. An 8½" x 11" plot plan showing the 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 relevant portion of USGS topographic map). (See Attachment D)
8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram. (See Attachment F)

9. An application fee of $20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
[X] Yes [ ] No

Contaminant	Rate or Concentration
Sulfur Dioxide	4 lb/ton 100% H_2SO_4 produced
H_2SO_4 Mist	0.15 lb/ton 100% H_2SO_4 produced

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) [X] Yes [ ] No

Contaminant	Rate or Concentration
Sulfur Dioxide	4 lb/ton 100% H_2SO_4 produced
H_2SO_4 Mist	0.15 lb/ton 100% H_2SO_4 produced
(See Attachment G)	

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
Sulfur Dioxide	4 lb/ton 100% H_2SO_4 produced
H_2SO_4 Mist	0.15 lb/ton 100% H_2SO_4 produced

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:
5. Useful Life:
6. Operating Costs:
7. Energy:
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

10. Stack Parameters

a. Height: ft.
b. Diameter: ft.
c. Flow Rate: ACFM
d. Temperature: °F
e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device:

b. Operating Principles:

c. Efficiency*:
d. Capital Cost:
e. Useful Life:
f. Operating Cost:
g. Energy*:
h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency*:
d. Capital Cost:
e. Useful Life:
f. Operating Cost:
g. Energy**:
h. Maintenance Costs:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power — KWH design rate.

3.

a. Control Device:

b. Operating Principles:

c. Efficiency*:
d. Capital Cost:
e. Life:
f. Operating Cost:
g. Energy:
h. Maintenance Cost:

*Explain method of determining efficiency above.

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space and operate within proposed levels:

4.

a. Control Device

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device: 2nd Stage Absorber
2. Efficiency*: 99.7%
3. Capital Cost: $3,100,000
4. Life: 20 years
5. Operating Cost: N.A.
6. Energy: Self-sufficient
7. Maintenance Cost: $92,000 per year, estimated @ 3% of capital cost
8. Manufacturer: Monsanto Enviro-Chem
9. Other locations where employed on similar processes:

a.

(1) Company: W. R. Grace and Company

(2) Mailing Address: P.O. Box 471

(3) City: Bartow

(4) State: Florida 33830

(5) Environmental Manager: Mike Altenburger

(6) Telephone No.: (813) 533-2171

*Explain method of determining efficiency above. Efficiency based on sulfur loss vs. sulfur gain

(7) Emissions*:

Contaminant	Rate or Concentration
Sulfur Dioxide	4 lb/ton 100% H_2SO_4 produced
H_2SO_4 Mist	0.15 lb/ton 100% H_2SO_4 produced

(8) Process Rate*:

b.

(1) Company:

(2) Mailing Address:

(3) City:

(4) State:

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

10. Reason for selection and description of systems:

(See Attachment C)

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII — PREVENTION OF SIGNIFICANT DETERIORATION

(See Attachment H)

A. Company Monitored Data

1. 0 no sites ______ TSP ______ ( ) SO^2* ______ Wind spd/dir

Period of monitoring ___ / ___ / ___ (month day year) to ___ / ___ / ___ (month day year)

Other data recorded ______

Attach all data or statistical summaries to this application.

2. Instrumentation, Field and Laboratory

a) Was instrumentation EPA referenced or its equivalent? ___ Yes ___ No

b) Was instrumentation calibrated in accordance with Department procedures? ___ Yes ___ No ___ Unknown

B. Meteorological Data Used for Air Quality Modeling

1. 1 Year(s) of data from 01 / 01 / 72 (month day year) to 12 / 31 / 72 (month day year)

2. Surface data obtained from (location) Tampa

3. Upper air (mixing height) data obtained from (location) Tampa

4. Stability wind rose (STAR) data obtained from (location) N/A

C. Computer Models Used

1. CRSTER (See Attachment H) Modified? If yes, attach description.

2. ______ Modified? If yes, attach description.

3. ______ Modified? If yes, attach description.

4. ______ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	0 grams/sec
SO^2	(See Attachment H) grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time. (See Attachment H)

F. Attach all other information supportive to the PSD review.

*Specify bubbler (B) or continuous (C).

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

SECTION V

GUARANTEES

A. PERFORMANCE GUARANTEES

1. Contractor guarantees that the plants shall be capable of operating at their rated capacity of 4,000 short tons (100% H_2SO_4) per twenty-four (24) hour day, with all product as 98% sulfuric acid (2000 short tons per plant).

2. Contractor guarantees that the plants shall be capable of operating at 50% of rate capacity of 2,000 short tons (100% H_2SO_4) per twenty-four (24) hour day, with all product as 98% sulfuric acid (1,000 short tons per plant).

3. Contractor guarantees when each plant is operated at its capacity of 2,000 short tons (100% H_2SO_4) per twenty-four (24) hour day, that the SO_2 content in the process gas leaving the final absorption tower shall average over a two (2) hour period not to exceed 4 lbs. per ton of acid produced, and that the H_2SO_4 mist content in the process gas leaving the inter-pass and final absorption tower shall average not to exceed 0.15 lb. per ton of acid produced.

4. Contractor guarantees that the combined cooling tower blowdown and boiler blowdown will average not to exceed 500 GPM when both cooling tower and boiler are operated per vendor recommendations and with inlet well water quality as specified in Section II.

5. Contractor guarantees that the demineralizer neutralized effluent will have a pH between 6.-9.5 as measured at battery limits.

6. Contractor guarantees that the product acid concentration will be between 98.0% and 99.0% as sampled from acid plants.

Performance Tests

The demonstration of performance guarantees A-1, A-2, A-4 and A-6 require the operation of both sulfuric acid plants. These guarantees shall be demonstrated after start-up of the second plant over an operating period of three (3) substantially consecutive days.

Performance guarantees A-3 and A-6 will be demonstrated sequentially as each plant is started up.

ATTACHMENT B

(For Section V of Application)

1. Total Process Input Rate and Product Weight

(Refer to Monsanto Enviro-Chem drawing in Attachment E)

Input

At nominal capacity, plant will use 54900 lb/h liquid sulfur feedstock. Assuming maximum operating level at 10 percent above nominal capacity, a maximum liquid sulfur feedstock input of 60390 lb/h (1.1 x 10980) is needed. However, feedstock is only 99.46% pure sulfur; therefore, maximum sulfur input is 60064 lb/h (0.9946 x 60390).

Output

Nominal production capacity of 98% H_2SO_4 is 170100 lb/h. Assuming maximum operating level at 10 percent above nominal capacity and converting 98% H_2SO_4 to 100% H_2SO_4, the maximum production of 100% H_2SO_4 is 183368 lb/h (170100 x 1.1 x 0.98). Based on this figure, the following calculations can be made:

(a) Sulfur in product $= 183368 \text{ lb/h } H_2SO_4 \times \frac{32 \text{ lb S}}{98 \text{ lb } H_2SO_4}$

$= 59875$ lb/h

(b) Sulfur loss as SO_2 $= \frac{183368 \text{ lb/h } H_2SO_4}{2000 \text{ lb/ton}} \times \frac{1 \text{ lb S}}{2 \text{ lb } SO_2} \times \frac{4 \text{ lb } SO_2}{\text{ton } H_2SO_4}$

$= 184$ lb/h

(c) Sulfur loss as mist $= \frac{183368 \text{ lb/h } H_2SO_4}{2000 \text{ lb/ton}} \times \frac{32 \text{ lb S}}{98 \text{ lb } H_2SO_4} \times \frac{0.15 \text{ lb mist}}{\text{ton } H_2SO_4}$

$= 5$ lb/h

(d) Total sulfur = 59875 + 184 + 5 = 60064 lb/h

2. Emission Estimate and Test Methods

(a) Basis of emission estimate - performance guarantees from Monsanto Enviro-Chem (Attachment A) which equate to meeting Federal NSPS and Florida Emission Limiting Standards.

(b) Compliance Test Methods - in accordance with 40 CFR 60, or DER/EPA approved alternate methods.

3. Basis of Potential Discharge

Potential and actual emissions are equivalent in this case since control is achieved by components integral to overall process. Actual emissions are based on performance guarantees which equate to Federal NSPS and Florida Emission Limiting Standards.

4. Design Details of Pollution Control Equipment

Design details of the second stage absorber are the proprietary information of Monsanto Enviro-Chem.

5. Efficiency of Control Devices

$$\text{Efficiency} = \frac{\text{Sulfur in Product Acid}}{\text{Sulfur Input}} = \frac{59875 \text{ lb}}{60064 \text{ lb}} = 99.7\%$$

ATTACHMENT C

(For Section VI.F.10 of Application)

REASON FOR SELECTION

The double absorption system is a proven, reliable, and widely accepted process to minimize emissions from sulfuric acid plants.

DESCRIPTION OF SYSTEM

(Starts on next page.)

DESCRIPTION OF SULFURIC ACID PRODUCTION

The principal steps in the process consist of burning sulfur (S) in air to form sulfur dioxide (SO_2), combining the sulfur dioxide with oxygen (O_2) to form sulfur trioxide (SO_3), and combining the sulfur trioxide with water (H_2O) to form a solution containing sulfuric acid (H_2SO_4). The chemical reactions are:

$$S + O_2 = SO_2$$

$$SO_2 + 1/2\ O_2 = SO_3$$

$$SO_3 + H_2O = H_2SO_4$$

The sulfur is burned with air in a horizontal spray-type sulfur burner. Before the air is admitted to the sulfur burner, it is dried by contact with 98 percent sulfuric acid.

The temperature of the SO_2 gas from the sulfur burner is higher than is required for inlet to the conversion system; therefore, the gas is cooled in a waste heat boiler, which recovers the surplus heat as by-product steam.

From the waste heat boiler, the gas flows to the first pass of the converter system where it is partially converted to sulfur trioxide gas in the presence of vanadium catalyst. The conversion reaction produces heat. Gases leaving the first converter pass flow to the superheater where they are cooled. Temperature of the gas stream downstream of the superheater is controlled in the proper range by by-passing a portion of the gas flow around the superheater. The cool gas stream flows from the superheater to the second converter pass where additional conversion of sulfur dioxide to sulfur trioxide takes place, accompanied by the generation of additional heat. Hot gases leaving the second converter pass are cooled by sending them through the tube side of the hot interpass exchanger.

Cooled gases leaving the heat exchanger flow to the third converter pass where additional conversion of sulfur dioxide to sulfur trioxide takes place. Hot gases leaving the third converter pass are cooled by sending them through the tube side of two gas heat ex-

changers, called cold interpass heat exchangers, connected in series, and the economizer.

Gas leaving the economizer flows to the interpass absorbing tower where the SO_3 in the gas stream is removed. In the interpass absorbing tower, the SO_3 does not combine directly with water, but must be combined indirectly by absorbing it in sulfuric acid where the SO_3 reacts with water in the acid. The temperature of the 98 to 99 percent H_2SO_4 circulated over the interpass absorbing tower increases due to the heat of formation and the sensible heat of the gas stream entering the tower. Acid from the bottom of the interpass absorbing tower is circulated through coolers and returned to the top of the tower. Sufficient water is added to the interpass absorption tower system to control the strength of acid circulated over the interpass tower between 98 and 99 percent. Cool gas leaving the interpass absorbing tower, containing unreacted SO_2, flows to the shell side of the cold interpass gas heat exchangers where it is heated by gases leaving the third converter pass.

From the shell side of the cold interpass heat exchangers, the gas stream flows to the hot interpass heat exchanger where it is further heated by gases flowing from the second converter pass.

The temperature downstream of the interpass heat exchanger is controlled in the proper range by by-passing a portion of gas around the shell side of the heat exchanger. From the hot interpass heat exchanger, the gas stream flows to the fourth converter pass where final conversion of SO_2 in the gas stream to SO_3 is accomplished.

The gas stream from the fourth converter pass flows to the economizer where it is cooled by boiler feedwater and then flows to the final absorbing tower. In the final absorbing tower, SO_3 in the gas stream reacts with water in the 98 to 99 percent circulating acid. The temperature of the strong acid circulated over the final absorbing tower increases due to the heat of formation and the sensible heat of the gas stream entering the tower. Acid from the bottom of the final absorbing tower is circulated through coolers and returned to the top

of the tower. Sufficient water is admitted to the final absorbing tower system to control the strength of acid circulated over the final acid tower between 98 and 99 percent. That acid produced in the final absorbing tower underflows to the drying/interpass acid pump tank.

Gas leaving the final absorbing tower flows to the atmosphere through a stack.

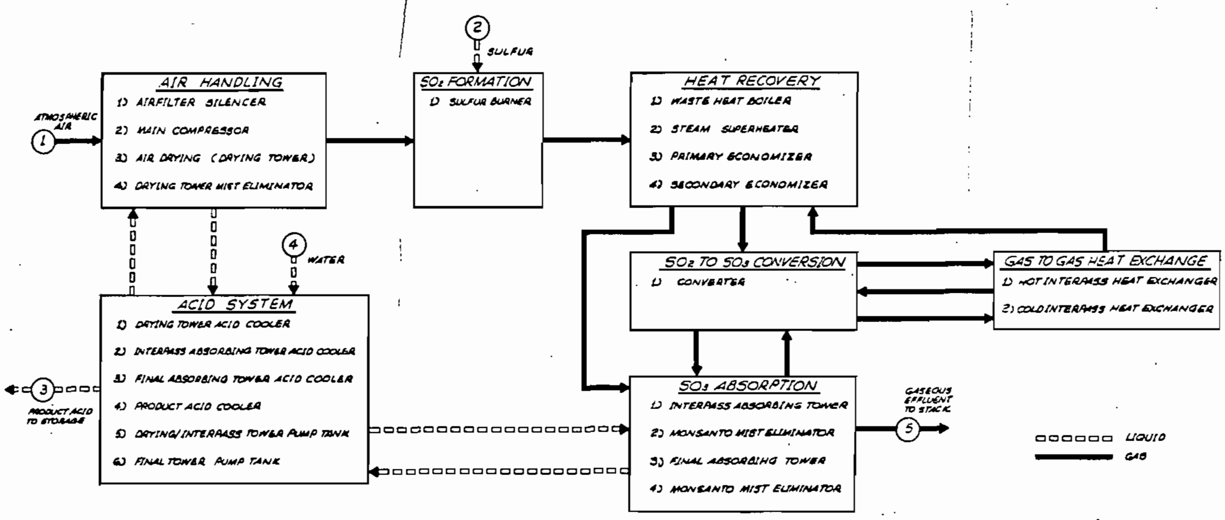
The 98 percent product acid from the drying acid system is pumped directly through a product cooler to storage.

Cooling Water System

Cooling requirements for the plant are achieved by use of cooling towers in which an upward draft is induced by fans located overhead. Water to be cooled is evenly distributed across the top of the tower and allowed to fall in evaporative contact with the upflow of air. The cooled water collects in a basin beneath the tower and is recirculated by pumps through non-contact coolers and back to the tower. The cooling towers provide non-contact cooling for other sections of the complex as well as the sulfuric acid plant.

Use of cooling towers greatly reduces the consumption of ground water. Ground water is required only for make-up of the water evaporated in the cooling process and lost on blowdown to prevent solids build-up in the cooling water system. Additionally, a very small fraction, about 0.1%, is lost by entrainment to the atmosphere.

Attachment D - Location of USS Agri-Chemicals
Fort Meade Phosphate Chemical Complex



STREAM / COMPONENT	UNIT	1	5				
SO_2	SCFM		31				
SO_3	SCFM		0				
O_2	SCFM	20294	5016				
N_2	SCFM	76806	76806				
H_2O	SCFM	3360					
TOTAL	SCFM	100460	81853				
TOTAL	ACFM	113323	106475				
TEMPERATURE	°F	95	180				

STREAM / COMPONENT	UNIT	2	3	4			
LIQUID		SULFUR	98%	WATER			
	LBS/MIN	915	2835	395			
	GPM	61	190	47			
TEMPERATURE	°F	270	100	95			

CLIENT: USS AGRICHEM
LOCATION: FORT MEADE, FLORIDA
PRODUCTION: 2000 STPD AS 98% ACID (100% H_2SO_4 BASIS)
NUMBER OF UNITS: TWO PLANTS
CONVERSION: 99.7 CONVERSION OF SO_2 TO SO_3 WITH 10.1 SO_2 TO CONVERTER.
STANDARD CONDITIONS: 0°C AND 760 MM Hg.
EMISSIONS:
SO_2: 4 LBS SO_2/TON 100% H_2SO_4 PRODUCED
ACID MIST: LESS THAN OR EQUIVALENT TO 0.15 LBS H_2SO_4/TON 100% H_2SO_4 PRODUCED

STACK: 175' HIGH, 8'-6" I.D.

ATTACHMENT E

REVISIONS	NO	DATE	DESCRIPTION	BY	BY	BY
		4-1-84	ISSUED TO EPA			

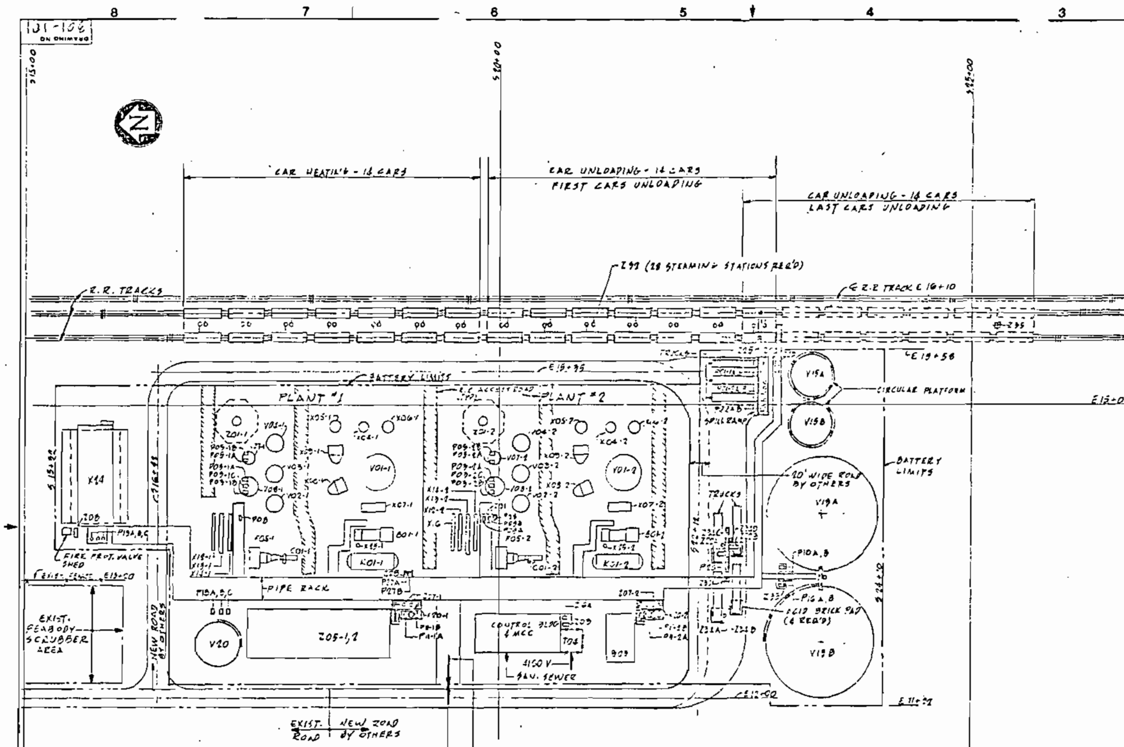
MONSANTO ENVIRO-CHEM SYSTEMS, INC.
ST. LOUIS, MISSOURI

ENVIRONMENTAL
PROCESS MATERIAL FLOW DIAGRAM
SULFUR BURNING PLANT

THIS DRAWING IS THE PROPERTY OF MONSANTO ENVIRO CHEM SYSTEMS INC

ISSUE DATE	PURPOSE OF ISSUE
4- -80	EPA

	BY	DATE	APP'D	DATE	JOB NO	REVISION
DRAWN		4-9-80			2139	
CHECKED					DRAWING NO 321-121	
SCALE						



EQUIPMENT LIST - CONTINUED		
	Z95	CAR PULLER

NOTES

1. * DENOTES ONE IS AN INST. SPARE.
2. FOR DETAILED PLANT LAYOUT SEE DWG. 301-102

EQUIPMENT LIST - MAJOR EQUIPMENT

PLANT NO. 1	PLANT NO. 2	EQUIPMENT COMMON TO BOTH PLANTS	DESCRIPTION
B01-1	B01-2		WASTE HEAT BOILER
		B03	AUX. BOILER SYSTEM
C01-1	C01-2		MAIN COMPRESSOR
F02-1	F02-2		DRYING TOWER MIST ELIMINATOR
F03-1	F03-2		INTERPASS TOWER MIST ELIMINATOR
F04-1	F04-2		FINAL TOWER MIST ELIMINATOR
F05-1	F05-2		INLET AIR FILTER WITH SILENCER
K01-1	K01-2		SULFUR BURNER
*P01-1A,B	*P01-2A,B		SULFUR BURNER FEED PUMPS
		*P02A,B	SULFUR TRANSFER PUMPS
*P03-1A,B,C	*P03-2A,B,C		DRYING/INTERPASS TOWER ACID PUMPS
*P05-1A,B	*P05-2A,B		FINAL TOWER ACID PUMPS
P06			ACID COOLER DRAIN PUMP
		*P09A,B	PRODUCT ACID BOOSTER PUMP & P12 A,B,C
		*P10A,B	PRODUCT ACID TRANSFER PUMP
*P11-1A,B	*P11-2A,B		BOILER FEED WATER PUMPS
		*P14A,B,C	COOLING TOWER WTR. SUPPLY PUMPS
		*P15A,B	PRODUCT ACID LOADING PUMPS
		*P16A,B,C	DEAERATOR FEED WATER PUMPS
		P19	TRUCK LOADING SUMP PUMP
		*P27A,B	PROCESS WATER SUMP PUMP
		P28	PRODUCT ACID BOOSTER SUMP PUMP
		T04	4160/480 VOLT TRANSFORMER
V01-1	V01-2		CONVERTER
V02-1	V02-2		DRYING TOWER
V03-1	V03-2		INTERPASS TOWER
V06-1	V06-2		FINAL TOWER
V07-1	V07-2		FINAL TOWER PUMP TANK
V08-1	V08-2		DRYING/INTERPASS TOWER PUMP TANK
		V15A,B	SULFURIC ACID STORAGE TANKS
		V19	MOLTEN SULFUR STORAGE TANK
		V20	TREATED WATER STORAGE TANK
X04-1	X04-2		COLD INTERPASS HEAT EXCHANGER, HOT SHELL
X05-1	X05-2		COLD INTERPASS HEAT EXCHANGER, COLD SHELL
X06-1	X06-2		HOT INTERPASS HEAT EXCHANGER
X07-1	X07-2		SUPERHEATER
X08-1	X08-2		SECONDARY ECONOMIZER
X09-1	X09-2		PRIMARY ECONOMIZER
X12-1	X12-2		DRYING TOWER ACID COOLER
X13-1	X13-2		INTERPASS TOWER ACID COOLER
X14-1	X14-2		FINAL TOWER ACID COOLER
		X16	PRODUCT ACID COOLER
X20-1	X20-2		BOILER FEEDWATER HEATER
		X24	WATER COOLING TOWER
X25-1	X25-2		BOILER B.D. HEAT RECOVERY SYSTEM
Z01-1	Z01-2		PLANT STACK
		Z02	MOLTEN SULFUR PIT
Z05-1	Z05-2		DEMINERALIZER SYSTEM
Z07-1	Z07-2		BOILER CHEMICAL FEED SYSTEM
		Z08	COOLING WATER TREATMENT SYSTEM
		Z09	AUXILIARY GENERATOR
		Z62	HVAC UNIT FOR CONTROL ROOM
		Z22A,B	ACID TRUCK LOADING STATIONS
		Z25	SULFUR TANK CAR UNLOADING TROUGH
		Z28	PROCESS WASTE WTR. SUMP
		Z29	CONDENSATE RECEIVER SYSTEM
		Z30	TRUCK LOADING SPILL SUMP
		Z31	PRODUCT ACID BOOSTER PUMP BASIN & SUMP
		Z92	TANK CAR STEAMING SYSTEM
		Z93	ACID LOADING & TRANSFER PUMP SPILL BASIN
		Z44A,B,C,D	ACID TRUCK UNLOADING STATIONS

REVISIONS		
C		ISSUED FOR PROPOSAL
1		ISSUED FOR ESTIMATE

MONSANTO ENVIRO-CHEM SYSTEMS, INC.
ST. LOUIS, MISSOURI

PLOT PLAN
ATTACHMENT - F

PROPOSAL — PURPOSE OF ISSUE

DRAWING NO. 301-101

SCALE 1"=50'

EPA-450/2-79-003

ATTACHMENT G

(For Section VI. B. of Application)

Compilation of BACT/LAER Determinations

by

Jack A. Wunderle

PEDCo Environmental, Inc.
Chester Towers
11499 Chester Rd.
Cincinnati, Ohio 45246

Contract No. 68-02-2603
Task No. 42

EPA Project Officer: Gary Rust

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air, Noise, and Radiation
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

May 1979

BACT/LAER CLEARINGHOUSE REPORT

SOURCE TYPE/SIZE: PHOSPHATE FERTILIZER CHEMICAL COMPLEX EXPANSION /2000 TON/DAY

NAME/ADDRESS: OXIDENTAL CHEMICAL COMPANY, WHITE SPRINGS FL

DETERMINATION IS: CONDITIONAL/FINAL/PENDING: DATE OF ISSUE: 2/2/78 BASIS:* BACT[1]/LAER/BACT[2]
FOR NEW/MODIFIED SOURCE

BY EPA REGION IV (Agency) ______ (Person) ______ (Phone)

PERMIT PARAMETERS:

AFFECTED FACILITIES	THROUGHPUT CAPACITY, weight rate	POLLUTANT(S) EMITTED	EMISSION LIMIT(S) AND BASIS FOR**	CONTROL STRATEGY DESCRIPTION Equipment type, etc.	Eff.,%
New contact type		SO_2	333 lb/hr		
double absorption	2000 ton/day	H_2SO_4 Mist	12.5 lb/hr (N)	Mist Eliminator	99+
sulfuric acid plant					
Fossil-fuel-fired	125×10^6 MMBtu/hr	SO_2	(B)	Low sulfur oil	
steam generator		Part	(B)		
Vacuum evaporation					
super phosphoric	700 ton/day	SiF_4	0.29 lb/hr (N)	Venturi scrubber	
acid (SPA) plant		(silicon tetra-flouride)			

NOTES:

* Circle one. BACT-1 indicates determination made under pre-1977 amendments; BACT-2 indicates post-1977 amendments to CAA.

** Basis symbols: Use B = BACT, N = NSPS, S = SIP, L = LAER, P = PSD Increment

ATTACHMENT G (continued)

BACT/LAER CLEARINGHOUSE REPORT

SOURCE TYPE/SIZE: PHOSPHATE FERTILIZER CHEMICAL COMPLEX EXPANSION /2000TON/DAY

NAME/ADDRESS: OXIDENTAL CHEMICAL COMPANY, WHITE SPRINGS, FL

DETERMINATION IS: CONDITIONAL/FINAL/PENDING: DATE OF ISSUE: 2/2/78 BASIS:* BACT[1]/LAER/BACT[2]
FOR NEW/MODIFIED SOURCE

BY EPA REGION IV (Agency) ______ (Person) ______ (Phone)

PERMIT PARAMETERS: AFFECTED FACILITIES	THROUGHPUT CAPACITY, weight rate	POLLUTANT(S) EMITTED	EMISSION LIMIT(S) AND BASIS FOR**	CONTROL STRATEGY DESCRIPTION Equipment type, etc.	Eff.,%
Fossil fuel-fired		Part			
steam generator	75,000 lb/hr	SO_2	(B)	Low sulfur oil	
		SiF_4			
Phosphoric Acid Train	1500 ton/day	SiF_4	1.54 lb/hr (N)	Hoods and cyclone	99.9%
				scrubber	
		Part	46 lb/hr (N)	baghouse	99.8

NOTES:

* Circle one. BACT-1 indicates determination made under pre-1977 amendments; BACT-2 indicates post-1977 amendments to CAA.

** Basis symbols: Use B = BACT, N = NSPS, S = SIP, L = LAER, P = PSD Increment

ATTACHMENT G (continued)

ATTACHMENT H

PREVENTION OF SIGNIFICANT DETERIORATION

(For Section VII of Application)

1. INTRODUCTION

USS Agri-Chemicals (USSAC) is proposing to replace an existing sulfuric acid plant at its Fort Meade Phosphate Chemical Complex with a new sulfuric acid plant. This new plant will have a greater production capacity than the existing plant, but at the same time will be able to achieve a much lower sulfur dioxide (SO_2) emission rate on a pounds per ton basis. In fact, annual average SO_2 emissions from the new plant are expected to be less than those from the existing plant even though sulfuric acid production will substantially increase.

On a short-term basis, however, SO_2 emissions from the new plant can exceed those from the existing plant. At its permitted production rate of 1500 tons per day (100 percent H_2SO_4), the existing plant is allowed to emit and frequently does emit SO_2 at the rate of 10 pounds per ton (lb/ton), which is equivalent to a rate of 625 pounds per hour (lb/h) or 15,000 pounds per day (lb/d). In comparison, the new plant is expected to be able to achieve a daily production rate of up to 4400 tons. At the maximum allowable SO_2 emission rate of 4 lb/ton, maximum short-term SO_2 emissions from the new plant would be 733 lb/h and 17,600 lb/d. The primary purpose of this analysis is to assess whether or not this difference in short-term emissions might result in a significant change in ambient ground-level SO_2 concentrations.

2. ANALYSIS PROCEDURES

Model

EPA's CRSTER model was used to assess 3-hour, 24-hour, and annual average SO_2 concentrations.

Emissions Characteristics

Specific emission source characteristics for the old and new sulfuric acid plants as used for modeling purposes are listed in Attachment A (a copy from one of the modeling run printouts). The SO_2 emission rate for the existing plant was treated as a negative number since this plant will be replaced by the new plant.

The only difference between these characteristics and those listed in Table 4-1 of the original permit application is that the temperature of the existing plant as used for modeling purposes is 98°F (310 K) rather than 87°F. This slight temperature change was made to ensure that stack exit temperature would never be lower than ambient temperatures. Making this change actually increases the conservatism of the analysis since it results in slightly lower concentrations attributable to the existing plant, thereby providing a greater chance for new plant concentrations to exceed existing plant concentrations.

For modeling purposes, the existing and new plant stacks were treated as though located at the same point. In reality, the new plant will be located about 200 to 300 meters southeast of the existing plant, but this distance is slight enough to be ignored.

It should also be noted that the two-stack configuration of the new plant was treated as one stack. This was done in the typical conservative fashion of assuming all SO_2 emissions are emitted at one point with a volumetric flow and velocity equal to that of one of the identical individual stacks.

Meteorological Input

The meteorological observation station normally used for central Florida modeling studies is Tampa. Following this normal practice, Tampa surface and upper air data were used for the present analysis. Although several years of Tampa data are available in the correct format for the CRSTER Model, only a single year was used. The year 1972 was selected because of the high 24-hour concentrations typically resulting from use of this data set. As will be evident when modeling results are presented, use of this single year of data is easily sufficient to show that shutting down the existing plant will offset the effect of the new plant in comparsion with PSD increments.

Receptor Grid

A point midway between the locations of the existing sulfuric acid plant and the proposed new plant was selected as the point from which SO_2 emissions originate. This point is at least 0.6 km from the nearest USSAC property line (State Road 630 to the north), and in most directions is even further away from the boundaries of USSAC-owned property. Therefore, the receptor distances evaluated through the CRSTER Model began at 0.6 km and continued outward. (The CRSTER Model establishes a polar coordinate receptor grid so that it is only necessary to specify radial distances and calculations are automatically made at ten-degree direction increments for each distance selected.)

The following distances were evaluated using the entire year of meteorological data: 0.6, 1.0, 2.0, 3.0, 4.0, 6.0, 12.0, 15.0, 20.0, 25.0, 30.0, 35.0, 40.0, 45.0, and 50.0 km. Based on the results obtained from these initial calculations, specific days were selected for additional evaluations using a smaller grid spacing. The days and receptor separation distances evaluated are shown in the attached computer printouts.

3. MODELING RESULTS

Modeling results are summarized in Table 1. Highest 3-hour, 24-hour, and annual average SO_2 concentrations are listed in comparison with PSD Class II increments, Florida ambient air quality standards (which are more restrictive than the national standards), and EPA significance levels. (Concentrations lower than these defined significance levels are considered to be inconsequential.) As can be seen, not only are the highest concentrations predicted well below the PSD Class II increments, they are also well below the significance levels. This result is attributable to the better dispersion characteristics of the new plant (taller stacks and higher exit temperature) which compensate for the greater maximum hourly emission rate.

TABLE 1

SO_2 Modeling Results

Averaging Period	Highest Predicted Concentration (µg/m3)	Distance and Direction to Highest Concentration	PSD Class II Increment ($\mu g/m^3$)	Florida Ambient Standards ($\mu g/m^3$)	EPA Significance Level ($\mu g/m^3$)
3-Hour	3[a]	3.0 km, 340°	512	1300	25
24-Hour	< 1	1.0 km, 90°	91	260	5
Annual	< 0[b]	50.0 km, 10°	20	60	1

[a] This is the highest concentration excluding one period containing two consecutive hours with calm winds.

[b] The highest annual concentration is actually a negative number, representing a decrease in concentrations. Annual concentrations are based on continuous emissions at the maximum hourly rate.

The conclusion is reached, therefore, that replacement of the existing sulfuric acid plant should not result in adverse ambient air quality effects. PSD Class II increments should not be consumed to a significant extent, and SO_2 ambient air quality standards in this designated attainment area should not be threatened as a result of the proposed project.

4. OTHER CONSIDERATIONS

GEP Stack Height

The height of the new sulfuric acid plant stacks, 175 ft, will not exceed Good Engineering Practice stack height guidelines.

Effect on PSD Class I Areas

As stated in the original permit application, the nearest PSD Class I area is located 125 km away. This large separation distance combined with the offsetting effects of shutting down the existing plant should ensure that the proposed new sulfuric acid plant will not adversely affect the nearest Class I area.

Effect on Nonattainment Areas

The nearest designated SO_2 nonattainment is in Pinellas County, approximately 80 km away. This large separation distance combined with the offsetting effects of shutting down the existing plant should ensure that the proposed new sulfuric acid plant will not contribute to a condition of nonattainment in the nearest designated SO_2 nonattainment area.

Effect on Visibility, Vegetation, and Soils

Since the predicted highest concentration differences resulting from replacement of the existing plant by the proposed new plant are below the EPA levels of significance, it is expected that the proposed change in SO_2 emissions will not have a significant impact on present conditions affecting visibility, vegetation, and soils.

Effect on Associated Growth

Since the operational labor force required for the proposed modification is only about 15 employees more than is required at present, the air quality effects of associated population, commercial, and industrial growth should be negligible.

ATTACHMENT H

PART A

Emission Source Characteristics Used in all Modeling Runs

STACK # 1--OLD SO2 STACK
STACK # 2--NEW SO2 STACK

STACK	MONTH	EMISSION RATE (GMS/SEC)	HEIGHT (METERS)	DIAMETER (METERS)	EXIT VELOCITY (M/SEC)	TEMP (DEG.K)	VOLUMETRIC FLOW (M**3/SEC)
1	ALL	-78.7500	29.00	3.02	6.77	310.00	48.49
2	ALL	92.3600	53.30	2.59	9.45	355.00	49.79

ATTACHMENT H

PART B

Concentrations at Distances of 0.6, 1.0, 2.0, 4.0, and 12.0 km
Using Entire 1972 Meteorolgoical Data Set

Note: 24-hour concentrations of 4.1667 E-32 and 3-hour concentrations of 1.0000 E-30 are presumed to represent negative concentrations which have been set to these values by initializing statements in the CRSTER Model.

PLANT NAME: FORT MEADE SULFURIC ACID   POLLUTANT: SO2   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

MAXIMUM MEAN CONC= -1.1547E-07 DIRECTION= 1 DISTANCE= 12.0 KM

ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR

RANGE DIR	.6 KM	1.0 KM	2.0 KM	4.0 KM	12.0 KM
1	-1.10542E-05	-7.77197E-06	-2.94133E-06	-8.95733E-07	-1.15470E-07
2	-1.46742E-05	-1.03298E-05	-3.93054E-06	-1.25532E-06	-1.98908E-07
3	-1.24830E-05	-8.11257E-06	-3.13668E-06	-1.10965E-06	-2.00033E-07
4	-9.90308E-06	-5.96867E-06	-2.49501E-06	-1.04164E-06	-2.05925E-07
5	-1.16780E-05	-6.67876E-06	-2.82968E-06	-1.27302E-06	-2.93225E-07
6	-1.40093E-05	-7.68884E-06	-2.80865E-06	-1.02109E-06	-1.91637E-07
7	-1.53911E-05	-8.68870E-06	-2.99980E-06	-1.00457E-06	-1.88987E-07
8	-2.09687E-05	-1.16222E-05	-3.67459E-06	-1.02566E-06	-1.38505E-07
9	-3.42884E-05	-2.10838E-05	-6.93821E-06	-1.96792E-06	-2.61061E-07
10	-2.34083E-05	-1.42342E-05	-4.78774E-06	-1.43625E-06	-2.24421E-07
11	-1.30885E-05	-9.40348E-06	-3.86834E-06	-1.34680E-06	-2.01020E-07
12	-9.31209E-06	-6.87312E-06	-3.22213E-06	-1.43340E-06	-2.82924E-07
13	-9.58068E-06	-7.58986E-06	-3.64509E-06	-1.58522E-06	-3.25117E-07
14	-8.67399E-06	-7.52583E-06	-3.90528E-06	-2.08881E-06	-5.91310E-07
15	-8.27493E-06	-7.66021E-06	-3.78493E-06	-1.54615E-06	-2.81247E-07
16	-7.42289E-06	-6.22478E-06	-2.82652E-06	-1.21546E-06	-2.58991E-07
17	-7.20656E-06	-5.65697E-06	-2.51092E-06	-1.09590E-06	-2.61473E-07
18	-7.58701E-06	-6.44791E-06	-3.17323E-06	-1.43442E-06	-3.34403E-07
19	-5.81166E-06	-4.80295E-06	-2.35876E-06	-1.08393E-06	-2.54282E-07
20	-5.72867E-06	-4.46657E-06	-2.22037E-06	-1.00097E-06	-2.09963E-07
21	-8.36406E-06	-6.88062E-06	-3.56591E-06	-1.89453E-06	-5.51526E-07
22	-1.16052E-05	-9.43266E-06	-4.43107E-06	-1.82323E-06	-3.91715E-07
23	-1.50103E-05	-1.30771E-05	-7.06495E-06	-3.65920E-06	-9.33540E-07
24	-1.68126E-05	-1.45578E-05	-7.89537E-06	-3.93650E-06	-9.46232E-07
25	-1.78138E-05	-1.50033E-05	-8.70667E-06	-5.02639E-06	-1.41723E-06
26	-1.96873E-05	-1.65320E-05	-9.16150E-06	-4.63878E-06	-1.11971E-06
27	-2.61885E-05	-2.27847E-05	-1.25240E-05	-6.13369E-06	-1.38436E-06
28	-2.08464E-05	-1.67132E-05	-8.19345E-06	-3.97323E-06	-9.80295E-07
29	-1.57892E-05	-1.22523E-05	-6.39000E-06	-3.28791E-06	-8.50878E-07
30	-1.43464E-05	-1.06056E-05	-5.40110E-06	-3.06494E-06	-8.65826E-07
31	-1.25796E-05	-9.70860E-06	-4.78671E-06	-2.18875E-06	-5.15405E-07
32	-1.16940E-05	-8.79881E-06	-3.74055E-06	-1.34271E-06	-2.47835E-07
33	-1.22111E-05	-9.06788E-06	-4.25415E-06	-1.90688E-06	-4.31577E-07
34	-1.02747E-05	-7.66862E-06	-3.22892E-06	-1.24575E-06	-2.63563E-07
35	-7.25032E-06	-5.60549E-06	-2.53656E-06	-9.92435E-07	-1.77595E-07
36	-9.91598E-06	-7.84184E-06	-3.43708E-06	-1.26375E-06	-2.18088E-07

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 24-HOUR CONC= 2.5751E-07 DIRECTION= 9 DISTANCE= 1.0 KM DAY=249

HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.6 KM	1.0 KM	2.0 KM	4.0 KM	12.0 KM
1	4.1667E-32 (6)	1.0753E-07 (215)	5.2191E-08 (215)	4.9553E-08 (233)	4.8874E-08 (143)
2	4.1667E-32 (1)	2.3252E-07 (215)	1.2980E-07 (215)	6.8928E-08 (215)	1.5404E-07 (237)
3	4.1667E-32 (1)	9.7767E-08 (241)	2.6331E-08 (241)	7.1846E-08 (205)	1.3901E-07 (237)
4	4.1667E-32 (1)	1.9784E-07 (241)	7.1022E-08 (241)	9.5140E-08 (150)	3.2640E-08 (237)
5	4.1667E-32 (1)	2.4011E-09 (248)	8.1338E-08 (241)	1.1342E-07 (150)	4.6776E-08 (261)
6	4.1667E-32 (1)	2.0984E-08 (248)	1.1502E-07 (215)	1.5622E-07 (216)	6.5695E-08 (244)
7	4.1667E-32 (1)	9.1052E-08 (248)	7.3394E-08 (215)	1.1630E-07 (216)	3.6355E-08 (78)
8	4.1667E-32 (1)	1.8752E-07 (248)	1.3798E-07 (248)	9.6519E-08 (195)	3.6415E-08 (53)
9	4.1667E-32 (1)	2.5751E-07 (249)	1.1164E-07 (248)	1.2315E-07 (195)	7.3483E-08 (46)
10	4.1667E-32 (1)	2.3665E-07 (189)	6.9779E-08 (189)	1.2660E-07 (87)	4.7159E-08 (87)
11	4.1667E-32 (1)	1.0963E-07 (189)	5.4455E-08 (87)	3.2143E-08 (87)	3.8896E-08 (96)
12	4.1667E-32 (1)	2.7029E-08 (150)	9.7408E-09 (87)	3.7419E-08 (112)	9.0301E-08 (184)
13	4.1667E-32 (1)	2.4551E-09 (150)	6.8074E-10 (87)	1.1327E-07 (182)	4.4795E-08 (182)
14	4.1667E-32 (1)	6.5083E-10 (247)	5.1894E-11 (247)	6.4337E-08 (194)	3.5312E-08 (208)
15	8.1251E-32 (3)	4.1667E-32 (1)	9.1201E-10 (247)	5.8791E-08 (194)	2.5405E-08 (194)
16	5.4064E-32 (304)	4.0937E-11 (163)	1.1569E-09 (247)	4.7446E-08 (189)	1.1943E-07 (48)
17	7.5937E-32 (73)	9.5234E-10 (163)	8.1939E-11 (163)	6.5331E-08 (45)	8.3112E-08 (245)
18	6.1800E-32 (290)	1.0284E-08 (163)	2.6490E-11 (265)	1.1385E-07 (245)	4.9315E-08 (245)
19	8.3333E-32 (72)	4.5719E-08 (163)	7.4300E-09 (263)	6.8235E-08 (252)	5.8084E-08 (208)
20	4.1667E-32 (1)	1.7060E-07 (163)	4.0329E-08 (163)	8.2430E-08 (252)	1.9772E-08 (193)
21	8.3084E-32 (215)	4.1667E-32 (1)	4.7816E-08 (163)	9.2082E-08 (189)	2.4883E-08 (359)
22	7.5015E-32 (119)	5.6569E-08 (186)	1.5704E-08 (158)	8.3797E-08 (283)	6.0149E-08 (363)
23	8.3333E-32 (78)	1.5726E-07 (186)	8.2974E-08 (186)	1.3909E-07 (283)	5.1370E-08 (283)
24	8.3333E-32 (75)	8.2016E-08 (248)	2.1806E-08 (248)	1.5150E-07 (237)	4.8484E-08 (237)
25	8.3333E-32 (75)	8.3333E-32 (75)	8.3333E-32 (75)	9.6259E-08 (363)	4.1879E-08 (363)
26	1.1096E-31 (215)	8.3333E-32 (75)	2.6479E-11 (214)	8.7529E-08 (323)	5.8262E-08 (323)
27	8.3333E-32 (211)	8.3333E-32 (211)	8.3333E-32 (211)	3.1747E-10 (64)	4.6778E-08 (141)
28	4.1667E-32 (2)	4.1667E-32 (2)	8.3333E-32 (98)	3.3382E-08 (253)	3.5232E-08 (237)
29	4.1667E-32 (5)	4.1667E-32 (5)	2.0419E-10 (158)	4.8339E-08 (248)	3.9044E-08 (253)
30	4.1667E-32 (6)	4.1667E-32 (6)	3.0600E-09 (186)	6.2801E-08 (248)	1.1458E-07 (291)
31	8.3309E-32 (290)	1.4462E-11 (156)	9.0461E-13 (156)	4.5277E-08 (73)	4.5035E-08 (241)
32	4.1667E-32 (6)	4.1667E-32 (6)	2.0230E-16 (267)	5.3898E-08 (231)	3.6493E-08 (231)
33	8.3333E-32 (194)	8.3333E-32 (194)	4.1074E-16 (154)	1.0503E-07 (314)	6.8065E-08 (206)
34	4.1667E-32 (6)	4.1667E-32 (6)	1.8889E-09 (196)	7.0332E-08 (314)	9.2772E-08 (210)
35	4.1667E-32 (6)	4.1667E-32 (6)	4.1667E-32 (6)	5.6760E-08 (54)	3.9191E-08 (78)
36	4.1667E-32 (6)	1.5913E-08 (215)	9.1138E-09 (215)	5.2853E-08 (29)	4.4532E-08 (135)

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 24-HOUR CONC= 2.5379E-07 DIRECTION= 9 DISTANCE= 1.0 KM DAY=189

SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.6 KM	1.0 KM	2.0 KM	4.0 KM	12.0 KM
1	4.1667E-32 (7)	2.2506E-09 (241)	3.0114E-10 (241)	4.8109E-08 (206)	4.1214E-08 (237)
2	4.1667E-32 (6)	2.1092E-08 (241)	4.2600E-09 (241)	5.9162E-08 (210)	3.8925E-08 (124)
3	4.1667E-32 (6)	2.6900E-09 (229)	1.0273E-08 (112)	6.4362E-08 (209)	3.7804E-08 (45)
4	4.1667E-32 (6)	1.3652E-10 (248)	2.5420E-08 (112)	9.4958E-08 (195)	2.9447E-08 (162)
5	4.1667E-32 (6)	3.0824E-10 (189)	2.9068E-08 (224)	7.7962E-08 (216)	3.6300E-08 (210)
6	4.1667E-32 (6)	5.7834E-09 (222)	2.8707E-08 (224)	9.5157E-08 (194)	6.3318E-08 (216)
7	4.1667E-32 (6)	3.5817E-08 (189)	5.5517E-08 (248)	1.0354E-07 (259)	3.6210E-08 (298)
8	4.1667E-32 (2)	1.3525E-07 (189)	6.9517E-08 (249)	9.3246E-08 (259)	2.7767E-08 (234)
9	4.1667E-32 (2)	2.5379E-07 (189)	1.0707E-07 (249)	8.1506E-08 (238)	5.3964E-08 (137)
10	4.1667E-32 (2)	4.1667E-32 (1)	5.5039E-08 (150)	1.0768E-07 (195)	3.3074E-08 (222)
11	4.1667E-32 (2)	5.6851E-08 (150)	2.8067E-08 (189)	2.7085E-08 (314)	2.3925E-08 (222)
12	4.1667E-32 (2)	2.1468E-08 (189)	4.8901E-09 (189)	7.2172E-09 (222)	5.6470E-08 (250)
13	4.1667E-32 (2)	1.6630E-09 (87)	6.7514E-10 (222)	4.7066E-08 (23)	3.6461E-08 (245)
14	4.1667E-32 (3)	1.2007E-10 (87)	4.2175E-11 (222)	3.7012E-08 (182)	3.1906E-08 (194)
15	4.1667E-32 (1)	4.1667E-32 (3)	4.1667E-32 (1)	4.8778E-08 (189)	1.6563E-08 (26)
16	4.1667E-32 (1)	4.1667E-32 (1)	1.9742E-12 (163)	3.7784E-08 (240)	1.6007E-08 (245)
17	4.1667E-32 (1)	4.1667E-32 (1)	1.9331E-13 (265)	5.0990E-08 (216)	3.4079E-08 (45)
18	4.1667E-32 (1)	4.1667E-32 (1)	1.7468E-15 (158)	8.4680E-08 (247)	4.1938E-08 (208)
19	8.3296E-32 (55)	3.0153E-11 (186)	7.9920E-10 (265)	5.8731E-08 (247)	2.9058E-08 (231)
20	4.1667E-32 (3)	7.5228E-10 (186)	4.2833E-09 (265)	5.6308E-08 (189)	1.8200E-08 (205)
21	6.9290E-32 (150)	4.1667E-32 (2)	2.8272E-09 (158)	5.8691E-08 (359)	2.3677E-08 (288)
22	6.9290E-32 (195)	4.1667E-32 (1)	4.1667E-32 (1)	5.9319E-08 (265)	2.8056E-08 (283)
23	8.3269E-32 (355)	2.3460E-08 (248)	1.0393E-09 (248)	4.6469E-08 (52)	2.4056E-08 (52)
24	4.1667E-32 (2)	8.3333E-32 (75)	8.3333E-32 (75)	1.0381E-07 (283)	3.6116E-08 (283)
25	8.3084E-32 (215)	4.1667E-32 (2)	8.3333E-32 (216)	6.5432E-09 (185)	3.7467E-08 (186)
26	8.3333E-32 (75)	8.3333E-32 (215)	8.3333E-32 (75)	7.5076E-08 (237)	3.8629E-08 (363)
27	4.1667E-32 (2)	4.1667E-32 (2)	4.1667E-32 (2)	5.2316E-11 (291)	1.0079E-08 (363)
28	4.1667E-32 (5)	4.1667E-32 (5)	4.1667E-32 (2)	2.3560E-09 (291)	2.1544E-08 (253)
29	4.1667E-32 (6)	4.1667E-32 (6)	4.9651E-11 (217)	3.3762E-08 (251)	2.5666E-08 (198)
30	4.1667E-32 (7)	4.1667E-32 (7)	2.7527E-11 (156)	4.8561E-08 (251)	8.7801E-08 (185)
31	4.1667E-32 (6)	4.1667E-32 (6)	1.6467E-13 (267)	3.4496E-08 (240)	3.9906E-08 (216)
32	4.1667E-32 (7)	4.1667E-32 (7)	4.1667E-32 (6)	5.3880E-08 (314)	3.1482E-08 (75)
33	6.5493E-32 (363)	4.1667E-32 (6)	8.3333E-32 (194)	1.0210E-07 (229)	4.1783E-08 (314)
34	4.1667E-32 (7)	4.1667E-32 (7)	4.1667E-32 (6)	5.9613E-08 (218)	5.2884E-08 (103)
35	4.1667E-32 (7)	4.1667E-32 (7)	4.1667E-32 (7)	5.3016E-08 (238)	2.3506E-08 (87)
36	4.1667E-32 (7)	2.2276E-09 (248)	2.1952E-09 (111)	5.1906E-08 (87)	3.1041E-08 (259)

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 3-HOUR CONC= 2.4641E-06 DIRECTION= 22 DISTANCE= 1.0 KM DAY=189 TIME PERIOD= 5

HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE DIR	.6 KM	1.0 KM	2.0 KM	4.0 KM	12.0 KM
1	1.0000E-30 (1, 1)	8.6025E-07 (215, 4)	4.1753E-07 (215, 4)	4.0117E-07 (196, 4)	4.7383E-07 (143, 3)
2	1.0000E-30 (1, 1)	1.8602E-06 (215, 4)	1.0384E-06 (215, 4)	5.5143E-07 (215, 4)	1.2186E-06 (237, 6)
3	1.0000E-30 (1, 1)	2.0285E-06 (215, 4)	1.1361E-06 (215, 4)	6.1061E-07 (215, 4)	6.0052E-07 (237, 4)
4	1.0000E-30 (1, 1)	1.8130E-06 (241, 5)	6.2790E-07 (215, 4)	7.0544E-07 (124, 3)	2.9211E-07 (124, 3)
5	1.0000E-30 (1, 1)	1.7675E-06 (241, 5)	1.3203E-06 (206, 4)	6.9397E-07 (206, 4)	2.5878E-07 (244, 4)
6	1.0000E-30 (1, 1)	1.9752E-06 (215, 4)	1.5582E-06 (206, 4)	1.0121E-06 (216, 3)	5.2556E-07 (244, 4)
7	1.0000E-30 (1, 1)	1.9375E-06 (229, 4)	8.6676E-07 (215, 4)	5.8092E-07 (299, 4)	2.7637E-07 (78, 4)
8	1.0000E-30 (1, 1)	1.5734E-06 (248, 4)	1.1042E-06 (248, 4)	6.2934E-07 (53, 4)	2.2714E-07 (290, 4)
9	1.0000E-30 (1, 1)	2.1595E-06 (87, 4)	1.5142E-06 (87, 4)	1.2366E-06 (207, 4)	5.8786E-07 (46, 5)
10	1.0000E-30 (1, 1)	1.8932E-06 (189, 4)	1.2832E-06 (87, 4)	7.8188E-07 (242, 4)	2.8703E-07 (303, 4)
11	1.0000E-30 (1, 1)	8.7723E-07 (189, 4)	5.9638E-07 (222, 4)	4.1638E-07 (195, 4)	3.3186E-07 (96, 3)
12	1.0000E-30 (1, 1)	2.1623E-07 (150, 5)	1.7999E-07 (222, 4)	4.1828E-07 (112, 4)	7.2241E-07 (184, 4)
13	1.0000E-30 (1, 1)	2.7847E-08 (150, 5)	1.5564E-08 (222, 4)	9.0617E-07 (182, 3)	3.5836E-07 (182, 3)
14	1.0000E-30 (1, 1)	5.7570E-09 (247, 5)	2.4935E-07 (184, 4)	5.6043E-07 (194, 3)	2.8249E-07 (208, 6)
15	1.0000E-30 (1, 1)	7.1374E-08 (247, 5)	7.3128E-08 (184, 4)	4.7033E-07 (194, 3)	2.0324E-07 (194, 3)
16	1.0000E-30 (1, 1)	4.3972E-07 (247, 5)	7.0955E-08 (247, 5)	4.9012E-07 (216, 4)	7.8707E-07 (48, 6)
17	1.0000E-30 (1, 1)	1.3462E-06 (247, 5)	2.6687E-07 (247, 5)	1.2779E-06 (245, 3)	4.9261E-07 (245, 3)
18	1.0000E-30 (1, 1)	2.0480E-06 (247, 5)	4.3858E-07 (247, 5)	1.0725E-06 (245, 3)	3.9056E-07 (245, 3)
19	1.0000E-30 (1, 1)	1.7618E-06 (189, 5)	3.5019E-07 (189, 5)	4.5350E-07 (19, 4)	2.3672E-06 (236, 6)
20	1.0000E-30 (1, 1)	2.3910E-06 (189, 5)	4.8078E-07 (189, 5)	3.9630E-07 (205, 4)	7.9001E-07 (236, 6)
21	1.0000E-30 (1, 1)	2.4504E-06 (189, 5)	5.2214E-07 (189, 5)	4.9573E-07 (264, 4)	6.6774E-07 (245, 3)
22	1.0000E-30 (1, 1)	2.4641E-06 (189, 5)	6.0721E-07 (189, 5)	6.7038E-07 (283, 4)	4.8119E-07 (363, 4)
23	1.0000E-30 (1, 1)	1.7813E-06 (189, 5)	6.7227E-07 (186, 4)	1.1127E-06 (283, 4)	4.1096E-07 (283, 4)
24	1.0000E-30 (1, 1)	2.1313E-06 (186, 4)	1.1048E-06 (186, 4)	1.2120E-06 (237, 4)	3.9888E-07 (284, 3)
25	1.0000E-30 (1, 2)	1.9593E-06 (247, 5)	7.9180E-07 (186, 4)	2.0506E-06 (237, 4)	7.7825E-07 (237, 4)
26	1.0000E-30 (1, 5)	1.9375E-06 (248, 5)	6.1279E-07 (248, 5)	7.3392E-07 (323, 3)	4.6475E-07 (323, 3)
27	1.0000E-30 (1, 5)	1.0325E-06 (248, 5)	2.9087E-07 (248, 5)	7.0615E-07 (208, 5)	3.7456E-07 (141, 3)
28	1.0000E-30 (1, 5)	1.1862E-06 (163, 4)	5.8578E-07 (163, 4)	5.0779E-07 (230, 3)	3.7665E-07 (231, 3)
29	1.0000E-30 (1, 8)	1.8049E-06 (163, 4)	9.6268E-07 (163, 4)	8.7982E-07 (185, 4)	4.2127E-07 (283, 3)
30	1.0000E-30 (1, 1)	1.3645E-06 (163, 4)	6.9127E-07 (163, 4)	1.7167E-06 (185, 4)	7.1111E-07 (185, 4)
31	1.0000E-30 (1, 1)	5.1259E-07 (163, 4)	2.1689E-07 (163, 4)	1.0272E-06 (185, 4)	3.5005E-07 (185, 4)
32	1.0000E-30 (1, 1)	1.7921E-07 (248, 4)	1.0715E-06 (248, 4)	6.0956E-07 (248, 4)	2.9195E-07 (231, 4)
33	1.0000E-30 (1, 1)	1.7557E-06 (248, 4)	9.4544E-07 (248, 4)	8.2783E-07 (229, 4)	5.4982E-07 (206, 3)
34	1.0000E-30 (1, 1)	7.7812E-07 (248, 4)	3.5028E-07 (248, 4)	2.1390E-06 (236, 4)	8.2890E-07 (236, 4)
35	1.0000E-30 (1, 1)	1.6713E-07 (248, 4)	5.6669E-08 (248, 4)	4.7385E-07 (54, 4)	5.1679E-07 (236, 4)
36	1.0000E-30 (1, 1)	1.2731E-07 (215, 4)	7.2911E-08 (215, 4)	4.5750E-07 (309, 4)	6.0460E-07 (236, 4)

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 3-HOUR CONC= 2.1591E-06 DIRECTION= 9 DISTANCE= 1.0 KM DAY=249 TIME PERIOD= 4

SECOND HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.6 KM	1.0 KM	2.0 KM	4.0 KM	12.0 KM
1	1.0000E-30 (1, 2)	1.8005E-08 (241, 5)	7.8360E-08 (211, 4)	3.9643E-07 (233, 4)	3.2971E-07 (237, 6)
2	1.0000E-30 (1, 2)	1.6875E-07 (241, 5)	1.1102E-07 (211, 4)	4.7598E-07 (210, 5)	3.1140E-07 (124, 3)
3	1.0000E-30 (1, 2)	7.8594E-07 (241, 5)	2.1065E-07 (241, 5)	5.8199E-07 (205, 4)	5.1155E-07 (237, 6)
4	1.0000E-30 (1, 2)	1.3354E-06 (215, 4)	5.6892E-07 (241, 5)	5.8175E-07 (102, 5)	2.3473E-07 (162, 3)
5	1.0000E-30 (1, 2)	1.5061E-06 (206, 4)	6.7033E-07 (241, 5)	6.6917E-07 (261, 5)	2.5768E-07 (233, 4)
6	1.0000E-30 (1, 2)	1.8067E-06 (229, 4)	9.5121E-07 (215, 4)	8.4607E-07 (206, 4)	4.6828E-07 (216, 3)
7	1.0000E-30 (1, 2)	1.8097E-06 (215, 4)	8.0344E-07 (206, 4)	5.5827E-07 (78, 4)	2.2470E-07 (24, 5)
8	1.0000E-30 (1, 2)	1.5220E-06 (249, 4)	7.8079E-07 (87, 4)	6.2112E-07 (207, 4)	2.1410E-07 (248, 4)
9	1.0000E-30 (1, 2)	2.1591E-06 (249, 4)	1.1995E-06 (248, 4)	1.1201E-06 (124, 4)	4.6105E-07 (207, 4)
10	1.0000E-30 (1, 2)	1.8777E-06 (87, 4)	9.1295E-07 (222, 4)	7.1205E-07 (124, 4)	2.8012E-07 (181, 3)
11	1.0000E-30 (1, 2)	8.1127E-07 (87, 4)	4.7511E-07 (87, 4)	3.6670E-07 (193, 4)	1.4805E-07 (184, 4)
12	1.0000E-30 (1, 2)	2.0199E-07 (189, 4)	7.6864E-08 (87, 4)	4.1191E-07 (245, 4)	4.7371E-07 (250, 4)
13	1.0000E-30 (1, 2)	2.3112E-08 (189, 4)	5.4335E-09 (87, 4)	4.0244E-07 (184, 4)	3.4459E-07 (184, 4)
14	1.0000E-30 (1, 2)	1.7025E-09 (150, 5)	4.1842E-10 (247, 5)	4.7211E-07 (102, 4)	2.5634E-07 (194, 3)
15	1.0000E-30 (1, 2)	1.0000E-30 (1, 1)	8.2430E-09 (247, 5)	3.9023E-07 (189, 5)	1.4938E-07 (362, 5)
16	1.0000E-30 (1, 2)	2.0250E-08 (184, 4)	5.8104E-09 (184, 4)	3.9047E-07 (189, 5)	2.2944E-07 (216, 4)
17	1.0000E-30 (1, 2)	7.6187E-09 (163, 4)	1.0114E-07 (263, 5)	6.0038E-07 (148, 3)	2.7144E-07 (45, 5)
18	1.0000E-30 (1, 2)	8.8074E-08 (163, 4)	2.1322E-07 (263, 5)	5.0620E-07 (193, 3)	3.3551E-07 (208, 5)
19	1.0000E-30 (1, 2)	1.5483E-06 (247, 5)	3.1493E-07 (247, 5)	3.5161E-07 (231, 4)	4.6467E-07 (208, 5)
20	1.0000E-30 (1, 2)	1.3649E-06 (163, 4)	3.2467E-07 (163, 4)	3.6153E-07 (252, 5)	1.5679E-07 (322, 3)
21	1.0000E-30 (1, 2)	1.1041E-07 (247, 5)	3.8261E-07 (163, 4)	4.9524E-07 (189, 4)	1.9907E-07 (359, 4)
22	1.0000E-30 (1, 2)	4.5967E-07 (186, 4)	1.7874E-07 (186, 4)	4.9974E-07 (189, 4)	2.2445E-07 (283, 4)
23	1.0000E-30 (1, 2)	1.4072E-06 (186, 4)	4.4167E-07 (189, 5)	5.2613E-07 (158, 5)	1.8126E-07 (163, 4)
24	1.0000E-30 (1, 2)	9.8835E-07 (247, 5)	4.0095E-07 (156, 4)	8.3051E-07 (283, 4)	3.8787E-07 (237, 4)
25	1.0000E-30 (1, 4)	1.8066E-06 (248, 5)	6.9314E-07 (156, 4)	7.7106E-07 (363, 4)	4.1789E-07 (235, 3)
26	1.0000E-30 (1, 6)	5.8619E-07 (247, 5)	4.6254E-07 (247, 5)	7.0615E-07 (208, 5)	3.0903E-07 (363, 4)
27	1.0000E-30 (1, 6)	3.5511E-07 (163, 4)	1.5523E-07 (163, 4)	5.7599E-07 (247, 4)	2.8997E-07 (323, 3)
28	1.0000E-30 (1, 7)	2.7344E-07 (248, 5)	1.9524E-07 (185, 4)	3.9970E-07 (247, 5)	3.4753E-07 (230, 4)
29	1.0000E-30 (2, 1)	3.5984E-08 (248, 5)	9.5745E-08 (154, 4)	7.0207E-07 (283, 3)	3.4857E-07 (234, 3)
30	1.0000E-30 (2, 1)	2.3532E-09 (248, 5)	7.1161E-08 (212, 5)	6.1255E-07 (241, 4)	5.5328E-07 (291, 4)
31	1.0000E-30 (1, 2)	1.1569E-10 (156, 4)	2.0218E-07 (212, 5)	5.7948E-07 (241, 4)	3.1925E-07 (216, 3)
32	1.0000E-30 (1, 2)	9.5692E-08 (163, 4)	3.3687E-07 (185, 4)	4.8929E-07 (229, 4)	2.7084E-07 (234, 4)
33	1.0000E-30 (1, 2)	8.8771E-09 (163, 4)	7.6749E-08 (186, 4)	7.5458E-07 (236, 4)	3.0123E-07 (218, 3)
34	1.0000E-30 (1, 2)	4.0922E-10 (163, 4)	4.2260E-08 (186, 4)	4.7690E-07 (218, 3)	6.9121E-07 (210, 3)
35	1.0000E-30 (1, 2)	1.0000E-30 (1, 1)	5.2351E-09 (186, 4)	4.2417E-07 (238, 4)	3.1353E-07 (78, 4)
36	1.0000E-30 (1, 2)	1.7832E-08 (248, 4)	1.9753E-08 (111, 5)	4.2647E-07 (135, 3)	4.7383E-07 (143, 3)

ATTACHMENT H

PART C

Concentrations at Distances of 3.0, 6.0, 15.0, 20.0, and 25.0 km
Using Entire 1972 Meteorological Data Set

PLANT NAME: FORT MEADE SULFURIC ACID   POLLUTANT: SO2   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

MAXIMUM MEAN CONC= -2.9060E-08   DIRECTION= 1   DISTANCE= 25.0 KM

ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR

DIR \ RANGE	3.0 KM	6.0 KM	15.0 KM	20.0 KM	25.0 KM
1	-1.48482E-06	-4.28374E-07	-7.53402E-08	-4.36503E-08	-2.90598E-08
2	-2.02334E-06	-6.39973E-07	-1.35861E-07	-8.37117E-08	-5.80183E-08
3	-1.71103E-06	-6.00876E-07	-1.38348E-07	-8.64185E-08	-6.03063E-08
4	-1.50699E-06	-6.00240E-07	-1.41404E-07	-8.68955E-08	-5.96974E-08
5	-1.78153E-06	-7.74205E-07	-2.08397E-07	-1.34225E-07	-9.55128E-08
6	-1.55597E-06	-5.58626E-07	-1.35216E-07	-8.68542E-08	-6.24348E-08
7	-1.56830E-06	-5.46357E-07	-1.32489E-07	-8.42090E-08	-5.93372E-08
8	-1.74245E-06	-4.87365E-07	-9.31609E-08	-5.68413E-08	-3.93695E-08
9	-3.31836E-06	-9.39211E-07	-1.72470E-07	-1.01663E-07	-6.82819E-08
10	-2.36106E-06	-7.20764E-07	-1.54451E-07	-9.63104E-08	-6.76043E-08
11	-2.11494E-06	-6.87884E-07	-1.34138E-07	-8.02434E-08	-5.47071E-08
12	-2.03619E-06	-8.31539E-07	-1.94517E-07	-1.19885E-07	-8.28587E-08
13	-2.26734E-06	-9.25597E-07	-2.25635E-07	-1.40890E-07	-9.80789E-08
14	-2.71352E-06	-1.40127E-06	-4.28190E-07	-2.80182E-07	-2.00450E-07
15	-2.27930E-06	-8.59571E-07	-1.91797E-07	-1.16839E-07	-8.03500E-08
16	-1.72701E-06	-7.24185E-07	-1.79031E-07	-1.10791E-07	-7.62778E-08
17	-1.54011E-06	-6.73105E-07	-1.87024E-07	-1.21480E-07	-8.67394E-08
18	-2.00672E-06	-8.72049E-07	-2.40088E-07	-1.57519E-07	-1.14068E-07
19	-1.50229E-06	-6.70645E-07	-1.79044E-07	-1.13013E-07	-7.89136E-08
20	-1.41368E-06	-5.91433E-07	-1.46148E-07	-9.15255E-08	-6.39548E-08
21	-2.46230E-06	-1.28032E-06	-4.02562E-07	-2.66794E-07	-1.92760E-07
22	-2.65215E-06	-1.06227E-06	-2.79130E-07	-1.81001E-07	-1.29980E-07
23	-4.86354E-06	-2.35432E-06	-6.65179E-07	-4.27743E-07	-3.02607E-07
24	-5.34023E-06	-2.45623E-06	-6.74421E-07	-4.35613E-07	-3.11047E-07
25	-6.42198E-06	-3.38081E-06	-1.02698E-06	-6.76077E-07	-4.87211E-07
26	-6.26427E-06	-2.90478E-06	-7.96952E-07	-5.12576E-07	-3.64248E-07
27	-8.41495E-06	-3.74330E-06	-9.74235E-07	-6.18986E-07	-4.37096E-07
28	-5.39460E-06	-2.50571E-06	-6.99014E-07	-4.51265E-07	-3.20720E-07
29	-4.38583E-06	-2.10825E-06	-6.16476E-07	-4.06662E-07	-2.95276E-07
30	-3.90869E-06	-2.07130E-06	-6.25165E-07	-4.09241E-07	-2.93125E-07
31	-3.05246E-06	-1.34031E-06	-3.67169E-07	-2.36094E-07	-1.67700E-07
32	-2.06799E-06	-7.27055E-07	-1.73721E-07	-1.10188E-07	-7.78038E-08
33	-2.67768E-06	-1.15082E-06	-3.06404E-07	-1.96694E-07	-1.39564E-07
34	-1.84982E-06	-7.12698E-07	-1.89736E-07	-1.25425E-07	-9.16650E-08
35	-1.48529E-06	-5.44392E-07	-1.21541E-07	-7.45988E-08	-5.14759E-08
36	-1.93655E-06	-6.74960E-07	-1.50684E-07	-9.45823E-08	-6.70230E-08

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 24-HOUR CONC= 2.2376E-07 DIRECTION= 3 DISTANCE= 6.0 KM DAY=237

HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	3.0 KM	6.0 KM	15.0 KM	20.0 KM	25.0 KM
1	5.9935E-08 (187)	3.4566E-08 (206)	4.1166E-08 (143)	3.2179E-08 (143)	2.6190E-08 (143)
2	8.9646E-08 (215)	4.9039E-08 (162)	1.2917E-07 (237)	9.9015E-08 (237)	8.0445E-08 (237)
3	8.0115E-08 (209)	2.2376E-07 (237)	1.1172E-07 (237)	8.3951E-08 (237)	6.7161E-08 (237)
4	1.1867E-07 (150)	6.9734E-08 (237)	2.4850E-08 (237)	1.8720E-08 (195)	1.5421E-08 (195)
5	1.0146E-07 (102)	8.2520E-08 (261)	3.8026E-08 (261)	2.9079E-08 (261)	2.3649E-08 (261)
6	1.1569E-07 (194)	1.2185E-07 (216)	5.4528E-08 (244)	4.1982E-08 (244)	3.4246E-08 (244)
7	1.3639E-07 (259)	7.6044E-08 (298)	2.9652E-08 (78)	2.2874E-08 (78)	1.8760E-08 (78)
8	1.3333E-07 (195)	5.9193E-08 (53)	2.8329E-08 (53)	2.0284E-08 (53)	1.5777E-08 (53)
9	1.6461E-07 (195)	9.8483E-08 (46)	6.0008E-08 (46)	4.6232E-08 (46)	3.7775E-08 (46)
10	1.2973E-07 (195)	9.2105E-08 (87)	3.7733E-08 (87)	3.4197E-08 (183)	3.3224E-08 (183)
11	4.6094E-08 (87)	4.0477E-08 (222)	3.3956E-08 (96)	2.6708E-08 (96)	2.1983E-08 (96)
12	1.7789E-08 (112)	9.7082E-08 (184)	7.4527E-08 (184)	5.7937E-08 (184)	4.7680E-08 (184)
13	5.9097E-08 (23)	8.4169E-08 (182)	3.6581E-08 (182)	2.8183E-08 (182)	2.3027E-08 (182)
14	3.9132E-08 (198)	5.8391E-08 (194)	3.0046E-08 (208)	2.3014E-08 (208)	1.8666E-08 (208)
15	5.0797E-08 (198)	4.9517E-08 (194)	2.0410E-08 (194)	1.5354E-08 (194)	1.2285E-08 (194)
16	4.4269E-08 (240)	2.1635E-07 (48)	9.7545E-08 (48)	7.5075E-08 (48)	6.1267E-08 (48)
17	3.5210E-08 (283)	6.1954E-08 (45)	6.9360E-08 (245)	5.3377E-08 (245)	4.3437E-08 (245)
18	6.7778E-08 (247)	9.3374E-08 (245)	3.9583E-08 (245)	2.9717E-08 (245)	2.3743E-08 (245)
19	8.5858E-08 (252)	5.1229E-08 (231)	4.7641E-08 (208)	3.6394E-08 (208)	2.9500E-08 (208)
20	8.0594E-08 (252)	4.7182E-08 (252)	1.7164E-08 (260)	1.3912E-08 (260)	1.9129E-08 (236)
21	1.1325E-07 (189)	5.3101E-08 (189)	2.1454E-08 (250)	1.6997E-08 (250)	1.3957E-08 (250)
22	8.2056E-08 (283)	1.0265E-07 (363)	4.9119E-08 (363)	3.7842E-08 (363)	3.0920E-08 (363)
23	1.3176E-07 (283)	9.8223E-08 (283)	4.1735E-08 (283)	3.1953E-08 (283)	2.5990E-08 (283)
24	1.8509E-07 (237)	1.0017E-07 (237)	3.8157E-08 (237)	2.7870E-08 (237)	2.1738E-08 (237)
25	5.5488E-08 (363)	7.6239E-08 (363)	3.4459E-08 (363)	2.6846E-08 (363)	2.2151E-08 (363)
26	9.5843E-08 (237)	1.1324E-07 (323)	4.6849E-08 (323)	3.5325E-08 (323)	2.8345E-08 (323)
27	7.4231E-11 (64)	8.3577E-08 (141)	3.8405E-08 (141)	2.9803E-08 (141)	2.4498E-08 (141)
28	2.2724E-13 (52)	4.0913E-08 (253)	2.9005E-08 (237)	2.2351E-08 (237)	1.8263E-08 (237)
29	2.3278E-08 (248)	5.5140E-08 (253)	3.2101E-08 (253)	2.4657E-08 (253)	2.0058E-08 (253)
30	5.3872E-08 (251)	5.2946E-08 (248)	9.4458E-08 (291)	7.3026E-08 (291)	5.9806E-08 (291)
31	5.7020E-08 (73)	4.4551E-08 (241)	3.7297E-08 (241)	2.8743E-08 (241)	2.3466E-08 (241)
32	5.3637E-08 (315)	6.6779E-08 (231)	2.9754E-08 (231)	2.2860E-08 (231)	1.8625E-08 (231)
33	1.0991E-07 (229)	7.9807E-08 (314)	5.5928E-08 (206)	4.3295E-08 (206)	3.5461E-08 (206)
34	6.6433E-08 (314)	6.8325E-08 (210)	7.5454E-08 (210)	5.7607E-08 (210)	4.6715E-08 (210)
35	5.8293E-08 (238)	3.7945E-08 (87)	3.3730E-08 (78)	2.6073E-08 (78)	2.1303E-08 (78)
36	5.2957E-08 (224)	7.8132E-08 (135)	3.6642E-08 (135)	2.8440E-08 (135)	2.3356E-08 (135)

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 24-HOUR CONC= 1.2873E-07 DIRECTION= 7 DISTANCE= 3.0 KM DAY=209

SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	3.0 KM	6.0 KM	15.0 KM	20.0 KM	25.0 KM
1	5.9818E-08 (233)	3.4406E-08 (233)	3.3709E-08 (237)	2.3874E-08 (237)	1.8123E-08 (237)
2	6.0026E-08 (210)	4.7565E-08 (215)	3.1806E-08 (124)	2.4547E-08 (124)	2.0103E-08 (124)
3	5.6692E-08 (187)	6.3256E-08 (205)	3.1630E-08 (45)	2.4615E-08 (45)	2.0136E-08 (45)
4	1.1168E-07 (195)	6.1465E-08 (195)	2.4059E-08 (195)	1.8268E-08 (245)	1.5114E-08 (245)
5	9.3912E-08 (218)	7.1674E-08 (150)	3.0326E-08 (210)	2.3400E-08 (210)	1.8977E-08 (210)
6	1.0595E-07 (299)	5.3890E-08 (299)	5.1880E-08 (216)	4.0182E-08 (216)	3.2982E-08 (216)
7	1.2873E-07 (209)	6.8550E-08 (216)	2.9148E-08 (298)	2.2067E-08 (298)	1.7876E-08 (298)
8	1.2604E-07 (185)	5.6773E-08 (216)	2.2465E-08 (234)	1.6753E-08 (234)	1.3539E-08 (248)
9	1.0098E-07 (248)	6.7417E-08 (137)	4.6817E-08 (87)	3.9944E-08 (87)	3.4169E-08 (87)
10	1.1985E-07 (87)	5.9826E-08 (195)	2.5839E-08 (183)	2.8296E-08 (87)	2.2611E-08 (87)
11	3.3943E-08 (314)	3.9863E-08 (195)	1.8597E-08 (195)	1.3553E-08 (195)	1.0632E-08 (195)
12	5.1494E-09 (87)	6.7114E-08 (250)	4.7578E-08 (250)	3.7676E-08 (250)	3.1291E-08 (250)
13	3.5931E-08 (225)	3.2617E-08 (245)	3.0709E-08 (245)	2.3742E-08 (245)	1.9126E-08 (245)
14	2.4813E-08 (23)	2.4933E-08 (182)	2.6070E-08 (194)	2.0056E-08 (194)	1.6348E-08 (194)
15	2.7664E-08 (189)	3.1467E-08 (189)	1.4763E-08 (26)	1.0575E-08 (26)	7.9781E-09 (47)
16	2.3715E-08 (189)	3.1211E-08 (189)	1.2541E-08 (245)	8.7058E-09 (216)	9.7138E-09 (216)
17	3.1932E-08 (193)	5.9449E-08 (245)	2.8008E-08 (45)	2.1770E-08 (45)	1.7921E-08 (45)
18	5.9315E-08 (157)	7.1250E-08 (208)	3.4008E-08 (208)	2.5911E-08 (208)	2.0982E-08 (208)
19	4.8767E-08 (206)	3.8701E-08 (208)	2.3692E-08 (231)	1.8202E-08 (231)	1.4830E-08 (231)
20	4.8767E-08 (206)	3.9473E-08 (189)	1.6035E-08 (193)	1.1711E-08 (193)	1.1335E-08 (260)
21	7.0864E-08 (265)	4.6699E-08 (359)	2.0288E-08 (359)	1.5587E-08 (359)	1.2700E-08 (359)
22	6.9093E-08 (265)	5.8327E-08 (283)	2.2426E-08 (189)	1.7885E-08 (189)	1.4820E-08 (189)
23	5.5732E-08 (186)	4.4799E-08 (52)	1.9425E-08 (52)	1.4695E-08 (52)	1.1824E-08 (52)
24	1.0593E-07 (283)	7.1278E-08 (283)	2.8962E-08 (283)	2.1747E-08 (283)	1.7384E-08 (283)
25	9.3984E-09 (185)	4.4402E-08 (314)	3.2033E-08 (186)	2.4400E-08 (186)	1.9582E-08 (186)
26	3.8062E-08 (185)	5.0665E-08 (363)	3.0772E-08 (363)	2.2902E-08 (363)	1.8183E-08 (363)
27	5.8881E-11 (52)	8.8261E-09 (117)	1.1056E-08 (337)	1.1135E-08 (337)	1.5358E-08 (323)
28	1.3143E-18 (289)	8.3272E-09 (291)	1.7129E-08 (253)	1.3604E-08 (363)	1.7585E-08 (363)
29	1.6373E-08 (251)	4.3540E-08 (27)	2.0785E-08 (231)	1.6127E-08 (231)	1.2920E-08 (231)
30	3.5373E-08 (248)	3.5078E-08 (251)	8.1279E-08 (185)	6.7619E-08 (185)	5.7204E-08 (185)
31	1.7827E-08 (24)	2.5427E-08 (240)	3.2435E-08 (216)	2.4783E-08 (216)	2.0101E-08 (216)
32	5.2723E-08 (240)	4.0362E-08 (314)	2.6350E-08 (75)	2.0343E-08 (75)	1.6627E-08 (75)
33	9.3665E-08 (314)	6.9857E-08 (218)	3.3847E-08 (314)	2.5768E-08 (314)	2.0831E-08 (314)
34	5.8780E-08 (240)	5.1372E-08 (314)	4.3646E-08 (103)	3.6223E-08 (147)	3.0637E-08 (147)
35	4.8449E-08 (139)	3.7938E-08 (238)	2.0276E-08 (307)	1.6367E-08 (307)	1.3469E-08 (307)
36	5.2348E-08 (87)	3.8090E-08 (87)	2.6695E-08 (259)	2.0788E-08 (259)	1.7086E-08 (259)

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 3-HOUR CONC= 4.1699E-06 DIRECTION= 19 DISTANCE= 6.0 KM DAY=236 TIME PERIOD= 6

HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE DIR	3.0 KM	6.0 KM	15.0 KM	20.0 KM	25.0 KM
1	4.7856E-07 (233, 4)	2.7653E-07 (206, 4)	3.7704E-07 (143, 3)	2.8008E-07 (143, 3)	2.2187E-07 (143, 3)
2	7.1717E-07 (215, 4)	4.0003E-07 (162, 4)	1.0242E-06 (237, 6)	7.8681E-07 (237, 6)	6.4016E-07 (237, 6)
3	7.8954E-07 (215, 4)	1.0626E-06 (237, 4)	4.8738E-07 (237, 4)	3.7225E-07 (237, 4)	3.0192E-07 (237, 4)
4	7.7856E-07 (102, 5)	5.3448E-07 (124, 3)	2.4081E-07 (124, 3)	1.8796E-07 (124, 3)	1.5524E-07 (124, 3)
5	9.0677E-07 (206, 4)	4.8178E-07 (216, 3)	2.1430E-07 (233, 4)	1.6676E-07 (233, 4)	1.4656E-07 (98, 3)
6	1.0896E-06 (206, 4)	8.6132E-07 (216, 3)	4.3623E-07 (244, 4)	3.3586E-07 (244, 4)	2.7397E-07 (244, 4)
7	6.6116E-07 (259, 4)	5.0460E-07 (78, 4)	2.2733E-07 (78, 4)	1.7688E-07 (78, 4)	1.4569E-07 (78, 4)
8	7.6575E-07 (207, 4)	4.0477E-07 (248, 4)	1.8418E-07 (290, 4)	1.3865E-07 (290, 4)	1.1202E-07 (290, 4)
9	1.3674E-06 (207, 4)	8.6081E-07 (207, 4)	4.8007E-07 (46, 5)	3.6986E-07 (46, 5)	3.0220E-07 (46, 5)
10	1.0074E-06 (242, 4)	5.3505E-07 (181, 3)	2.3630E-07 (303, 4)	1.8351E-07 (303, 4)	1.5092E-07 (303, 4)
11	5.1230E-07 (222, 4)	2.9844E-07 (184, 4)	2.8104E-07 (96, 3)	2.6484E-07 (183, 3)	2.3026E-07 (183, 3)
12	3.7458E-07 (112, 4)	7.7685E-07 (184, 4)	5.9622E-07 (184, 4)	4.6350E-07 (184, 4)	3.8144E-07 (184, 4)
13	4.7279E-07 (23, 5)	6.7335E-07 (182, 3)	2.9265E-07 (182, 3)	2.2546E-07 (182, 3)	1.8422E-07 (182, 3)
14	4.7079E-07 (282, 4)	4.8078E-07 (194, 3)	2.4037E-07 (208, 6)	1.8411E-07 (208, 6)	1.4933E-07 (208, 6)
15	4.2183E-07 (240, 5)	3.9613E-07 (194, 3)	1.6328E-07 (194, 3)	1.2283E-07 (194, 3)	1.0370E-07 (303, 3)
16	3.5813E-07 (240, 5)	1.3903E-06 (48, 6)	6.4652E-07 (48, 6)	5.0129E-07 (48, 6)	4.1152E-07 (48, 6)
17	6.3642E-07 (245, 3)	9.2802E-07 (245, 3)	4.0164E-07 (245, 3)	3.0857E-07 (245, 3)	2.5142E-07 (245, 3)
18	5.4031E-07 (245, 3)	7.6463E-07 (245, 3)	3.1378E-07 (245, 3)	2.3605E-07 (245, 3)	1.8886E-07 (245, 3)
19	3.9014E-07 (206, 4)	4.1699E-06 (236, 6)	1.9260E-06 (236, 6)	1.4766E-06 (236, 6)	1.2018E-06 (236, 6)
20	4.6753E-07 (252, 5)	1.5456E-06 (236, 6)	6.1797E-07 (236, 6)	4.4915E-07 (236, 6)	3.4996E-07 (236, 6)
21	5.8172E-07 (189, 4)	9.6478E-07 (245, 3)	5.4800E-07 (245, 3)	4.2514E-07 (245, 3)	3.4942E-07 (245, 3)
22	6.5645E-07 (283, 4)	8.2123E-07 (363, 4)	3.9295E-07 (363, 4)	3.0274E-07 (363, 4)	2.4736E-07 (363, 4)
23	1.0541E-06 (283, 4)	7.8578E-07 (283, 4)	3.3388E-07 (283, 4)	2.5562E-07 (283, 4)	2.0792E-07 (283, 4)
24	1.4807E-06 (237, 4)	8.0137E-07 (237, 4)	3.2539E-07 (284, 3)	2.4896E-07 (284, 3)	2.0227E-07 (284, 3)
25	2.4198E-06 (237, 4)	1.4327E-06 (237, 4)	6.4016E-07 (237, 4)	4.9809E-07 (237, 4)	4.1028E-07 (237, 4)
26	8.2159E-07 (247, 4)	9.0610E-07 (323, 3)	3.7395E-07 (323, 3)	2.8216E-07 (323, 3)	2.2650E-07 (323, 3)
27	7.1383E-07 (247, 4)	6.7197E-07 (141, 3)	3.0739E-07 (141, 3)	2.5017E-07 (207, 3)	2.1231E-07 (207, 3)
28	4.6128E-07 (339, 4)	5.7168E-07 (231, 3)	3.0640E-07 (231, 3)	2.7748E-07 (197, 3)	2.4911E-07 (197, 3)
29	1.0100E-06 (185, 4)	7.8835E-07 (283, 3)	3.4332E-07 (283, 3)	2.6393E-07 (283, 3)	2.1536E-07 (283, 3)
30	1.8100E-06 (185, 4)	1.2832E-06 (185, 4)	5.8784E-07 (185, 4)	4.6054E-07 (185, 4)	4.7628E-07 (137, 3)
31	1.1919E-06 (185, 4)	7.1254E-07 (185, 4)	2.7652E-07 (185, 4)	2.0301E-07 (185, 4)	1.6081E-07 (216, 3)
32	7.8283E-07 (248, 4)	5.3423E-07 (231, 4)	2.3803E-07 (231, 4)	1.8288E-07 (231, 4)	1.4900E-07 (231, 4)
33	9.7219E-07 (236, 4)	5.5886E-07 (218, 3)	4.4976E-07 (206, 3)	3.4712E-07 (206, 3)	2.8401E-07 (206, 3)
34	2.4839E-06 (236, 4)	1.5184E-06 (236, 4)	6.8292E-07 (236, 4)	5.3269E-07 (236, 4)	4.3981E-07 (236, 4)
35	4.6662E-07 (238, 4)	8.8221E-07 (236, 4)	4.0404E-07 (236, 4)	2.9287E-07 (236, 4)	2.2729E-07 (236, 4)
36	4.7422E-07 (315, 4)	6.3885E-07 (135, 3)	4.8997E-07 (236, 4)	3.7393E-07 (236, 4)	3.0354E-07 (236, 4)

Note: Day 236, Period 6 contains two consecutive hours with calm winds.

