DER

MAY 27 1982

BAQM

OCCIDENTAL CHEMICAL COMPANY, FLORIDA OPERATIONS, Post Office Box 300, White Springs, Florida 32096, Telephone 904 397-8101

May 21, 1982

Mr. Steve Smallwood
Florida Department of
Environmental Regulation
Northwest District Branch Office
TwinTower Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

Subject: Air Construction Permit Applications -
Sulfuric Acid Plants and Auxiliary Boiler

Reference: PSD-FL-082

Dear Mr. Smallwood:

Attached are four (4) copies each of construction permit applications for both existing NSPS Sulfuric Acid plants at Occidental's White Springs, Florida, Swift Creek Chemical Complex. Also included are four copies of an application for an auxiliary boiler.

The intent of the applications is to increase the production rate of the two Sulfuric Acid plants ("E" & "F") from 2000 to 2500 STPD of 100 percent sulfuric acid. The application for the auxiliary boiler requests an increase in fuel oil sulfur from 0.8% to 1.0%. The applications are submitted in conjunction with a request for PSD approval (PSD-FL-082) which is under review by your staff.

Should you have any questions, please contact me at (904) 397-8269 or Dr. J. Koogler at