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 3-HOUR CONC= 1.2468E-06 DIRECTION= 9 DISTANCE= 3.0 KM DAY=124 TIME PERIOD= 4

SECOND HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE DIR	3.0 KM	6.0 KM	15.0 KM	20.0 KM	25.0 KM
1	4.6123E-07 (196, 4)	2.7525E-07 (233, 4)	2.6967E-07 (237, 6)	1.9099E-07 (237, 6)	1.4498E-07 (237, 6)
2	4.8865E-07 (210, 5)	3.8052E-07 (215, 4)	2.5445E-07 (124, 3)	1.9638E-07 (124, 3)	1.6082E-07 (124, 3)
3	6.4091E-07 (209, 4)	7.2750E-07 (237, 6)	4.0635E-07 (237, 6)	2.9936E-07 (237, 6)	2.3537E-07 (237, 6)
4	6.2245E-07 (209, 4)	4.7215E-07 (237, 4)	1.8655E-07 (162, 3)	1.4614E-07 (245, 5)	1.2091E-07 (245, 5)
5	8.6464E-07 (261, 5)	4.7530E-07 (206, 4)	2.0648E-07 (244, 4)	1.6324E-07 (98, 3)	1.3722E-07 (233, 4)
6	9.0711E-07 (194, 4)	5.9310E-07 (206, 4)	3.8519E-07 (216, 3)	2.9970E-07 (216, 3)	2.4687E-07 (216, 3)
7	6.0412E-07 (238, 5)	4.1848E-07 (24, 5)	1.9243E-07 (290, 4)	1.5121E-07 (290, 4)	1.2255E-07 (290, 4)
8	7.6278E-07 (248, 4)	4.0423E-07 (207, 4)	1.7421E-07 (248, 4)	1.3339E-07 (248, 4)	1.0831E-07 (248, 4)
9	1.2468E-06 (124, 4)	7.8786E-07 (46, 5)	3.7819E-07 (207, 4)	2.9305E-07 (207, 4)	2.4052E-07 (207, 4)
10	8.8120E-07 (87, 4)	4.8899E-07 (303, 4)	2.1991E-07 (181, 3)	1.6741E-07 (183, 3)	1.3427E-07 (183, 3)
11	4.9054E-07 (195, 4)	2.5422E-07 (195, 4)	1.4149E-07 (183, 3)	2.1692E-07 (96, 3)	1.7724E-07 (96, 3)
12	3.2557E-07 (225, 4)	7.7087E-07 (250, 4)	3.9052E-07 (250, 4)	3.0481E-07 (250, 4)	2.5176E-07 (250, 4)
13	3.8291E-07 (225, 4)	5.8479E-07 (184, 4)	2.7456E-07 (184, 4)	2.0405E-07 (184, 4)	1.6175E-07 (184, 4)
14	4.5095E-07 (216, 4)	4.0443E-07 (102, 4)	2.0900E-07 (194, 3)	1.6057E-07 (194, 3)	1.3083E-07 (194, 3)
15	4.1348E-07 (362, 5)	2.8111E-07 (362, 5)	1.2279E-07 (38, 5)	1.1799E-07 (303, 3)	9.8276E-08 (194, 3)
16	2.2837E-07 (216, 4)	4.2871E-07 (216, 4)	1.8699E-07 (216, 4)	1.4360E-07 (216, 4)	1.1698E-07 (216, 4)
17	3.9617E-07 (59, 4)	4.9482E-07 (45, 5)	2.2328E-07 (45, 5)	1.7373E-07 (45, 5)	1.4310E-07 (45, 5)
18	4.7451E-07 (157, 5)	5.7000E-07 (208, 5)	2.7206E-07 (208, 5)	2.0729E-07 (208, 5)	1.6785E-07 (208, 5)
19	3.8559E-07 (260, 4)	4.0983E-07 (231, 4)	3.8113E-07 (208, 5)	2.9115E-07 (208, 5)	2.3600E-07 (208, 5)
20	4.4513E-07 (205, 4)	2.7345E-07 (205, 4)	1.2942E-07 (260, 3)	1.0628E-07 (260, 3)	8.7209E-08 (260, 3)
21	4.9793E-07 (264, 4)	3.7359E-07 (359, 4)	1.7163E-07 (250, 4)	1.3598E-07 (250, 4)	1.1165E-07 (250, 4)
22	5.8601E-07 (189, 4)	4.6662E-07 (283, 4)	1.7688E-07 (283, 4)	1.2989E-07 (283, 4)	1.0209E-07 (283, 4)
23	7.0179E-07 (158, 5)	3.5573E-07 (163, 4)	1.4686E-07 (163, 4)	1.1201E-07 (163, 4)	9.0806E-08 (163, 4)
24	8.4745E-07 (283, 4)	5.7022E-07 (283, 4)	3.0526E-07 (237, 4)	2.2296E-07 (237, 4)	1.7390E-07 (237, 4)
25	5.8332E-07 (247, 4)	6.3924E-07 (86, 5)	3.3624E-07 (235, 3)	2.5370E-07 (235, 3)	2.0366E-07 (235, 3)
26	7.6925E-07 (237, 4)	4.9761E-07 (208, 5)	2.4972E-07 (338, 4)	1.9448E-07 (338, 4)	1.5991E-07 (338, 4)
27	6.4250E-07 (208, 5)	6.0400E-07 (323, 3)	2.8034E-07 (207, 3)	2.3847E-07 (141, 3)	1.9600E-07 (141, 3)
28	4.0867E-07 (54, 5)	4.0204E-07 (230, 3)	2.8121E-07 (230, 4)	2.3484E-07 (231, 3)	1.9109E-07 (231, 3)
29	6.7502E-07 (163, 4)	6.8120E-07 (291, 4)	3.0430E-07 (234, 3)	2.3757E-07 (234, 3)	1.9287E-07 (234, 3)
30	7.0713E-07 (241, 4)	1.0034E-06 (291, 4)	4.5344E-07 (291, 4)	3.5095E-07 (291, 4)	3.8154E-07 (185, 4)
31	5.8042E-07 (241, 4)	4.1236E-07 (241, 4)	2.5948E-07 (216, 3)	1.9826E-07 (216, 3)	1.5901E-07 (185, 4)
32	5.6911E-07 (229, 4)	4.2671E-07 (248, 4)	2.2232E-07 (234, 4)	1.7218E-07 (234, 4)	1.4130E-07 (234, 4)
33	9.3003E-07 (229, 4)	5.5565E-07 (229, 4)	2.4687E-07 (218, 3)	1.9107E-07 (218, 3)	1.5693E-07 (229, 4)
34	4.6738E-07 (240, 5)	7.3393E-07 (308, 3)	5.6345E-07 (210, 3)	4.3157E-07 (210, 3)	3.5089E-07 (210, 3)
35	3.8760E-07 (139, 4)	3.0356E-07 (87, 4)	2.6984E-07 (78, 4)	2.0859E-07 (78, 4)	1.7043E-07 (78, 4)
36	4.3101E-07 (309, 4)	3.7644E-07 (30, 3)	3.7704E-07 (143, 3)	2.8008E-07 (143, 3)	2.2187E-07 (143, 3)

ATTACHMENT H

PART D

Concentrations at Distances of 30.0, 35.0, 40.0, 45.0, and 50.0 km
Using Entire 1972 Meteorological Data Set

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

MAXIMUM MEAN CONC= -8.6185E-09 DIRECTION= 1 DISTANCE= 50.0 KM

ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR

DIR \ RANGE	30.0 KM	35.0 KM	40.0 KM	45.0 KM	50.0 KM
1	-2.08296E-08	-1.58832E-08	-1.25602E-08	-1.02960E-08	-8.61845E-09
2	-4.29763E-08	-3.37038E-08	-2.73112E-08	-2.27748E-08	-1.93571E-08
3	-4.48737E-08	-3.52952E-08	-2.86594E-08	-2.39101E-08	-2.03253E-08
4	-4.36753E-08	-3.38080E-08	-2.70407E-08	-2.22871E-08	-1.87286E-08
5	-7.19673E-08	-5.70773E-08	-4.66320E-08	-3.91104E-08	-3.33878E-08
6	-4.77814E-08	-3.84258E-08	-3.18603E-08	-2.71317E-08	-2.35131E-08
7	-4.44445E-08	-3.51454E-08	-2.86591E-08	-2.39753E-08	-2.04274E-08
8	-2.93083E-08	-2.31347E-08	-1.89034E-08	-1.59016E-08	-1.36453E-08
9	-4.92834E-08	-3.78143E-08	-3.00546E-08	-2.46862E-08	-2.06966E-08
10	-5.07016E-08	-4.01774E-08	-3.28948E-08	-2.77112E-08	-2.37915E-08
11	-4.00627E-08	-3.11235E-08	-2.50453E-08	-2.08226E-08	-1.76665E-08
12	-6.10344E-08	-4.75129E-08	-3.82145E-08	-3.16739E-08	-2.67612E-08
13	-7.25967E-08	-5.67497E-08	-4.57905E-08	-3.80164E-08	-3.21594E-08
14	-1.51265E-07	-1.20011E-07	-9.79689E-08	-8.19560E-08	-6.97546E-08
15	-5.89175E-08	-4.56483E-08	-3.65593E-08	-3.02536E-08	-2.55227E-08
16	-5.59049E-08	-4.33952E-08	-3.47921E-08	-2.87102E-08	-2.41524E-08
17	-6.55453E-08	-5.21685E-08	-4.27632E-08	-3.59284E-08	-3.07254E-08
18	-8.75149E-08	-7.05527E-08	-5.85608E-08	-4.98206E-08	-4.31212E-08
19	-5.84623E-08	-4.56871E-08	-3.68243E-08	-3.04989E-08	-2.57319E-08
20	-4.75229E-08	-3.72606E-08	-3.01499E-08	-2.51108E-08	-2.13055E-08
21	-1.46877E-07	-1.17577E-07	-9.68068E-08	-8.15858E-08	-6.99445E-08
22	-9.90245E-08	-7.93337E-08	-6.54920E-08	-5.54628E-08	-4.78099E-08
23	-2.26512E-07	-1.78718E-07	-1.45278E-07	-1.21188E-07	-1.02927E-07
24	-2.35391E-07	-1.87420E-07	-1.53784E-07	-1.29545E-07	-1.11096E-07
25	-3.70686E-07	-2.96424E-07	-2.43911E-07	-2.05622E-07	-1.76355E-07
26	-2.74091E-07	-2.17022E-07	-1.77058E-07	-1.48340E-07	-1.26520E-07
27	-3.27584E-07	-2.58670E-07	-2.10645E-07	-1.76385E-07	-1.50410E-07
28	-2.41203E-07	-1.91058E-07	-1.55897E-07	-1.30533E-07	-1.11267E-07
29	-2.26682E-07	-1.82621E-07	-1.51425E-07	-1.28736E-07	-1.11339E-07
30	-2.21796E-07	-1.76503E-07	-1.44596E-07	-1.21391E-07	-1.03727E-07
31	-1.26164E-07	-9.99426E-08	-8.15765E-08	-6.83698E-08	-5.83317E-08
32	-5.83585E-08	-4.61534E-08	-3.76361E-08	-3.15233E-08	-2.68842E-08
33	-1.04994E-07	-8.31597E-08	-6.78793E-08	-5.68736E-08	-4.85182E-08
34	-7.10710E-08	-5.78358E-08	-4.84624E-08	-4.15977E-08	-3.63230E-08
35	-3.79060E-08	-2.94879E-08	-2.37109E-08	-1.96502E-08	-1.66046E-08
36	-5.07589E-08	-4.05556E-08	-3.34765E-08	-2.84539E-08	-2.46377E-08

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 24-HOUR CONC= 6.7889E-08 DIRECTION= 2 DISTANCE= 30.0 KM DAY=237

HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	30.0 KM	35.0 KM	40.0 KM	45.0 KM	50.0 KM
1	2.1967E-08 (143)	1.8846E-08 (143)	1.6453E-08 (143)	1.4564E-08 (143)	1.3038E-08 (143)
2	6.7889E-08 (237)	5.8812E-08 (237)	5.1933E-08 (237)	4.6533E-08 (237)	4.2178E-08 (237)
3	5.5908E-08 (237)	4.7837E-08 (237)	4.1766E-08 (237)	3.7032E-08 (237)	3.3237E-08 (237)
4	1.3168E-08 (195)	1.1525E-08 (195)	1.0271E-08 (195)	9.2812E-09 (195)	8.4780E-09 (195)
5	1.9992E-08 (261)	1.7354E-08 (261)	1.5357E-08 (261)	1.3791E-08 (261)	1.2529E-08 (261)
6	2.9004E-08 (244)	2.5209E-08 (244)	2.2328E-08 (244)	2.0064E-08 (244)	1.8235E-08 (244)
7	1.5975E-08 (78)	1.3954E-08 (78)	1.2416E-08 (78)	1.1203E-08 (78)	1.0220E-08 (78)
8	1.3001E-08 (53)	1.1131E-08 (53)	9.7720E-09 (53)	8.7262E-09 (53)	7.8897E-09 (53)
9	3.2032E-08 (46)	2.7866E-08 (46)	2.4699E-08 (46)	2.2208E-08 (46)	2.0193E-08 (46)
10	3.0401E-08 (183)	2.7358E-08 (183)	2.4663E-08 (183)	2.2347E-08 (183)	2.0367E-08 (183)
11	1.8704E-08 (96)	1.6299E-08 (96)	1.4461E-08 (96)	1.3010E-08 (96)	1.1834E-08 (96)
12	4.0680E-08 (184)	3.5580E-08 (184)	3.1689E-08 (184)	2.8616E-08 (184)	2.6124E-08 (184)
13	1.9526E-08 (182)	1.6987E-08 (182)	1.5057E-08 (182)	1.3538E-08 (182)	1.2310E-08 (182)
14	1.5726E-08 (208)	1.3601E-08 (208)	1.1992E-08 (208)	1.0729E-08 (208)	9.7108E-09 (208)
15	1.0979E-08 (48)	1.1197E-08 (48)	1.0369E-08 (48)	9.3427E-09 (48)	8.3789E-09 (48)
16	5.1898E-08 (48)	4.5110E-08 (48)	3.9957E-08 (48)	3.5906E-08 (48)	3.2634E-08 (48)
17	3.6693E-08 (245)	3.1805E-08 (245)	2.8094E-08 (245)	2.5176E-08 (245)	2.2819E-08 (245)
18	1.9733E-08 (245)	1.6855E-08 (245)	1.4688E-08 (245)	1.2997E-08 (245)	1.1641E-08 (245)
19	2.4837E-08 (208)	2.1466E-08 (208)	1.8913E-08 (208)	2.4464E-08 (236)	3.0590E-08 (236)
20	2.6894E-08 (236)	2.6583E-08 (236)	2.4508E-08 (236)	2.2155E-08 (236)	1.9969E-08 (236)
21	1.1881E-08 (250)	1.0372E-08 (250)	9.2229E-09 (250)	8.3170E-09 (250)	7.5836E-09 (250)
22	2.6219E-08 (363)	2.2809E-08 (363)	2.0217E-08 (363)	1.8178E-08 (363)	1.6529E-08 (363)
23	2.1963E-08 (283)	1.9055E-08 (283)	1.6853E-08 (283)	1.5125E-08 (283)	1.3732E-08 (283)
24	1.7679E-08 (237)	1.4803E-08 (237)	1.2662E-08 (237)	1.1011E-08 (237)	9.7006E-09 (237)
25	1.8951E-08 (363)	1.6620E-08 (363)	1.4842E-08 (363)	1.3438E-08 (363)	1.2299E-08 (363)
26	2.3658E-08 (323)	2.0292E-08 (323)	1.7755E-08 (323)	1.5774E-08 (323)	1.4185E-08 (323)
27	2.0882E-08 (141)	1.8251E-08 (141)	1.6247E-08 (141)	1.4666E-08 (141)	1.3385E-08 (141)
28	1.5841E-08 (363)	1.3910E-08 (363)	1.2391E-08 (363)	1.1158E-08 (363)	1.0161E-08 (363)
29	1.6943E-08 (253)	1.4689E-08 (253)	1.3420E-08 (47)	1.2258E-08 (47)	1.1170E-08 (47)
30	5.0805E-08 (291)	4.4263E-08 (291)	3.9283E-08 (291)	3.5502E-08 (185)	3.2525E-08 (185)
31	1.9890E-08 (241)	1.7299E-08 (241)	1.5333E-08 (241)	1.3787E-08 (241)	1.2539E-08 (241)
32	1.5749E-08 (231)	1.3663E-08 (231)	1.2077E-08 (231)	1.0830E-08 (231)	9.8210E-09 (231)
33	3.0118E-08 (206)	2.6232E-08 (206)	2.3273E-08 (206)	2.0941E-08 (206)	1.9054E-08 (206)
34	3.9362E-08 (210)	3.4055E-08 (210)	3.0040E-08 (210)	2.6893E-08 (210)	2.4358E-08 (210)
35	1.8065E-08 (78)	1.5715E-08 (78)	1.3930E-08 (78)	1.2524E-08 (78)	1.1388E-08 (78)
36	1.9887E-08 (135)	1.7633E-08 (236)	1.7660E-08 (236)	1.7193E-08 (236)	1.6551E-08 (236)

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 24-HOUR CONC= 4.9523E-08 DIRECTION= 30 DISTANCE= 30.0 KM DAY=185

SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	30.0 KM	35.0 KM	40.0 KM	45.0 KM	50.0 KM
1	1.4420E-08 (237)	1.2291E-08 (107)	1.0808E-08 (107)	9.6484E-09 (107)	8.7162E-09 (107)
2	1.7089E-08 (124)	1.4904E-08 (124)	1.3244E-08 (124)	1.1937E-08 (124)	1.0880E-08 (124)
3	1.7077E-08 (45)	1.4856E-08 (45)	1.3167E-08 (45)	1.1837E-08 (45)	1.0761E-08 (45)
4	1.2856E-08 (245)	1.1196E-08 (245)	9.9298E-09 (245)	8.9323E-09 (245)	8.1251E-09 (245)
5	1.5967E-08 (210)	1.3791E-08 (210)	1.2146E-08 (210)	1.0858E-08 (210)	9.8216E-09 (210)
6	2.8083E-08 (216)	2.4521E-08 (216)	2.1808E-08 (216)	1.9669E-08 (216)	1.7937E-08 (216)
7	1.5117E-08 (298)	1.3150E-08 (298)	1.1666E-08 (298)	1.0501E-08 (298)	9.5588E-09 (298)
8	1.1410E-08 (248)	9.9026E-09 (290)	8.8563E-09 (290)	8.0087E-09 (290)	7.3109E-09 (290)
9	2.9712E-08 (87)	2.6241E-08 (87)	2.3506E-08 (87)	2.1302E-08 (87)	1.9490E-08 (87)
10	1.8797E-08 (87)	1.6055E-08 (87)	1.3989E-08 (87)	1.2376E-08 (87)	1.1082E-08 (87)
11	8.7789E-09 (195)	7.5153E-09 (195)	6.5996E-09 (195)	5.9009E-09 (195)	5.3463E-09 (195)
12	2.6850E-08 (250)	2.3582E-08 (250)	2.1075E-08 (250)	1.9087E-08 (250)	1.7472E-08 (250)
13	1.5915E-08 (245)	1.3570E-08 (245)	1.1793E-08 (245)	1.0401E-08 (245)	9.2842E-09 (245)
14	1.4458E-08 (48)	1.2752E-08 (48)	1.1282E-08 (48)	1.0081E-08 (48)	9.0999E-09 (48)
15	1.0220E-08 (194)	8.7364E-09 (194)	7.6176E-09 (194)	6.7438E-09 (194)	6.0425E-09 (194)
16	9.5234E-09 (216)	8.9497E-09 (216)	8.3161E-09 (216)	7.7082E-09 (216)	7.1527E-09 (216)
17	1.5296E-08 (45)	1.3384E-08 (45)	1.1925E-08 (45)	1.0774E-08 (45)	9.8400E-09 (45)
18	1.7657E-08 (208)	1.5260E-08 (208)	1.3446E-08 (208)	1.2025E-08 (208)	1.0880E-08 (208)
19	1.2540E-08 (231)	1.0879E-08 (231)	1.3448E-08 (236)	1.6909E-08 (208)	1.5294E-08 (208)
20	9.5622E-09 (260)	8.2836E-09 (260)	7.3171E-09 (260)	6.5602E-09 (260)	5.9507E-09 (260)
21	1.0739E-08 (359)	9.3163E-09 (359)	8.2351E-09 (359)	7.3843E-09 (359)	6.6965E-09 (359)
22	1.2665E-08 (189)	1.1074E-08 (189)	9.8522E-09 (189)	8.8843E-09 (189)	8.0992E-09 (189)
23	9.8985E-09 (52)	8.5159E-09 (52)	7.4745E-09 (52)	6.6614E-09 (52)	6.0087E-09 (52)
24	1.4460E-08 (283)	1.2363E-08 (283)	1.0787E-08 (283)	9.7459E-09 (186)	8.9340E-09 (186)
25	1.6337E-08 (186)	1.4002E-08 (186)	1.2241E-08 (186)	1.0865E-08 (186)	9.7590E-09 (186)
26	1.5042E-08 (363)	1.2804E-08 (363)	1.1129E-08 (363)	9.9060E-09 (226)	9.0837E-09 (226)
27	1.6281E-08 (323)	1.5337E-08 (323)	1.4008E-08 (323)	1.2667E-08 (323)	1.1437E-08 (323)
28	1.5486E-08 (237)	1.3472E-08 (237)	1.1941E-08 (237)	1.0737E-08 (237)	9.7627E-09 (237)
29	1.4020E-08 (47)	1.4382E-08 (47)	1.2981E-08 (253)	1.1640E-08 (253)	1.0559E-08 (253)
30	4.9523E-08 (185)	4.3686E-08 (185)	3.9140E-08 (185)	3.5358E-08 (291)	3.2181E-08 (291)
31	1.6935E-08 (216)	1.4647E-08 (216)	1.2914E-08 (216)	1.1554E-08 (216)	1.0457E-08 (216)
32	1.4406E-08 (195)	1.3011E-08 (195)	1.1581E-08 (195)	1.0318E-08 (195)	9.2473E-09 (195)
33	1.7493E-08 (314)	1.5082E-08 (314)	1.3255E-08 (314)	1.1823E-08 (314)	1.0785E-08 (229)
34	2.6441E-08 (147)	2.3219E-08 (147)	2.0703E-08 (147)	1.8688E-08 (147)	1.7039E-08 (147)
35	1.1473E-08 (307)	1.0017E-08 (307)	8.9078E-09 (307)	8.0330E-09 (307)	7.3245E-09 (307)
36	1.6495E-08 (236)	1.7363E-08 (135)	1.5439E-08 (135)	1.3923E-08 (135)	1.2695E-08 (135)

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 3-HOUR CONC= 1.0158E-06 DIRECTION= 19 DISTANCE= 30.0 KM DAY=236 TIME PERIOD= 6

HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	30.0 KM	35.0 KM	40.0 KM	45.0 KM	50.0 KM
1	1.8309E-07 (143, 3)	1.5542E-07 (143, 3)	1.3471E-07 (143, 3)	1.1864E-07 (143, 3)	1.0581E-07 (143, 3)
2	5.4078E-07 (237, 6)	4.6882E-07 (237, 6)	4.1422E-07 (237, 6)	3.7132E-07 (237, 6)	3.3668E-07 (237, 6)
3	2.5436E-07 (237, 4)	2.2000E-07 (237, 4)	1.9396E-07 (237, 4)	1.7354E-07 (237, 4)	1.5707E-07 (237, 4)
4	1.3288E-07 (124, 3)	1.1656E-07 (124, 3)	1.0409E-07 (124, 3)	9.4239E-08 (124, 3)	8.6239E-08 (124, 3)
5	1.2429E-07 (98, 3)	1.0672E-07 (98, 3)	9.3322E-08 (98, 3)	8.2814E-08 (98, 3)	7.5222E-08 (233, 4)
6	2.3204E-07 (244, 4)	2.0167E-07 (244, 4)	1.7863E-07 (244, 4)	1.6051E-07 (244, 4)	1.4588E-07 (244, 4)
7	1.2440E-07 (78, 4)	1.0888E-07 (78, 4)	9.7040E-08 (78, 4)	8.7685E-08 (78, 4)	8.0096E-08 (78, 4)
8	9.4519E-08 (290, 4)	8.2003E-08 (290, 4)	7.2559E-08 (290, 4)	6.5166E-08 (290, 4)	5.9214E-08 (290, 4)
9	2.5625E-07 (46, 5)	2.2292E-07 (46, 5)	1.9759E-07 (46, 5)	1.7766E-07 (46, 5)	1.6155E-07 (46, 5)
10	1.2870E-07 (303, 4)	1.1253E-07 (303, 4)	1.0021E-07 (303, 4)	9.0494E-08 (303, 4)	8.2619E-08 (303, 4)
11	1.9421E-07 (183, 3)	1.6698E-07 (183, 3)	1.4625E-07 (183, 3)	1.3006E-07 (183, 3)	1.1708E-07 (183, 3)
12	3.2544E-07 (184, 4)	2.8464E-07 (184, 4)	2.5351E-07 (184, 4)	2.2893E-07 (184, 4)	2.0899E-07 (184, 4)
13	1.5621E-07 (182, 3)	1.3590E-07 (182, 3)	1.2045E-07 (182, 3)	1.0830E-07 (182, 3)	9.8479E-08 (182, 3)
14	1.2581E-07 (208, 6)	1.0881E-07 (208, 6)	9.5932E-08 (208, 6)	8.5830E-08 (208, 6)	7.7686E-08 (208, 6)
15	9.0755E-08 (97, 3)	9.3521E-08 (97, 3)	8.9985E-08 (97, 3)	8.4430E-08 (97, 3)	7.8560E-08 (97, 3)
16	3.5034E-07 (48, 6)	3.0585E-07 (48, 6)	2.7196E-07 (48, 6)	2.4525E-07 (48, 6)	2.2362E-07 (48, 6)
17	2.1259E-07 (245, 3)	1.8443E-07 (245, 3)	1.6303E-07 (245, 3)	1.4618E-07 (245, 3)	1.3257E-07 (245, 3)
18	1.5713E-07 (245, 3)	1.3431E-07 (245, 3)	1.1711E-07 (245, 3)	1.0368E-07 (245, 3)	9.2895E-08 (245, 3)
19	1.0158E-06 (236, 6)	8.8133E-07 (236, 6)	7.7935E-07 (236, 6)	6.9929E-07 (236, 6)	6.3470E-07 (236, 6)
20	2.8500E-07 (236, 6)	2.3932E-07 (236, 6)	2.0553E-07 (236, 6)	1.7958E-07 (236, 6)	1.5906E-07 (236, 6)
21	2.9783E-07 (245, 3)	2.6031E-07 (245, 3)	2.3172E-07 (245, 3)	2.0916E-07 (245, 3)	1.9089E-07 (245, 3)
22	2.0975E-07 (363, 4)	1.8247E-07 (363, 4)	1.6174E-07 (363, 4)	1.4542E-07 (363, 4)	1.3223E-07 (363, 4)
23	1.7570E-07 (283, 4)	1.5244E-07 (283, 4)	1.3482E-07 (283, 4)	1.2100E-07 (283, 4)	1.0986E-07 (283, 4)
24	1.7071E-07 (284, 3)	1.4789E-07 (284, 3)	1.3061E-07 (284, 3)	1.1705E-07 (284, 3)	1.0611E-07 (284, 3)
25	3.5032E-07 (237, 4)	3.0662E-07 (237, 4)	2.7327E-07 (237, 4)	2.4692E-07 (237, 4)	2.2555E-07 (237, 4)
26	1.8910E-07 (323, 3)	1.6222E-07 (323, 3)	1.4196E-07 (323, 3)	1.2614E-07 (323, 3)	1.1344E-07 (323, 3)
27	1.8207E-07 (207, 3)	1.5902E-07 (207, 3)	1.4127E-07 (207, 3)	1.2723E-07 (207, 3)	1.1586E-07 (207, 3)
28	2.1496E-07 (197, 3)	1.8728E-07 (197, 3)	1.6578E-07 (197, 3)	1.4878E-07 (197, 3)	1.3505E-07 (197, 3)
29	1.8245E-07 (283, 3)	1.5862E-07 (283, 3)	1.4053E-07 (283, 3)	1.2631E-07 (283, 3)	1.1482E-07 (283, 3)
30	5.0569E-07 (137, 3)	4.6246E-07 (137, 3)	4.1636E-07 (137, 3)	3.7658E-07 (137, 3)	3.4380E-07 (137, 3)
31	1.3548E-07 (216, 3)	1.1718E-07 (216, 3)	1.0331E-07 (216, 3)	9.2430E-08 (216, 3)	9.7303E-08 (195, 3)
32	1.2600E-07 (231, 4)	1.0930E-07 (231, 4)	9.6619E-08 (231, 4)	8.6637E-08 (231, 4)	7.8568E-08 (231, 4)
33	2.4110E-07 (206, 3)	2.0994E-07 (206, 3)	1.8623E-07 (206, 3)	1.6756E-07 (206, 3)	1.5245E-07 (206, 3)
34	3.7635E-07 (236, 4)	3.3007E-07 (236, 4)	2.9473E-07 (236, 4)	2.6680E-07 (236, 4)	2.4413E-07 (236, 4)
35	1.8424E-07 (236, 4)	1.5393E-07 (236, 4)	1.3151E-07 (236, 4)	1.1429E-07 (236, 4)	1.0069E-07 (236, 4)
36	2.5616E-07 (236, 4)	2.2203E-07 (236, 4)	1.9622E-07 (236, 4)	1.7601E-07 (236, 4)	1.5973E-07 (236, 4)

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 3-HOUR CONC= 3.2743E-07 DIRECTION= 30 DISTANCE= 30.0 KM DAY=185 TIME PERIOD= 4

SECOND HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	30.0 KM	35.0 KM	40.0 KM	45.0 KM	50.0 KM
1	1.1536E-07 (237, 6)	9.4857E-08 (237, 6)	7.9913E-08 (237, 6)	6.8594E-08 (237, 6)	5.9759E-08 (237, 6)
2	1.3671E-07 (124, 3)	1.1923E-07 (124, 3)	1.0595E-07 (124, 3)	9.5494E-08 (124, 3)	8.7039E-08 (124, 3)
3	1.9290E-07 (237, 6)	1.6270E-07 (237, 6)	1.4016E-07 (237, 6)	1.2272E-07 (237, 6)	1.0883E-07 (237, 6)
4	1.0285E-07 (245, 5)	8.9567E-08 (245, 5)	7.9438E-08 (245, 5)	7.1458E-08 (245, 5)	6.5001E-08 (245, 5)
5	1.1708E-07 (233, 4)	1.0240E-07 (233, 4)	9.1215E-08 (233, 4)	8.2383E-08 (233, 4)	7.4385E-08 (98, 3)
6	2.1079E-07 (216, 3)	1.8449E-07 (216, 3)	1.6443E-07 (216, 3)	1.4857E-07 (216, 3)	1.3572E-07 (216, 3)
7	1.0314E-07 (290, 4)	8.9170E-08 (290, 4)	7.8620E-08 (290, 4)	7.0367E-08 (290, 4)	6.3731E-08 (290, 4)
8	9.1280E-08 (248, 4)	7.8928E-08 (248, 4)	6.9541E-08 (248, 4)	6.2158E-08 (248, 4)	5.6191E-08 (248, 4)
9	2.0470E-07 (207, 4)	1.7862E-07 (207, 4)	1.5875E-07 (207, 4)	1.4306E-07 (207, 4)	1.3035E-07 (207, 4)
10	1.1146E-07 (183, 3)	9.4908E-08 (183, 3)	8.2404E-08 (183, 3)	7.2646E-08 (183, 3)	6.5904E-08 (209, 6)
11	1.5029E-07 (96, 3)	1.3074E-07 (96, 3)	1.1589E-07 (96, 3)	1.0420E-07 (96, 3)	9.4746E-08 (96, 3)
12	2.1549E-07 (250, 4)	1.8903E-07 (250, 4)	1.6881E-07 (250, 4)	1.5283E-07 (250, 4)	1.3986E-07 (250, 4)
13	1.3358E-07 (184, 4)	1.1350E-07 (184, 4)	9.9212E-08 (138, 3)	8.8925E-08 (138, 3)	8.0645E-08 (138, 3)
14	1.1564E-07 (48, 4)	1.0193E-07 (48, 4)	9.0176E-08 (48, 4)	8.0578E-08 (48, 4)	7.2743E-08 (48, 4)
15	8.8563E-08 (303, 3)	7.7036E-08 (303, 3)	6.8298E-08 (303, 3)	6.1434E-08 (303, 3)	5.5893E-08 (303, 3)
16	9.8904E-08 (216, 4)	8.5796E-08 (216, 4)	7.5835E-08 (216, 4)	6.7998E-08 (216, 4)	6.1664E-08 (216, 4)
17	1.2219E-07 (45, 5)	1.0695E-07 (45, 5)	9.5312E-08 (45, 5)	8.6123E-08 (45, 5)	7.8670E-08 (45, 5)
18	1.4126E-07 (208, 5)	1.2208E-07 (208, 5)	1.0757E-07 (208, 5)	9.6199E-08 (208, 5)	8.7041E-08 (208, 5)
19	1.9870E-07 (208, 5)	1.7173E-07 (208, 5)	1.5130E-07 (208, 5)	1.3527E-07 (208, 5)	1.2235E-07 (208, 5)
20	7.3962E-08 (260, 3)	6.4343E-08 (260, 3)	5.7032E-08 (260, 3)	5.1279E-08 (260, 3)	4.6627E-08 (260, 3)
21	9.5048E-08 (250, 4)	8.2976E-08 (250, 4)	7.3783E-08 (250, 4)	6.6536E-08 (250, 4)	6.0669E-08 (250, 4)
22	9.0211E-08 (59, 3)	8.2081E-08 (59, 3)	7.3662E-08 (59, 3)	6.6658E-08 (59, 3)	6.0796E-08 (59, 3)
23	7.6502E-08 (163, 4)	6.6467E-08 (39, 5)	5.8917E-08 (39, 5)	5.3399E-08 (285, 3)	4.9032E-08 (285, 3)
24	1.4143E-07 (237, 4)	1.1842E-07 (237, 4)	1.0130E-07 (237, 4)	8.9006E-08 (70, 3)	8.0933E-08 (70, 3)
25	1.7351E-07 (86, 5)	1.5201E-07 (86, 5)	1.3559E-07 (86, 5)	1.2262E-07 (86, 5)	1.1210E-07 (86, 5)
26	1.3626E-07 (338, 4)	1.1904E-07 (338, 4)	1.0591E-07 (338, 4)	9.5566E-08 (338, 4)	8.7188E-08 (338, 4)
27	1.6706E-07 (141, 3)	1.4602E-07 (141, 3)	1.2998E-07 (141, 3)	1.1733E-07 (141, 3)	1.0708E-07 (141, 3)
28	1.6149E-07 (231, 3)	1.4009E-07 (231, 3)	1.2386E-07 (231, 3)	1.1113E-07 (231, 3)	1.0086E-07 (231, 3)
29	1.6232E-07 (234, 3)	1.4024E-07 (234, 3)	1.2354E-07 (234, 3)	1.1045E-07 (234, 3)	9.9917E-08 (234, 3)
30	3.2743E-07 (185, 4)	2.8788E-07 (185, 4)	2.5763E-07 (185, 4)	2.3368E-07 (185, 4)	2.1421E-07 (185, 4)
31	1.2979E-07 (185, 4)	1.0901E-07 (185, 4)	9.3513E-08 (185, 4)	8.1526E-08 (185, 4)	8.3659E-08 (216, 3)
32	1.2029E-07 (234, 4)	1.0501E-07 (234, 4)	9.3374E-08 (234, 4)	8.4204E-08 (234, 4)	7.6778E-08 (234, 4)
33	1.3400E-07 (229, 4)	1.1728E-07 (229, 4)	1.0453E-07 (229, 4)	9.4448E-08 (229, 4)	8.6274E-08 (229, 4)
34	2.9632E-07 (210, 3)	2.5688E-07 (210, 3)	2.2698E-07 (210, 3)	2.0352E-07 (210, 3)	1.8461E-07 (210, 3)
35	1.4452E-07 (78, 4)	1.2572E-07 (78, 4)	1.1144E-07 (78, 4)	1.0019E-07 (78, 4)	9.1106E-08 (78, 4)
36	1.8309E-07 (143, 3)	1.5542E-07 (143, 3)	1.3471E-07 (143, 3)	1.1864E-07 (143, 3)	1.0581E-07 (143, 3)

ATTACHMENT H

PART E

24-Hour Concentrations on Day 249 at Distances of 0.8, 1.2, 1.4, 1.6, and 1.8 km.

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 24-HOUR CONC= 2.1302E-07 DIRECTION= 9 DISTANCE= 1.2 KM DAY=249

HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.8 KM		1.2 KM		1.4 KM		1.6 KM		1.8 KM	
1	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
2	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
3	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
4	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
5	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
6	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
7	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
8	0.	(0)	1.2438E-07	(249)	9.7874E-08	(249)	8.3329E-08	(249)	7.5562E-08	(249)
9	0.	(0)	2.1302E-07	(249)	1.5888E-07	(249)	1.3103E-07	(249)	1.1694E-07	(249)
10	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
11	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
12	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
13	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
14	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
15	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
16	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
17	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
18	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
19	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
20	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
21	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
22	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
23	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
24	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
25	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
26	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
27	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
28	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
29	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
30	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
31	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
32	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)
33	4.1667E-32	(249)	4.1667E-32	(249)	4.1667E-32	(249)	4.1667E-32	(249)	4.1667E-32	(249)
34	4.1667E-32	(249)	4.1667E-32	(249)	4.1667E-32	(249)	4.1667E-32	(249)	4.1667E-32	(249)
35	4.1667E-32	(249)	4.1667E-32	(249)	4.1667E-32	(249)	4.1667E-32	(249)	4.1667E-32	(249)
36	0.	(0)	0.	(0)	0.	(0)	0.	(0)	0.	(0)

ATTACHMENT H

PART F

24-Hour Concentrations on Day 189 at Distances of 0.8, 1.2,
1.4, 1.6, and 1.8 km.

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 24-HOUR CONC= 2.0823E-07 DIRECTION= 9 DISTANCE= 1.2 KM DAY=189

HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.8 KM	1.2 KM	1.4 KM	1.6 KM	1.8 KM
1	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)
2	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)
3	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)
4	0. (0)	5.2372E-12 (189)	2.4818E-12 (189)	1.2522E-12 (189)	7.1935E-13 (189)
5	0. (0)	1.8767E-10 (189)	1.0188E-10 (189)	5.8154E-11 (189)	3.7420E-11 (189)
6	0. (0)	3.2396E-09 (189)	1.9595E-09 (189)	1.2339E-09 (189)	8.6903E-10 (189)
7	0. (0)	2.6939E-08 (189)	1.7659E-08 (189)	1.1962E-08 (189)	9.0100E-09 (189)
8	0. (0)	1.0791E-07 (189)	7.4565E-08 (189)	5.2987E-08 (189)	4.1704E-08 (189)
9	0. (0)	2.0823E-07 (189)	1.4752E-07 (189)	1.0723E-07 (189)	8.6177E-08 (189)
10	0. (0)	1.9356E-07 (189)	1.3675E-07 (189)	9.9154E-08 (189)	7.9500E-08 (189)
11	0. (0)	8.6670E-08 (189)	5.9394E-08 (189)	4.1889E-08 (189)	3.2742E-08 (189)
12	0. (0)	1.7338E-08 (189)	1.1554E-08 (189)	7.8630E-09 (189)	5.9233E-09 (189)
13	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
14	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
15	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
16	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
17	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
18	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
19	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
20	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
21	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
22	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
23	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
24	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
25	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
26	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
27	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
28	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
29	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
30	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
31	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
32	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
33	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
34	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
35	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)
36	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)

ATTACHMENT H

PART G

24-Hour Concentrations on Day 48 at Distances of 5.0, 5.5, 6.5, 8.0, and 10.0 km.

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 24-HOUR CONC= 2.2277E-07 DIRECTION= 16 DISTANCE= 5.5 KM DAY= 48

HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE DIR	5.0 KM	5.5 KM	6.5 KM	8.0 KM	10.0 KM
1	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)
2	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)
3	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)
4	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)
5	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)
6	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
7	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
8	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
9	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
10	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
11	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
12	1.1124E-12 (48)	8.4134E-13 (48)	4.8669E-13 (48)	2.3581E-13 (48)	1.0379E-13 (48)
13	0. (0)	0. (0)	0. (0)	0. (0)	2.5052E-10 (48)
14	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
15	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
16	2.1062E-07 (48)	2.2277E-07 (48)	2.0486E-07 (48)	1.7182E-07 (48)	1.4079E-07 (48)
17	0. (0)	0. (0)	0. (0)	0. (0)	1.2511E-08 (48)
18	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
19	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
20	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
21	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
22	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
23	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
24	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
25	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
26	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
27	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
28	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
29	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
30	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
31	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
32	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
33	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
34	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
35	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
36	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)

ATTACHMENT H

PART H

3-Hour Concentrations on Day 236 at Distances of 2.5, 3.5, 4.0, 4.5, and 5.0 km.

PLANT NAME: FORT MEADE SULFURIC ACID   POLLUTANT: SO2   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM   3-HOUR CONC= 3.9162E-06 DIRECTION= 19 DISTANCE= 5.5 KM DAY=236 TIME PERIOD= 6

HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	2.5 KM	3.5 KM	4.5 KM	5.0 KM	5.5 KM
1	1.0000E-30 (236, 6)	1.0000E-30 (236, 6)	1.0391E-15 (236, 5)	2.8653E-15 (236, 5)	2.5717E-15 (236, 5)
2	1.0000E-30 (236, 6)	1.0000E-30 (236, 6)	1.0000E-30 (236, 6)	1.0000E-30 (236, 6)	1.0000E-30 (236, 6)
3	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
4	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
5	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
6	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
7	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
8	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
9	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
10	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
11	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
12	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
13	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
14	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
15	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	5.4441E-20 (236, 6)	1.4108E-19 (236, 6)	9.6794E-20 (236, 6)
16	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.5016E-14 (236, 6)	9.0876E-14 (236, 6)	8.3462E-14 (236, 6)
17	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.5673E-11 (236, 6)	1.2220E-09 (236, 6)	1.3967E-09 (236, 6)
18	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	3.5424E-07 (236, 6)	4.6928E-07 (236, 6)
19	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	2.6912E-06 (236, 6)	3.9162E-06 (236, 6)
20	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	9.4430E-07 (236, 6)	1.4491E-06 (236, 6)
21	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.4741E-08 (236, 6)	2.1474E-08 (236, 6)
22	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	5.7664E-12 (236, 6)	7.2205E-12 (236, 6)
23	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	4.6950E-17 (236, 6)	4.6549E-17 (236, 6)
24	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
25	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
26	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
27	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
28	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
29	2.4456E-15 (236, 4)	6.2779E-16 (236, 4)	1.2795E-16 (236, 4)	6.3159E-17 (236, 4)	3.2695E-17 (236, 4)
30	3.3393E-12 (236, 4)	1.5469E-12 (236, 4)	5.1296E-13 (236, 4)	3.1458E-13 (236, 4)	1.9957E-13 (236, 4)
31	9.4916E-10 (236, 4)	6.9793E-10 (236, 4)	3.3874E-10 (236, 4)	2.4619E-10 (236, 4)	1.8313E-10 (236, 4)
32	5.6162E-08 (236, 4)	5.7655E-08 (236, 4)	3.6845E-08 (236, 4)	3.0273E-08 (236, 4)	2.5261E-08 (236, 4)
33	6.9140E-07 (236, 4)	8.7201E-07 (236, 4)	6.6011E-07 (236, 4)	5.8489E-07 (236, 4)	5.2383E-07 (236, 4)
34	1.5082E-06 (236, 4)	2.3651E-06 (236, 4)	1.9414E-06 (236, 4)	1.7762E-06 (236, 4)	1.6370E-06 (236, 4)
35	1.0000E-30 (236, 6)	1.0000E-30 (236, 6)	3.4582E-07 (236, 4)	6.6440E-07 (236, 4)	8.2095E-07 (236, 4)
36	1.0000E-30 (236, 6)	1.0000E-30 (236, 6)	2.1436E-11 (236, 5)	7.3455E-11 (236, 5)	8.0764E-11 (236, 5)

ATTACHMENT H

PART I

3-Hour Concentrations on Day 189 at Distances of 0.8, 1.2, 1.4, 1.6, and 1.8 km.

PLANT NAME: FORT MEADE SULFURIC ACID   POLLUTANT: SO2   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM   3-HOUR CONC= 1.9656E-06   DIRECTION= 22   DISTANCE= 1.2 KM   DAY=189   TIME PERIOD= 5

HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.8 KM	1.2 KM	1.4 KM	1.6 KM	1.8 KM
1	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
2	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
3	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
4	1.0000E-30 (189, 1)	4.1897E-11 (189, 4)	1.9854E-11 (189, 4)	1.0018E-11 (189, 4)	5.7548E-12 (189, 4)
5	1.0000E-30 (189, 1)	1.5014E-09 (189, 4)	8.1502E-10 (189, 4)	4.6523E-10 (189, 4)	2.9936E-10 (189, 4)
6	1.0000E-30 (189, 1)	2.5916E-08 (189, 4)	1.5676E-08 (189, 4)	9.8714E-09 (189, 4)	6.9522E-09 (189, 4)
7	1.0000E-30 (189, 1)	2.1551E-07 (189, 4)	1.4127E-07 (189, 4)	9.5699E-08 (189, 4)	7.2080E-08 (189, 4)
8	1.0000E-30 (189, 1)	8.6328E-07 (189, 4)	5.9652E-07 (189, 4)	4.2389E-07 (189, 4)	3.3363E-07 (189, 4)
9	1.0000E-30 (189, 1)	1.6658E-06 (189, 4)	1.1802E-06 (189, 4)	8.5787E-07 (189, 4)	6.8941E-07 (189, 4)
10	1.0000E-30 (189, 1)	1.5485E-06 (189, 4)	1.0940E-06 (189, 4)	7.9324E-07 (189, 4)	6.3600E-07 (189, 4)
11	1.0000E-30 (189, 1)	6.9341E-07 (189, 4)	4.7517E-07 (189, 4)	3.3512E-07 (189, 4)	2.6194E-07 (189, 4)
12	1.0000E-30 (189, 1)	1.4958E-07 (189, 4)	9.6700E-08 (189, 4)	6.4687E-08 (189, 4)	4.8161E-08 (189, 4)
13	1.0000E-30 (189, 1)	1.5543E-08 (189, 4)	9.2206E-09 (189, 4)	5.7049E-09 (189, 4)	3.9533E-09 (189, 4)
14	1.0000E-30 (189, 1)	7.7804E-10 (189, 4)	4.1195E-10 (189, 4)	2.2988E-10 (189, 4)	1.4487E-10 (189, 4)
15	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
16	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
17	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
18	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	8.0427E-08 (189, 5)	1.0711E-07 (189, 5)	1.0334E-07 (189, 5)
19	7.4651E-07 (189, 5)	1.2916E-06 (189, 5)	8.7988E-07 (189, 5)	6.0890E-07 (189, 5)	4.4203E-07 (189, 5)
20	8.6411E-07 (189, 5)	1.7613E-06 (189, 5)	1.1990E-06 (189, 5)	8.2921E-07 (189, 5)	6.0372E-07 (189, 5)
21	2.1602E-07 (189, 5)	1.8610E-06 (189, 5)	1.2711E-06 (189, 5)	8.7851E-07 (189, 5)	6.4529E-07 (189, 5)
22	1.0000E-30 (189, 1)	1.9656E-06 (189, 5)	1.3742E-06 (189, 5)	9.6785E-07 (189, 5)	7.2898E-07 (189, 5)
23	1.0000E-30 (189, 1)	1.4316E-06 (189, 5)	1.0004E-06 (189, 5)	7.0356E-07 (189, 5)	5.2989E-07 (189, 5)
24	1.0000E-30 (189, 1)	5.4478E-07 (189, 5)	3.6811E-07 (189, 5)	2.5099E-07 (189, 5)	1.8375E-07 (189, 5)
25	1.0000E-30 (189, 2)	1.0127E-07 (189, 5)	6.4235E-08 (189, 5)	4.1350E-08 (189, 5)	2.8711E-08 (189, 5)
26	1.0000E-30 (189, 2)	9.0881E-09 (189, 5)	5.2613E-09 (189, 5)	3.1171E-09 (189, 5)	2.0053E-09 (189, 5)
27	1.0000E-30 (189, 2)	3.9310E-10 (189, 5)	2.0199E-10 (189, 5)	1.0739E-10 (189, 5)	6.2539E-11 (189, 5)
28	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)
29	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)
30	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)
31	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)
32	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
33	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
34	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
35	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
36	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)

ATTACHMENT H

PART J

3-Hour Concentrations on Day 237 at Distances of 2.6, 2.8, 3.2, and 3.6 km.

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 3-HOUR CONC= 2.4081E-06 DIRECTION= 25 DISTANCE= 3.2 KM DAY=237 TIME PERIOD= 4

HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	2.6 KM	2.8 KM	3.2 KM	3.4 KM	3.6 KM
1	1.0000E-30 (237, 2)	1.0000E-30 (237, 2)	1.0000E-30 (237, 2)	1.0000E-30 (237, 2)	1.0000E-30 (237, 2)
2	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
3	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
4	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	3.9878E-08 (237, 6)
5	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.3419E-09 (237, 6)
6	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	5.6787E-12 (237, 6)
7	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	4.3322E-15 (237, 6)
8	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
9	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
10	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
11	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
12	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
13	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
14	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
15	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
16	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
17	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
18	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
19	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
20	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
21	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
22	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
23	1.0431E-07 (237, 4)	1.4412E-07 (237, 4)	1.5413E-07 (237, 4)	1.4713E-07 (237, 4)	1.3834E-07 (237, 4)
24	1.1556E-06 (237, 4)	1.4108E-06 (237, 4)	1.4625E-06 (237, 4)	1.4078E-06 (237, 4)	1.3416E-06 (237, 4)
25	1.8585E-06 (237, 4)	2.2876E-06 (237, 4)	2.4081E-06 (237, 4)	2.3346E-06 (237, 4)	2.2403E-06 (237, 4)
26	6.1338E-07 (237, 4)	7.4066E-07 (237, 4)	7.5226E-07 (237, 4)	7.1718E-07 (237, 4)	6.7719E-07 (237, 4)
27	4.1547E-08 (237, 4)	4.7884E-08 (237, 4)	4.4587E-08 (237, 4)	4.0811E-08 (237, 4)	3.7055E-08 (237, 4)
28	5.7753E-10 (237, 4)	6.1816E-10 (237, 4)	5.0141E-10 (237, 4)	4.3019E-10 (237, 4)	3.6703E-10 (237, 4)
29	1.6476E-12 (237, 4)	1.5935E-12 (237, 4)	1.0699E-12 (237, 4)	8.4001E-13 (237, 4)	6.5810E-13 (237, 4)
30	9.6466E-16 (237, 4)	8.2021E-16 (237, 4)	4.3311E-16 (237, 4)	3.0384E-16 (237, 4)	2.1360E-16 (237, 4)
31	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)
32	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)
33	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	2.5697E-17 (237, 6)
34	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	9.2275E-14 (237, 6)
35	1.0000E-30 (237, 7)	1.0000E-30 (237, 7)	1.0000E-30 (237, 7)	1.0000E-30 (237, 7)	1.0000E-30 (237, 7)
36	1.0000E-30 (237, 7)	1.0000E-30 (237, 7)	1.0000E-30 (237, 7)	1.0000E-30 (237, 7)	1.0000E-30 (237, 7)

ATTACHMENT H

PART K

CRSTER Modifications

Note: The attached minor modifications (consisting of resetting some initialization statements) were made in the CRSTER Model used for this analysis. Without these modifications, execution of the program will terminate when printing out results if all of the maximum annual mean concentrations are negative as they are in this case. A comparsion was made on several days of meteorological data using the modified and unmodified forms of CRSTER, and the modifications appear not to have any affect on the actual concentrations calculated.

NOTE: ALL CHANGES ARE IN SUBROUTINE CRS

```
EQUIVALENCE (QTAPE1(1),CHI(1)),(QTAPE2(1),CHI25(1)),(QTAPE3(1),
*CHI26(1)),(TAPIN(1),JYR),(DMAXYR(1),JMAX3(1)),(DX(1),JM(1))
DATA HMAXT,DMAXT,NNN,MMM/-1.E+30,-1.E+30,1,1,1/
DATA IHC,P/6,13,18,24,.1,.15,.2,.25,.3,.3/
DATA DTH/-50.,-40.,-30.,-20.,-10.,0.,10.,20.,30.,40.,50./
DATA LOOP/1,1,2,3,4,4,11,11,10,9,8,8/
```

Original statement is:

```
DATA HMAXT,DMAXT,NNN,MMM/0.,0.,1,1,1/
```

```
C***RE-INITIALIZE DAILY AVERAGE AT BEGINNING OF EACH DAY***
 1000 DO 1310 IR=1,180
 1310 CHI25(IR)=1.0E-30
      TDAY=TDAY+1.
      DMAXT=-1.E+30
      HMAXT=-1.E+30
C***INPUT INFORMATION FROM MET FILE***
```

Original statements are:

```
DMAXT=0.
HMAXT=0.
```

```
C***CALCULATE ANNUAL MEANS AND DETERMINE THE MAXIMUM
      IST1=1
      K1=1
      AMMAX=-1.E+30
      MAXI=0
      DO 5200 IR=1,180
```

Original statement is:

```
AMMAX=0.
```

State of Florida

Department of State

I certify from the records of this office that UNITED STATES STEEL CORPORATION, is a corporation organized under the laws of the State of Delaware, and is authorized to transact business within the State of Florida.

The charter number for this corporation is 819214.

I further certify that said corporation has filed all annual reports and has paid all annual report filing fees due this office through December 31, 1979, and its status is active.

Given under my hand and the Great Seal of the State of Florida, at Tallahassee, the Capital, this the 3rd day of March, 1980.

George Firestone

George Firestone
Secretary of State

CER 101 Rev. 5-79

AC 53-33819

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Air Pollution [X] New[1] [ ] Existing[1]

APPLICATION TYPE: [X] Construction [ ] Operation [ ] Modification

COMPANY NAME: USS Agri-Chemicals COUNTY: Polk

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Sulfuric Acid Plant - No. 2 Train

SOURCE LOCATION: Street Highway 630 West City Ft. Meade

UTM: East 416.26 (Zone 17) North 3068.71

Latitude ____ ° ____ ' ____ "N Longitude ____ ° ____ ' ____ "W

APPLICANT NAME AND TITLE: G. W. Beck, Manager, Florida Phosphate Operations

APPLICANT ADDRESS: P.O. Box 150, Bartow, Florida 33830

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of USS Agri-Chemicals

I certify that the statements made in this application for a construction 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 provision 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 non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: George W Beck

George W. Beck, Manager, Fl Phosphate Operations
Name and Title (Please Type)

Date: 8/5/80 Telephone No. 813-533-0471

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

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 judgment, 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, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed: James H Carroll

James H. Carroll
Name (Please Type)

USS Agri-Chemicals
Company Name (Please Type)

P. O. Box 150, Bartow, Fl 33830
Mailing Address (Please Type)

(Affix Seal)

JAMES H. CARROLL
CERTIFICATE
NO. 19407
STATE OF
FLORIDA
REGISTERED ENGINEER

Florida Registration No. 19407 Date: 8/5/80 Telephone No. 813-533-0471

[1] See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

This is a double absorption sulfuric acid plant, complete with cooling water tower and boiler feedwater treatment system. Emissions of sulfur dioxide and sulfuric acid mist will be in full compliance with Federal New Source Performance Standards and Florida Emission Limiting Standards.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction March, 1981 Completion of Construction March, 1983

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Second Stage Absorber - $3,100,000

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Operating permit A053-4528, issued 11/2/77, expires 11/2/82, 1500 ton/day sulfuric acid plant. This existing plant will be shut down as soon as the new plant is tested for service.

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ____ Yes X No

F. Normal equipment operating time:* hrs/day 24 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr ____ ;

if seasonal, describe:

*Plant will be shut down only when required for repairs.

G. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No
   a. If yes, has "offset" been applied? ____
   b. If yes, has "Lowest Achievable Emission Rate" been applied? ____
   c. If yes, list non-attainment pollutants. ____
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII. See Attachment H
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? Yes
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, If applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Sulfur	S	99.46	60064	Pt. 2 on Atch E

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 60390
2. Product Weight (lbs/hr): 187110 (98% H_2SO_4)

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr *	T/yr	
SO_2	367	1355	4 lb/ton 100% H_2SO_4	367	367	1355	Pt. 5
H_2SO_4 Mist	13.75	51	0.15 lb/ton 100% H_2SO_4	13.75	13.75	51	Atch E
*Emissions control is integral to double absorption process.							

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5]
2nd Stage Absorber*	SO_2	99.7	N/A	See Atch A
Mist Eliminator	H_2SO_4 Mist	99.99+	N/A	See Atch A
*SO_2 control is achieved through components integral to process.				

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 0.1 pounds per million BTU heat input)

[3] Calculated from operating rate and applicable standard

[4] Emission, if source operated without control (See Section V, Item 3)

[5] If Applicable

E. Fuels

Type (Be Specific) **	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: ______ Percent Ash: ______

Density: ______ lbs/gal Typical Percent Nitrogen: ______

Heat Capacity: ______ BTU/lb ______ BTU/gal

Other Fuel Contaminants (which may cause air pollution): ______

F. If applicable, indicate the percent of fuel used for space heating. Annual Average ______ Maximum ______

G. Indicate liquid or solid wastes generated and method of disposal.

Cooling tower blowdown, boiler blowdown, and feedwater treatment unit blowdown are non-process effluents and will be discharged to the plant outfall.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 175 ft. Stack Diameter: 8.5 ft.

Gas Flow Rate: 112,123 ACFM Gas Exit Temperature: 180 °F.

Water Vapor Content: nil % Velocity: 34 FPS

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste ______

Total Weight Incinerated (lbs/hr) ______ Design Capacity (lbs/hr) ______

Approximate Number of Hours of Operation per day ______ days/week ______

Manufacturer ______

Date Constructed ______ Model No. ______

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

Stack Height: ______________ ft. Stack Diameter ______________ Stack Temp. ______________

Gas Flow Rate: ______________ ACFM ______________ DSCFM* Velocity ______________ FPS

*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 devices: ______________

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 where required for this application.

1. Total process input rate and product weight — show derivation. (See Attachment B)
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.,) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made. (See Attachment B)
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). (See Attachment B)
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, etc.). (See Attachment B)
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3, and 5 should be consistent: actual emissions = potential (1-efficiency). (See Attachment B)
6. 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. (See Attachment E)
7. An 8½" x 11" plot plan showing the 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 relevant portion of USGS topographic map). (See Attachment D)
8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram. (See Attachment F)

9. An application fee of $20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
[X] Yes [ ] No

Contaminant	Rate or Concentration
Sulfur Dioxide	4 lb/ton 100% H_2SO_4 produced
H_2SO_4 Mist	0.15 lb/ton 100% H_2SO_4 produced

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) [X] Yes [ ] No

Contaminant	Rate or Concentration
Sulfur Dioxide	4 lb/ton 100% H_2SO_4 produced
H_2SO_4 Mist	0.15 lb/ton 100% H_2SO_4 produced
(See Attachment G)	

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
Sulfur Dioxide	4 lb/ton 100% H_2SO_4 produced
H_2SO_4 Mist	0.15 lb/ton 100% H_2SO_4 produced

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:
5. Useful Life:
6. Operating Costs:
7. Energy:
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

10. Stack Parameters

a. Height: ft. b. Diameter: ft.

c. Flow Rate: ACFM d. Temperature: °F

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy*: h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy**: h. Maintenance Costs:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power — KWH design rate.

3.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Life: f. Operating Cost:

g. Energy: h. Maintenance Cost:

*Explain method of determining efficiency above.

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space and operate within proposed levels:

4.

a. Control Device

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device: 2nd Stage Absorber
2. Efficiency*: 99.7%
3. Capital Cost: $3,100,000
4. Life: 20 years
5. Operating Cost: N.A.
6. Energy: Self-sufficient
7. Maintenance Cost: $92,000 per year, estimated @ 3% of capital cost
8. Manufacturer: Monsanto Enviro-Chem
9. Other locations where employed on similar processes:

a.

(1) Company: W. R. Grace and Company

(2) Mailing Address: P.O. Box 471

(3) City: Bartow

(4) State: Florida 33830

(5) Environmental Manager: Mike Altenburger

(6) Telephone No.: (813) 533-2171

*Explain method of determining efficiency above. Efficiency based on sulfur loss vs. sulfur gain

(7) Emissions*:

Contaminant	Rate or Concentration
Sulfur Dioxide	4 lb/ton 100% H_2SO_4 produced
H_2SO_4 Mist	0.15 lb/ton 100% H_2SO_4 produced

(8) Process Rate*:

b.

(1) Company:

(2) Mailing Address:

(3) City:

(4) State:

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

10. Reason for selection and description of systems:

(See Attachment C)

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII – PREVENTION OF SIGNIFICANT DETERIORATION

(See Attachment H)

A. Company Monitored Data

1. ___0___ no sites _______ TSP ___( )___ SO^2* _______ Wind spd/dir

Period of monitoring ___/___/___ to ___/___/___
month day year month day year

Other data recorded ______________________

Attach all data or statistical summaries to this application.

2. Instrumentation, Field and Laboratory

a) Was instrumentation EPA referenced or its equivalent? ___ Yes ___ No

b) Was instrumentation calibrated in accordance with Department procedures? ___ Yes ___ No ___ Unknown

B. Meteorological Data Used for Air Quality Modeling

1. ___1___ Year(s) of data from ___01 / 01 / 72___ to ___12 / 31 / 72___
month day year month day year

2. Surface data obtained from (location) ___Tampa___

3. Upper air (mixing height) data obtained from (location) ___Tampa___

4. Stability wind rose (STAR) data obtained from (location) ___N/A___

C. Computer Models Used

1. ___CRSTER (See Attachment H)___ Modified? If yes, attach description.

2. ______________________ Modified? If yes, attach description.

3. ______________________ Modified? If yes, attach description.

4. ______________________ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate	
TSP	0	grams/sec
SO^2	(See Attachment H)	grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time. (See Attachment H)

F. Attach all other information supportive to the PSD review.

*Specify bubbler (B) or continuous (C).

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

ATTACHMENT A

2189
11/28/79

Monsanto Enviro-Chem

. ATTACHMENT-A

SECTION V

GUARANTEES

A. PERFORMANCE GUARANTEES

1. Contractor guarantees that the plants shall be capable of operating at their rated capacity of 4,000 short tons (100% H_2SO_4) per twenty-four (24) hour day, with all product as 98% sulfuric acid (2000 short tons per plant).

2. Contractor guarantees that the plants shall be capable of operating at 50% of rate capacity of 2,000 short tons (100% H_2SO_4) per twenty-four (24) hour day, with all product as 98% sulfuric acid (1,000 short tons per plant).

3. Contractor guarantees when each plant is operated at its capacity of 2,000 short tons (100% H_2SO_4) per twenty-four (24) hour day, that the SO_2 content in the process gas leaving the final absorption tower shall average over a two (2) hour period not to exceed 4 lbs. per ton of acid produced, and that the H_2SO_4 mist content in the process gas leaving the inter-pass and final absorption tower shall average not to exceed 0.15 lb. per ton of acid produced.

4. Contractor guarantees that the combined cooling tower blowdown and boiler blowdown will average not to exceed 500 GPM when both cooling tower and boiler are operated per vendor recommendations and with inlet well water quality as specified in Section II.

5. Contractor guarantees that the demineralizer neutralized effluent will have a pH between 6.-9.5 as measured at battery limits.

6. Contractor guarantees that the product acid concentration will be between 98.0% and 99.0% as sampled from acid plants.

Performance Tests

The demonstration of performance guarantees A-1, A-2, A-4 and A-6 require the operation of both sulfuric acid plants. These guarantees shall be demonstrated after start-up of the second plant over an operating period of three (3) substantially consecutive days.

Performance guarantees A-3 and A-6 will be demonstrated sequentially as each plant is started up.

EC-16 (REV. 11/77)

ATTACHMENT B

(For Section V of Application)

1. Total Process Input Rate and Product Weight

(Refer to Monsanto Enviro-Chem drawing in Attachment E)

Input

At nominal capacity, plant will use 54900 lb/h liquid sulfur feedstock. Assuming maximum operating level at 10 percent above nominal capacity, a maximum liquid sulfur feedstock input of 60390 lb/h (1.1 x 10980) is needed. However, feedstock is only 99.46% pure sulfur; therefore, maximum sulfur input is 60064 lb/h (0.9946 x 60390).

Output

Nominal production capacity of 98% H_2SO_4 is 170100 lb/h. Assuming maximum operating level at 10 percent above nominal capacity and converting 98% H_2SO_4 to 100% H_2SO_4, the maximum production of 100% H_2SO_4 is 183368 lb/h (170100 x 1.1 x 0.98). Based on this figure, the following calculations can be made:

(a) Sulfur in product $= 183368 \text{ lb/h } H_2SO_4 \times \dfrac{32 \text{ lb S}}{98 \text{ lb } H_2SO_4}$

$= 59875$ lb/h

(b) Sulfur loss as SO_2 $= \dfrac{183368 \text{ lb/h } H_2SO_4}{2000 \text{ lb/ton}} \times \dfrac{1 \text{ lb S}}{2 \text{ lb } SO_2} \times \dfrac{4 \text{ lb } SO_2}{\text{ton } H_2SO_4}$

$= 184$ lb/h

(c) Sulfur loss as mist $= \dfrac{183368 \text{ lb/h } H_2SO_4}{2000 \text{ lb/ton}} \times \dfrac{32 \text{ lb S}}{98 \text{ lb } H_2SO_4} \times \dfrac{0.15 \text{ lb mist}}{\text{ton } H_2SO_4}$

$= 5$ lb/h

(d) Total sulfur $= 59875 + 184 + 5 = 60064$ lb/h

2. Emission Estimate and Test Methods

(a) Basis of emission estimate - performance guarantees from Monsanto Enviro-Chem (Attachment A) which equate to meeting Federal NSPS and Florida Emission Limiting Standards.

(b) Compliance Test Methods - in accordance with 40 CFR 60, or DER/EPA approved alternate methods.

3. Basis of Potential Discharge

Potential and actual emissions are equivalent in this case since control is achieved by components integral to overall process. Actual emissions are based on performance guarantees which equate to Federal NSPS and Florida Emission Limiting Standards.

4. Design Details of Pollution Control Equipment

Design details of the second stage absorber are the proprietary information of Monsanto Enviro-Chem.

5. Efficiency of Control Devices

$$\text{Efficiency} = \frac{\text{Sulfur in Product Acid}}{\text{Sulfur Input}} = \frac{59875 \text{ lb}}{60064 \text{ lb}} = 99.7\%$$

ATTACHMENT C

(For Section VI.F.10 of Application)

REASON FOR SELECTION

The double absorption system is a proven, reliable, and widely accepted process to minimize emissions from sulfuric acid plants.

DESCRIPTION OF SYSTEM

(Starts on next page.)

DESCRIPTION OF SULFURIC ACID PRODUCTION

The principal steps in the process consist of burning sulfur (S) in air to form sulfur dioxide (SO_2), combining the sulfur dioxide with oxygen (O_2) to form sulfur trioxide (SO_3), and combining the sulfur trioxide with water (H_2O) to form a solution containing sulfuric acid (H_2SO_4). The chemical reactions are:

$$S + O_2 = SO_2$$

$$SO_2 + 1/2\ O_2 = SO_3$$

$$SO_3 + H_2O = H_2SO_4$$

The sulfur is burned with air in a horizontal spray-type sulfur burner. Before the air is admitted to the sulfur burner, it is dried by contact with 98 percent sulfuric acid.

The temperature of the SO_2 gas from the sulfur burner is higher than is required for inlet to the conversion system; therefore, the gas is cooled in a waste heat boiler, which recovers the surplus heat as by-product steam.

From the waste heat boiler, the gas flows to the first pass of the converter system where it is partially converted to sulfur trioxide gas in the presence of vanadium catalyst. The conversion reaction produces heat. Gases leaving the first converter pass flow to the superheater where they are cooled. Temperature of the gas stream downstream of the superheater is controlled in the proper range by by-passing a portion of the gas flow around the superheater. The cool gas stream flows from the superheater to the second converter pass where additional conversion of sulfur dioxide to sulfur trioxide takes place, accompanied by the generation of additional heat. Hot gases leaving the second converter pass are cooled by sending them through the tube side of the hot interpass exchanger.

Cooled gases leaving the heat exchanger flow to the third converter pass where additional conversion of sulfur dioxide to sulfur trioxide takes place. Hot gases leaving the third converter pass are cooled by sending them through the tube side of two gas heat ex-

changers, called cold interpass heat exchangers, connected in series, and the economizer.

Gas leaving the economizer flows to the interpass absorbing tower where the SO_3 in the gas stream is removed. In the interpass absorbing tower, the SO_3 does not combine directly with water, but must be combined indirectly by absorbing it in sulfuric acid where the SO_3 reacts with water in the acid. The temperature of the 98 to 99 percent H_2SO_4 circulated over the interpass absorbing tower increases due to the heat of formation and the sensible heat of the gas stream entering the tower. Acid from the bottom of the interpass absorbing tower is circulated through coolers and returned to the top of the tower. Sufficient water is added to the interpass absorption tower system to control the strength of acid circulated over the interpass tower between 98 and 99 percent. Cool gas leaving the interpass absorbing tower, containing unreacted SO_2, flows to the shell side of the cold interpass gas heat exchangers where it is heated by gases leaving the third converter pass.

From the shell side of the cold interpass heat exchangers, the gas stream flows to the hot interpass heat exchanger where it is further heated by gases flowing from the second converter pass.

The temperature downstream of the interpass heat exchanger is controlled in the proper range by by-passing a portion of gas around the shell side of the heat exchanger. From the hot interpass heat exchanger, the gas stream flows to the fourth converter pass where final conversion of SO_2 in the gas stream to SO_3 is accomplished.

The gas stream from the fourth converter pass flows to the economizer where it is cooled by boiler feedwater and then flows to the final absorbing tower. In the final absorbing tower, SO_3 in the gas stream reacts with water in the 98 to 99 percent circulating acid. The temperature of the strong acid circulated over the final absorbing tower increases due to the heat of formation and the sensible heat of the gas stream entering the tower. Acid from the bottom of the final absorbing tower is circulated through coolers and returned to the top

of the tower. Sufficient water is admitted to the final absorbing tower system to control the strength of acid circulated over the final acid tower between 98 and 99 percent. That acid produced in the final absorbing tower underflows to the drying/interpass acid pump tank.

Gas leaving the final absorbing tower flows to the atmosphere through a stack.

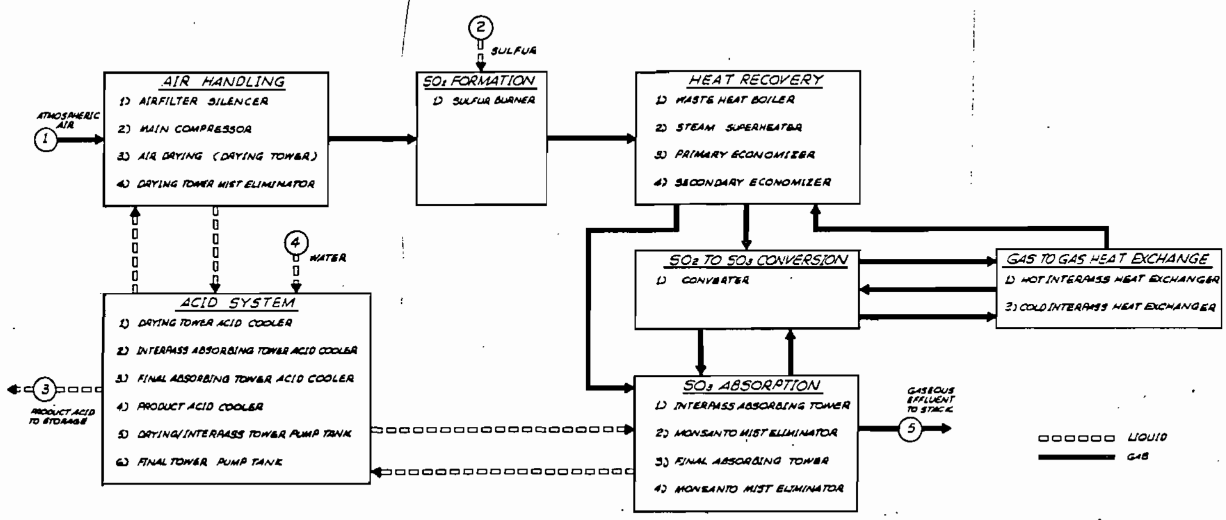
The 98 percent product acid from the drying acid system is pumped directly through a product cooler to storage.

Cooling Water System

Cooling requirements for the plant are achieved by use of cooling towers in which an upward draft is induced by fans located overhead. Water to be cooled is evenly distributed across the top of the tower and allowed to fall in evaporative contact with the upflow of air. The cooled water collects in a basin beneath the tower and is recirculated by pumps through non-contact coolers and back to the tower. The cooling towers provide non-contact cooling for other sections of the complex as well as the sulfuric acid plant.

Use of cooling towers greatly reduces the consumption of ground water. Ground water is required only for make-up of the water evaporated in the cooling process and lost on blowdown to prevent solids build-up in the cooling water system. Additionally, a very small fraction, about 0.1%, is lost by entrainment to the atmosphere.

Attachment D - Location of USS Agri-Chemicals
Fort Meade Phosphate Chemical Complex



STREAM / COMPONENT UNIT		1	5					
SO_2	SCFM		91					
SO_3	SCFM		0					
O_2	SCFM	20894	5016					
N_2	SCFM	76806	76806					
H_2O	SCFM	3360						
TOTAL	SCFM	100460	81833					
TOTAL	ACFM	113383	106475					
TEMPERATURE	°F	95	180					

STREAM / COMPONENT UNIT		2	3	4				
LIQUID		SULFUR	98%	WATER				
	LBS/MIN	915	2835	395				
	GPM	61	190	47				
TEMPERATURE	°F	270	100	95				

CLIENT: USS AGRICHEM
LOCATION: FORT MEADE, FLORIDA
PRODUCTION: 2000 STPD AS 98% ACID (100% H_2SO_4 BASIS)
NUMBER OF UNITS: TWO PLANTS
CONVERSION: 99.7 CONVERSION OF SO_2 TO SO_3 WITH 10.5% SO_2 TO CONVERTER.
STANDARD CONDITIONS: 0°C AND 760 MM Hg.
EMISSIONS:
SO_2: 4 LBS SO_2/TON 100% H_2SO_4 PRODUCED.
ACID MIST: LESS THAN OR EQUIVALENT TO 0.15 LBS H_2SO_4/TON 100% H_2SO_4 PRODUCED.

STACK: 175' HIGH, 8'-6" I.D.

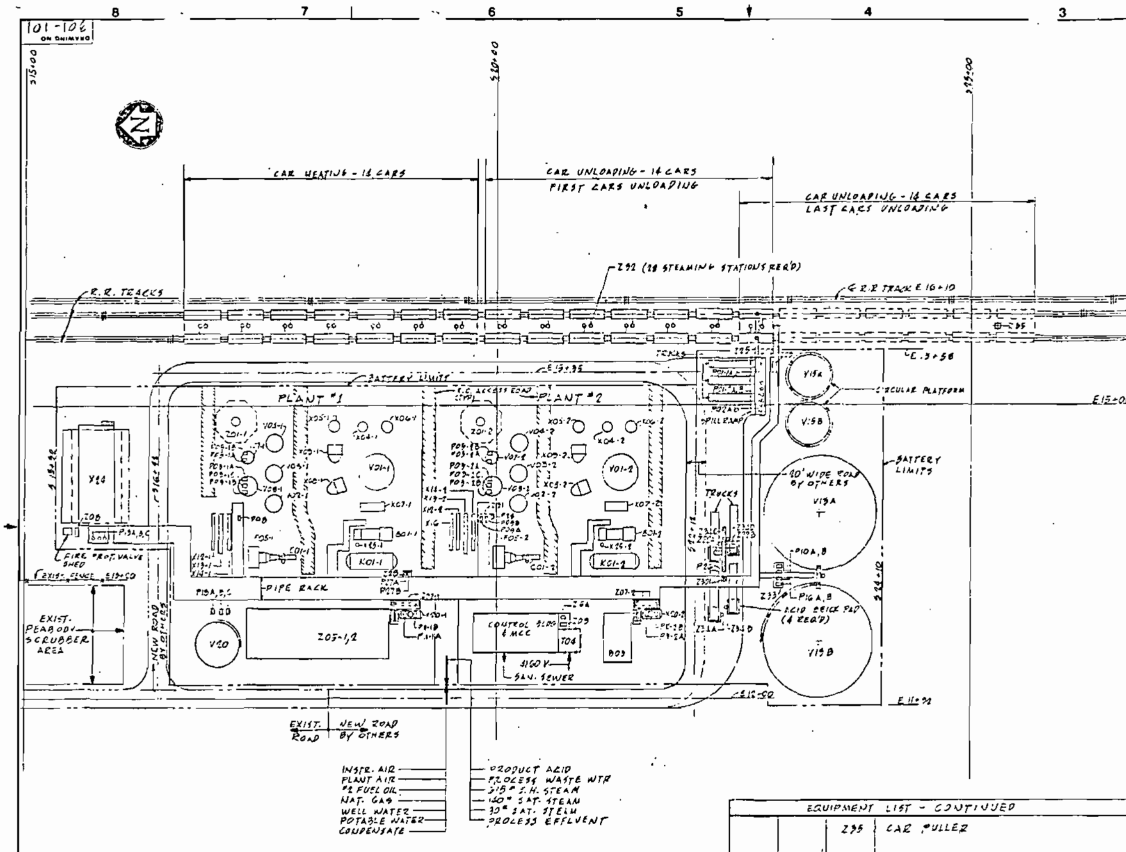
ATTACHMENT E

MONSANTO ENVIRO-CHEM SYSTEMS, INC.
ST. LOUIS, MISSOURI

ENVIRONMENTAL
PROCESS MATERIAL FLOW DIAGRAM
SULFUR BURNING PLANT

	BY	DATE	APP'D	DATE	JOB NO	REVISION
DRAWN		4-9-80			2189	
CHECKED					DRAWING NO 321-121	

ISSUED TO EPA
ISSUE DATE | PURPOSE OF ISSUE: EPA



EQUIPMENT LIST - CONTINUED	
Z35	CAR PULLER

NOTES

1. * DENOTES ONE IS AN INST. SPARE.
2. FOR DETAILED PLANT LAYOUT SEE DWG. 301-102

EQUIPMENT LIST - MAJOR EQUIPMENT ONLY

PLANT NO. 1	PLANT NO. 2	EQUIPMENT COMMON TO BOTH PLANTS	DESCRIPTION
B01-1	B01-2		WASTE HEAT BOILER
		B03	AUX. BOILER SYSTEM
C01-1	C01-2		MAIN COMPRESSOR
F02-1	F02-2		DRYING TOWER MIST ELIMINATOR
F03-1	F03-2		INTERPASS TOWER MIST ELIMINATOR
F04-1	F04-2		FINAL TOWER MIST ELIMINATOR
F05-1	F05-2		INLET AIR FILTER WITH SILENCER
K01-1	K01-2		SULFUR BURNER
*P01-1A,B	*P01-2A,B		SULFUR BURNER FEED PUMPS
		*P02A,F	SULFUR TRANSFER PUMPS
*P03-1A,B,C	*P03-2A,B,C		DRYING/INTERPASS TOWER ACID PUMPS
*P05-1A,B	*P05-2A,B		FINAL TOWER ACID PUMPS
P06			ACID COOLER DRAIN PUMP
		*P09A,B	PRODUCT ACID BOOSTER PUMP & PL#2 A.C. DR. PUMP
		*P0A,B	PRODUCT ACID TRANSFER PUMP
*P1-1A,B	*P1-2A,B		BOILER FEED WATER PUMPS
		*P_A,B,C	COOLING TOWER WTR. SUPPLY PUMPS
		*P_A,B	PRODUCT ACID LOADING PUMPS
		*P_A,B,C	DEAERATOR FEED WATER PUMPS
		P_	TRUCK LOADING SUMP PUMP
		*P_A,B	PROCESS WATER SUMP PUMP
		P25	PRODUCT ACID BOOSTER SUMP PUMP
		T04	4160/480 VOLT TRANSFORMER
V01-1	V01-2		CONVERTER
V02-1	V02-2		DRYING TOWER
V03-1	V03-2		INTERPASS TOWER
V04-1	V04-2		FINAL TOWER
V07-1	V07-2		FINAL TOWER PUMP TANK
V08-1	V08-2		DRYING/INTERPASS TOWER PUMP TANK
		V19A,B	SULFURIC ACID STORAGE TANKS
		V18	MOLTEN SULFUR STORAGE TANK
		V20	TREATED WATER STORAGE TANK
X04-1	X04-2		COLD INTERPASS HEAT EXCHANGER, HOT SHEL
X05-1	X05-2		COLD INTERPASS HEAT EXCHANGER, COLD SHE
X06-1	X06-2		HOT INTERPASS HEAT EXCHANGER
X07-1	X07-2		SUPERHEATER
X08-1	X08-2		SECONDARY ECONOMIZER
X09-1	X09-2	-	PRIMARY ECONOMIZER
X12-1	X12-2		DRYING TOWER ACID COOLER
X13-1	X13-2		INTERPASS TOWER ACID COOLER
X14-1	X14-2		FINAL TOWER ACID COOLER
		X16	PRODUCT ACID COOLER
X20-1	X20-2		BOILER FEEDWATER HEATER
		X26	WATER COOLING TOWER
X28-1	X28-2		BOILER B.D. HEAT RECOVERY SYSTEM
Z01-1	Z01-2		PLANT STACK
		Z02	MOLTEN SULFUR PIT
Z05-1	Z05-2		DEMINERALIZER SYSTEM
Z07-1	Z07-2		BOILER CHEMICAL FEED SYSTEM
		Z08	COOLING WATER TREATMENT SYSTEM
		Z09	AUXILIARY GENERATOR
		Z_A	HVAC UNIT FOR CONTROL ROOM
		Z22A,B	ACID TRUCK LOADING STATIONS
		Z25	SULFUR TANK CAR UNLOADING TROUGH
		Z28	PROCESS WASTE WTR. SUMP
		Z29	CONDENSATE RECEIVER SYSTEM
		Z30	TRUCK LOADING SPILL SUMP
		Z31	PRODUCT ACID BOOSTER PUMP BASIN & SUMP
		Z32	TANK CAR STEAMING SYSTEM
		Z33	ACID LOADING & TRANSFER PUMP SPILL BASI
		Z34A,B,C,D	ACID TRUCK UNLOADING STATIONS

MONSANTO ENVIRO-CHEM SYSTEMS, INC
ST. LOUIS, MISSOURI

PLOT PLAN
ATTACHMENT · F

REVISIONS			
NO	DATE	DESCRIPTION	BY
		ISSUED FOR PROPOSAL	
		ISSUED FOR ESTIMATE	

ISSUE DATE	PURPOSE OF ISSUE
[illegible]-79	PROPOSAL

	BY	DATE	APP'D	DATE	JOB NO	REVISION
DRAWN	[illegible]	[illegible]			2133	
CHECKED			[illegible]	[illegible]	DRAWING NO 301-101	
SCALE 1"=[illegible]						

EPA-450/2-79-003

ATTACHMENT G

(For Section VI. B. of Application)

Compilation of BACT/LAER Determinations

by

Jack A. Wunderle

PEDCo Environmental, Inc.
Chester Towers
11499 Chester Rd.
Cincinnati, Ohio 45246

Contract No. 68-02-2603
Task No. 42

EPA Project Officer: Gary Rust

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air, Noise, and Radiation
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

May 1979

BACT/LAER CLEARINGHOUSE REPORT

SOURCE TYPE/SIZE: PHOSPHATE FERTILIZER CHEMICAL COMPLEX EXPANSION /2000 TON/DAY

NAME/ADDRESS: OXIDENTAL CHEMICAL COMPANY, WHITE SPRINGS FL

DETERMINATION IS: CONDITIONAL/FINAL/PENDING: DATE OF ISSUE: 2/2/78 BASIS:* BACT[1]/LAER/BACT[2]
FOR NEW/MODIFIED SOURCE

BY EPA REGION IV (Agency) ______ (Person) ______ (Phone)

PERMIT PARAMETERS:

AFFECTED FACILITIES	THROUGHPUT CAPACITY, weight rate	POLLUTANT(S) EMITTED	EMISSION LIMIT(S) AND BASIS FOR**		CONTROL STRATEGY DESCRIPTION Equipment type, etc.	Eff.,%
New contact type		SO_2	333 lb/hr			
double absorption	2000 ton/day	H_2SO_4 Mist	12.5 lb/hr	(N)	Mist Eliminator	99+
sulfuric acid plant						
Fossil-fuel-fired	$125x10^6$ MMBtu/hr	SO_2		(B)	Low sulfur oil	
steam generator		Part		(B)		
Vacuum evaporation						
super phosphoric	700 ton/day	SiF_4	0.29 lb/hr	(N)	Venturi scrubber	
acid (SPA) plant		(silicon tetra-flouride)				

NOTES: ______

* Circle one. BACT-1 indicates determination made under pre-1977 amendments; BACT-2 indicates post-1977 amendments to CAA.

** Basis symbols: Use B = BACT, N = NSPS, S = SIP, L = LAER, P = PSD Increment

BACT/LAER CLEARINGHOUSE REPORT

SOURCE TYPE/SIZE: PHOSPHATE FERTILIZER CHEMICAL COMPLEX EXPANSION /2000TON/DAY

NAME/ADDRESS: OXIDENTAL CHEMICAL COMPANY, WHITE SPRINGS, FL

DETERMINATION IS: CONDITIONAL/FINAL/PENDING: DATE OF ISSUE: 2/2/78 BASIS:* BACT[1]/LAER/BACT[2]
FOR NEW/MODIFIED SOURCE

BY EPA REGION IV (Agency) ______ (Person) ______ (Phone)

PERMIT PARAMETERS: AFFECTED FACILITIES	THROUGHPUT CAPACITY, weight rate	POLLUTANT(S) EMITTED	EMISSION LIMIT(S) AND BASIS FOR**	CONTROL STRATEGY DESCRIPTION Equipment type, etc.	Eff.,%
Fossil fuel-fired		Part			
steam generator	75,000 lb/hr	SO_2	(B)	Low sulfur oil	
		SiF_4			
Phosphoric Acid Train	1500 ton/day	SiF_4	1.54 lb/hr (N)	Hoods and cyclone	99.9%
				scrubber	
		Part	46 lb/hr (N)	baghouse	99.8

NOTES:

* Circle one. BACT-1 indicates determination made under pre-1977 amendments; BACT-2 indicates post-1977 amendments to CAA.

** Basis symbols: Use B = BACT, N = NSPS, S = SIP, L = LAER, P = PSD Increment

ATTACHMENT G (continued)

ATTACHMENT H

PREVENTION OF SIGNIFICANT DETERIORATION

(For Section VII of Application)

1. INTRODUCTION

USS Agri-Chemicals (USSAC) is proposing to replace an existing sulfuric acid plant at its Fort Meade Phosphate Chemical Complex with a new sulfuric acid plant. This new plant will have a greater production capacity than the existing plant, but at the same time will be able to achieve a much lower sulfur dioxide (SO_2) emission rate on a pounds per ton basis. In fact, annual average SO_2 emissions from the new plant are expected to be less than those from the existing plant even though sulfuric acid production will substantially increase.

On a short-term basis, however, SO_2 emissions from the new plant can exceed those from the existing plant. At its permitted production rate of 1500 tons per day (100 percent H_2SO_4), the existing plant is allowed to emit and frequently does emit SO_2 at the rate of 10 pounds per ton (lb/ton), which is equivalent to a rate of 625 pounds per hour (lb/h) or 15,000 pounds per day (lb/d). In comparison, the new plant is expected to be able to achieve a daily production rate of up to 4400 tons. At the maximum allowable SO_2 emission rate of 4 lb/ton, maximum short-term SO_2 emissions from the new plant would be 733 lb/h and 17,600 lb/d. The primary purpose of this analysis is to assess whether or not this difference in short-term emissions might result in a significant change in ambient ground-level SO_2 concentrations.

2. ANALYSIS PROCEDURES

Model

EPA's CRSTER model was used to assess 3-hour, 24-hour, and annual average SO_2 concentrations.

Emissions Characteristics

Specific emission source characteristics for the old and new sulfuric acid plants as used for modeling purposes are listed in Attachment A (a copy from one of the modeling run printouts). The SO_2 emission rate for the existing plant was treated as a negative number since this plant will be replaced by the new plant.

The only difference between these characteristics and those listed in Table 4-1 of the original permit application is that the temperature of the existing plant as used for modeling purposes is 98°F (310 K) rather than 87°F. This slight temperature change was made to ensure that stack exit temperature would never be lower than ambient temperatures. Making this change actually increases the conservatism of the analysis since it results in slightly lower concentrations attributable to the existing plant, thereby providing a greater chance for new plant concentrations to exceed existing plant concentrations.

For modeling purposes, the existing and new plant stacks were treated as though located at the same point. In reality, the new plant will be located about 200 to 300 meters southeast of the existing plant, but this distance is slight enough to be ignored.

It should also be noted that the two-stack configuration of the new plant was treated as one stack. This was done in the typical conservative fashion of assuming all SO_2 emissions are emitted at one point with a volumetric flow and velocity equal to that of one of the identical individual stacks.

Meteorological Input

The meteorological observation station normally used for central Florida modeling studies is Tampa. Following this normal practice, Tampa surface and upper air data were used for the present analysis. Although several years of Tampa data are available in the correct format for the CRSTER Model, only a single year was used. The year 1972 was selected because of the high 24-hour concentrations typically resulting from use of this data set. As will be evident when modeling results are presented, use of this single year of data is easily sufficient to show that shutting down the existing plant will offset the effect of the new plant in comparsion with PSD increments.

Receptor Grid

A point midway between the locations of the existing sulfuric acid plant and the proposed new plant was selected as the point from which SO_2 emissions originate. This point is at least 0.6 km from the nearest USSAC property line (State Road 630 to the north), and in most directions is even further away from the boundaries of USSAC-owned property. Therefore, the receptor distances evaluated through the CRSTER Model began at 0.6 km and continued outward. (The CRSTER Model establishes a polar coordinate receptor grid so that it is only necessary to specify radial distances and calculations are automatically made at ten-degree direction increments for each distance selected.)

The following distances were evaluated using the entire year of meteorological data: 0.6, 1.0, 2.0, 3.0, 4.0, 6.0, 12.0, 15.0, 20.0, 25.0, 30.0, 35.0, 40.0, 45.0, and 50.0 km. Based on the results obtained from these initial calculations, specific days were selected for additional evaluations using a smaller grid spacing. The days and receptor separation distances evaluated are shown in the attached computer printouts.

3. MODELING RESULTS

Modeling results are summarized in Table 1. Highest 3-hour, 24-hour, and annual average SO_2 concentrations are listed in comparison with PSD Class II increments, Florida ambient air quality standards (which are more restrictive than the national standards), and EPA significance levels. (Concentrations lower than these defined significance levels are considered to be inconsequential.) As can be seen, not only are the highest concentrations predicted well below the PSD Class II increments, they are also well below the significance levels. This result is attributable to the better dispersion characteristics of the new plant (taller stacks and higher exit temperature) which compensate for the greater maximum hourly emission rate.

TABLE 1

SO_2 Modeling Results

Averaging Period	Highest Predicted Concentration (µg/m3)	Distance and Direction to Highest Concentration	PSD Class II Increment ($\mu g/m^3$)	Florida Ambient Standards ($\mu g/m^3$)	EPA Significance Level ($\mu g/m^3$)
3-Hour	3[a]	3.0 km, 340°	512	1300	25
24-Hour	< 1	1.0 km, 90°	91	260	5
Annual	< 0[b]	50.0 km, 10°	20	60	1

[a] This is the highest concentration excluding one period containing two consecutive hours with calm winds.

[b] The highest annual concentration is actually a negative number, representing a decrease in concentrations. Annual concentrations are based on continuous emissions at the maximum hourly rate.

The conclusion is reached, therefore, that replacement of the existing sulfuric acid plant should not result in adverse ambient air quality effects. PSD Class II increments should not be consumed to a significant extent, and SO_2 ambient air quality standards in this designated attainment area should not be threatened as a result of the proposed project.

4. OTHER CONSIDERATIONS

GEP Stack Height

The height of the new sulfuric acid plant stacks, 175 ft, will not exceed Good Engineering Practice stack height guidelines.

Effect on PSD Class I Areas

As stated in the original permit application, the nearest PSD Class I area is located 125 km away. This large separation distance combined with the offsetting effects of shutting down the existing plant should ensure that the proposed new sulfuric acid plant will not adversely affect the nearest Class I area.

Effect on Nonattainment Areas

The nearest designated SO_2 nonattainment is in Pinellas County, approximately 80 km away. This large separation distance combined with the offsetting effects of shutting down the existing plant should ensure that the proposed new sulfuric acid plant will not contribute to a condition of nonattainment in the nearest designated SO_2 nonattainment area.

Effect on Visibility, Vegetation, and Soils

Since the predicted highest concentration differences resulting from replacement of the existing plant by the proposed new plant are below the EPA levels of significance, it is expected that the proposed change in SO_2 emissions will not have a significant impact on present conditions affecting visibility, vegetation, and soils.

Effect on Associated Growth

Since the operational labor force required for the proposed modification is only about 15 employees more than is required at present, the air quality effects of associated population, commercial, and industrial growth should be negligible.

ATTACHMENT H

PART A

Emission Source Characteristics Used in all Modeling Runs

STACK # 1--OLD SO2 STACK
STACK # 2--NEW SO2 STACK

STACK	MONTH	EMISSION RATE (GMS/SEC)	HEIGHT (METERS)	DIAMETER (METERS)	EXIT VELOCITY (M/SEC)	TEMP (DEG.K)	VOLUMETRIC FLOW (M**3/SEC)
1	ALL	-78.7500	29.00	3.02	6.77	310.00	48.49
2	ALL	92.3600	53.30	2.59	9.45	355.00	49.79

ATTACHMENT H

PART B

Concentrations at Distances of 0.6, 1.0, 2.0, 4.0, and 12.0 km
Using Entire 1972 Meteorolgoical Data Set

Note: 24-hour concentrations of 4.1667 E-32 and 3-hour concentrations of 1.0000 E-30 are presumed to represent negative concentrations which have been set to these values by initializing statements in the CRSTER Model.

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

MAXIMUM MEAN CONC= -1.1547E-07 DIRECTION= 1 DISTANCE= 12.0 KM

ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR

DIR / RANGE	.6 KM	1.0 KM	2.0 KM	4.0 KM	12.0 KM
1	-1.10542E-05	-7.77197E-06	-2.94133E-06	-8.95733E-07	-1.15470E-07
2	-1.46742E-05	-1.03298E-05	-3.93054E-06	-1.25532E-06	-1.98908E-07
3	-1.24830E-05	-8.11257E-06	-3.13668E-06	-1.10965E-06	-2.00033E-07
4	-9.90308E-06	-5.96867E-06	-2.49501E-06	-1.04164E-06	-2.05925E-07
5	-1.16780E-05	-6.67876E-06	-2.82968E-06	-1.27302E-06	-2.93225E-07
6	-1.40093E-05	-7.68884E-06	-2.80865E-06	-1.02109E-06	-1.91637E-07
7	-1.53911E-05	-8.68870E-06	-2.99980E-06	-1.00457E-06	-1.88987E-07
8	-2.09687E-05	-1.16222E-05	-3.67459E-06	-1.02566E-06	-1.38505E-07
9	-3.42884E-05	-2.10838E-05	-6.93821E-06	-1.96792E-06	-2.61061E-07
10	-2.34083E-05	-1.42342E-05	-4.78774E-06	-1.43625E-06	-2.24421E-07
11	-1.30885E-05	-9.40348E-06	-3.86834E-06	-1.34680E-06	-2.01020E-07
12	-9.31209E-06	-6.87312E-06	-3.22213E-06	-1.43340E-06	-2.82924E-07
13	-9.58068E-06	-7.58986E-06	-3.64509E-06	-1.58522E-06	-3.25117E-07
14	-8.67399E-06	-7.52583E-06	-3.90528E-06	-2.08881E-06	-5.91310E-07
15	-8.27493E-06	-7.66021E-06	-3.78493E-06	-1.54615E-06	-2.81247E-07
16	-7.42289E-06	-6.22478E-06	-2.82652E-06	-1.21546E-06	-2.58991E-07
17	-7.20656E-06	-5.65697E-06	-2.51092E-06	-1.09590E-06	-2.61473E-07
18	-7.58701E-06	-6.44791E-06	-3.17323E-06	-1.43442E-06	-3.34403E-07
19	-5.81166E-06	-4.80295E-06	-2.35876E-06	-1.08393E-06	-2.54282E-07
20	-5.72867E-06	-4.46657E-06	-2.22037E-06	-1.00097E-06	-2.09963E-07
21	-8.36406E-06	-6.88062E-06	-3.56591E-06	-1.89453E-06	-5.51526E-07
22	-1.16052E-05	-9.43266E-06	-4.43107E-06	-1.82323E-06	-3.91715E-07
23	-1.50103E-05	-1.30771E-05	-7.06495E-06	-3.65920E-06	-9.33540E-07
24	-1.68126E-05	-1.45578E-05	-7.89537E-06	-3.93650E-06	-9.46232E-07
25	-1.78138E-05	-1.50033E-05	-8.70667E-06	-5.02639E-06	-1.41723E-06
26	-1.96873E-05	-1.65320E-05	-9.16150E-06	-4.63878E-06	-1.11971E-06
27	-2.61885E-05	-2.27847E-05	-1.25240E-05	-6.13369E-06	-1.38436E-06
28	-2.08464E-05	-1.67132E-05	-8.19345E-06	-3.97323E-06	-9.80295E-07
29	-1.57892E-05	-1.22523E-05	-6.39000E-06	-3.28791E-06	-8.50878E-07
30	-1.43464E-05	-1.06056E-05	-5.40110E-06	-3.06494E-06	-8.65826E-07
31	-1.25796E-05	-9.70860E-06	-4.78671E-06	-2.18875E-06	-5.15405E-07
32	-1.16940E-05	-8.79881E-06	-3.74055E-06	-1.34271E-06	-2.47835E-07
33	-1.22111E-05	-9.06788E-06	-4.25415E-06	-1.90688E-06	-4.31577E-07
34	-1.02747E-05	-7.66862E-06	-3.22892E-06	-1.24575E-06	-2.63563E-07
35	-7.25032E-06	-5.60549E-06	-2.53656E-06	-9.92435E-07	-1.77595E-07
36	-9.91598E-06	-7.84184E-06	-3.43708E-06	-1.26375E-06	-2.18088E-07

PLANT NAME: FORT MEADE SULFURIC ACID   POLLUTANT: SO2   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 24-HOUR CONC= 2.5751E-07 DIRECTION= 9 DISTANCE= 1.0 KM DAY=249

HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.6 KM	1.0 KM	2.0 KM	4.0 KM	12.0 KM
1	4.1667E-32 (6)	1.0753E-07 (215)	5.2191E-08 (215)	4.9553E-08 (233)	4.8874E-08 (143)
2	4.1667E-32 (1)	2.3252E-07 (215)	1.2980E-07 (215)	6.8928E-08 (215)	1.5404E-07 (237)
3	4.1667E-32 (1)	9.7767E-08 (241)	2.6331E-08 (241)	7.1846E-08 (205)	1.3901E-07 (237)
4	4.1667E-32 (1)	1.9784E-07 (241)	7.1022E-08 (241)	9.5140E-08 (150)	3.2640E-08 (237)
5	4.1667E-32 (1)	2.4011E-09 (248)	8.1338E-08 (241)	1.1342E-07 (150)	4.6776E-08 (261)
6	4.1667E-32 (1)	2.0984E-08 (248)	1.1502E-07 (215)	1.5622E-07 (216)	6.5695E-08 (244)
7	4.1667E-32 (1)	9.1052E-08 (248)	7.3394E-08 (215)	1.1630E-07 (216)	3.6355E-08 (78)
8	4.1667E-32 (1)	1.8752E-07 (248)	1.3798E-07 (248)	9.6519E-08 (195)	3.6415E-08 (53)
9	4.1667E-32 (1)	2.5751E-07 (249)	1.1164E-07 (248)	1.2315E-07 (195)	7.3483E-08 (46)
10	4.1667E-32 (1)	2.3665E-07 (189)	6.9779E-08 (189)	1.2660E-07 (87)	4.7159E-08 (87)
11	4.1667E-32 (1)	1.0963E-07 (189)	5.4455E-08 (87)	3.2143E-08 (87)	3.8896E-08 (96)
12	4.1667E-32 (1)	2.7029E-08 (150)	9.7408E-09 (87)	3.7419E-08 (112)	9.0301E-08 (184)
13	4.1667E-32 (1)	2.4551E-09 (150)	6.8074E-10 (87)	1.1327E-07 (182)	4.4795E-08 (182)
14	4.1667E-32 (1)	6.5083E-10 (247)	5.1894E-11 (247)	6.4337E-08 (194)	3.5312E-08 (208)
15	8.1251E-32 (3)	4.1667E-32 (1)	9.1201E-10 (247)	5.8791E-08 (194)	2.5405E-08 (194)
16	5.4064E-32 (304)	4.0937E-11 (163)	1.1569E-09 (247)	4.7446E-08 (189)	1.1943E-07 (48)
17	7.5937E-32 (73)	9.5234E-10 (163)	8.1939E-11 (163)	6.5331E-08 (45)	8.3112E-08 (245)
18	6.1800E-32 (290)	1.0284E-08 (163)	2.6490E-11 (265)	1.1385E-07 (245)	4.9315E-08 (245)
19	8.3333E-32 (72)	4.5719E-08 (163)	7.4300E-09 (263)	6.8235E-08 (252)	5.8084E-08 (208)
20	4.1667E-32 (1)	1.7060E-07 (163)	4.0329E-08 (163)	8.2430E-08 (252)	1.9772E-08 (193)
21	8.3084E-32 (215)	4.1667E-32 (1)	4.7816E-08 (163)	9.2082E-08 (189)	2.4883E-08 (359)
22	7.5015E-32 (119)	5.6569E-08 (186)	1.5704E-08 (158)	8.3797E-08 (283)	6.0149E-08 (363)
23	8.3333E-32 (78)	1.5726E-07 (186)	8.2974E-08 (186)	1.3909E-07 (283)	5.1370E-08 (283)
24	8.3333E-32 (75)	8.2016E-08 (248)	2.1806E-08 (248)	1.5150E-07 (237)	4.8484E-08 (237)
25	8.3333E-32 (75)	8.3333E-32 (75)	8.3333E-32 (75)	9.6259E-08 (363)	4.1879E-08 (363)
26	1.1096E-31 (215)	8.3333E-32 (75)	2.6479E-11 (214)	8.7529E-08 (323)	5.8262E-08 (323)
27	8.3333E-32 (211)	8.3333E-32 (211)	8.3333E-32 (211)	3.1747E-10 (64)	4.6778E-08 (141)
28	4.1667E-32 (2)	4.1667E-32 (2)	8.3333E-32 (98)	3.3382E-08 (253)	3.5232E-08 (237)
29	4.1667E-32 (5)	4.1667E-32 (5)	2.0419E-10 (158)	4.8339E-08 (248)	3.9044E-08 (253)
30	4.1667E-32 (6)	4.1667E-32 (6)	3.0600E-09 (186)	6.2801E-08 (248)	1.1458E-07 (291)
31	8.3309E-32 (290)	1.4462E-11 (156)	9.0461E-13 (156)	4.5277E-08 (73)	4.5035E-08 (241)
32	4.1667E-32 (6)	4.1667E-32 (6)	2.0230E-16 (267)	5.3898E-08 (231)	3.6493E-08 (231)
33	8.3333E-32 (194)	8.3333E-32 (194)	4.1074E-16 (154)	1.0503E-07 (314)	6.8065E-08 (206)
34	4.1667E-32 (6)	4.1667E-32 (6)	1.8889E-09 (196)	7.0332E-08 (314)	9.2772E-08 (210)
35	4.1667E-32 (6)	4.1667E-32 (6)	4.1667E-32 (6)	5.6760E-08 (54)	3.9191E-08 (78)
36	4.1667E-32 (6)	1.5913E-08 (215)	9.1138E-09 (215)	5.2853E-08 (29)	4.4532E-08 (135)

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 24-HOUR CONC= 2.5379E-07 DIRECTION= 9 DISTANCE= 1.0 KM DAY=189

SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.6 KM	1.0 KM	2.0 KM	4.0 KM	12.0 KM
1	4.1667E-32 (7)	2.2506E-09 (241)	3.0114E-10 (241)	4.8109E-08 (206)	4.1214E-08 (237)
2	4.1667E-32 (6)	2.1092E-08 (241)	4.2600E-09 (241)	5.9162E-08 (210)	3.8925E-08 (124)
3	4.1667E-32 (6)	2.6900E-09 (229)	1.0273E-08 (112)	6.4362E-08 (209)	3.7804E-08 (45)
4	4.1667E-32 (6)	1.3652E-10 (248)	2.5420E-08 (112)	9.4958E-08 (195)	2.9447E-08 (162)
5	4.1667E-32 (6)	3.0824E-10 (189)	2.9068E-08 (224)	7.7962E-08 (216)	3.6300E-08 (210)
6	4.1667E-32 (6)	5.7834E-09 (222)	2.8707E-08 (224)	9.5157E-08 (194)	6.3318E-08 (216)
7	4.1667E-32 (6)	3.5817E-08 (189)	5.5517E-08 (248)	1.0354E-07 (259)	3.6210E-08 (298)
8	4.1667E-32 (2)	1.3525E-07 (189)	6.9517E-08 (249)	9.3246E-08 (259)	2.7767E-08 (234)
9	4.1667E-32 (2)	2.5379E-07 (189)	1.0707E-07 (249)	8.1506E-08 (238)	5.3964E-08 (137)
10	4.1667E-32 (2)	4.1667E-32 (1)	5.5039E-08 (150)	1.0768E-07 (195)	3.3074E-08 (222)
11	4.1667E-32 (2)	5.6851E-08 (150)	2.8067E-08 (189)	2.7085E-08 (314)	2.3925E-08 (222)
12	4.1667E-32 (2)	2.1468E-08 (189)	4.8901E-09 (189)	7.2172E-09 (222)	5.6470E-08 (250)
13	4.1667E-32 (2)	1.6630E-09 (87)	6.7514E-10 (222)	4.7066E-08 (23)	3.6461E-08 (245)
14	4.1667E-32 (3)	1.2007E-10 (87)	4.2175E-11 (222)	3.7012E-08 (182)	3.1906E-08 (194)
15	4.1667E-32 (1)	4.1667E-32 (3)	4.1667E-32 (1)	4.8778E-08 (189)	1.6563E-08 (26)
16	4.1667E-32 (1)	4.1667E-32 (1)	1.9742E-12 (163)	3.7784E-08 (240)	1.6007E-08 (245)
17	4.1667E-32 (1)	4.1667E-32 (1)	1.9331E-13 (265)	5.0990E-08 (216)	3.4079E-08 (45)
18	4.1667E-32 (1)	4.1667E-32 (1)	1.7468E-15 (158)	8.4680E-08 (247)	4.1938E-08 (208)
19	8.3296E-32 (55)	3.0153E-11 (186)	7.9920E-10 (265)	5.8731E-08 (247)	2.9058E-08 (231)
20	4.1667E-32 (3)	7.5228E-10 (186)	4.2833E-09 (265)	5.6308E-08 (189)	1.8200E-08 (205)
21	6.9290E-32 (150)	4.1667E-32 (2)	2.8272E-09 (158)	5.8691E-08 (359)	2.3677E-08 (288)
22	6.9290E-32 (195)	4.1667E-32 (1)	4.1667E-32 (1)	5.9319E-08 (265)	2.8056E-08 (283)
23	8.3269E-32 (355)	2.3460E-08 (248)	1.0393E-09 (248)	4.6469E-08 (52)	2.4056E-08 (52)
24	4.1667E-32 (2)	8.3333E-32 (75)	8.3333E-32 (75)	1.0381E-07 (283)	3.6116E-08 (283)
25	8.3084E-32 (215)	4.1667E-32 (2)	8.3333E-32 (216)	6.5432E-09 (185)	3.7467E-08 (186)
26	8.3333E-32 (75)	8.3333E-32 (215)	8.3333E-32 (75)	7.5076E-08 (237)	3.8629E-08 (363)
27	4.1667E-32 (2)	4.1667E-32 (2)	4.1667E-32 (2)	5.2316E-11 (291)	1.0079E-08 (363)
28	4.1667E-32 (5)	4.1667E-32 (5)	4.1667E-32 (2)	2.3560E-09 (291)	2.1544E-08 (253)
29	4.1667E-32 (6)	4.1667E-32 (6)	4.9651E-11 (217)	3.3762E-08 (251)	2.5666E-08 (198)
30	4.1667E-32 (7)	4.1667E-32 (7)	2.7527E-11 (156)	4.8561E-08 (251)	8.7801E-08 (185)
31	4.1667E-32 (6)	4.1667E-32 (6)	1.6467E-13 (267)	3.4496E-08 (240)	3.9906E-08 (216)
32	4.1667E-32 (7)	4.1667E-32 (7)	4.1667E-32 (6)	5.3880E-08 (314)	3.1482E-08 (75)
33	6.5493E-32 (363)	4.1667E-32 (6)	8.3333E-32 (194)	1.0210E-07 (229)	4.1783E-08 (314)
34	4.1667E-32 (7)	4.1667E-32 (7)	4.1667E-32 (6)	5.9613E-08 (218)	5.2884E-08 (103)
35	4.1667E-32 (7)	4.1667E-32 (7)	4.1667E-32 (7)	5.3016E-08 (238)	2.3506E-08 (87)
36	4.1667E-32 (7)	2.2276E-09 (248)	2.1952E-09 (111)	5.1906E-08 (87)	3.1041E-08 (259)

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 3-HOUR CONC= 2.4641E-06 DIRECTION= 22 DISTANCE= 1.0 KM DAY=189 TIME PERIOD= 5

HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE DIR	.6 KM	1.0 KM	2.0 KM	4.0 KM	12.0 KM
1	1.0000E-30 (1, 1)	8.6025E-07 (215, 4)	4.1753E-07 (215, 4)	4.0117E-07 (196, 4)	4.7383E-07 (143, 3)
2	1.0000E-30 (1, 1)	1.8602E-06 (215, 4)	1.0384E-06 (215, 4)	5.5143E-07 (215, 4)	1.2186E-06 (237, 6)
3	1.0000E-30 (1, 1)	2.0285E-06 (215, 4)	1.1361E-06 (215, 4)	6.1061E-07 (215, 4)	6.0052E-07 (237, 4)
4	1.0000E-30 (1, 1)	1.8130E-06 (241, 5)	6.2790E-07 (215, 4)	7.0544E-07 (124, 3)	2.9211E-07 (124, 3)
5	1.0000E-30 (1, 1)	1.7675E-06 (241, 5)	1.3203E-06 (206, 4)	6.9397E-07 (206, 4)	2.5878E-07 (244, 4)
6	1.0000E-30 (1, 1)	1.9752E-06 (215, 4)	1.5582E-06 (206, 4)	1.0121E-06 (216, 3)	5.2556E-07 (244, 4)
7	1.0000E-30 (1, 1)	1.9375E-06 (229, 4)	8.6676E-07 (215, 4)	5.8092E-07 (299, 4)	2.7637E-07 (78, 4)
8	1.0000E-30 (1, 1)	1.5734E-06 (248, 4)	1.1042E-06 (248, 4)	6.2934E-07 (53, 4)	2.2714E-07 (290, 4)
9	1.0000E-30 (1, 1)	2.1595E-06 (87, 4)	1.5142E-06 (87, 4)	1.2366E-06 (207, 4)	5.8786E-07 (46, 5)
10	1.0000E-30 (1, 1)	1.8932E-06 (189, 4)	1.2832E-06 (87, 4)	7.8188E-07 (242, 4)	2.8703E-07 (303, 4)
11	1.0000E-30 (1, 1)	8.7723E-07 (189, 4)	5.9638E-07 (222, 4)	4.1638E-07 (195, 4)	3.3186E-07 (96, 3)
12	1.0000E-30 (1, 1)	2.1623E-07 (150, 5)	1.7999E-07 (222, 4)	4.1828E-07 (112, 4)	7.2241E-07 (184, 4)
13	1.0000E-30 (1, 1)	2.7847E-08 (150, 5)	1.5564E-08 (222, 4)	9.0617E-07 (182, 3)	3.5836E-07 (182, 3)
14	1.0000E-30 (1, 1)	5.7570E-09 (247, 5)	2.4935E-07 (184, 4)	5.6043E-07 (194, 3)	2.8249E-07 (208, 6)
15	1.0000E-30 (1, 1)	7.1374E-08 (247, 5)	7.3128E-08 (184, 4)	4.7033E-07 (194, 3)	2.0324E-07 (194, 3)
16	1.0000E-30 (1, 1)	4.3972E-07 (247, 5)	7.0955E-08 (247, 5)	4.9012E-07 (216, 4)	7.8707E-07 (48, 6)
17	1.0000E-30 (1, 1)	1.3462E-06 (247, 5)	2.6687E-07 (247, 5)	1.2779E-06 (245, 3)	4.9261E-07 (245, 3)
18	1.0000E-30 (1, 1)	2.0480E-06 (247, 5)	4.3858E-07 (247, 5)	1.0725E-06 (245, 3)	3.9056E-07 (245, 3)
19	1.0000E-30 (1, 1)	1.7618E-06 (189, 5)	3.5019E-07 (189, 5)	4.5350E-07 (19, 4)	2.3672E-06 (236, 6)
20	1.0000E-30 (1, 1)	2.3910E-06 (189, 5)	4.8078E-07 (189, 5)	3.9630E-07 (205, 4)	7.9001E-07 (236, 6)
21	1.0000E-30 (1, 1)	2.4504E-06 (189, 5)	5.2214E-07 (189, 5)	4.9573E-07 (264, 4)	6.6774E-07 (245, 3)
22	1.0000E-30 (1, 1)	2.4641E-06 (189, 5)	6.0721E-07 (189, 5)	6.7038E-07 (283, 4)	4.8119E-07 (363, 4)
23	1.0000E-30 (1, 1)	1.7813E-06 (189, 5)	6.7227E-07 (186, 4)	1.1127E-06 (283, 4)	4.1096E-07 (283, 4)
24	1.0000E-30 (1, 1)	2.1313E-06 (186, 4)	1.1048E-06 (186, 4)	1.2120E-06 (237, 4)	3.9888E-07 (284, 3)
25	1.0000E-30 (1, 2)	1.9593E-06 (247, 5)	7.9180E-07 (186, 4)	2.0506E-06 (237, 4)	7.7825E-07 (237, 4)
26	1.0000E-30 (1, 5)	1.9375E-06 (248, 5)	6.1279E-07 (248, 5)	7.3392E-07 (323, 3)	4.6475E-07 (323, 3)
27	1.0000E-30 (1, 5)	1.0325E-06 (248, 5)	2.9087E-07 (248, 5)	7.0615E-07 (208, 5)	3.7456E-07 (141, 3)
28	1.0000E-30 (1, 5)	1.1862E-06 (163, 4)	5.8578E-07 (163, 4)	5.0779E-07 (230, 3)	3.7665E-07 (231, 3)
29	1.0000E-30 (1, 8)	1.8049E-06 (163, 4)	9.6268E-07 (163, 4)	8.7982E-07 (185, 4)	4.2127E-07 (283, 3)
30	1.0000E-30 (1, 1)	1.3645E-06 (163, 4)	6.9127E-07 (163, 4)	1.7167E-06 (185, 4)	7.1111E-07 (185, 4)
31	1.0000E-30 (1, 1)	5.1259E-07 (163, 4)	2.1689E-07 (163, 4)	1.0272E-06 (185, 4)	3.5005E-07 (185, 4)
32	1.0000E-30 (1, 1)	1.7921E-07 (248, 4)	1.0715E-06 (248, 4)	6.0956E-07 (248, 4)	2.9195E-07 (231, 4)
33	1.0000E-30 (1, 1)	1.7557E-06 (248, 4)	9.4544E-07 (248, 4)	8.2783E-07 (229, 4)	5.4982E-07 (206, 3)
34	1.0000E-30 (1, 1)	7.7812E-07 (248, 4)	3.5028E-07 (248, 4)	2.1390E-06 (236, 4)	8.2890E-07 (236, 4)
35	1.0000E-30 (1, 1)	1.6713E-07 (248, 4)	5.6669E-08 (248, 4)	4.7385E-07 (54, 4)	5.1679E-07 (236, 4)
36	1.0000E-30 (1, 1)	1.2731E-07 (215, 4)	7.2911E-08 (215, 4)	4.5750E-07 (309, 4)	6.0460E-07 (236, 4)

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 3-HOUR CONC= 2.1591E-06 DIRECTION= 9 DISTANCE= 1.0 KM DAY=249 TIME PERIOD= 4

SECOND HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.6 KM	1.0 KM	2.0 KM	4.0 KM	12.0 KM
1	1.0000E-30 (1, 2)	1.8005E-08 (241, 5)	7.8360E-08 (211, 4)	3.9643E-07 (233, 4)	3.2971E-07 (237, 6)
2	1.0000E-30 (1, 2)	1.6875E-07 (241, 5)	1.1102E-07 (211, 4)	4.7598E-07 (210, 5)	3.1140E-07 (124, 3)
3	1.0000E-30 (1, 2)	7.8594E-07 (241, 5)	2.1065E-07 (241, 5)	5.8199E-07 (205, 4)	5.1155E-07 (237, 6)
4	1.0000E-30 (1, 2)	1.3354E-06 (215, 4)	5.6892E-07 (241, 5)	5.8175E-07 (102, 5)	2.3473E-07 (162, 3)
5	1.0000E-30 (1, 2)	1.5061E-06 (206, 4)	6.7033E-07 (241, 5)	6.6917E-07 (261, 5)	2.5768E-07 (233, 4)
6	1.0000E-30 (1, 2)	1.8067E-06 (229, 4)	9.5121E-07 (215, 4)	8.4607E-07 (206, 4)	4.6828E-07 (216, 3)
7	1.0000E-30 (1, 2)	1.8097E-06 (215, 4)	8.0344E-07 (206, 4)	5.5827E-07 (78, 4)	2.2470E-07 (24, 5)
8	1.0000E-30 (1, 2)	1.5220E-06 (249, 4)	7.8079E-07 (87, 4)	6.2112E-07 (207, 4)	2.1410E-07 (248, 4)
9	1.0000E-30 (1, 2)	2.1591E-06 (249, 4)	1.1995E-06 (248, 4)	1.1201E-06 (124, 4)	4.6105E-07 (207, 4)
10	1.0000E-30 (1, 2)	1.8777E-06 (87, 4)	9.1295E-07 (222, 4)	7.1205E-07 (124, 4)	2.8012E-07 (181, 3)
11	1.0000E-30 (1, 2)	8.1127E-07 (87, 4)	4.7511E-07 (87, 4)	3.6670E-07 (193, 4)	1.4805E-07 (184, 4)
12	1.0000E-30 (1, 2)	2.0199E-07 (189, 4)	7.6864E-08 (87, 4)	4.1191E-07 (245, 4)	4.7371E-07 (250, 4)
13	1.0000E-30 (1, 2)	2.3112E-08 (189, 4)	5.4335E-09 (87, 4)	4.0244E-07 (184, 4)	3.4459E-07 (184, 4)
14	1.0000E-30 (1, 2)	1.7025E-09 (150, 5)	4.1842E-10 (247, 5)	4.7211E-07 (102, 4)	2.5634E-07 (194, 3)
15	1.0000E-30 (1, 2)	1.0000E-30 (1, 1)	8.2430E-09 (247, 5)	3.9023E-07 (189, 5)	1.4938E-07 (362, 5)
16	1.0000E-30 (1, 2)	2.0250E-08 (184, 4)	5.8104E-09 (184, 4)	3.9047E-07 (189, 5)	2.2944E-07 (216, 4)
17	1.0000E-30 (1, 2)	7.6187E-09 (163, 4)	1.0114E-07 (263, 5)	6.0038E-07 (148, 3)	2.7144E-07 (45, 5)
18	1.0000E-30 (1, 2)	8.8074E-08 (163, 4)	2.1322E-07 (263, 5)	5.0620E-07 (193, 3)	3.3551E-07 (208, 5)
19	1.0000E-30 (1, 2)	1.5483E-06 (247, 5)	3.1493E-07 (247, 5)	3.5161E-07 (231, 4)	4.6467E-07 (208, 5)
20	1.0000E-30 (1, 2)	1.3649E-06 (163, 4)	3.2467E-07 (163, 4)	3.6153E-07 (252, 5)	1.5679E-07 (322, 3)
21	1.0000E-30 (1, 2)	1.1041E-07 (247, 5)	3.8261E-07 (163, 4)	4.9524E-07 (189, 4)	1.9907E-07 (359, 4)
22	1.0000E-30 (1, 2)	4.5967E-07 (186, 4)	1.7874E-07 (186, 4)	4.9974E-07 (189, 4)	2.2445E-07 (283, 4)
23	1.0000E-30 (1, 2)	1.4072E-06 (186, 4)	4.4167E-07 (189, 5)	5.2613E-07 (158, 5)	1.8126E-07 (163, 4)
24	1.0000E-30 (1, 2)	9.8835E-07 (247, 5)	4.0095E-07 (156, 4)	8.3051E-07 (283, 4)	3.8787E-07 (237, 4)
25	1.0000E-30 (1, 4)	1.8066E-06 (248, 5)	6.9314E-07 (156, 4)	7.7106E-07 (363, 4)	4.1789E-07 (235, 3)
26	1.0000E-30 (1, 6)	5.8619E-07 (247, 5)	4.6254E-07 (247, 5)	7.0615E-07 (208, 5)	3.0903E-07 (363, 4)
27	1.0000E-30 (1, 6)	3.5511E-07 (163, 4)	1.5523E-07 (163, 4)	5.7599E-07 (247, 4)	2.8997E-07 (323, 3)
28	1.0000E-30 (1, 7)	2.7344E-07 (248, 5)	1.9524E-07 (185, 4)	3.9970E-07 (247, 5)	3.4753E-07 (230, 4)
29	1.0000E-30 (2, 1)	3.5984E-08 (248, 5)	9.5745E-08 (154, 4)	7.0207E-07 (283, 3)	3.4857E-07 (234, 3)
30	1.0000E-30 (2, 1)	2.3532E-09 (248, 5)	7.1161E-08 (212, 5)	6.1255E-07 (241, 4)	5.5328E-07 (291, 4)
31	1.0000E-30 (1, 2)	1.1569E-10 (156, 4)	2.0218E-07 (212, 5)	5.7948E-07 (241, 4)	3.1925E-07 (216, 3)
32	1.0000E-30 (1, 2)	9.5692E-08 (163, 4)	3.3687E-07 (185, 4)	4.8929E-07 (229, 4)	2.7084E-07 (234, 4)
33	1.0000E-30 (1, 2)	8.8771E-09 (163, 4)	7.6749E-08 (186, 4)	7.5458E-07 (236, 4)	3.0123E-07 (218, 3)
34	1.0000E-30 (1, 2)	4.0922E-10 (163, 4)	4.2260E-08 (186, 4)	4.7690E-07 (218, 3)	6.9121E-07 (210, 3)
35	1.0000E-30 (1, 2)	1.0000E-30 (1, 1)	5.2351E-09 (186, 4)	4.2417E-07 (238, 4)	3.1353E-07 (78, 4)
36	1.0000E-30 (1, 2)	1.7832E-08 (248, 4)	1.9753E-08 (111, 5)	4.2647E-07 (135, 3)	4.7383E-07 (143, 3)

ATTACHMENT H

PART C

Concentrations at Distances of 3.0, 6.0, 15.0, 20.0, and 25.0 km
Using Entire 1972 Meteorological Data Set

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

MAXIMUM MEAN CONC= -2.9060E-08 DIRECTION= 1 DISTANCE= 25.0 KM

ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR

DIR \ RANGE	3.0 KM	6.0 KM	15.0 KM	20.0 KM	25.0 KM
1	-1.48482E-06	-4.28374E-07	-7.53402E-08	-4.36503E-08	-2.90598E-08
2	-2.02334E-06	-6.39973E-07	-1.35861E-07	-8.37117E-08	-5.80183E-08
3	-1.71103E-06	-6.00876E-07	-1.38348E-07	-8.64185E-08	-6.03063E-08
4	-1.50699E-06	-6.00240E-07	-1.41404E-07	-8.68955E-08	-5.96974E-08
5	-1.78153E-06	-7.74205E-07	-2.08397E-07	-1.34225E-07	-9.55128E-08
6	-1.55597E-06	-5.58626E-07	-1.35216E-07	-8.68542E-08	-6.24348E-08
7	-1.56830E-06	-5.46357E-07	-1.32489E-07	-8.42090E-08	-5.93372E-08
8	-1.74245E-06	-4.87365E-07	-9.31609E-08	-5.68413E-08	-3.93695E-08
9	-3.31836E-06	-9.39211E-07	-1.72470E-07	-1.01663E-07	-6.82819E-08
10	-2.36106E-06	-7.20764E-07	-1.54451E-07	-9.63104E-08	-6.76043E-08
11	-2.11494E-06	-6.87884E-07	-1.34138E-07	-8.02434E-08	-5.47071E-08
12	-2.03619E-06	-8.31539E-07	-1.94517E-07	-1.19885E-07	-8.28587E-08
13	-2.26734E-06	-9.25597E-07	-2.25635E-07	-1.40890E-07	-9.80789E-08
14	-2.71352E-06	-1.40127E-06	-4.28190E-07	-2.80182E-07	-2.00450E-07
15	-2.27930E-06	-8.59571E-07	-1.91797E-07	-1.16839E-07	-8.03500E-08
16	-1.72701E-06	-7.24185E-07	-1.79031E-07	-1.10791E-07	-7.62778E-08
17	-1.54011E-06	-6.73105E-07	-1.87024E-07	-1.21480E-07	-8.67394E-08
18	-2.00672E-06	-8.72049E-07	-2.40088E-07	-1.57519E-07	-1.14068E-07
19	-1.50229E-06	-6.70645E-07	-1.79044E-07	-1.13013E-07	-7.89136E-08
20	-1.41368E-06	-5.91433E-07	-1.46148E-07	-9.15255E-08	-6.39548E-08
21	-2.46230E-06	-1.28032E-06	-4.02562E-07	-2.66794E-07	-1.92760E-07
22	-2.65215E-06	-1.06227E-06	-2.79130E-07	-1.81001E-07	-1.29980E-07
23	-4.86354E-06	-2.35432E-06	-6.65179E-07	-4.27743E-07	-3.02607E-07
24	-5.34023E-06	-2.45623E-06	-6.74421E-07	-4.35613E-07	-3.11047E-07
25	-6.42198E-06	-3.38081E-06	-1.02698E-06	-6.76077E-07	-4.87211E-07
26	-6.26427E-06	-2.90478E-06	-7.96952E-07	-5.12576E-07	-3.64248E-07
27	-8.41495E-06	-3.74330E-06	-9.74235E-07	-6.18986E-07	-4.37096E-07
28	-5.39460E-06	-2.50571E-06	-6.99014E-07	-4.51265E-07	-3.20720E-07
29	-4.38583E-06	-2.10825E-06	-6.16476E-07	-4.06662E-07	-2.95276E-07
30	-3.90869E-06	-2.07130E-06	-6.25165E-07	-4.09241E-07	-2.93125E-07
31	-3.05246E-06	-1.34031E-06	-3.67169E-07	-2.36094E-07	-1.67700E-07
32	-2.06799E-06	-7.27055E-07	-1.73721E-07	-1.10188E-07	-7.78038E-08
33	-2.67768E-06	-1.15082E-06	-3.06404E-07	-1.96694E-07	-1.39564E-07
34	-1.84982E-06	-7.12698E-07	-1.89736E-07	-1.25425E-07	-9.16650E-08
35	-1.48529E-06	-5.44392E-07	-1.21541E-07	-7.45988E-08	-5.14759E-08
36	-1.93655E-06	-6.74960E-07	-1.50684E-07	-9.45823E-08	-6.70230E-08

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 24-HOUR CONC= 2.2376E-07 DIRECTION= 3 DISTANCE= 6.0 KM DAY=237

HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE DIR	3.0 KM	6.0 KM	15.0 KM	20.0 KM	25.0 KM
1	5.9935E-08 (187)	3.4566E-08 (206)	4.1166E-08 (143)	3.2179E-08 (143)	2.6190E-08 (143)
2	8.9646E-08 (215)	4.9039E-08 (162)	1.2917E-07 (237)	9.9015E-08 (237)	8.0445E-08 (237)
3	8.0115E-08 (209)	2.2376E-07 (237)	1.1172E-07 (237)	8.3951E-08 (237)	6.7161E-08 (237)
4	1.1867E-07 (150)	6.9734E-08 (237)	2.4850E-08 (237)	1.8720E-08 (195)	1.5421E-08 (195)
5	1.0146E-07 (102)	8.2520E-08 (261)	3.8026E-08 (261)	2.9079E-08 (261)	2.3649E-08 (261)
6	1.1569E-07 (194)	1.2185E-07 (216)	5.4528E-08 (244)	4.1982E-08 (244)	3.4246E-08 (244)
7	1.3639E-07 (259)	7.6044E-08 (298)	2.9652E-08 (78)	2.2874E-08 (78)	1.8760E-08 (78)
8	1.3333E-07 (195)	5.9193E-08 (53)	2.8329E-08 (53)	2.0284E-08 (53)	1.5777E-08 (53)
9	1.6461E-07 (195)	9.8483E-08 (46)	6.0008E-08 (46)	4.6232E-08 (46)	3.7775E-08 (46)
10	1.2973E-07 (195)	9.2105E-08 (87)	3.7733E-08 (87)	3.4197E-08 (183)	3.3224E-08 (183)
11	4.6094E-08 (87)	4.0477E-08 (222)	3.3956E-08 (96)	2.6708E-08 (96)	2.1983E-08 (96)
12	1.7789E-08 (112)	9.7082E-08 (184)	7.4527E-08 (184)	5.7937E-08 (184)	4.7680E-08 (184)
13	5.9097E-08 (23)	8.4169E-08 (182)	3.6581E-08 (182)	2.8183E-08 (182)	2.3027E-08 (182)
14	3.9132E-08 (198)	5.8391E-08 (194)	3.0046E-08 (208)	2.3014E-08 (208)	1.8666E-08 (208)
15	5.0797E-08 (198)	4.9517E-08 (194)	2.0410E-08 (194)	1.5354E-08 (194)	1.2285E-08 (194)
16	4.4269E-08 (240)	2.1635E-07 (48)	9.7545E-08 (48)	7.5075E-08 (48)	6.1267E-08 (48)
17	3.5210E-08 (283)	6.1954E-08 (45)	6.9360E-08 (245)	5.3377E-08 (245)	4.3437E-08 (245)
18	6.7778E-08 (247)	9.3374E-08 (245)	3.9583E-08 (245)	2.9717E-08 (245)	2.3743E-08 (245)
19	8.5858E-08 (252)	5.1229E-08 (231)	4.7641E-08 (208)	3.6394E-08 (208)	2.9500E-08 (208)
20	8.0594E-08 (252)	4.7182E-08 (252)	1.7164E-08 (260)	1.3912E-08 (260)	1.9129E-08 (236)
21	1.1325E-07 (189)	5.3101E-08 (189)	2.1454E-08 (250)	1.6997E-08 (250)	1.3957E-08 (250)
22	8.2056E-08 (283)	1.0265E-07 (363)	4.9119E-08 (363)	3.7842E-08 (363)	3.0920E-08 (363)
23	1.3176E-07 (283)	9.8223E-08 (283)	4.1735E-08 (283)	3.1953E-08 (283)	2.5990E-08 (283)
24	1.8509E-07 (237)	1.0017E-07 (237)	3.8157E-08 (237)	2.7870E-08 (237)	2.1738E-08 (237)
25	5.5488E-08 (363)	7.6239E-08 (363)	3.4459E-08 (363)	2.6846E-08 (363)	2.2151E-08 (363)
26	9.5843E-08 (237)	1.1324E-07 (323)	4.6849E-08 (323)	3.5325E-08 (323)	2.8345E-08 (323)
27	7.4231E-11 (64)	8.3577E-08 (141)	3.8405E-08 (141)	2.9803E-08 (141)	2.4498E-08 (141)
28	2.2724E-13 (52)	4.0913E-08 (253)	2.9005E-08 (237)	2.2351E-08 (237)	1.8263E-08 (237)
29	2.3278E-08 (248)	5.5140E-08 (253)	3.2101E-08 (253)	2.4657E-08 (253)	2.0058E-08 (253)
30	5.3872E-08 (251)	5.2946E-08 (248)	9.4458E-08 (291)	7.3026E-08 (291)	5.9806E-08 (291)
31	5.7020E-08 (73)	4.4551E-08 (241)	3.7297E-08 (241)	2.8743E-08 (241)	2.3466E-08 (241)
32	5.3637E-08 (315)	6.6779E-08 (231)	2.9754E-08 (231)	2.2860E-08 (231)	1.8625E-08 (231)
33	1.0991E-07 (229)	7.9807E-08 (314)	5.5928E-08 (206)	4.3295E-08 (206)	3.5461E-08 (206)
34	6.6433E-08 (314)	6.8325E-08 (210)	7.5454E-08 (210)	5.7607E-08 (210)	4.6715E-08 (210)
35	5.8293E-08 (238)	3.7945E-08 (87)	3.3730E-08 (78)	2.6073E-08 (78)	2.1303E-08 (78)
36	5.2957E-08 (224)	7.8132E-08 (135)	3.6642E-08 (135)	2.8440E-08 (135)	2.3356E-08 (135)

PLANT NAME: FORT MEADE SULFURIC ACID   POLLUTANT: SO2   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 24-HOUR CONC= 1.2873E-07 DIRECTION= 7 DISTANCE= 3.0 KM DAY=209

SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE DIR	3.0 KM	6.0 KM	15.0 KM	20.0 KM	25.0 KM
1	5.9818E-08 (233)	3.4406E-08 (233)	3.3709E-08 (237)	2.3874E-08 (237)	1.8123E-08 (237)
2	6.0026E-08 (210)	4.7565E-08 (215)	3.1806E-08 (124)	2.4547E-08 (124)	2.0103E-08 (124)
3	5.6692E-08 (187)	6.3256E-08 (205)	3.1630E-08 (45)	2.4615E-08 (45)	2.0136E-08 (45)
4	1.1168E-07 (195)	6.1465E-08 (195)	2.4059E-08 (195)	1.8268E-08 (245)	1.5114E-08 (245)
5	9.3912E-08 (218)	7.1674E-08 (150)	3.0326E-08 (210)	2.3400E-08 (210)	1.8977E-08 (210)
6	1.0595E-07 (299)	5.3890E-08 (299)	5.1880E-08 (216)	4.0182E-08 (216)	3.2982E-08 (216)
7	1.2873E-07 (209)	6.8550E-08 (216)	2.9148E-08 (298)	2.2067E-08 (298)	1.7876E-08 (298)
8	1.2604E-07 (185)	5.6773E-08 (216)	2.2465E-08 (234)	1.6753E-08 (234)	1.3539E-08 (248)
9	1.0098E-07 (248)	6.7417E-08 (137)	4.6817E-08 (87)	3.9944E-08 (87)	3.4169E-08 (87)
10	1.1985E-07 (87)	5.9826E-08 (195)	2.5839E-08 (183)	2.8296E-08 (87)	2.2611E-08 (87)
11	3.3943E-08 (314)	3.9863E-08 (195)	1.8597E-08 (195)	1.3553E-08 (195)	1.0632E-08 (195)
12	5.1494E-09 (87)	6.7114E-08 (250)	4.7578E-08 (250)	3.7676E-08 (250)	3.1291E-08 (250)
13	3.5931E-08 (225)	3.2617E-08 (245)	3.0709E-08 (245)	2.3742E-08 (245)	1.9126E-08 (245)
14	2.4813E-08 (23)	2.4933E-08 (182)	2.6070E-08 (194)	2.0056E-08 (194)	1.6348E-08 (194)
15	2.7664E-08 (189)	3.1467E-08 (189)	1.4763E-08 (26)	1.0575E-08 (26)	7.9781E-09 (47)
16	2.3715E-08 (189)	3.1211E-08 (189)	1.2541E-08 (245)	8.7058E-09 (216)	9.7138E-09 (216)
17	3.1932E-08 (193)	5.9449E-08 (245)	2.8008E-08 (45)	2.1770E-08 (45)	1.7921E-08 (45)
18	5.9315E-08 (157)	7.1250E-08 (208)	3.4008E-08 (208)	2.5911E-08 (208)	2.0982E-08 (208)
19	4.8767E-08 (206)	3.8701E-08 (208)	2.3692E-08 (231)	1.8202E-08 (231)	1.4830E-08 (231)
20	4.8767E-08 (206)	3.9473E-08 (189)	1.6035E-08 (193)	1.1711E-08 (193)	1.1335E-08 (260)
21	7.0864E-08 (265)	4.6699E-08 (359)	2.0288E-08 (359)	1.5587E-08 (359)	1.2700E-08 (359)
22	6.9093E-08 (265)	5.8327E-08 (283)	2.2426E-08 (189)	1.7885E-08 (189)	1.4820E-08 (189)
23	5.5732E-08 (186)	4.4799E-08 (52)	1.9425E-08 (52)	1.4695E-08 (52)	1.1824E-08 (52)
24	1.0593E-07 (283)	7.1278E-08 (283)	2.8962E-08 (283)	2.1747E-08 (283)	1.7384E-08 (283)
25	9.3984E-09 (185)	4.4402E-08 (314)	3.2033E-08 (186)	2.4400E-08 (186)	1.9582E-08 (186)
26	3.8062E-08 (185)	5.0665E-08 (363)	3.0772E-08 (363)	2.2902E-08 (363)	1.8183E-08 (363)
27	5.8881E-11 (52)	8.8261E-09 (117)	1.1056E-08 (337)	1.1135E-08 (337)	1.5358E-08 (323)
28	1.3143E-18 (289)	8.3272E-09 (291)	1.7129E-08 (253)	1.3604E-08 (363)	1.7585E-08 (363)
29	1.6373E-08 (251)	4.3540E-08 (27)	2.0785E-08 (231)	1.6127E-08 (231)	1.2920E-08 (231)
30	3.5373E-08 (248)	3.5078E-08 (251)	8.1279E-08 (185)	6.7619E-08 (185)	5.7204E-08 (185)
31	1.7827E-08 (24)	2.5427E-08 (240)	3.2435E-08 (216)	2.4783E-08 (216)	2.0101E-08 (216)
32	5.2723E-08 (240)	4.0362E-08 (314)	2.6350E-08 (75)	2.0343E-08 (75)	1.6627E-08 (75)
33	9.3665E-08 (314)	6.9857E-08 (218)	3.3847E-08 (314)	2.5768E-08 (314)	2.0831E-08 (314)
34	5.8780E-08 (240)	5.1372E-08 (314)	4.3646E-08 (103)	3.6223E-08 (147)	3.0637E-08 (147)
35	4.8449E-08 (139)	3.7938E-08 (238)	2.0276E-08 (307)	1.6367E-08 (307)	1.3469E-08 (307)
36	5.2348E-08 (87)	3.8090E-08 (87)	2.6695E-08 (259)	2.0788E-08 (259)	1.7086E-08 (259)

PLANT NAME: FORT MEADE SULFURIC ACID   POLLUTANT: SO2   EMISSION UNITS: GM/SEC   AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM   3-HOUR CONC= 4.1699E-06 DIRECTION= 19 DISTANCE= 6.0 KM DAY=236 TIME PERIOD= 6

HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	3.0 KM	6.0 KM	15.0 KM	20.0 KM	25.0 KM
1	4.7856E-07 (233, 4)	2.7653E-07 (206, 4)	3.7704E-07 (143, 3)	2.8008E-07 (143, 3)	2.2187E-07 (143, 3)
2	7.1717E-07 (215, 4)	4.0003E-07 (162, 4)	1.0242E-06 (237, 6)	7.8681E-07 (237, 6)	6.4016E-07 (237, 6)
3	7.8954E-07 (215, 4)	1.0626E-06 (237, 4)	4.8738E-07 (237, 4)	3.7225E-07 (237, 4)	3.0192E-07 (237, 4)
4	7.7856E-07 (102, 5)	5.3448E-07 (124, 3)	2.4081E-07 (124, 3)	1.8796E-07 (124, 3)	1.5524E-07 (124, 3)
5	9.0677E-07 (206, 4)	4.8178E-07 (216, 3)	2.1430E-07 (233, 4)	1.6676E-07 (233, 4)	1.4656E-07 (98, 3)
6	1.0896E-06 (206, 4)	8.6132E-07 (216, 3)	4.3623E-07 (244, 4)	3.3586E-07 (244, 4)	2.7397E-07 (244, 4)
7	6.6116E-07 (259, 4)	5.0460E-07 (78, 4)	2.2733E-07 (78, 4)	1.7688E-07 (78, 4)	1.4569E-07 (78, 4)
8	7.6575E-07 (207, 4)	4.0477E-07 (248, 4)	1.8418E-07 (290, 4)	1.3865E-07 (290, 4)	1.1202E-07 (290, 4)
9	1.3674E-06 (207, 4)	8.6081E-07 (207, 4)	4.8007E-07 (46, 5)	3.6986E-07 (46, 5)	3.0220E-07 (46, 5)
10	1.0074E-06 (242, 4)	5.3505E-07 (181, 3)	2.3630E-07 (303, 4)	1.8351E-07 (303, 4)	1.5092E-07 (303, 4)
11	5.1230E-07 (222, 4)	2.9844E-07 (184, 4)	2.8104E-07 (96, 3)	2.6484E-07 (183, 3)	2.3026E-07 (183, 3)
12	3.7458E-07 (112, 4)	7.7685E-07 (184, 4)	5.9622E-07 (184, 4)	4.6350E-07 (184, 4)	3.8144E-07 (184, 4)
13	4.7279E-07 (23, 5)	6.7335E-07 (182, 3)	2.9265E-07 (182, 3)	2.2546E-07 (182, 3)	1.8422E-07 (182, 3)
14	4.7079E-07 (282, 4)	4.8078E-07 (194, 3)	2.4037E-07 (208, 6)	1.8411E-07 (208, 6)	1.4933E-07 (208, 6)
15	4.2183E-07 (240, 5)	3.9613E-07 (194, 3)	1.6328E-07 (194, 3)	1.2283E-07 (194, 3)	1.0370E-07 (303, 3)
16	3.5813E-07 (240, 5)	1.3903E-06 (48, 6)	6.4652E-07 (48, 6)	5.0129E-07 (48, 6)	4.1152E-07 (48, 6)
17	6.3642E-07 (245, 3)	9.2802E-07 (245, 3)	4.0164E-07 (245, 3)	3.0857E-07 (245, 3)	2.5142E-07 (245, 3)
18	5.4031E-07 (245, 3)	7.6463E-07 (245, 3)	3.1378E-07 (245, 3)	2.3605E-07 (245, 3)	1.8886E-07 (245, 3)
19	3.9014E-07 (206, 4)	4.1699E-06 (236, 6)	1.9260E-06 (236, 6)	1.4766E-06 (236, 6)	1.2018E-06 (236, 6)
20	4.6753E-07 (252, 5)	1.5456E-06 (236, 6)	6.1797E-07 (236, 6)	4.4915E-07 (236, 6)	3.4996E-07 (236, 6)
21	5.8172E-07 (189, 4)	9.6478E-07 (245, 3)	5.4800E-07 (245, 3)	4.2514E-07 (245, 3)	3.4942E-07 (245, 3)
22	6.5645E-07 (283, 4)	8.2123E-07 (363, 4)	3.9295E-07 (363, 4)	3.0274E-07 (363, 4)	2.4736E-07 (363, 4)
23	1.0541E-06 (283, 4)	7.8578E-07 (283, 4)	3.3388E-07 (283, 4)	2.5562E-07 (283, 4)	2.0792E-07 (283, 4)
24	1.4807E-06 (237, 4)	8.0137E-07 (237, 4)	3.2539E-07 (284, 3)	2.4896E-07 (284, 3)	2.0227E-07 (284, 3)
25	2.4198E-06 (237, 4)	1.4327E-06 (237, 4)	6.4016E-07 (237, 4)	4.9809E-07 (237, 4)	4.1028E-07 (237, 4)
26	8.2159E-07 (247, 4)	9.0610E-07 (323, 3)	3.7395E-07 (323, 3)	2.8216E-07 (323, 3)	2.2650E-07 (323, 3)
27	7.1383E-07 (247, 4)	6.7197E-07 (141, 3)	3.0739E-07 (141, 3)	2.5017E-07 (207, 3)	2.1231E-07 (207, 3)
28	4.6128E-07 (339, 4)	5.7168E-07 (231, 3)	3.0640E-07 (231, 3)	2.7748E-07 (197, 3)	2.4911E-07 (197, 3)
29	1.0100E-06 (185, 4)	7.8835E-07 (283, 3)	3.4332E-07 (283, 3)	2.6393E-07 (283, 3)	2.1536E-07 (283, 3)
30	1.8100E-06 (185, 4)	1.2832E-06 (185, 4)	5.8784E-07 (185, 4)	4.6054E-07 (185, 4)	4.7628E-07 (137, 3)
31	1.1919E-06 (185, 4)	7.1254E-07 (185, 4)	2.7652E-07 (185, 4)	2.0301E-07 (185, 4)	1.6081E-07 (216, 3)
32	7.8283E-07 (248, 4)	5.3423E-07 (231, 4)	2.3803E-07 (231, 4)	1.8288E-07 (231, 4)	1.4900E-07 (231, 4)
33	9.7219E-07 (236, 4)	5.5886E-07 (218, 3)	4.4976E-07 (206, 3)	3.4712E-07 (206, 3)	2.8401E-07 (206, 3)
34	2.4839E-06 (236, 4)	1.5184E-06 (236, 4)	6.8292E-07 (236, 4)	5.3269E-07 (236, 4)	4.3981E-07 (236, 4)
35	4.6662E-07 (238, 4)	8.8221E-07 (236, 4)	4.0404E-07 (236, 4)	2.9287E-07 (236, 4)	2.2729E-07 (236, 4)
36	4.7422E-07 (315, 4)	6.3885E-07 (135, 3)	4.8997E-07 (236, 4)	3.7393E-07 (236, 4)	3.0354E-07 (236, 4)

Note: Day 236, Period 6 contains two consecutive hours with calm winds.

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 3-HOUR CONC= 1.2468E-06 DIRECTION= 9 DISTANCE= 3.0 KM DAY=124 TIME PERIOD= 4

SECOND HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE DIR	3.0 KM	6.0 KM	15.0 KM	20.0 KM	25.0 KM
1	4.6123E-07 (196, 4)	2.7525E-07 (233, 4)	2.6967E-07 (237, 6)	1.9099E-07 (237, 6)	1.4498E-07 (237, 6)
2	4.8865E-07 (210, 5)	3.8052E-07 (215, 4)	2.5445E-07 (124, 3)	1.9638E-07 (124, 3)	1.6082E-07 (124, 3)
3	6.4091E-07 (209, 4)	7.2750E-07 (237, 6)	4.0635E-07 (237, 6)	2.9936E-07 (237, 6)	2.3537E-07 (237, 6)
4	6.2245E-07 (209, 4)	4.7215E-07 (237, 4)	1.8655E-07 (162, 3)	1.4614E-07 (245, 5)	1.2091E-07 (245, 5)
5	8.6464E-07 (261, 5)	4.7530E-07 (206, 4)	2.0648E-07 (244, 4)	1.6324E-07 (98, 3)	1.3722E-07 (233, 4)
6	9.0711E-07 (194, 4)	5.9310E-07 (206, 4)	3.8519E-07 (216, 3)	2.9970E-07 (216, 3)	2.4687E-07 (216, 3)
7	6.0412E-07 (238, 5)	4.1848E-07 (24, 5)	1.9243E-07 (290, 4)	1.5121E-07 (290, 4)	1.2255E-07 (290, 4)
8	7.6278E-07 (248, 4)	4.0423E-07 (207, 4)	1.7421E-07 (248, 4)	1.3339E-07 (248, 4)	1.0831E-07 (248, 4)
9	1.2468E-06 (124, 4)	7.8786E-07 (46, 5)	3.7819E-07 (207, 4)	2.9305E-07 (207, 4)	2.4052E-07 (207, 4)
10	8.8120E-07 (87, 4)	4.8899E-07 (303, 4)	2.1991E-07 (181, 3)	1.6741E-07 (183, 3)	1.3427E-07 (183, 3)
11	4.9054E-07 (195, 4)	2.5422E-07 (195, 4)	1.4149E-07 (183, 3)	2.1692E-07 (96, 3)	1.7724E-07 (96, 3)
12	3.2557E-07 (225, 4)	7.7087E-07 (250, 4)	3.9052E-07 (250, 4)	3.0481E-07 (250, 4)	2.5176E-07 (250, 4)
13	3.8291E-07 (225, 4)	5.8479E-07 (184, 4)	2.7456E-07 (184, 4)	2.0405E-07 (184, 4)	1.6175E-07 (184, 4)
14	4.5095E-07 (216, 4)	4.0443E-07 (102, 4)	2.0900E-07 (194, 3)	1.6057E-07 (194, 3)	1.3083E-07 (194, 3)
15	4.1348E-07 (362, 5)	2.8111E-07 (362, 5)	1.2279E-07 (38, 5)	1.1799E-07 (303, 3)	9.8276E-08 (194, 3)
16	2.2837E-07 (216, 4)	4.2871E-07 (216, 4)	1.8699E-07 (216, 4)	1.4360E-07 (216, 4)	1.1698E-07 (216, 4)
17	3.9617E-07 (59, 4)	4.9482E-07 (45, 5)	2.2328E-07 (45, 5)	1.7373E-07 (45, 5)	1.4310E-07 (45, 5)
18	4.7451E-07 (157, 5)	5.7000E-07 (208, 5)	2.7206E-07 (208, 5)	2.0729E-07 (208, 5)	1.6785E-07 (208, 5)
19	3.8559E-07 (260, 4)	4.0983E-07 (231, 4)	3.8113E-07 (208, 5)	2.9115E-07 (208, 5)	2.3600E-07 (208, 5)
20	4.4513E-07 (205, 4)	2.7345E-07 (205, 4)	1.2942E-07 (260, 3)	1.0628E-07 (260, 3)	8.7209E-08 (260, 3)
21	4.9793E-07 (264, 4)	3.7359E-07 (359, 4)	1.7163E-07 (250, 4)	1.3598E-07 (250, 4)	1.1165E-07 (250, 4)
22	5.8601E-07 (189, 4)	4.6662E-07 (283, 4)	1.7688E-07 (283, 4)	1.2989E-07 (283, 4)	1.0209E-07 (283, 4)
23	7.0179E-07 (158, 5)	3.5573E-07 (163, 4)	1.4686E-07 (163, 4)	1.1201E-07 (163, 4)	9.0806E-08 (163, 4)
24	8.4745E-07 (283, 4)	5.7022E-07 (283, 4)	3.0526E-07 (237, 4)	2.2296E-07 (237, 4)	1.7390E-07 (237, 4)
25	5.8332E-07 (247, 4)	6.3924E-07 (86, 5)	3.3624E-07 (235, 3)	2.5370E-07 (235, 3)	2.0366E-07 (235, 3)
26	7.6925E-07 (237, 4)	4.9761E-07 (208, 5)	2.4972E-07 (338, 4)	1.9448E-07 (338, 4)	1.5991E-07 (338, 4)
27	6.4250E-07 (208, 5)	6.0400E-07 (323, 3)	2.8034E-07 (207, 3)	2.3847E-07 (141, 3)	1.9600E-07 (141, 3)
28	4.0867E-07 (54, 5)	4.0204E-07 (230, 3)	2.8121E-07 (230, 4)	2.3484E-07 (231, 3)	1.9109E-07 (231, 3)
29	6.7502E-07 (163, 4)	6.8120E-07 (291, 4)	3.0430E-07 (234, 3)	2.3757E-07 (234, 3)	1.9287E-07 (234, 3)
30	7.0713E-07 (241, 4)	1.0034E-06 (291, 4)	4.5344E-07 (291, 4)	3.5095E-07 (291, 4)	3.8154E-07 (185, 4)
31	5.8042E-07 (241, 4)	4.1236E-07 (241, 4)	2.5948E-07 (216, 3)	1.9826E-07 (216, 3)	1.5901E-07 (185, 4)
32	5.6911E-07 (229, 4)	4.2671E-07 (248, 4)	2.2232E-07 (234, 4)	1.7218E-07 (234, 4)	1.4130E-07 (234, 4)
33	9.3003E-07 (229, 4)	5.5565E-07 (229, 4)	2.4687E-07 (218, 3)	1.9107E-07 (218, 3)	1.5693E-07 (229, 4)
34	4.6738E-07 (240, 5)	7.3393E-07 (308, 3)	5.6345E-07 (210, 3)	4.3157E-07 (210, 3)	3.5089E-07 (210, 3)
35	3.8760E-07 (139, 4)	3.0356E-07 (87, 4)	2.6984E-07 (78, 4)	2.0859E-07 (78, 4)	1.7043E-07 (78, 4)
36	4.3101E-07 (309, 4)	3.7644E-07 (30, 3)	3.7704E-07 (143, 3)	2.8008E-07 (143, 3)	2.2187E-07 (143, 3)

ATTACHMENT H

PART D

Concentrations at Distances of 30.0, 35.0, 40.0, 45.0, and 50.0 km
Using Entire 1972 Meteorological Data Set

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

MAXIMUM MEAN CONC= -8.6185E-09 DIRECTION= 1 DISTANCE= 50.0 KM

ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR

DIR \ RANGE	30.0 KM	35.0 KM	40.0 KM	45.0 KM	50.0 KM
1	-2.08296E-08	-1.58832E-08	-1.25602E-08	-1.02960E-08	-8.61845E-09
2	-4.29763E-08	-3.37038E-08	-2.73112E-08	-2.27748E-08	-1.93571E-08
3	-4.48737E-08	-3.52952E-08	-2.86594E-08	-2.39101E-08	-2.03253E-08
4	-4.36753E-08	-3.38080E-08	-2.70407E-08	-2.22871E-08	-1.87286E-08
5	-7.19673E-08	-5.70773E-08	-4.66320E-08	-3.91104E-08	-3.33878E-08
6	-4.77814E-08	-3.84258E-08	-3.18603E-08	-2.71317E-08	-2.35131E-08
7	-4.44445E-08	-3.51454E-08	-2.86591E-08	-2.39753E-08	-2.04274E-08
8	-2.93083E-08	-2.31347E-08	-1.89034E-08	-1.59016E-08	-1.36453E-08
9	-4.92834E-08	-3.78143E-08	-3.00546E-08	-2.46862E-08	-2.06966E-08
10	-5.07016E-08	-4.01774E-08	-3.28948E-08	-2.77112E-08	-2.37915E-08
11	-4.00627E-08	-3.11235E-08	-2.50453E-08	-2.08226E-08	-1.76665E-08
12	-6.10344E-08	-4.75129E-08	-3.82145E-08	-3.16739E-08	-2.67612E-08
13	-7.25967E-08	-5.67497E-08	-4.57905E-08	-3.80164E-08	-3.21594E-08
14	-1.51265E-07	-1.20011E-07	-9.79689E-08	-8.19560E-08	-6.97546E-08
15	-5.89175E-08	-4.56483E-08	-3.65593E-08	-3.02536E-08	-2.55227E-08
16	-5.59049E-08	-4.33952E-08	-3.47921E-08	-2.87102E-08	-2.41524E-08
17	-6.55453E-08	-5.21685E-08	-4.27632E-08	-3.59284E-08	-3.07254E-08
18	-8.75149E-08	-7.05527E-08	-5.85608E-08	-4.98206E-08	-4.31212E-08
19	-5.84623E-08	-4.56871E-08	-3.68243E-08	-3.04989E-08	-2.57319E-08
20	-4.75229E-08	-3.72606E-08	-3.01499E-08	-2.51108E-08	-2.13055E-08
21	-1.46877E-07	-1.17577E-07	-9.68068E-08	-8.15858E-08	-6.99445E-08
22	-9.90245E-08	-7.93337E-08	-6.54920E-08	-5.54628E-08	-4.78099E-08
23	-2.26512E-07	-1.78718E-07	-1.45278E-07	-1.21188E-07	-1.02927E-07
24	-2.35391E-07	-1.87420E-07	-1.53784E-07	-1.29545E-07	-1.11096E-07
25	-3.70686E-07	-2.96424E-07	-2.43911E-07	-2.05622E-07	-1.76355E-07
26	-2.74091E-07	-2.17022E-07	-1.77058E-07	-1.48340E-07	-1.26520E-07
27	-3.27584E-07	-2.58670E-07	-2.10645E-07	-1.76385E-07	-1.50410E-07
28	-2.41203E-07	-1.91058E-07	-1.55897E-07	-1.30533E-07	-1.11267E-07
29	-2.26682E-07	-1.82621E-07	-1.51425E-07	-1.28736E-07	-1.11339E-07
30	-2.21796E-07	-1.76503E-07	-1.44596E-07	-1.21391E-07	-1.03727E-07
31	-1.26164E-07	-9.99426E-08	-8.15765E-08	-6.83698E-08	-5.83317E-08
32	-5.83585E-08	-4.61534E-08	-3.76361E-08	-3.15233E-08	-2.68842E-08
33	-1.04994E-07	-8.31597E-08	-6.78793E-08	-5.68736E-08	-4.85182E-08
34	-7.10710E-08	-5.78358E-08	-4.84624E-08	-4.15977E-08	-3.63230E-08
35	-3.79060E-08	-2.94879E-08	-2.37109E-08	-1.96502E-08	-1.66046E-08
36	-5.07589E-08	-4.05556E-08	-3.34765E-08	-2.84539E-08	-2.46377E-08

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 24-HOUR CONC= 6.7889E-08 DIRECTION= 2 DISTANCE= 30.0 KM DAY=237

HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE DIR	30.0 KM	35.0 KM	40.0 KM	45.0 KM	50.0 KM
1	2.1967E-08 (143)	1.8846E-08 (143)	1.6453E-08 (143)	1.4564E-08 (143)	1.3038E-08 (143)
2	6.7889E-08 (237)	5.8812E-08 (237)	5.1933E-08 (237)	4.6533E-08 (237)	4.2178E-08 (237)
3	5.5908E-08 (237)	4.7837E-08 (237)	4.1766E-08 (237)	3.7032E-08 (237)	3.3237E-08 (237)
4	1.3168E-08 (195)	1.1525E-08 (195)	1.0271E-08 (195)	9.2812E-09 (195)	8.4780E-09 (195)
5	1.9992E-08 (261)	1.7354E-08 (261)	1.5357E-08 (261)	1.3791E-08 (261)	1.2529E-08 (261)
6	2.9004E-08 (244)	2.5209E-08 (244)	2.2328E-08 (244)	2.0064E-08 (244)	1.8235E-08 (244)
7	1.5975E-08 (78)	1.3954E-08 (78)	1.2416E-08 (78)	1.1203E-08 (78)	1.0220E-08 (78)
8	1.3001E-08 (53)	1.1131E-08 (53)	9.7720E-09 (53)	8.7262E-09 (53)	7.8897E-09 (53)
9	3.2032E-08 (46)	2.7866E-08 (46)	2.4699E-08 (46)	2.2208E-08 (46)	2.0193E-08 (46)
10	3.0401E-08 (183)	2.7358E-08 (183)	2.4663E-08 (183)	2.2347E-08 (183)	2.0367E-08 (183)
11	1.8704E-08 (96)	1.6299E-08 (96)	1.4461E-08 (96)	1.3010E-08 (96)	1.1834E-08 (96)
12	4.0680E-08 (184)	3.5580E-08 (184)	3.1689E-08 (184)	2.8616E-08 (184)	2.6124E-08 (184)
13	1.9526E-08 (182)	1.6987E-08 (182)	1.5057E-08 (182)	1.3538E-08 (182)	1.2310E-08 (182)
14	1.5726E-08 (208)	1.3601E-08 (208)	1.1992E-08 (208)	1.0729E-08 (208)	9.7108E-09 (208)
15	1.0979E-08 (48)	1.1197E-08 (48)	1.0369E-08 (48)	9.3427E-09 (48)	8.3789E-09 (48)
16	5.1898E-08 (48)	4.5110E-08 (48)	3.9957E-08 (48)	3.5906E-08 (48)	3.2634E-08 (48)
17	3.6693E-08 (245)	3.1805E-08 (245)	2.8094E-08 (245)	2.5176E-08 (245)	2.2819E-08 (245)
18	1.9733E-08 (245)	1.6855E-08 (245)	1.4688E-08 (245)	1.2997E-08 (245)	1.1641E-08 (245)
19	2.4837E-08 (208)	2.1466E-08 (208)	1.8913E-08 (208)	2.4464E-08 (236)	3.0590E-08 (236)
20	2.6894E-08 (236)	2.6583E-08 (236)	2.4508E-08 (236)	2.2155E-08 (236)	1.9969E-08 (236)
21	1.1881E-08 (250)	1.0372E-08 (250)	9.2229E-09 (250)	8.3170E-09 (250)	7.5836E-09 (250)
22	2.6219E-08 (363)	2.2809E-08 (363)	2.0217E-08 (363)	1.8178E-08 (363)	1.6529E-08 (363)
23	2.1963E-08 (283)	1.9055E-08 (283)	1.6853E-08 (283)	1.5125E-08 (283)	1.3732E-08 (283)
24	1.7679E-08 (237)	1.4803E-08 (237)	1.2662E-08 (237)	1.1011E-08 (237)	9.7006E-09 (237)
25	1.8951E-08 (363)	1.6620E-08 (363)	1.4842E-08 (363)	1.3438E-08 (363)	1.2299E-08 (363)
26	2.3658E-08 (323)	2.0292E-08 (323)	1.7755E-08 (323)	1.5774E-08 (323)	1.4185E-08 (323)
27	2.0882E-08 (141)	1.8251E-08 (141)	1.6247E-08 (141)	1.4666E-08 (141)	1.3385E-08 (141)
28	1.5841E-08 (363)	1.3910E-08 (363)	1.2391E-08 (363)	1.1158E-08 (363)	1.0161E-08 (363)
29	1.6943E-08 (253)	1.4689E-08 (253)	1.3420E-08 (47)	1.2258E-08 (47)	1.1170E-08 (47)
30	5.0805E-08 (291)	4.4263E-08 (291)	3.9283E-08 (291)	3.5502E-08 (185)	3.2525E-08 (185)
31	1.9890E-08 (241)	1.7299E-08 (241)	1.5333E-08 (241)	1.3787E-08 (241)	1.2539E-08 (241)
32	1.5749E-08 (231)	1.3663E-08 (231)	1.2077E-08 (231)	1.0830E-08 (231)	9.8210E-09 (231)
33	3.0118E-08 (206)	2.6232E-08 (206)	2.3273E-08 (206)	2.0941E-08 (206)	1.9054E-08 (206)
34	3.9362E-08 (210)	3.4055E-08 (210)	3.0040E-08 (210)	2.6893E-08 (210)	2.4358E-08 (210)
35	1.8065E-08 (78)	1.5715E-08 (78)	1.3930E-08 (78)	1.2524E-08 (78)	1.1388E-08 (78)
36	1.9887E-08 (135)	1.7633E-08 (236)	1.7660E-08 (236)	1.7193E-08 (236)	1.6551E-08 (236)

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 24-HOUR CONC= 4.9523E-08 DIRECTION= 30 DISTANCE= 30.0 KM DAY=185

SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	30.0 KM	35.0 KM	40.0 KM	45.0 KM	50.0 KM
1	1.4420E-08 (237)	1.2291E-08 (107)	1.0808E-08 (107)	9.6484E-09 (107)	8.7162E-09 (107)
2	1.7089E-08 (124)	1.4904E-08 (124)	1.3244E-08 (124)	1.1937E-08 (124)	1.0880E-08 (124)
3	1.7077E-08 (45)	1.4856E-08 (45)	1.3167E-08 (45)	1.1837E-08 (45)	1.0761E-08 (45)
4	1.2856E-08 (245)	1.1196E-08 (245)	9.9298E-09 (245)	8.9323E-09 (245)	8.1251E-09 (245)
5	1.5967E-08 (210)	1.3791E-08 (210)	1.2146E-08 (210)	1.0858E-08 (210)	9.8216E-09 (210)
6	2.8083E-08 (216)	2.4521E-08 (216)	2.1808E-08 (216)	1.9669E-08 (216)	1.7937E-08 (216)
7	1.5117E-08 (298)	1.3150E-08 (298)	1.1666E-08 (298)	1.0501E-08 (298)	9.5588E-09 (298)
8	1.1410E-08 (248)	9.9026E-09 (290)	8.8563E-09 (290)	8.0087E-09 (290)	7.3109E-09 (290)
9	2.9712E-08 (87)	2.6241E-08 (87)	2.3506E-08 (87)	2.1302E-08 (87)	1.9490E-08 (87)
10	1.8797E-08 (87)	1.6055E-08 (87)	1.3989E-08 (87)	1.2376E-08 (87)	1.1082E-08 (87)
11	8.7789E-09 (195)	7.5153E-09 (195)	6.5996E-09 (195)	5.9009E-09 (195)	5.3463E-09 (195)
12	2.6850E-08 (250)	2.3582E-08 (250)	2.1075E-08 (250)	1.9087E-08 (250)	1.7472E-08 (250)
13	1.5915E-08 (245)	1.3570E-08 (245)	1.1793E-08 (245)	1.0401E-08 (245)	9.2842E-09 (245)
14	1.4458E-08 (48)	1.2752E-08 (48)	1.1282E-08 (48)	1.0081E-08 (48)	9.0999E-09 (48)
15	1.0220E-08 (194)	8.7364E-09 (194)	7.6176E-09 (194)	6.7438E-09 (194)	6.0425E-09 (194)
16	9.5234E-09 (216)	8.9497E-09 (216)	8.3161E-09 (216)	7.7082E-09 (216)	7.1527E-09 (216)
17	1.5296E-08 (45)	1.3384E-08 (45)	1.1925E-08 (45)	1.0774E-08 (45)	9.8400E-09 (45)
18	1.7657E-08 (208)	1.5260E-08 (208)	1.3446E-08 (208)	1.2025E-08 (208)	1.0880E-08 (208)
19	1.2540E-08 (231)	1.0879E-08 (231)	1.3448E-08 (236)	1.6909E-08 (208)	1.5294E-08 (208)
20	9.5622E-09 (260)	8.2836E-09 (260)	7.3171E-09 (260)	6.5602E-09 (260)	5.9507E-09 (260)
21	1.0739E-08 (359)	9.3163E-09 (359)	8.2351E-09 (359)	7.3843E-09 (359)	6.6965E-09 (359)
22	1.2665E-08 (189)	1.1074E-08 (189)	9.8522E-09 (189)	8.8843E-09 (189)	8.0992E-09 (189)
23	9.8985E-09 (52)	8.5159E-09 (52)	7.4745E-09 (52)	6.6614E-09 (52)	6.0087E-09 (52)
24	1.4460E-08 (283)	1.2363E-08 (283)	1.0787E-08 (283)	9.7459E-09 (186)	8.9340E-09 (186)
25	1.6337E-08 (186)	1.4002E-08 (186)	1.2241E-08 (186)	1.0865E-08 (186)	9.7590E-09 (186)
26	1.5042E-08 (363)	1.2804E-08 (363)	1.1129E-08 (363)	9.9060E-09 (226)	9.0837E-09 (226)
27	1.6281E-08 (323)	1.5337E-08 (323)	1.4008E-08 (323)	1.2667E-08 (323)	1.1437E-08 (323)
28	1.5486E-08 (237)	1.3472E-08 (237)	1.1941E-08 (237)	1.0737E-08 (237)	9.7627E-09 (237)
29	1.4020E-08 (47)	1.4382E-08 (47)	1.2981E-08 (253)	1.1640E-08 (253)	1.0559E-08 (253)
30	4.9523E-08 (185)	4.3686E-08 (185)	3.9140E-08 (185)	3.5358E-08 (291)	3.2181E-08 (291)
31	1.6935E-08 (216)	1.4647E-08 (216)	1.2914E-08 (216)	1.1554E-08 (216)	1.0457E-08 (216)
32	1.4406E-08 (195)	1.3011E-08 (195)	1.1581E-08 (195)	1.0318E-08 (195)	9.2473E-09 (195)
33	1.7493E-08 (314)	1.5082E-08 (314)	1.3255E-08 (314)	1.1823E-08 (314)	1.0785E-08 (229)
34	2.6441E-08 (147)	2.3219E-08 (147)	2.0703E-08 (147)	1.8688E-08 (147)	1.7039E-08 (147)
35	1.1473E-08 (307)	1.0017E-08 (307)	8.9078E-09 (307)	8.0330E-09 (307)	7.3245E-09 (307)
36	1.6495E-08 (236)	1.7363E-08 (135)	1.5439E-08 (135)	1.3923E-08 (135)	1.2695E-08 (135)

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 3-HOUR CONC= 1.0158E-06 DIRECTION= 19 DISTANCE= 30.0 KM DAY=236 TIME PERIOD= 6

HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	30.0 KM	35.0 KM	40.0 KM	45.0 KM	50.0 KM
1	1.8309E-07 (143, 3)	1.5542E-07 (143, 3)	1.3471E-07 (143, 3)	1.1864E-07 (143, 3)	1.0581E-07 (143, 3)
2	5.4078E-07 (237, 6)	4.6882E-07 (237, 6)	4.1422E-07 (237, 6)	3.7132E-07 (237, 6)	3.3668E-07 (237, 6)
3	2.5436E-07 (237, 4)	2.2000E-07 (237, 4)	1.9396E-07 (237, 4)	1.7354E-07 (237, 4)	1.5707E-07 (237, 4)
4	1.3288E-07 (124, 3)	1.1656E-07 (124, 3)	1.0409E-07 (124, 3)	9.4239E-08 (124, 3)	8.6239E-08 (124, 3)
5	1.2429E-07 (98, 3)	1.0672E-07 (98, 3)	9.3322E-08 (98, 3)	8.2814E-08 (98, 3)	7.5222E-08 (233, 4)
6	2.3204E-07 (244, 4)	2.0167E-07 (244, 4)	1.7863E-07 (244, 4)	1.6051E-07 (244, 4)	1.4588E-07 (244, 4)
7	1.2440E-07 (78, 4)	1.0888E-07 (78, 4)	9.7040E-08 (78, 4)	8.7685E-08 (78, 4)	8.0096E-08 (78, 4)
8	9.4519E-08 (290, 4)	8.2003E-08 (290, 4)	7.2559E-08 (290, 4)	6.5166E-08 (290, 4)	5.9214E-08 (290, 4)
9	2.5625E-07 (46, 5)	2.2292E-07 (46, 5)	1.9759E-07 (46, 5)	1.7766E-07 (46, 5)	1.6155E-07 (46, 5)
10	1.2870E-07 (303, 4)	1.1253E-07 (303, 4)	1.0021E-07 (303, 4)	9.0494E-08 (303, 4)	8.2619E-08 (303, 4)
11	1.9421E-07 (183, 3)	1.6698E-07 (183, 3)	1.4625E-07 (183, 3)	1.3006E-07 (183, 3)	1.1708E-07 (183, 3)
12	3.2544E-07 (184, 4)	2.8464E-07 (184, 4)	2.5351E-07 (184, 4)	2.2893E-07 (184, 4)	2.0899E-07 (184, 4)
13	1.5621E-07 (182, 3)	1.3590E-07 (182, 3)	1.2045E-07 (182, 3)	1.0830E-07 (182, 3)	9.8479E-08 (182, 3)
14	1.2581E-07 (208, 6)	1.0881E-07 (208, 6)	9.5932E-08 (208, 6)	8.5830E-08 (208, 6)	7.7686E-08 (208, 6)
15	9.0755E-08 (97, 3)	9.3521E-08 (97, 3)	8.9985E-08 (97, 3)	8.4430E-08 (97, 3)	7.8560E-08 (97, 3)
16	3.5034E-07 (48, 6)	3.0585E-07 (48, 6)	2.7196E-07 (48, 6)	2.4525E-07 (48, 6)	2.2362E-07 (48, 6)
17	2.1259E-07 (245, 3)	1.8443E-07 (245, 3)	1.6303E-07 (245, 3)	1.4618E-07 (245, 3)	1.3257E-07 (245, 3)
18	1.5713E-07 (245, 3)	1.3431E-07 (245, 3)	1.1711E-07 (245, 3)	1.0368E-07 (245, 3)	9.2895E-08 (245, 3)
19	1.0158E-06 (236, 6)	8.8133E-07 (236, 6)	7.7935E-07 (236, 6)	6.9929E-07 (236, 6)	6.3470E-07 (236, 6)
20	2.8500E-07 (236, 6)	2.3932E-07 (236, 6)	2.0553E-07 (236, 6)	1.7958E-07 (236, 6)	1.5906E-07 (236, 6)
21	2.9783E-07 (245, 3)	2.6031E-07 (245, 3)	2.3172E-07 (245, 3)	2.0916E-07 (245, 3)	1.9089E-07 (245, 3)
22	2.0975E-07 (363, 4)	1.8247E-07 (363, 4)	1.6174E-07 (363, 4)	1.4542E-07 (363, 4)	1.3223E-07 (363, 4)
23	1.7570E-07 (283, 4)	1.5244E-07 (283, 4)	1.3482E-07 (283, 4)	1.2100E-07 (283, 4)	1.0986E-07 (283, 4)
24	1.7071E-07 (284, 3)	1.4789E-07 (284, 3)	1.3061E-07 (284, 3)	1.1705E-07 (284, 3)	1.0611E-07 (284, 3)
25	3.5032E-07 (237, 4)	3.0662E-07 (237, 4)	2.7327E-07 (237, 4)	2.4692E-07 (237, 4)	2.2555E-07 (237, 4)
26	1.8910E-07 (323, 3)	1.6222E-07 (323, 3)	1.4196E-07 (323, 3)	1.2614E-07 (323, 3)	1.1344E-07 (323, 3)
27	1.8207E-07 (207, 3)	1.5902E-07 (207, 3)	1.4127E-07 (207, 3)	1.2723E-07 (207, 3)	1.1586E-07 (207, 3)
28	2.1496E-07 (197, 3)	1.8728E-07 (197, 3)	1.6578E-07 (197, 3)	1.4878E-07 (197, 3)	1.3505E-07 (197, 3)
29	1.8245E-07 (283, 3)	1.5862E-07 (283, 3)	1.4053E-07 (283, 3)	1.2631E-07 (283, 3)	1.1482E-07 (283, 3)
30	5.0569E-07 (137, 3)	4.6246E-07 (137, 3)	4.1636E-07 (137, 3)	3.7658E-07 (137, 3)	3.4380E-07 (137, 3)
31	1.3548E-07 (216, 3)	1.1718E-07 (216, 3)	1.0331E-07 (216, 3)	9.2430E-08 (216, 3)	9.7303E-08 (195, 3)
32	1.2600E-07 (231, 4)	1.0930E-07 (231, 4)	9.6619E-08 (231, 4)	8.6637E-08 (231, 4)	7.8568E-08 (231, 4)
33	2.4110E-07 (206, 3)	2.0994E-07 (206, 3)	1.8623E-07 (206, 3)	1.6756E-07 (206, 3)	1.5245E-07 (206, 3)
34	3.7635E-07 (236, 4)	3.3007E-07 (236, 4)	2.9473E-07 (236, 4)	2.6680E-07 (236, 4)	2.4413E-07 (236, 4)
35	1.8424E-07 (236, 4)	1.5393E-07 (236, 4)	1.3151E-07 (236, 4)	1.1429E-07 (236, 4)	1.0069E-07 (236, 4)
36	2.5616E-07 (236, 4)	2.2203E-07 (236, 4)	1.9622E-07 (236, 4)	1.7601E-07 (236, 4)	1.5973E-07 (236, 4)

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY SECOND MAXIMUM 3-HOUR CONC= 3.2743E-07 DIRECTION= 30 DISTANCE= 30.0 KM DAY=185 TIME PERIOD= 4

SECOND HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	30.0 KM	35.0 KM	40.0 KM	45.0 KM	50.0 KM
1	1.1536E-07 (237, 6)	9.4857E-08 (237, 6)	7.9913E-08 (237, 6)	6.8594E-08 (237, 6)	5.9759E-08 (237, 6)
2	1.3671E-07 (124, 3)	1.1923E-07 (124, 3)	1.0595E-07 (124, 3)	9.5494E-08 (124, 3)	8.7039E-08 (124, 3)
3	1.9290E-07 (237, 6)	1.6270E-07 (237, 6)	1.4016E-07 (237, 6)	1.2272E-07 (237, 6)	1.0883E-07 (237, 6)
4	1.0285E-07 (245, 5)	8.9567E-08 (245, 5)	7.9438E-08 (245, 5)	7.1458E-08 (245, 5)	6.5001E-08 (245, 5)
5	1.1708E-07 (233, 4)	1.0240E-07 (233, 4)	9.1215E-08 (233, 4)	8.2383E-08 (233, 4)	7.4385E-08 (98, 3)
6	2.1079E-07 (216, 3)	1.8449E-07 (216, 3)	1.6443E-07 (216, 3)	1.4857E-07 (216, 3)	1.3572E-07 (216, 3)
7	1.0314E-07 (290, 4)	8.9170E-08 (290, 4)	7.8620E-08 (290, 4)	7.0367E-08 (290, 4)	6.3731E-08 (290, 4)
8	9.1280E-08 (248, 4)	7.8928E-08 (248, 4)	6.9541E-08 (248, 4)	6.2158E-08 (248, 4)	5.6191E-08 (248, 4)
9	2.0470E-07 (207, 4)	1.7862E-07 (207, 4)	1.5875E-07 (207, 4)	1.4306E-07 (207, 4)	1.3035E-07 (207, 4)
10	1.1146E-07 (183, 3)	9.4908E-08 (183, 3)	8.2404E-08 (183, 3)	7.2646E-08 (183, 3)	6.5904E-08 (209, 6)
11	1.5029E-07 (96, 3)	1.3074E-07 (96, 3)	1.1589E-07 (96, 3)	1.0420E-07 (96, 3)	9.4746E-08 (96, 3)
12	2.1549E-07 (250, 4)	1.8903E-07 (250, 4)	1.6881E-07 (250, 4)	1.5283E-07 (250, 4)	1.3986E-07 (250, 4)
13	1.3358E-07 (184, 4)	1.1350E-07 (184, 4)	9.9212E-08 (138, 3)	8.8925E-08 (138, 3)	8.0645E-08 (138, 3)
14	1.1564E-07 (48, 4)	1.0193E-07 (48, 4)	9.0176E-08 (48, 4)	8.0578E-08 (48, 4)	7.2743E-08 (48, 4)
15	8.8563E-08 (303, 3)	7.7036E-08 (303, 3)	6.8298E-08 (303, 3)	6.1434E-08 (303, 3)	5.5893E-08 (303, 3)
16	9.8904E-08 (216, 4)	8.5796E-08 (216, 4)	7.5835E-08 (216, 4)	6.7998E-08 (216, 4)	6.1664E-08 (216, 4)
17	1.2219E-07 (45, 5)	1.0695E-07 (45, 5)	9.5312E-08 (45, 5)	8.6123E-08 (45, 5)	7.8670E-08 (45, 5)
18	1.4126E-07 (208, 5)	1.2208E-07 (208, 5)	1.0757E-07 (208, 5)	9.6199E-08 (208, 5)	8.7041E-08 (208, 5)
19	1.9870E-07 (208, 5)	1.7173E-07 (208, 5)	1.5130E-07 (208, 5)	1.3527E-07 (208, 5)	1.2235E-07 (208, 5)
20	7.3962E-08 (260, 3)	6.4343E-08 (260, 3)	5.7032E-08 (260, 3)	5.1279E-08 (260, 3)	4.6627E-08 (260, 3)
21	9.5048E-08 (250, 4)	8.2976E-08 (250, 4)	7.3783E-08 (250, 4)	6.6536E-08 (250, 4)	6.0669E-08 (250, 4)
22	9.0211E-08 (59, 3)	8.2081E-08 (59, 3)	7.3662E-08 (59, 3)	6.6658E-08 (59, 3)	6.0796E-08 (59, 3)
23	7.6502E-08 (163, 4)	6.6467E-08 (39, 5)	5.8917E-08 (39, 5)	5.3399E-08 (285, 3)	4.9032E-08 (285, 3)
24	1.4143E-07 (237, 4)	1.1842E-07 (237, 4)	1.0130E-07 (237, 4)	8.9006E-08 (70, 3)	8.0933E-08 (70, 3)
25	1.7351E-07 (86, 5)	1.5201E-07 (86, 5)	1.3559E-07 (86, 5)	1.2262E-07 (86, 5)	1.1210E-07 (86, 5)
26	1.3626E-07 (338, 4)	1.1904E-07 (338, 4)	1.0591E-07 (338, 4)	9.5566E-08 (338, 4)	8.7188E-08 (338, 4)
27	1.6706E-07 (141, 3)	1.4602E-07 (141, 3)	1.2998E-07 (141, 3)	1.1733E-07 (141, 3)	1.0708E-07 (141, 3)
28	1.6149E-07 (231, 3)	1.4009E-07 (231, 3)	1.2386E-07 (231, 3)	1.1113E-07 (231, 3)	1.0086E-07 (231, 3)
29	1.6232E-07 (234, 3)	1.4024E-07 (234, 3)	1.2354E-07 (234, 3)	1.1045E-07 (234, 3)	9.9917E-08 (234, 3)
30	3.2743E-07 (185, 4)	2.8788E-07 (185, 4)	2.5763E-07 (185, 4)	2.3368E-07 (185, 4)	2.1421E-07 (185, 4)
31	1.2979E-07 (185, 4)	1.0901E-07 (185, 4)	9.3513E-08 (185, 4)	8.1526E-08 (185, 4)	8.3659E-08 (216, 3)
32	1.2029E-07 (234, 4)	1.0501E-07 (234, 4)	9.3374E-08 (234, 4)	8.4204E-08 (234, 4)	7.6778E-08 (234, 4)
33	1.3400E-07 (229, 4)	1.1728E-07 (229, 4)	1.0453E-07 (229, 4)	9.4448E-08 (229, 4)	8.6274E-08 (229, 4)
34	2.9632E-07 (210, 3)	2.5688E-07 (210, 3)	2.2698E-07 (210, 3)	2.0352E-07 (210, 3)	1.8461E-07 (210, 3)
35	1.4452E-07 (78, 4)	1.2572E-07 (78, 4)	1.1144E-07 (78, 4)	1.0019E-07 (78, 4)	9.1106E-08 (78, 4)
36	1.8309E-07 (143, 3)	1.5542E-07 (143, 3)	1.3471E-07 (143, 3)	1.1864E-07 (143, 3)	1.0581E-07 (143, 3)

ATTACHMENT H

PART E

24-Hour Concentrations on Day 249 at Distances of 0.8, 1.2, 1.4, 1.6, and 1.8 km.

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 24-HOUR CONC= 2.1302E-07 DIRECTION= 9 DISTANCE= 1.2 KM DAY=249

HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.8 KM	1.2 KM	1.4 KM	1.6 KM	1.8 KM
1	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
2	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
3	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
4	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
5	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
6	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
7	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
8	0. (0)	1.2438E-07 (249)	9.7874E-08 (249)	8.3329E-08 (249)	7.5562E-08 (249)
9	0. (0)	2.1302E-07 (249)	1.5888E-07 (249)	1.3103E-07 (249)	1.1694E-07 (249)
10	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
11	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
12	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
13	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
14	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
15	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
16	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
17	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
18	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
19	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
20	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
21	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
22	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
23	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
24	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
25	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
26	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
27	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
28	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
29	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
30	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
31	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
32	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
33	4.1667E-32 (249)	4.1667E-32 (249)	4.1667E-32 (249)	4.1667E-32 (249)	4.1667E-32 (249)
34	4.1667E-32 (249)	4.1667E-32 (249)	4.1667E-32 (249)	4.1667E-32 (249)	4.1667E-32 (249)
35	4.1667E-32 (249)	4.1667E-32 (249)	4.1667E-32 (249)	4.1667E-32 (249)	4.1667E-32 (249)
36	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)

ATTACHMENT H

PART F

24-Hour Concentrations on Day 189 at Distances of 0.8, 1.2, 1.4, 1.6, and 1.8 km.

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 24-HOUR CONC= 2.0823E-07 DIRECTION= 9 DISTANCE= 1.2 KM DAY=189

HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.8 KM	1.2 KM	1.4 KM	1.6 KM	1.8 KM
1	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)
2	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)
3	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)
4	0. (0)	5.2372E-12 (189)	2.4818E-12 (189)	1.2522E-12 (189)	7.1935E-13 (189)
5	0. (0)	1.8767E-10 (189)	1.0188E-10 (189)	5.8154E-11 (189)	3.7420E-11 (189)
6	0. (0)	3.2396E-09 (189)	1.9595E-09 (189)	1.2339E-09 (189)	8.6903E-10 (189)
7	0. (0)	2.6939E-08 (189)	1.7659E-08 (189)	1.1962E-08 (189)	9.0100E-09 (189)
8	0. (0)	1.0791E-07 (189)	7.4565E-08 (189)	5.2987E-08 (189)	4.1704E-08 (189)
9	0. (0)	2.0823E-07 (189)	1.4752E-07 (189)	1.0723E-07 (189)	8.6177E-08 (189)
10	0. (0)	1.9356E-07 (189)	1.3675E-07 (189)	9.9154E-08 (189)	7.9500E-08 (189)
11	0. (0)	8.6670E-08 (189)	5.9394E-08 (189)	4.1889E-08 (189)	3.2742E-08 (189)
12	0. (0)	1.7338E-08 (189)	1.1554E-08 (189)	7.8630E-09 (189)	5.9233E-09 (189)
13	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
14	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
15	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
16	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
17	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
18	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
19	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
20	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
21	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
22	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
23	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
24	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
25	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
26	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
27	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
28	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
29	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
30	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
31	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
32	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
33	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
34	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
35	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)
36	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)	4.1667E-32 (189)

ATTACHMENT H

PART G

24-Hour Concentrations on Day 48 at Distances of 5.0, 5.5, 6.5, 8.0, and 10.0 km.

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 24-HOUR CONC= 2.2277E-07 DIRECTION= 16 DISTANCE= 5.5 KM DAY= 48

HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	5.0 KM	5.5 KM	6.5 KM	8.0 KM	10.0 KM
1	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)
2	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)
3	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)
4	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)
5	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)	4.1667E-32 (48)
6	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
7	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
8	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
9	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
10	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
11	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
12	1.1124E-12 (48)	8.4134E-13 (48)	4.8669E-13 (48)	2.3581E-13 (48)	1.0379E-13 (48)
13	0. (0)	0. (0)	0. (0)	0. (0)	2.5052E-10 (48)
14	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
15	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
16	2.1062E-07 (48)	2.2277E-07 (48)	2.0486E-07 (48)	1.7182E-07 (48)	1.4079E-07 (48)
17	0. (0)	0. (0)	0. (0)	0. (0)	1.2511E-08 (48)
18	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
19	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
20	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
21	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
22	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
23	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
24	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
25	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
26	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
27	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
28	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
29	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
30	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
31	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
32	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
33	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
34	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
35	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)
36	0. (0)	0. (0)	0. (0)	0. (0)	0. (0)

ATTACHMENT H

PART H

3-Hour Concentrations on Day 236 at Distances of 2.5, 3.5, 4.0, 4.5, and 5.0 km.

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 3-HOUR CONC= 3.9162E-06 DIRECTION= 19 DISTANCE= 5.5 KM DAY=236 TIME PERIOD= 6

HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	2.5 KM	3.5 KM	4.5 KM	5.0 KM	5.5 KM
1	1.0000E-30 (236, 6)	1.0000E-30 (236, 6)	1.0391E-15 (236, 5)	2.8653E-15 (236, 5)	2.5717E-15 (236, 5)
2	1.0000E-30 (236, 6)	1.0000E-30 (236, 6)	1.0000E-30 (236, 6)	1.0000E-30 (236, 6)	1.0000E-30 (236, 6)
3	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
4	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
5	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
6	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
7	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
8	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
9	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
10	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
11	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
12	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
13	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
14	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
15	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	5.4441E-20 (236, 6)	1.4108E-19 (236, 6)	9.6794E-20 (236, 6)
16	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.5016E-14 (236, 6)	9.0876E-14 (236, 6)	8.3462E-14 (236, 6)
17	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.5673E-11 (236, 6)	1.2220E-09 (236, 6)	1.3967E-09 (236, 6)
18	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	3.5424E-07 (236, 6)	4.6928E-07 (236, 6)
19	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	2.6912E-06 (236, 6)	3.9162E-06 (236, 6)
20	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	9.4430E-07 (236, 6)	1.4491E-06 (236, 6)
21	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.4741E-08 (236, 6)	2.1474E-08 (236, 6)
22	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	5.7664E-12 (236, 6)	7.2205E-12 (236, 6)
23	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	4.6950E-17 (236, 6)	4.6549E-17 (236, 6)
24	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
25	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
26	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
27	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
28	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)	1.0000E-30 (236, 1)
29	2.4456E-15 (236, 4)	6.2779E-16 (236, 4)	1.2795E-16 (236, 4)	6.3159E-17 (236, 4)	3.2695E-17 (236, 4)
30	3.3393E-12 (236, 4)	1.5469E-12 (236, 4)	5.1296E-13 (236, 4)	3.1458E-13 (236, 4)	1.9957E-13 (236, 4)
31	9.4916E-10 (236, 4)	6.9793E-10 (236, 4)	3.3874E-10 (236, 4)	2.4619E-10 (236, 4)	1.8313E-10 (236, 4)
32	5.6162E-08 (236, 4)	5.7655E-08 (236, 4)	3.6845E-08 (236, 4)	3.0273E-08 (236, 4)	2.5261E-08 (236, 4)
33	6.9140E-07 (236, 4)	8.7201E-07 (236, 4)	6.6011E-07 (236, 4)	5.8489E-07 (236, 4)	5.2383E-07 (236, 4)
34	1.5082E-06 (236, 4)	2.3651E-06 (236, 4)	1.9414E-06 (236, 4)	1.7762E-06 (236, 4)	1.6370E-06 (236, 4)
35	1.0000E-30 (236, 6)	1.0000E-30 (236, 6)	3.4582E-07 (236, 4)	6.6440E-07 (236, 4)	8.2095E-07 (236, 4)
36	1.0000E-30 (236, 6)	1.0000E-30 (236, 6)	2.1436E-11 (236, 5)	7.3455E-11 (236, 5)	8.0764E-11 (236, 5)

ATTACHMENT H

PART I

3-Hour Concentrations on Day 189 at Distances of 0.8, 1.2, 1.4, 1.6, and 1.8 km.

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 3-HOUR CONC= 1.9656E-06 DIRECTION= 22 DISTANCE= 1.2 KM DAY=189 TIME PERIOD= 5

HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE / DIR	.8 KM	1.2 KM	1.4 KM	1.6 KM	1.8 KM
1	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
2	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
3	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
4	1.0000E-30 (189, 1)	4.1897E-11 (189, 4)	1.9854E-11 (189, 4)	1.0018E-11 (189, 4)	5.7548E-12 (189, 4)
5	1.0000E-30 (189, 1)	1.5014E-09 (189, 4)	8.1502E-10 (189, 4)	4.6523E-10 (189, 4)	2.9936E-10 (189, 4)
6	1.0000E-30 (189, 1)	2.5916E-08 (189, 4)	1.5676E-08 (189, 4)	9.8714E-09 (189, 4)	6.9522E-09 (189, 4)
7	1.0000E-30 (189, 1)	2.1551E-07 (189, 4)	1.4127E-07 (189, 4)	9.5699E-08 (189, 4)	7.2080E-08 (189, 4)
8	1.0000E-30 (189, 1)	8.6328E-07 (189, 4)	5.9652E-07 (189, 4)	4.2389E-07 (189, 4)	3.3363E-07 (189, 4)
9	1.0000E-30 (189, 1)	1.6658E-06 (189, 4)	1.1802E-06 (189, 4)	8.5787E-07 (189, 4)	6.8941E-07 (189, 4)
10	1.0000E-30 (189, 1)	1.5485E-06 (189, 4)	1.0940E-06 (189, 4)	7.9324E-07 (189, 4)	6.3600E-07 (189, 4)
11	1.0000E-30 (189, 1)	6.9341E-07 (189, 4)	4.7517E-07 (189, 4)	3.3512E-07 (189, 4)	2.6194E-07 (189, 4)
12	1.0000E-30 (189, 1)	1.4958E-07 (189, 4)	9.6700E-08 (189, 4)	6.4687E-08 (189, 4)	4.8161E-08 (189, 4)
13	1.0000E-30 (189, 1)	1.5543E-08 (189, 4)	9.2206E-09 (189, 4)	5.7049E-09 (189, 4)	3.9533E-09 (189, 4)
14	1.0000E-30 (189, 1)	7.7804E-10 (189, 4)	4.1195E-10 (189, 4)	2.2988E-10 (189, 4)	1.4487E-10 (189, 4)
15	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
16	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
17	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
18	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	8.0427E-08 (189, 5)	1.0711E-07 (189, 5)	1.0334E-07 (189, 5)
19	7.4651E-07 (189, 5)	1.2916E-06 (189, 5)	8.7988E-07 (189, 5)	6.0890E-07 (189, 5)	4.4203E-07 (189, 5)
20	8.6411E-07 (189, 5)	1.7613E-06 (189, 5)	1.1990E-06 (189, 5)	8.2921E-07 (189, 5)	6.0372E-07 (189, 5)
21	2.1602E-07 (189, 5)	1.8610E-06 (189, 5)	1.2711E-06 (189, 5)	8.7851E-07 (189, 5)	6.4529E-07 (189, 5)
22	1.0000E-30 (189, 1)	1.9656E-06 (189, 5)	1.3742E-06 (189, 5)	9.6785E-07 (189, 5)	7.2898E-07 (189, 5)
23	1.0000E-30 (189, 1)	1.4316E-06 (189, 5)	1.0004E-06 (189, 5)	7.0356E-07 (189, 5)	5.2989E-07 (189, 5)
24	1.0000E-30 (189, 1)	5.4478E-07 (189, 5)	3.6811E-07 (189, 5)	2.5099E-07 (189, 5)	1.8375E-07 (189, 5)
25	1.0000E-30 (189, 2)	1.0127E-07 (189, 5)	6.4235E-08 (189, 5)	4.1350E-08 (189, 5)	2.8711E-08 (189, 5)
26	1.0000E-30 (189, 2)	9.0881E-09 (189, 5)	5.2613E-09 (189, 5)	3.1171E-09 (189, 5)	2.0053E-09 (189, 5)
27	1.0000E-30 (189, 2)	3.9310E-10 (189, 5)	2.0199E-10 (189, 5)	1.0739E-10 (189, 5)	6.2539E-11 (189, 5)
28	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)
29	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)
30	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)
31	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)	1.0000E-30 (189, 2)
32	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
33	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
34	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
35	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)
36	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)	1.0000E-30 (189, 1)

ATTACHMENT H

PART J

3-Hour Concentrations on Day 237 at Distances of 2.6, 2.8, 3.2, and 3.6 km.

PLANT NAME: FORT MEADE SULFURIC ACID POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3

YEARLY MAXIMUM 3-HOUR CONC= 2.4081E-06 DIRECTION= 25 DISTANCE= 3.2 KM DAY=237 TIME PERIOD= 4

HIGHEST 3-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE DIR	2.6 KM	2.8 KM	3.2 KM	3.4 KM	3.6 KM
1	1.0000E-30 (237, 2)	1.0000E-30 (237, 2)	1.0000E-30 (237, 2)	1.0000E-30 (237, 2)	1.0000E-30 (237, 2)
2	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
3	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
4	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	3.9878E-08 (237, 6)
5	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.3419E-09 (237, 6)
6	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	5.6787E-12 (237, 6)
7	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	4.3322E-15 (237, 6)
8	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
9	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
10	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
11	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
12	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
13	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
14	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
15	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
16	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
17	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
18	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
19	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
20	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
21	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
22	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)	1.0000E-30 (237, 1)
23	1.0431E-07 (237, 4)	1.4412E-07 (237, 4)	1.5413E-07 (237, 4)	1.4713E-07 (237, 4)	1.3834E-07 (237, 4)
24	1.1556E-06 (237, 4)	1.4108E-06 (237, 4)	1.4625E-06 (237, 4)	1.4078E-06 (237, 4)	1.3416E-06 (237, 4)
25	1.8585E-06 (237, 4)	2.2876E-06 (237, 4)	2.4081E-06 (237, 4)	2.3346E-06 (237, 4)	2.2403E-06 (237, 4)
26	6.1338E-07 (237, 4)	7.4066E-07 (237, 4)	7.5226E-07 (237, 4)	7.1718E-07 (237, 4)	6.7719E-07 (237, 4)
27	4.1547E-08 (237, 4)	4.7884E-08 (237, 4)	4.4587E-08 (237, 4)	4.0811E-08 (237, 4)	3.7055E-08 (237, 4)
28	5.7753E-10 (237, 4)	6.1816E-10 (237, 4)	5.0141E-10 (237, 4)	4.3019E-10 (237, 4)	3.6703E-10 (237, 4)
29	1.6476E-12 (237, 4)	1.5935E-12 (237, 4)	1.0699E-12 (237, 4)	8.4001E-13 (237, 4)	6.5810E-13 (237, 4)
30	9.6466E-16 (237, 4)	8.2021E-16 (237, 4)	4.3311E-16 (237, 4)	3.0384E-16 (237, 4)	2.1360E-16 (237, 4)
31	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)
32	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)
33	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	2.5697E-17 (237, 6)
34	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	1.0000E-30 (237, 4)	9.2275E-14 (237, 6)
35	1.0000E-30 (237, 7)	1.0000E-30 (237, 7)	1.0000E-30 (237, 7)	1.0000E-30 (237, 7)	1.0000E-30 (237, 7)
36	1.0000E-30 (237, 7)	1.0000E-30 (237, 7)	1.0000E-30 (237, 7)	1.0000E-30 (237, 7)	1.0000E-30 (237, 7)

ATTACHMENT H

PART K

CRSTER Modifications

Note: The attached minor modifications (consisting of resetting some initialization statements) were made in the CRSTER Model used for this analysis. Without these modifications, execution of the program will terminate when printing out results if all of the maximum annual mean concentrations are negative as they are in this case. A comparsion was made on several days of meteorological data using the modified and unmodified forms of CRSTER, and the modifications appear not to have any affect on the actual concentrations calculated.

NOTE: ALL CHANGES ARE IN SUBROUTINE CRS

```
EQUIVALENCE (QTAPE1(1),CHI(1)),(QTAPE2(1),CHI25(1)),(QTAPE3(1),
*CHI26(1)),(TAPIN(1),JYR),(DMAXYR(1),JMAX3(1)),(DX(1),JM(1))
DATA HMAXT,DMAXT,NNN,MMM/-1.E+30,-1.E+30,1,1,1/
DATA IHC,P/6,13,18,24,.1,.15,.2,.25,.3,.3/
DATA DTH/-50.,-40.,-30.,-20.,-10.,0.,10.,20.,30.,40.,50./
DATA LOOP/1,1,2,3,4,4,11,11,10,9,8,8/
```

Original statement is:

```
DATA HMAXT,DMAXT,NNN,MMM/0.,0.,1,1,1/
```

```
C***RE-INITIALIZE DAILY AVERAGE AT BEGINNING OF EACH DAY***
 1000 DO 1310 IR=1,180
 1310 CHI25(IR)=1.0E-30
      TDAY=TDAY+1.
      DMAXT=-1.E+30
      HMAXT=-1.E+30
C***INPUT INFORMATION FROM MET FILE***
```

Original statements are:

```
DMAXT=0.
HMAXT=0.
```

```
C***CALCULATE ANNUAL MEANS AND DETERMINE THE MAXIMUM
      IST1=1
      K1=1
      AMMAX=-1.E+30
      MAXI=0
      DO 5200 IR=1,180
```

Original statement is:

```
AMMAX=0.
```

State of Florida

IN GOD WE TRUST

Department of State

I certify from the records of this office that UNITED STATES STEEL CORPORATION, is a corporation organized under the laws of the State of Delaware, and is authorized to transact business within the State of Florida.

The charter number for this corporation is 819214.

I further certify that said corporation has filed all annual reports and has paid all annual report filing fees due this office through December 31, 1979, and its status is active.

Given under my hand and the
Great Seal of the State of Florida,
at Tallahassee, the Capital, this the
3rd day of March, 1980.

George Firestone

GREAT SEAL OF THE STATE OF FLORIDA
IN GOD WE TRUST

George Firestone
Secretary of State

CER 101 Rev. 5-79

AC 53-33820

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Air Pollution [X] New[1] [ ] Existing[1]

APPLICATION TYPE: [X] Construction [ ] Operation [ ] Modification

COMPANY NAME: USS Agri-Chemicals COUNTY: Polk

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Phosphoric Acid Plant - Train B

SOURCE LOCATION: Street Highway 630 West City Ft. Meade

UTM: East 416.07 (Zone 17) North 3068.70

Latitude ___ ° ___ ' ___ "N Longitude ___ ° ___ ' ___ "W

APPLICANT NAME AND TITLE: G. W. Beck, Manager, Florida Phosphate Operations

APPLICANT ADDRESS: P.O. Box 150, Bartow, Florida 33830

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of USS Agri-Chemicals

I certify that the statements made in this application for a Construction 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 provision 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 non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: George W Beck

George W. Beck, Manager, Fla Phosphate Operations
Name and Title (Please Type)

Date: 8/5/80 Telephone No. 813-533-0471

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

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 judgment, 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, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed: James H Carroll

James H. Carroll
Name (Please Type)

USS Agri-Chemicals
Company Name (Please Type)

P. O. Box 150, Bartow, Fl 33830
Mailing Address (Please Type)

(Affix Seal)

JAMES H. CARROLL CERTIFICATE NO. 19407 STATE OF FLORIDA REGISTERED ENGINEER

Florida Registration No. 19407 Date: 8/5/80 Telephone No. 813-533-0471

[1]See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

This phosphoric acid plant uses wet rock grinding to save energy and reduce particulate emissions, and includes a processing section for recovery of fluorine. Emissions will be in full compliance with Federal New Source Performance Standards and Florida Emission Limiting Standards. (Also see attachments.)

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction March 1981 Completion of Construction March 1983

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

1 - Scrubber System for Reaction and Filtration Area	$1,375,000
*1/2 - Scrubber System for Clarification and Storage Area	425,000
*1/2 - Fluorine Recovery System	1,800,000
*Note: These systems common to Train A and Train B	$2,600,000

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Existing plant to be replaced by the new plant has operating permit A053-4563, issued 11/15/77, expiring 11/10/82. The permitted capacity of the existing plant is 321 tons/day P_2O_5. The existing plant will be shut down as soon as the new plant is tested for service.

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ____ Yes X No

F. Normal equipment operating time: *hrs/day 24 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr ____ ;

if seasonal, describe:

*Plant will be shut down only when required for repairs.

G. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No
   a. If yes, has "offset" been applied?
   b. If yes, has "Lowest Achievable Emission Rate" been applied?
   c. If yes, list non-attainment pollutants.
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII. No (see Attachment H)
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? Yes
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Sulfuric Acid	N/A			Pt. 2 on Atch E
Wet Phosphate Rock	Fluorine	3.5	233,510	Pt. 1 on Atch E
		(dry basis)	(dry basis)	

B. Process Rate, if applicable: (See Section V, Item 1)

946 TPD P_2O_5

1. Total Process Input Rate (lbs/hr): 233,510 lbs/hr phosphate rock; 70,510 lbs/hr P_2O_5
2. Product Weight (lbs/hr): 64,165 lbs/hr P_2O_5 770 TPH

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Fluorides	0.71 x10	2.7*	0.02 lb F/ton P_2O_5	0.71	48	181*	Pts. 20 &
	17.04		input				21 Atch E
Particulates -	See Attachment G						
*Based on expected maximum P_2O_5 input of 265,900 T/yr. ~730 STPD P_2O_5							

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5]
Venturi Cyclone	F	99%	N/A	*
Venturi Cyclone	F	95%	N/A	*
*Vendor guarantee; see Attachment A.				

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 0.1 pounds per million BTU heat input)

[3] Calculated from operating rate and applicable standard

[4] Emission, if source operated without control (See Section V, Item 3)

[5] If Applicable

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
None			

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: ______ Percent Ash: ______

Density: ______ lbs/gal Typical Percent Nitrogen: ______

Heat Capacity: ______ BTU/lb ______ BTU/gal

Other Fuel Contaminants (which may cause air pollution): ______

F. If applicable, indicate the percent of fuel used for space heating. Annual Average ______ Maximum ______

G. Indicate liquid or solid wastes generated and method of disposal.

Gypsum slurry is sent to on-site gypsum disposal area. Water is recycled.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):*

Stack Height: 75 ft. Stack Diameter: 3.4 ft.

Gas Flow Rate: 18000 ACFM Gas Exit Temperature: 100 °F.

Water Vapor Content: Saturated % Velocity: 33.3 FPS

*For Point 20 on Attachment E. (Note: Characteristics for the single clarification and storage area scrubber stack are given in Train A application.)

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste ______

Total Weight Incinerated (lbs/hr) ______ Design Capacity (lbs/hr) ______

Approximate Number of Hours of Operation per day ______ days/week ______

Manufacturer ______

Date Constructed ______ Model No. ______

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

Stack Height: ______________ ft. Stack Diameter ______________ Stack Temp. ______________

Gas Flow Rate: ______________ ACFM ______________ DSCFM* Velocity ______________ FPS

*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 devices: ______________

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 where required for this application.

1. Total process input rate and product weight — show derivation. (See Attachment B)
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.,) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made. (See Attachment B)
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). (See Attachment B)
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, etc.). (See Attachment B)
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3, and 5 should be consistent: actual emissions = potential (1-efficiency). (See Attachment A)
6. 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. (See Attachment E)
7. An 8½" x 11" plot plan showing the 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 relevant portion of USGS topographic map). (See Attachment D)
8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram. (See Attachment F)

9. An application fee of $20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
[X] Yes [ ] No

Contaminant	Rate or Concentration
Total Fluorides	0.02 lbs fluorides per ton of equivalent P_2O_5 feed.

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) [ ] Yes [X] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
Total Fluorides	0.02 lbs fluorides per ton of equivalent P_2O_5 feed.

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:
5. Useful Life:
6. Operating Costs:
7. Energy:
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

10. Stack Parameters

a. Height: ft. b. Diameter: ft.

c. Flow Rate: ACFM d. Temperature: °F

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy*: h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy**: h. Maintenance Costs:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power — KWH design rate.

3.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Life: f. Operating Cost:

g. Energy: h. Maintenance Cost:

*Explain method of determining efficiency above.

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space and operate within proposed levels:

4.

a. Control Device

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device: Two Venturi Cyclone Scrubbers and Fluorine Recovery System
2. Efficiency*: 99% and 95%
3. Capital Cost: $2,600,000
4. Life: 20 years
5. Operating Cost: $200,000 per year
6. Energy:
7. Maintenance Cost: $130,000 per year
8. Manufacturer: Badger America, Inc.
9. Other locations where employed on similar processes:

a.

(1) Company: Farmland Industries

(2) Mailing Address: P.O. Box 960

(3) City: Bartow

(4) State: Florida 33830

(5) Environmental Manager: Jack Harwell

(6) Telephone No.: (813) 425-4981

*Explain method of determining efficiency above. Based on manufacturer performance guarantees.

(7) Emissions*:

Contaminant	Rate or Concentration
Total Fluorides	0.02 lbs F/ton P_2O_5 feed

(8) Process Rate*:

b.

(1) Company:

(2) Mailing Address:

(3) City:

(4) State:

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

10. Reason for selection and description of systems:

(See Attachment C)

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION V[illegible] - PREVENTION OF SIGNIFICANT DETERIORATION

See Attachment H

A. Company Monitored Data

1. ____________ no sites ____________ TSP ____________ ( ) SO^2* ____________ Wind spd/dir

   Period of monitoring ____ / ____ / ____ to ____ / ____ / ____
   month day year month day year

   Other data recorded ____

   Attach all data or statistical summaries to this application.

2. Instrumentation, Field and Laboratory

   a) Was instrumentation EPA referenced or its equivalent? ____ Yes ____ No

   b) Was instrumentation calibrated in accordance with Department procedures? ____ Yes ____ No ____ Unknown

B. Meteorological Data Used for Air Quality Modeling

1. ______ Year(s) of data from ____ / ____ / ____ to ____ / ____ / ____
   month day year month day year

2. Surface data obtained from (location) ____

3. Upper air (mixing height) data obtained from (location) ____

4. Stability wind rose (STAR) data obtained from (location) ____

C. Computer Models Used

1. ____ Modified? If yes, attach description.

2. ____ Modified? If yes, attach description.

3. ____ Modified? If yes, attach description.

4. ____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	____________ grams/sec
SO^2	____________ grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

*Specify bubbler (B) or continuous (C).

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

ATTACHMENT A

BADGER AMERICA, INC.

SUBSIDIARY OF THE BADGER COMPANY, INC.

Designers • Engineers • Constructors

BADGER BUILDING
1401 NORTH WESTSHORE BLVD.
P.O. BOX 22317, TAMPA, FLORIDA 33622

TEL. (813) 879-0715
TELEX 52-853

April 16, 1980
Letter No. GD/USSAC-002L

United States Steel Corporation
600 Grant Street, Room 1010
Pittsburgh, Pa. 15230

Attention: RT Lindsay,
Project Manager

Subject: USS Agri-Chemicals
Phosphate Complex Replacement
Ft. Meade, Florida
Badger Project No. E-7551
Overall Plant Material Balance

Dear Mr. Lindsay:

As you requested, we have enclosed ten copies of Drawing No. E-7541-106-0 which is a simplified process schematic diagram indicating plant raw material requirements and effluents.

In regards to pollution abatement, Badger's Gulf Design Division will employ tried and proven technology in minimizing contaminants in plant emissions. Gulf Design will guarantee that when the facilities are operated at the nominal capacity of 1400 short tons of P_2O_5 per day, the total emissions from the fluorine scrubber stacks will not exceed 0.02 pounds of fluorine per ton P_2O_5 input to the system.

Very truly yours,

BADGER AMERICA, INC.

J. W. Salter

J. W. Salter
Project Manager

JWS/rh

enclosure

ATTACHMENT B

(For Section V of Application)

1. Total Process Input Rate and Product Weight

P_2O_5 Input	=	70510	lb/h
P_2O_5 in Product	=	64165	lb/h
P_2O_5 Loss to Gypsum Storage	=	6345	lb/h

2. Emission Estimate and Test Methods

(a) Basis of Emission Estimate - performance guarantee from Badger America Inc. (Attachment A) which equates to meeting Federal NSPS and Florida Emission Limiting Standards.

(b) Compliance Test Methods - in accordance with 40 CFR 60, or DER/EPA approved alternate methods.

3. Basis of Potential Discharge

(Refer to Flow Diagram, Attachment E)

Based on guarantees from Bader America, fluoride emissions from the reactor area fume scrubber will be 10.8 pounds per day (lb/d) at a scrubber efficiency of 99%. Fluoride emissions from the storage tank area fume scrubber will be 3.8 lb/d at a scrubber efficiency of 95%. Total potential (uncontrolled) emission rates will be as follows:

Reactor Area $= \dfrac{10.8\ \text{lb/d}}{0.01\ \text{(effic. factor)}} = 2090\ \text{lb/d}$ input

Storage Tank Area $= \dfrac{7.8\ \text{lb/d}}{0.05\ \text{(effic. factor)}} = 156\ \text{lb/d}$ input

TOTAL 18.6 = 2246 lb/d TOTAL INPUT

= 94 lb/h TOTAL INPUT

4. Design Details of Pollution Control Equipment

Design details are not yet available. Refer to flow diagram in Attachment E for additional information.

5. <u>Efficiency of Control Devices</u>

Badger America design efficiencies for fluoride removal are as follows:

Reactor Area Fume Scrubber	=	99% Efficiency
Storage Tank Fume Scrubber	=	95% Efficiency

ATTACHMENT C

(For Section VI.F.10 of Application)

REASON FOR SELECTION

The existing phosphoric acid facility began production in 1961 and is nearing the end of its useful life. To meet the needs for greater efficiency and growth in demand for product, a new and larger plant is required to replace the old facility. At the same time environmental improvements will result. Federal and State new source emission standards are more stringent than standards for the existing plant. The new plant will take advantage of a number of technological advancements made since the existing plant was built. The new plant will use wet rock grinding which is more environmentally favorable and energy conservative than dry rock grinding. Fume scrubber designs have been improved and a better system of fume collection will be employed.

DESCRIPTION OF SYSTEM

(Starts on next page.)

DESCRIPTION OF PHOSPHORIC ACID AND
FLUOCILICIC ACID PRODUCTION

PHOSPHORIC ACID PRODUCTION

Phosphoric acid is produced by reacting ground phosphate rock with sulfuric acid (produced as described above). This reaction produces phosphoric acid and gypsum. The details of the rock grinding, reaction, filtration, evaporation, storage and clarification processes necessary to produce the desired product are described in the following sections.

WET ROCK GRINDING

The proposed wet rock grinding system is designed with the capability of grinding phosphate rock and producing a ground phosphate rock slurry containing no less than 65 percent solids (by weight). The wet rock grinding system is an open circuit system. Open circuit grinding is a method of reducing particle size by a single passage of the material through a mill.

The wet grinding mill is designed to process a feed material having an approximate size analysis of 100 percent minus 1/2 inch and 60 percent plus 35 mesh to a product material of 98 percent minus 35 mesh Tyler.

The unground rock is received from offsite storage via a belt conveyor and/or elevator and stored in the unground rock silo. A bin activator at the discharge cone of this silo provides a steady flow of rock from the silo to the weigh belt feed conveyor that transfers the unground rock to the ball mill. The unground rock feed rate is controlled by varying the speed of the belt.

Fresh water makeup from the mill water supply tank is introduced at two points within the system. A small quantity of this water is used to wash the weigh belt feed conveyor after it discharges rock to the mill. This waste water then enters the rock ball mill feed chute via the belt wash trough. The remainder of the water is used to slurry the rock being fed to the ball mill. The total quantity of water fed to the mill is flow-recorded and is controlled by a ratio-controller

which receives its signal from the weigh belt feed conveyor. This rock-to-water ratio-controller system, together with a density recorder, is used to control the concentration of solids in the product slurry.

The ground phosphate rock slurry from the ball mill discharges through a trommel screen into the agitated rock slurry pump tank. This trommel screen is used to remove ball chips and any other oversize material from the phosphate rock slurry. These materials are discharged from the screen to a solids container for removal to the battery limits. The slurry is then pumped from the rock slurry pump tank to the rock slurry storage tank (or, alternatively, to the reactor) using a variable-speed controlled horizontal centrifugal pump. The rock slurry pump tank is equipped with a level control used to vary the speed of this pump. The rock slurry storage tank is an agitated vessel with four hours of surge capacity at design flow.

A varible-speed controlled horizontal centrifugal pump is used to pump the phosphate rock slurry from the rock slurry storage tank to the isothermal reactor. Installed spare pumps are included to ensure a continuous feed from either the rock slurry pump tank or the rock slurry storage tank. The flow of the phosphate rock slurry is recorded and controlled by a flow recorder-controller. The density of the slurry is also recorded and the combination of flow and density is then used to obtain a flow measurement in tons per hour of phosphate rock, dry basis.

REACTION PROCESS

The reactor is specifically designed as a crystallizer to promote controlled growth of the dihydrate gypsum crystals. Adequate crystal growth of the by-product gypsum in the slurry is essential to obtain maximum efficiencies and recoveries in a phosphoric acid plant. Process control is the major factor affecting uniform crystal growth. The internal design and the process control of the reactor are such as to provide the operator with optimum control of the production of phosphoric acid. Vacuum flash evaporation is the most economical and

efficient method of removing the heat of reaction and dilution from the reactor. System response to temperature is kept to a minimum by this method of cooling and by high circulation within the reactor. High circulation also allows accurate control of free sulfates, solids, and acid concentration.

Because of the enclosed environment in which the reaction of phosphate rock and sulfuric acid takes place, gaseous fluoride emissions are minimized.

The phosphoric acid reactor is furnished with a draft tube-type agitator-circulator and a vacuum system for vapor removal from the reactor.

The reactor dimensions provide for ample vapor/liquid disengaging space so as to eliminate entrainment.

A propeller-type, top-mounted, agitator-circulator with an electric motor drive is used in the reactor. The impeller is located within the draft tube to achieve proper circulation of the slurry.

The reactor is sufficient to provide a total system retention time (reactor plus filter feed tank) of four hours and allow ample vapor disengaging area.

The agitator-circulator is located in a draft tube to circulate the slurry at a rate to insure the proper conditions are maintained at all points.

Raw material feed is designed for rapid dispersion into the circulating mass of the reactor slurry. The ground rock slurry is fed into the reactor bottom, entering the upward flow into the draft tube. Sulfuric acid is distributed just above the propeller in the draft tube at the point of highest turbulence in the reactor. Recycle acid is fed to the slurry surface in the annular area of the reactor.

The reaction of concentrated sulfuric acid and phosphate rock yields phosphoric acid and gypsum. With the vessel operating under a vacuum of 9 inches Hg absolute and a temperature of 174°F, continuous

flash evaporation at the slurry surface removes the exothermic heat of reaction.

Fluorine and carbon dioxide gases are also evolved due to the acidic decomposition of the phosphate rock.

The vapors from the top of the reactor enter the barometric condenser where condensable vapors are removed by direct contact with pond water. The non-condensable vapors containing carbon dioxide and air are removed by the steam jet ejector. As an alternate, vacuum pumps the same size as the filter vacuum pump may be utlized.

Slurry containing phosphoric acid and gypsum overflows the reactor to the filter feed tank which serves both as a seal tank and a surge tank. The overflow piping configuration is vented and provides smooth flow of the slurry from the reactor to the filter feed tank. The vent gases from the filter feed tank are piped to the fume scrubber for the removal of residual fluoride vapors before discharge to the atmosphere. An Auto-Analyzer pulls a sample from the filter feed tank to continuously monitor the free sulfate concentration in the filtrate.

FILTRATION PROCESS

In the filtration section, the phosphoric acid and by-product gypsum are separated on a horizontal, rotary vacuum filter with wet cake discharge and three counter-current washes.

The filter feed slurry is pumped to a splitter box, then flows by gravity to the slurry distributor which evenly distributes the slurry. A pre-cut, or cloudy port, section separates the first portion of filtrate coming through the cloth before the cake is formed. This removes fine solids and insures against the possibility of product dilution by carryover from the cloth wash section.

A conveyor removes most of the dry cake and discharges it into a hopper where it is slurried with pond water and pumped to battery limits. The remaining layer of gypsum is removed by washing with water. The cloth is also thoroughly cleaned by the high pressure

water. This water and small amount of gypsum is recirculated to the wash box for the final wash.

EVAPORATION PROCESS

Clarified and aged 29 percent P_2O_5 phosphoric acid is concentrated in two stages to produce 1440 TPD P_2O_5 as 54 percent P_2O_5 phosphoric acid. The 40 percent P_2O_5 phosphoric acid produced by the first stage evaporators is clarified and aged before evaporation to 54 percent P_2O_5 phosphoric acid in the second stage evaporators. Evaporation is carried out in two 40 percent and two 54 percent evaporators. Provision is made for the recovery of fluorine.

The 40 percent evaporation circuit receives 29 percent P_2O_5 clarified and aged acid. The 40 percent P_2O_5 acid product is returned from each evaporator to the 40 percent P_2O_5 acid clarifier tank in the tank farm for further clarification and aging. This includes recycle acid required for 40 percent clarification.

The 54 percent evaporation circuit receives clarified and aged 40 percent acid. The 54 percent P_2O_5 acid product is pumped from each evaporator to the 54 percent P_2O_5 accumulator tank in the tank farm for further clarification, aging, and shipment.

The 29 percent P_2O_5 acid feed contains 1 percent or less solids. Concentration and precipitation in the evaporator raises the solids concentration in the 40 percent P_2O_5 product returned to the tank farm to a value of 4.4 percent. The 40 percent P_2O_5 acid feed contains 0.75 percent or less solids. Concentration and precipitation in the evaporator will raise the solids concentration in the 54 percent P_2O_5 product returned to the tank farm to a design value of 5 percent.

Heater condensate is collected in a condensate flash tank and then transferred to two condensate storage tanks located in the clarification tank farm area. Condensate is monitored for conductivity contamination at three locations.

Each of the two 40 percent evaporators has a single barometric condenser and a single steam ejector which maintain an operating vacuum of 6.8 inches Hg absolute at the outlet of the entrainment separator. Each of the 54 percent evaporators has a barometric condenser and a two stage steam ejector system with intercondenser, which maintains an operating vacuum of 2.5 inches Hg absolute at the outlet of the entrainment separator.

The constant liquid level in the body is designed to provide sufficient submergence to suppress flashing in the heat exchanger tubes. Provision is made for 98 percent H_2SO_4 addition at 20 GPM for evaporator washing and boilouts.

STORAGE AND CLARIFICATION PROCESS

The storage and clarification area comprises the tank farm for 29 percent, 40 percent and 54 percent P_2O_5 storage and clarification. Clarification for 29 percent and 40 percent P_2O_5 is via rake clarifier. Clarification of 54 percent P_2O_5 acid incorporates rake clarifiers or centrifuges, depending on the final quality of the acid required. In addition, two 8 hour condensate storage tanks are located in this tank farm.

Filtrate acid from the filtration area containing 29 percent P_2O_5 and approximately 2 percent solids is added to the feedwell of a conventional rake clarifier for initial clarification. The overflow from this tank, containing less than 1 percent solids, is pumped to an agitated storage tank. Sludge acid raked off the bottom of the clarifier is returned to the filter feed tank at a nominal 20 percent solids loading. Clarified 29 percent P_2O_5 acid from the agitated tank is pumped to the 40 percent evaporators for concentration to 40 percent P_2O_5.

The 40 percent phosphoric acid containing 4.4 percent solids is pumped from the evaporators to the feedwell of a conventional rake clarifier for initial clarification. Overflow product containing less than 0.75 percent solids is pumped to a storage tank. A third agitated storage tank is used as a swing tank for either clarified 29 percent or

40 percent acid. Sludge raked off the bottom of the 40 percent P_2O_5 acid clarifier is returned to the 29 percent P_2O_5 clarifie at a nominal 20 percent solids loading. Clarified 40 percent P_2O_5 acid from the agitated storage tank is pumped to the 54 percent evaporators for concentration to 54 percent P_2O_5.

The 54 percent P_2O_5 phosphoric acid containing 5 percent solids is pumped from the evaporators to an agitated tank.

FLUOSILICIC ACID PRODUCTION

A fluosilicic acid recovery system consists essentially of a spray tower located between the phosphoric acid evaporator and the barometric condenser. This spray tower receives vapors from the phosphoric acid evaporator. Fluorine (as HF and SiF_4), water vapor, and minor amounts of air and entrained P_2O_5 (as H_3PO_4), are the major constituents of this stream.

An aqueous solution of H_2SiF_6 is sprayed into the tower to scrub the fluorine compounds in the vapor stream. The H_2SiF_6 solution absorbs the fluorine compounds as the vapor stream and solution approach chemical equilibrium. A small portion of this solution is taken as product and the remainder is recycled back to the scrubber. Water is added to the recycled solution to maintain the desired volume and concentration.

The flow of fluosilicic acid is counter-current to the flow of phosphoric acid in the evaporation system. Phosphoric acid is fed to the first stage evaporator at approximately 30 percent P_2O_5 and concentrated to 42 percent. During this step of concentration, fluorine in the form of SiF_4 is evolved. During the second stage of P_2O_5 concentration (42 percent to 54 percent P_2O_5) the fluorine evolution is in the form of both HF and SiF_4.

In the production of fluosilicic acid, the fluorine compounds from the second stage evaporator are scrubbed first with a solution containing 10 to 11 percent H_2SiF_6. This solution also contains the HF evolved from this evaporator. The primary reaction that occurs in this scrubber is as follows:

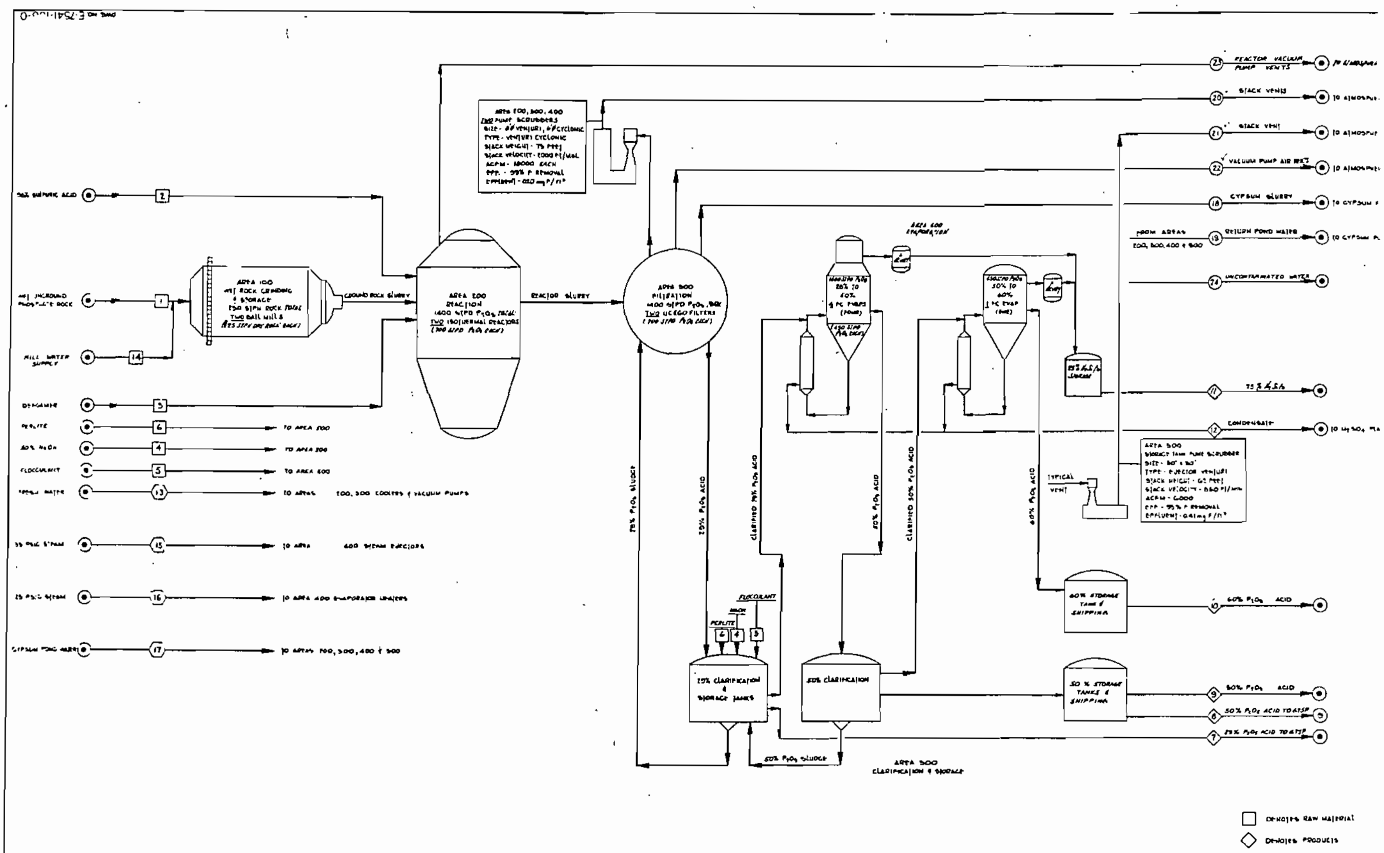
$$3SiF_4 + 4H_2O = SiO_2 \quad 2H_2O + 2H_2SiF_6$$

However, a second reaction takes place because of the dissolved HF in the solution. It is as follows:

$$6HF + SiO_2 \quad 2H_2O = H_2SiF_6 + 4H_2O$$

All of the dissolved HF is not reacted in this stage of the scrubbing process, and it is carried in solution to the scrubber on the first stage evaporator. Additional fluoride compounds are absorbed in this scrubber. The chemical reactions are the same as those previously shown. The concentration of the H_2SiF_6 solution is raised to 25 percent by the absorption step and a side stream is taken as product. The concentration is maintained at this level by adding the scrubber liquor from the second stage evaporator. P_2O_5 entrainment in the scrubber liquor is kept to a minimum by use of an entrainment separator installed in the inlet of the scrubber.

Attachment D - Location of USS Agri-Chemicals
Fort Meade Phosphate Chemical Complex



		RAW MATERIALS						PRODUCTS						UTILITIES					EFFLUENTS						
STREAM NUMBERS		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
STREAM NAME		WET GROUND PHOSPHATE ROCK	98% SULFURIC ACID	DEFOAMER	CAUSTIC	FLOCCULANT	PERLITE	29% ACID TO ATSP	50% ACID TO ATSP	50% ACID TO TRUCK LOADING	60% ACID TO CAR LOADING	25% H₂SiF₆ ACID	COND.	FRESH WATER	MILL WATER SUPPLY	150# STEAM	25# STEAM	RETURN POND WATER	GYPSUM SLURRY	POND WATER RETURN	STACK VENT	STACK VENT CLAR.	FILTER VACUUM PUMP VENTS	REACTOR VACUUM PUMP VENTS	UNCONTAMINATED WATER
MASS FLOW RATE	TPD	5396	5946	5.7	0.6	—	14	508	337	1275	793	875	2952	5900	2036	—	—	224,580	36348	207,[illegible]	—	—	—	—	7880
	TPD P_2O_5	1466	—	—	0	·	0	152	.168	638	446	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	lbs/hr	—	—	—	—	1.5	1280	—	—	—	—	—	—	—	—	8500	346,000	—	—	—	—	—	—	—	—
	ACFM	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36,000	6000	1711	4900	—
	GPM (GPH)	—	—	—	(4)	—	—	65	33	125	75	90	516	660	346	—	—	38430	5337	33687	—	—	—	—	—
TEMPERATURE, °F		100	100	90	100	100	100	130	150	130	140	115	180	85	100	360	240	95	113	95	100	105	100	100	100
FLUORINE, lbs/DAY		—	—	—	—	—	—	—	—	—	—	58 [illegible]	—	—	—	—	—	—	—	—	21.6	7.6	—	—	—
SOLIDS, TPD (lbs/day)		4895	—	—	—	(30	18	2.5	3	13	10	—	—	—	—	—	—	—	7269	—	~0	~0	~0	~0	—

ATTACHMENT - E

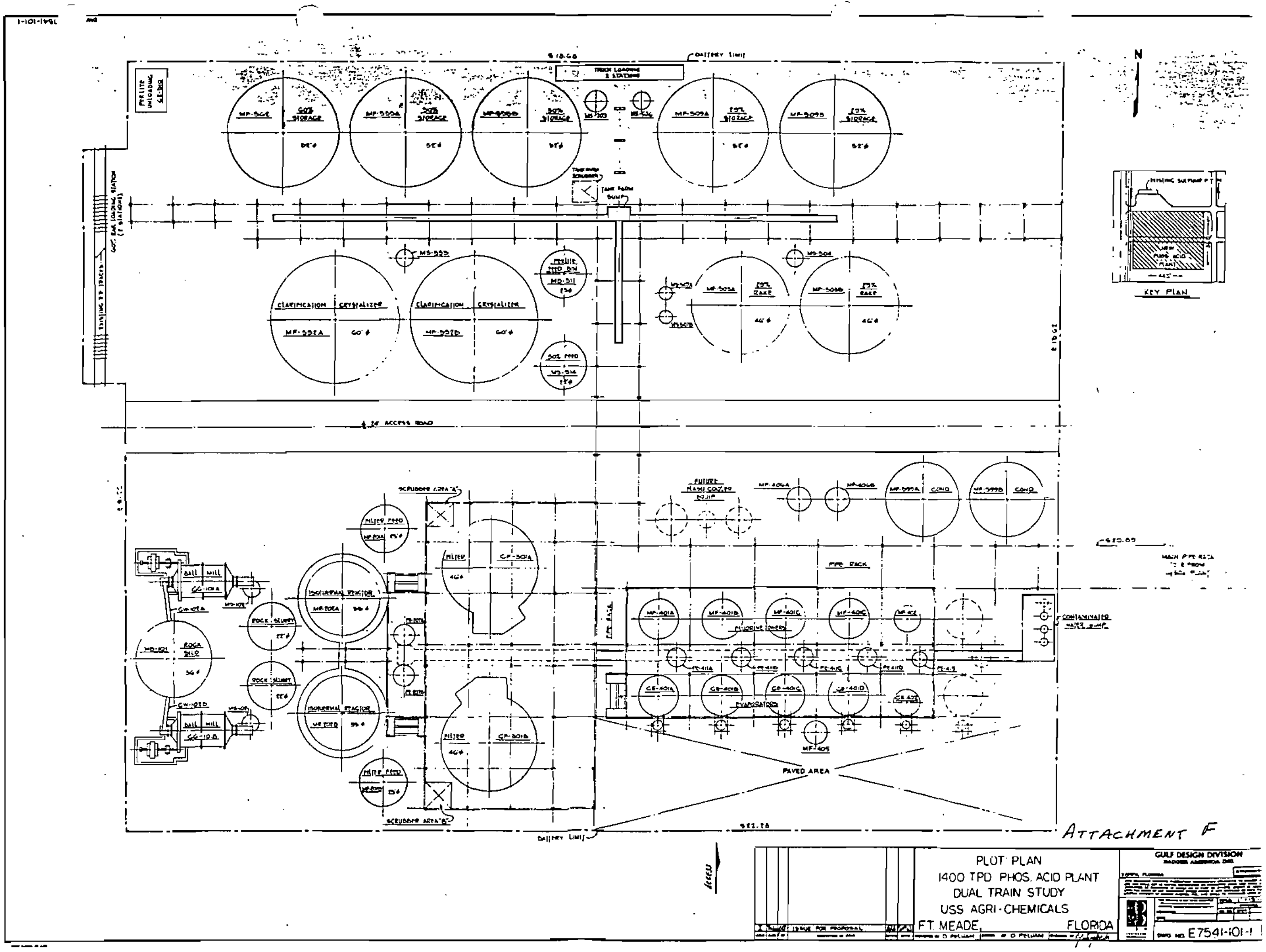
FLOW DIAGRAM
RAW MATERIALS, PRODUCTS, UTILITIES AND EFFLUENTS
PHOSPHORIC ACID PLANT
USS AGRI-CHEMICALS

FT. MEADE FLORIDA

ISSUED FOR PROPOSAL
FOR APPROVAL

BADGER AMERICA, INC.

DWG. NO. E-7541-106-0



TRUCK LOADING & STATIONS
BATTERY LIMIT
MF-502
50% STORAGE
MF-503A
MF-503B
MF-509A
MF-509B
KEY PLAN
CLARIFICATION
CRYSTALLIZER
MF-551A
60'Ø
MS-552
MS-506
MF-506A
MF-506B
RAKE
46'Ø
ACCESS ROAD
SCRUBBER AREA "A"
SCRUBBER AREA "B"
BALL MILL
ROCK SILO
ROCK SLURRY
ISOTHERMAL REACTOR
MIXED FEED
FILTER
CF-301A
CF-301B
PIPE RACK
FLUORINE TOWER
EVAPORATOR
MF-405
CONTAMINATED WATER SUMP
PAVED AREA
Attachment F
PLOT PLAN
1400 TPD PHOS. ACID PLANT
DUAL TRAIN STUDY
USS AGRI-CHEMICALS
FT. MEADE, FLORIDA
GULF DESIGN DIVISION
ISSUE FOR PROPOSAL
DWG NO. E7541-101-1
N

ATTACHMENT G

PARTICULATE EMISSIONS
(For Section III.C. of Application)

Primarily and most importantly the phosphoric acid plant scrubbers must control fluoride emissions to the low levels required by New Source Performance Standards. The control system includes fans and ducts which draw ambient air into the process and storage equipment where it mixes with contaminated fumes and conveys the contaminants to the scrubbers for removal. The system must have sufficient air capacity to prevent fugitive fluoride emissions by assurance of an ingress of air at all openings.

It is expected that the concentration of particulate emissions from the scrubbers will be not more than 0.03 grains per cubic foot of stack gas. In conjunction with the quantity of air flow determined by the designers to be necessary to meet fluoride emission standards, this amounts to 0.185 pounds per ton of P_2O_5 production or 20 tons per year for an average annual production of 220,000 tons P_2O_5. (Refer to Attachment E. See sample calculation below.)

Although it is expected that particulate emissions from the scrubbers will be 0.03 grains per cubic foot or less, there is no history of performance to substantiate this. USS Agri-Chemicals requests that final emission limits be deferred pending actual performance testing.

<u>Sample Calculations</u>

1. <u>Particulate emission rate per ton of P_2O_5 produced:</u>

   a) Volumetric flow through reaction and filtration area scrubber for each train @ 700 tons P_2O_5 produced per day $= \dfrac{36{,}000\ ft^3/min}{2} = 18{,}000\ ft^3/min$

   b) Volumetric flow through clarification and storage area scrubber for each train @ 700 tons P_2O_5 produced per day $= \dfrac{6{,}000\ ft^3/min}{2} = 3{,}000\ ft^3/min$

c) Particulate emission rate:

$$= 21{,}000 \ \frac{ft^3}{min} \ \times \ 0.03 \ \frac{gr\ part.}{ft^3} \ \times \ 1440 \ \frac{min}{d} \ \times \ \frac{1}{7000} \ \frac{lb}{gr} \ \times \ \frac{1}{700} \ \frac{d}{ton\ P_2O_5}$$

$= 0.185$ lb/ton

2. Maximum particulate emission rate per hour:

$= 0.185$ lb/ton $\times$ 32.1 ton/h

$= 5.9$ lb/h

3. Average particulate emission rate per year:

$$= \frac{0.185 \text{ lb/ton} \ \times \ 220{,}000 \text{ ton/yr}}{2000 \text{ lb/ton}}$$

$= 20$ ton/yr

ATTACHMENT H

PREVENTION OF SIGNIFICANT DETERIORATION
(For Section II.G.3 and Section VII. of Application)

The new phosphoric acid plant will not be a source of sulfur dioxide (SO_2). Therefore, PSD provisions in FAC 17-2.04 related to SO_2 do not apply.

Emissions of particulate matter are difficult to estimate as discussed in Attachment G, but average annual emissions are expected to be no greater than 20 tons per year per train, or 40 tons per year for both trains combined. However, this figure must be evaluated in light of the fact that the new phosphoric plant will replace an existing phosphoric acid plant. If point source particulate emissions from the existing plant (which are not regulated) are calculated on the same basis as that for the new plant (0.185 lb/ton P_2O_5), existing particulate emissions are on the order of 18 tons per year. The net difference is therefore an increase of about 22 tons per year.

This change must be further qualified, however, by noting that the existing plant processes dry rock whereas the new plant will process only wet rock. As a result of the switch to a wet rock process, fugitive particulate emissions will decrease substantially. The actual increase (if any) in overall particulate emissions should therefore be less than 20 tons per year, and a detailed PSD analysis does not seem warranted for this relatively minor change in emissions.

State of Florida

Department of State

I certify from the records of this office that UNITED STATES STEEL CORPORATION, is a corporation organized under the laws of the State of Delaware, and is authorized to transact business within the State of Florida.

The charter number for this corporation is 819214.

I further certify that said corporation has filed all annual reports and has paid all annual report filing fees due this office through December 31, 1979, and its status is active.

Given under my hand and the
Great Seal of the State of Florida,
at Tallahassee, the Capital, this the
3rd day of March, 1980.

George Firestone
Secretary of State

CER 101 Rev. 5-79

AC 53-33821
AC 53-33868

2 EMISSION POINTS.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Air Pollution [X] New[1] [ ] Existing[1]

APPLICATION TYPE: [X] Construction [ ] Operation [ ] Modification

COMPANY NAME: USS Agri-Chemicals COUNTY: Polk

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Phosphoric Acid Plant - Train A

SOURCE LOCATION: Street Highway 630 West City Ft. Meade

UTM: East 416.07 (Zone 17) North 3068.78

Latitude ___ ° ___ ' ___ "N Longitude ___ ° ___ ' ___ "W

APPLICANT NAME AND TITLE: G. W. Beck, Manager, Florida Phosphate Operations

APPLICANT ADDRESS: P.O. Box 150, Bartow, Florida 33830

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of USS Agri-Chemicals

I certify that the statements made in this application for a Construction 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 provision 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 non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: George W Beck

George W. Beck, Manager, Fla. Phosphate Operations
Name and Title (Please Type)

Date: Aug. 5, 1980 Telephone No. 813-5330471

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

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 judgment, 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, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed: James H Carroll

James H. Carroll
Name (Please Type)

(Affix Seal)

JAMES H. CARROLL
CERTIFICATE NO. 12497
STATE OF FLORIDA
REGISTERED ENGINEER

USS Agri-Chemicals
Company Name (Please Type)

P. O. Box 150, Bartow, Fl 33830
Mailing Address (Please Type)

Florida Registration No. 12497

Date: Aug. 5, 1980 Telephone No. 813-533-0471

[1]See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

This phosphoric acid plant uses wet rock grinding to save energy and reduce particulate emissions, and includes a processing section for recovery of fluorine. Emissions will be in full compliance with Federal New Source Performance Standards and Florida Emission Limiting Standards. (Also see attachments.)

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction March 1981 Completion of Construction March 1983

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

1 - Scrubber System for Reaction and Filtration Area	$1,375,000
*1/2 - Scrubber System for Clarification and Storage Area	425,000
*1/2 - Fluorine Recovery System	1,800,000
*Note: These systems common to Train A and Train B	$2,600,000

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Existing plant to be replaced by the new plant has operating permit A053-4563, issued 11/15/77, expiring 11/10/82. The permitted capacity of the existing plant is 321 tons/day P_2O_5. The existing plant will be shut down as soon as the new plant is tested for service.

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ____ Yes X No

F. Normal equipment operating time: *hrs/day 24 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr ____ ;

if seasonal, describe:

*Plant will be shut down only when required for repairs.

G. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No
   a. If yes, has "offset" been applied? ____
   b. If yes, has "Lowest Achievable Emission Rate" been applied? ____
   c. If yes, list non-attainment pollutants. ____
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII. No (see Attachment H)
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? Yes
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Sulfuric Acid	N/A			Pt. 2 on Atch E
Wet Phosphate Rock	Fluorine	3.5	233,510	Pt. 1 on Atch E
		(dry basis)	(dry basis)	

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 233,510 lbs/hr phosphate rock; 70,510 lbs/hr P_2O_5
2. Product Weight (lbs/hr): 64,165 lbs/hr P_2O_5

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Fluorides	0.71	2.7*	0.02 lb F/ton P_2O_5	0.71	48	181*	Pts. 20 &
			input				21 Atch E
Particulates -	See Attachment G						
*Based on expected maximum P_2O_5 input of 265,900 T/yr.							

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5]
Venturi Cyclone	F	99%	N/A	*
Venturi Cyclone	F	95%	N/A	*
*Vendor guarantee, see Attachment A.				

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard

[4]Emission, if source operated without control (See Section V, Item 3)

[5]If Applicable

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
None			

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: ______ Percent Ash: ______

Density: ______ lbs/gal Typical Percent Nitrogen: ______

Heat Capacity: ______ BTU/lb ______ BTU/gal

Other Fuel Contaminants (which may cause air pollution): ______

F. If applicable, indicate the percent of fuel used for space heating. Annual Average ______ Maximum ______

G. Indicate liquid or solid wastes generated and method of disposal.

Gypsum slurry is sent to on-site gypsum disposal area. Water is recycled.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):*

Stack Height: 75; 62 ft. Stack Diameter: 3.4; 3.0 ft.

Gas Flow Rate: 18000; 6000 ACFM Gas Exit Temperature: 100; 105 °F.

Water Vapor Content: Saturated % Velocity: 33.3; 14.2 FPS

*First number is for Point 20 on Attachment E. Second number is for Point 21 on Attachment E.

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste ______

Total Weight Incinerated (lbs/hr) ______ Design Capacity (lbs/hr) ______

Approximate Number of Hours of Operation per day ______ days/week ______

Manufacturer ______

Date Constructed ______ Model No. ______

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

Stack Height: ______________ ft. Stack Diameter ______________ Stack Temp. ______________

Gas Flow Rate: ______________ ACFM ______________ DSCFM* Velocity ______________ FPS

*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 devices: ______________

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 where required for this application.

1. Total process input rate and product weight — show derivation. (See Attachment B)
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.,) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made. (See Attachment B)
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). (See Attachment B)
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, etc.). (See Attachment B)
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3, and 5 should be consistent: actual emissions = potential (1-efficiency). (See Attachment A)
6. 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. (See Attachment E)
7. An 8½" x 11" plot plan showing the 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 relevant portion of USGS topographic map). (See Attachment D)
8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram. (See Attachment F)

9. An application fee of $20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
[X] Yes [ ] No

Contaminant	Rate or Concentration
Total Fluorides	0.02 lbs fluorides per ton of equivalent P_2O_5 feed.

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) [ ] Yes [X] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
Total Fluorides	0.02 lbs fluorides per ton of equivalent P_2O_5 feed.

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:
5. Useful Life:
6. Operating Costs:
7. Energy:
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

10. Stack Parameters

a. Height: ft. b. Diameter: ft.

c. Flow Rate: ACFM d. Temperature: °F

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy*: h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy**: h. Maintenance Costs:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power — KWH design rate.

3.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Life: f. Operating Cost:

g. Energy: h. Maintenance Cost:

*Explain method of determining efficiency above.

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space and operate within proposed levels:

4.

a. Control Device

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device: Two Venturi Cyclone Scrubbers and Fluorine Recovery System
2. Efficiency*: 99% and 95%
3. Capital Cost: $2,600,000
4. Life: 20 years
5. Operating Cost: $200,000 per year
6. Energy:
7. Maintenance Cost: $130,000 per year
8. Manufacturer: Badger America, Inc.
9. Other locations where employed on similar processes:

a.

(1) Company: Farmland Industries

(2) Mailing Address: P.O. Box 960

(3) City: Bartow

(4) State: Florida 33830

(5) Environmental Manager: Jack Harwell

(6) Telephone No.: (813) 425-4981

*Explain method of determining efficiency above. Based on manufacturer performance guarantees.

(7) Emissions*:

Contaminant	Rate or Concentration
Total Fluorides	0.02 lbs F/ton P_2O_5 feed

(8) Process Rate*:

b.

(1) Company:

(2) Mailing Address:

(3) City:

(4) State:

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

10. Reason for selection and description of systems:

(See Attachment C)

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII – PREVENTION OF SIGNIFICANT DETERIORATION

See Attachment H

A. Company Monitored Data

1. ______ no sites ______ TSP ______ ( ) SO^2* ______ Wind spd/dir

Period of monitoring ___/___/___ to ___/___/___
month day year month day year

Other data recorded ______

Attach all data or statistical summaries to this application.

2. Instrumentation, Field and Laboratory

a) Was instrumentation EPA referenced or its equivalent? ___ Yes ___ No

b) Was instrumentation calibrated in accordance with Department procedures? ___ Yes ___ No ___ Unknown

B. Meteorological Data Used for Air Quality Modeling

1. ___ Year(s) of data from ___/___/___ to ___/___/___
month day year month day year

2. Surface data obtained from (location) ______

3. Upper air (mixing height) data obtained from (location) ______

4. Stability wind rose (STAR) data obtained from (location) ______

C. Computer Models Used

1. ______ Modified? If yes, attach description.

2. ______ Modified? If yes, attach description.

3. ______ Modified? If yes, attach description.

4. ______ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	______ grams/sec
SO^2	______ grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

*Specify bubbler (B) or continuous (C).

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

ATTACHMENT A

BADGER AMERICA, INC.
SUBSIDIARY OF THE BADGER COMPANY, INC.
Designers • Engineers • Constructors
BADGER BUILDING
1401 NORTH WESTSHORE BLVD.
P.O. BOX 22317, TAMPA, FLORIDA 33622

TEL. (813) 879-0715
TELEX 52-853

April 16, 1980
Letter No. GD/USSAC-002L

United States Steel Corporation
600 Grant Street, Room 1010
Pittsburgh, Pa. 15230

Attention: RT Lindsay,
Project Manager

Subject: USS Agri-Chemicals
Phosphate Complex Replacement
Ft. Meade, Florida
Badger Project No. E-7551
Overall Plant Material Balance

Dear Mr. Lindsay:

As you requested, we have enclosed ten copies of Drawing No. E-7541-106-0 which is a simplified process schematic diagram indicating plant raw material requirements and effluents.

In regards to pollution abatement, Badger's Gulf Design Division will employ tried and proven technology in minimizing contaminants in plant emissions. Gulf Design will guarantee that when the facilities are operated at the nominal capacity of 1400 short tons of P_2O_5 per day, the total emissions from the fluorine scrubber stacks will not exceed 0.02 pounds of fluorine per ton P_2O_5 input to the system.

Very truly yours,

BADGER AMERICA, INC.

J W Salter

J. W. Salter
Project Manager

JWS/rh

enclosure

ATTACHMENT B

(For Section V of Application)

1. Total Process Input Rate and Product Weight

P_2O_5 Input	=	70510	lb/h
P_2O_5 in Product	=	64165	lb/h
P_2O_5 Loss to Gypsum Storage	=	6345	lb/h

2. Emission Estimate and Test Methods

(a) Basis of Emission Estimate - performance guarantee from Badger America Inc. (Attachment A) which equates to meeting Federal NSPS and Florida Emission Limiting Standards.

(b) Compliance Test Methods - in accordance with 40 CFR 60, or DER/EPA approved alternate methods.

3. Basis of Potential Discharge

(Refer to Flow Diagram, Attachment E)

Based on guarantees from Bader America, fluoride emissions from the reactor area fume scrubber will be 10.8 pounds per day (lb/d) at a scrubber efficiency of 99%. Fluoride emissions from the storage tank area fume scrubber will be 3.8 lb/d at a scrubber efficiency of 95%. Total potential (uncontrolled) emission rates will be as follows:

Reactor Area $= \dfrac{10.8 \text{ lb/d}}{0.01 \text{ (effic. factor)}} = 2090$ lb/d

Storage Tank Area $= \dfrac{7.8 \text{ lb/d}}{0.05 \text{ (effic. factor)}} = 156$ lb/d

TOTAL = 2246 lb/d

18.6

1400 x .02 28

= 94 lb/h

4. Design Details of Pollution Control Equipment

Design details are not yet available. Refer to flow diagram in Attachment E for additional information.

5. Efficiency of Control Devices

Badger America design efficiencies for fluoride removal are as follows:

Reactor Area Fume Scrubber = 99% Efficiency

Storage Tank Fume Scrubber = 95% Efficiency

ATTACHMENT C

(For Section VI.F.10 of Application)

REASON FOR SELECTION

The existing phosphoric acid facility began production in 1961 and is nearing the end of its useful life. To meet the needs for greater efficiency and growth in demand for product, a new and larger plant is required to replace the old facility. At the same time environmental improvements will result. Federal and State new source emission standards are more stringent than standards for the existing plant. The new plant will take advantage of a number of technological advancements made since the existing plant was built. The new plant will use wet rock grinding which is more environmentally favorable and energy conservative than dry rock grinding. Fume scrubber designs have been improved and a better system of fume collection will be employed.

DESCRIPTION OF SYSTEM

(Starts on next page.)

DESCRIPTION OF PHOSPHORIC ACID AND FLUOCILICIC ACID PRODUCTION

PHOSPHORIC ACID PRODUCTION

Phosphoric acid is produced by reacting ground phosphate rock with sulfuric acid (produced as described above). This reaction produces phosphoric acid and gypsum. The details of the rock grinding, reaction, filtration, evaporation, storage and clarification processes necessary to produce the desired product are described in the following sections.

WET ROCK GRINDING

The proposed wet rock grinding system is designed with the capability of grinding phosphate rock and producing a ground phosphate rock slurry containing no less than 65 percent solids (by weight). The wet rock grinding system is an open circuit system. Open circuit grinding is a method of reducing particle size by a single passage of the material through a mill.

The wet grinding mill is designed to process a feed material having an approximate size analysis of 100 percent minus 1/2 inch and 60 percent plus 35 mesh to a product material of 98 percent minus 35 mesh Tyler.

The unground rock is received from offsite storage via a belt conveyor and/or elevator and stored in the unground rock silo. A bin activator at the discharge cone of this silo provides a steady flow of rock from the silo to the weigh belt feed conveyor that transfers the unground rock to the ball mill. The unground rock feed rate is controlled by varying the speed of the belt.

Fresh water makeup from the mill water supply tank is introduced at two points within the system. A small quantity of this water is used to wash the weigh belt feed conveyor after it discharges rock to the mill. This waste water then enters the rock ball mill feed chute via the belt wash trough. The remainder of the water is used to slurry the rock being fed to the ball mill. The total quantity of water fed to the mill is flow-recorded and is controlled by a ratio-controller

which receives its signal from the weigh belt feed conveyor. This rock-to-water ratio-controller system, together with a density recorder, is used to control the concentration of solids in the product slurry.

The ground phosphate rock slurry from the ball mill discharges through a trommel screen into the agitated rock slurry pump tank. This trommel screen is used to remove ball chips and any other oversize material from the phosphate rock slurry. These materials are discharged from the screen to a solids container for removal to the battery limits. The slurry is then pumped from the rock slurry pump tank to the rock slurry storage tank (or, alternatively, to the reactor) using a variable-speed controlled horizontal centrifugal pump. The rock slurry pump tank is equipped with a level control used to vary the speed of this pump. The rock slurry storage tank is an agitated vessel with four hours of surge capacity at design flow.

A varible-speed controlled horizontal centrifugal pump is used to pump the phosphate rock slurry from the rock slurry storage tank to the isothermal reactor. Installed spare pumps are included to ensure a continuous feed from either the rock slurry pump tank or the rock slurry storage tank. The flow of the phosphate rock slurry is recorded and controlled by a flow recorder-controller. The density of the slurry is also recorded and the combination of flow and density is then used to obtain a flow measurement in tons per hour of phosphate rock, dry basis.

REACTION PROCESS

The reactor is specifically designed as a crystallizer to promote controlled growth of the dihydrate gypsum crystals. Adequate crystal growth of the by-product gypsum in the slurry is essential to obtain maximum efficiencies and recoveries in a phosphoric acid plant. Process control is the major factor affecting uniform crystal growth. The internal design and the process control of the reactor are such as to provide the operator with optimum control of the production of phosphoric acid. Vacuum flash evaporation is the most economical and

efficient method of removing the heat of reaction and dilution from the reactor. System response to temperature is kept to a minimum by this method of cooling and by high circulation within the reactor. High circulation also allows accurate control of free sulfates, solids, and acid concentration.

Because of the enclosed environment in which the reaction of phosphate rock and sulfuric acid takes place, gaseous fluoride emissions are minimized.

The phosphoric acid reactor is furnished with a draft tube-type agitator-circulator and a vacuum system for vapor removal from the reactor.

The reactor dimensions provide for ample vapor/liquid disengaging space so as to eliminate entrainment.

A propeller-type, top-mounted, agitator-circulator with an electric motor drive is used in the reactor. The impeller is located within the draft tube to achieve proper circulation of the slurry.

The reactor is sufficient to provide a total system retention time (reactor plus filter feed tank) of four hours and allow ample vapor disengaging area.

The agitator-circulator is located in a draft tube to circulate the slurry at a rate to insure the proper conditions are maintained at all points.

Raw material feed is designed for rapid dispersion into the circulating mass of the reactor slurry. The ground rock slurry is fed into the reactor bottom, entering the upward flow into the draft tube. Sulfuric acid is distributed just above the propeller in the draft tube at the point of highest turbulence in the reactor. Recycle acid is fed to the slurry surface in the annular area of the reactor.

The reaction of concentrated sulfuric acid and phosphate rock yields phosphoric acid and gypsum. With the vessel operating under a vacuum of 9 inches Hg absolute and a temperature of 174°F, continuous

flash evaporation at the slurry surface removes the exothermic heat of reaction.

Fluorine and carbon dioxide gases are also evolved due to the acidic decomposition of the phosphate rock.

The vapors from the top of the reactor enter the barometric condenser where condensable vapors are removed by direct contact with pond water. The non-condensable vapors containing carbon dioxide and air are removed by the steam jet ejector. As an alternate, vacuum pumps the same size as the filter vacuum pump may be utlized.

Slurry containing phosphoric acid and gypsum overflows the reactor to the filter feed tank which serves both as a seal tank and a surge tank. The overflow piping configuration is vented and provides smooth flow of the slurry from the reactor to the filter feed tank. The vent gases from the filter feed tank are piped to the fume scrubber for the removal of residual fluoride vapors before discharge to the atmosphere. An Auto-Analyzer pulls a sample from the filter feed tank to continuously monitor the free sulfate concentration in the filtrate.

FILTRATION PROCESS

In the filtration section, the phosphoric acid and by-product gypsum are separated on a horizontal, rotary vacuum filter with wet cake discharge and three counter-current washes.

The filter feed slurry is pumped to a splitter box, then flows by gravity to the slurry distributor which evenly distributes the slurry. A pre-cut, or cloudy port, section separates the first portion of filtrate coming through the cloth before the cake is formed. This removes fine solids and insures against the possibility of product dilution by carryover from the cloth wash section.

A conveyor removes most of the dry cake and discharges it into a hopper where it is slurried with pond water and pumped to battery limits. The remaining layer of gypsum is removed by washing with water. The cloth is also thoroughly cleaned by the high pressure

water. This water and small amount of gypsum is recirculated to the wash box for the final wash.

EVAPORATION PROCESS

Clarified and aged 29 percent P_2O_5 phosphoric acid is concentrated in two stages to produce 1440 TPD P_2O_5 as 54 percent P_2O_5 phosphoric acid. The 40 percent P_2O_5 phosphoric acid produced by the first stage evaporators is clarified and aged before evaporation to 54 percent P_2O_5 phosphoric acid in the second stage evaporators. Evaporation is carried out in two 40 percent and two 54 percent evaporators. Provision is made for the recovery of fluorine.

The 40 percent evaporation circuit receives 29 percent P_2O_5 clarified and aged acid. The 40 percent P_2O_5 acid product is returned from each evaporator to the 40 percent P_2O_5 acid clarifier tank in the tank farm for further clarification and aging. This includes recycle acid required for 40 percent clarification.

The 54 percent evaporation circuit receives clarified and aged 40 percent acid. The 54 percent P_2O_5 acid product is pumped from each evaporator to the 54 percent P_2O_5 accumulator tank in the tank farm for further clarification, aging, and shipment.

The 29 percent P_2O_5 acid feed contains 1 percent or less solids. Concentration and precipitation in the evaporator raises the solids concentration in the 40 percent P_2O_5 product returned to the tank farm to a value of 4.4 percent. The 40 percent P_2O_5 acid feed contains 0.75 percent or less solids. Concentration and precipitation in the evaporator will raise the solids concentration in the 54 percent P_2O_5 product returned to the tank farm to a design value of 5 percent.

Heater condensate is collected in a condensate flash tank and then transferred to two condensate storage tanks located in the clarification tank farm area. Condensate is monitored for conductivity contamination at three locations.

Each of the two 40 percent evaporators has a single barometric condenser and a single steam ejector which maintain an operating vacuum of 6.8 inches Hg absolute at the outlet of the entrainment separator. Each of the 54 percent evaporators has a barometric condenser and a two stage steam ejector system with intercondenser, which maintains an operating vacuum of 2.5 inches Hg absolute at the outlet of the entrainment separator.

The constant liquid level in the body is designed to provide sufficient submergence to suppress flashing in the heat exchanger tubes. Provision is made for 98 percent H_2SO_4 addition at 20 GPM for evaporator washing and boilouts.

STORAGE AND CLARIFICATION PROCESS

The storage and clarification area comprises the tank farm for 29 percent, 40 percent and 54 percent P_2O_5 storage and clarification. Clarification for 29 percent and 40 percent P_2O_5 is via rake clarifier. Clarification of 54 percent P_2O_5 acid incorporates rake clarifiers or centrifuges, depending on the final quality of the acid required. In addition, two 8 hour condensate storage tanks are located in this tank farm.

Filtrate acid from the filtration area containing 29 percent P_2O_5 and approximately 2 percent solids is added to the feedwell of a conventional rake clarifier for initial clarification. The overflow from this tank, containing less than 1 percent solids, is pumped to an agitated storage tank. Sludge acid raked off the bottom of the clarifier is returned to the filter feed tank at a nominal 20 percent solids loading. Clarified 29 percent P_2O_5 acid from the agitated tank is pumped to the 40 percent evaporators for concentration to 40 percent P_2O_5.

The 40 percent phosphoric acid containing 4.4 percent solids is pumped from the evaporators to the feedwell of a conventional rake clarifier for initial clarification. Overflow product containing less than 0.75 percent solids is pumped to a storage tank. A third agitated storage tank is used as a swing tank for either clarified 29 percent or

40 percent acid. Sludge raked off the bottom of the 40 percent P_2O_5 acid clarifier is returned to the 29 percent P_2O_5 clarifie at a nominal 20 percent solids loading. Clarified 40 percent P_2O_5 acid from the agitated storage tank is pumped to the 54 percent evaporators for concentration to 54 percent P_2O_5.

The 54 percent P_2O_5 phosphoric acid containing 5 percent solids is pumped from the evaporators to an agitated tank.

FLUOSILICIC ACID PRODUCTION

A fluosilicic acid recovery system consists essentially of a spray tower located between the phosphoric acid evaporator and the barometric condenser. This spray tower receives vapors from the phosphoric acid evaporator. Fluorine (as HF and SiF_4), water vapor, and minor amounts of air and entrained P_2O_5 (as H_3PO_4), are the major constituents of this stream.

An aqueous solution of H_2SiF_6 is sprayed into the tower to scrub the fluorine compounds in the vapor stream. The H_2SiF_6 solution absorbs the fluorine compounds as the vapor stream and solution approach chemical equilibrium. A small portion of this solution is taken as product and the remainder is recycled back to the scrubber. Water is added to the recycled solution to maintain the desired volume and concentration.

The flow of fluosilicic acid is counter-current to the flow of phosphoric acid in the evaporation system. Phosphoric acid is fed to the first stage evaporator at approximately 30 percent P_2O_5 and concentrated to 42 percent. During this step of concentration, fluorine in the form of SiF_4 is evolved. During the second stage of P_2O_5 concentration (42 percent to 54 percent P_2O_5) the fluorine evolution is in the form of both HF and SiF_4.

In the production of fluosilicic acid, the fluorine compounds from the second stage evaporator are scrubbed first with a solution containing 10 to 11 percent H_2SiF_6. This solution also contains the HF evolved from this evaporator. The primary reaction that occurs in this scrubber is as follows:

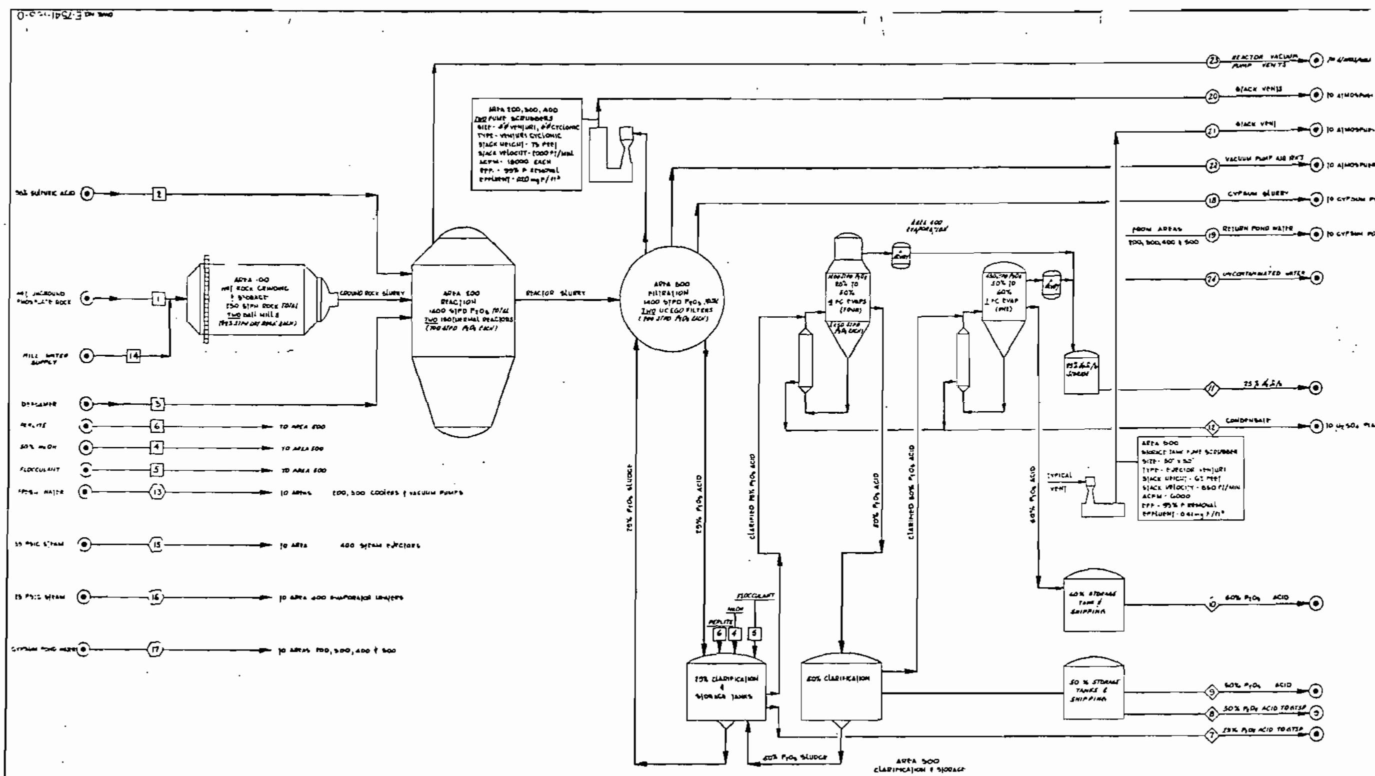
$$3SiF_4 + 4H_2O = SiO_2 \quad 2H_2O + 2H_2SiF_6$$

However, a second reaction takes place because of the dissolved HF in the solution. It is as follows:

$$6HF + SiO_2 \quad 2H_2O = H_2SiF_6 + 4H_2O$$

All of the dissolved HF is not reacted in this stage of the scrubbing process, and it is carried in solution to the scrubber on the first stage evaporator. Additional fluoride compounds are absorbed in this scrubber. The chemical reactions are the same as those previously shown. The concentration of the H_2SiF_6 solution is raised to 25 percent by the absorption step and a side stream is taken as product. The concentration is maintained at this level by adding the scrubber liquor from the second stage evaporator. P_2O_5 entrainment in the scrubber liquor is kept to a minimum by use of an entrainment separator installed in the inlet of the scrubber.

Attachment D - Location of USS Agri-Chemicals
Fort Meade Phosphate Chemical Complex



□ DENOTES RAW MATERIAL
◇ DENOTES PRODUCTS
⬡ DENOTES UTILITIES
○ DENOTES EFFLUENTS
⊙ DENOTES BATTERY LIMITS

		RAW MATERIALS						PRODUCTS						UTILITIES					EFFLUENTS						
STREAM NUMBERS		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
STREAM NAME		WET GROUND PHOSPHATE ROCK	93% SULFURIC ACID	DEFOAMER	CAUSTIC	FLOCCULANT	PERLITE	30% ACID TO ATSP	30% ACID TO ATSP	50% ACID TO TRUCK LOADING	50% ACID TO CAR LOADING	PHOSPHORIC ACID	COND.	FRESH WATER	MILL WATER SUPPLY	150° STEAM	25° STEAM	GYPSUM POND WATER	GYPSUM SLURRY	POND WATER RETURN	STACK VENT P-F-E	STACK VENT CLAR.	FILTER VACUUM PUMP VENTS	REACTOR VACUUM PUMP VENTS	SLUDGE
MASS FLOW RATE	TPD	5096	5945	5.7	0.6	—	14	506	337	1275	743	895	2352	3900	2076	—	—	224,580	36,343	203,192	—	—	—	—	2850
	TPD P_2O_5	1466	—	—	0	-	0	162	168	638	446	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	lbs/hr	—	—	—	—	1.5	1780	—	—	—	—	—	—	—	—	8500	845,000	—	—	—	—	—	—	—	—
	ACFM	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36,000	6000	1711	4900	—
	GPM (GPD)	—	—	—	(4)	—	—	65	33	125	75	50	616	660	346	—	—	38430	5357	33687	—	—	—	—	—
TEMPERATURE, °F		100	100	90	100	100	100	150	150	130	140	115	180	85	100	260	240	95	115	115	100	105	100	100	100
FLUORINE, lbs/DAY		—	—	—	—	—	—	—	—	—	—	58,000	—	—	—	—	—	—	—	—	21.6	7.2	—	—	—
SOLIDS, TPD		4846	—	—	—	(32)	18	2.5	3	13	10	—	—	—	—	—	—	—	7269	—	~0	~0	~0	~8	—

ATTACHMENT - E

FLOW DIAGRAM
RAW MATERIALS, PRODUCTS,
UTILITIES AND EFFLUENTS
PHOSPHORIC ACID PLANT
USS AGRI-CHEMICALS

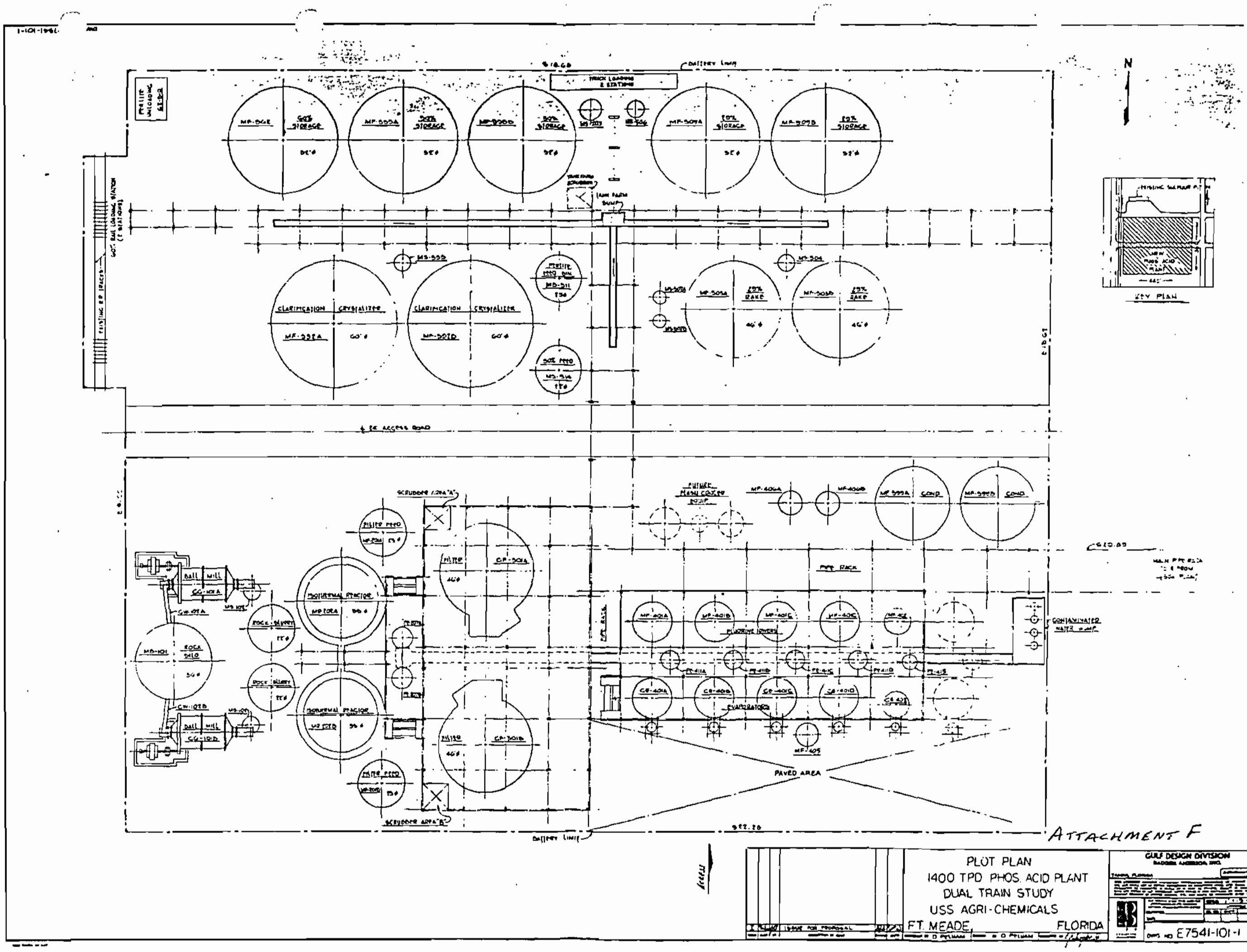
FT. MEADE FLORIDA

RELEASED FOR PROPOSAL
FOR PROPOSAL
FOR APPROVAL

BADGER AMERICA, INC

DWG NO E-7541-106-0

BEST AVAILABLE COPY



Attachment F

ATTACHMENT G

PARTICULATE EMISSIONS
(For Section III.C. of Application)

Primarily and most importantly the phosphoric acid plant scrubbers must control fluoride emissions to the low levels required by New Source Performance Standards. The control system includes fans and ducts which draw ambient air into the process and storage equipment where it mixes with contaminated fumes and conveys the contaminants to the scrubbers for removal. The system must have sufficient air capacity to prevent fugitive fluoride emissions by assurance of an ingress of air at all openings.

It is expected that the concentration of particulate emissions from the scrubbers will be not more than 0.03 grains per cubic foot of stack gas. In conjunction with the quantity of air flow determined by the designers to be necessary to meet fluoride emission standards, this amounts to 0.185 pounds per ton of P_2O_5 production or 20 tons per year for an average annual production of 220,000 tons P_2O_5. (Refer to Attachment E. See sample calculation below.)

Although it is expected that particulate emissions from the scrubbers will be 0.03 grains per cubic foot or less, there is no history of performance to substantiate this. USS Agri-Chemicals requests that final emission limits be deferred pending actual performance testing.

Sample Calculations

1. Particulate emission rate per ton of P_2O_5 produced:

a) Volumetric flow through reaction and filtration area scrubber for each train @ 700 tons P_2O_5 produced per day $= \frac{36{,}000 \text{ ft}^3/\text{min}}{2} = 18{,}000 \text{ ft}^3/\text{min}$

b) Volumetric flow through clarification and storage area scrubber for each train @ 700 tons P_2O_5 produced per day $= \frac{6{,}000 \text{ ft}^3/\text{min}}{2} = 3{,}000 \text{ ft}^3/\text{min}$

c) Particulate emission rate:

$$= 21{,}000\ \frac{ft^3}{min} \times 0.03\ \frac{gr\ part.}{ft^3} \times 1440\ \frac{min}{d} \times \frac{1}{7000}\ \frac{lb}{gr} \times \frac{1}{700}\ \frac{d}{ton\ P_2O_5}$$

= 0.185 lb/ton

2. Maximum particulate emission rate per hour:

= 0.185 lb/ton x 32.1 ton/h

= 5.9 lb/h

3. Average particulate emission rate per year:

$$= \frac{0.185\ lb/ton \times 220{,}000\ ton/yr}{2000\ lb/ton}$$

= 20 ton/yr

ATTACHMENT H

PREVENTION OF SIGNIFICANT DETERIORATION
(For Section II.G.3 and Section VII. of Application)

The new phosphoric acid plant will not be a source of sulfur dioxide (SO_2). Therefore, PSD provisions in FAC 17-2.04 related to SO_2 do not apply.

Emissions of particulate matter are difficult to estimate as discussed in Attachment G, but average annual emissions are expected to be no greater than 20 tons per year per train, or 40 tons per year for both trains combined. However, this figure must be evaluated in light of the fact that the new phosphoric plant will replace an existing phosphoric acid plant. If point source particulate emissions from the existing plant (which are not regulated) are calculated on the same basis as that for the new plant (0.185 lb/ton P_2O_5), existing particulate emissions are on the order of 18 tons per year. The net difference is therefore an increase of about 22 tons per year.

This change must be further qualified, however, by noting that the existing plant processes dry rock whereas the new plant will process only wet rock. As a result of the switch to a wet rock process, fugitive particulate emissions will decrease substantially. The actual increase (if any) in overall particulate emissions should therefore be less than 20 tons per year, and a detailed PSD analysis does not seem warranted for this relatively minor change in emissions.

State of Florida

Department of State

I certify from the records of this office that UNITED STATES STEEL CORPORATION, is a corporation organized under the laws of the State of Delaware, and is authorized to transact business within the State of Florida.

The charter number for this corporation is 819214.

I further certify that said corporation has filed all annual reports and has paid all annual report filing fees due this office through December 31, 1979, and its status is active.

Given under my hand and the Great Seal of the State of Florida, at Tallahassee, the Capital, this the 3rd day of March, 1980.

George Firestone

George Firestone
Secretary of State

CER 101 Rev. 5-79

AC 53-33822

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Air Pollution [X] New[1] [ ] Existing[1]

APPLICATION TYPE: [X] Construction [ ] Operation [ ] Modification

COMPANY NAME: USS Agri-Chemicals COUNTY: Polk

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Auxiliary Boiler

SOURCE LOCATION: Street Highway 630 West City Ft. Meade

UTM: East 416.19 (Zone 17) North 3068.65

Latitude ____ ° ____ ' ____ "N Longitude ____ ° ____ ' ____ "W

APPLICANT NAME AND TITLE: G. W. Beck, Manager, Florida Phosphate Operations

APPLICANT ADDRESS: P.O. Box 150, Bartow, Florida 33830

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of ____________

I certify that the statements made in this application for a ____________ 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 provision 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 non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: George W. Beck

George W. Beck, Manager, Fl Phosphate Operations
Name and Title (Please Type)

Date: 8/5/80 Telephone No. 813-533-0471

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

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 judgment, 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, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed: James H. Carroll

James H. Carroll
Name (Please Type)

USS Agri-Chemicals
Company Name (Please Type)

P. O. Box 150, Bartow, Fl 33830
Mailing Address (Please Type)

(Affix Seal)

JAMES H. CARROLL CERTIFICATE NO. 19407 STATE OF FLORIDA REGISTERED ENGINEER

Florida Registration No. 19407

Date: 8/5/80 Telephone No. 813-533-0471

[1]See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Construction of a package boiler. See Attachment A for additional details.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction March 1981 Completion of Construction March 1983

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

None

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ____ Yes X No

F. Normal equipment operating time: hrs/day 24 ; days/wk ____ ; wks/yr 5 ; if power plant, hrs/yr ____ ;

if seasonal, describe:

G. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No
   a. If yes, has "offset" been applied? ____
   b. If yes, has "Lowest Achievable Emission Rate" been applied? ____
   c. If yes, list non-attainment pollutants. ____
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII. No (See Atch B)
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? No
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
NOT APPLICABLE				

B. Process Rate, if applicable: (See Section V, Item 1) NOT APPLICABLE

1. Total Process Input Rate (lbs/hr): ______

2. Product Weight (lbs/hr): ______

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
SO_2	51	11	None	51	51	22	Pt. B03
NO_x (as NO_2)	30	11	None	30	30	13	on Atch F
(CO, hydrocarbons, and particulates $\leq$ 1 ton/year)							

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5]
Low-sulfur fuel will be used.				

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. — 0.1 pounds per million BTU heat input)

[3] Calculated from operating rate and applicable standard

[4] Emission, if source operated without control (See Section V, Item 3)

[5] If Applicable

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Natural Gas	-	0.105	100
or, No. 2 Fuel Oil	-	16.9	100
(Natural gas used whenever available. See Attachment C.)			

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis: (for No. 2 Fuel Oil)

Percent Sulfur: 0.5 Percent Ash: Trace

Density: 7.2 @ 60°F lbs/gal Typical Percent Nitrogen: + O_2 = 0.2

Heat Capacity: ______ BTU/lb 141000 BTU/gal

Other Fuel Contaminants (which may cause air pollution): ______

F. If applicable, indicate the percent of fuel used for space heating. Annual Average ______ Maximum ______

G. Indicate liquid or solid wastes generated and method of disposal.

Boiler blowdown is combined with cooling tower blowdown and discharged to plant outfall.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 70 ft. Stack Diameter: 3.67 ft.

Gas Flow Rate: 31700 ACFM Gas Exit Temperature: 400 °F.

Water Vapor Content: 18 % Velocity: 50 FPS

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste ______

Total Weight Incinerated (lbs/hr) ______ Design Capacity (lbs/hr) ______

Approximate Number of Hours of Operation per day ______ days/week ______

Manufacturer ______

Date Constructed ______ Model No. ______

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

Stack Height: ______________ ft. Stack Diameter ______________ Stack Temp. ______________

Gas Flow Rate: ______________ ACFM ______________ DSCFM* Velocity ______________ FPS

*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 devices: ______________

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 where required for this application.

1. Total process input rate and product weight – show derivation. NOT APPLICABLE
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.,) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made. (See Attachment C)
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). (See Attachment C)
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, etc.). NOT APPLICABLE
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3, and 5 should be consistent: actual emissions = potential (1-efficiency). NOT APPLICABLE
6. 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. (See Attachment D)
7. An 8½" x 11" plot plan showing the 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 relevant portion of USGS topographic map). (See Attachment E)
8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram. (See Attachment F)

9. An application fee of $20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
[ ] Yes [X] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) [ ] Yes [X] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
SO_2 - fuel oil	51 lb/h (0.51 lb/10^6 Btu)
NO_x (as NO_2) - fuel oil	30 lb/h (0.3 lb/10^6 Btu)
NO_x (as NO_2) - natural gas	20 lb/h (0.2 lb/10^6 Btu)

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:
5. Useful Life:
6. Operating Costs:
7. Energy:
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

10. Stack Parameters

a. Height: ft. b. Diameter: ft.

c. Flow Rate: ACFM d. Temperature: °F

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy*: h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy**: h. Maintenance Costs:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power — KWH design rate.

3.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Life: f. Operating Cost:

g. Energy: h. Maintenance Cost:

*Explain method of determining efficiency above.

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space and operate within proposed levels:

4.

a. Control Device

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device: Low-sulfur fuel oil when natural gas not available.
2. Efficiency*:
3. Capital Cost:
4. Life:
5. Operating Cost: $132,800/year**
6. Energy:
7. Maintenance Cost:
8. Manufacturer:
9. Other locations where employed on similar processes:

**Premium paid for low-sulfur fuel compared with No. 6 fuel oil @ 2.5% sulfur.

a.

(1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Manager:

(6) Telephone No.:

*Explain method of determining efficiency above.

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

b.

(1) Company:

(2) Mailing Address:

(3) City:

(4) State:

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

10. Reason for selection and description of systems:

Low-sulfur fuel oil is to be used when natural gas not available in order to reduce SO_2 emissions.

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII – PREVENTION OF SIGNIFICANT DETERIORATION
(See Attachment B)

A. Company Monitored Data

1. ______ no sites ______ TSP ______ ( ) SO^{2}* ______ Wind spd/dir

Period of monitoring ___/___/___ to ___/___/___
month day year month day year

Other data recorded ______________________________

Attach all data or statistical summaries to this application.

2. Instrumentation, Field and Laboratory

a) Was instrumentation EPA referenced or its equivalent? ___ Yes ___ No

b) Was instrumentation calibrated in accordance with Department procedures? ___ Yes ___ No ___ Unknown

B. Meteorological Data Used for Air Quality Modeling

1. ___ Year(s) of data from ___/___/___ to ___/___/___
month day year month day year

2. Surface data obtained from (location) ______________________________

3. Upper air (mixing height) data obtained from (location) ______________________________

4. Stability wind rose (STAR) data obtained from (location) ______________________________

C. Computer Models Used

1. ______________________________ Modified? If yes, attach description.

2. ______________________________ Modified? If yes, attach description.

3. ______________________________ Modified? If yes, attach description.

4. ______________________________ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	______ grams/sec
SO^{2}	______ grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

*Specify bubbler (B) or continuous (C).

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

ATTACHMENT A

(For Section II.A. of Permit Application)

This unit will be a conventional dual fired, water tube, package boiler, with a maximum input rating of 100 x 10^6 Btu per hour, generating saturated steam at 250 PSIG pressure.

The boiler is a necessity to provide an independent supply of steam to start up the sulfuric acid plants which are part of the overall project. Additionally, it may be used as an auxiliary steam supply in event of an unscheduled shut down of one or both of the sulfuric acid plants.

The boiler is designed to use natural gas or No. 2 fuel oil. Natural gas will be used whenever available which is expected to be about 50 percent of the time. These premium grade (low-sulfur fuels) are used to minimize SO_2 emissions. The added annual cost of low-sulfur fuels is shown elsewhere in the application.

ATTACHMENT B

PREVENTION OF SIGNIFICANT DETERIORATION

(For Section II.G.3. and Section VII. of Application)

The new sulfuric acid plant auxiliary boiler is a replacement for an existing auxiliary boiler and does not represent a net change in emissions. In addition, the boiler will operate on a very intermittent basis and will use natural gas rather than No. 2 fuel oil whenever possible. As a result, annual emissions of sulfur dioxide are expected to be less than 15 tons per year. Therefore, a PSD analysis is not considered necessary.

ATTACHMENT C

(For Section V.2. and Section V.3. of Application)

1. Emission Estimate

Estimates are based on expected operation of the boiler 5 weeks per year (840 hours) - 420 hours per year on natural gas and 420 hours per year on No. 2 fuel oil - and a heat input of 100×10^6 Btu per hour.

Natural Gas:

(a) SO_2 Emissions = negligible

(b) Hourly NO_x Emissions $= 0.2 \frac{\text{lb } NO_2}{10^6 \text{ Btu}} \times 100 \times 10^6 \frac{\text{Btu}}{\text{h}}$

$= 20 \text{ lb/h}$

(c) Annual NO_x Emissions $= \frac{20 \text{ lb/hr} \times 420 \text{ h/yr}}{2000 \text{ lb/ton}}$

$= 4 \text{ ton/yr}$

No. 2 Fuel Oil

(a) Hourly SO_2 Emissions $= 16.9 \frac{\text{bbl}}{\text{h}} \times 42 \frac{\text{gal}}{\text{bbl}} \times 7.2 \frac{\text{lb}}{\text{gal}} \times 0.005 \frac{\text{lb S}}{\text{lb oil}} \times 2 \frac{\text{lb } SO_2}{\text{lb S}}$

$= 51 \text{ lb/h}$

(b) Annual SO_2 Emissions $= \frac{51 \text{ lb/h} \times 420 \text{ h/yr}}{2000 \text{ lb/ton}}$

$= 11 \text{ ton/yr}$

(c) Hourly NO_x Emissions $= 0.3 \frac{\text{lb } NO_2}{10^6 \text{ Btu}} \times 100 \times 10^6 \frac{\text{Btu}}{\text{h}}$

$= 30 \text{ lb/h}$

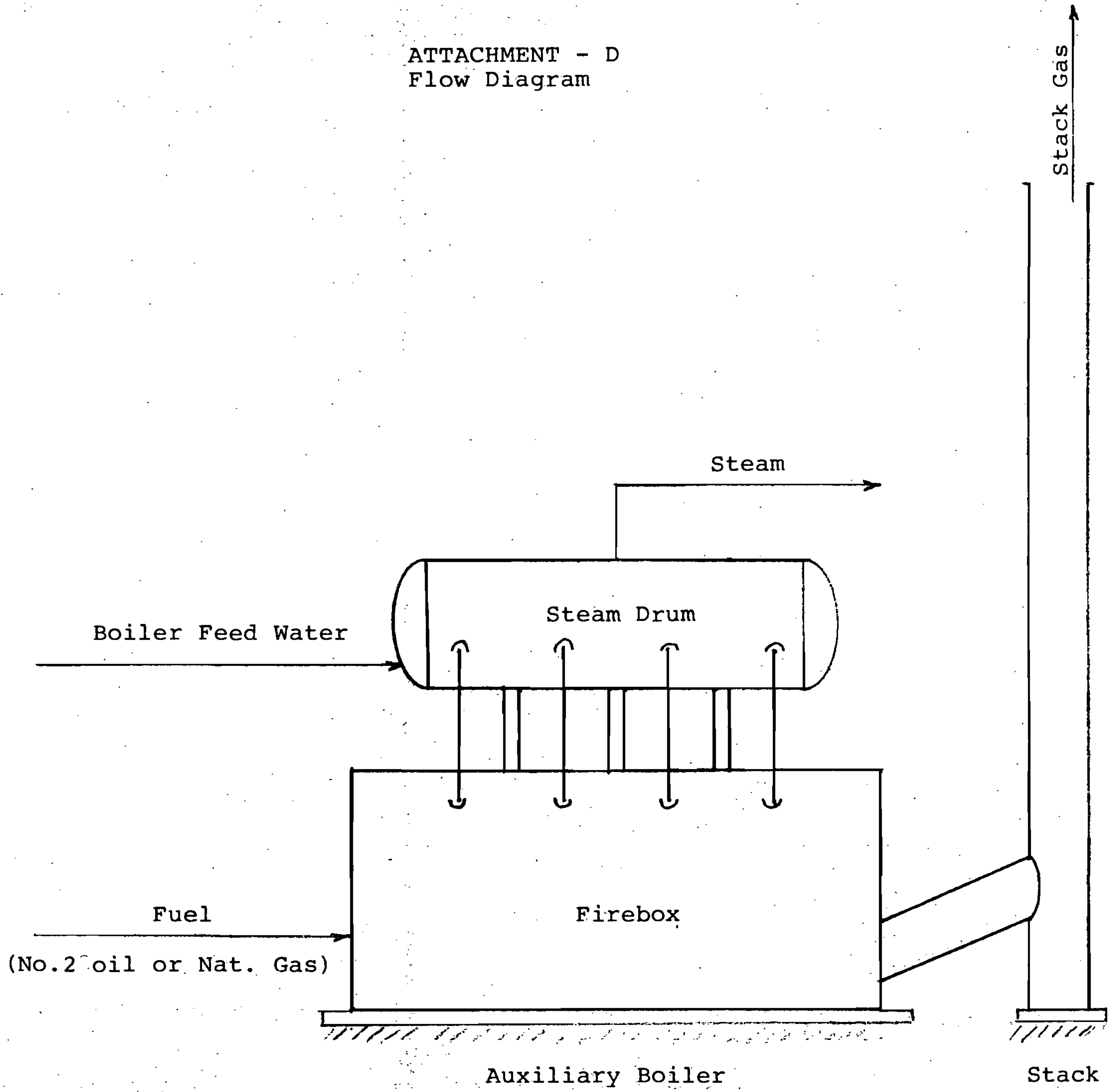
(d) Annual NO_x Emissions $= \frac{30 \text{ lb/h} \times 420 \text{ h/yr}}{2000 \text{ lb/ton}}$

$= 6 \text{ ton/yr}$

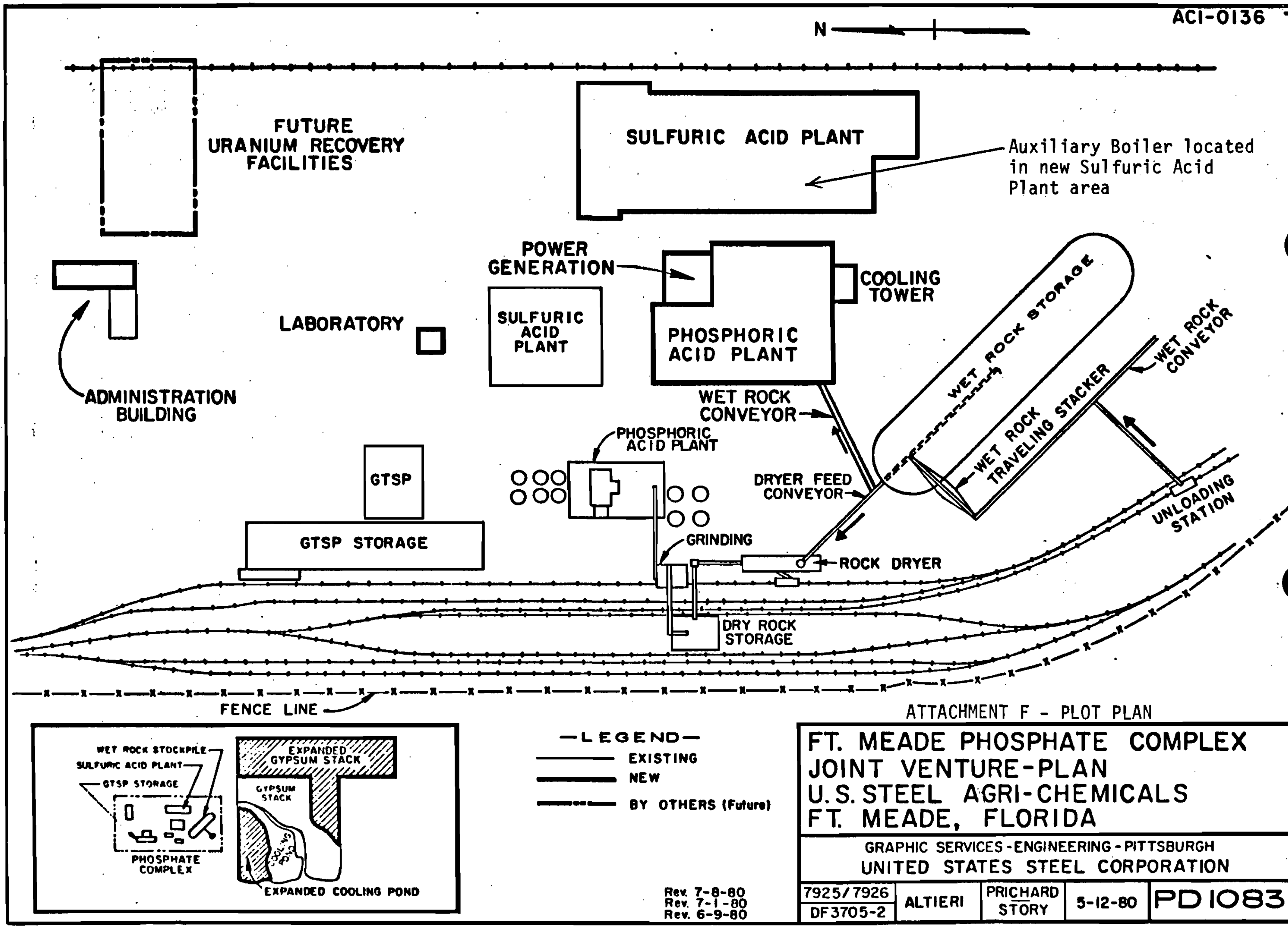
2. Basis of Potential Discharge

Potential and actual hourly emissions are equivalent in this case since there are no flue gas emission controls. Potential annual emissions are based on use of fuel oil alone during the 840 hours per year when the boiler is expected to be in operation.

ATTACHMENT - D
Flow Diagram



Attachment E - Location of USS Agri-Chemicals
Fort Meade Phosphate Chemical Complex


ACI-0136
N
FUTURE URANIUM RECOVERY FACILITIES
SULFURIC ACID PLANT
Auxiliary Boiler located in new Sulfuric Acid Plant area
POWER GENERATION
COOLING TOWER
LABORATORY
SULFURIC ACID PLANT
PHOSPHORIC ACID PLANT
WET ROCK STORAGE
WET ROCK CONVEYOR
ADMINISTRATION BUILDING
WET ROCK CONVEYOR
WET ROCK TRAVELING STACKER
PHOSPHORIC ACID PLANT
GTSP
DRYER FEED CONVEYOR
UNLOADING STATION
GTSP STORAGE
GRINDING
ROCK DRYER
DRY ROCK STORAGE
FENCE LINE
ATTACHMENT F - PLOT PLAN
WET ROCK STOCKPILE
SULFURIC ACID PLANT
GTSP STORAGE
PHOSPHATE COMPLEX
EXPANDED GYPSUM STACK
GYPSUM STACK
COOLING POND
EXPANDED COOLING POND
-LEGEND-
EXISTING
NEW
BY OTHERS (Future)
Rev. 7-8-80
Rev. 7-1-80
Rev. 6-9-80
FT. MEADE PHOSPHATE COMPLEX
JOINT VENTURE-PLAN
U.S. STEEL AGRI-CHEMICALS
FT. MEADE, FLORIDA
GRAPHIC SERVICES-ENGINEERING-PITTSBURGH
UNITED STATES STEEL CORPORATION
7925/7926
DF3705-2
ALTIERI
PRICHARD
STORY
5-12-80
PD1083

State of Florida

Department of State

I certify from the records of this office that UNITED STATES STEEL CORPORATION, is a corporation organized under the laws of the State of Delaware, and is authorized to transact business within the State of Florida.

The charter number for this corporation is 819214.

I further certify that said corporation has filed all annual reports and has paid all annual report filing fees due this office through December 31, 1979, and its status is active.

Given under my hand and the Great Seal of the State of Florida, at Tallahassee, the Capital, this the 3rd day of March, 1980.

George Firestone
Secretary of State

GREAT SEAL OF THE STATE OF FLORIDA
IN GOD WE TRUST

CER 101 Rev. 5-79

Copy Tampa 1-5-83

USS
Agri-Chemicals
Division of United States Steel Corporation

MAIL: P. O. BOX 150
BARTOW, FLORIDA 33830
813-533-0471

July 11, 1980

RECEIVED
JUL 1980
BUREAU
AQM

Mr. Tommie A. Gibbs
Air Facilities Branch
U. S. Environmental Protection Agency
345 Courtland Street
Atlanta, Georgia 30308

Dear Mr. Gibbs:

Re: Phosphate Chemical Complex
PSD-FL-064

Herein is information requested by your letter of June 19, 1980 as needed for continuation of the permit application review.

1. Proposed Allowable Capacities and Emission Rates

Phosphoric Acid Plant

Capacity:- 64.2 Tons/Hr. P_2O_5, 24 hour average basis.
Fluoride Emissions:
Daily Maximum Basis - 1.41 Pounds/Hr.
Daily Avg., 365 day Basis - 1.21 Pounds/Hr.

Sulfuric Acid Plant

Capacity:- 183.3 Tons/Hr. H_2SO_4, 24 Hour average basis.
SO_2 Emissions:
Daily Maximum Basis - 733 Pounds/Hr.
Daily Avg., 365 Day Basis - 619 Pounds/Hr.

Note: USS Agri-Chemicals is willing to accept an annual SO_2 emission limit of 2710 tons. This is equivalent to 619 pounds per hour average on a 365 day basis. The emission will be verified in USSAC's annual report to Florida DER.

Acid Mist Emissions:
Daily Maximum Basis - 27.5 Pounds/Hr.
Daily Avg., 365 Day Basis - 23.2 Pounds/Hr.

2. Actual SO_2 Emissions Compared to Proposed Emissions

As shown in the attached table, maximum production rates for the new sulfuric acid plant on a daily and hourly basis are expected to be 4400 tons/day and 183.3 tons/hour. (These rates are based on production at 10 percent avove the manufacturer's guaranteed capacity and of course cannot be sustained continuously as is pointed out in the attached table.) Corresponding SO_2 emissions rates at the maximum allowable limit of 4 lb. SO_2 per ton of acid are 17,600 lb./day and 733 lb./hour. Actual SO_2 emissions from the existing sulfuric acid plant are frequently at a level of 625 lb./hour (15,000 lb./day), which is the maximum allowable rate. Therefore, maximum allowable emissions for the new plant on an hourly and daily basis exceed maximum actual emissions from the existing plant. The significance of this difference on ambient concentrations is assessed in the attached report by Dames & Moore dated July 9, 1980.

Comparison of actual emissions from the existing plant with emissions from the new plant on an annual basis is more difficult to do in a realistic fashion because of variations in production from year to year and variations in SO_2 emission rates (on a pound per ton basis) during any given year. We feel that the most meaningful procedure is to compare maximum allowable annual emissions for the existing plant with maximum allowable annual emissions for the new plant. This was done in the original PSD permit application, and the resulting comparison shows a decrease in SO_2 emission of 28 tons/year.

To illustrate the complexities involved in comparing annual emissions, emissions from the existing plant during the most recent annual period (1979) can be cited as an example. We have reported total SO_2 emissions during 1979 from the existing plant of 2338 tons, or 534 lb./hour on an annual average basis. Comparable annual average basis emissions from the new plant would be no more than 2464 tons/year or 563 lb./hour, allowing for necessary maintenance and emergency outages but assuming that guaranteed production capacity will be achieved (1,232,000 tons/year; see attached table) and that emissions are always at the maximum allowable rate of 4 lb./ton. Moreover, even this type of comparison must be made with caution since 1979 is not necessarily a representative year for the existing plant. Therefore, since the existing plant frequently operates at its allowable hourly production and emission rates, we feel that the better comparison is between allowable rates as previously stated.

3. <u>GTSP Plant</u>

Since a new GTSP plant has been deleted from the project item 3 is no longer relevant. As you have already been advised by Dames & Moore, in early June it was found necessary to change plans for the Ft. Meade Chemical Plant expansion. USS Agri-Chemicals now plans to continue operation of the existing GTSP plant and storage facilities. Other units of the project remain unchanged. Our consultants, Dames & Moore, have evaluated environmental ramifications of the changes. Enclosed is a report of the findings.

Your letter requests evidence of consistency between hourly and annual values. A set of tables and brief calculations, Exhibit "A" is enclosed to illustrate this relationship.

We trust this information will enable you to conclude your review of our application and that it will be satisfactory for issue of the permit for which we have applied.

Very truly yours,

USS AGRI-CHEMICALS

G. W. Beck, General Manager,
Florida Phosphate Operations

GWB:cbr

Enclosures:
- Dames & Moore report of June 19
- Dames & Moore report of July 9
- Table of Production Rates
- Revised Table 4-1

cc: Mr. Jeffrey Shumaker, TRW, Inc.
Mr. Steve Smallwood, FDER

EXHIBIT "A"

COMPARATIVE PRODUCTION RATES

BASIS	*TONS PER DAY	(TONS) (PER HOUR)	TONS PER YEAR	TONS DAILY AVG.,365 DAYS
Guarantee, P_2O_5	1400		440,000	1205
Maximum, P_2O_5	1540	(64.2)	484,000	1326
Guarantee, H_2SO_4	4000		1,232,000	3375
Maximum, H_2SO_4	4400	(183.3	1,355,000	3712

ALLOWABLE EMISSIONS

Daily Maximum Basis

Fluoride: 1540 x 0.02/0.91** x 24 = 1.41 pounds/hr.
SO_2: 4400 x 4/24 = 733 pounds/hr.
Acid Mist: 4400 x 0.15/24 = 27.5 pounds/hr.

Daily Average, 365 Day Basis

Fluoride: 1326 x 0.02/0.91** x 24 = 1.21 pounds/hr.
SO_2: 3712 x 4/24 = 619 pounds/hr.
Acid Mist: 3712 x 0.15/24 = 23.2 pounds/ hr.

* Chemical plants must have a daily (hourly) operating capacity in excess of the annual average daily (hourly) rate in order to allow downtime for necessary maintenance and emergency outages. The table illustrates expected production rates based on the guaranteed daily rate, and potential production rates based on optimum conditions.

** P_2O_5 in product is 91% of P_2O_5 in feed rock.

TABLE 4-1 (REVISED)

CHARACTERISTICS OF AFFECTED EMISSION SOURCES

Existing Facilities Which Will be Replaced or Continued	Allowable Sulfur Dioxide Emissions (ton/yr)	Allowable Sulfuric Acid Mist Emissions (ton/yr)	Allowable Flouride Emissions (ton/yr)	Stack Height (ft)	Stack Diameter (ft)	Exit Temperature (°F)	Exit Velocity (ft/s)	Exit Volumetric Flow (act.ft^3/min)
Sulfuric Acid Plant (replaced)	2738	82	--	95	9.9	87	22.2	102400
Phosphoric Acid Plant (replaced)	--	--		73	3.3	99	35.9	18400
				76	6.0	105	7.5	12800
				76	6.0	112	7.4	12500
Granular Triple Super Phosphate Plant (continued)	--	--	45[a]	80	2.5	95	11.9	3500
				93	5.0	119	53.2	62700
				93	5.0	125	41.1	48400
				89	15.0	69	4.4	47000
Granular Triple Super Phosphate Storage (continued)	--	--		c	c	c	c	c
Existing Complex Total	2738	82	45					
New and Continued Facilities								
Sulfuric Acid Plant (new)	2710	102	--	175	8.5	180	31	106500[d]
Phosphoric Acid Plant (new)	--	--	5[b]	75	3.4	100	33	18000[d]
				62	3.0	105	14	6000
Granular Triple Super Phosphate Plant (continued)	--	--	43	e	e	e	e	e
Granular Triple Super Phosphate Storage (continued)	--			e	e	e	e	e
Modified Complex Total	2710	102	48					
Net Change in Allowable Emissions	-28	+20	+3					

[a]The allowable fluoride emission rate for the existing plant complex is a total rate for all fluoride emission sources combined.
[b]The fluoride emission rate shown is the total for all stacks combined.
[c]No stack.
[d]Volumetric flow through each of two identical stacks.
[e]Same as above.

DAMES & MOORE
CONSULTANTS IN THE ENVIRONMENTAL AND APPLIED EARTH SCIENCES

SUITE M-4 • 1935 EAST EDGEWOOD DRIVE • LAKELAND, FLORIDA 33803 • (813) 682-8141

June 19, 1980

USS Agri-Chemicals
P.O. Box 150
Bartow, Florida 33830

Attention: Mr. R.T. Lindsay

Gentlemen:

Environmental Permitting Studies
Fort Meade Phosphate Chemical Complex
Fort Meade, Florida

As you have requested, we have reviewed the changes in the proposed plan for the Fort Meade Phosphate Chemical Complex expansion and have assessed the effects of these changes on the project impacts identified in earlier studies. Dames & Moore's evaluation of these changes is described in the following sections.

INTRODUCTION

The USS Agri-Chemicals Ft. Meade Phosphate Chemical Complex expansion project has been modified from that submitted to the U.S. EPA on October 25, 1979 and supplemented on March 11, 1980. USSAC now plans not to add a monammonium phosphate unit to the plant and will not replace the existing granular triple super phosphate unit or modify the existing GTSP storage area. Other units and aspects of the project remain unchanged.

The following discussion explains these changes in greater detail and their effect on previously identified project impacts.

REVISED PROJECT DESCRIPTION

The modified plant expansion project includes:

- Addition of new wet rock grinding mills.
- Extension of the present cooling water pond area and addition of cooling water towers.

- Extension of the present gypsum disposal area.

- Replacement of the present sulfuric acid plant with a new sulfuric acid plant.

- Replacement of the present phosphoric acid plant, including the fluorine recovery system, with a new phosphoric acid plant and fluorine recovery system.

These modifications will provide increased sulfuric and phosphoric acid production capabilities and will also add the capability for wet rock grinding. Uranium extraction from the phosphoric acid produced by USSAC will be accomplished off-site by an independent operation.

Deleted from the original plant expansion project are the following:

- Construction of a monammonium phosphate (MAP) fertilizer production plant.

- Replacement of the present GTSP plant with a new GTSP plant.

- Addition of a scrubbing system to the granular triple super phosphate (GTSP) storage building.

Neither plant or individual unit planned production capacities are affected by these changes in the proposed project.

CHANGES IN IMPACTS

The elimination of these portions of the project will reduce many of the project impacts, and will not affect the magnitude of many others. In only one area, air pollutant emissions, is an increase noted, as described in this section.

The reduced scope of the construction effort results in a reduction in the magnitude of many of the construction induced impacts, including traffic, dust and noise, and secondary impacts related to construction force size.

In addition to affecting these short term impacts, a reduction in many of the long term impacts is expected. These impacts will include those related to resource utilization, permanent labor force and area required for the expansion (see Figure 1-2 (revised)).

As a result of these changes in the project, allowable air pollutant emissions of fluoride will increase from the current 45 tons/year to 48.1 tons/year. This increase will have a negligible impact on the air quality of the surrounding area and will be within state and federal air pollutant emission standards.

Since this change in the proposed plan will not affect the waste gypsum disposal or cooling water requirements, no effects are anticipated on water quality, the biological environment, aesthetics or land use.

-oOo-

Should you wish to discuss the preceeding information, please contact us at your convenience.

Yours very truly,

DAMES & MOORE

TM Gurr by SFT

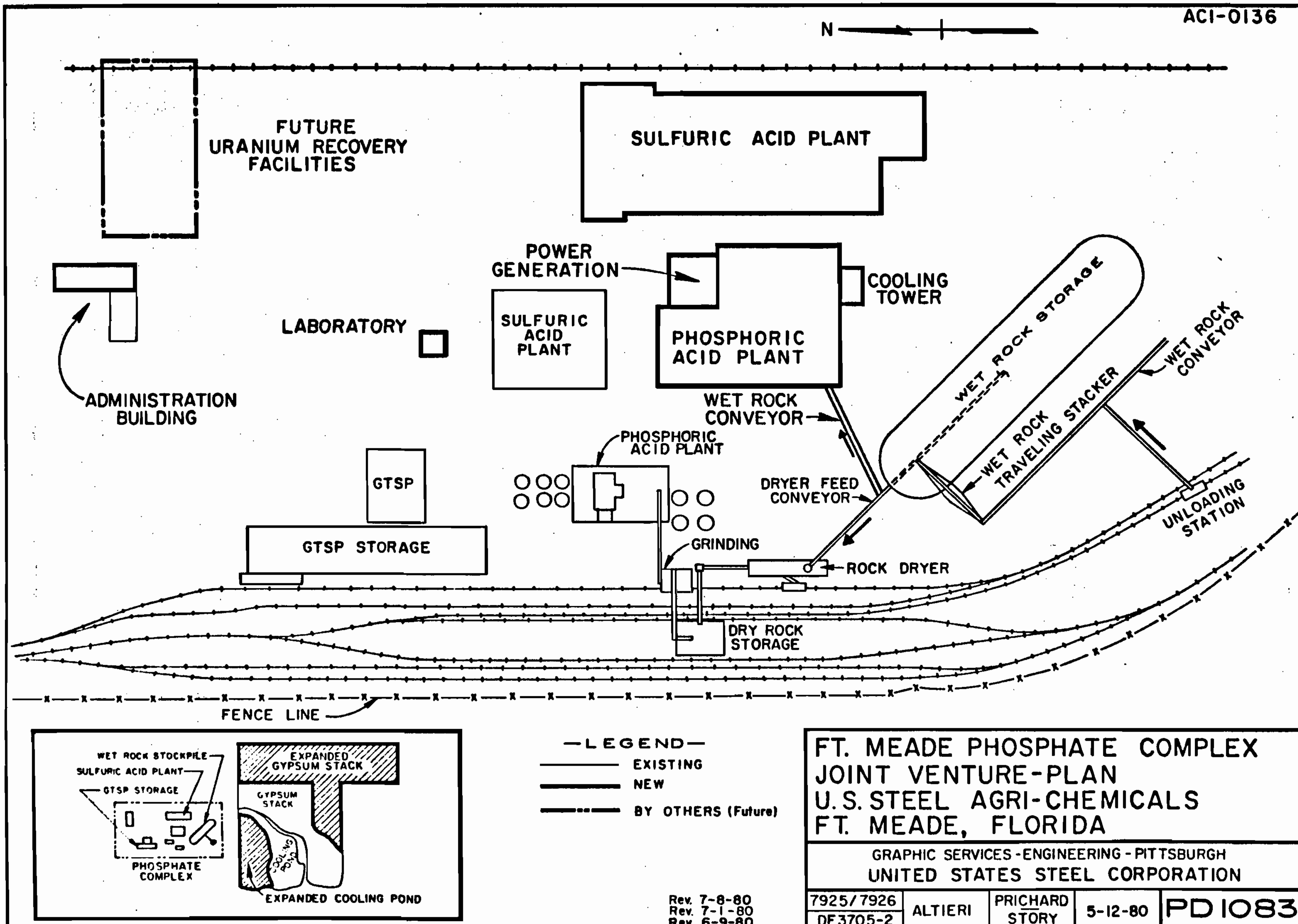
T.M. Gurr
Principal-in-Charge

Steve Tarlton

S.F. Tarlton
Project Manager

TMG/SFT:arm

cc: Mr. William C. Thomas - USSAC
Mr. B. Powell - USSAC


ACI-0136
N
FUTURE URANIUM RECOVERY FACILITIES
SULFURIC ACID PLANT
POWER GENERATION
COOLING TOWER
ADMINISTRATION BUILDING
LABORATORY
SULFURIC ACID PLANT
PHOSPHORIC ACID PLANT
WET ROCK STORAGE
WET ROCK CONVEYOR
WET ROCK CONVEYOR
WET ROCK TRAVELING STACKER
PHOSPHORIC ACID PLANT
DRYER FEED CONVEYOR
GTSP
GTSP STORAGE
GRINDING
ROCK DRYER
UNLOADING STATION
DRY ROCK STORAGE
FENCE LINE
WET ROCK STOCKPILE
SULFURIC ACID PLANT
GTSP STORAGE
PHOSPHATE COMPLEX
EXPANDED GYPSUM STACK
GYPSUM STACK
COOLING POND
EXPANDED COOLING POND
—LEGEND—
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NEW
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Rev. 7-1-80
Rev. 6-9-80
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GRAPHIC SERVICES-ENGINEERING-PITTSBURGH
UNITED STATES STEEL CORPORATION
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USS
Agri-Chemicals
Division of United States Steel Corporation

MAIL: P. O. BOX 150
BARTOW, FLORIDA 33830
813-533-0471

May 21, 1980

U. S. Environmental Protection Agency, Region IV
Air and Hazardous Materials Division
Air Facilities Branch
345 Courtland Street, N.E.,
Atlanta, Ga. 30308

Attn: Mr. Tommie A. Gibbs, Branch Chief

Gentlemen:

Re: Prevention of Significant
Deterioration Permit Application
for Proposed Modifications
at the USS Agri-Chemicals'
Fort Meade Phosphate Chemical Complex

Attached is a Prevention of Significant Deterioration (PSD) permit application for proposed modifications at USS Agri-Chemicals' Fort Meade (Florida) Phosphate Chemical Complex. It is our understanding that our consultants, Dames & Moore, have discussed this project with members of your staff and representatives of EPA's contractor, TRW, Inc. We trust you will find the application suitable in form and content to satisfy your requirements.

USS Agri-Chemicals will be pleased to meet with EPA representatives or otherwise provide additional information relevant to the project at any time if this will assist in your review.

Your timely response will be appreciated.

Very truly yours,

USS AGRI-CHEMICALS

GWB:cbr

G. W. Beck, General Manager,
Florida Phosphate Operations

cc: Mr. Jack Preece, TRW, Inc.
Mr. Steve Smallwood, Florida DER

DAMES & MOORE

from the desk of

Jim Little

May 21, 1980

ATTN: WILLARD HANKS

Please route this to Steve Smallwood and the USSAC file after you have reviewed.

Jim Little

PREVENTION OF SIGNIFICANT DETERIORATION PERMIT APPLICATION

USS AGRI-CHEMICALS
FORT MEADE (FLORIDA) PHOSPHATE
CHEMICAL COMPLEX

SUBMITTED TO
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION IV

PREVENTION OF SIGNIFICANT DETERIORATION PERMIT APPLICATION FOR PROPOSED MODIFICATIONS AT USS AGRI-CHEMICALS FORT MEADE PHOSPHATE CHEMICAL COMPLEX

Submitted by:

Dames & Moore
Atlanta, Georgia

Submitted to:

USS Agri-Chemicals
P.O. Box 150
Bartow, Florida 33830

DAMES & MOORE

10746-014-26
May 1980

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DAMES & MOORE

CONSULTANTS IN THE ENVIRONMENTAL AND APPLIED EARTH SCIENCES

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SUITE 200, 455 EAST PACES FERRY ROAD · ATLANTA, GEORGIA 30305 · (404) 262-2915
CABLE: DAMEMORE TWX: 810-751-8218

May 21, 1980

USS Agri-Chemicals
Post Office Box 150
Bartow, Florida 33830

Attention: Mr. Basil Powell

Re: Prevention of Significant Deterioration Permit Application for Proposed Modifications at the USS Agri-Chemicals Fort Meade Phosphate Chemical Complex

Gentlemen:

Attached is a Prevention of Significant Deterioration (PSD) permit application for proposed modifications at USS Agri-Chemicals' Fort Meade (Florida) Phosphate Chemical Complex. The application is based on our understanding that the proposed project will be reviewed under existing PSD regulations (adopted in June 1978). We further understand from our reading of the regulations and from discussions with EPA and TRW that the project requires a PSD permit and is subject to certain Best Available Control Technology requirements, but that a detailed impact analysis is not required based on the exemption allowed under Section 52.21(k)(1)(iv) of the regulations as further described in the preamble to the regulations found on p. 26394 of the 6/19/78 Federal Register.

Please call if there are any questions.

Yours truly,

DAMES & MOORE

James W. Little, for

T. M. Gurr
Associate

James W. Little

James W. Little
Senior Air Quality Analyst

TMG:JWL:ht

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1.0 APPLICANT INFORMATION

1.1 GENERAL INFORMATION

Company Name: USS Agri-Chemicals

Address: Post Office Box 150
Bartow, Florida 33830

Telephone: 813/533-0471

Facility Requiring Permit: Fort Meade Phosphate Chemical Complex

Responsible Official: G.W. Beck, Manager
Florida Phosphate Operations

Person to Contact
For Additional Information: Basil Powell

Source Location: The Fort Meade Phosphate Chemical Complex is located in Polk County on Highway 630 West approximately 4 km west of Fort Meade, Florida, at UTM coordinates 416.0 E, 3069.0 N (Zone 17).

Nature of the
Proposed Project: USS Agri-Chemicals (USSAC) plans to replace and overhaul equipment at its existing Fort Meade Phosphate Chemical Complex as a part of a modification program which will result in a production capacity increase.

1.2 PROJECT SCHEDULE OBJECTIVES

Start Construction: January 1981

Start Operation: July 1982

2.0 SITE INFORMATION

A regional scale map showing the location of USSAC's Fort Meade Phosphate Chemical Complex is provided in Figure 2-1. Site boundaries and the location of proposed facility modifications are shown in Figure 2-2.

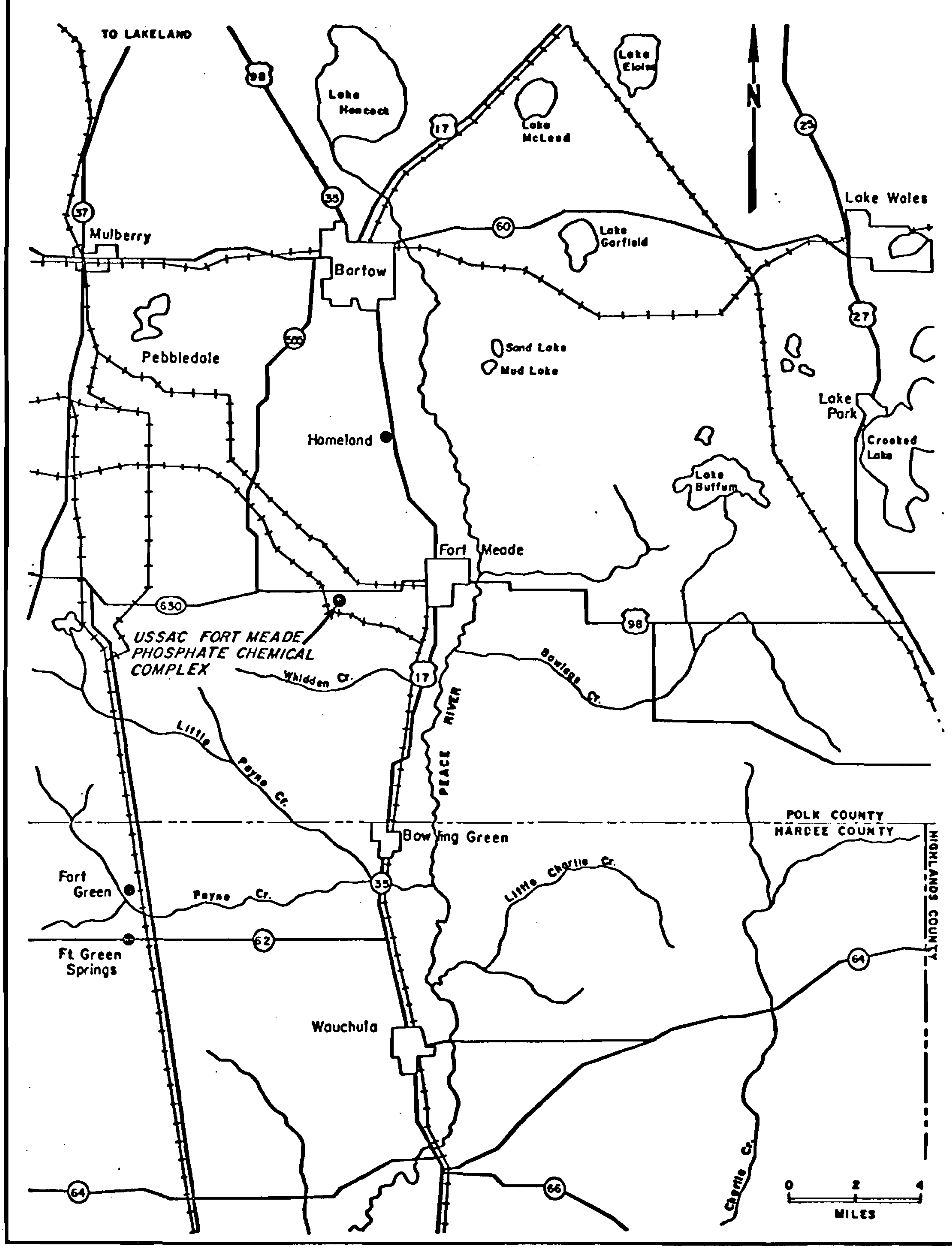


Figure 2-1. Location of USS Agri-Chemicals Fort Meade Phosphate Chemical Complex.

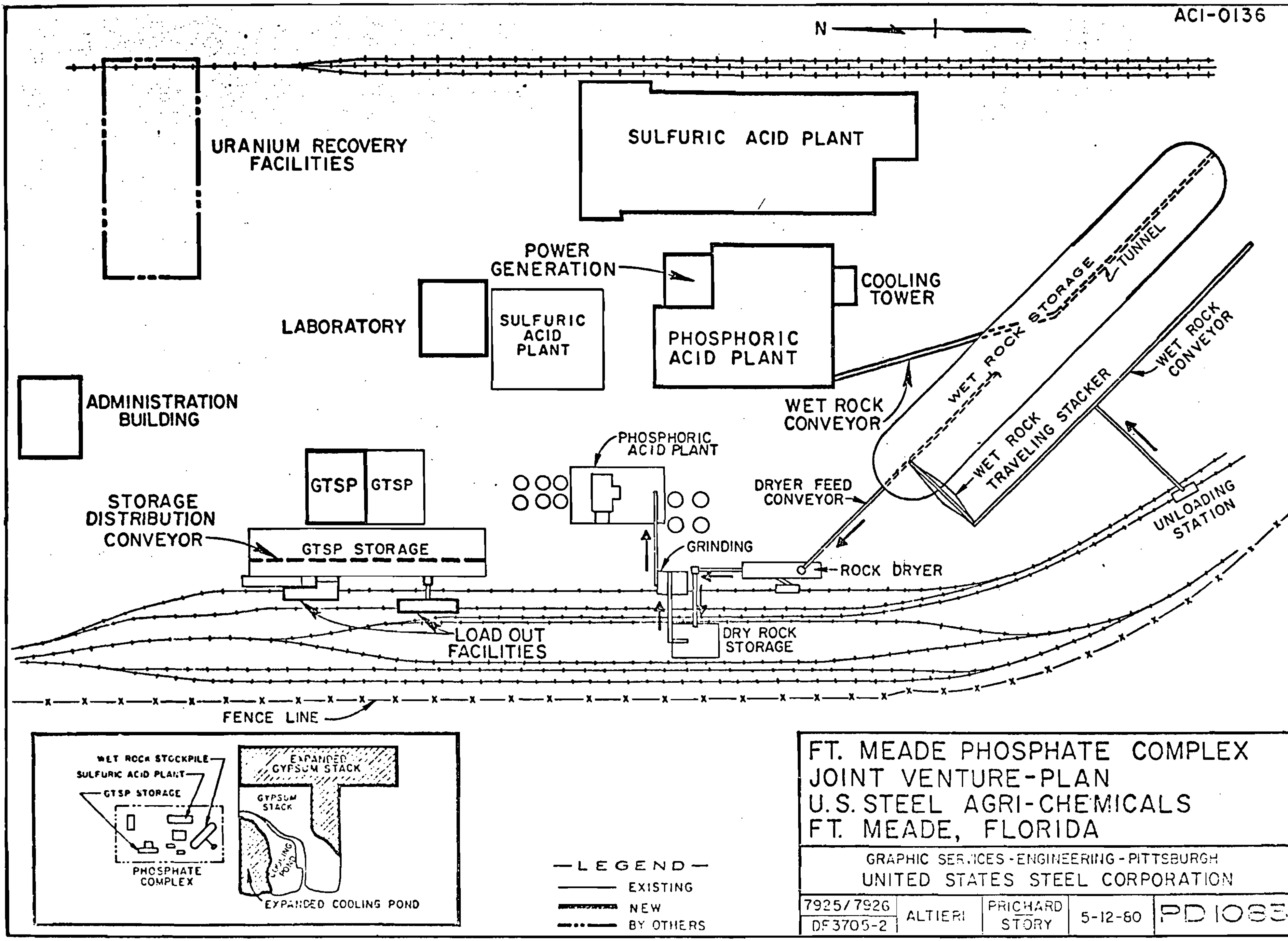


Figure 2-2. Location of New and Modified Facilities.

3.0 DESCRIPTION OF MODIFICATIONS AND NEW FACILITIES

3.1 GENERAL DESCRIPTION

USSAC presently operates a phosphate chemical complex near Fort Meade, Florida. Some of the facilities at the complex are old and need replacement or major overhauls. Modifications to these facilities will result in the replacement of some equipment, renovation of other equipment, and construction of some new facilities. These modifications will be undertaken by USSAC as managing partner of a joint venture between United States Steel Corporation and W.R. Grace & Company.

The present complex covers about 560 acres of land and consists of: a sulfuric acid plant, a phosphoric acid plant, a granular triple superphosphate (GTSP) plant, a GTSP storage building, a system for the recovery of fluosilicic acid from the phosphoric acid plant, and supporting facilities and buildings such as office and maintenance. These facilities were constructed and began operation in 1961. Sulfur dioxide abatement equipment was added to the sulfuric acid plant in 1975. Current plant sections (excluding the sulfur dioxide abatement facility) occupy about 20 acres of land.

A number of waste disposal and water storage areas required for fertilizer chemical production are also located on the USSAC site. Gypsum, a by-product resulting from the processing of phosphoric acid, is stored in a disposal area to the south of the chemical complex. Process water is cooled in a recirculating cooling water pond adjacent to the gypsum disposal area. The existing gypsum disposal area and cooling water ponds occupy about 178 acres of land. Sulfur dioxide limestone scrubber water is held in a retention pond located southwest of the plant area and north of the existing gypsum disposal area. This retention pond, together with the sulfur dioxide abatement facility, occupy about 33 acres of land.

Many facilities at the USSAC plant are nearing the end of their useful life. In addition, a number of technological advancements have been made within the phosphate industry since construction of the Fort Meade complex. In order to update the existing complex, it will be necessary to add some new facilities and overhaul or replace some existing facilities. Planned modifications to the USSAC plant include:

- Addition of new wet rock grinding mills.
- Addition of a scrubbing system to the GTSP storage building. (?)
- Extension of the present cooling water pond area and addition of cooling water towers.
- Extension of the present gypsum disposal area.
- Replacement of the present sulfuric acid plant with a new sulfuric acid plant.
- Replacement of the present GTSP plant with a new GTSP plant.
- Replacement of the present phosphoric acid plant, including the fluorine recovery system, with a new phosphoric acid plant and fluorine recovery system.

(Addition of a monammonium phosphate plant which had been part of original design plans is no longer considered necessary. Uranium extraction from the phosphoric acid produced by USSAC will be accomplished off-site by an independent operation.)

These modifications will provide increased sulfuric and phosphoric acid production capabilities and will also add the capability for wet rock grinding. Present and proposed permitted annual production capacities for the Fort Meade complex can be compared quantitatively as follows:

Activity	Permitted Production Level (short tons/year) Present	Proposed
Wet Rock Grinding	None	1,600,000
Sulfuric Acid Production	547,500	1,355,000
Phosphoric Acid Production	200,000	484,000
Fluosilicic Acid Production	8,100	15,000
GTSP Production	365,000	365,000
GTSP to Storage	365,000	365,000

DRY ROCK PROCESSING?

Construction of these facilities is planned to begin early in 1981. Existing facilities to be dismantled once the proposed plant modifications are fully operational include the sulfuric acid plant, phosphoric acid plant, and GTSP plant. Modification of production facilities will require approximately 8 additional acres of land. Expansion of the gypsum disposal area will require the largest amount of land, approximately 165 acres. The water surface area of ponds used for cooling purposes will increase from the present area of about 60 acres to a total of as much as 123 acres, an increase of up to 63 acres.

3.2 FUEL CONSUMPTION

There will be no increase in fuel consumption as a result of the proposed project. The only new facility which requires fuel routinely is the GTSP plant where natural gas (or fuel oil when gas is not available) is used in the product dryer. Since there will be no increase in GTSP production capacity, the same amount of fuel will be needed for the new plant as is now used in the existing plant which will be replaced.

3.3 PROCESS FLOW DIAGRAMS

As stated above, new process facilities to be constructed as part of the proposed project are a wet process phosphoric acid plant, a sulfuric acid plant, and a GTSP plant. Flow diagrams are provided for these facilities as follows:

- sulfuric acid plant -- Appendix A
- phosphoric acid plant -- Appendix B
- granular triple superphosphate plant -- Appendix C

The other emission source affected by this project is the existing GTSP storage building which will be modified by addition of a scrubbing system. Since this is strictly an add-on to an existing facility and one which will lower air emissions, no flow diagram is included.

4.0 EMISSIONS SOURCE INFORMATION

4.1 IDENTIFICATION OF EMISSION SOURCES

4.1.1 Point Sources

Table 4-1 lists characteristics of existing emission sources which will be replaced or modified, in comparison with characteristics of new and modified sources. The emission rates shown are allowable rates on a tons per year (ton/yr) basis. Derivation of emission rates is explained in Section 4.2.

As can be seen, the only new or modified source with allowable emissions in excess of 100 ton/yr is the new sulfuric acid plant. Allowable emissions of both sulfur dioxide and sulfuric acid mist from this plant will exceed 100 ton/yr. Allowable emissions of fluorides from all new and modified plants combined will be less than 50 ton/yr. Potential emissions of fluorides in the absence of control equipment would be approximately 2200 ton/yr for all sources combined.

An important aspect of the proposed project is the net change in emissions after existing plants are replaced or modified. As shown in Table 4-1, there will be a decrease in allowable emissions of sulfur dioxide and fluorides and an increase in allowable emissions of sulfuric acid mist. The increase in allowable emissions of sulfuric acid mist, however, will be well below 50 ton/yr.

Although there are no specific particulate emission standards applicable to the sources in question, two of the sources - the GTSP plant and GTSP storage building - are minor particulate sources. The key point here is that there will be no increase in GTSP production, and therefore no increase in particulate emissions. It is more probable that there will be a decrease in emissions because of design features such as the baghouse which will be used to collect rock dust in the new GTSP plant and the scrubber which will be added to the GTSP storage building.

The only continuous fuel burning source involved in the project is the GTSP plant dryer. Natural gas is the fuel used when available.

No. 6 fuel oil is burned when gas supplies are interrupted. There is a potential for emissions of nitrogen oxides (NO_x) when fossil fuels are burned, but there will be no increase in emissions as a result of the proposed project because the product amount dried in the new plant will be equal to that now dried and the amount of fuel used will therefore be the same. NO_x emissions from existing and new GTSP plants are not regulated by State or Federal emission standards, and it is difficult to estimate what these emissions are or will be when the new plant begins operation. NO_x emission factors for oil- and gas-fired boilers are not directly applicable to rotary dryers because there can be some retention of combustion gases (including NO_x) in materials being dried and because the considerable moisture present can reduce flame temperatures, thereby inhibiting NO_x formation. Furthermore, some removal of NO_x can occur in the wet scrubbers which are used in the GTSP plant for control of fluoride and particulate emissions. Formation of NO_x is also dependent on the type of fuel used, and in this case would vary depending on whether or not natural gas or fuel oil is burned.

Operation of the GTSP dryer requires a heat input of approximately 2.7×10^{11} Btu per year. Typically about 54 percent of this energy requirement is supplied by natural gas and 46 percent by fuel oil. This is equivalent to about 1.53×10^8 cubic feet of natural gas and 8.33×10^5 gallons of No. 6 fuel oil per year. Using AP-42 boiler emission factors (EPA, 1977a) as an upper limit on emission rates, annual NO_x emissions (as NO_2) should be no higher than 39 tons. As discussed above, there will be no increase in this rate when the new GTSP dryer begins operation.

4.1.2 Fugitive Fluoride Emissions

For several years there has been an interest in possible fugitive fluoride emissions from cooling ponds used in phosphate chemical production plants. Despite this interest, there is no clearcut means of estimating the quantity of emissions which might be released from a specific cooling pond area. One proposed method of estimating these emissions is on the basis of cooling pond water surface area. This approach seems overly simplistic in that it does not take into direct account such factors as cooling water fluoride concentration and heat load. Moreover, the few empirical studies available indicate emission factors using the surface area approach which can vary by two orders of magnitude, suggesting considerable uncertainty in this methodology. For example, a review of research studies made for EPA (Linero and Baker, 1978) contains the conclusion that an appropriate emission factor "appears" to lie in a range from 0.1 to 10 pounds per acre per day.

USSAC presently plans to expand the existing cooling ponds at the Fort Meade Phosphate Chemical Complex from the present water surface area of about 60 acres to a new total of as much as 123 acres, an increase of up to 63 acres. The size required is based primarily on two factors: the size required for cooling purposes and the size required for storage purposes. Surface area (as well as pond depth) plays a key role in storage capacity because there must be sufficient evaporation to compensate for the abundant rainfall experienced in central Florida. The storage capacity and associated evaporation potential must be sufficiently large if discharge of contaminated cooling water is to be avoided as is USSAC's intention. It is, of course, to USSAC's advantage - both from an economic and a space availablitiy standpoint - to provide for no greater area than is needed, and therefore the final size of the cooling pond expansion will be kept to a minimum consistent with cooling and storage needs. (It should also be noted that the cooling towers listed in Section 3.1 will circulate uncontaminated water and will not be a source of fugitive fluoride emissions.)

USSAC feels that EPA's decision on this PSD permit application should not be contingent on considerations of fugitive fluoride emissions from cooling pond areas for the following reasons: (1) there is extreme uncertainty in estimating what specific change in fugitive fluoride emissions might occur as a result of this project; (2) there are no Federal or State emission standards limiting fluoride emissions from cooling ponds; (3) there are no Federal or Florida ambient standards for fluorides; (4) there are no hazardous emission standards for fluorides; and (5) there is no agreement on what would constitute a control technology to reduce fluoride emissions from cooling ponds other than possibly minimizing the size of cooling ponds which is USSAC's intention. (With regard to this last point, EPA's Areawide Environmental Impact Statement for the central Florida phosphate industry recommends fluosilicic acid byproduct recovery as a means of reducing fluoride emissions from cooling ponds, although there is disagreement as to whether or not this is actually an effective approach. USSAC plans to follow the EIS recommendation by increasing fluosilicic acid production.

4.1.3 Fugitive Dust Emissions

USSAC's plan to increase phosphoric acid production suggests at first glance that there might be an increase in fugitive dust emissions associated with the increased amount of phosphate rock which must be fed into the process. However, the new phosphoric acid plant will use wet rock rather than dry rock, thereby virtually eliminating any fugitive dust emissions from rock storage, conveying, and grinding. Increased production of sulfuric acid will not result in fugitive dust emissions because there is no dry materials handling in sulfuric acid plants. Any fugitive dust emissions associated with the GTSP plant and GTSP storage area will not change from existing levels because there will be no increase in production of GTSP. The conclusion is, therefore, that fugitive dust emissions will not increase as a result of the proposed project. In fact, although the amount cannot be quantified, it is expected that fugitive dust emissions will be reduced because of improved layout and product handling in the new and modified facilities.

4.1.4 Sulfuric Acid Plant Startup Boiler

The new sulfuric acid plant requires a startup boiler as does the existing plant which it replaces. This boiler will be strictly in standby service and will be used only to start the plant back up after a shutdown. Emissions, therefore, will be inconsequential and no greater than those which originate from the existing startup boiler.

The new boiler will be fueled with natural gas when available, and with No. 2 fuel oil otherwise.

4.2 DERIVATION OF EMISSION RATE ESTIMATES

Emission rates for sulfur dioxide and sulfuric acid mist from the sulfuric acid plant and fluoride emissions from the phosphoric acid plant, GTSP plant, and GTSP storage area were derived by applying State and Federal emission limits to the permitted production capacities of existing units and proposed production capacity of new units. Applicable emission limits and production capacities are listed in Table 4-2.

The fluoride emission limit shown for GTSP storage is the Florida limit of 0.05 lb flouride per ton P_2O_5. The Federal New Source Performance Standard (NSPS) for this source is 0.0005 lb per hour per ton of equivalent P_2O_5 stored, a limit which is awkward to use in estimating annual emissions. In practice, emissions from the storage area will have to conform to the most stringent of these standards.

4.3 SCHEDULE FOR EMISSION SOURCE CHANGES

The new sulfuric acid, phosphoric acid, and GTSP plants are designed for complete replacement of the existing plants. After construction of the new plants is finished, there will be a brief overlapping period of operation until the new plants are operating satisfactorily, then the old plants will be removed from service. The shakedown period for the new plants is expected to last about 3 months.

Since the GTSP storage area will be modified and not replaced, the question of overlapping period of operation is not applicable. When the new scrubber system has been constructed and tested, it will be placed into full-time service.

TABLE 4-1

CHARACTERISTICS OF AFFECTED EMISSION SOURCES

Existing Facilities Which Will be Replaced or Modified	Allowable Sulfur Dioxide Emissions (ton/yr)	Allowable Sulfuric Acid Mist Emissions (ton/yr)	Allowable Flouride Emissions (ton/yr)	Stack Height (ft)	Stack Diameter (ft)	Exit Temperature (°F)	Exit Velocity (ft/s)	Exit Volumetric Flow (act.ft^3/min)
Sulfuric Acid Plant (replaced)	2738	82	--	95	9.9	87	22.2	102400
Phosphoric Acid Plant (replaced)	--	--		73	3.3	99	35.9	18400
				76	6.0	105	7.5	12800
				76	6.0	112	7.4	12500
Granular Triple Super Phosphate Plant (replaced)	[e]	--	45[a]	80	2.5	95	11.9	3500
				93	5.0	119	53.2	62700
				93	5.0	125	41.1	48400
				89	15.0	69	4.4	47000
Granular Triple Super Phosphate Storage (modified)	--	--		[c]	[c]	[c]	[c]	[c]
	2937	82	45					
New or Modified Facilities								
Sulfuric Acid Plant (new)	2710	102	--	175	8.5	180	31	106500[d]
Phosphoric Acid Plant (new)	--	--	5[b]	75	4.0	100	33	24400
				62	3.0	105	14	6000
Granular Triple Super Phosphate Plant (new)	[e]	--	14	190	6.0	105	40	67000
Granular Triple Super Phosphate Storage (modified)	--	--	5	120	7.5	100	42	108000
	2909	102	24					
Net Change in Allowable Emissions	-28	+20	-21					

[a] The allowable fluoride emission rate for the existing plant complex is a total rate for all fluoride emission sources combined.

[b] The new phosphoric acid plant will be equipped with two emission vent stacks. The fluoride emission rate shown is the total for both stacks combined.

[c] No stack.

[d] Volumetric flow through each of two identical stacks.

[e] The GTSP plant dryer when burning fuel oil will be a source of SO_2. However, fuel consumption in the new plant will equal that in the existing plant, and there should be no net change in emissions.

TABLE 4-2

PRODUCTION CAPACITIES AND EMISSION LIMITS

A. Production Capacities

	Present Sulfuric Acid Production and P_2O_5 Input Rates (tons/year)	Proposed Sulfuric Acid Production and P_2O_5 Input Rates (tons/year)
Sulfuric Acid (100% H_2SO_4)	547,500	1,355,000
Phosphoric Acid (as P_2O_5 input)	223,000	532,000
GTSP (as P_2O_5 input)	n/a	182,500
GTSP to Storage (as P_2O_5 input)	n/a	182,500

B. Emission Limits

	Existing Units	New Units
Sulfuric Acid Plant		
Sulfur Dioxide	10 lb/ton 100% H_2SO_4	4 lb/ton 100% H_2SO_4
Sulfur Acid Mist	0.3 lb/ton 100% H_2SO_4	0.15 lb/ton 100% H_2SO_4
Phosphoric Acid Plant		
Fluorides	a	0.02 lb/ton P_2O_5
GTSP Plant		
Fluorides	a	0.15 lb/ton P_2O_5[b]
GTSP Storage		
Fluorides	a	0.05 lb/ton P_2O_5[b]

[a] Fluoride emission limit for existing units is a total emission rate for the entire complex of 0.4 lb/ton P_2O_5 input to wet-process phosphoric acid section.

[b] Florida emission limiting standard.

5.0 REGULATORY CONSIDERATIONS

5.1 PREVENTION OF SIGNIFICANT DETERIORATION REGULATIONS

Existing PSD regulations require that when a major facility (one with allowable emissions of a regulated pollutant greater than 50 ton/yr and potential emissions greater than 100 ton/yr) is added to or reconstructed at an emission source, whether the addition is to replace previous production capacity or for increased capacity, a PSD permit is needed and the facility must undergo a Best Available Control Technology (BACT) review. At the same time, so long as there is no net increase for the source as a whole in emissions of pollutants subject to national ambient air quality standards and no adverse air quality impact would occur, then an exemption from a formal impact analysis can be obtained (40 CFR 52.21(k)(1)(iv)). Under such an exemption, an applicant need not (1) perform a detailed analysis to show compliance with ambient air quality standards and PSD increments, (2) conduct pre-construction or post-construction ambient air quality monitoring, or (3) provide an additional impact analysis of the impairment to visibility, soils, or vegetation, or an analysis of the air quality impact projected for the area as a result of general commercial, residential, industrial, and other growth associated with the applicant's project. If potential emissions (emissions in the absence of control equipment) are greater than 100 ton/yr but allowable emissions are less than 50 ton/yr, it is necessary to demonstrate that the applicant will meet all emission limitations which are part of an applicable State Implementation Plan and all applicable Federal emission standards and standards of performance.

Based on these regulatory considerations and on the nature of the emission source changes described in Section 4.0, it is USSAC's understanding that a PSD permit will be required for the Fort Meade Phosphate Chemical Complex project, that a BACT analysis for the new sulfuric acid plant is needed as is a discussion to show that other process facilities will meet applicable emission standards, but that a detailed impact analysis is not necessary. The remainder of this application is organized accordingly. Section 6.0 presents a BACT analysis for the new sulfuric acid plant and an emissions control analysis for the new phosphoric acid plant, the new GTSP plant, and the modified GTSP storage building. Information is also provided on the proposed cooling pond expansion. Section 7.0 contains a brief ambient impact analysis to show that emission source changes should not result in an adverse air quality impact offsetting the effect of decreased emissions, and to show that nearest PSD Class I and nonattainment areas will not be significantly affected by the project.

5.2 FLORIDA PERMIT APPLICATIONS

In addition to PSD permitting requirements, USSAC must also satisfy Florida permitting requirements. Applications for construction permits will be submitted to the Florida Department of Environmental Regulation. Four separate permit applications will be filed - one each for the new sulfuric acid plant, the new phosphoric acid plant, the new GTSP plant, and the modified GTSP storage building.

5.3 OTHER PERMITTING ACTIONS

Because of the need to obtain a National Pollutant Discharge Elimination System permit from EPA, USSAC has submitted an Environmental Information Document to Region IV's Environmental Impact Statement Branch. This document should be reviewed if additional information on the project is needed.

6.0 BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

As discussed in Section 5.0, it is USSAC's understanding that the only new facility technically requiring a BACT analysis is the new sulfuric acid plant. However, for information purposes, a description of fluoride emission controls for the new phosphoric acid plant, the new GTSP plant, and the modified GTSP storage area is also presented below. Comments on cooling pond design are given as well.

6.1 SULFURIC ACID PLANT

USSAC proposes to construct a two-unit, contact-type double absorption process, Monsanto design sulfuric acid plant with a nominal production capacity of 4000 short tons per day (100 percent H_2SO_4 basis). Control of sulfur dioxide emissions will be achieved as an integral feature of the double absorption process, contrasted with the existing sulfuric acid plant which requires an add-on scrubber to achieve desired emission levels. Sulfuric acid mist control will be achieved through the use of mist eliminators to reduce mist levels in gases leaving the interpass and final absorption tower. A description of the sulfuric acid production process, a copy of the contractor performance quarantee, a process material flow diagram, and a plot plan are attached in Appendix A.

The maximum emission rates which USSAC intends to achieve in satisfaction of BACT requirements are 4 lb SO_2 and 0.15 lb H_2SO_4 mist per ton of 100 percent H_2SO_4 produced. USSAC considers these limits to be representative of BACT for the following reasons:

1. The emission rates proposed are in compliance with Federal NSPS for new sulfuric acid plants (40 CFR 60.82 and 60.83) and with Florida emission limiting standards for new sulfuric acid plants (Florida Administrative Code 17-2.05(6)).

2. Compliance with Federal NSPS and use of the contact-type double absorption system with mist eliminator has previously been judged by EPA to constitute BACT for at least one other phosphate chemical plant in Florida (EPA, 1979).

3. By complying with new source emission standards, operation of the new plant will result in a decrease in allowable SO_2 emissions. Coincident with the decrease in allowable emissions there will be "no adverse air quality impact" (using the language of PSD regulations) - as discussed in Section 7.0. Acid mist emissions will increase slightly, but there is no ambient standard or PSD increment for sulfuric acid mist and no adverse impact is expected to result.

It is theoretically conceivable that additional control of SO_2 emissions could be achieved using some sort of add-on stack flue gas desulfurization (FGD) system. However, USSAC is not aware of any other installations where the double-absorption process has had to be supplemented by FGD equipment, and such an approach certainly does not seem necessary in this case for the reasons cited above.

6.2 PHOSPHORIC ACID PLANT

The new phosphoric acid plant will use wet rock, thereby eliminating incidental dust emissions connected with dry rock handling. Fluoride emissions will be controlled through the use of two fume scrubbers. A venturi cyclonic fume scrubber with a design fluoride collection efficiency of 99 percent will be used to control emissions from the reaction and filtration area, and an ejector venturi fume scrubber with a design fluoride collection efficiency of 95 percent will be used to control emissions from the storage tank area. A description of the phosphoric acid production process (including fluocilicic acid production), a copy of the contractor performance guarantee, and a process flow diagram are attached in Appendix B.

The proposed maximum fluoride emission rate from the new phosphoric acid plant is 0.02 lb per ton of equivalent P_2O_5 feed. This rate conforms with the Federal NSPS for new wet-process phosphoric acid plants (40 CFR 60.202) and with the Florida emission limiting standard for new wet-process phosphoric acid plants (Florida Administrative Code 17-2.05(6)). Compliance with this standard will result in a decrease in fluoride emissions from process facilities when combined with proposed changes in GTSP production and storage.

6.3 GRANULAR TRIPLE SUPERPHOSPHATE PLANT AND STORAGE

The new GTSP plant will have the same production rate as the existing plant which will be taken out of service. Control of particulate and fluoride emissions will be achieved through the use of two scrubbers, a reactor-granulator scrubber and a dryer scrubber. (Exhaust gases from these scrubbers will go to a common stack for discharge to the atmosphere.) Fluoride control efficiencies achieved in reactor-granulator and dryer scrubbers will be at least 99 percent. A description of the GTSP production process and a process flow diagram are attached in Appendix C. Modifications to the existing GTSP storage building will include addition of a scrubber system to achieve emission control which does not now exist.

The proposed maximum fluoride emission rate from the new GTSP plant is 0.15 lb per ton of equivalent P_2O_5 feed. This rate conforms with the Florida emission limiting standard for new plants producing GTSP from phosphoric acid and phosphate rock slurry (Florida Administrative Code 17-2.05(6)), and is better than the 0.2 lb per ton allowed by Federal NSPS for new triple superphosphate plants (40 CFR 60.232).

The maximum fluoride emission rate from the modified GTSP storage building will conform with the Federal NSPS for new GTSP storage facilities (0.0005 lb fluoride per ton equivalent P_2O_5 stored; 40 CFR 60.242). Compliance with the Florida emission limiting standard of 0.05 lb per ton P_2O_5 (Florida Administrative Code 17-2.05(6)) will also be achieved.

The fluoride emission controls planned for the GTSP plant and storage building, in combination with new phosphoric acid plant emission controls, will result in a decrease in fluoride emissions from process facilities compared with the existing phosphate chemical complex. After the proposed changes are in operation, the minor particulate emissions associated with GTSP production and storage will be at least as low as and probably lower than at present.

6.4 COOLING POND EXPANSION

As discussed previously, USSAC does not think it is possible to accurately estimate fugitive fluoride emissions from cooling ponds, and consequently does not think it justifiable for process or pond design requirements to be imposed because of possible cooling pond fluoride emissions. Nevertheless, to allay any concerns about such emissions, the following points are noted:

1. Fluosilicic acid production rates will increase. Although not all authorities agree that fluosilicic acid recovery helps reduce fluoride emissions from cooling ponds, USSAC's proposed action in this regard is consistent with the recommendation of EPA's areawide EIS for the central Florida phosphate industry.

2. USSAC is designing the cooling pond expansion to be large enough for cooling and storage needs but is not overdesigning to the point that water surface area will be much larger than required. Cooling water surface area will increase from the present size of about 60 acres to an expanded total area of up to 123 acres.

7.0 AMBIENT AIR QUALITY

As discussed in Section 5.0, exemption from a detailed impact analysis is permitted if a source is modified but there is no increase in the net amount of emissions for any pollutant subject to a national ambient air quality standard (a criteria pollutant), provided that no adverse air quality impact would occur as a result of the modification. The purpose of the following discussion is to show that no adverse air quality effects will result from USSAC's planned modifications.

In typical PSD air quality impact evaluation studies, ambient ground-level concentrations are predicted using Gaussian modeling concepts. As an example, reference can be made to EPA's CRSTER Model (EPA, 1977b). In this model, as in similar models, ground-level concentrations are inversely proportional to the effective stack height of emission sources. The proportionality is not linear, but if two emission sources have the same emission rate, the one with the higher effective stack height will produce lower ground-level concentrations under all atmospheric stability conditions. Or stated another way more appropriate to the USSAC project, if the emissions from a given source decrease while at the same time the effective stack height remains the same or increases, predicted ground-level concentrations will also decrease. If it can be shown that the proposed decrease in allowable emissions at the Fort Meade Chemical Complex will be accompanied by an increase or no change in effective stack heights, then it is reasonable to conclude that no adverse impact will occur.

(There is one exception to this calculation procedure, but one which does not change the sense of the argument. In situtations when the atmospheric mixing height and dispersion conditions are such as to cause uniform concentrations between the ground and the top of the mixing layer, ground-level concentrations are not a function of effective stack height but are directly dependent on emission rates. In this situation a decrease in emissions will also result in a predicted decrease in ground-level concentrations.)

Effective stack height is defined as the sum of physical stack height plus plume rise. In the standard EPA Gaussian models, plume rise for buoyant sources is calculated using the Briggs plume rise formulas. (See, for example, EPA 1977b). Using these formulas, a different plume rise is calculated for each of three major atmospheric stability conditions (unstable/neutral, stable, and very stable). Regardless of stability, however, plume rise is proportional to what is called the buoyancy flux parameter, F, defined by the equation:

$$F = \frac{gV}{\pi} \left(\frac{T_s - T}{T_s}\right)$$

Where,

g = gravitational acceleration [m/s^2]

T = ambient air temperature [K]

T_s = stack gas temperature [K]

V = stack gas volumetric flow [m^3/s]

The greater the value of F, the higher the plume rise.

These concepts can now be applied to the USSAC project. The only new source with allowable emissions of a criteria pollutant exceeding 50 ton/yr is the sulfuric acid plant. Using the stack characteristics shown in Table 4-1, the value of F for each of the two stacks in the new sulfuric acid plant is 26.5 (using an ambient temperature of 295 K). By comparison, the F value for the existing sulfuric acid plant is 4.3. The new plant will therefore have a higher plume rise. Also, as can be seen from Table 4-1, the physical stack heights of the new plant are nearly twice as high as the existing sulfuric acid plant stack. Therefore, the effective stack height of the new plant will be considerably higher than the effective stack height of the existing plant, and the conclusion is reached that the proposed decrease in allowable SO_2 emissions will result in a decrease in predicted SO_2 ground-level concentrations. In addition, although sulfuric acid mist is not a criteria pollutant requiring an impact analysis, the increase in effective stack height should largely offset the ambient effects of the small increase in sulfuric acid mist emissions.

It is recognized that the Briggs plume rise formulas for buoyant plumes are not strictly applicable to the existing sulfuric acid plant because of the low exit temperature involved. If anything, however, the Briggs buoyant plume rise formulas probably overpredict plume rise from this plant, and the argument above would be further strengthened if a cold plume calculation method were used.

It is not necessary to evaluate the air quality effect of flouride emission sources because fluorides are not designated as a criteria pollutant and because fluoride emissions from new and modified sources (that is, process sources) will not exceed 50 ton/yr. The same approach can be taken with these sources as with the sulfuric plants, however. The effective stack heights of new and modified sources will be higher than or approximately equal to those of the existing plants. (Actual calculations show that the plume rise of the new GTSP plant stack will be less than that from two of the four stacks in the existing plant, but the difference in physical stack heights will make up for the difference in plume rise.) Therefore, the decrease in allowable fluoride emissions will result in a decrease in predicted ambient fluoride concentrations attributable to process sources.

As a final note on ambient air quality, some comments on PSD Class I areas and nonattainment areas are appropriate. The nearest PSD Class I area is the Chassahowitzka National Wilderness Area located 125 km to the northwest on the Gulf coast. The next nearest Class I is 200 km away. The proposed project will not have an adverse effect on either area.

The nearest sulfur dioxide nonattainment area is in Pinellas County, approximately 80 km from the Fort Meade Phosphate Chemical Complex. Closer nonattainment areas are located in Hillsborough County for ozone and particulate matter. None of these areas will be adversely affected by the proposed project.

8.0 REFERENCES

Linero, A.A. and Baker, R.A., 1978, Evaluation of emissions and control techniques for reducing fluoride emissions from gypsum ponds in the phosphoric acid industry. Prepared for U.S. Environmental Protection Agency, Industrial Environmental Research Laboratory, Publication No. EPA-600/2-78-124.

U.S. Environmental Protection Agency, 1977a, Compilation of air pollutant emission factors. Office of Air Quality Planning and Standards, Publication No. AP-42 (updated through supplement 9, October 1979).

__________, 1977b, User's manual for single-source (CRSTER) model. Office of Air Quality Planning and Standards, Publication No. EPA-450/2-77-013.

__________, 1979, Compilation of BACT/LAER determinations. Office of Air Quality Planning and Standards, Publication No. EPA-450/2-79-003.

APPENDIX A

SULFURIC ACID PLANT INFORMATION

DESCRIPTION OF SULFURIC ACID PRODUCTION

The principal steps in the process consist of burning sulfur (S) in air to form sulfur dioxide (SO_2), combining the sulfur dioxide with oxygen (O_2) to form sulfur trioxide (SO_3), and combining the sulfur trioxide with water (H_2O) to form a solution containing sulfuric acid (H_2SO_4). The chemical reactions are:

$$S + O_2 = SO_2$$

$$SO_2 + 1/2\ O_2 = SO_3$$

$$SO_3 + H_2O = H_2SO_4$$

The sulfur is burned with air in a horizontal spray-type sulfur burner. Before the air is admitted to the sulfur burner, it is dried by contact with 98 percent sulfuric acid.

The temperature of the SO_2 gas from the sulfur burner is higher than is required for inlet to the conversion system; therefore, the gas is cooled in a waste heat boiler, which recovers the surplus heat as by-product steam.

From the waste heat boiler, the gas flows to the first pass of the converter system where it is partially converted to sulfur trioxide gas in the presence of vanadium catalyst. The conversion reaction produces heat. Gases leaving the first converter pass flow to the superheater where they are cooled. Temperature of the gas stream downstream of the superheater is controlled in the proper range by by-passing a portion of the gas flow around the superheater. The cool gas stream flows from the superheater to the second converter pass where additional conversion of sulfur dioxide to sulfur trioxide takes place, accompanied by the generation of additional heat. Hot gases leaving the second converter pass are cooled by sending them through the tube side of the hot interpass exchanger.

Cooled gases leaving the heat exchanger flow to the third converter pass where additional conversion of sulfur dioxide to sulfur trioxide takes place. Hot gases leaving the third converter pass are cooled by sending them through the tube side of two gas heat ex-

changers, called cold interpass heat exchangers, connected in series, and the economizer.

Gas leaving the economizer flows to the interpass absorbing tower where the SO_3 in the gas stream is removed. In the interpass absorbing tower, the SO_3 does not combine directly with water, but must be combined indirectly by absorbing it in sulfuric acid where the SO_3 reacts with water in the acid. The temperature of the 98 to 99 percent H_2SO_4 circulated over the interpass absorbing tower increases due to the heat of formation and the sensible heat of the gas stream entering the tower. Acid from the bottom of the interpass absorbing tower is circulated through coolers and returned to the top of the tower. Sufficient water is added to the interpass absorption tower system to control the strength of acid circulated over the interpass tower between 98 and 99 percent. Cool gas leaving the interpass absorbing tower, containing unreacted SO_2, flows to the shell side of the cold interpass gas heat exchangers where it is heated by gases leaving the third converter pass.

From the shell side of the cold interpass heat exchangers, the gas stream flows to the hot interpass heat exchanger where it is further heated by gases flowing from the second converter pass.

The temperature downstream of the interpass heat exchanger is controlled in the proper range by by-passing a portion of gas around the shell side of the heat exchanger. From the hot interpass heat exchanger, the gas stream flows to the fourth converter pass where final conversion of SO_2 in the gas stream to SO_3 is accomplished.

The gas stream from the fourth converter pass flows to the economizer where it is cooled by boiler feedwater and then flows to the final absorbing tower. In the final absorbing tower, SO_3 in the gas stream reacts with water in the 98 to 99 percent circulating acid. The temperature of the strong acid circulated over the final absorbing tower increases due to the heat of formation and the sensible heat of the gas stream entering the tower. Acid from the bottom of the final absorbing tower is circulated through coolers and returned to the top

of the tower. Sufficient water is admitted to the final absorbing tower system to control the strength of acid circulated over the final acid tower between 98 and 99 percent. That acid produced in the final absorbing tower underflows to the drying/interpass acid pump tank.

Gas leaving the final absorbing tower flows to the atmosphere through a stack.

The 98 percent product acid from the drying acid system is pumped directly through a product cooler to storage.

SECTION V

GUARANTEES

A. PERFORMANCE GUARANTEES

1. Contractor guarantees that the plants shall be capable of operating at their rated capacity of 4,000 short tons (100% H_2SO_4) per twenty-four (24) hour day, with all product as 98% sulfuric acid (2000 short tons per plant).

2. Contractor guarantees that the plants shall be capable of operating at 50% of rate capacity of 2,000 short tons (100% H_2SO_4) per twenty-four (24) hour day, with all product as 98% sulfuric acid (1,000 short tons per plant).

3. Contractor guarantees when each plant is operated at its capacity of 2,000 short tons (100% H_2SO_4) per twenty-four (24) hour day, that the SO_2 content in the process gas leaving the final absorption tower shall average over a two (2) hour period not to exceed 4 lbs. per ton of acid produced, and that the H_2SO_4 mist content in the process gas leaving the inter-pass and final absorption tower shall average not to exceed 0.15 lb. per ton of acid produced.

4. Contractor guarantees that the combined cooling tower blowdown and boiler blowdown will average not to exceed 500 GPM when both cooling tower and boiler are operated per vendor recommendations and with inlet well water quality as specified in Section II.

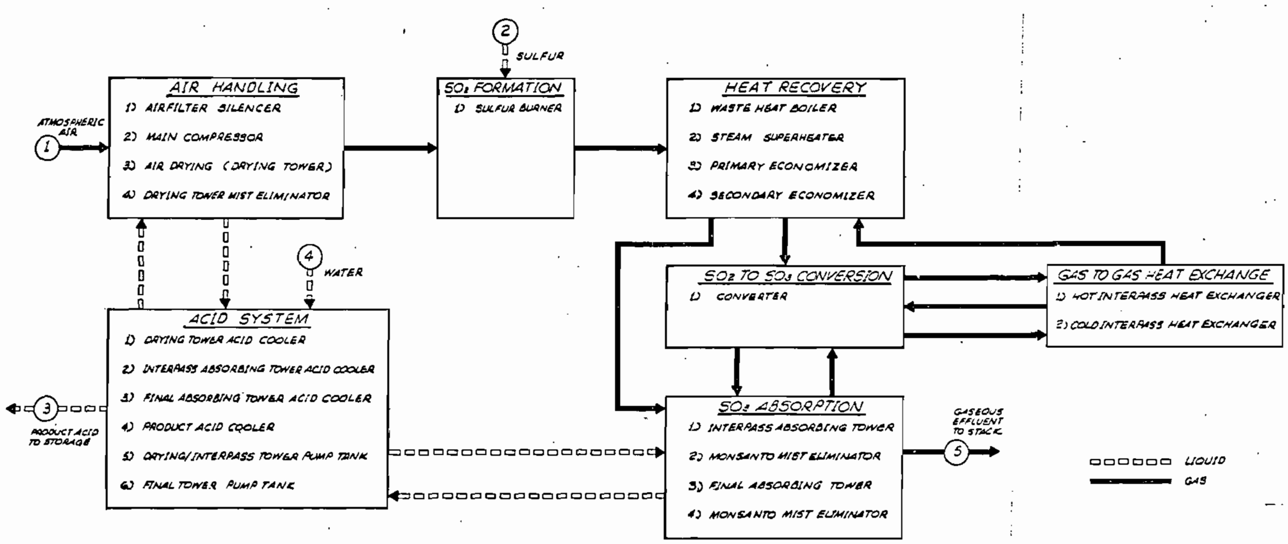
5. Contractor guarantees that the demineralizer neutralized effluent will have a pH between 6.-9.5 as measured at battery limits.

6. Contractor guarantees that the product acid concentration will be between 98.0% and 99.0% as sampled from acid plants.

Performance Tests

The demonstration of performance guarantees A-1, A-2, A-4 and A-6 require the operation of both sulfuric acid plants. These guarantees shall be demonstrated after start-up of the second plant over an operating period of three (3) substantially consecutive days.

Performance guarantees A-3 and A-6 will be demonstrated sequentially as each plant is started up.



STREAM / COMPONENT	UNIT	1	5					
SO_2	SCFM		31					
SO_3	SCFM		0					
O_2	SCFM	20294	5016					
N_2	SCFM	76806	76806					
H_2O	SCFM	3360						
TOTAL	SCFM	100460	81853					
TOTAL	ACFM	113323	106475					
TEMPERATURE	°F	95	180					

STREAM / COMPONENT	UNIT	2	3	4				
LIQUID		SULFUR	98%	WATER				
	LBS/MIN	915	2855	395				
	GPM	61	190	47				
TEMPERATURE	°F	270	100	95				

CLIENT: USS AGRICHEM
LOCATION: FORT MEADE, FLORIDA
PRODUCTION: 2000 STPD AS 98% ACID (100% H_2SO_4 BASIS)
NUMBER OF UNITS: TWO PLANTS
CONVERSION: 99.7 CONVERSION OF SO_2 TO SO_3 WITH 10.5% SO_2 TO CONVERTER.
STANDARD CONDITIONS: 0°C AND 760 MM Hg.
EMISSIONS:
SO_2: 4 LBS SO_2/TON 100% H_2SO_4 PRODUCED.
ACID MIST: LESS THAN OR EQUIVALENT TO 0.15 LBS H_2SO_4/TON 100% H_2SO_4 PRODUCED.

STACK: 175' HIGH, 8'-6" I.D.

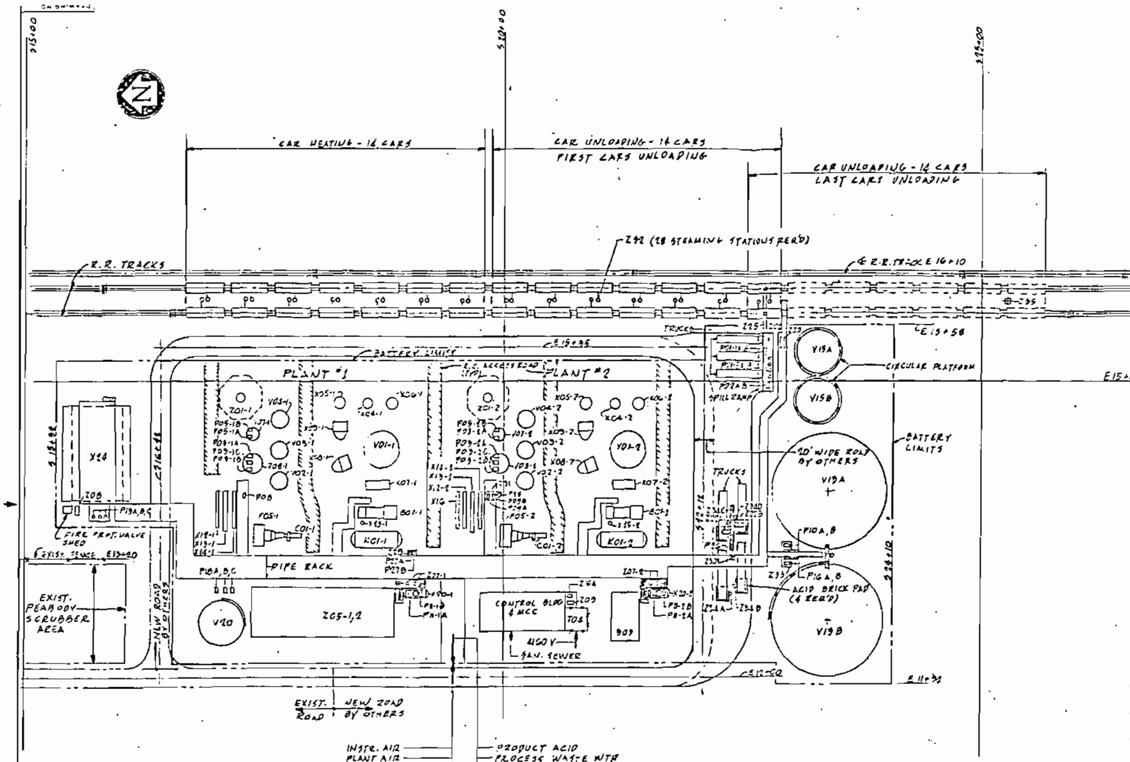
Fig. A-1

MONSANTO ENVIRO-CHEM SYSTEMS, INC.
ST. LOUIS, MISSOURI

ENVIRONMENTAL
PROCESS MATERIAL FLOW DIAGRAM
SULFUR BURNING PLANT

	BY	DATE	APP'D	DATE	JOB NO	REVISION
DRAWN		4-9-80			2139	
CHECKED					DRAWING NO 321-121	
SCALE						

ISSUED TO EPA



EQUIPMENT LIST - CONTINUED		
Z95	CAR PULLER	

NOTES

1. * DENOTES ONE IS AN INST. SPARE.
2. FOR DETAILED PLANT LAYOUT SEE DWG. 301-102

EQUIPMENT LIST - MAJOR EQUIPMENT ONLY

PLANT NO. 1	PLANT NO. 2	EQUIPMENT COMMON TO BOTH PLANTS	DESCRIPTION
B01-1	B01-2		WASTE HEAT BOILER
		B03	AUX. BOILER SYSTEM
C01-1	C01-2		MAIN COMPRESSOR
F02-1	F02-2		DRYING TOWER MIST ELIMINATOR
F03-1	F03-2		INTERPASS TOWER MIST ELIMINATO
F04-1	F04-2		FINAL TOWER MIST ELIMINATOR
F05-1	F05-2		INLET AIR FILTER WITH SILENCE
K01-1	K01-2		SULFUR BURNER
*P01-1A,B	*P01-2A,B		SULFUR BURNER FEED PUMPS
		*P02A,B	SULFUR TRANSFER PUMPS
*P03-1A,B,C	*P03-2A,B,C		DRYING/INTERPASS TOWER ACID PUMPS
*P05-1A,B	*P05-2A,B		FINAL TOWER ACID PUMPS
P08			ACID COOLER DRAIN PUMP
		*P09A,B	PRODUCT ACID BOOSTER PUMP & PL. 2 A.C.F.
		*P10A,B	PRODUCT ACID TRANSFER PUMP
*P11-1A,B	*P11-2A,B		BOILER FEED WATER PUMPS
		*P13A,B,C	COOLING TOWER WTR. SUPPLY PUMPS
		*P16A,B	PRODUCT ACID LOADING PUMPS
		*P23A,B,C	DEAERATOR FEED WATER PUMPS
		P26	TRUCK LOADING SUMP PUMP
		*P27A,B	PROCESS WATER SUMP PUMP
		P28	PRODUCT ACID BOOSTER SUMP PUMP
		T04	4160/480 VOLT TRANSFORMER
V01-1	V01-2		CONVERTER
V02-1	V02-2		DRYING TOWER
V03-1	V03-2		INTERPASS TOWER
V06-1	V06-2		FINAL TOWER
V07-1	V07-2		FINAL TOWER PUMP TANK
V08-1	V08-2		DRYING/INTERPASS TOWER PUMP T.
		V19A,B	SULFURIC ACID STORAGE TANKS
		V15	MOLTEN SULFUR STORAGE TANK
		V20	TREATED WATER STORAGE TANK
X04-1	X04-2		COLD INTERPASS HEAT EXCHANGER, HOT
X05-1	X05-2		COLD INTERPASS HEAT EXCHANGER, COLD
X06-1	X06-2		HOT INTERPASS HEAT EXCHANGER
X07-1	X07-2		SUPERHEATER
X08-1	X08-2		SECONDARY ECONOMIZER
X09-1	X09-2		PRIMARY ECONOMIZER
X12-1	X12-2		DRYING TOWER ACID COOLER
X13-1	X13-2		INTERPASS TOWER ACID COOLER
X14-1	X14-2		FINAL TOWER ACID COOLER
		X16	PRODUCT ACID COOLER
X20-1	X20-2		BOILER FEEDWATER HEATER
		X24	WATER COOLING TOWER
X25-1	X25-2		BOILER B.D. HEAT RECOVERY SYSTEM
Z01-1	Z01-2		PLANT STACK
		Z02	MOLTEN SULFUR PIT
Z05-1	Z05-2		DEMINERALIZER SYSTEM
Z07-1	Z07-2		BOILER CHEMICAL FEED SYSTEM
		Z08	COOLING WATER TREATMENT SYSTE
		Z09	AUXILIARY GENERATOR
		Z16A	HVAC UNIT FOR CONTROL ROOM
		Z22A,B	ACID TRUCK LOADING STATIONS
		Z25	SULFUR TANK CAR UNLOADING TROUGH
		Z28	PROCESS WASTE WTR. SUMP
		Z29	CONDENSATE RECEIVER SYSTEM
		Z30	TRUCK LOADING SPILL SUMP
		Z31	PRODUCT ACID BOOSTER PUMP BASIN & SUM
		Z92	TANK CAR STEAMING SYSTEM
		Z93	ACID LOADING & TRANSFER PUMP SPILL BA
		Z94A,B,C,D	ACID TRUCK UNLOADING STATIONS

MONSANTO ENVIRO-CHEM SYSTEMS, IN

ST. LOUIS, MISSOURI

FIG. A-2

PLOT PLAN

SULFURIC ACID PLANT

NO	DATE	DESCRIPTION
C		ISSUED FOR PROPOSAL
B		[illegible]
A		ISSUED FOR ESTIMATE

PROPOSAL

DRAWING NO 301-101

APPENDIX B

PHOSPHORIC ACID PLANT INFORMATION

DESCRIPTION OF PHOSPHORIC ACID AND
FLUOCILICIC ACID PRODUCTION

PHOSPHORIC ACID PRODUCTION

Phosphoric acid is produced by reacting ground phosphate rock with sulfuric acid (produced as described above). This reaction produces phosphoric acid and gypsum. The details of the rock grinding, reaction, filtration, evaporation, storage and clarification processes necessary to produce the desired product are described in the following sections.

WET ROCK GRINDING

The proposed wet rock grinding system is designed with the capability of grinding phosphate rock and producing a ground phosphate rock slurry containing no less than 65 percent solids (by weight). The wet rock grinding system is an open circuit system. Open circuit grinding is a method of reducing particle size by a single passage of the material through a mill.

The wet grinding mill is designed to process a feed material having an approximate size analysis of 100 percent minus 1/2 inch and 60 percent plus 35 mesh to a product material of 98 percent minus 35 mesh Tyler.

The unground rock is received from offsite storage via a belt conveyor and/or elevator and stored in the unground rock silo. A bin activator at the discharge cone of this silo provides a steady flow of rock from the silo to the weigh belt feed conveyor that transfers the unground rock to the ball mill. The unground rock feed rate is controlled by varying the speed of the belt.

Fresh water makeup from the mill water supply tank is introduced at two points within the system. A small quantity of this water is used to wash the weigh belt feed conveyor after it discharges rock to the mill. This waste water then enters the rock ball mill feed chute via the belt wash trough. The remainder of the water is used to slurry the rock being fed to the ball mill. The total quantity of water fed to the mill is flow-recorded and is controlled by a ratio-controller

which receives its signal from the weigh belt feed conveyor. This rock-to-water ratio-controller system, together with a density recorder, is used to control the concentration of solids in the product slurry.

The ground phosphate rock slurry from the ball mill discharges through a trommel screen into the agitated rock slurry pump tank. This trommel screen is used to remove ball chips and any other oversize material from the phosphate rock slurry. These materials are discharged from the screen to a solids container for removal to the battery limits. The slurry is then pumped from the rock slurry pump tank to the rock slurry storage tank (or, alternatively, to the reactor) using a variable-speed controlled horizontal centrifugal pump. The rock slurry pump tank is equipped with a level control used to vary the speed of this pump. The rock slurry storage tank is an agitated vessel with four hours of surge capacity at design flow.

A varible-speed controlled horizontal centrifugal pump is used to pump the phosphate rock slurry from the rock slurry storage tank to the isothermal reactor. Installed spare pumps are included to ensure a continuous feed from either the rock slurry pump tank or the rock slurry storage tank. The flow of the phosphate rock slurry is recorded and controlled by a flow recorder-controller. The density of the slurry is also recorded and the combination of flow and density is then used to obtain a flow measurement in tons per hour of phosphate rock, dry basis.

REACTION PROCESS

The reactor is specifically designed as a crystallizer to promote controlled growth of the dihydrate gypsum crystals. Adequate crystal growth of the by-product gypsum in the slurry is essential to obtain maximum efficiencies and recoveries in a phosphoric acid plant. Process control is the major factor affecting uniform crystal growth. The internal design and the process control of the reactor are such as to provide the operator with optimum control of the production of phosphoric acid. Vacuum flash evaporation is the most economical and

efficient method of removing the heat of reaction and dilution from the reactor. System response to temperature is kept to a minimum by this method of cooling and by high circulation within the reactor. High circulation also allows accurate control of free sulfates, solids, and acid concentration.

Because of the enclosed environment in which the reaction of phosphate rock and sulfuric acid takes place, gaseous fluoride emissions are minimized.

The phosphoric acid reactor is furnished with a draft tube-type agitator-circulator and a vacuum system for vapor removal from the reactor.

The reactor dimensions provide for ample vapor/liquid disengaging space so as to eliminate entrainment.

A propeller-type, top-mounted, agitator-circulator with an electric motor drive is used in the reactor. The impeller is located within the draft tube to achieve proper circulation of the slurry.

The reactor is sufficient to provide a total system retention time (reactor plus filter feed tank) of four hours and allow ample vapor disengaging area.

The agitator-circulator is located in a draft tube to circulate the slurry at a rate to insure the proper conditions are maintained at all points.

Raw material feed is designed for rapid dispersion into the circulating mass of the reactor slurry. The ground rock slurry is fed into the reactor bottom, entering the upward flow into the draft tube. Sulfuric acid is distributed just above the propeller in the draft tube at the point of highest turbulence in the reactor. Recycle acid is fed to the slurry surface in the annular area of the reactor.

The reaction of concentrated sulfuric acid and phosphate rock yields phosphoric acid and gypsum. With the vessel operating under a vacuum of 9 inches Hg absolute and a temperature of 174°F, continuous

flash evaporation at the slurry surface removes the exothermic heat of reaction.

Fluorine and carbon dioxide gases are also evolved due to the acidic decomposition of the phosphate rock.

The vapors from the top of the reactor enter the barometric condenser where condensable vapors are removed by direct contact with pond water. The non-condensable vapors containing carbon dioxide and air are removed by the steam jet ejector. As an alternate, vacuum pumps the same size as the filter vacuum pump may be utlized.

Slurry containing phosphoric acid and gypsum overflows the reactor to the filter feed tank which serves both as a seal tank and a surge tank. The overflow piping configuration is vented and provides smooth flow of the slurry from the reactor to the filter feed tank. The vent gases from the filter feed tank are piped to the fume scrubber for the removal of residual fluoride vapors before discharge to the atmosphere. An Auto-Analyzer pulls a sample from the filter feed tank to continuously monitor the free sulfate concentration in the filtrate.

FILTRATION PROCESS

In the filtration section, the phosphoric acid and by-product gypsum are separated on a horizontal, rotary vacuum filter with wet cake discharge and three counter-current washes.

The filter feed slurry is pumped to a splitter box, then flows by gravity to the slurry distributor which evenly distributes the slurry. A pre-cut, or cloudy port, section separates the first portion of filtrate coming through the cloth before the cake is formed. This removes fine solids and insures against the possibility of product dilution by carryover from the cloth wash section.

A conveyor removes most of the dry cake and discharges it into a hopper where it is slurried with pond water and pumped to battery limits. The remaining layer of gypsum is removed by washing with water. The cloth is also thoroughly cleaned by the high pressure

water. This water and small amount of gypsum is recirculated to the wash box for the final wash.

EVAPORATION PROCESS

Clarified and aged 29 percent P_2O_5 phosphoric acid is concentrated in two stages to produce 1440 TPD P_2O_5 as 54 percent P_2O_5 phosphoric acid. The 40 percent P_2O_5 phosphoric acid produced by the first stage evaporators is clarified and aged before evaporation to 54 percent P_2O_5 phosphoric acid in the second stage evaporators. Evaporation is carried out in two 40 percent and two 54 percent evaporators. Provision is made for the recovery of fluorine.

The 40 percent evaporation circuit receives 29 percent P_2O_5 clarified and aged acid. The 40 percent P_2O_5 acid product is returned from each evaporator to the 40 percent P_2O_5 acid clarifier tank in the tank farm for further clarification and aging. This includes recycle acid required for 40 percent clarification.

The 54 percent evaporation circuit receives clarified and aged 40 percent acid. The 54 percent P_2O_5 acid product is pumped from each evaporator to the 54 percent P_2O_5 accumulator tank in the tank farm for further clarification, aging, and shipment.

The 29 percent P_2O_5 acid feed contains 1 percent or less solids. Concentration and precipitation in the evaporator raises the solids concentration in the 40 percent P_2O_5 product returned to the tank farm to a value of 4.4 percent. The 40 percent P_2O_5 acid feed contains 0.75 percent or less solids. Concentration and precipitation in the evaporator will raise the solids concentration in the 54 percent P_2O_5 product returned to the tank farm to a design value of 5 percent.

Heater condensate is collected in a condensate flash tank and then transferred to two condensate storage tanks located in the clarification tank farm area. Condensate is monitored for conductivity contamination at three locations.

Each of the two 40 percent evaporators has a single barometric condenser and a single steam ejector which maintain an operating vacuum of 6.8 inches Hg absolute at the outlet of the entrainment separator. Each of the 54 percent evaporators has a barometric condenser and a two stage steam ejector system with intercondenser, which maintains an operating vacuum of 2.5 inches Hg absolute at the outlet of the entrainment separator.

The constant liquid level in the body is designed to provide sufficient submergence to suppress flashing in the heat exchanger tubes. Provision is made for 98 percent H_2SO_4 addition at 20 GPM for evaporator washing and boilouts.

STORAGE AND CLARIFICATION PROCESS

The storage and clarification area comprises the tank farm for 29 percent, 40 percent and 54 percent P_2O_5 storage and clarification. Clarification for 29 percent and 40 percent P_2O_5 is via rake clarifier. Clarification of 54 percent P_2O_5 acid incorporates rake clarifiers or centrifuges, depending on the final quality of the acid required. In addition, two 8 hour condensate storage tanks are located in this tank farm.

Filtrate acid from the filtration area containing 29 percent P_2O_5 and approximately 2 percent solids is added to the feedwell of a conventional rake clarifier for initial clarification. The overflow from this tank, containing less than 1 percent solids, is pumped to an agitated storage tank. Sludge acid raked off the bottom of the clarifier is returned to the filter feed tank at a nominal 20 percent solids loading. Clarified 29 percent P_2O_5 acid from the agitated tank is pumped to the 40 percent evaporators for concentration to 40 percent P_2O_5.

The 40 percent phosphoric acid containing 4.4 percent solids is pumped from the evaporators to the feedwell of a conventional rake clarifier for initial clarification. Overflow product containing less than 0.75 percent solids is pumped to a storage tank. A third agitated storage tank is used as a swing tank for either clarified 29 percent or

40 percent acid. Sludge raked off the bottom of the 40 percent P_2O_5 acid clarifier is returned to the 29 percent P_2O_5 clarifie at a nominal 20 percent solids loading. Clarified 40 percent P_2O_5 acid from the agitated storage tank is pumped to the 54 percent evaporators for concentration to 54 percent P_2O_5.

The 54 percent P_2O_5 phosphoric acid containing 5 percent solids is pumped from the evaporators to an agitated tank.

FLUOSILICIC ACID PRODUCTION

A fluosilicic acid recovery system consists essentially of a spray tower located between the phosphoric acid evaporator and the barometric condenser. This spray tower receives vapors from the phosphoric acid evaporator. Fluorine (as HF and SiF_4), water vapor, and minor amounts of air and entrained P_2O_5 (as H_3PO_4), are the major constituents of this stream.

An aqueous solution of H_2SiF_6 is sprayed into the tower to scrub the fluorine compounds in the vapor stream. The H_2SiF_6 solution absorbs the fluorine compounds as the vapor stream and solution approach chemical equilibrium. A small portion of this solution is taken as product and the remainder is recycled back to the scrubber. Water is added to the recycled solution to maintain the desired volume and concentration.

The flow of fluosilicic acid is counter-current to the flow of phosphoric acid in the evaporation system. Phosphoric acid is fed to the first stage evaporator at approximately 30 percent P_2O_5 and concentrated to 42 percent. During this step of concentration, fluorine in the form of SiF_4 is evolved. During the second stage of P_2O_5 concentration (42 percent to 54 percent P_2O_5) the fluorine evolution is in the form of both HF and SiF_4.

In the production of fluosilicic acid, the fluorine compounds from the second stage evaporator are scrubbed first with a solution containing 10 to 11 percent H_2SiF_6. This solution also contains the HF evolved from this evaporator. The primary reaction that occurs in this scrubber is as follows:

$$3SiF_4 + 4H_2O = SiO_2 \quad 2H_2O + 2H_2SiF_6$$

However, a second reaction takes place because of the dissolved HF in the solution. It is as follows:

$$6HF + SiO_2 \quad 2H_2O = H_2SiF_6 + 4H_2O$$

All of the dissolved HF is not reacted in this stage of the scrubbing process, and it is carried in solution to the scrubber on the first stage evaporator. Additional fluoride compounds are absorbed in this scrubber. The chemical reactions are the same as those previously shown. The concentration of the H_2SiF_6 solution is raised to 25 percent by the absorption step and a side stream is taken as product. The concentration is maintained at this level by adding the scrubber liquor from the second stage evaporator. P_2O_5 entrainment in the scrubber liquor is kept to a minimum by use of an entrainment separator installed in the inlet of the scrubber.

PHOSPHORIC ACID PLANT
BADGER AMERICA, INC.
SUBSIDIARY OF THE BADGER COMPANY, INC.
Designers • Engineers • Constructors
BADGER BUILDING
1401 NORTH WESTSHORE BLVD.
P.O. BOX 22317, TAMPA, FLORIDA 33622
TEL. (813) 879-0715
TELEX 52-863

April 16, 1980
Letter No. GD/USSAC-002L

United States Steel Corporation
600 Grant Street, Room 1010
Pittsburgh, Pa. 15230

Attention: RT Lindsay,
Project Manager

Subject: USS Agri-Chemicals
Phosphate Complex Replacement
Ft. Meade, Florida
Badger Project No. E-7551
Overall Plant Material Balance

Dear Mr. Lindsay:

As you requested, we have enclosed ten copies of Drawing No. E-7541-106-0 which is a simplified process schematic diagram indicating plant raw material requirements and effluents.

In regards to pollution abatement, Badger's Gulf Design Division will employ tried and proven technology in minimizing contaminants in plant emissions. Gulf Design will guarantee that when the facilities are operated at the nominal capacity of 1400 short tons of P_2O_5 per day, the total emissions from the fluorine scrubber stacks will not exceed 0.02 pounds of fluorine per ton P_2O_5 input to the system.

Very truly yours,

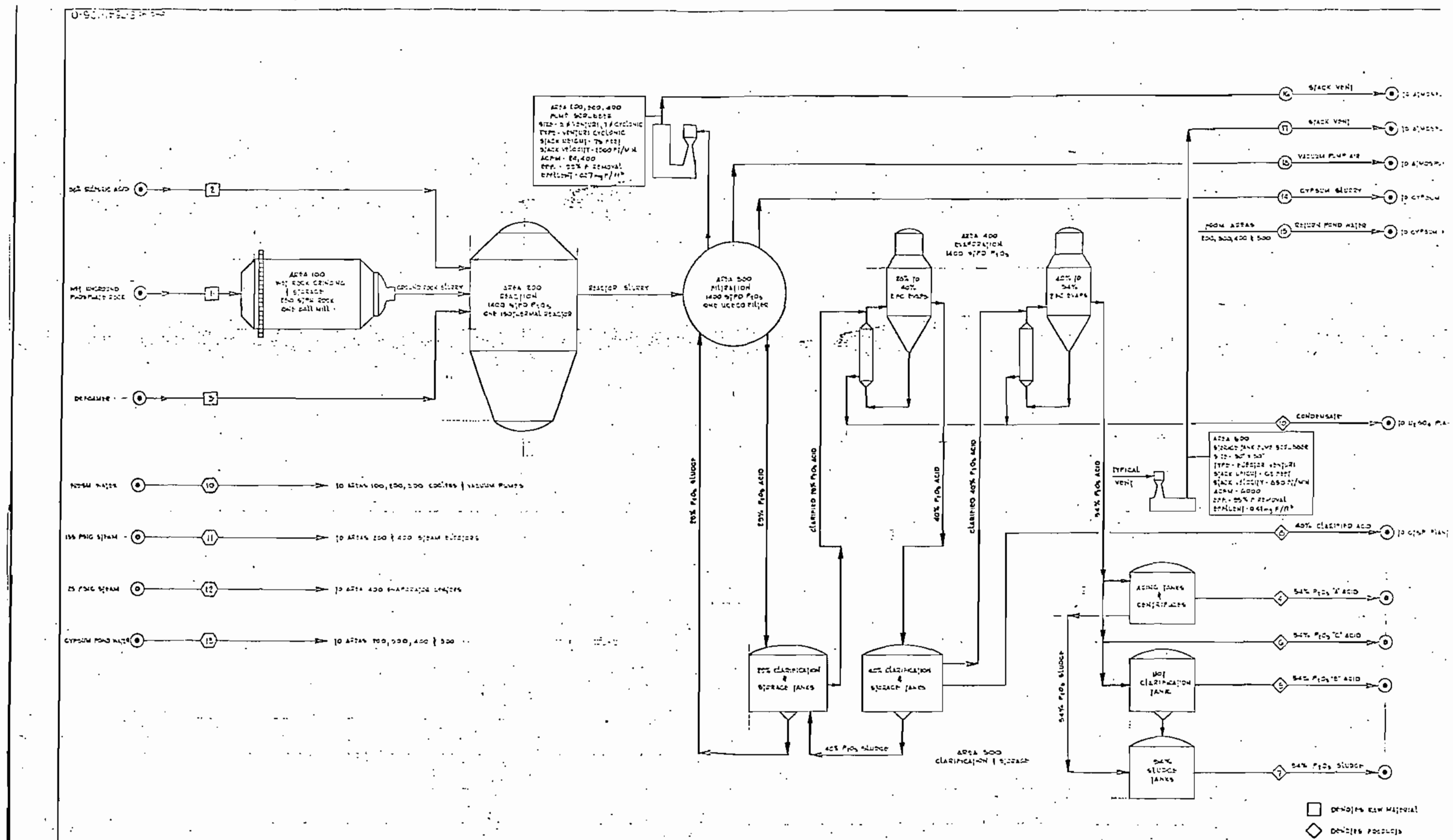
BADGER AMERICA, INC.

J. W. Salter
J. W. Salter
Project Manager

JWS/rh

enclosure

BEST AVAILABLE COPY



		RAW MATERIALS			PRODUCTS						UTILITIES				EFFLUENTS				
STREAM NUMBERS		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
STREAM NAME		WET GROUND PHOSPHATE ROCK	98% SULFURIC ACID	DEFOAMER	"A" ACID	"B" ACID	"C" ACID	54% SLUDGE TO [illegible] PLANT	40% ACID TO GTSP PLANT	CONDENSATE	FRESH WATER	155 PSIG STEAM	25 PSIG STEAM	GYPSUM POND WATER	GYPSUM SLURRY	POND WATER RETURN	STACK VENT [illegible]	STACK VENT CLAR.	VAC. PUMP FILT.
MASS FLOW RATE	TPD	5294	5545	57	645	204	852	255	855	5200	2268	540	2000	175000	5545	177450			
	TPD P_2O_5	1456	—	—	550	110	400	146	334										
	lbs/hr											45,000	750,000						
	ACFM																74,450	6000	1000
	GPM									576	575			2995	2557	29575			
TEMPERATURE, °F		100	100	90	115	160	160	160	150	212	60	368	267	95	115	115	100	105	100
FLUORIDE, lbs/DAY																	209	7.8	0
SOLIDS, TPD		2455												~0	2235	~0	~0	~0	~0

FIG. B-1

FLOW DIAGRAM
RAW MATERIALS, PRODUCTS,
UTILITIES AND EFFLUENTS
PHOSPHORIC ACID PLANT
USS AGRI-CHEMICALS
FT MEADE FLORIDA

BADGER AMERICA, INC.

APPENDIX C

GRANULAR TRIPLE SUPERPHOSPHATE PLANT INFORMATION

DESCRIPTION OF GRANULAR TRIPLE SUPERPHOSPHATE PRODUCTION

Triple superphosphate is a high analysis product resulting from the reaction between ground phosphate rock and phosphoric acid. The GTSP process is the only process in the modified plant that will require dry grinding of phosphate rock.

The GTSP plant is designed to produce granular triple superphosphate. In triple superphosphate manufacture, the principal result desired is the formation of monocalcium phosphate monohydrate from phosphate rock and phosphoric acid, as indicated by the following chemical reaction:

$$2Ca_5 (PO_4) \quad F + 12H_3PO_4 + 9H_2O = 9Ca (H_2PO_4) \quad H_2O + CaF_2$$

The triple superphosphate consists largely of water-soluble monocalcium phosphate. There is also a small percentage of citrate-soluble material, consisting mainly of unreacted rock. The remainder of the phosphate (approximately 10 percent) is a combination of citrate-soluble compounds made up largely of iron, aluminum and dicalcium phosphates.

The purpose of the GTSP plant is to convert ground phosphate rock and wet process phosphoric acid into a dry granular material that meets a minimum commercial fertilizer grade of 0-46-0 (percent total nitrogen-percent available phosphoric acid-percent soluble potash) at a rate of 40 tons per hour, after five days storage.

Ground rock from the offsite rock bin is conveyed pneumatically to a rock feed hopper. From the hopper, the rock flows into the weigh scale and is then conveyed to a mixing cone in a quantity which will result in a P_2O_5:Ca (weight basis) ratio of about 2.3 in the final product. The phosphoric acid stream is 41 percent P_2O_5 phosphoric acid.

The rock and acid are vigorously agitated in both the No. 1 and No. 2 reactor vessels. The No. 1 reactor serves to wet and mix the rock and acid to yield the reaction slurry. The No. 2 reactor acts primarily as a surge tank which adds retention time and enables the chemical reaction to proceed further toward completion. The primary reactor overflows into the secondary reactor. Live steam is introduced into the reactors as required to maintain the temperature in the No. 1 reactor at 200 to 220°F and in the No. 2 reactor at 190 to 210°F. This steam condenses, causing some dilution.

Slurry from the No. 2 reactor is pumped to a granulator where the slurry is distributed on a rolling bed of recycle material to form moist triple superphoshate granules. The recycle material is a composite of cyclone discharge dust, undersize granules from the screen, ground oversize granules from the mills, and some product size granules. Triple superphosphate particles recycle through the system until the small particles become coated wiht a sufficient number of slurry layers to become spherical, hard product size granules.

The material leaves the granulator as a damp mass, containing approximately 5 percent free moisture and falls down a chute into the rotary dryer. In the dryer, the moisture is reduced to 3 to 3.4 percent. Co-current hot dryer gases evaporate the excess moisture and heat the granules to approximately 220°F. The remainder of the phosphoric acid and rock reaction started in the reactor is essentially completed in the dryer. This phase of the reaction, together with the heat, liberates fluorine as well as moisture from the granules.

The dryer is equipped with a bar grizzley that reduces the size of the larger lumps before discharging them from the dryer. From the dryer, the dried granules are elevated by two elevators in series and are distributed to four scalping screens. On these screens, the oversize material is separated and flows to the double opposed chain mills for size reduction.

The stream of material from the scalping screen is sent to the product screens at a controlled rate tht will result in screening only the quantity of product size material required to meet the production rate. The analysis of the product sent to storage will be approximately 0-45.5-0. After three to five days, the material will cure to 0-46-0.

The reduced oversize, fines from product screen, material by-passing the product screen, cyclone dust, and fines from shipping are collected in the recycle bin and flow by gravity to the granulator.

Dusty air from the rotary dryer, the screening stations, elevators, recycle conveyor, and the miscellaneous transfer take-off points flows to the dry cyclonic dust collectors for first stage dust removal. The discharge point of the cyclone is equipped with a trickle valve to prevent air leakage. Exhaust gases vent from the top of the cyclones to the wet scrubber system.

The discharge of the dryer cyclone is sprayed with pond water for further dust recovery. The discharge air stream from the granulator is also sprayed with pond water for dust recovery. The water and dust from this spray system are collected in a recovery tank clarifier. The clarifier overflow is pumped to the duct sprays. The underflow at 25 percent solids is pumped to the No. 1 reactor to reclaim the recovered triple superphosphate. Pond water is metered into the recovery tank to maintain a constant level.

The dryer gases are scrubbed in a Venturi cross flow scrubber for final dust removal and fluorine scrubbing. The reactor and granulator gases are scrubbed in a similar system.

STREAM No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DESCRIPTION	75% BPL PHOSPHATE ROCK	41% P_2O_5 ACID	HP STEAM TO EACH REACTOR	HP STEAM TO GRANULATOR	GTSP SLURRY TO GRANULATOR	GRANULATOR DISCHARGE	DRYER DISCHARGE	OVERS TO MILL	ON SIZE MATERIAL TO RECYCLE	FINES	PRODUCT TO STORAGE	RECLAIM FROM SHIPPING	TOTAL RECYCLE	REACTOR OFF GASES	GRANULATOR OFF GASES
TOTAL (TPH)	15.72	34.60	0.66	-	56.15	372.44	354.21	94.40	116.81	99.00	[illegible]	[illegible]	220.00	1.70	3.71
P_2O_5 (TPH)	5.94	14.27	-	-	20.71	173.95	170.05	46.51	30.41	49.02	23.80	9.60	153.60	-	0.86
H_2O (TPH)	0.19	12.26	0.86	-	13.05	23.19	14.17	3.78	4.24	3.75	2.40	0.80	18.00	1.44	2.09
SPECIFIC GRAVITY	70 PCF	1.52	-	-	1.66	65 PCF	65 PCF	65 PCF	65 PCF	65 PCF	65 PCF	65 PCF	[illegible] PCF	-	-
TEMP. °F	100°F	130°F	340°F	340°F	220°F	172°F	210°F	200°F	195°F	190°F	190°F	140°F	172°F	160°F	160°F
PRESSURE	GRAVITY	5 PSIG	100 PSIG	100 PSIG	10 PSIG	GRAVITY	GRAVITY	GRAVITY	GRAVITY	GRAVITY	GRAVITY	GRAVITY	GRAVITY	-2" H.G.	-2" H.G.
GPM (ACFM)	-	92	1720 LBS/HR	200 LBS/HR	134	-	-	-	-	-	-	-	-	(2,000)	(10,000)

STREAM No	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
DESCRIPTION	COMBINED R&G OFF GASES TO SCRUBBER	R&G GASES TO STACK	DUST SYSTEM GASES TO DRYER INLET	DRYER FURNACE EXIT TO DRYER	DRYER OFF GASES TO SCRUBBER	DRYER GASES TO STACK	#6 FUEL OIL TO DRYER FURNACE	TOTAL INCOMING POND WATER	POND WATER TO SCRUBBER SPRAYS	POND WATER TO VENTURIS	POND WATER MAKE-UP TO RECLAIM SYSTEM	RECLAIM WATER TO GRANULATOR SPRAY DUCT	RECLAIM WATER TO DRYER SPRAY DUCT	RECLAIMED SOLUTION TO REACTOR	TOTAL DUST RETURN FROM CYCLONES
TOTAL (TPH)	8.24	-	0.12	-	10.17	-	-	1022	510	5.0	1.75	23.15	140.75	2.61	7.56
P_2O_5 (TPH)	0.10	-	-	-	0.90	-	-	6	3	3	.001	8.01	35.04	2.50	5.05
H_2O (TPH)	4.12	-	-	-	2.02	-	-	992	495	495	1.74	17.03	85.16	1.73	0.31
SPECIFIC GRAVITY	-	-	-	-	-	-	0.96	1.02	1.02	1.02	1.02	1.25	1.25	1.25	65 PCF
TEMP. °F	149°F	107°F	160°F	1160°F	220°F	105°F	125°F	95°F	95°F	95°F	95°F	125°F	125°F	125°F	190°F
PRESSURE	-3" H.G.	-30" H.G.	[illegible]	-3" H.G.	-2" H.G.	-30" H.G.	50 PSIG	10 PSIG	50 PSIG	10 PSIG	5 PSIG	50 PSIG	50 PSIG	10 PSIG	GRAVITY
GPM (ACFM)	(12,800)	(10,000)	[illegible]	(31,000)	(29,000)	(15,000)	420 GPH	4000	2000	2000	7	40	450	9	-

[illegible] TPH FLOW IS NEW PRODUCTION, UP TO [illegible] TPH OF FINES CAN BE RETURNED FROM SHIPPING AND REGRANULATED. PRODUCT CONVEYING TO STORAGE IS DESIGNED FOR [illegible] TPH TO INCLUDE 40 TPH NEW PRODUCTION AND UP TO [illegible] TPH OF REGRANULATED FINES

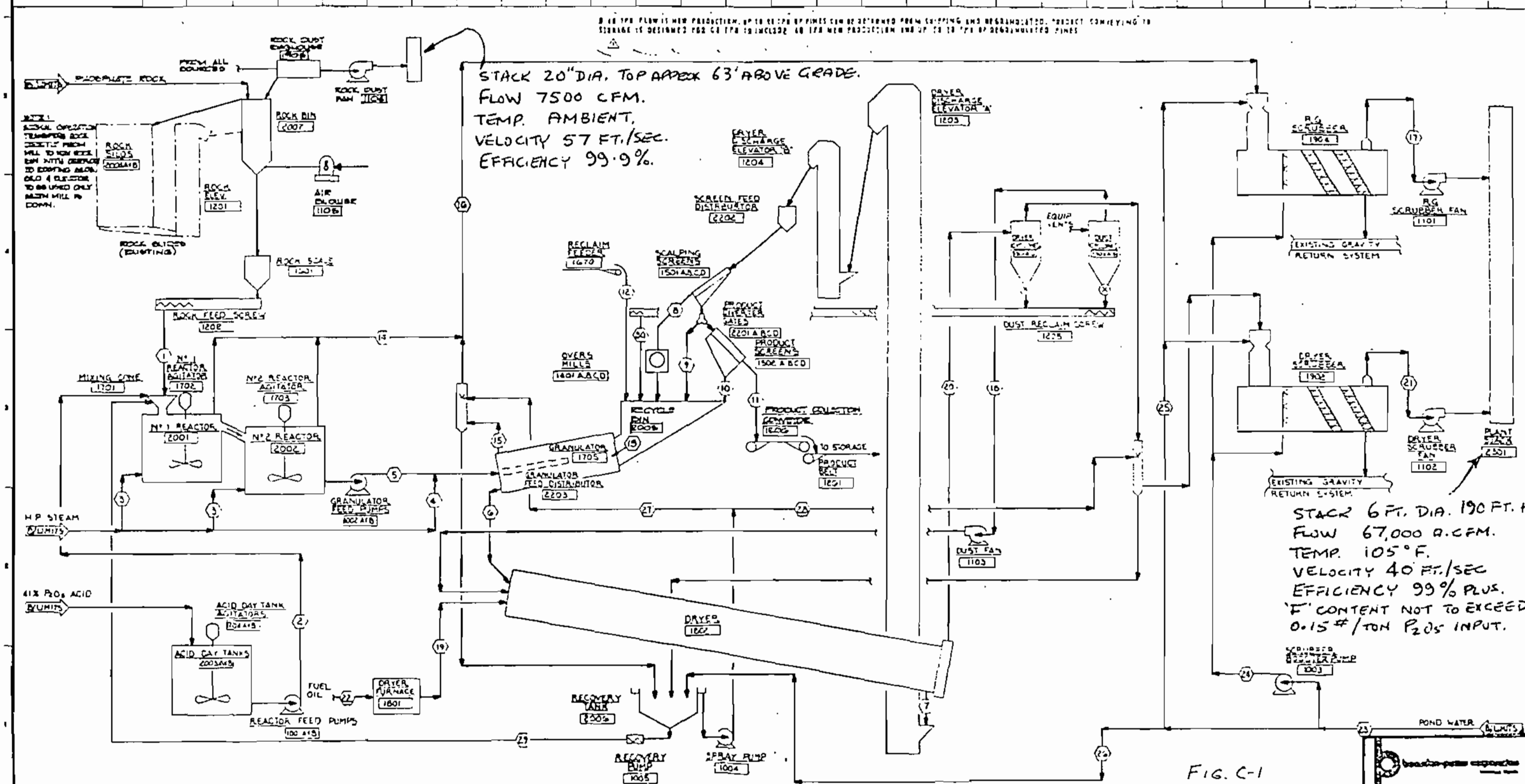


FIG. C-1

Agri-Chemicals

GTSP EXPANSION STUDY
GTSP PROCESS PLANT
PROCESS FLOW SHEET

NO. 357Q-P-001

REVISIONS | REQUISITIONS | DRAWING HISTORY

USS Agri-Chemicals
Division of United States Steel Corporation

MAIL: P. O. BOX 150
BARTOW, FLORIDA 33830
813 - 533-0471

PROCESS RATE STATEMENT FOR EMISSION TEST

Date MARCH 5, 1980

Process PHOSPHORIC ACID, STACK 7X

Location FT. MEADE, FLORIDA

Permit Number A053-4563

Start of Test	End of Test	Production Rate
2:00 P.M.	4:10 P.M.	TON P_2O_5/DAY Input
4:25 P.M.	6:35 P.M.	324

I certify that the above statement is true to the best of my knowledge.

DER NOTIFIED TO
WITNESS THIS TEST.
DID NOT SHOW UP.

Signature Eugene Williams

Title Environmental Tech.

Date 3/5/80

DATE – 3/5/80
ANALYSIS – PARTICULATE
LOCATION – FT. MEADE PAD
WEST STACK, X-TRAIN

RUN 1	ACETONE BLANK	PROBE WASHED	FILTER PAPER
GROSS	101.5972	102.2784	0.5872
TARE	101.5972	102.2780	0.5681
TOTAL	.0000	.0004	.0191
			.0004
			.0195

RUN 2	ACETONE BLANK	PROBE WASHED	FILTER PAPER
GROSS		102.5984	0.5900
TARE		102.5978	0.5684
TOTAL		.0006	.0216
			.0006
			.0222

RUN – 1

$GRAINS = \frac{19.5}{64.8} = 0.3009$

$\frac{GRS.}{Ft^3} = \frac{0.3009}{22.74} = 0.0132$

$\frac{LB.}{HR.} = \frac{0.0132 \times 7343 \times 60}{7,000} = 0.8308$

RUN – 2

$GRAINS = \frac{22.2}{64.8} = 0.3426$

$\frac{GRS.}{FT^3} = \frac{0.3426}{22.03} = 0.0156$

$\frac{LB.}{HR.} = \frac{0.0156 \times 7069 \times 60}{7,000} = 0.9452 \frac{LB.}{HR.}$

$\frac{0.8308 \times 24}{\frac{324\ T\text{-}P_2O_5}{DAY}} = 0.0062 \frac{LB.\ PARTICULATE}{TON\ P_2O_5}$

$\frac{0.9452 \times 24}{324} = .0070\ \ .07 \frac{LB.\ PART}{TON\ P_2O_5}$

USS Agri-Chemicals
Division of United States Steel Corporation

MAIL: P. O. BOX 150
BARTOW, FLORIDA 33830
813 - 533-0471

PROCESS RATE STATEMENT FOR EMISSION TEST

Date: April 15, 1980

Process: Granular Triple superphosphate Drier 11-X

Location: Ft. Meade Chemical plant

Permit Number: A053-4561 Wet Scrubber

Start of Test	End of Test	Production Rate
12:55 PM	1:50 PM	8.33 T-P_2O_5/HR Input
2:30	3:20	8.33
		200 T-P_2O_5/DAY

I certify that the above statement is true to the best of my knowledge.

Signature: James H Carroll

Title: Environmental Engineer

Date: April 16, 1980

E.W. EW - 4/15

DRIER FUEL - #6 OIL

PARTICULATE COLLECTION FILTER WAS BLACK

DATE - 4-15-80

ANALYSIS - PARTICULATE

LOCATION - Ft. MEADE - TSP STACK 11X

RUN 1	ACETONE BLANK	PROBE WASHED	FILTER PAPER
GROSS			
TARE	102.8058 102.8058	102.5198 102.5176	0.5955 0.5600
TOTAL	.0000	.0022	.0355 .0022 .0377

RUN 2	ACETONE BLANK	PROBE WASHED	FILTER PAPER
GROSS			
TARE		103.2749 103.2722	0.5940 0.5553
TOTAL		.0027	.0387 .0027 .0414

RUN - 1

$\text{GRAINS} = \frac{37.7}{64.8} = 0.5818$

$\frac{\text{GRS.}}{\text{Ft}^3} = \frac{0.5818}{34.54} = 0.0168$

$\frac{\text{LB.}}{\text{HR.}} = \frac{0.0168 \times 58369 \times 60}{7{,}000} = 8.4051$

RUN - 2

$\text{GRAINS} = \frac{41.4}{64.8} = 0.6389$

$\frac{\text{GRS.}}{\text{FT}^3} = \frac{0.6389}{36.39} = 0.0176$

$\frac{\text{LB.}}{\text{HR.}} = \frac{0.0176 \times 58424 \times 60}{7000} = 8.8137$

$\frac{8.4051}{8} = 1.0506$ $\frac{\text{LBS}}{\text{TON - Rock}}$

$\frac{8.8137}{8} = 1.1017$ $\frac{\text{LBS.}}{\text{TON - Rock}}$

$\frac{8.4051 \times .47}{8.33 \cancel{\times .47}} = \cancel{2.15}\ 0.47$

$\frac{8.8137 \times .47}{8.33 \cancel{\times .47}} = \cancel{2.25}\ 0.50$

.47% Pros in GTSP

0.485

~~2.2~~ LB Particulate

T - GTSP

JHL
5-8-8

EXHIBIT – B

STATE OF FLORIDA
DEPARTMENT OF POLLUTION CONTROL
~~500 EAST~~ CENTRAL AVENUE P.O. BOX 9205
WINTER HAVEN, FLORIDA 33881

PETER P. BALJET
EXECUTIVE DIRECTOR

POLK COUNTY AP
USS AGRI-CHEMICALS (FT. MEADE)

W. D. FREDERICK, JR.
CHAIRMAN

RECEIVED
OCT 25 1974

Mr. George W. Beck
General Manager
USS Agri-Chemicals
P.O. Box 150
Bartow, Florida 33830

Dear Mr. Beck:

Pursuant to your recent application, please find enclosed a permit (No. AC53-2582) dated Oct. 21, 1974 to construct/ XXXXXXXXX the subject pollution source.

This permit will expire on August 21, 1975 and will be subject to the conditions, requirements and restrictions checked or indicated otherwise in the attached sheet "Construction/XXXXXXXXX Permit Conditions".

This permit is issued under the authority of Florida Statute 403.061(16). The time limits imposed herein are a condition to this permit and are enforceable under Florida Statute 403.161. You are hereby placed on Notice that the Department will review this permit before the scheduled date of expiry and will seek court action for violation of the conditions and requirements of this permit.

You have ten days from the date of receipt hereof within which to seek a review of the conditions and requirements contained in this permit. Failure to file a written request to review or modify the conditions or requirements contained in this permit shall be deemed a waiver of any objections thereto.

Your continued cooperation in this matter is appreciated and in future communication please refer to your permit number.

Yours very truly,

for J. H. Kerns, P.E.
Regional Engineer
West Central Region

JHK/FW/pm
cc: Nickonovitz

FS3
1-74

BEST AVAILABLE COPY

STATE OF FLORIDA

DEPARTMENT OF POLLUTION CONTROL

CONSTRUCTION PERMIT

FOR: USS Agri-Chemicals
P.O. Box 150
Bartow, Florida 33830

PERMIT NO. AC53-2582 DATE October 21, 1974

PURSUANT TO THE PROVISION OF SECTION 403.061 (16) OF CHAPTER 403, FLORIDA STATUTES, AND CHAPTER 17-4, FLORIDA ADMINISTRATIVE CODE, THIS PERMIT IS ISSUED TO:
Mr. George W. Beck, General Manager

FOR THE CONSTRUCTION OF:
A limestone scrubbing process to serve existing sulfuric acid plants

LOCATED AT: Ft. Meade chemical plant, S.R. 630, 3 miles West of Ft. Meade, Polk County UTM 17-416000 East, 3069000 North

IN ACCORDANCE WITH THE APPLICATION DATED September 5, 1974

AND IN CONFORMITY WITH THE STATEMENTS AND SUPPORTING DATA ENTERED THEREIN, ALL OF WHICH ARE FILED WITH THE DEPARTMENT AND ARE CONSIDERED A PART OF THIS PERMIT.

THIS PERMIT SHALL BE EFFECTIVE FROM THE DATE OF ITS ISSUANCE UNTIL Aug. 21, 1975 AND SHALL BE SUBJECT TO ALL APPLICABLE LAWS OF THE STATE AND THE RULES AND REGULATIONS OF THE DEPARTMENT.

W. E. [signature]

CHIEF, BUREAU OF PERMITTING J. H. KERNS, P.E. EXECUTIVE DIRECTOR
WEST CENTRAL REGION

FORM 1-J

STATE OF FLORIDA

DEPARTMENT OF POLLUTION CONTROL

CONSTRUCTION PERMIT PROVISOS

AIR POLLUTION SOURCES

Permit No. AC53-2582

Date: October 21, 1974

(X) 1. Construction of this installation shall be completed by June 30, 1975. Application for Permit to Operate to be submitted by ______.

(X) 2. This construction permit expires on August 21, 1975 following an initial period of operation for appropriate testing to determine compliance with the Rules of the Florida Pollution Control Board.

(X) 3. All applicable rules of the Department including design discharge limitations specified in the application shall be adhered to. The permit holder may also need to comply with county, municipal, federal, or other state regulations prior to construction.

(X) 4. The applicant shall continue the retention of the engineer of record for the inspection of the construction of this project. Upon completion the engineer shall inspect for conformity to construction permit applications and associated documents. A report of such inspection shall be submitted by the engineer to the Department of Pollution Control for consideration toward the issuance of an operation permit.

(X) 5. This scrubber stack shall be tested* for sulfur dioxide and sulfuric acid mist within 10 days after it is placed in operation. These test results are required prior to our issuance of an operation permit and shall be submitted in duplicate to the DPC West Central Florida Regional Office P.O. Box 9205, Winter Haven, Florida 33880

*FUEL ANALYSIS MAY BE SUBMITTED FOR REQUIRED SULFUR DIOXIDE EMISSION TEST.

( ) 6. The operation of this installation shall be observed for visible emissions in accordance with Method 9 - Visible Determination of the Opacity of Emissions from Stationary Sources (36FR24895; Federal Register, December 23, 1971). The observation results are required prior to our issuance of an operation permit, and shall be submitted in duplicate to the DPC ______ Florida Regional Office, ______.

(X) 7. Satisfactory ladders, platforms, and other safety devices shall be provided/available as well as necessary ports to facilitate the carrying out of an adequate sampling program.

( ) 8. There shall be no discharges of liquid effluents or contaminated runoff from the plant site.

( ) 9. All fugitive dust generated at this site shall be adequately controlled.

FS17
1-74

(X) 10. Recognition of the foregoing estimated date of completion shall not be construed as the granting of a variance or the waiver of permittee's responsibility to conduct operations in timely compliance with applicable law.

(X) 11. The compliance schedule for this plant established by permit A053-2144 remains in effect.

53-493

D.P.C.
SEP 10 197?

STATE OF FLORIDA
DEPARTMENT OF POLLUTION CONTROL

APPLICATION TO ~~OPERATE~~/CONSTRUCT POLLUTION ~~SOURCES~~ CONTROL FACILITY

WEST ... REGION

SECTION I – GENERAL INFORMATION FOR ALL POLLUTION SOURCES

I TO BE FILLED IN BY APPLICANT

Source Type: Air Pollution

Type application: [ ] Operation [ ] Temporary Operation [x] Construction

Status Source: [x] New [ ] Existing [ ] Modification

Source Name: Ft. Meade Phosphate Chemical Plant County: Polk

Source Location: Street: 3 miles west of City: Ft. Meade

(Water Source Only) Lat: ____ ° ____ ' ____ " Long: ____ ° ____ ' ____ "

(Air Source Only) UTM: East ~~166.2~~ 17-416000 North ~~377.9~~ 3069000

Appl. Name and Title: G. W. Beck, Manager Florida Phosphate Operations

Appl. Address: c/o USS Agri-Chemicals, P.O.Box 150, Bartow, Florida 33830

II TO BE FILLED IN BY REGION (*BY BUREAU OF PERMITTING)

Control No: Region ______ County ______ Type ______ *Project ______

Type Permit	Date Rec'd	*Permit No.	*Issue Date	*Compl. Date	*Exp. Date

Source Description: ______

Control Equipment: ______

Water Permits

Receiving Body Code: ______ Surface Water Code: ______

Station No.: Influent: ______ Effluent: ______

Effluent:	Average	Design	% Reduction
Flow rate, MGD			
BOD, lbs/day			
Susp. Sol., lbs/day			
Other:			

Air Permits

Operating Time: [ ] Continuous [ ] Intermittent

Fuel: Type ______ M-BTU/hr. In Put ______

Incinerator: Capacity, tons/day ______ Type Waste ______

Mfg. & Model ______

Pollutant Emissions, lbs/day	Actual	Design	Allowable
Particulate			
Sulfur Oxides			
Other:			

Implementation: Estimated Appl. Filing Date ______

Estimated Start of Const. ______ Estimated Compliance Date ______

Ft. Meade

DESCRIPTION OF PROPOSED PROJECT

A. Describe the nature and extent of the proposed project. Refer to existing pollution control facilities, DPC permits, conditions, orders and notices, expected improvement in performance of the facilities and state whether the proposed project will result in full compliance of the source. Attach additional sheet if necessary.

The existing sulfuric acid plant is operating under permit no.A053-2144 which expires July 1, 1975. A compliance schedule was submitted to DPC on February 25, 1974. Work is on schedule and, subject to the prior issue of a construction permit, construction is expected to begin on the dates shown below. The Peabody Limestone Scrubbing Process will be used to achieve emissions at the levels required for a compliance with Chapter 17-2 rules. Refer to flow diagram E-65011-0100/A for a further description of the process.

B. Schedule of Project Covered in this Application (Construction Permit Application Only).

Federally or State Financed Projects only:

Planning Complete NA

Financing Program Complete NA

Indicate other local, state and/or federal agency approvals and dates NA

NA-Not applicable

All projects:

Start of Construction On or before 10/31/74

Completion of Construction 6/1/75 to 6/31/75 (Start-up by 6/15/75)

C. Costs of Construction (Show a breakdown of costs for individual components/units of the proposed project serving pollution control purpose only). Information on actual costs shall be furnished with the application for operation permit.

SO_2 Abatement Process Unit	\$2,514,000
Disposal Pond	156,000
Supernate Pumping	63,000
Utility Tie-ins	63,000
Total	\$2,796,000

D. Indicate any previous DPC permits, issuance dates, and expiration dates.

This construction permit application is for a new facility. No previous permits have been issued.

Ft. Meade

AIR POLLUTION SOURCES & CONTROL DEVICES

A. Identification of Air Contaminants

1) [ ] Particulates
   a) [ ] Dust   b) [ ] Fly Ash   c) [ ] Smoke   d) [ ] Other (Identify)

2) [x] Sulfur Compounds
   a) [x] SO_x as SO_2 b) [ ] Reduced Sulfur as H_2S c) [ ] Other (Identify)

3) [ ] Nitrogen Compounds
   a) [ ] NO_x as NO_2 b) [ ] NH_3 c) [ ] Other (Identify)

4) [ ] Flourides   5) [x] Acid Mist   6) [ ] Odor

7) [ ] Hydrocarbons   8) [ ] Volatile Organic Compounds

9) [ ] Other (Specify): ______

B. Raw Materials and Chemicals Used (Be Specific)

Description	Utilization ~~Tons/day, lbs/day~~ lbs./hr.	Approximate Contaminant Content: Type	Approximate Contaminant Content: % Wt.	Relate to Flow Diagram
Tail gas from an existing 1500 ton/day sulfuric acid plant	609,190	SO_x+ acid mist	0.786	E-65011-0100/A (Stream #1)

C. Process Weight:

1) Total Process Weight Rate NA lbs./hr. [See Sec. 17-2.04(2)]
2) Product Weight NA lb./hr. expressed as NA
3) Normal Operating Time 24 hrs. per day, if seasonal describe: Not seasonal
   NA-Not applicable

D. Airborne Contaminants Discharged:

Name of Contaminant	Design Actual Discharge	Discharge Criteria*	Allowable Discharge*	Relate Location to Flow Diagram
SO_2	10 max.	#/ton H_2SO_4	10	E-65011-0100/A
Acid mist	0.15 max.	#/ton H_2SO_4	0.15	(Stream #4)

* Refer to Chapter 17-2 Florida Administrative Code
(Discharge Criteria: Process Weight Rate, #/tonP_2O_5, #/M BTU/hr etc.)

Ft. Meade

E. Control Devices:

Name	% Eff.	Conditions of Operation, Particle Size Range, etc.	Relate to Flow Diagram
Limestone Scrubbing Unit	86.9	Continuous	E-65011-0100/A

F. Fuels:

Type (Be specific)	Daily Consumption	Heat Input BTU/hr.	Relate to Flow Diagram
None	None	None	----

G. Describe briefly, without revealing trade secrets, the unit processes/operations generating the airborne emissions identified in this application:

The control devices of this construction permit application are to reduce the airborne emissions generated in an existing sulfuric acid plant.

H. Indicate liquid or solid wastes generated and method of disposal.

Slurry discharges to the disposal pond where solids settle to the bottom. The supernate is recycled to the existing rock beneficiation plant. Alternatively the recycle may be recycled to the chemical plant. Disposal pond and recycle system totally contained on company property.

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Ft. Meade

STATEMENTS BY APPLICANT AND ENGINEER

A. Applicant

The undersigned owner or authorized representative of * USS Agri-Chemicals is fully aware that the statements made in this application for a construction permit are true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to maintain and operate the pollution 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 or revisions thereof. He also understands that a permit, if granted by the Department, will be non-transferable and he will promptly notify the Department upon sale or legal transfer of the permitted establishment.

Signature of the Owner or Authorized Representative

G. W. Beck, Manager Florida Phosphate Operations
Name and Title (Please Type)

Date: 9-5-74 Telephone No.: (813)533-1495

* 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 control and discharge of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution source(s) with appropriate control facilities, when properly maintained and operated, will comply 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 installation covered in this application.

Signature Arthur O. Hansen

Mailing Address: P. O. Box 150
Bartow, Florida 33830

Name: Arthur O. Hansen
(please type)

Telephone No.: (813)533-1495

Florida Registration Number 12239
(Please affix seal)

Date: 9/6/74

PERMIT NO. AC53-2582
DATE October 21, 1974

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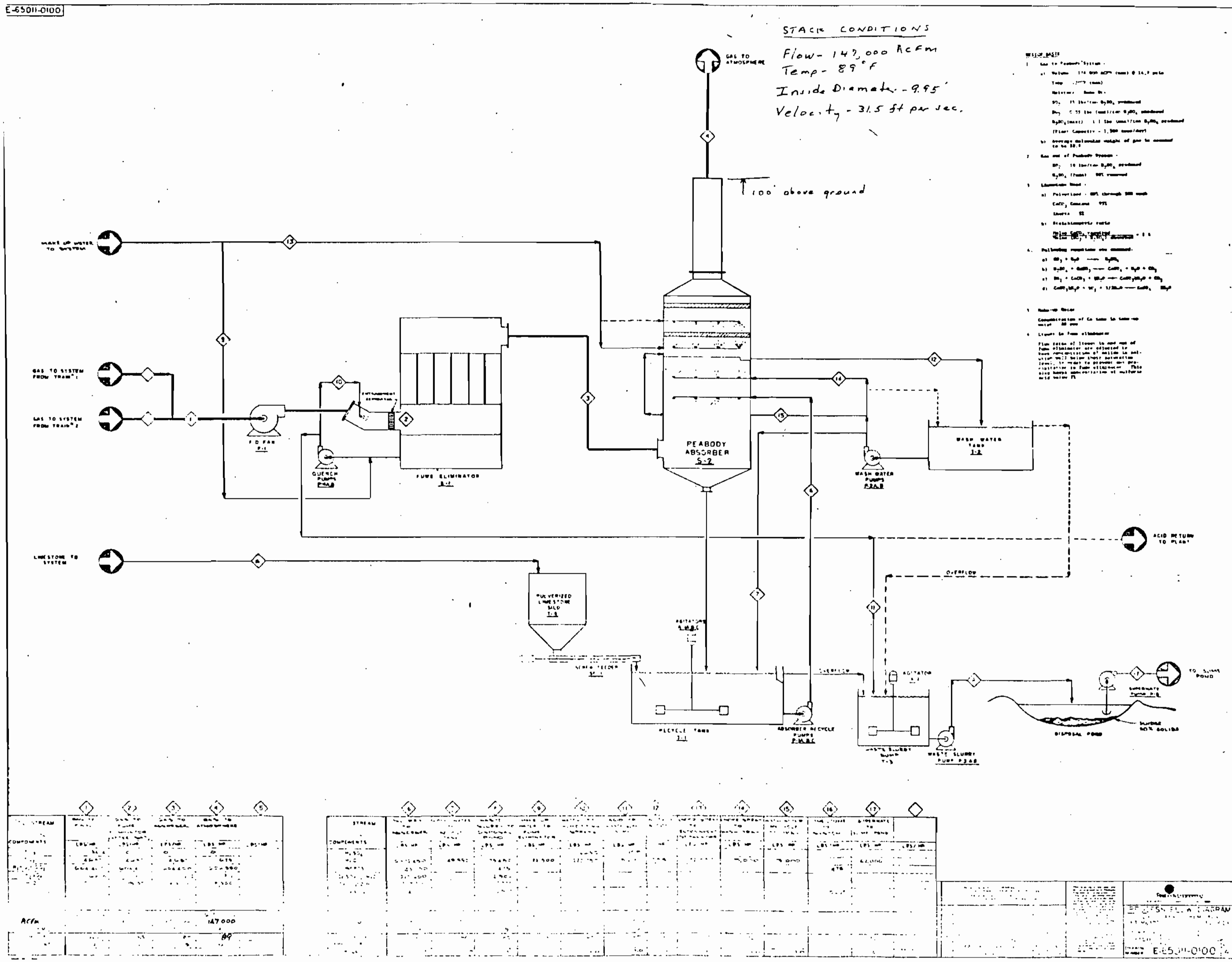

Exhibit - C

REFERENCES

STUDY OF SO_2 SCRUBBERS
NATIONAL AIR POLLUTION CONTROL ADMINISTRATION

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2. Backstrom, H. L. J., "The Chain-Reaction Theory of Negative Catalysis," *Journal of the American Chemical Society*, 49, 1460, 1927

3. Barron, C. H., and O'Hern, H. A., "Reaction Kinetics of Sodium Sulfite Oxidation by the Rapid-Mixing Method," *Chemical Engineering Science*, 21, 397, 1966

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11. Johnstone, H. F., and Kleinschmidt, R. V., "The Absorption of Gases in Wet Cyclone Scrubbers," *Transactions of the American Institute of Chemical Engineers*, 34, 181, 1938

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EXHIBIT-D

AVERAGE AND MAXIMUM PRODUCTION/EMISSION RATES

The material balance on the contractors drawing, Attachment-E of the permit application, represents nominal design rates under average conditions.

USSAC expects maximum sustainable production rates to be 10% in excess of the nominal design. The application form section III C, first column, specifies emissions to be recorded as "maximum,lbs./hr.", and the numbers entered comply with this specification. For consistency, maxima were also used in section III B.

For further clarification tables have been prepared to summarize average and maximum rates, and are included as part of EXHIBIT-D. See tables IA, IB, IIA, and IIB. Numbers are given in lbs./hr. to be more easily identified with permit application numbers which are also in lbs./hr.

There are no fluoride emissions in streams 22 and 23 on Attachment-E of the permit application. This is verified by the designer/contractor letter which is included with this EXHIBIT-D.

EXHIBIT D

TABLE IA-AVERAGE RAW MATERIAL & PRODUCTION RATES
(Refer Attachment E)

	Pounds Per Hour Train A	Pounds Per Hour Train B	Pounds Per Hour Total	(Tons/Day)
Rock Feed, P_2O_5	61,085	61,085	122,170	(1466)
Production, P_2O_5	58,335	58,335	116,670	(1400)

TABLE IB-FLUORIDE EMISSIONS AT AVERAGE PRODUCTION RATE
(Refer Attachment E)

	Pounds Per Hour Train A	Pounds Per Hour Train B	Pounds Per Hour Total	(Lbs./Day)
Reaction Area, Stream 20	0.45	0.45	0.90	(21.6)
Storage Area, Stream 21	0.16	0.16	0.32*	(7.6)
Other	0	0	0	0
Total	0.61	0.61	1.22	(29.2)

*The storage area scrubber is common to both trains.

TABLE IIA-MAXIMUM RAW MATERIAL & PRODUCTION RATES

	Pounds Per Hour Train A	Pounds Per Hour Train B	Pounds Per Hour Total	(Tons/Day)
Rock Feed, P_2O_5	70,510	70,510	141,020	(1692)
Production, P_2O_5	64,165	64,165	128,330	(1540)

TABLE IIB-FLUORIDE EMISSIONS AT MAXIMUM PRODUCTION RATE

	Pounds Per Hour Train A	Pounds Per Hour Train B	Pounds Per Hour Total	(Lbs./Day)
Reaction Area, Stream 20	0.53	0.53	1.06	(25.4)
Storage Area, Stream 21	0.18	0.18	0.36*	(8.6)
Other	0	0	0	0
Total	0.71	0.71	1.42	(34.0)

*The storage area scrubber is common to both trains.

Badger
GULF DESIGN DIVISION
1401 NORTH WESTSHORE BOULEVARD □ P.O. BOX 22317 □ TAMPA, FLORIDA 33622 □ TELEPHONE: 813/879-0715

EXHIBIT - D

RECEIVED
SEP 18 1980
USS ENG. - FT. MEADE

September 19, 1980
Letter No. GD/USSAC-030L

USS Agri-Chemicals
P.O. Box 150
Bartow, Florida 33830

Attention: Mr. R. T. Lindsay
Project Manager

Subject: Exhaust Gases from Vacuum Pump Silencer
Phosphoric Acid Plant
Fort Meade, Florida
Badger Study No. E-7541

Dear Bob:

In recent discussions, your technical team questioned the nature of gases exhausting from the Reactor and Filter Vacuum Pumps in our phosphoric acid plant. Please be advised that these gases are primarily air, carbon dioxide, and water vapor. We have not detected fluorine compounds in gases leaving these silencers.

Very truly yours,

BADGER AMERICA, INC.

J W Salter

J. W. Salter
Project Manager

JWS:mey

EXHIBIT-E

ERRATA

A numerical error has been found in Attachment-B, paragraph 3, of the permit application.

Attachment-B revised for correction is included as EXHIBIT-E. The error was not reflected elsewhere in the application.

EXHIBIT - E

TRAIN - A

ATTACHMENT B

(For Section V of Application)

1. Total Process Input Rate and Product Weight

P_2O_5 Input	=	70510	lb/h
P_2O_5 in Product	=	64165	lb/h
P_2O_5 Loss to Gypsum Storage	=	6345	lb/h

2. Emission Estimate and Test Methods

(a) Basis of Emission Estimate - performance guarantee from Badger America Inc. (Attachment A) which equates to meeting Federal NSPS and Florida Emission Limiting Standards.

(b) Compliance Test Methods - in accordance with 40 CFR 60, or DER/EPA approved alternate methods.

3. Basis of Potential Discharge

(Refer to Flow Diagram, Attachment E)

Based on guarantees from Bader America, fluoride emissions from the reactor area fume scrubber will be 10.8 pounds per day (lb/d) at a scrubber efficiency of 99%. Fluoride emissions from the storage tank area fume scrubber will be 3.8 lb/d at a scrubber efficiency of 95%. Total potential (uncontrolled) emission rates will be as follows:

Reactor Area = $\dfrac{10.8 \text{ lb/d}}{0.01 \text{ (effic. factor)}}$ = ~~2090~~ 1080 lb/d ★

Storage Tank Area = $\dfrac{\cancel{7.8}\ 3.8 \text{ lb/d}}{0.05 \text{ (effic. factor)}}$ = ~~156~~ 76 lb/d ★

TOTAL = ~~2246~~ 1156 lb/d ★

= ~~94~~ 48 lb/h ★

4. Design Details of Pollution Control Equipment

Design details are not yet available. Refer to flow diagram in Attachment E for additional information.

★ Revised to correct error - 9/15/80

EXHIBIT - E

TRAIN-B

ATTACHMENT B

(For Section V of Application)

1. Total Process Input Rate and Product Weight

P_2O_5 Input	=	70510	lb/h
P_2O_5 in Product	=	64165	lb/h
P_2O_5 Loss to Gypsum Storage	=	6345	lb/h

2. Emission Estimate and Test Methods

(a) Basis of Emission Estimate - performance guarantee from Badger America Inc. (Attachment A) which equates to meeting Federal NSPS and Florida Emission Limiting Standards.

(b) Compliance Test Methods - in accordance with 40 CFR 60, or DER/EPA approved alternate methods.

3. Basis of Potential Discharge

(Refer to Flow Diagram, Attachment E)

Based on guarantees from Bader America, fluoride emissions from the reactor area fume scrubber will be 10.8 pounds per day (lb/d) at a scrubber efficiency of 99%. Fluoride emissions from the storage tank area fume scrubber will be 3.8 lb/d at a scrubber efficiency of 95%. Total potential (uncontrolled) emission rates will be as follows:

Reactor Area = $\frac{10.8 \text{ lb/d}}{0.01 \text{ (effic. factor)}}$ = ~~2090~~ 1080 lb/d *

Storage Tank Area = $\frac{\cancel{7.8}\ 3.8 \text{ lb/d}}{0.05 \text{ (effic. factor)}}$ = ~~156~~ 76 lb/d *

TOTAL = ~~2246~~ 1156 lb/d *

= ~~94~~ 48 lb/h *

4. Design Details of Pollution Control Equipment

Design details are not yet available. Refer to flow diagram in Attachment E for additional information.

* Revised to correct error - 9/15/80

	After	Before	metric units
emission rate (g/sec)	0.88 lb/hr	0.71 lb/hr	0.111
stack ht (meters)	85 ft		25.9
stack exit temp (°K)	100°F		311
stack exit velocity (m/s)	22 FT/sec		6.7
stack dia (m)	3.4 FT		1.04

```
@@PRNT
@XQT TSOURCE.TEST-STACK
 ENTER OPTIONS 1,2,3,TEMP K,MIX HT,AND RECEPTOR ELE
0 0 0 293 1500 0
 ENTER ANEMOMETER HEIGHT,AND SIX WIND EXPONENTS
 .10 .15 .20 .25 .30 .30
USS AGRI CHEM PHOS ACID PLT MODIF

FTN ERR ON UNIT-5       INPUT DATA DOES NOT CORRESPOND TO TYPE
```

```
 ENTER UP TO 80 COLUMNS OF HEADER INFORMATION
USS AGRI CHEM PHOS ACID PLTS MODIF
ENTER SRC STRENGTH,HT,GAS TEMP,GAS VELOCITY,& DIAM
0.111 25.9 311 6.7 1.04
```

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PTPLU VERSION 80021, TOM PIERCE AND BRUCE TURNER : ENVIRONMENTAL OPERATIONS BRANCH

USS AGRI CHEM PHOS ACID PLTS MODIF

OPTIONS 1=YES USE THE OPTION 0=NO DO NOT USE THE OPTION

IOPT(1) = 0 (COMPUTE GRADUAL PLUME RISE) AMBIENT AIR TEMP = 293.00(DEG,K)

IOPT(2) = 0 (COMPUTE STACK DOWNWASH) WIND EXPONENTS = .15 .20 .25 .30 .30 .00

IOPT(3) = 0 (COMPUTE INITIAL PLUME SIZE) ANEMOMETER HT = .10 (METERS)

IF =1 USE PASQUILLS RECOMMENDATION

SOURCE PARAMETERS

EMISSION RATE = .11(G/SEC) PHYSICAL STACK HEIGHT = 25.90(METERS)

STACK TEMP = 311.00(DEG,K) STACK EXIT VELOCITY = 6.70(M/SEC)

STACK DIAM = 1.04(METERS) VOLUME FLOW = 5.69(CU M/SEC)

MIXING HT = 1500.0(METERS) RECEPTOR HT = .00(METERS)

ANALYSIS OF CONCENTRATION AS A FUNCTION OF STABILITY AND WIND SPEED

					****EXTRAPOLATED WINDS****			
STABILITY	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	PLUME RISE (M)	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	PLUME RISE (M)
1	.50	7.3136-006 Max 1 new stack	.331	69.7	1.15	6.7149-006	.225	44.9
1	.80	7.1592-006	.266	53.2	1.84	5.7276-006	.192	37.8
1	1.00	6.9160-006	.238	47.8	2.30	5.1565-006	.181	35.4
1	1.50	6.2050-006	.206	40.5	3.45	4.0767-006	.166	32.2
1	2.00	5.5207-006	.188	36.8	4.60	3.3510-006	.159	30.7
1	2.50	4.9366-006	.177	34.7	5.75	2.8389-006	.154	29.7
1	3.00	4.4484-006	.171	33.2	6.90	2.4605-006	.151	29.1

					****EXTRAPOLATED WINDS****			
STABILITY	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	PLUME RISE (M)	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	PLUME RISE (M)

Max Impact
after modif
7.3 ug/m3 - 1 stack
14.6 ug/m3 - 2 stacks

Max Impact before Modif $= (14.6)\left(\frac{0.71}{0.88}\right) = 11.8\ ug/m^3$ (1 hr)

Increased Impact =
14.6 x .4 = 5.84 (24 hr)
11.8 x .4 = 4.72 (24 hr)
2.8 ug/m3 increase (1 hr)

X 0.4
1.12 ug/m3 max 24 hr Impact

2	.50	6.6004-006	.505	69.7	1.52	6.0614-006	.289	40.3
2	.80	6.7456-006	.384	53.2	2.43	4.9935-006	.250	34.9
2	1.00	6.6432-006	.344	47.8	3.04	4.4224-006	.237	33.1
2	1.50	6.0855-006	.291	40.5	4.56	3.4069-006	.219	30.7
2	2.00	5.4707-006	.264	36.8	6.08	2.7586-006	.211	29.5
2	2.50	4.9225-006	.248	34.7	7.60	2.3142-006	.205	28.8
2	3.00	4.4552-006	.237	33.2	9.12	1.9919-006	.202	28.3
2	4.00	3.7244-006	.224	31.4	12.15	1.5582-006	.195	27.7
2	5.00	3.1898-006	.216	30.3	15.19	1.2792-006	.192	27.3

****EXTRAPOLATED WINDS****

STABILITY	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	PLUME RISE (M)	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	PLUME RISE (M)
3	2.00	5.6734-006	.393	36.8	8.02	2.3438-006	.298	28.6
3	2.50	5.1306-006	.368	34.7	10.03	1.9487-006	.292	28.1
3	3.00	4.6601-006	.351	33.2	12.04	1.6669-006	.288	27.7
3	4.00	3.9138-006	.330	31.4	16.05	1.2923-006	.283	27.3
3	5.00	3.3618-006	.317	30.3	20.06	1.0549-006	.280	27.0
3	7.00	2.6130-006	.303	29.0	28.08	7.7122-007	.276	26.7
3	10.00	1.9535-006	.292	28.1	40.12	5.4946-007	.273	26.4
3	12.00	1.6711-006	.288	27.7	48.14	4.6105-007	.272	26.4
3	15.00	1.3728-006	.284	27.4	60.18	3.7140-007	.271	26.3

****EXTRAPOLATED WINDS****

STABILITY	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	PLUME RISE (M)	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	PLUME RISE (M)
4	.50	4.3152-006	1.683	69.7	2.65	4.1157-006	.678	34.2
4	.80	5.1556-006	1.107	53.2	4.24	3.1493-006	.603	31.1
4	1.00	5.3355-006	1.000	47.8	5.30	2.7075-006	.578	30.0
4	1.50	5.0628-006	.836	40.5	7.94	1.9948-006	.545	28.7
4	2.00	4.6413-006	.744	36.8	10.59	1.5756-006	.529	28.0
4	2.50	4.2296-006	.690	34.7	13.24	1.3011-006	.520	27.6
4	3.00	3.8625-006	.654	33.2	15.89	1.1077-006	.513	27.3
4	4.00	3.2671-006	.610	31.4	21.19	8.5357-007	.505	26.9

4	5.00	2.8189-006	.584	30.3	26.48	6.9414-007	.500	26.7
4	7.00	2.2027-006	.554	29.0	37.08	5.0528-007	.495	26.5
4	10.00	1.6536-006	.532	28.1	52.97	3.5879-007	.491	26.3
4	12.00	1.4169-006	.524	27.7	63.56	3.0066-007	.489	26.2
4	15.00	1.1659-006	.515	27.4	79.45	2.4188-007	.488	26.2
4	20.00	8.9982-007	.507	27.0	105.93	1.8243-007	.486	26.1

****EXTRAPOLATED WINDS****

STABILITY	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	PLUME RISE (M)	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	PLUME RISE (M)
5	2.00	1.8429-006	1.845	49.7	10.59	6.0767-007	1.283	39.6
5	2.50	1.6055-006	1.746	48.0	13.24	5.1684-007	1.233	38.6
5	3.00	1.4308-006	1.671	46.7	15.89	4.5180-007	1.195	37.8
5	4.00	1.1877-006	1.564	44.8	21.19	3.6398-007	1.140	36.7
5	5.00	1.0242-006	1.489	43.4	26.48	3.0681-007	1.102	36.0

****EXTRAPOLATED WINDS****

STABILITY	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	PLUME RISE (M)	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	PLUME RISE (M)
6	2.00	1.7009-006	3.000	45.7	2.00	1.7009-006	3.000	45.7
6	2.50	1.4851-006	3.000	44.2	2.50	1.4851-006	3.000	44.2
6	3.00	1.3219-006	2.898	43.2	3.00	1.3219-006	2.898	43.2
6	4.00	1.0947-006	2.705	41.6	4.00	1.0947-006	2.705	41.6
6	5.00	9.4195-007	2.572	40.5	5.00	9.4195-007	2.572	40.5

(1) NO COMPUTATION WAS ATTEMPTED AS THE DISTANCE TO THE POINT OF MAXIMUM CONCENTRATION IS SO GREAT THAT THE SAME STABILITY IS NOT LIKELY TO PERSIST LONG ENOUGH FOR THE PLUME TO TRAVEL THIS FAR.

(2) THE PLUME IS OF SUFFICIENT HEIGHT THAT EXTREME CAUTION SHOULD BE USED IN INTERPRETING THIS COMPUTATION AS THIS STABILITY TYPE MAY NOT EXIST TO THIS HEIGHT. ALSO WIND SPEED VARIATIONS WITH HEIGHT MAY EXERT A DOMINATING INFLUENCE.

(3) NO COMPUTATION WAS ATTEMPTED FOR THIS HEIGHT AS THE POINT OF MAXIMUM CONCENTRATION IS GREATER THAN 100 KILOMETERS FROM THE SOURCE.

MEMORANDUM OF UNDERSTANDING
REGARDING BEST OPERATIONAL START-UP PRACTICES
FOR SULFURIC ACID PLANTS

4/8/95

The parties jointly agree: for the purposes of Rule 17-2.250, the foregoing practices constitute "best operational practices" for the start-up of sulfuric acid plants.

The Department will not seek to incorporate these practices into permits for existing facilities during the first 18 months after implementation. After the expiration of this 18-month period, which is a typical catalyst cycle, the Department may seek to modify the permits, in accordance with Rule 17-4.080 and other applicable laws, to incorporate appropriate site-specific start-up procedures as enforceable permit conditions.

These Sulfuric Acid Plant Best Operation Start-Up Practices will be made available in the control room at all times.

Since these specific procedures are undergoing evaluation, the Department will not consider these practices to be the only means of demonstrating best operating procedures. If a company chooses to use another method, it will be its responsibility to demonstrate that it constitutes best operational practices in accordance with 17-2.250, F.A.C.

BEST OPERATIONAL START-UP PRACTICES
FOR SULFURIC ACID PLANTS

1. Only one sulfuric acid plant at a facility should be started up and burning sulfur at a time. There are times when it will be acceptable for more than one sulfuric acid plant to be in the start-up mode at the same time, provided the following condition is met. It is not acceptable to initiate sulfur burning at one sulfuric acid plant when another plant at the same facility is emitting SO_2 at a rate in excess of the emission limits imposed by the permit or rule, as determined by the CEMs emission rates for the immediately preceding 20 minutes.

2. A plant start-up must be at the lowest practicable operating rate, not to exceed 70 percent of the designated operating rate, until the SO_2 monitor indicates compliance. Because production rate is difficult to measure during start-up, if a more appropriate indicator (such as blower pressure, furnace temperature, gas strength, blower speed, number of sulfur guns operating, etc.) can be documented, tested and validated, the Department will accept this in lieu of directly documenting the operating rate. Implementation requires the development of a suitable list of surrogate parameters to demonstrate and document the reduced operating rate on a plant-by-plant basis. Documentation that the plant is conducting start-up at the reduced rate is the responsibility of the owner or operator.

3. Sulfuric acid plants are authorized to emit excess emissions from start-up for a period of three consecutive hours provided best operational practices, in accordance with this agreement, to minimize emissions are followed. No plant shall be operated (with sulfur as fuel) out of compliance for more than three consecutive hours. Thereafter, the plant shall be shut down. The plant shall be shut down (cease burning sulfur) if, as indicated by the continuous emission monitoring system, the plant is not in compliance within three hours of start-up. Restart may occur as soon as practicable following any needed repairs or adjustments, provided the corrective action is taken and properly documented.

4. Cold Start-Up Procedures.

a. Converter.

(1) The inlet and outlet temperature at the first two masses of catalyst shall be sufficiently high to provide immediate ignition when SO_2 enters the masses. In no event shall the inlet temperature to the first mass be less than 800°F or the outlet temperature to the first two masses be less than 700°F.

These temperatures are the desired temperatures at the time the use of auxiliary fuel is terminated.

(2) The gas stream entering the converter shall contain SO_2 at a level less than normal, and sufficiently low to promote catalytic conversion to SO_3.

b. Absorbing Towers.

The concentration, temperature and flow of circulating acid shall be as near to normal conditions as reasonably can be achieved. In no event shall the concentration be less than 96 percent H_2SO_4.

5. Warm Restart.

a. Converter.

The inlet and outlet temperatures of the first two catalyst masses should be sufficiently high to ensure conversion. One of the following three conditions must be met:

(1) The first two catalyst masses inlet and outlet temperatures must be at a minimum of 700°F; or

(2) Two of the four inlet and outlet temperatures must be greater than or equal to 800°F; or

(3) The inlet temperature of the first catalyst must be greater than or equal to 600°F and the outlet temperature greater than or equal to 800°F. Also, the inlet and outlet temperatures of the second catalyst must be greater than or equal to 700°F.

Failure to meet one of the above conditions, requires use of cold start-up procedures.

To allow for technological improvements or individual plant conditions, alternative conditions will be considered by the Department in appropriate cases.

b. Absorbing Towers.

The concentration, temperature and flow of circulating acid shall be as near to normal conditions as reasonably can be achieved. In no event shall the concentration be less than 96 percent H_2SO_4.

Steve Smallwood 10-10-89 James M. Williams 12/4/89

Steve Smallwood, P.E. / Date

Director, Division of Air
Resources Management
Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

U.S. Agri-Chemicals Date

President.

REK 12/4/89

PHOSPHORIC ACID "A" TRAIN
STACK 17
APRIL 2, 1985

5/17/85

William,
Here is the P_2O_5 Emission Test data you need.
Regards Jim

USS
Agri-Chemicals
Division of United States Steel Corporation

MAIL: P. O. BOX 150
BARTOW, FLORIDA 33830
813-533-0471

PROCESS RATE STATEMENT FOR EMISSION TEST

Date APRIL 2, 1985

Process PHOSPHORIC ACID, STACK 17

Location Ft. MEADE, FLA.

Permit Number A053-69840

Start of Test	End of Test	Production Rate, TONS P_2O_5/DAY
3:17 PM	4:22 PM	696.7
4:40 PM	5:45 PM	696.7
6:08 PM	7:13 PM	696.7

I certify that the above statement is true to the best of my knowledge.

Signature Eugene Williams

Title Environmental Tech.

Date 4/26/85

GROUP : 94 POLLUTION TEST 2-APR-85 16:00:01

TAG	DESCRIPTOR	MV	SP	OUTPUT	STATUS
WQ101	A ROCKTOTAL	1.796 TPM		0.0 TONS	
FQ201	AH2SO4TOTAL	178.0 GPM		0.0 TONS	
WQ151	B ROCKTOTAL	1.561 TPM		0.0 TONS	
FQ251	BH2SO4TOTAL	168.0 GPM		0.0 TONS	

Run 1 A Train   R E Hall

GROUP : 94   POLLUTION TEST   2-APR-85   17:00:01

TAG	DESCRIPTOR	MV	SP	OUTPUT	STATUS
WQ101	A ROCKTOTAL	1.795 TPM		107.7 TONS	
FQ201	AH2SO4TOTAL	178.8 GPM		80.0 TONS	
WQ151	B ROCKTOTAL	1.497 TPM		91.9 TONS	
FQ251	BH2SO4TOTAL	174.6 GPM		76.5 TONS	

hour	Rock Ton	H_2SO_4 Ton
1700	107.7	80.0
1600	0.0	0.0
	107.7	80.0

Rock Consumption For 1 hr. 107.7 Ton

'500 Rock P_2O_5 31.06 %

Rock Moisture 13.3 %

Production For 1 hour =

$107.7 \times .3106 \times (1 - .133) = 29.0026$ Ton P_2O_5/Hr.

Run # 2 A-Train

RE Hall

GROUP : 94 POLLUTION TEST 2-APR-85 18:00:01

TAG	DESCRIPTOR	MV	SP	OUTPUT	STATUS
WQ101	A ROCKTOTAL	1.796 TPM		215.5 TONS	
FQ201	AH2SO4TOTAL	183.4 GPM		161.1 TONS	
WQ151	B ROCKTOTAL	1.497 TPM		181.8 TONS	
FQ251	BH2SO4TOTAL	176.9 GPM		155.5 TONS	

	Rock Ton
1800	215.5
1700	107.7
	107.8

Rock Consumption For 1 hour 107.8 Ton

Rock P_2O_5 31.06 %

Rock Moisture 13.3 %

Production For 1 hr. =

$107.8 \times .3106 \times (1 - .133) = 29.0294$ Ton P_2O_5/hr

Run #3 A-Train

R E Hall

GROUP : 94 POLLUTION TEST 2-APR-85 19:00:01

TAG	DESCRIPTOR	MV	SP	OUTPUT	STATUS
WQ101	A ROCKTOTAL	1.798 TPM		323.4 TONS	
FQ201	AH2SO4TOTAL	182.3 GPM		243.4 TONS	
WQ151	B ROCKTOTAL	1.536 TPM		273.8 TONS	
FQ251	BH2SO4TOTAL	178.6 GPM		235.2 TONS	

hr.	Rock	H_2SO_4
1900	323.4	243.4
1800	215.5	161.1
	107.9 Ton hr	82.3 Ton/hr

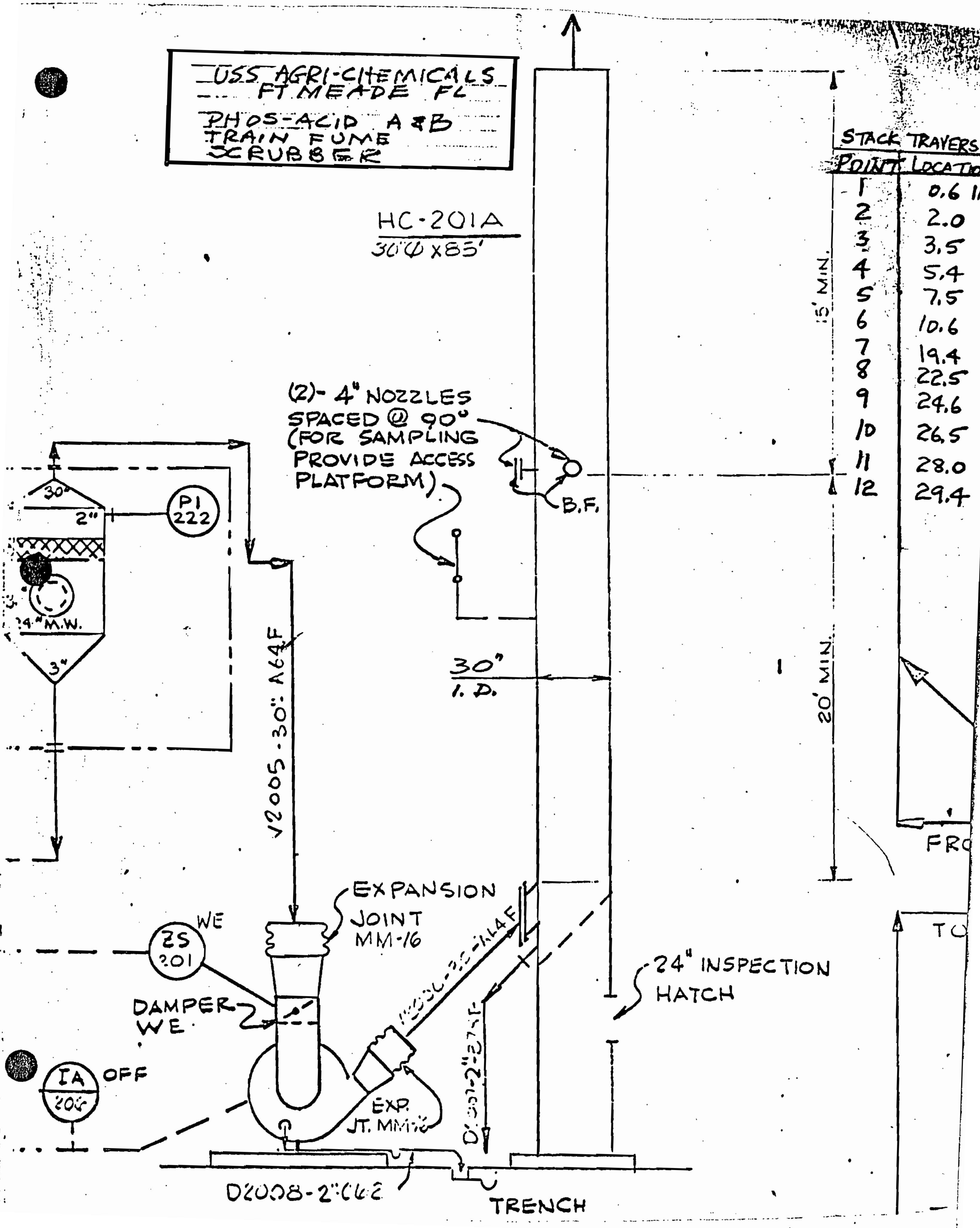
Rock Consumption 107.9 Ton hr.

Rock P_2O_5 = 31.06 %

Rock Moisture ~ 13.3 %

Production For 1 hour =

$107.9 \times .3106 \times (1.0 - .133) = 29.0564$ Tons P_2O_5/hour


USS AGRI-CHEMICALS
FT MEADE FL
PHOS-ACID A & B
TRAIN FUME
SCRUBBER
HC-201A
30"Ø x85'
STACK TRAVERS
POINT LOCATIO
1 0.6
2 2.0
3 3.5
4 5.4
5 7.5
6 10.6
7 19.4
8 22.5
9 24.6
10 26.5
11 28.0
12 29.4
15' MIN.
20' MIN.
(2)- 4" NOZZLES
SPACED @ 90°
(FOR SAMPLING
PROVIDE ACCESS
PLATFORM)
B.F.
30"
2"
PI
222
24" M.W.
3"
30"
I. D.
EXPANSION
JOINT
MM-16
WE
ZS
201
DAMPER
WE
IA
OFF
EXP.
JT.
24" INSPECTION
HATCH
FRO
TO
TRENCH

NOZZLE CALIBRATION

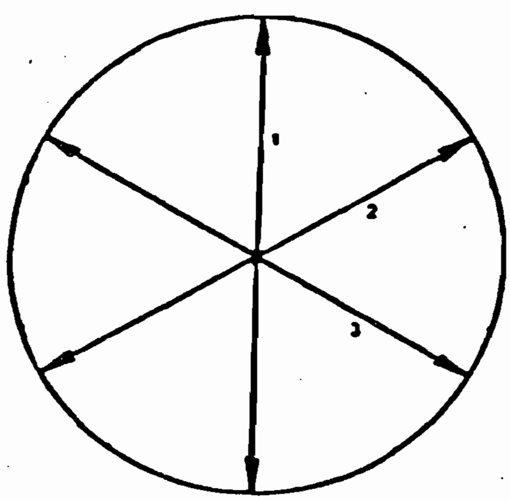
Nozzle 1056 -3849 Date 4-2-85

Measurement No.	Inside Diameter (inches)
1	.271
2	.271
3	.271

Average .271

Area of Nozzle .000400 Ft^2

Calibrated by: Robert E. Hall



Nozzle X-section

USS AGRI-CHEMICALS, PLANT
EMISSION TEST CONSTANTS AND APPARATUS CHECKS
SOURCE: PHOSPHORIC ACID "A" TRAIN STACK 17 PERMIT # A053-69839

	RUN #	1	2	3
		4-2-85	4-2-85	4-2-85
		3:17PM	4:40PM	6:08PM
		4:22PM	5:45PM	7:13PM
	STACK DIAMETER, INCHES	30.0	→	→
	STACK AREA, FT^2	4.909	→	→
	SAMPLE BOX NO.	31D 639C	→	→
	METER NO.	1002490	→	→
Y	METER CORRECTION FACTOR	0.9917	→	→
	PITOT TUBE SERIAL NO.	SC#6192	→	→
	PITOT TUBE PRESS TEST "H_2O	7.3	6.5	5.7
	" " " " TIME	15.0 SEC	→	→
	" " " " LEAK	0.0	0.0	0.0
Cp	PITOT TUBE CP.	0.84	→	→
	SAMPLE PROBE LENGTH, INCHES	39.0	→	→
	PROBE SERIAL NO.	SC-6192	→	→
	PROBE LINER MATERIAL	STAINLESS STEEL	→	→
	PROBE HEATER SETTING	50	→	→
	NOZZLE SERIAL NO.	1056-3849	→	→
Ad	NOZZLE DIA INCH	0.271	→	→
An	NOZZLE AREA FT^2	0.0004	→	→
	METER & TRAIN LEAK TEST			
	PRESSURE, IN-HG	10.0	8.0	8.0
	VOL LEAK TEST ELAPED TIME	1.0 MIN	1.0 MIN.	1.0 MIN.
	VOL LEAK FT^3	0.007	0.006	0.012
	CYCLONIC CONDITIONS IN STACK			
	POST TEST, METER CALIB. CHECK			
n	NUMBER OF TRAVERSE POINTS IN STACK DIAMETER			24.0
θt	SAMPLE TIME EACH POINT, MIN	2.5	→	→
θ	SAMPLE TIME FOR RUN, MIN	60.0	→	→
Md	MOL WGT OF DRY STACK GAS - 29.0			
T_{STD}	528°R			
P_{STD}	29.92 IN MERCURY			

DATA CERTIFIED BY: E. Williams DATE: 4/26/85

Made in U.S.A.

USS AGRI-CHEMICALS, PLANT:
EMISSION TEST FOR:
SOURCE: PHOSPHORIC ACID "B" TRAIN PERMIT: #A053-69839
STACK 17

		1	2	3
	RUN #	1	2	3
	DATE	4-2-85	4-2-85	4-2-85
	START TIME	3:17PM	4:40PM	6:08PM
	END TIME	4:22PM	5:45PM	7:13PM
PRODUCTION RATE: TONS P_2O_5/day		696.7	→	→
V_m	VOL DRY GAS SAMPLED, METER FT^3	55.9	56.1	54.1
$V_{m\,STD}$	" STD COND.	53.46	53.4	50.58
P_B	BAROMETER, INCHES-HG.	29.95	29.95	29.95
P_S	STACK PRESS, INCHES-HG.	0.0	0.0	0.0
ΔH	ORIFICE ΔH INCHES-H_2O	2.58	2.42	2.4
T_m	METER TEMP. AVG. °R	552	554	564
T_s	STACK TEMP, AVG. °R	554	554	555
V_ℓ	VOL OF WATER COLLECTED, ML	31.1	29.6	31.6
V_w	WATER VOL, FT^3	1.4664	1.3956	1.4899
B_{ws}	WATER, MOL PERCENT	2.67	2.55	2.4
$\sqrt{\Delta P}$	STACK VELOCITY HEAD, $\sqrt{IN\text{-}H_2O}$	0.7302	0.7055	0.7081
V_s	STACK VELOCITY	42.09	40.66	40.87
Q_s	STACK FLOW RATE ACFM	12397	11975	12037
Q_{STD}	STACK FLOW RATE DSCFM	11511	11133	11135
I	ISOKINETIC SAMPLING COND. %	95.5	98.7	93.4
θ	TOTAL SAMPLE TIME, MIN	60.0	60.0	60.0
M_s	STACK GAS MOL WGT AT CONDITIONS	28.71	28.72	
M_d	STACK GAS MOL WGT DRY COND.	29.0	→	→
	FUEL TYPE			
	CONSUMPTION THERMS/T-PROD			
	EMISSIONS - TYPE FLUORIDE			
	MG COLLECTED	2.7	2.41	2.73
	MG/SCF	0.0505	0.0451	0.054
	LB/ ~~HR~~ Day	1.844	1.593	1.907
	LB/ TON P_2O_5	0.0026	0.0023	0.0027

DATA CERTIFIED BY: E. Williams DATE: 4/26/85

Made in U.S.A.

Date 4-2-85
By R E Hall
A Train PAO

Moisture Collected

Run #	Impinger A-1	A-2	A3	A4	Total Collect
1	669.1 644.2 24.9 6.2 31.1	654.7 650.4 4.3 1.9 6.2	456.4 455.5 0.9	646.4 645.4 1.0	31.1

Run #	B-1	B-2	B-3	B-4	Total Collect
2	673.8 648.5 25.3 4.3 29.6	698.9 697.1 1.8 2.5 4.3	455.1 453.9 1.2	668.9 667.6 1.3	29.6

Run #	C-1	C-2	C-3	C-4	Total Collect
3	686.2 659.0 27.2 4.4 31.6	661.4 659.3 2.1 2.3 4.4	454.6 453.3 1.3	647.0 645.0 2.0	31.6

ANALYTICAL WORK SHEET

DATE: 4-2-85
By : R.E. Hall

ANALYSIS: Fluoride
PLANT : FT. Meade
STACK : PAD. A Train

RUN		
1	2.70	mg F/l × 1l = 2.7 mgF
2	2.41	mg F/l × 1l = 2.41 mgF
3	2.73	mg F/l × 1l = 2.73 mg F
STANDARD	1.0	mg F/l
STANDARD	10.0	mg F/l

RUN				
1	53.46	SCF	.0505	mg F/SCF
2	53.4	SCF	.0451	mg F/SCF
3	50.58	SCF	.0540	mg F/SCF

RUN

1 $\frac{(.0505)(11,511)(60)(24)}{(454)(1000)} = 1.8438$ LBS. F/DAY

2 $\frac{(.0451)(11,133)(60)(24)}{(454)(1000)} = 1.5926$ LBS. F/DAY

3 $\frac{(.054)(11,135)(60)(24)}{(454)(1000)} = 1.9072$ LBS. F/DAY

RUN

1 $\frac{1.8438 \div 24}{29.0026 \text{ Ton } P_2O_5/hr} = 0.0026$ LB. F/TON P_2O_5

2 $\frac{1.5926 \div 24}{29.0294 \text{ Ton } P_2O_5/hr} = 0.0023$ LB. F/TON P_2O_5

3 $\frac{1.9072 \div 24}{29.0564 \text{ Ton } P_2O_5/hr} = 0.0027$ LB. F/TON P_2O_5

Plant PHOSPHORIC ACID
City [illegible] MEADE
Location A-TRAIN STACK 17
Operator E. WILLIAMS
Date 4-2-85
Run number — 1

Sheet 1 of ______
Filter number N/A
leak rate TRAIN, 0.007 @ 10" Hg
LEAK RATE TRAIN, 0.005 @ 10" Hg

E. Williams 4/2/85

	"H_2O	LEAK	TIME
PITOT LEAK TEST -	7.3	0.0	15 SEC.

REFERENCE ΔP - 0.38

Traverse point number	Sampling time, (θ), min	3:17 PM Clock time, (24 h)	Vacuum, (in.) Hg	Stack temperature (T_s), (°F)	Velocity head (ΔP_s), (in.) H_2O	Pressure differential across orifice meter (ΔH), (in.) H_2O	895.7 Gas sample volume (V_m), (ft^3)	Gas sample temperature at dry gas meter Inlet, (°F)	Gas sample temperature at dry gas meter Outlet, (°F)	Temperature of gas leaving condenser or last impinger, (°F)	Filter temp (°F)
1	2.5	3:19.5	4.0	93	.42	2.05	897.5	85	85	57	
2	"	22.0	4.3	93	.46	2.25	899.7	85	84	57	
3	"	24.5	4.7	94	.54	2.6	902.1	86	85	57	
4	"	27.0	4.7	94	.55	2.65	904.5	86	85	57	
5	"	29.5	5.2	94	.60	2.9	906.8	87	85	57	
6	"	32.0	5.3	94	.60	2.9	909.2	88	86	57	
7	"	34.5	5.3	94	.60	2.9	911.5	89	86	57	
8	"	37.0	5.3	94	.55	2.65	913.9	89	87	57	
9	"	39.5	5.3	94	.55	2.65	916.2	90	87	57	
10	"	42.0	4.8	94	.52	2.45	918.5	91	88	57	
11	"	44.5	4.8	94	.52	2.45	920.8	91	89	57	
12	"	47.0	4.4	94	.47	2.25	923.0	91	89	57	
0		3:52 PM					923.0				
1	2.5	54.5	4.0	93	.40	1.95	925.0	92	91	57	
2	"	57.0	4.4	93	.48	2.35	927.3	93	91	57	
3	"	59.5	4.8	93	.55	2.65	929.7	94	91	58	
4	"	4:02.0	5.2	94	.58	2.8	932.2	95	92	58	
5	"	04.5	5.4	94	.60	2.9	934.7	96	92	58	
6	"	07.0	5.5	94	.62	3.0	937.2	96	93	58	
7	"	09.5	5.5	94	.62	3.0	939.7	97	94	58	
8	"	12.0	5.0	94	.55	2.65	942.2	98	94	57	
9	"	14.5	5.0	94	.55	2.65	944.6	99	95	57	
10	"	17.0	5.0	94	.55	2.65	947.0	100	96	57	
11	"	19.5	4.8	94	.50	2.4	949.3	101	96	57	
12	"	22.0	4.3	94	.46	2.25	951.6	102	97	57	
	Total 60		Max 5.4	Avg 94	17.5256 0.7302	61.95 2.58	Total 55.9	Avg 93	Avg 90	Max 58	

RUN NO. 1
STACK NO. 17

STACK SAMPLING CALCULATIONS

DATE: 4/2/85
BY: EW

Meter Pressure

$$P_m = 29.95 + \frac{2.58}{13.6} = 30.14$$

Volume of Gas Sampled

$$V_{m(std)} = \frac{55.9 \times 0.9917 \times 528 \times 30.14}{552 \times 29.92} = 53.4644$$

16500.8

Moisture Content

$$V_{w(std)} = 31.1\ (0.04715) = 1.4664$$

$$B_{ws} = \frac{1.4664}{1.4664 + 53.4644} = 0.0267 \sim 2.67$$

54.9308

Stack Gas Molecular Weight

$$M_s = 29(.9733) + 18(.0267) = 28.7063$$

28.2257 + .4806

Stack Gas Pressure

$$P_s = 29.95 + \frac{0.0}{13.6} = 29.95$$

Stack Gas Velocity

$$V_s = 85.49(0.84)(0.7302)\sqrt{\frac{554}{29.95 \times 28.7063}} = 42.091$$

.8027

859.75

Isokinetic Variation

$$\%I = \frac{(0.09450)(554)(53.46)}{(29.95)(42.091)(0.000398)(60)(.9733)} = 95.52$$

Stack Gas Flowrate

$$Q = 60(A_s)(V_s) = (60)(4.909)(42.091) = 12,397$$

$$Q_{std} = \frac{(12,397)(528)(29.95)(.9733)}{(554)(29.92)} = 11,511$$

16,575.68

Plant PHOSPHORIC ACID
City F[illegible]MEADE
Location A-TRAIN STACK 17
Operator E. WILLIAMS
Date 4-2-85
Run number 2

Sheet 1 o[illegible]
Filter number N/A
leak rate TRAIN, 0.005 @ 8" Hg
LEAK RATE TRAIN, 0.006 @ 8" Hg

PITOT LEAK TEST - "H_2O 6.5 LEAK 0.0 TIME 15 SEC.
REFERENCE ΔP - 0.38

Traverse point number	Sampling time, (θ), min	Clock time, (24 h) 4:40PM	Vacuum, (in.) Hg	Stack temperature (T_s), (°F)	Velocity head (ΔP_s), (in.) H_2O	Pressure differential across orifice meter (ΔH), (in.) H_2O	Gas sample volume (V_m), (ft^3) 951.602	Gas sample temperature at dry gas meter Inlet, (°F)	Gas sample temperature at dry gas meter Outlet, (°F)	Temperature of gas leaving condenser or last impinger, (°F)	Filter temp (°F)
1	2.5	4:42.5	4.0	93	.32	1.55	953.5	103	102	58	
2	"	45.0	4.8	93	.38	1.85	955.6	104	102	58	
3	"	47.5	4.8	93	.38	1.85	957.7	105	102	58	
4	"	50.0	5.0	94	.42	2.05	959.9	106	103	58	
5	"	52.5	5.8	94	.48	2.35	962.3	106	103	57	
6	"	55.0	5.8	94	.48	2.35	964.7	107	103	57	
7	"	57.5	6.0	94	.55	2.65	967.2	108	104	57	
8	"	5:00.0	6.4	94	.60	2.9	969.7	109	104	57	
9	"	02.5	6.4	94	.60	2.9	972.3	109	105	57	
10	"	05.0	6.4	93	.60	2.9	974.9	110	106	58	
11	"	07.5	6.0	93	.55	2.65	977.4	110	106	58	
12	"	10.0	5.3	93	.47	2.25	979.8	111	107	58	
0		5:15PM					979.8				
1	2.5	17.5	5.0	93	.40	1.95	982.0	109	107	58	
2	"	20.0	5.2	94	.45	2.2	984.3	109	108	58	
3	"	22.5	5.8	94	.52	2.45	986.5	110	108	58	
4	"	25.0	6.0	94	.54	2.6	988.8	110	109	58	
5	"	27.5	6.3	94	.58	2.8	991.2	110	109	59	
6	"	30.0	6.3	94	.58	2.8	993.7	111	109	59	
7	"	32.5	6.3	94	.58	2.8	996.1	111	109	59	
8	"	35.0	6.1	94	.54	2.6	998.5	112	110	59	
9	"	37.5	6.1	94	.54	2.6	1000.9	112	110	59	
10	"	40.0	5.8	94	.50	2.4	1003.2	113	110	59	
11	"	42.5	5.9	94	.50	2.4	1005.5	113	111	59	
12	"	45.0	5.5	94	.46	2.25	1007.7	114	111	58	
	Total 60		Max 6.4	Avg 94	16.931 0.7055	58.1 2.42	Total 56.1	Avg 109	Avg 107	Max 59	

RUN NO. 2
STACK NO. 17

STACK SAMPLING CALCULATIONS

A Train

DATE: 4/2/85
BY: EW

Meter Pressure

$P_m = 29.95 + \frac{2.42}{13.6} = 30.13$

Volume of Gas Sampled

$V_{m(std)} = \frac{56.1 \times 0.9917 \times 528 \times 30.13}{554 \times 29.92} = 53.4$

16575.7

Moisture Content

$V_{w(std)} = 29.6\,(0.04715) = 1.3956$

$B_{ws} = \frac{1.3956}{1.3956 + 53.4} = 0.0255 \sim 2.55\,\%$

54.7956

Stack Gas Molecular Weight

$M_s = 29(.9745) + 18(.0255) = 28.7195$

28.2605 + .459

Stack Gas Pressure

$P_s = 29.95 + \frac{0.0}{13.6} = 29.95$

Stack Gas Velocity

$V_s = 85.49(0.84)(0.7055)\sqrt{\frac{554}{29.95 \times 28.7195}} = 40.6571$

.8025

860.149

Isokinetic Variation

$\%I = \frac{(0.09450)(554)(53.4)}{(29.95)(40.6571)(0.000398)(60)(.9745)} = 98.66$

Stack Gas Flowrate

$Q = 60(A_s)(V_s) = (60)(4.909)(40.6571) = 11,975$

$Q_{std} = \frac{(11,975)(528)(29.95)(.9745)}{(554)(29.92)} = 11,133$

16575.7

Plant PHOSPHORIC ACID
City FT. MEADE
Location A-TRAIN STACK 17
Operator E. WILLIAMS
Date 4-2-85
Run number 3

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Sheet 1 of
Filter number N/A
leak rate TRAIN, 0.012 @ 8" Hg
LEAK RATE TRAIN, 0.011 @ 8" Hg

E. Williams 4/2/85

	"H2O	LEAK	TIME
PITOT LEAK TEST-	5.7	0.0	15 SEC.

REFERENCE ΔP - 0.38

Traverse point number	Sampling time, (θ), min	6:08PM Clock time, (24 h)	Vacuum, (in.) Hg	Stack temperature (T_s), (°F)	Velocity head (ΔP_s), (in.) H_2O	Pressure differential across orifice meter (ΔH), (in.) H_2O	1007.703 Gas sample volume (V_m), (ft^3)	Gas sample temperature at dry gas meter Inlet, (°F)	Gas sample temperature at dry gas meter Outlet, (°F)	Temperature of gas leaving condenser or last impinger, (°F)	Filter temp (°F)
1	2.5	6:10.5	4.1	94	.40	1.95	1009.5	103	102	58	
2	"	13.0	4.4	94	.45	2.2	1011.8	104	102	58	
3	"	15.5	4.4	94	.55	2.2	1014.1	104	102	58	
4	"	18.0	4.4	94	.55	2.2	1016.4	105	103	58	
5	"	20.5	4.8	94	.60	2.9	1018.8	106	103	58	
6	"	23.0	4.8	95	.60	2.9	1021.2	106	104	57	
7	"	25.5	5.0	95	.62	3.0	1023.7	107	104	57	
8	"	28.0	4.3	95	.56	2.7	1026.1	107	105	57	
9	"	30.5	4.3	95	.56	2.7	1028.5	107	105	57	
10	"	33.0	4.2	95	.52	2.45	1030.7	108	106	58	
11	"	35.5	4.2	95	.52	2.45	1032.9	107	105	58	
12	"	38.0	4.0	95	.45	2.2	1035.2	107	105	58	
0		6:44PM					1035.2				
1	2.5	46.5	3.5	94	.30	1.45	1037.0	107	106	58	
2	"	49.0	4.0	94	.38	1.85	1039.0	107	106	59	
3	"	51.5	4.2	95	.38	1.85	1040.9	106	106	59	
4	"	53.0	4.6	95	.40	1.95	1042.9	106	105	59	
5	"	55.5	5.1	95	.47	2.25	1045.2	105	104	59	
6	"	58.0	5.1	95	.47	2.25	1047.5	104	103	59	
7	"	7:00.5	5.4	95	.55	2.65	1049.8	103	102	59	
8	"	03.0	5.5	95	.60	2.9	1052.3	102	101	59	
9	"	05.5	5.5	95	.60	2.9	1054.6	102	101	59	
10	"	08.0	5.5	95	.60	2.9	1057.1	102	100	59	
11	"	10.5	5.2	95	.54	2.6	1059.5	101	99	58	
12	"	13.0	5.0	95	.46	2.25	1061.8	100	98	58	
	Total 60		Max 5.5	Avg 95	16.9955 0.7081	57.65 2.40	Total 54.1	Avg 105	Avg 103	Max 59	

RUN NO. 3 STACK SAMPLING CALCULATIONS DATE: 4/2/85

STACK NO. 17 A Train BY: EW

Meter Pressure

$$P_m = 29.95 + \frac{2.4}{13.6} = 30.13$$

Volume of Gas Sampled

$$V_{m(std)} = \frac{541 \times 0.9917 \times 528 \times 30.13}{564 \times 29.92} = 50.58$$

16874.9

Moisture Content

$$V_{w(std)} = 31.6\ (0.04715) = 1.4899$$

$$B_{ws} = \frac{1.4899}{1.4899 + 50.5789} = 0.0286 \sim 2.86\%$$

52.0688

Stack Gas Molecular Weight

$$M_s = 29(.9714) + 18(.0286) = 28.6854$$

28.1706 + .5148

Stack Gas Pressure

$$P_s = 29.95 + \frac{0.0}{13.6} = 29.95$$

Stack Gas Velocity

$$V_s = 85.49(0.84)(0.7081)\sqrt{\frac{555}{29.95 \times 28.6854}} = 40.868$$

.8037

859.1277

Isokinetic Variation

$$\%I = \frac{(0.09450)(555)(50.58)}{(29.95)(40.868)(.000398)(60)(.9714)} = 93.43$$

Stack Gas Flowrate

$$Q = 60(A_s)(V_s) = (60)(4.909)(40.868) = 12,037$$

$$Q_{std} = \frac{(12,037)(528)(29.95)(.9714)}{(555)(29.92)} = 11,135$$

16605.6

PHOSPHORIC ACID "B" TRAIN

STACK 18

APRIL 2, 1985

USS Agri-Chemicals
Division of United States Steel Corporation

MAIL: P. O. BOX 150
BARTOW, FLORIDA 33830
813-533-0471

PROCESS RATE STATEMENT FOR EMISSION TEST

Date APRIL 2, 1985

Process PHOSPHORIC ACID, STACK 18

Location FT. MEADE, FLA.

Permit Number A053-69839

Start of Test	End of Test	Production Rate, TONS P_2O_5/DAY
10:28 AM	11:34 AM	722.4
11:48 AM	12:53 PM	632.4
1:10 PM	2:14 PM	616.8

I certify that the above statement is true to the best of my knowledge.

Signature Eugene Williams

Title Environmental Tech.

Date 4/26/85

Run #1 B. Train

GROUP : 94 POLLUTION TEST 2-APR-85 10:00:01

TAG	DESCRIPTOR	MV	SP	OUTPUT	STATUS
WQ101	A ROCKTOTAL	2.057 TPM		248.1 TONS	
FQ201	AH2SO4TOTAL	212.1 GPM		190.9 TONS	
WQ151	B ROCKTOTAL	1.847 TPM		224.4 TONS	
FQ251	BH2SO4TOTAL	209.3 GPM		189.9 TONS	

B Train

Rock ton Acid

10:28 AM

11:34 Am

	Rock ton	Acid
11:00 AM	335.2	283.8
10:00 AM	− 224.4	189.9
	110.8	93.9 Ton H_2SO_4

12:00	446.0	Acid	377.3
11:00 Am	335.2		283.8
	110.8		93.5

Rock Consumption = 110.8 Ton Hr.

Rock P_2O_5 = 31.44 %

Rock Moisture = 13.6 %

Production For 1 hour =

110.8 × .3144 × 1.0 − .136 = 30.098 Ton P_2O_5/hr.

GROUP : 94 POLLUTION TEST 2-APR-85 11:00:01

TAG	DESCRIPTOR	MV	SP	OUTPUT	STATUS
WQ101	A ROCKTOTAL	2.059 TPM		371.6 TONS	
FQ201	AH2SO4TOTAL	206.7 GPM		285.4 TONS	
WQ151	B ROCKTOTAL	1.846 TPM		335.2 TONS	
FQ251	BH2SO4TOTAL	208.2 GPM		283.8 TONS	

Run #2 B- Train

R E Hall

GROUP : 94 POLLUTION TEST 2-APR-85 12:00:01

TAG	DESCRIPTOR	MV	SP	OUTPUT	STATUS
WQ101	A ROCKTOTAL	2.059 TPM		495.1 TONS	
FQ201	AH2SO4TOTAL	207.6 GPM		378.8 TONS	
WQ151	B ROCKTOTAL	1.847 TPM		446.0 TONS	
FQ251	BH2SO4TOTAL	206.8 GPM		377.3 TONS	

hr	Rock	H_2SO_4
1300	643.0	459.8
1200	446.0	377.3
	97.0	82.5

Rock Consumption = 97.0 Ton Hr.

Rock P_2O_5 = 31.44 %

Rock Moisture = 13.6 %

Production For 1 hour =

97.0 x .3144 x 1.0 - .136 = ~~30.4968~~ 26.3492 Ton P_2O_5/hr

GROUP : 94 POLLUTION TEST 2-APR-85 13:00:01

TAG	DESCRIPTOR	MV	SP	OUTPUT	STATUS
WQ101	A ROCKTOTAL	1.797 TPM		606.1 TONS	
FQ201	AH2SO4TOTAL	180.5 GPM		462.4 TONS	
WQ151	B ROCKTOTAL	1.585 TPM		543.0 TONS	
FQ251	BH2SO4TOTAL	177.2 GPM		459.8 TONS	

Run # 3 B Train

R.E. Holl

GROUP : 94 POLLUTION TEST 2-APR-85 14:00:01

TAG	DESCRIPTOR	MV	SP	OUTPUT	STATUS
WQ101	A ROCKTOTAL	1.797 TPM		713.9 TONS	
FQ201	AH2SO4TOTAL	178.7 GPM		543.9 TONS	
WQ151	B ROCKTOTAL	1.560 TPM		637.6 TONS	
FQ251	BH2SO4TOTAL	175.3 GPM		539.5 TONS	

	Rock	H_2SO_4
1400	637.6	539.5
1300	− 543.0	− 459.8
	94.6	79.7

Rock Consumption For 1 hour 94.6 Ton

Rock P_2O_5 31.44%

Rock Moisture 13.6%

Production For 1 hour =

94.6 x .3144 x 1 − .136 = 25.6973 Ton P_2O_5/hr.

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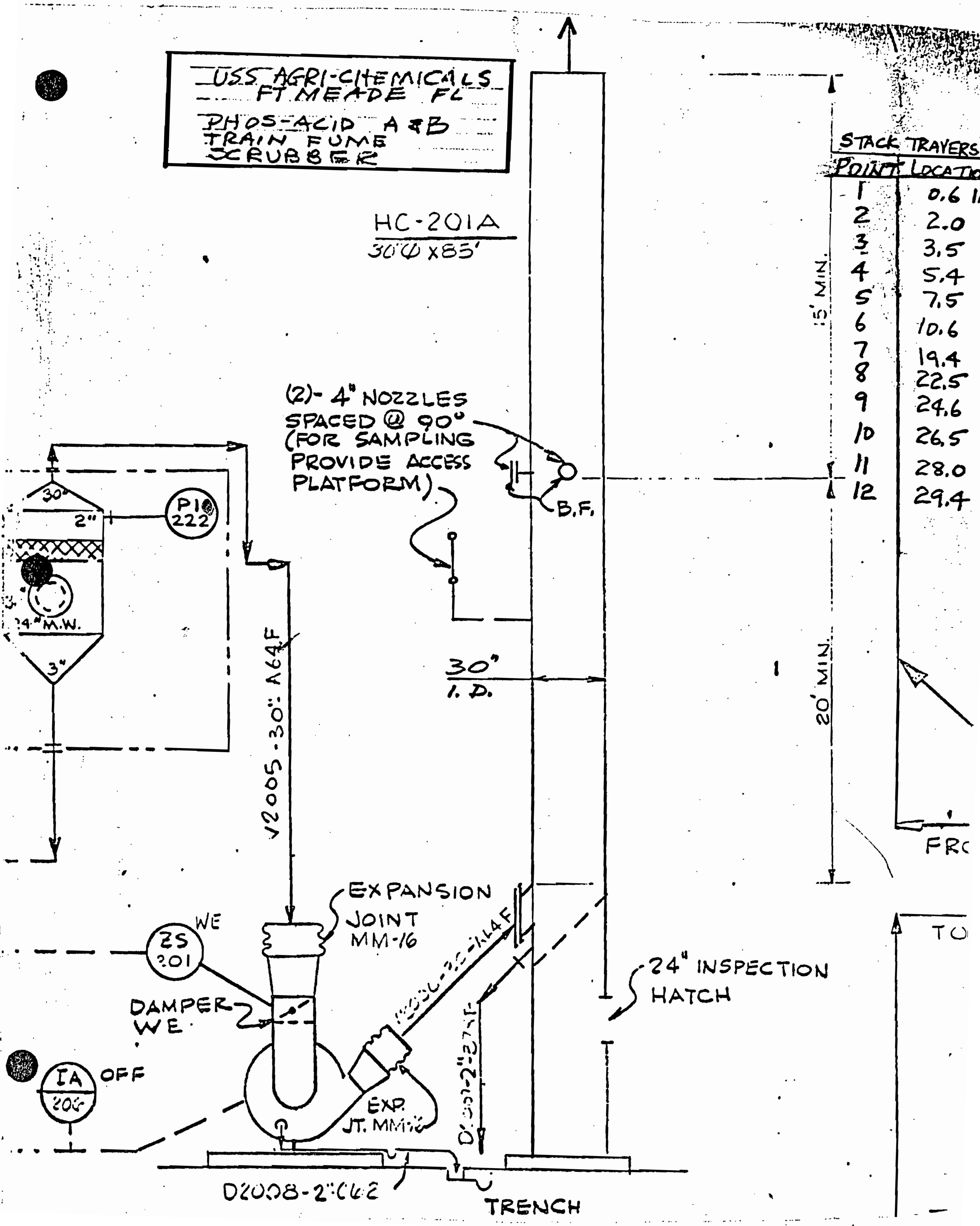


NOZZLE CALIBRATION

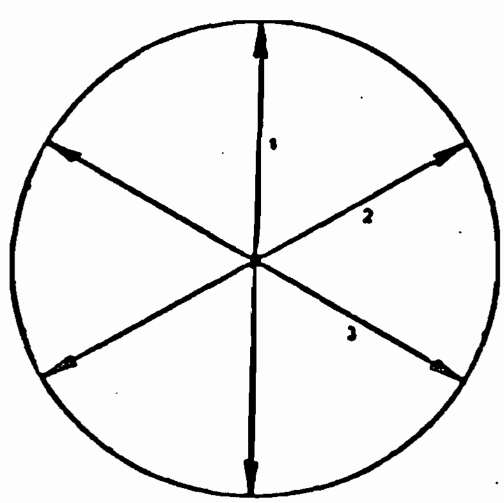
Nozzle 1056-3849 Date 4-2-85

Measurement No.	Inside Diameter (inches)
1	.271
2	.271
3	.271

Average .271

Area of Nozzle 0.000400 Ft^2

Calibrated by: Robert E. Hall



Nozzle X-section

USS AGRI-CHEMICALS, PLANT
EMISSION TEST CONSTANTS AND APPARATUS CHECKS
SOURCE: PHOSPHORIC ACID "B" TRAIN STACK 18 PERMIT # A053-69840

	RUN #	1	2	3
		4-2-85	4-2-85	4-2-85
	STACK DIAMETER, INCHES	30.0	→	→
	STACK AREA, FT^2	4.909		
	SAMPLE BOX NO.	310639C	→	→
	METER NO.	1002490	→	→
Y	METER CORRECTION FACTOR	0.9917	→	→
	PITOT TUBE SERIAL NO.	SC-6192	→	→
	PITOT TUBE PRESS TEST " H_2O	6.0	7.3	5.4
	" " " " TIME	15.0 SEC.	→	→
	" " " " LEAK	0.0	0.0	
Cp	PITOT TUBE CP.	0.84	→	→
	SAMPLE PROBE LENGTH, INCHES	39.0	→	→
	PROBE SERIAL NO.	SC-6192	→	→
	PROBE LINER MATERIAL	STAINLESS STEEL	→	→
	PROBE HEATER SETTING	5.0	→	→
	NOZZLE SERIAL NO.	1056-3849	→	→
Ad	NOZZLE DIA INCH	0.271	→	→
A_N	NOZZLE AREA FT^2	0.0004	→	→
	METER & TRAIN LEAK TEST			
	PRESSURE, IN-HG	8.0	8.0	8.0
	VOL LEAK TEST ELAPSED TIME	1.0 MIN	1.0 MIN.	1.0 MIN.
	VOL LEAK FT^3	0.01	0.01	0.012
	CYCLONIC CONDITIONS IN STACK			
	POST TEST, METER CALIB. CHECK			
n	NUMBER OF TRAVERSE POINTS IN STACK DIAMETER			24.0
θt	SAMPLE TIME EACH POINT, MIN	2.5	→	→
θ	SAMPLE TIME FOR RUN, MIN	60.0	→	→
Md	MOL WGT OF DRY STACK GAS - 29.0			
T_{STD}	528°R			
P_{STD}	29.92 IN MERCURY			

DATA CERTIFIED BY: E. Williams DATE: 4/26/85

Made in U.S.A.

USS AGRI-CHEMICALS, PLANT:
EMISSION TEST FOR: FLUORIDE
SOURCE: PHOSPHORIC ACID "B" TRAIN PERMIT: # A053-69840
STACK 18

		RUN # 1	2	3
	DATE	4-2-85	4-2-85	4-2-85
	START TIME	10:28AM		
	END TIME	11:34AM		
	PRODUCTION RATE: TONS P_2O_5/day	722.4	632.4	616.8
Vm	VOL DRY GAS SAMPLED, METER FT^3	51.3	51.9	52.4
Vm STD	" STD COND.	49.55	48.66	49.13
PB	BAROMETER, INCHES-HG.	29.95	29.95	29.95
Ps	STACK PRESS, INCHES-HG.	0.0	0.0	0.0
ΔH	ORIFICE ΔH INCHES-H_2O	2.16	2.16	2.18
Tm	METER TEMP. AVG. °R	546	562	562
Ts	STACK TEMP, AVG. °R	552	552	553
Vl	VOL OF WATER COLLECTED, ML	34.3	30.5	33.3
Vw	WATER VOL, FT^3	1.6172	1.4381	1.5701
Bws	WATER, MOL PERCENT	3.16	2.87	3.1
$\sqrt{\Delta P}$	STACK VELOCITY HEAD, $\sqrt{IN-H_2O}$	0.6658	0.668	0.6703
Vs	STACK VELOCITY	38.35	38.45	38.64
Qs	STACK FLOW RATE ACFM	11296	11326	11380
QSTD	STACK FLOW RATE DSCFM	10474	10533	10539
I	ISOKINETIC SAMPLING COND. %	97.3	95.0	95.9
θ	TOTAL SAMPLE TIME, MIN	60.0	60.0	60.0
Ms	STACK GAS MOL WGT AT CONDITIONS	28.65		
Md	STACK GAS MOL WGT DRY COND.	29.0	29.0	29.0
	FUEL TYPE			
	CONSUMPTION THERMS/T-PROD			
	EMISSIONS - TYPE FLUORIDE			
	MG COLLECTED	1.1	0.98	0.94
	MG/SCF	0.0222	0.0201	0.0191
	LB/~~HR~~ Day	0.738	0.672	0.639
	LB/TON P_2O_5	0.001	0.0011	0.001

DATA CERTIFIED BY: E. Williams   DATE: 4/26/85

Made in U.S.A.

ANALYTICAL WORK SHEET

DATE: 4-2-85
BY : R. E. Hall

ANALYSIS: Fluoride
PLANT : FT. Meade
STACK : P.A.D. B Train

RUN		
1	1.1	mg F/l × 1l = 1.1 mg F
2	.98	mg F/l × 1l = 0.98 mg F
3	.94	mg F/l × 1l = 0.94 mg F
STANDARD	1.0	mg F/l
STANDARD	10.0	mg F/l

RUN				
1	49.55	SCF	0.0222	mg F/SCF
2	48.66	SCF	0.0201	mg F/SCF
3	49.13	SCF	0.0191	mg F/SCF

RUN

1 $\frac{(0.0222)(10474)(60)(24)}{(454)(1000)} = 0.7375$ LBS. F/DAY

2 $\frac{(0.0201)(10533)(60)(24)}{(454)(1000)} = 0.6715$ LBS. F/DAY

3 $\frac{(0.0191)(10539)(60)(24)}{(454)(1000)} = 0.6385$ LBS. F/DAY

RUN

1 $\frac{0.7375 \div 24^{h}}{30.1 \text{ Ton } P_2O_5/hr} =$ 0.0010 LB. F/TON P_2O_5

2 $\frac{0.6715 \div 24}{26.35 \text{ Ton } P_2O_5/hr} =$ 0.0011 LB. F/TON P_2O_5

3 $\frac{0.6385 \div 24}{25.7 \text{ Ton } P_2O_5/hr} =$ 0.0010 LB. F/TON P_2O_5

Date 4-1-85

By R.E. Hall

Moisture Collected

Run #	Impinger A-1	A-2	A-3	A-4	Total Collect
	670.3 644.4 25.9 8.4 34.3	639.7 635.0 4.7 3.7 8.4	457.3 455.9 1.4	649.7 647.4 2.3	34.3
Run #	**B-1**	**B-2**	**B-3**	**B-4**	**Total Collect**
	670.7 646.1 24.6 5.9 30.5	699.4 696.1 3.3 2.6 5.9	454.5 453.6 0.9	667.9 666.2 1.7	30.5
Run #	**C-1**	**C-2**	**C-3**	**C-4**	**Total Collect**
	675.8 649.8 26.0 7.3 33.3	665.1 661.5 3.6 3.7 7.3	454.1 453.4 0.7	703.5 700.5 3.0	33.3

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E. Williams 4/2/85

Plant PHOSPHORIC ACID
City F[illegible]MEADE
Location B-TRAIN, STACK 18
Operator E. WILLIAMS
Date 4-2-85
Run number — 1

Sheet 1 of
Filter number N/A
leak rate TRAIN, 0.008 @ 8" Hg
LEAK RATE TRAIN, 0.011 @ 8" Hg

	"H_2O	LEAK	TIME
PITOT LEAK TEST -	6.0	0.0	15 SEC.

REFERENCE ΔP - 0.38

Traverse point number	Sampling time, (θ), min	10:28AM Clock time, (24 h)	Vacuum, (in.) Hg	Stack temperature (T_s), (°F)	Velocity head (ΔP_s), (in.) H_2O	Pressure differential across orifice meter (ΔH), (in.) H_2O	740.0 Gas sample volume (V_m), (ft^3)	Gas sample temperature at dry gas meter Inlet, (°F)	Gas sample temperature at dry gas meter Outlet, (°F)	Temperature of gas leaving condenser or last impinger, (°F)	Filter temp (°F)
1	2.5	10:30.5	3.2	90	.32	1.55	741.8	78	78	56	
2	"	33.0	3.7	90	.40	1.95	743.7	79	78	56	
3	"	35.5	4.0	90	.48	2.35	745.9	80	78	56	
4	"	38.0	4.0	92	.52	2.45	748.2	80	78	56	
5	"	40.5	4.2	92	.54	2.6	750.5	81	78	56	
6	"	43.0	4.2	92	.54	2.6	752.8	82	79	56	
7	"	45.5	4.1	92	.50	2.4	755.1	83	79	57	
8	"	48.0	4.0	92	.46	2.25	757.3	83	80	57	
9	"	50.5	4.0	92	.46	2.25	759.5	84	81	57	
10	"	53.0	3.8	92	.42	2.0	761.6	85	81	57	
11	"	55.5	3.8	92	.40	1.95	763.6	86	82	57	
12	"	58.0	3.2	92	.30	1.45	765.4	87	83	57	
0		11:04AM					765.4				
1	2.5	06.5	3.0	90	.28	1.37	767.1	88	87	57	
2	"	09.0	3.5	91	.36	1.75	769.0	89	87	57	
3	"	11.5	3.8	91	.40	1.95	771.1	89	87	57	
4	"	14.0	4.0	92	.46	2.25	773.3	90	87	57	
5	"	16.5	4.0	92	.48	2.35	775.5	91	88	57	
6	"	19.0	4.0	92	.50	2.4	777.8	91	88	57	
7	"	21.5	4.0	92	.52	2.45	780.1	92	89	57	
8	"	24.0	4.0	92	.52	2.45	782.4	93	89	57	
9	"	26.5	4.0	92	.52	2.45	784.7	94	90	57	
10	"	29.0	4.0	92	.48	2.35	787.0	94	90	57	
11	"	31.5	4.0	91	.46	2.25	789.2	95	91	57	
12	"	34.0	3.8	91	.40	1.95	791.3	95	91	57	
	Total 60		Max 4.0	Avg 92	15.9802 0.6658	51.77 2.16	Total 51.3	Avg 87	Avg 84	Max 57	

RUN NO. 1 STACK SAMPLING CALCULATIONS DATE: 4-2-85

STACK NO. 18 BY: EW

Meter Pressure

$$P_m = 29.95 + \frac{2.16}{13.6} = 30.11$$

Volume of Gas Sampled

$$V_{m(std)} = \frac{51.3 \times 0.9917 \times 528 \times 30.11}{546 \times 29.92} = 49.55$$

16321.4

Moisture Content

$$V_{w(std)} = 34.3\ (0.04715) = 1.6172$$

$$B_{ws} = \frac{1.6172}{1.6172 + 49.55} = 0.0316 \sim 3.16\%$$

51.1719

Stack Gas Molecular Weight

$$M_s = 29(\overset{.9684}{1-.0316}) + 18(0.0316) = 28.65$$

28.0836 + 0.5689

Stack Gas Pressure

$$P_s = 29.95 + \frac{0.0}{13.6} = 29.95$$

Stack Gas Velocity

$$V_s = 85.49(0.84)(0.6658)\sqrt{\frac{552}{29.95 \times 28.65}} = 38.35$$

0.8020

858.1

Isokinetic Variation

$$\%I = \frac{(0.09450)(552)(49.55)}{(29.95)(38.35)(0.000398)(60)(.9684)} = 97.3\%$$

26.56

Stack Gas Flowrate

$$Q = 60(A_s)(V_s) = (60)(4.909)(38.35) = 11296$$

$$Q_{std} = \frac{(11296)(528)(29.95)(.9684)}{(552)(29.92)} = 10,474$$

16515.8

E. Williams 4/2/85

Plant PHOSPHORIC ACID
City F[illegible]MEADE
Location B-TRAIN, STACK 18
Operator E. WILLIAMS
Date 4-2-85
Run number - 2

Sheet 1 of
Filter number N/A
leak rate TRAIN, 0.010 @ 8" Hg
LEAK RATE TRAIN, 0.009 @ 8" Hg

	"H_2O	LEAK	TIME
PITOT LEAK TEST -	7.3	0.0	15 SEC.

REFERENCE ΔP - 0.38

Traverse point number	Sampling time, (θ), min	Clock time, (24 h)	Vacuum, (in.) Hg	Stack temperature (T_s), (°F)	Velocity head (ΔP_s), (in.) H_2O	Pressure differential across orifice meter (ΔH), (in.) H_2O	Gas sample volume (V_m), (ft^3)	Gas sample temperature at dry gas meter: Inlet, (°F)	Gas sample temperature at dry gas meter: Outlet, (°F)	Temperature of gas leaving condenser or last impinger, (°F)	Filter temp (°F)
		11:48 AM					791.303				
1	2.5	11:50.5	3.7	91	.30	1.45	793.1	96	96	58	
2	"	53.0	4.6	91	.42	2.0	795.2	97	96	58	
3	"	55.5	5.1	92	.48	2.35	797.4	97	96	58	
4	"	58.0	5.3	92	.52	2.45	799.7	98	96	58	
5	"	12:00.5	6.0	92	.55	2.65	802.1	99	97	58	
6	"	03.0	6.0	92	.55	2.65	804.5	100	97	58	
7	"	05.5	5.5	92	.52	2.45	806.7	101	97	58	
8	"	08.0	5.0	92	.46	2.25	809.0	101	98	58	
9	"	10.5	5.0	92	.46	2.25	811.2	102	98	58	
10	"	13.0	4.8	92	.42	2.0	813.3	103	99	58	
11	"	15.5	4.5	92	.40	1.95	815.3	103	99	58	
12	"	18.0	3.7	92	.30	1.45	817.1	104	99	58	
0		12:23 PM					817.1				
1	2.5	25.5	3.7	92	.30	1.45	818.9	103	101	58	
2	"	28.0	4.0	92	.37	1.8	820.9	104	101	58	
3	"	30.5	4.5	92	.40	1.95	822.9	105	101	58	
4	"	33.0	5.0	92	.45	2.2	825.0	106	102	59	
5	"	35.5	5.2	92	.48	2.35	827.4	106	102	59	
6	"	38.0	5.2	92	.50	2.4	829.6	107	103	59	
7	"	40.5	5.4	92	.52	2.45	831.9	107	103	59	
8	"	43.0	5.4	92	.52	2.45	834.3	108	104	59	
9	"	45.5	5.4	92	.52	2.45	836.6	108	104	59	
10	"	48.0	5.4	92	.50	2.4	838.9	109	104	59	
11	"	50.5	5.0	92	.45	2.2	841.1	109	105	58	
12	"	53.0	4.8	92	.40	1.95	843.2	109	105	58	
	Total 60		Max 6.0	Avg 92	16.0317 6.668	51.95 2.16	Total 51.9	Avg 103	Avg 100	Max 59	

RUN NO. 2 STACK SAMPLING CALCULATIONS DATE: 4/2/85

STACK NO. 18 BY: EW

Meter Pressure

$$P_m = 29.95 + \frac{2.16}{13.6} = 30.11$$

Volume of Gas Sampled

$$V_{m(std)} = \frac{51.9 \times 0.9917 \times 528 \times 30.11}{562 \times 29.92} = 48.66$$

16815

Moisture Content

$$V_{w(std)} = 30.5(0.04715) = 1.4381$$

$$B_{ws} = \frac{1.4381}{1.4381 + 48.6626} = 0.0287 \sim 2.87\%$$

50.1007

Stack Gas Molecular Weight

$$M_s = 29(\overset{.9713}{1-.0287}) + 18(.0287) = 28.68$$

28.1677 + 0.5167

Stack Gas Pressure

$$P_s = 29.95 + \frac{0.0}{13.6} = 29.95$$

Stack Gas Velocity

$$V_s = 85.49(0.84)(0.668)\sqrt{\frac{\overset{0.8016}{552}}{29.95 \times 28.68}} = 38.45$$

859.1

Isokinetic Variation

$$\%I = \frac{(0.09450)(552)(48.66)}{(29.95)(38.45)(0.000398)(60)(.9713)} = 95.0\%$$

26.71

Stack Gas Flowrate

$$Q = 60(A_s)(V_s) = (60)(4.909)(38.45) = 11,326$$

$$Q_{std} = \frac{(11326)(528)(29.95)(.9713)}{(552)(29.92)} = 10,533$$

16515.8

Plant PHOSPHORIC ACID
City MEADE
Location B-TRAIN, STACK 18
Operator E. WILLIAMS
Date 4-2-85
Run number - 3

Sheet 1 of
Filter number N/A
leak rate TRAIN, 0.012 @ 8" Hg
LEAK RATE TRAIN, 0.011 @ 8" Hg

E. Williams 4/2/85

	"H_2O	LEAK	TIME
PITOT LEAK TEST	5.4	0.0	15 SEC.
REFERENCE ΔP	0.38		

Traverse point number	Sampling time, (θ), min	1:10PM Clock time, (24 h)	Vacuum, (in.) Hg	Stack temperature (T_s), (°F)	Velocity head (ΔP_s), (in.) H_2O	Pressure differential across orifice meter (ΔH), (in.) H_2O	843.203 Gas sample volume (V_m), (ft^3)	Gas sample temperature at dry gas meter Inlet, (°F)	Gas sample temperature at dry gas meter Outlet, (°F)	Temperature of gas leaving condenser or last impinger, (°F)	FILTER temp (°F)
1	2.5	1:12.5	3.5	93	.30	1.45	845.0	97	97	57	
2	"	15.0	4.2	93	.44	2.15	847.2	100	97	57	
3	"	17.5	4.8	93	.50	2.4	849.5	100	97	57	
4	"	20.0	4.8	93	.50	2.4	851.8	101	97	57	
5	"	22.5	5.0	93	.54	2.6	854.1	101	98	57	
6	"	25.0	5.0	93	.54	2.6	856.6	103	99	57	
7	"	27.5	4.8	93	.52	2.5	858.9	104	99	56	
8	"	30.0	4.5	93	.47	2.25	861.1	104	100	56	
9	"	32.5	4.5	93	.47	2.25	863.3	105	101	56	
10	"	35.0	4.0	93	.42	2.0	865.4	105	102	56	
11	"	37.5	4.0	93	.40	1.95	867.5	105	102	56	
12	"	40.0	3.5	93	.28	1.37	869.2	106	103	56	
0		1:44PM					869.2				
1	2.5	46.5	3.7	92	.32	1.55	871.0	103	100	57	
2	"	49.0	4.0	92	.38	1.85	873.0	103	100	57	
3	"	51.5	4.1	92	.42	2.0	875.1	104	100	57	
4	"	54.0	4.5	93	.46	2.25	877.3	104	101	57	
5	"	56.5	4.8	93	.48	2.35	879.7	105	101	57	
6	"	59.0	5.0	93	.52	2.5	882.0	106	102	57	
7	"	2:01.5	5.0	93	.52	2.5	884.3	106	102	57	
8	"	04.0	5.0	93	.52	2.5	886.6	105	102	57	
9	"	06.5	4.8	93	.50	2.4	888.9	105	101	57	
10	"	09.0	4.8	93	.50	2.4	891.3	104	101	57	
11	"	11.5	4.5	93	.44	2.15	893.5	104	100	57	
12	"	14.0	4.1	93	.42	2.0	895.6	103	100	57	
	Total 60		Max 5.0	Avg 93	16.0871 0.6703	52.37 2.18	Total 52.4	Avg 103	Avg 100	Max 57	

RUN NO. 3
STACK NO. 18

STACK SAMPLING CALCULATIONS

DATE: 4/2/85
BY: EW

Meter Pressure

$$P_m = 29.95 + \frac{2.18}{13.6} = 30.11$$

Volume of Gas Sampled

$$V_{m(std)} = \frac{52.4 \times 0.9917 \times 528 \times 30.11}{\underset{16815}{562 \times 29.92}} = 49.13$$

Moisture Content

$$V_{w(std)} = 33.3(0.04715) = 1.5701$$

$$B_{ws} = \frac{1.5701}{\underset{50.7015}{1.5701 + 49.1314}} = 0.031 \sim 3.1\%$$

Stack Gas Molecular Weight

$$M_s = 29(1 - \overset{.969}{.031}) + 18(.031) = 28.66$$

$$28.101 + .5574$$

Stack Gas Pressure

$$P_s = 29.95 + \frac{0.0}{13.6} = 29.95$$

Stack Gas Velocity

$$V_s = 85.49(0.84)(0.6703)\overset{0.8027}{\sqrt{\frac{553}{\underset{858.3}{29.95 \times 28.66}}}} = 38.64$$

Isokinetic Variation

$$\%I = \frac{(0.09450)(553)(49.13)}{\underset{26.78}{(29.95)(38.64)(0.000398)(60)(0.969)}} = 95.9\%$$

Stack Gas Flowrate

$$Q = 60(A_s)(V_s) = (60)(4.909)(38.64) = 11,380$$

$$Q_{std} = \frac{(11380)(528)(29.95)(0.969)}{\underset{16545.8}{(553)(29.92)}} = 10539$$

PHOSPHORIC ACID TANK FARM
STACK 19
APRIL 8, 1985

USS Agri-Chemicals
Division of United States Steel Corporation

MAIL: P. O. BOX 150
BARTOW, FLORIDA 33830
813 - 533-0471

PROCESS RATE STATEMENT FOR EMISSION TEST

Date 4-8-1985

Process PAD TANK Farm Storage

Location Ft. Meade, Fla. 33841

Permit Number A053-69842

Start of Test	End of Test	Production Rate
11:08 AM	12:12 PM	1373 Ton-P_2O_5/DAY
12:32 PM	1:36 PM	1373
2:00 PM	3:05 PM	1373

I certify that the above statement is true to the best of my knowledge.

Signature Robert E. Hall

Title Environmental Analyst

Date 4-20-85

8-APR-85 15:46:53

GROUP 66 ROCK GRINDING TOTALS
ROCK GRINDING TOTALS

```
 MV   *1.908  *132.2           *1.597  *107.8
        TPM     GPM              TPM     GPM

 SP


OUT     891.0   61.1             741.0   49.6
        TONS    M GAL            TONS    M GAL

 100   ******* *******         ******* *******



        **
  75  * **  *                 *                       *                       *
      * **  *                 *                       *                       *
        **  *   **              **
        **  *   **  *           **  *
        **  *   **  *           **  *
  50  * **  *   **  *         * **  *   **            *                       *
      * **  *   **  *         * **  *   **  *         *                       *
        **  *   **  *           **  *   **  *
        **  *   **  *           **  *   **  *
        **  *   **  *           **  *   **  *
  25  * **  *   **  *         * **  *   **  *         *                       *
      * **  *   **  *         * **  *   **  *         *                       *
        **  *   **  *           **  *   **  *
        **  *   **  *           **  *   **  *
        **  *   **  *           **  *   **  *
   0    **  *   **  *           **  *   **  *
       ******* *******         ******* *******

TAG     WQ101   FQ101            WQ151   FQ151

STATUS *AUTO   *AUTO            *AUTO   *AUTO

        A ROCK  A H20            B ROCK  B H20
        TOTAL   TOTAL            TOTAL   TOTAL

          1       2                4       5
```

9% ROCK MOISTURE

A Train

B Train

7.78 hrs. = 891.0 Ton Rock

741.0 Ton Rock

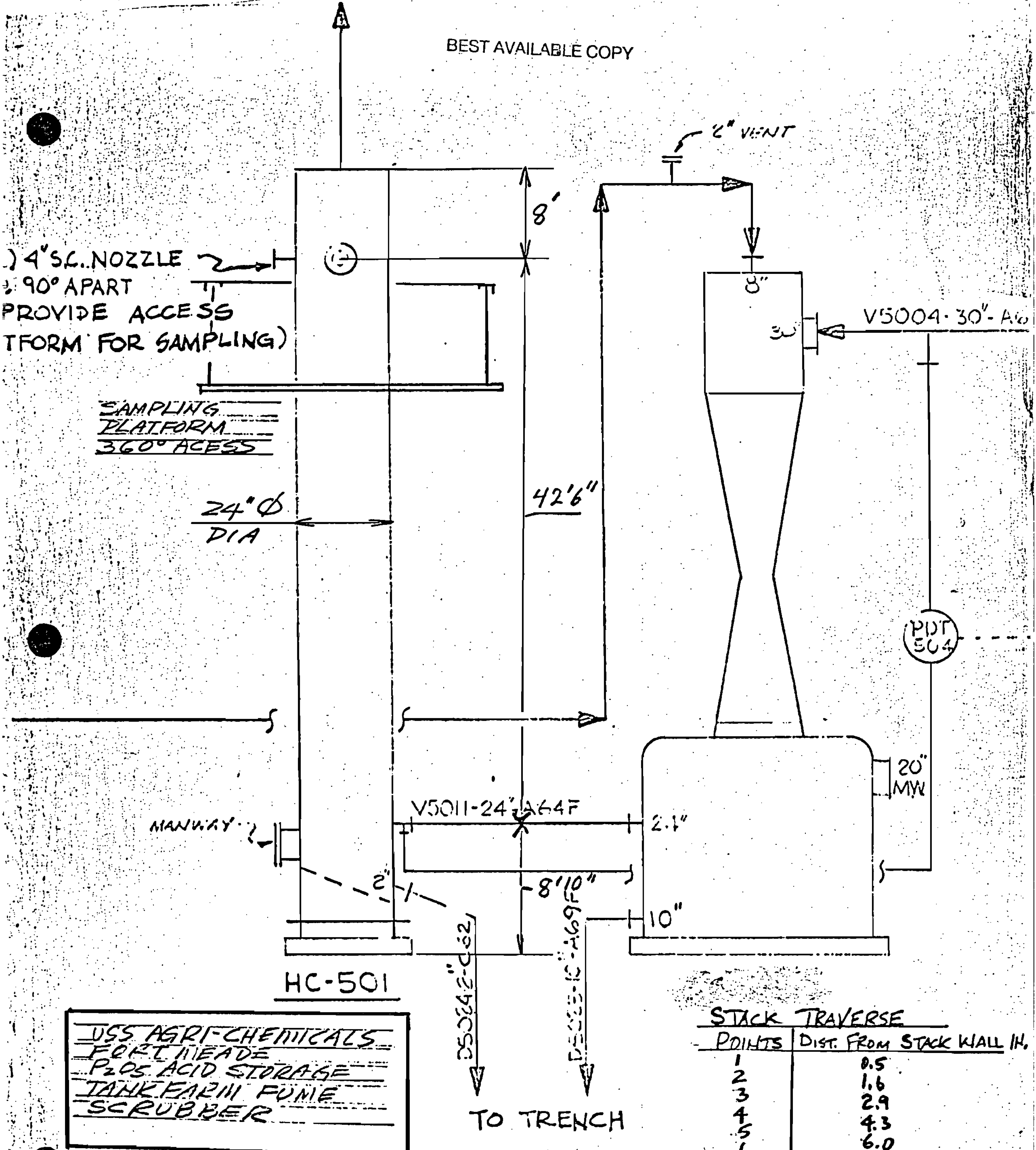
Ton Hr

114.52 x .2998 x(1.0 - .09) =

95.24 x .2998 x (1.0 - .09) =

31.243 Ton P_2O_5 A Train + 25.98 Ton P_2O_5/Hr = 57.223 Total Ton P_2O_5/hr

57.223 x 24 = 1373.35 Ton P_2O_5/Day



STACK TRAVERSE

POINTS	DIST. FROM STACK WALL IN.
1	0.5
2	1.6
3	2.9
4	4.3
5	6.0
6	8.5
7	15.5
8	18.0
9	19.8
10	21.1
11	22.4
12	23.5

NOZZLE CALIBRATION

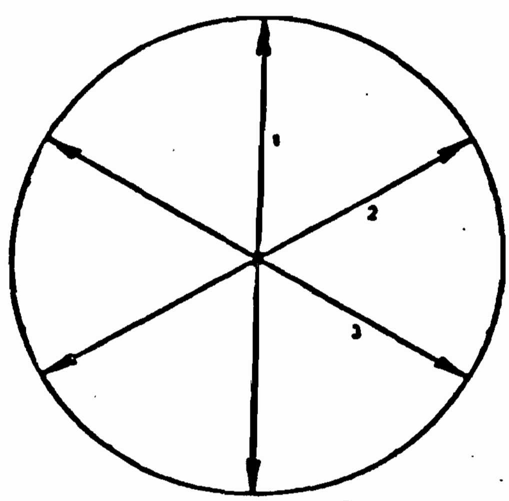
Nozzle SN - 1056 - 3899 Date 4/8/85

Measurement No.	Inside Diameter (inches)
1	0.273
2	0.273
3	0.273

Average 0.273

Area of Nozzle 0.000406 Ft^2

Calibrated by: E. Williams



Nozzle X-section

USS AGRI-CHEMICALS, PLANT
EMISSION TEST CONSTANTS AND APPARATUS CHECKS
SOURCE: PAD Tank Farm PERMIT A053-69842

	RUN #	1	2	3
		4-8-85 11:08 Am 12:12 PM	4-8-85 12:32 PM 1:36 Pm	4-8-85 2:00 PM 3:05 PM
	STACK DIAMETER, INCHES	24.0	→	→
	STACK AREA, FT^2	3.14	→	→
	SAMPLE BOX NO.	31D639C	→	→
	METER NO.	1002490	→	→
Y	METER CORRECTION FACTOR	.9917	→	→
	PITOT TUBE SERIAL NO.	SC-6192	→	→
	PITOT TUBE PRESS TEST H_2O	8.3	5.7	6.4
	" " " " Time-SEC	15 sec	15 sec	15. Sec
	~~in seconds~~ LEAK	0	0	0
Cp	PITOT TUBE CP.	.84	→	→
	SAMPLE PROBE LENGTH, Inches	39.0	→	→
	PROBE SERIAL NO.	613	→	→
	PROBE LINER MATERIAL	stainless steel	→	→
	PROBE HEATER SETTING	0.0	0.0	0.0
	NOZZLE SERIAL NO.	1056-3899	→	→
Ad	NOZZLE DIA INCH	.273	→	→
AN	NOZZLE AREA FT^2	.000406	→	→
	METER & TRAIN LEAK TEST			
	PRESSURE, IN-HG	10.0	8.0	8.0
	VOL LEAK TEST ELAPED TIME	1.0 min	1.0 min	1.0 min
	VOL LEAK FT^3	.008	.007	.009
	CYCLONIC CONDITIONS IN STACK			
	POST TEST, METER CALIB. CHECK			
n	NUMBER OF TRAVERSE POINTS IN STACK DIAMETER			24
θt	SAMPLE TIME EACH POINT, MIN	2.5	2.5	2.5
θ	SAMPLE TIME FOR RUN, MIN	60.0	60.0	60.0
Md	MOL WGT OF DRY STACK GAS -29.0			
T_{STD}	528°R			
P_{STD}	29.92 IN MERCURY			

DATA CERTIFIED BY Robert E. Hall DATE 4-20-85

Made in U.S.A

USS AGRI-CHEMICALS, PLANT:
EMISSION TEST FOR: Fluoride
SOURCE: DAP TANK Farm PERMIT: A053-69842

		RUN # 1	2	3
	DATE	4-8-85	4-8-85	4-8-85
	START TIME	11:08 AM	12:32 PM	2:00 PM
	END TIME	12:12 PM	1:36 PM	3:05 PM
	PRODUCTION RATE Ton P_2O_5/HR	57.22	57.22	57.22
V_m	VOL DRY GAS SAMPLED, METER FT^3	41.7	43.1	41.4
$V_{m\,STD}$	" STD COND.	39.49	39.88	38.41
P_B	BAROMETER, INCHES-HG.	30.12	30.12	30.12
P_S	STACK PRESS, INCHES-HG.	0.0	0.0	0.0
ΔH	ORIFICE ΔH INCHES-H_2O	1.37	1.37	1.3
T_m	METER TEMP, AVG °R	559.0	572	570.
T_S	STACK TEMP, AVG °R	547.0	547	547
V_ℓ	VOL OF WATER COLLECTED, ML	28.6	31.3	30.4
V_W	WATER VOL, FT^3	.7242	.7849	.7915
B_{WS}	WATER, MOL PERCENT	3.30	3.57	3.60
$\sqrt{\Delta P}$	STACK VELOCITY HEAD, $\sqrt{IN\text{-}H_2O}$	.4667	.4677	.4630
V_S	STACK VELOCITY FT sec	26.69	26.76	26.49
Q_S	STACK FLOW RATE ACFM	5028	5042	4991
Q_{STD}	STACK FLOW RATE DSCFM	4725	4725	4675
I	ISOKINETIC SAMPLING COND. %	107.7	108.9	105.9
θ	TOTAL SAMPLE TIME, MIN	60	60.0	60.0
M_S	STACK GAS MOL WGT AT CONDITIONS	28.64	28.61	28.6
M_d	STACK GAS MOL WGT DRY COND.	29.0	29.0	29.0
	FUEL TYPE			
	CONSUMPTION THERMS/T-PROD			
	EMISSIONS - TYPE - FLUORIDES			
	MG COLLECTED	0.93	0.99	0.91
	MG/SCF	.0236	.0248	.0237
	LB/HR	.0147	.0155	.0146
	F-LB/TON P_2O_5	.0003	.0003	.0003

DATA CERTIFIED BY Robert E. Hall DATE 4-20-85

Made in U.S.A.

Date 4-8-85

By R E Hall

Moisture Collected

PAD TANK Farm

Run #	Impinger A-1	A-2	A-3	A-4	Total Collect
	659.9 636.9 23.0 5.6 28.6	641.7 638.2 3.5 2.1 5.6	456.5 455.8 0.7	644.4 643.0 1.4	28.6
Run #	**B-1**	**B-2**	**B-3**	**B-4**	**Total Collect**
	663.8 637.7 26.1 5.2 31.3	699.5 696.0 3.5 1.7 5.2	454.5 454.1 0.4	664.7 663.4 1.3	31.3
Run #	**C-1**	**C-2**	**C-3**	**C-4**	**Total Collect**
3	675.6 650.1 25.5 4.9 30.4	666.2 663.2 3.0 1.9 4.9	454.1 453.6 0.5	699.4 698.0 1.4	30.4

ANALYTICAL WORK SHEET

DATE: 4-8-85
BY: R.E. Hall

ANALYSIS: Fluoride
PLANT: PAD. FT. Meade
STACK: Tank Farm # 19

RUN pH		
1 3.85	0.93	mg F/l x 1l = 0.93 mg F
2 3.74	0.99	mg F/l x 1l = 0.99 mg F
3 3.78	0.91	mg F/l x 1l = 0.91 mg F
STANDARD	1.0	mg F/l
STANDARD	10.0	mg F/l

RUN				
1	39.49	SCF	0.0236	mg F/SCF
2	39.88	SCF	0.0248	mg F/SCF
3	38.41	SCF	0.0237	mg F/SCF

RUN

1 $\frac{(0.0236)(4725)(60)(24)}{(454)(1000)} = 0.3537$ LBS. F/DAY

2 $\frac{(0.0248)(4725)(60)(24)}{(454)(1000)} = 0.3717$ LBS. F/DAY

3 $\frac{(0.0237)(4675)(60)(24)}{(454)(1000)} = 0.3514$ LBS. F/DAY

1373 TON - P_2O_5/DAY PRODUCTION

RUN

1 $\frac{.3537}{1373.35} = 0.0003$ LB. F/TON P_2O_5

2 $\frac{.3717}{1373.35} = 0.0003$ LB. F/TON P_2O_5

3 $\frac{.3514}{1373.35} = 0.0003$ LB. F/TON P_2O_5

E. Williams 4/8/85

Plant PHOSPHORIC ACID
City [illegible] MEADE
Location TANK FARM STACK 19
Operator E. WILLIAMS
Date 4-8-85
Run number - 1

Sheet 1 of
Filter number N/A
leak rate TRAIN, 0.010 @ 10" Hg
LEAK RATE TRAIN, 0.008 @ 10" Hg

"H_2O LEAK TIME
PITOT LEAK TEST - 8.3 0.0 15 SEC.
REFERENCE ΔP - 0.30

Traverse point number	Sampling time, (θ), min	11:08 AM Clock time, (24 h)	Vacuum, (in.) Hg	Stack temperature (T_s), (°F)	Velocity head (ΔP_s), (in.) H_2O	Pressure differential across orifice meter (ΔH), (in.) H_2O	412.6 Gas sample volume (V_m), (ft^3)	Gas sample temperature at dry gas meter Inlet, (°F)	Outlet, (°F)	Temperature of gas leaving condenser or last impinger, (°F)	Filter temp (°F)
1	2.5	11:10.5	2.5	81	.13	.80	414.0	87	86	58	
2	"	13.0	2.8	81	.17	1.04	415.5	89	86	58	
3	"	15.5	3.0	81	.20	1.25	417.2	90	86	58	
4	"	18.0	3.1	81	.22	1.35	418.9	91	87	58	
5	"	20.5	3.1	81	.24	1.5	420.7	92	87	58	
6	"	23.0	3.2	81	.26	1.60	422.6	95	89	58	
7	"	25.5	3.2	81	.28	1.75	424.5	97	90	59	
8	"	28.0	3.2	81	.28	1.75	426.5	98	91	59	
9	"	30.5	3.2	81	.28	1.75	428.5	100	93	59	
10	"	33.0	3.0	81	.25	1.55	430.4	101	94	59	
11	"	35.5	3.0	81	.25	1.55	432.2	101	95	59	
12	"	38.0	3.0	81	.21	1.30	433.9	102	97	59	
0		11:42 AM					433.9				
1	2.5	44.5	2.5	81	.12	.75	435.2	101	99	60	
2	"	47.0	2.7	81	.15	.92	436.7	103	99	60	
3	"	49.5	2.8	81	.18	1.10	438.2	105	100	60	
4	"	52.0	3.0	81	.20	1.25	440.0	105	101	60	
5	"	54.5	3.0	81	.22	1.35	441.7	106	102	60	
6	"	57.0	3.1	81	.24	1.5	443.5	107	103	59	
7	"	59.5	3.1	81	.26	1.6	445.5	108	103	59	
8	"	12:02.0	3.1	81	.26	1.6	447.3	108	104	59	
9	"	04.5	3.1	81	.26	1.6	449.2	109	104	59	
10	"	07.0	3.0	81	.24	1.5	451.0	110	105	59	
11	"	09.5	2.9	81	.21	1.3	452.7	110	106	59	
12	"	12.0	2.7	81	.18	1.1	454.3	111	106	60	
	Total 60		Max 3.2	Avg 81	11.2009 0.4667	1.37	Total 41.7	Avg 101	Avg 96	Max 60	

RUN NO. 1
STACK NO. 19

STACK SAMPLING CALCULATIONS

DATE: 4/8/85
BY: EW

Meter Pressure

$$P_m = 30.12 + \frac{1.37}{13.6} = 30.22$$

Volume of Gas Sampled

$$V_{m(std)} = \frac{41.7 \times 0.9917 \times 528 \times 30.22}{559 \times 29.92} = 39.49$$

16710.3

Moisture Content

$$V_{w(std)} = 28.6(0.04715) = 1.3485$$

$$B_{ws} = \frac{1.3485}{1.3485 + 39.4876} = 0.0330 \sim 3.30\%$$

40.8361

Stack Gas Molecular Weight

$$M_s = 29(\overset{.967}{1-.033}) + 18(0.033) = 28.64$$

28.043 + 0.5944

Stack Gas Pressure

$$P_s = 30.12 + \frac{0.0}{13.6} = 30.12$$

Stack Gas Velocity

$$V_s = 85.49(0.84)(0.4667)\sqrt{\frac{547}{30.12 \times 28.6}} = 26.69$$

0.7963

862.6

Isokinetic Variation

$$\%I = \frac{(0.09450)(547)(39.49)}{(30.12)(26.69)(0.000406)(60)(0.967)} = 107.7\%$$

18.95

Stack Gas Flowrate

$$Q = 60(A_s)(V_s) = (60)(3.14)(26.69) = 5028$$

$$Q_{std} = \frac{(5028)(528)(30.12)(0.967)}{(547)(29.92)} = 4725$$

16366.2

Plant PHOSPHORIC ACID
City [illegible]MEADE
Location TANK FARM STACK 19
Operator E. WILLIAMS
Date 4-8-85
Run number -2

Sheet 1 of
Filter number N/A
leak rate TRAIN, 0.008 @ 8" Hg
LEAK RATE TRAIN, 0.007 @ 8" Hg

E. Williams 4/8/85

"H_2O LEAK TIME
PITOT LEAK TEST - 5.7 0.0 15 SEC,
REFERENCE ΔP - 0.3

Traverse point number	Sampling time, (θ), min	12:32 PM Clock time, (24 h)	Vacuum, (in.) Hg	Stack temperature (T_s), (°F)	Velocity head (ΔP_s), (in.) H_2O	Pressure differential across orifice meter (ΔH), (in.) H_2O	454.301 Gas sample volume (V_m), (ft^3)	Gas sample temperature at dry gas meter Inlet, (°F)	Gas sample temperature at dry gas meter Outlet, (°F)	Temperature of gas leaving condenser or last impinger, (°F)	Fil tem(
1	2.5	34.5	3.0	87	.12	.75	455.7	109	107	59	
2	"	37.0	3.4	87	.16	.98	457.2	110	108	59	
3	"	39.5	3.5	87	.18	1.10	458.8	110	108	59	
4	"	42.0	4.0	87	.20	1.25	460.5	111	108	59	
5	"	44.5	4.2	87	.22	1.35	462.3	111	108	59	
6	"	47.0	4.5	87	.24	1.5	464.1	112	108	60	
7	"	49.5	4.7	87	.26	1.6	466.0	113	109	60	
8	"	52.0	4.7	87	.26	1.6	467.9	113	110	60	
9	"	54.5	4.7	87	.26	1.6	469.8	114	110	60	
10	"	57.0	4.7	87	.24	1.5	471.6	114	110	60	
11	"	59.5	4.2	87	.22	1.35	473.4	114	110	60	
12	"	1:02.0	4.0	87	.20	1.25	475.1	114	110	60	
0		1:06 PM					475.1				
1	2.5	08.5	3.0	87	.12	.75	476.5	110	110	60	
2	"	11.0	3.6	87	.18	1.1	478.1	111	110	60	
3	"	13.5	4.1	87	.20	1.25	480.4	111	110	61	
4	"	16.0	4.3	87	.22	1.35	482.6	112	110	61	
5	"	18.5	4.5	87	.24	1.5	484.8	113	111	61	
6	"	21.0	4.5	87	.25	1.55	486.9	114	111	61	
7	"	23.5	4.8	87	.26	1.6	488.8	114	112	61	
8	"	26.0	5.1	87	.28	1.75	490.6	115	112	60	
9	"	28.5	5.1	87	.28	1.75	492.5	115	112	60	
10	"	31.0	5.1	87	.28	1.75	494.2	116	113	60	
11	"	33.5	4.7	87	.24	1.5	496.0	116	113	60	
12	"	36.0	4.2	87	.20	1.25	497.4	116	113	60	
	Total 60		Max 5.1	Avg 87	11.2240 0.4677	1.37	Total 43.1	Avg 113	Avg 110	Max 61	

RUN NO. 2
STACK NO. 19

STACK SAMPLING CALCULATIONS

DATE: 4/8/85
BY: EW

Meter Pressure

$$P_m = 30.12 + \frac{1.37}{13.6} = 30.22$$

Volume of Gas Sampled

$$V_{m(std)} = \frac{43.1 \times 0.9917 \times 528 \times 30.22}{572 \times 29.92} = 39.88$$

17101.2

Moisture Content

$$V_{w(std)} = 31.3\ (0.04715) = 1.4759$$

$$B_{ws} = \frac{1.4758}{1.4758 + 39.8804} = 0.0357 \sim 3.57\%$$

41.3562

Stack Gas Molecular Weight

$$M_s = 29(1-.0357) + 18(.0357) = 28.61$$

27.9647 + 0.6423

Stack Gas Pressure

$$P_s = 30.12 + \frac{0.0}{13.6} = 30.12$$

Stack Gas Velocity

$$V_s = 85.49(0.84)(0.4677)\sqrt{\frac{547}{30.12 \times 28.61}} = 26.76$$

0.7968

861.6

Isokinetic Variation

$$\%I = \frac{(0.09450)(547)(39.88)}{(30.12)(26.76)(0.000406)(60)(.9643)} = 108.9\%$$

18.93

Stack Gas Flowrate

$$Q = 60(A_s)(V_s) = (60)(3.14)(26.76) = 5042$$

$$Q_{std} = \frac{(5042)(528)(30.12)(0.9643)}{(547)(29.92)} = 4725$$

Plant PHOSPHORIC ACID
City F MEADE
Location TANK FARM STACK 19
Operator E. WILLIAMS
Date 4-8-85
Run number 3

Sheet 1 of
Filter number N/A
leak rate TRAIN, 0.008 @ 8" Hg
LEAK RATE TRAIN, 0.009 @ 8" Hg

E. Williams 4/8/85

"H_2O LEAK TIME
PITOT LEAK TEST - 6.4 0.0 15 SEC.
REFERENCE ΔP - 0.3

Traverse point number	Sampling time, (θ), min	2:00 PM Clock time, (24 h)	Vacuum, (in.) Hg	Stack temperature (T_s), (°F)	Velocity head (ΔP_s), (in.) H_2O	Pressure differential across orifice meter (ΔH), (in.) H_2O	498.601 Gas sample volume (V_m), (ft^3)	Gas sample temperature at dry gas meter Inlet, (°F)	Gas sample temperature at dry gas meter Outlet, (°F)	Temperature of gas leaving condenser or last impinger, (°F)	Fil tem (
1	2.5	2:02.5	3.9	86	.12	.75	499.9	103	102	60	
2	"	05.0	4.4	86	.18	1.1	501.4	104	102	60	
3	"	07.5	4.5	87	.20	1.25	503.1	105	102	60	
4	"	10.0	4.7	87	.22	1.35	504.9	107	103	59	
5	"	12.5	4.9	87	.24	1.5	506.7	107	103	59	
6	"	15.0	4.9	87	.26	1.6	508.6	108	104	59	
7	"	17.5	4.9	87	.27	1.7	510.5	109	104	59	
8	"	20.0	5.0	87	.28	1.75	512.0	110	105	59	
9	"	22.5	5.0	87	.28	1.75	514.0	110	106	59	
10	"	25.0	4.8	87	.26	1.6	515.9	111	107	59	
11	"	27.5	4.8	87	.24	1.5	517.7	111	107	60	
12	"	30.0	4.5	87	.20	1.25	519.4	112	108	60	
0		2:35 PM					519.4				
1	2.5	37.5	4.0	87	.12	.75	520.7	111	110	61	
2	"	40.0	4.2	87	.14	.85	522.1	113	110	61	
3	"	42.5	4.5	87	.18	1.1	523.6	114	110	61	
4	"	45.0	4.6	87	.20	1.25	525.4	114	111	61	
5	"	47.5	4.6	87	.20	1.25	527.2	115	112	60	
6	"	50.0	5.0	87	.24	1.5	529.0	116	113	60	
7	"	52.5	5.0	87	.24	1.5	530.8	117	114	60	
8	"	55.0	5.1	87	.26	1.6	532.7	117	115	60	
9	"	57.5	5.1	87	.26	1.6	534.6	118	115	60	
10	"	3:00.0	5.1	87	.24	1.5	536.3	118	116	60	
11	"	02.5	4.7	87	.20	1.25	538.5	119	116	61	
12	"	05.0	4.5	87	.18	1.1	540.0	119	117	61	
	Total 60		Max 5.1	Avg 87	1.1119 0.463	1.3	Total 41.4	Avg 112	Avg 109	Max 61	

RUN NO. 3
STACK NO. 19

STACK SAMPLING CALCULATIONS

DATE: 4/8/85
BY: EW

Meter Pressure

$$P_m = 30.12 + \frac{1.3}{13.6} = 30.22$$

Volume of Gas Sampled

$$V_{m(std)} = \frac{41.4 \times 0.9917 \times 528 \times 30.22}{570 \times 29.92} = 38.41$$

$$17054.4$$

Moisture Content

$$V_{w(std)} = 30.4(0.04715) = 1.4334$$

$$B_{ws} = \frac{1.4334}{1.4334 + 38.4125} = 0.036 \sim 3.60\%$$

$$39.8459$$

Stack Gas Molecular Weight

$$M_s = 29(1 - \overset{.964}{.036}) + 18(0.036) = 28.6$$

$$27.956 + 0.6475$$

Stack Gas Pressure

$$P_s = 30.12 + \frac{0.0}{13.6} = 30.12$$

Stack Gas Velocity

$$V_s = 85.49(0.84)(0.463)\sqrt{\overset{0.7968}{\frac{547}{30.12 \times 28.6}}} = 26.49$$

$$861.5$$

Isokinetic Variation

$$\%I = \frac{(0.09450)(547)(38.41)}{(30.12)(26.49)(0.000406)(60)(0.964)} = 105.9\%$$

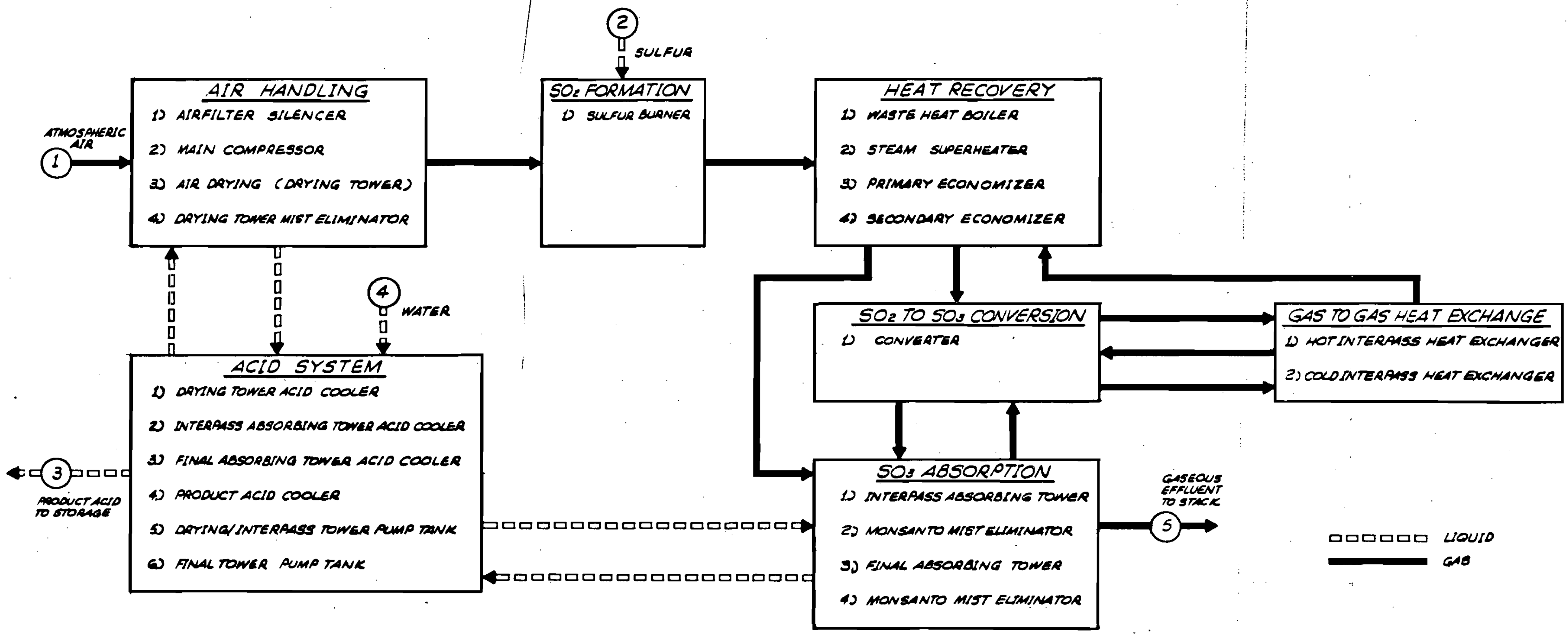
$$18.74$$

Stack Gas Flowrate

$$Q = 60(A_s)(V_s) = (60)(3.14)(26.49) = 4991$$

$$Q_{std} = \frac{(4991)(528)(30.12)(0.964)}{(547)(29.92)} = 4,675$$

$$16366.2$$



STREAM / COMPONENT	UNIT	1	5					
SO_2	SCFM		31					
SO_3	SCFM		0					
O_2	SCFM	20294	5016					
N_2	SCFM	76806	76806					
H_2O	SCFM	3360						
TOTAL	SCFM	100460	81853					
TOTAL	ACFM	113323	106475					
TEMPERATURE	°F	95	180					

STREAM / COMPONENT	UNIT	2	3	4				
LIQUID		SULFUR	98%	WATER				
	LBS/MIN	915	2835	395				
	GPM	61	190	47				
TEMPERATURE	°F	270	100	95				

CLIENT: USS AGRICHEM
LOCATION: FORT MEADE, FLORIDA
PRODUCTION: 2000 STPD AS 98% ACID (100% H_2SO_4 BASIS)
NUMBER OF UNITS: TWO PLANTS
CONVERSION: 99.7 CONVERSION OF SO_2 TO SO_3 WITH 10.5% SO_2 TO CONVERTER.
STANDARD CONDITIONS: 0°C AND 760 MM Hg.
EMISSIONS:
- SO_2: 4 LBS SO_2/TON 100% H_2SO_4 PRODUCED.
- ACID MIST: LESS THAN OR EQUIVALENT TO 0.15 LBS H_2SO_4/TON 100% H_2SO_4 PRODUCED.

STACK: 175' HIGH, 8'-6" I.D.

ATTACHMENT E

NO.	DATE	DESCRIPTION	BY
A	4-10-80	ISSUED TO EPA	

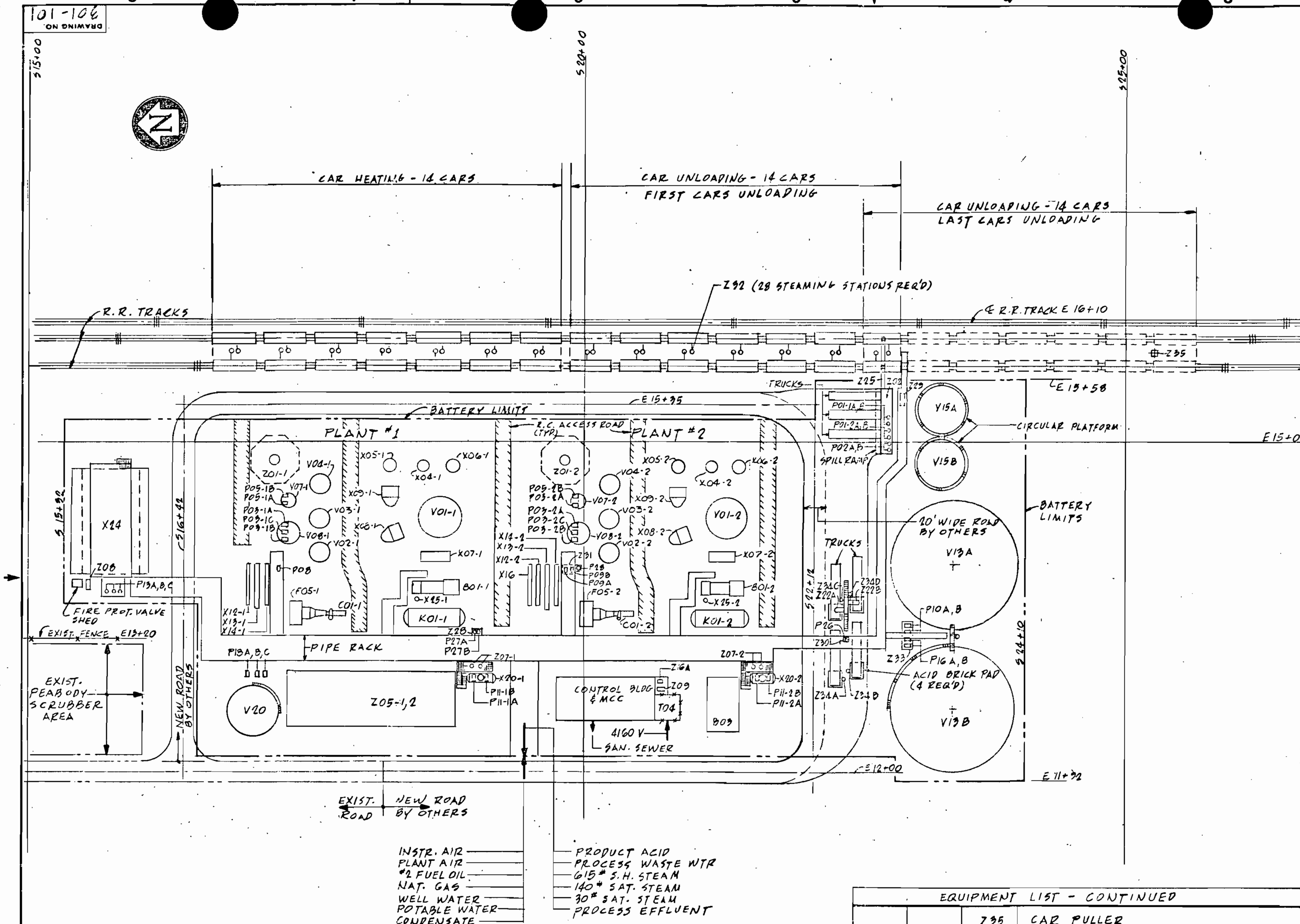
ISSUE DATE	PURPOSE OF ISSUE
4-10-80	EPA

MONSANTO ENVIRO-CHEM SYSTEMS, INC.
ST. LOUIS, MISSOURI

ENVIRONMENTAL
PROCESS MATERIAL FLOW DIAGRAM
SULFUR BURNING PLANT

	BY	DATE
DRAWN	S. L.	4-9-80
CHECKED		

JOB NO. 2189
DRAWING NO. 321-121
REVISION A



EQUIPMENT LIST - MAJOR EQUIPMENT

PLANT NO. 1	PLANT NO. 2	EQUIPMENT COMMON TO BOTH PLANTS	DESCRIPTION
B01-1	B01-2		WASTE HEAT BOILER
		B09	AUX. BOILER SYSTEM
C01-1	C01-2		MAIN COMPRESSOR
F02-1	F02-2		DRYING TOWER MIST ELIMINATOR
F03-1	F03-2		INTERPASS TOWER MIST ELIMINATOR
F04-1	F04-2		FINAL TOWER MIST ELIMINATOR
F05-1	F05-2		INLET AIR FILTER WITH SILENCER
K01-1	K01-2		SULFUR BURNER
*P01-1A,B	*P01-2A,B		SULFUR BURNER FEED PUMPS
		*P02A,B	SULFUR TRANSFER PUMPS
*P03-1A,B,C	*P03-2A,B,C		DRYING/INTERPASS TOWER ACID PUMPS
*P05-1A,B	*P05-2A,B		FINAL TOWER ACID PUMPS
P08			ACID COOLER DRAIN PUMP
		*P09A,B	PRODUCT ACID BOOSTER PUMP & PL#2 A.C. DR. PUMP
		*P10A,B	PRODUCT ACID TRANSFER PUMP
*P11-1A,B	*P11-2A,B		BOILER FEED WATER PUMPS
		*P13A,B,C	COOLING TOWER WTR. SUPPLY PUMPS
		*P15A,B	PRODUCT ACID LOADING PUMPS
		*P18A,B,C	DEAERATOR FEED WATER PUMPS
		P26	TRUCK LOADING SUMP PUMP
		*P27A,B	PROCESS WATER SUMP PUMP
		P28	PRODUCT ACID BOOSTER SUMP PUMP
		T04	4160/480 VOLT TRANSFORMER
V01-1	V01-2		CONVERTER
V02-1	V02-2		DRYING TOWER
V03-1	V03-2		INTERPASS TOWER
V04-1	V04-2		FINAL TOWER
V07-1	V07-2		FINAL TOWER PUMP TANK
V08-1	V08-2		DRYING/INTERPASS TOWER PUMP TANK
		V13A,B	SULFURIC ACID STORAGE TANKS
		V15	MOLTEN SULFUR STORAGE TANK
		V20	TREATED WATER STORAGE TANK
X04-1	X04-2		COLD INTERPASS HEAT EXCHANGER, HOT SHELL
X05-1	X05-2		COLD INTERPASS HEAT EXCHANGER, COLD SHELL
X06-1	X06-2		HOT INTERPASS HEAT EXCHANGER
X07-1	X07-2		SUPERHEATER
X08-1	X08-2		SECONDARY ECONOMIZER
X09-1	X09-2	—	PRIMARY ECONOMIZER
X12-1	X12-2		DRYING TOWER ACID COOLER
X13-1	X13-2		INTERPASS TOWER ACID COOLER
X14-1	X14-2		FINAL TOWER ACID COOLER
		X16	PRODUCT ACID COOLER
X20-1	X20-2		BOILER FEEDWATER HEATER
		X24	WATER COOLING TOWER
X25-1	X25-2		BOILER B.D. HEAT RECOVERY SYSTEM
Z01-1	Z01-2		PLANT STACK
		Z02	MOLTEN SULFUR PIT
Z05-1	Z05-2		DEMINERALIZER SYSTEM
Z07-1	Z07-2		BOILER-CHEMICAL FEED SYSTEM
		Z08	COOLING WATER TREATMENT SYSTEM
		Z09	AUXILIARY GENERATOR
		Z16A	HVAC UNIT FOR CONTROL ROOM
		Z22A,B	ACID TRUCK LOADING STATIONS
		Z25	SULFUR TANK CAR UNLOADING TROUGH
		Z28	PROCESS WASTE WTR. SUMP
		Z29	CONDENSATE RECEIVER SYSTEM
		Z30	TRUCK LOADING SPILL SUMP
		Z31	PRODUCT ACID BOOSTER PUMP BASIN & SUMP
		Z32	TANK CAR STEAMING SYSTEM
		Z33	ACID LOADING & TRANSFER PUMP SPILL BASIN
		Z34A,B,C,D	ACID TRUCK UNLOADING STATIONS

EQUIPMENT LIST - CONTINUED

		Z35	CAR PULLER

NOTES

1. * DENOTES ONE IS AN INST. SPARE.
2. FOR DETAILED PLANT LAYOUT SEE DWG. 301-102

REVISIONS NO.	DATE	DESCRIPTION	BY
C	11-28-79	ISSUED FOR PROPOSAL	JLR
3	9-13-79	REV. SULFUR STORAGE, TANK CAR UNLOAD, ACID UNLOADING AREAS & X20-1,2 ORIENTATION	48
A	8-17-79	ISSUED FOR ESTIMATE	49

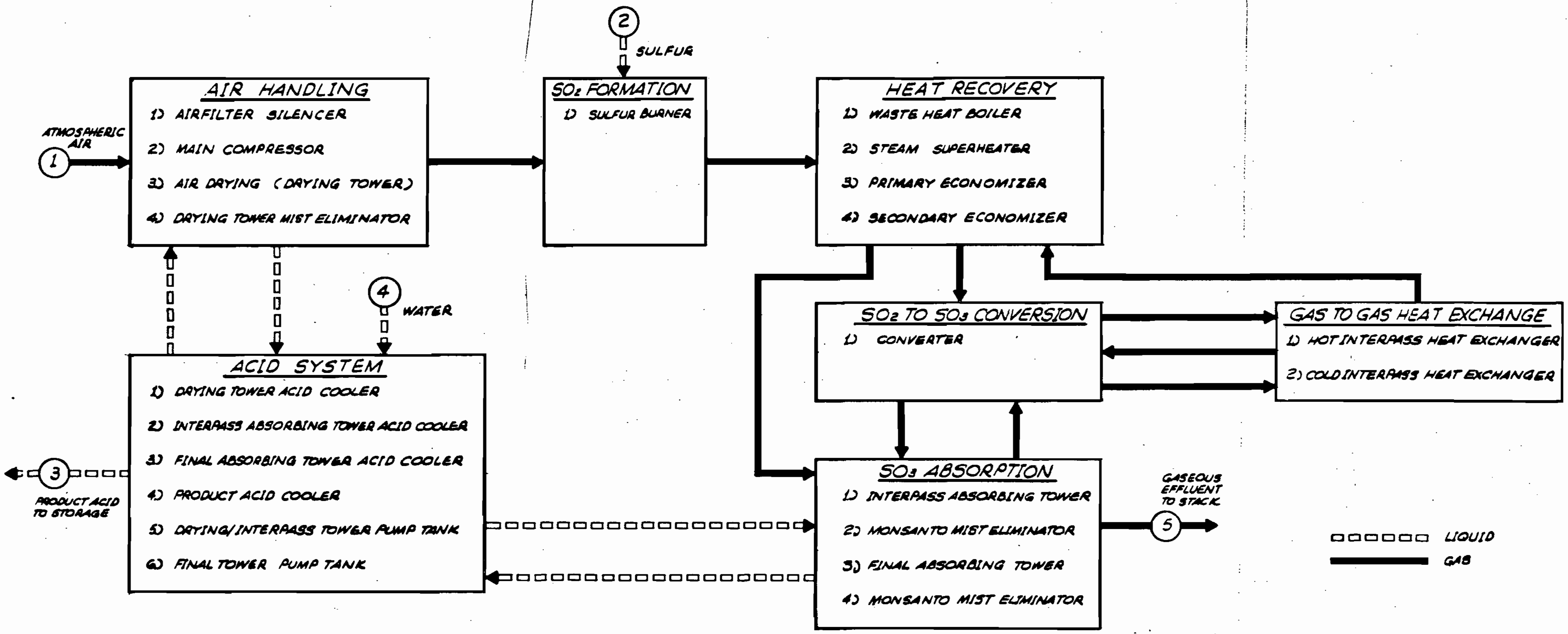
REFERENCES — DESCRIPTION

ISSUE DATE	PURPOSE OF ISSUE
11-28-79	PROPOSAL

MONSANTO ENVIRO-CHEM SYSTEMS, INC.
ST. LOUIS, MISSOURI

PLOT PLAN
ATTACHMENT - F

	BY	DATE	APP'D.	DATE	JOB NO.	REVISION
DRAWN	CJZ	8-15-79	EAK	8/17/79	2183	C
CHECKED			LSH	9/13/79	DRAWING NO 301-101	
SCALE	1" = 50'					



STREAM / COMPONENT UNIT		1	5					
SO_2	SCFM		31					
SO_3	SCFM		0					
O_2	SCFM	20294	5016					
N_2	SCFM	76806	76806					
H_2O	SCFM	3360						
TOTAL	SCFM	100460	81853					
TOTAL	ACFM	113323	106475					
TEMPERATURE	°F	95	180					
STREAM / COMPONENT UNIT		**2**	**3**	**4**				
LIQUID		SULFUR	98%	WATER				
	LBS/MIN	915	2835	395				
	GPM	61	190	47				
TEMPERATURE	°F	270	100	95				

CLIENT: USS AGRICHEM
LOCATION: FORT MEADE, FLORIDA
PRODUCTION: 2000 STPD AS 98% ACID (100% H_2SO_4 BASIS)
NUMBER OF UNITS: TWO PLANTS
CONVERSION: 99.7 CONVERSION OF SO_2 TO SO_3 WITH 10.5% SO_2 TO CONVERTER.
STANDARD CONDITIONS: 0°C AND 760 MM Hg.
EMISSIONS:
SO_2: 4LBS SO_2/TON 100% H_2SO_4 PRODUCED.
ACID MIST: LESS THAN OR EQUIVALENT TO 0.15LBS H_2SO_4/TON 100% H_2SO_4 PRODUCED.

STACK: 175' HIGH, 8'-6" I.D.

ATTACHMENT E

REVISIONS					
NO.	DATE	DESCRIPTION	BY	BY	BY
A	4-10-80	ISSUED TO EPA			

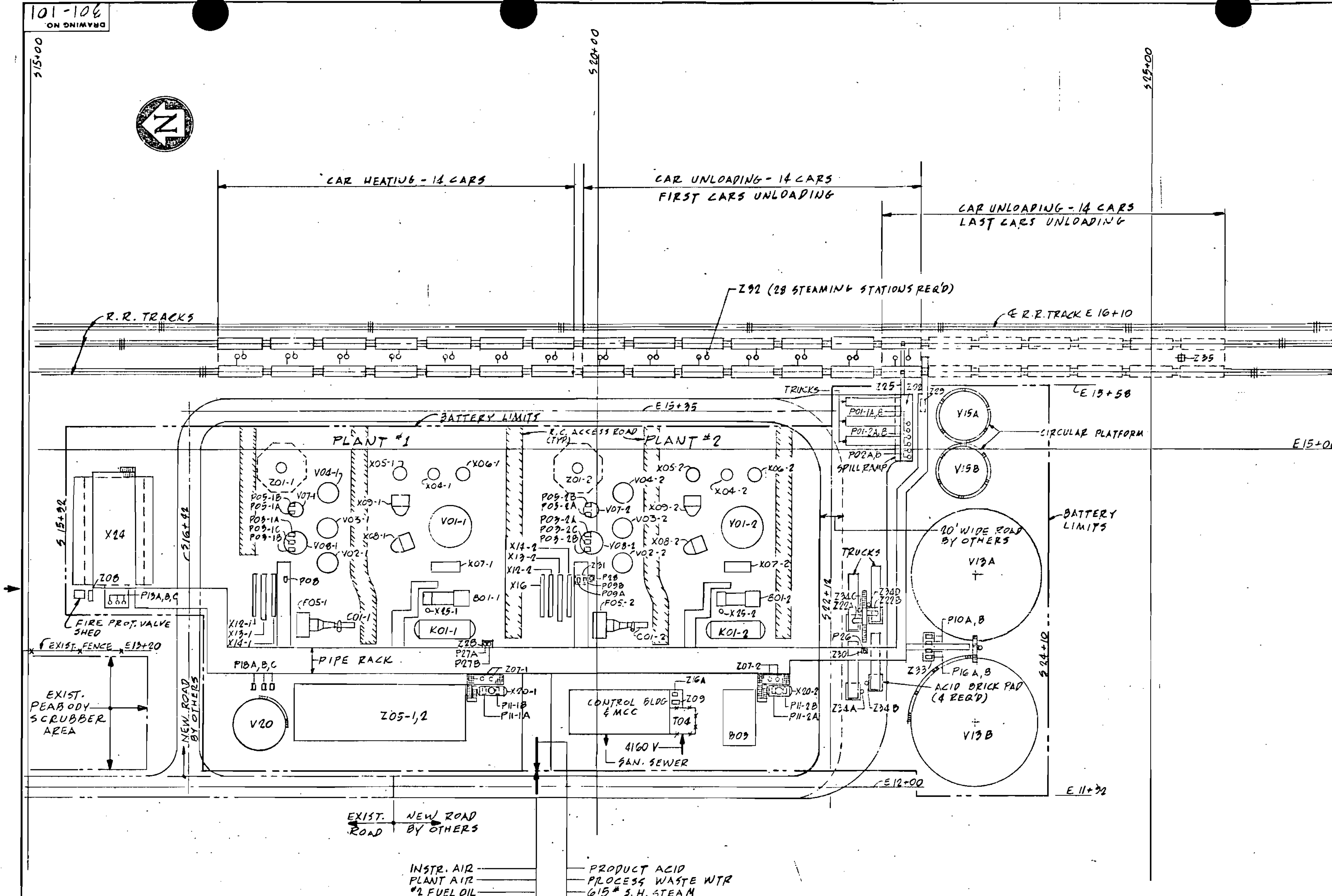
THIS DRAWING IS THE PROPERTY OF MONSANTO ENVIRO-CHEM SYSTEMS INC

ISSUE DATE	PURPOSE OF ISSUE
4-?-80	EPA

MONSANTO ENVIRO-CHEM SYSTEMS, INC.
ST. LOUIS, MISSOURI

ENVIRONMENTAL
PROCESS MATERIAL FLOW DIAGRAM
SULFUR BURNING PLANT

	BY	DATE	APP'D.	DATE	JOB NO	REVISION
DRAWN	S L	4-9-80			2189	A
CHECKED	[illegible]	4/11/80			DRAWING NO 321-121	
SCALE						



EQUIPMENT LIST - CONTINUED			
		Z35	CAR PULLER

NOTES
1.* DENOTES ONE IS AN INST. SPARE.
2. FOR DETAILED PLANT LAYOUT SEE DWG. 301-102

EQUIPMENT LIST - MAJOR EQUIPMENT ONLY

PLANT NO.1	PLANT NO.2	EQUIPMENT COMMON TO BOTH PLANTS	DESCRIPTION
B01-1	B01-2		WASTE HEAT BOILER
		B03	AUX. BOILER SYSTEM
C01-1	C01-2		MAIN COMPRESSOR
F02-1	F02-2		DRYING TOWER MIST ELIMINATOR
F03-1	F03-2		INTERPASS TOWER MIST ELIMINATOR
F04-1	F04-2		FINAL TOWER MIST ELIMINATOR
F05-1	F05-2		INLET AIR FILTER WITH SILENCER
K01-1	K01-2		SULFUR BURNER
*P01-1A,B	*P01-2A,B		SULFUR BURNER FEED PUMPS
		*P02A,B	SULFUR TRANSFER PUMPS
*P03-1A,B,C	*P03-2A,B,C		DRYING/INTERPASS TOWER ACID PUMPS
*P05-1A,B	*P05-2A,B		FINAL TOWER ACID PUMPS
P08			ACID COOLER DRAIN PUMP
		*P09A,B	PRODUCT ACID BOOSTER PUMP & PL#2 A.C. DR. PUMP
		*P10A,B	PRODUCT ACID TRANSFER PUMP
*P11-1A,B	*P11-2A,B		BOILER FEED WATER PUMPS
		*P13A,B,C	COOLING TOWER WTR. SUPPLY PUMPS
		*P16A,B	PRODUCT ACID LOADING PUMPS
		*P18A,B,C	DEAERATOR FEED WATER PUMPS
		P26	TRUCK LOADING SUMP PUMP
		*P27A,B	PROCESS WATER SUMP PUMP
		P28	PRODUCT ACID BOOSTER SUMP PUMP
		T04	4160/480 VOLT TRANSFORMER
V01-1	V01-2		CONVERTER
V02-1	V02-2		DRYING TOWER
V03-1	V03-2		INTERPASS TOWER
V04-1	V04-2		FINAL TOWER
V07-1	V07-2		FINAL TOWER PUMP TANK
V08-1	V08-2		DRYING/INTERPASS TOWER PUMP TANK
		V13A,B	SULFURIC ACID STORAGE TANKS
		V15	MOLTEN SULFUR STORAGE TANK
		V20	TREATED WATER STORAGE TANK
X04-1	X04-2		COLD INTERPASS HEAT EXCHANGER, HOT SHELL
X05-1	X05-2		COLD INTERPASS HEAT EXCHANGER, COLD SHELL
X06-1	X06-2		HOT INTERPASS HEAT EXCHANGER
X07-1	X07-2		SUPERHEATER
X08-1	X08-2		SECONDARY ECONOMIZER
X09-1	X09-2	—	PRIMARY ECONOMIZER
X12-1	X12-2		DRYING TOWER ACID COOLER
X13-1	X13-2		INTERPASS TOWER ACID COOLER
X14-1	X14-2		FINAL TOWER ACID COOLER
		X16	PRODUCT ACID COOLER
X20-1	X20-2		BOILER FEEDWATER HEATER
		X24	WATER COOLING TOWER
X25-1	X25-2		BOILER B.D. HEAT RECOVERY SYSTEM
Z01-1	Z01-2		PLANT STACK
		Z02	MOLTEN SULFUR PIT
Z05-1	Z05-2		DEMINERALIZER SYSTEM
Z07-1	Z07-2		BOILER CHEMICAL FEED SYSTEM
		Z08	COOLING WATER TREATMENT SYSTEM
		Z09	AUXILIARY GENERATOR
		Z16A	HVAC UNIT FOR CONTROL ROOM
		Z22A,B	ACID TRUCK LOADING STATIONS
		Z25	SULFUR TANK CAR UNLOADING TROUGH
		Z28	PROCESS WASTE WTR. SUMP
		Z29	CONDENSATE RECEIVER SYSTEM
		Z30	TRUCK LOADING SPILL SUMP
		Z31	PRODUCT ACID BOOSTER PUMP BASIN & SUMP
		Z32	TANK CAR STEAMING SYSTEM
		Z33	ACID LOADING & TRANSFER PUMP SPILL BASIN
		Z34A,B,C,D	ACID TRUCK UNLOADING STATIONS

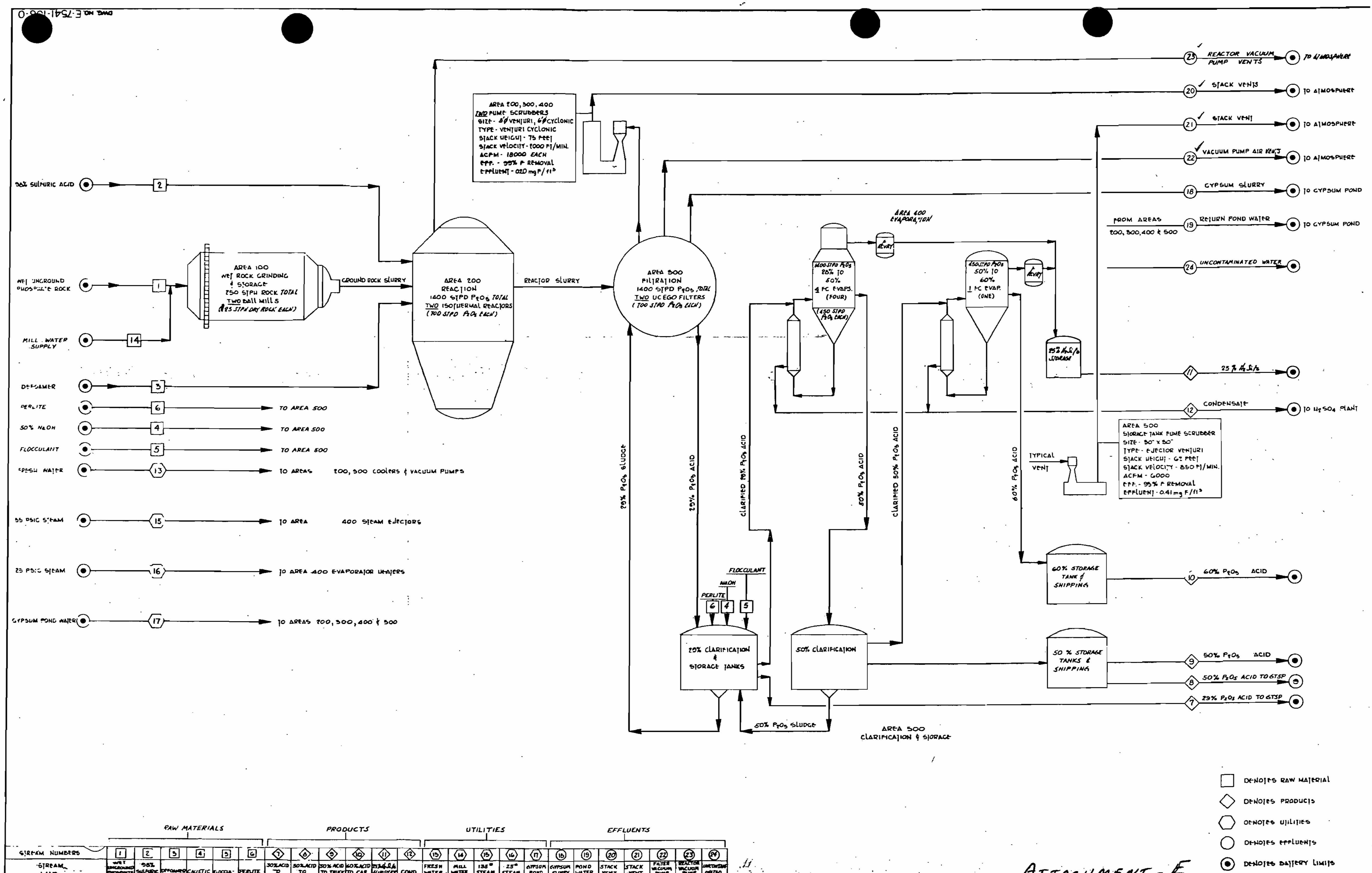
MONSANTO ENVIRO-CHEM SYSTEMS, INC.
ST. LOUIS, MISSOURI

PLOT PLAN
ATTACHMENT · F

REVISIONS NO	DATE	DESCRIPTION	BY
C	11-28-79	ISSUED FOR PROPOSAL	HR
B	9-13-79	REV. SULFUR STORAGE, TANK CAR UNLOAD., ACID UNLOADING AREAS & Z20-1,2 ORIENTATION	HR
A	8-17-79	ISSUED FOR ESTIMATE	HR

ISSUE DATE	PURPOSE OF ISSUE
11-28-79	PROPOSAL

	BY	DATE	APP'D.	DATE	JOB NO.	REVISION
DRAWN	CJZ	8-15-79	EKK	3/13/79	2189	C
CHECKED			LSH	9/13/79	DRAWING NO. 301-101	
SCALE	1" = 50'					



STREAM NUMBERS		RAW MATERIALS: 1	2	3	4	5	6	PRODUCTS: 7	8	9	10	11	12
STREAM NAME		WET UNGROUND PHOSPHATE ROCK	98% SULFURIC ACID	DEFOAMER	CAUSTIC	FLOCCULANT	PERLITE	30% ACID TO GTSP	50% ACID TO GTSP	50% ACID TO TRUCK LOADING	60% ACID TO CAR LOADING	25% H_2SiF_6 FLUOSILICIC ACID	COND.
MASS FLOW RATE	TPD	5396	5945	5.7	0.6	—	14	505	337	1275	743	285	2952
	TPD P_2O_5	1466	—	—	0		0	162	168	638	446	—	—
	lbs/hr	—	—	—	—	1.5	1200	—	—	—	—	—	—
	ACFM	—	—	—	—	—	—	—	—	—	—	—	—
	GPM (GPH)	—	—	—	(4)	—	—	65	33	125	75	50	516
TEMPERATURE, °F		100	100	80	100	100	100	130	130	130	140	115	180
FLUORINE, lbs/DAY		—	—	—	—	—	—	—	—	—	—	58 STPD	—
SOLIDS, TPD (lbs/day)		4855	—	—	—	(32)	18	2.5	3	13	10	—	—

STREAM NUMBERS		UTILITIES: 13	14	15	16	17	EFFLUENTS: 18	19	20	21	22	23	24
STREAM NAME		FRESH WATER	MILL WATER SUPPLY	135# STEAM	25# STEAM	GYPSUM POND WATER	GYPSUM SLURRY	POND WATER RETURN	STACK VENT R-F-E	STACK VENT CLAR.	FILTER VACUUM PUMP VENTS	REACTOR VACUUM PUMP VENTS	UNCONTAMINATED WATER
MASS FLOW RATE	TPD	3900	2076	—	—	224,580	36345	203,142	—	—	—	—	2880
	TPD P_2O_5	—	—	—	—	—	—	—	—	—	—	—	—
	lbs/hr	—	—	8500	245,000	—	—	—	—	—	—	—	—
	ACFM	—	—	—	—	—	—	—	36,000	6000	1711	4900	—
	GPM (GPH)	660	346	—	—	38430	5337	33857	—	—	—	—	—
TEMPERATURE, °F		85	100	360	240	85	113	115	100	105	100	100	100
FLUORINE, lbs/DAY		—	—	—	—	—	—	—	21.6	7.6	—	—	—
SOLIDS, TPD (lbs/day)		—	—	—	—	—	7269	—	~0	~0	~0	~0	—

ATTACHMENT - E

REV.	DESCRIPTION
III	REVISED FOR PROPOSAL
II	FOR PROPOSAL
I	FOR APPROVAL

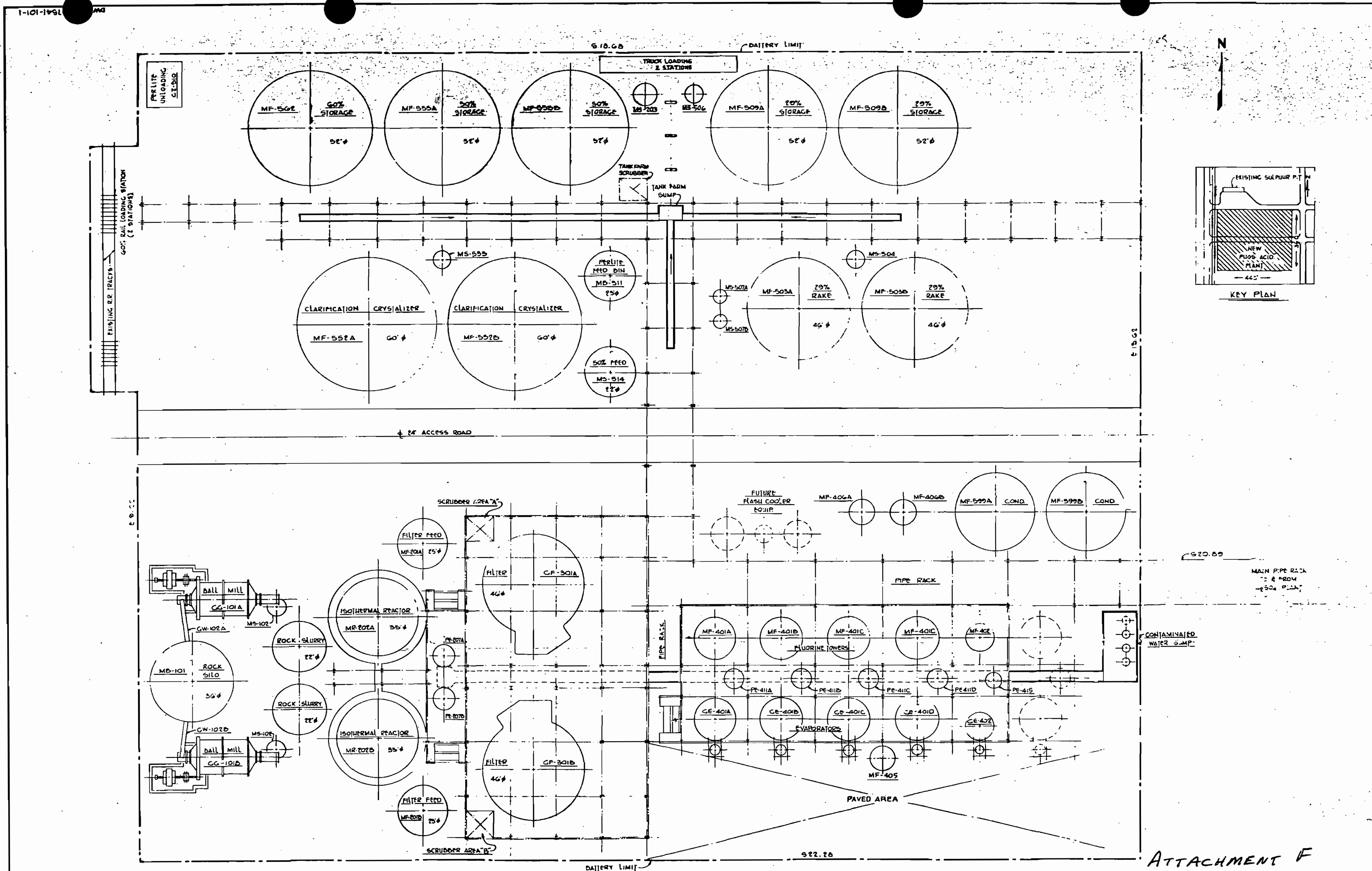
FLOW DIAGRAM
RAW MATERIALS, PRODUCTS, UTILITIES AND EFFLUENTS
PHOSPHORIC ACID PLANT
USS AGRI-CHEMICALS

FT. MEADE FLORIDA

DESIGNED BY J.L. MARTINEZ DRAWN BY D. PELHAM CHECKED BY CBC

BADGER AMERICA, INC.

DWG. NO. E-7541-106-0



ATTACHMENT F

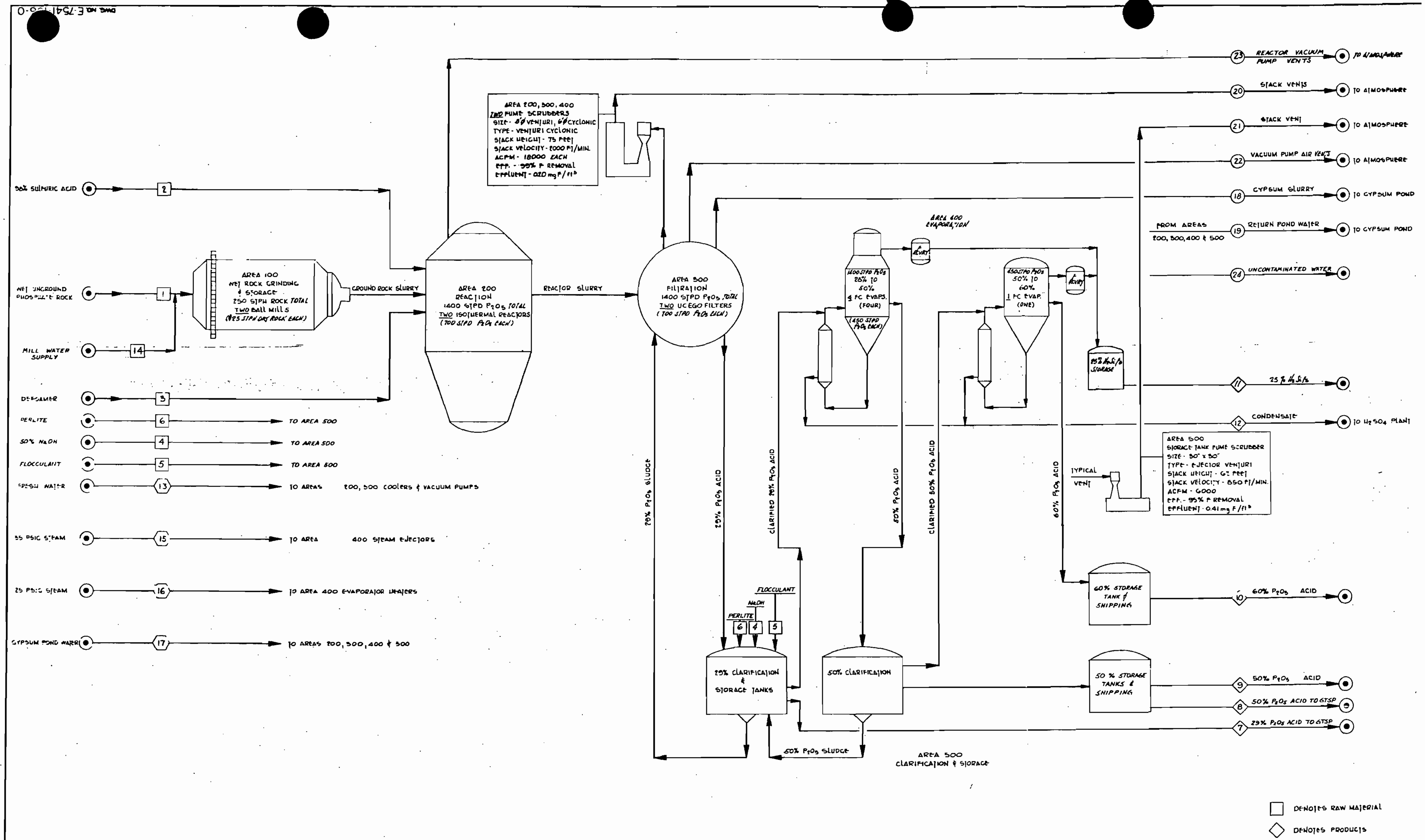
PLOT PLAN
1400 TPD PHOS. ACID PLANT
DUAL TRAIN STUDY
USS AGRI-CHEMICALS
FT. MEADE, FLORIDA

GULF DESIGN DIVISION
BADGER AMERICA, INC.
TAMPA, FLORIDA

ISSUE FOR PROPOSAL

DRAWN BY D. PELHAM

DWG. NO. E7541-101-1 I



	RAW MATERIALS						PRODUCTS						UTILITIES					EFFLUENTS						
STREAM NUMBERS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
STREAM NAME	WET UNGROUND PHOSPHATE ROCK	98% SULFURIC ACID	DEFOAMER	CAUSTIC	FLOCCULANT	PERLITE	30% ACID TO GTSP	50% ACID TO GTSP	50% ACID TO TRUCK LOADING	60% ACID TO CAR LOADING	25% H_2SiF_6 FLUOSILICIC ACID	COND.	FRESH WATER	MILL WATER SUPPLY	135# STEAM	25# STEAM	GYPSUM POND WATER	GYPSUM SLURRY	POND WATER RETURN	STACK VENT R-F-E	STACK VENT CLAR	FILTER VACUUM PUMP VENTS	REACTOR VACUUM PUMP VENTS	UNCONTAMINATED WATER
MASS FLOW RATE — TPD	5596	3945	57	0.6	—	14	505	337	1275	743	285	2952	3900	2076	—	—	224,580	36343	203,142	—	—	—	—	2880
MASS FLOW RATE — TPD P_2O_5	1466	—	—	0	—	0	152	168	638	446	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MASS FLOW RATE — lbs/hr	—	—	—	—	1.5	1200	—	—	—	—	—	—	—	—	8500	245,000	—	—	—	—	—	—	—	—
MASS FLOW RATE — ACFM	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	34,000	6000	1711	4900	—
MASS FLOW RATE — GPM (GPH)	—	—	—	(4)	—	—	65	33	125	75	50	515	660	346	—	—	38430	5337	33857	—	—	—	—	—
TEMPERATURE °F	100	100	90	100	100	100	130	150	130	140	115	180	85	100	350	240	95	113	115	100	105	100	100	100
FLUORIDE, lbs/DAY	—	—	—	—	—	—	—	—	—	—	58 STPD	—	—	—	—	—	—	—	—	21.6	7.6	—	—	—
SOLIDS, TPD (lbs/day)	4855	—	—	—	(32)	18	2.5	3	13	10	—	—	—	—	—	—	—	7269	—	~0	~0	~0	~0	—

ATTACHMENT - E

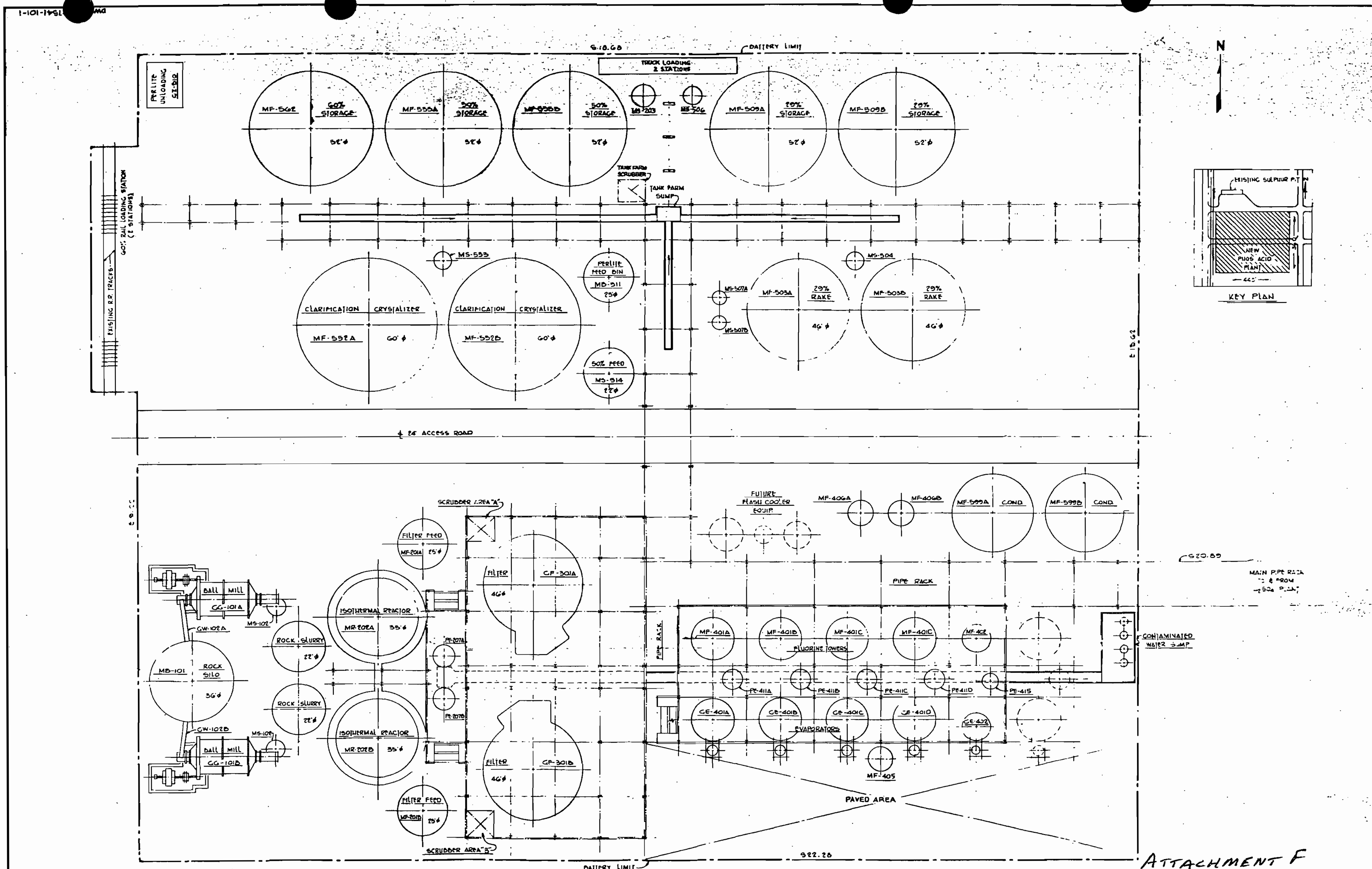
III			REISSUED FOR PROPOSAL	
II			FOR PROPOSAL	CBC
I		DP	FOR APPROVAL	

FLOW DIAGRAM
RAW MATERIALS, PRODUCTS, UTILITIES AND EFFLUENTS
PHOSPHORIC ACID PLANT
USS AGRI-CHEMICALS
FT. MEADE FLORIDA

DESIGNED BY J.L. MARTINEZ DRAWN BY D. PELHAM CHECKED BY CBC

BADGER AMERICA, INC.

DWG. NO. E-7541-106-0



Attachment F

I			ISSUE FOR PROPOSAL	

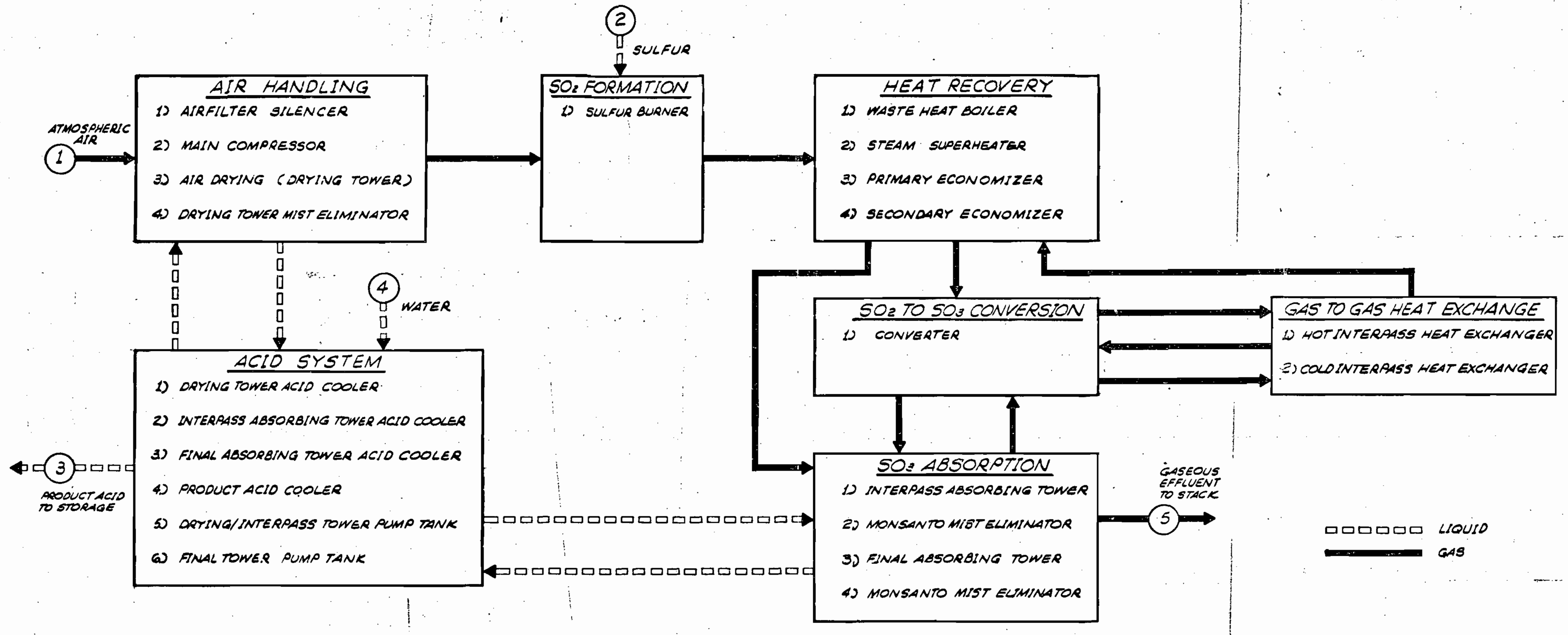
PLOT PLAN
1400 TPD PHOS. ACID PLANT
DUAL TRAIN STUDY
USS AGRI-CHEMICALS
FT. MEADE, FLORIDA

DESIGNED BY D. PELHAM — DRAWN BY D. PELHAM — CHECKED BY

GULF DESIGN DIVISION
BADGER AMERICA, INC.
TAMPA, FLORIDA

SCALE 1" = 15'-0"

DWG. NO. E7541-101-1 — ISSUE I



STREAM / COMPONENT	UNIT	1	5					
SO_2	SCFM		51					
SO_3	SCFM		0					
O_2	SCFM	20294	5016					
N_2	SCFM	76806	76806					
H_2O	SCFM	3360						
TOTAL	SCFM	100460	81853					
TOTAL	ACFM	113323	106475					
TEMPERATURE	°F	95	180					
STREAM / COMPONENT	**UNIT**	**2**	**3**	**4**				
LIQUID		SULFUR	98%	WATER				
	LBS/MIN	915	2835	395				
	GPM	61	190	47				
TEMPERATURE	°F	270	100	95				

CLIENT: USS AGRICHEM
LOCATION: FORT MEADE, FLORIDA
PRODUCTION: 2000 STPD AS 98% ACID (100% H_2SO_4 BASIS)
NUMBER OF UNITS: TWO PLANTS
CONVERSION: 99.7 CONVERSION OF SO_2 TO SO_3 WITH 10.5% SO_2 TO CONVERTER.
STANDARD CONDITIONS: 0°C AND 760 MM Hg.
EMISSIONS:
SO_2: 4LBS. SO_2/TON 100% H_2SO_4 PRODUCED.
ACID MIST: LESS THAN OR EQUIVALENT TO 0.15 LBS H_2SO_4/TON 100% H_2SO_4 PRODUCED.

STACK: 175' HIGH, 8'-6" I.D.

FIG. A-1

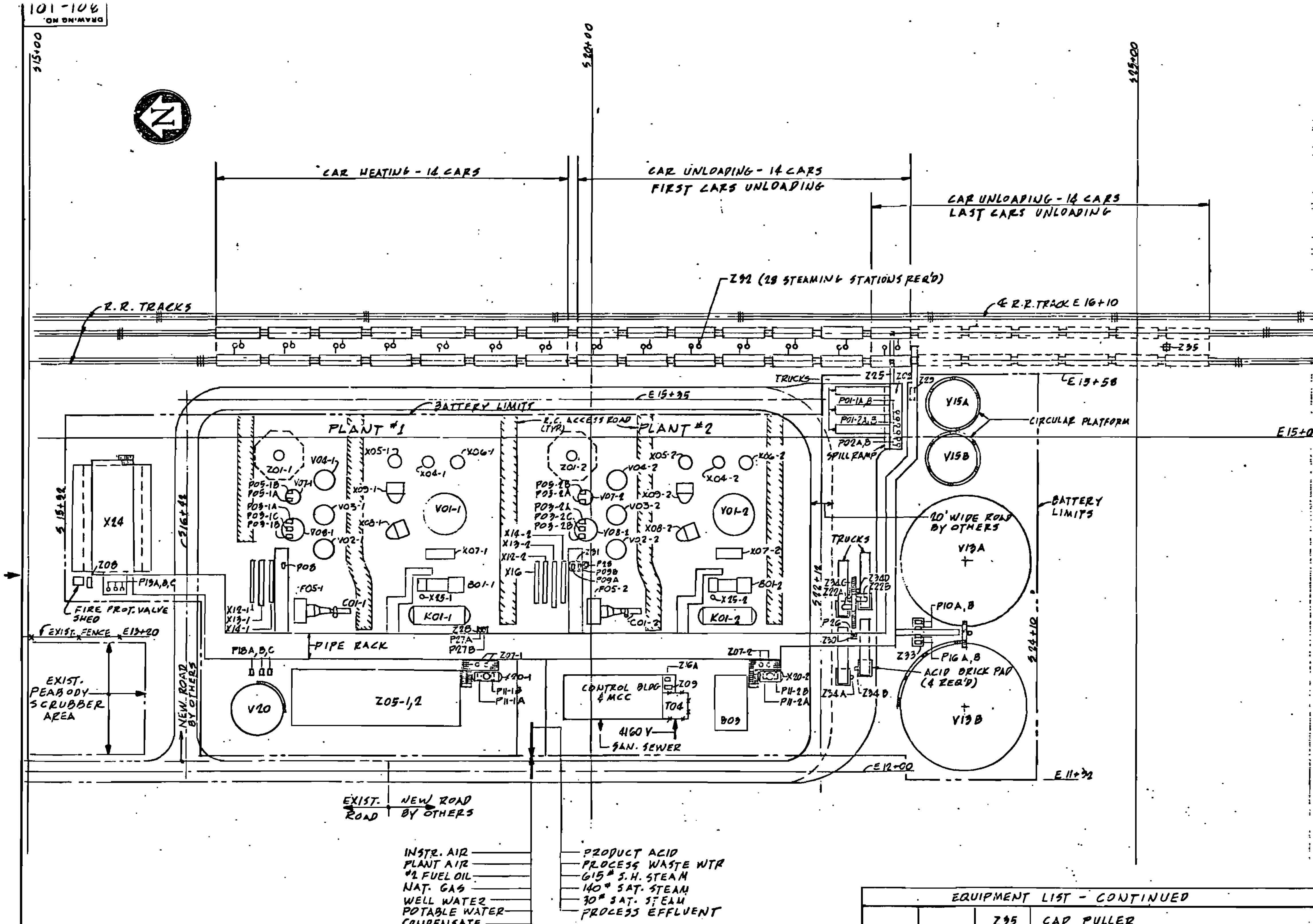
MONSANTO ENVIRO-CHEM SYSTEMS, INC.
ST. LOUIS, MISSOURI

ENVIRONMENTAL
PROCESS MATERIAL FLOW DIAGRAM
SULFUR BURNING PLANT

	BY	DATE	APP'D.	DATE	JOB NO.	REVISION
DRAWN	B.L.	4-9-80			2189	A
CHECKED	HAA	4/10/80			DRAWING NO. 321-121	
SCALE						

REVISIONS: A | 4-10-80 | ISSUED TO EPA | HR

ISSUE DATE: 4-10-80 — PURPOSE OF ISSUE: EPA



EQUIPMENT LIST - CONTINUED			
		Z35	CAR PULLER

NOTES
1. * DENOTES ONE IS AN INST. SPARE.
2. FOR DETAILED PLANT LAYOUT SEE DWG. 301-102

EQUIPMENT LIST - MAJOR EQUIPMENT ONLY

PLANT NO.1	PLANT NO.2	EQUIPMENT COMMON TO BOTH PLANTS	DESCRIPTION
B01-1	B01-2		WASTE HEAT BOILER
		B03	AUX. BOILER SYSTEM
C01-1	C01-2		MAIN COMPRESSOR
F02-1	F02-2		DRYING TOWER MIST ELIMINATOR
F03-1	F03-2		INTERPASS TOWER MIST ELIMINATOR
F04-1	F04-2		FINAL TOWER MIST ELIMINATOR
F05-1	F05-2		INLET AIR FILTER WITH SILENCER
K01-1	K01-2		SULFUR BURNER
*P01-1A,B	*P01-2A,B		SULFUR BURNER FEED PUMPS
		*P02A,B	SULFUR TRANSFER PUMPS
*P03-1A,B,C	*P03-2A,B,C		DRYING/INTERPASS TOWER ACID PUMPS
*P05-1A,B	*P05-2A,B		FINAL TOWER ACID PUMPS
P08			ACID COOLER DRAIN PUMP
		*P09A,B	PRODUCT ACID BOOSTER PUMP & PL.#2 A.C. DR. PUMP
		*P10A,B	PRODUCT ACID TRANSFER PUMP
*P11-1A,B	*P11-2A,B		BOILER FEED WATER PUMPS
		*P13A,B,C	COOLING TOWER WTR. SUPPLY PUMPS
		*P16A,B	PRODUCT ACID LOADING PUMPS
		*P18A,B,C	DEAERATOR FEED WATER PUMPS
		P26	TRUCK LOADING SUMP PUMP
		*P27A,B	PROCESS WATER SUMP PUMP
		P28	PRODUCT ACID BOOSTER SUMP PUMP
		T04	4160/480 VOLT TRANSFORMER
V01-1	V01-2		CONVERTER
V02-1	V02-2		DRYING TOWER
V03-1	V03-2		INTERPASS TOWER
V04-1	V04-2		FINAL TOWER
V07-1	V07-2		FINAL TOWER PUMP TANK
V08-1	V08-2		DRYING/INTERPASS TOWER PUMP TANK
		V13A,B	SULFURIC ACID STORAGE TANKS
		V15	MOLTEN SULFUR STORAGE TANK
		V20	TREATED WATER STORAGE TANK
X04-1	X04-2		COLD INTERPASS HEAT EXCHANGER, HOT SHELL
X05-1	X05-2		COLD INTERPASS HEAT EXCHANGER, COLD SHELL
X06-1	X06-2		HOT INTERPASS HEAT EXCHANGER
X07-1	X07-2		SUPERHEATER
X08-1	X08-2		SECONDARY ECONOMIZER
X09-1	X09-2		PRIMARY ECONOMIZER
X12-1	X12-2		DRYING TOWER ACID COOLER
X13-1	X13-2		INTERPASS TOWER ACID COOLER
X14-1	X14-2		FINAL TOWER ACID COOLER
		X16	PRODUCT ACID COOLER
X20-1	X20-2		BOILER FEEDWATER HEATER
		X24	WATER COOLING TOWER
X25-1	X25-2		BOILER B.D. HEAT RECOVERY SYSTEM
Z01-1	Z01-2		PLANT STACK
		Z02	MOLTEN SULFUR PIT
Z05-1	Z05-2		DEMINERALIZER SYSTEM
Z07-1	Z07-2		BOILER CHEMICAL FEED SYSTEM
		Z08	COOLING WATER TREATMENT SYSTEM
		Z09	AUXILIARY GENERATOR
		Z16A	HVAC UNIT FOR CONTROL ROOM
		Z22A,B	ACID TRUCK LOADING STATIONS
		Z25	SULFUR TANK CAR UNLOADING TROUGH
		Z28	PROCESS WASTE WTR. SUMP
		Z29	CONDENSATE RECEIVER SYSTEM
		Z30	TRUCK LOADING SPILL SUMP
		Z31	PRODUCT ACID BOOSTER PUMP BASIN & SUMP
		Z32	TANK CAR STEAMING SYSTEM
		Z33	ACID LOADING & TRANSFER PUMP SPILL BASIN
		Z34A,B,C,D	ACID TRUCK UNLOADING STATIONS

MONSANTO ENVIRO-CHEM SYSTEMS, INC.
ST. LOUIS, MISSOURI

FIG. A-2
PLOT PLAN
SULFURIC ACID PLANT

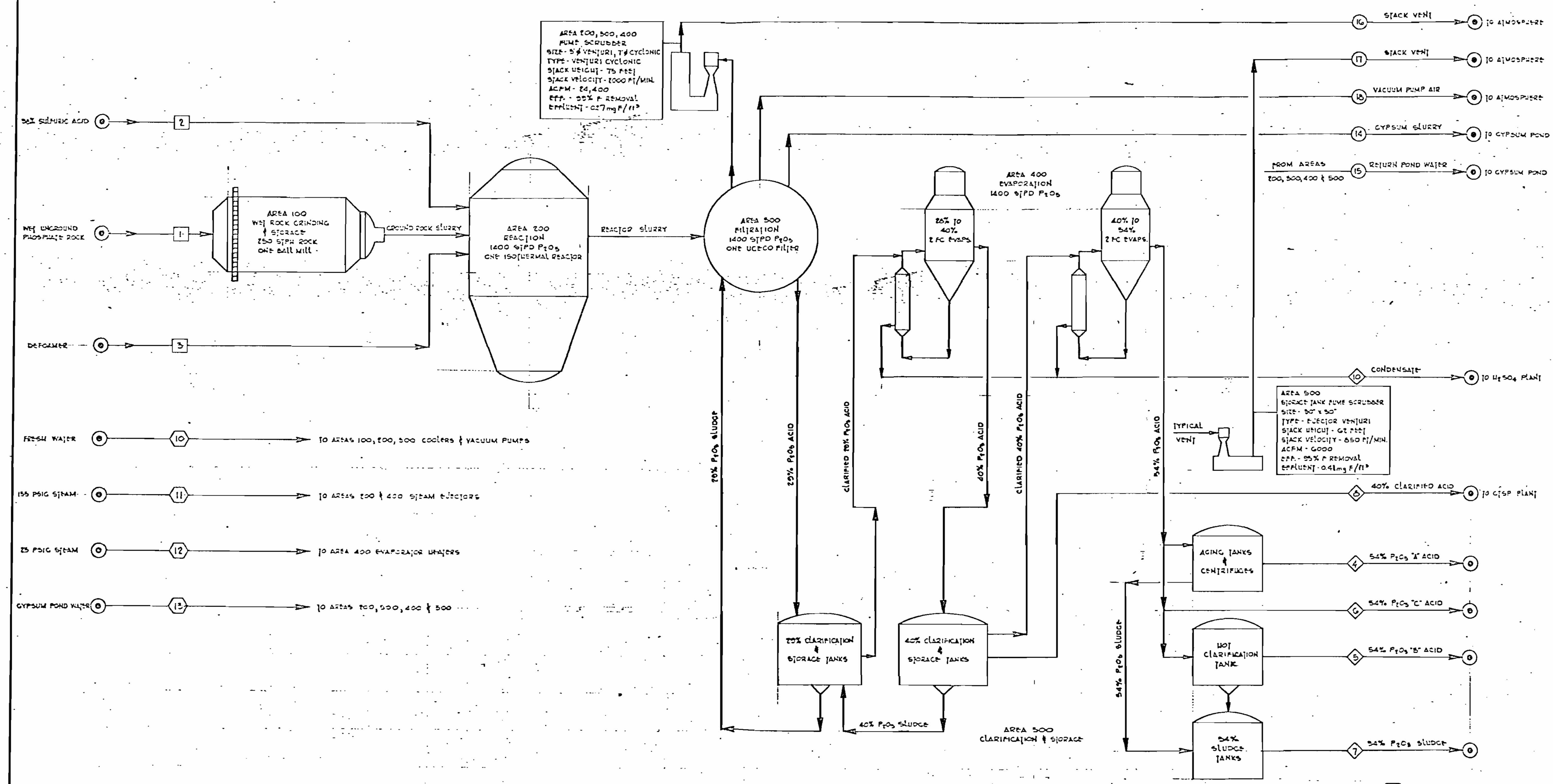
REVISIONS NO	DATE	DESCRIPTION	BY
C	11-28-79	ISSUED FOR PROPOSAL	
B	9-13-79	REV. SULFUR STORAGE, TANK CAR UNLOAD., ACID UNLOADING AREAS & X20-1,2 ORIENTATION	
A	8-17-79	ISSUED FOR ESTIMATE	

REFERENCES — DESCRIPTION

ISSUE DATE	PURPOSE OF ISSUE
11-28-79	PROPOSAL

	BY	DATE	APP'D	DATE	JOB NO	REVISION
DRAWN	[illegible]	[illegible]	LAK	[illegible]	2155	C
CHECKED			LSH	9/13/79	DRAWING NO. 301-101	
SCALE	1"=50'					

BEST AVAILABLE COPY



DENOTES RAW MATERIAL
DENOTES PRODUCTS
DENOTES UTILITIES
DENOTES EFFLUENTS
DENOTES BATTERY LIMITS

		RAW MATERIALS			PRODUCTS						UTILITIES				EFFLUENTS				
STREAM NUMBERS		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
STREAM NAME		WET UNGROUND PHOSPHATE ROCK	98% SULFURIC ACID	DEFOAMER	"A" ACID	"B" ACID	"C" ACID	54% SLUDGE TO MAP PLANT	40% ACID TO GTSP PLANT	CONDENSATE	FRESH WATER	135 PSIG STEAM	25 PSIG STEAM	GYPSUM POND WATER	GYPSUM SLURRY	POND WATER RETURN	STACK VENT R-F-E	STACK VENT CLAR.	VAC. PUMP FILT.
MASS FLOW RATE	TPD	5394	5545	57	645	204	852	269	835	5000	2268	540	3000	155650	56545	177450			
	TPD P_2O_5	1466	—	—	550	110	460	146	334										
	lbs/hr											45,000	250,000						
	ACFM																24,400	6000	1600
	GPM									526	578			33515	5337	29575			
TEMPERATURE, °F		100	100	90	115	160	180	160	150	212	60	358	267	95	115	115	100	105	100
FLUORIDE, lbs/DAY																	20.9	7.8	0
SOLIDS TPD		[illegible]												[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

FIG. B-1

FLOW DIAGRAM
RAW MATERIALS, PRODUCTS, UTILITIES AND EFFLUENTS
PHOSPHORIC ACID PLANT
USS AGRI-CHEMICALS
FT. MEADE FLORIDA

BADGER AMERICA, INC.

FOR APPROVAL

STREAM Nº	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DESCRIPTION	75% BPL PHOSPHATE ROCK	41% P2O5 ACID	HP STEAM TO EACH REACTOR	HP STEAM TO GRANULATOR	GTSP SLURRY TO GRANULATOR	GRANULATOR DISCHARGE	DRYER DISCHARGE	OVERS TO MILL	ON SIZE MATERIAL TO RECYCLE	FINES	PRODUCT TO STORAGE	RECLAIM FROM SHIPPING	TOTAL RECYCLE	REACTOR OFF GASES	GRANULATOR OFF GASES
TOTAL (TPH)	18.72	34.80	0.86	-	56.15	372.44	354.27	94.40	126.01	93.80	40.00	[illegible]	[illegible]	1.90	3.71
P_2O_5 (TPH)	5.94	14.27	-	-	20.71	173.95	170.05	46.31	50.91	45.02	28.80	9.60	155.60	-	0.86
H_2O (TPH)	0.19	12.26	0.86	-	13.05	23.19	14.17	3.78	4.24	3.75	2.40	0.80	18.80	1.44	2.06
SPECIFIC GRAVITY	70 PCF	1.52	-	-	1.68	65 PCF	65 PCF	65 PCF	65 PCF	65 PCF	65 PCF	65 PCF	[illegible] PCF	-	-
TEMP. °F	100°F	130°F	340°F	340°F	220°F	172°F	210°F	200°F	195°F	190°F	190°F	140°F	172°F	160°F	160°F
PRESSURE	GRAVITY	5 PSIG	100 PSIG	100 PSIG	10 PSIG	GRAVITY	GRAVITY	GRAVITY	GRAVITY	GRAVITY	GRAVITY	GRAVITY	GRAVITY	-2" W.G.	-2" W.G.
GPM (ACFM)	-	92	1720 LBS/HR	200 LBS/HR	134	-	-	-	-	-	-	-	-	(2,000)	(14,000)

STREAM Nº	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
DESCRIPTION	COMBINE R/G OFF GASES TO SCRUBBER	R/G GASES TO STACK	DUST SYSTEM GASES TO DRYER INLET	DRYER FURNACE OUT TO DRYER	DRYER OFF GASES TO SCRUBBER	DRYER GASES TO STACK	#6 FUEL OIL TO DRYER FURNACE	TOTAL INCOMING POND WATER	POND WATER TO SCRUBBER SPRAYS	POND WATER TO VENTURIS	POND WATER MAKE-UP TO RECLAIM SYSTEM	RECLAIM WATER TO GRANULATOR SPRAY DUCT	RECLAIM WATER TO DRYER SPRAY DUCT	RECOVERED SOLUTION TO REACTOR	TOTAL DUST RETURN FROM CYCLONES
TOTAL (TPH)	5.24	-	0.12	-	18.17	-	-	1022	510	5.0	1.79	28.15	140.75	2.81	7.56
P_2O_5 (TPH)	0.16	-	-	-	8.90	-	-	6	3	3	0.01	5.01	25.04	0.50	3.65
H_2O (TPH)	4.10	-	-	-	9.02	-	-	992	495	49.5	1.74	17.63	89.16	1.78	0.51
SPECIFIC GRAVITY	-	-	-	-	-	-	0.96	1.02	1.02	1.02	1.02	1.25	1.25	1.25	65 PCF
TEMP. °F	145°F	105°F	180°F	1160°F	220°F	105°F	125°F	95°F	95°F	95°F	95°F	125°F	125°F	125°F	150°F
PRESSURE	-5" W.G.	-30" W.G.	-10" W.G.	-½" W.G.	-2" W.G.	-30" W.G.	50 PSIG	10 PSIG	50 PSIG	10 PSIG	5 PSIG	50 PSIG	50 PSIG	10 PSIG	GRAVITY
GPM (ACFM)	(25,900)	(23,000)	(6,000)	(31,000)	(65,000)	(67,000)	400 GPH	4000	2000	2000	7	90	450	9	—

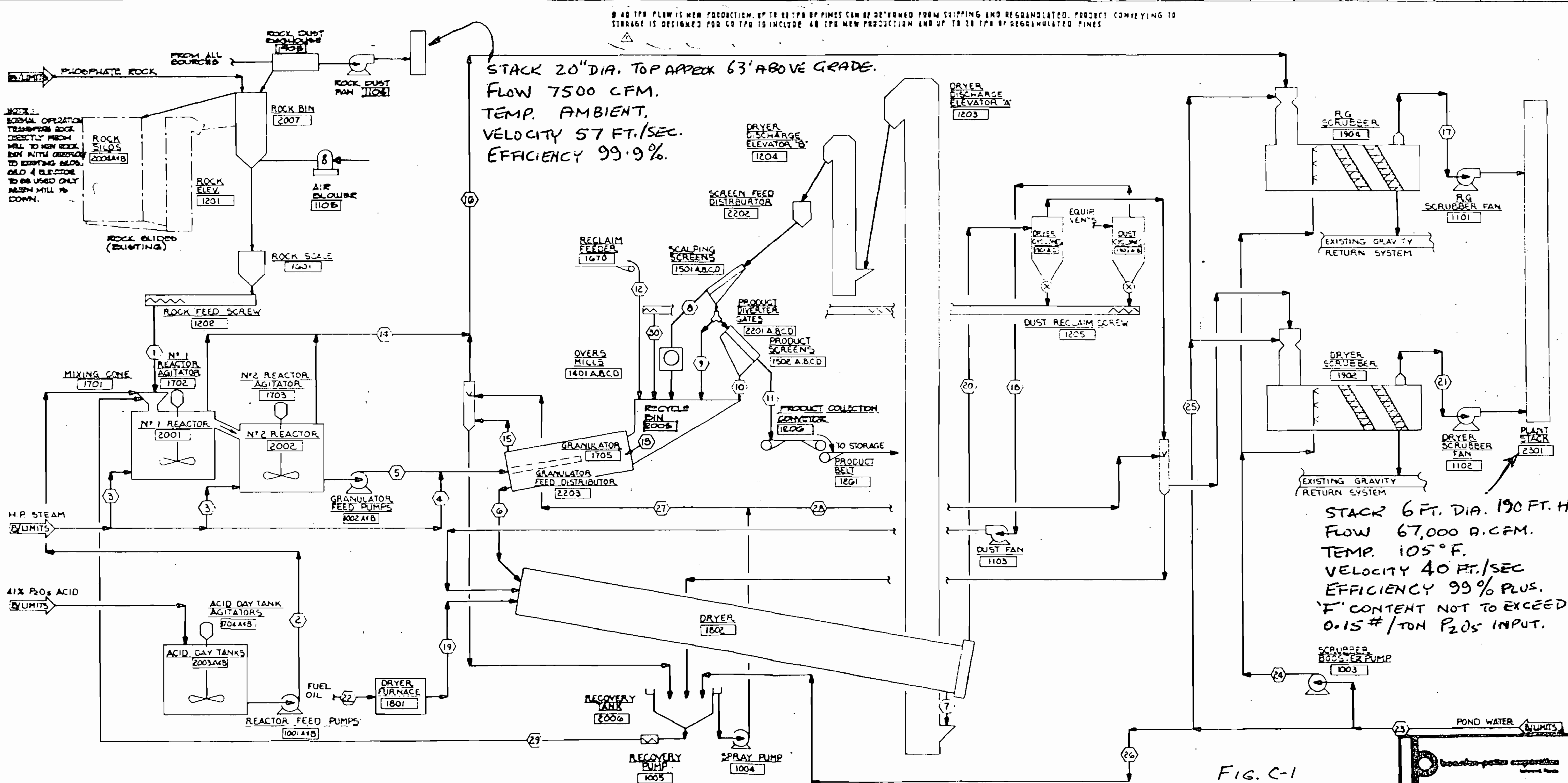


FIG. C-1

USS Agri-Chemicals
Division of United States Steel Corporation

GTSP EXPANSION STUDY
GTSP PROCESS PLANT
PROCESS FLOW SHEET

NO. 357Q-P-001

REVISIONS — DRAWING HISTORY — REQUISITIONS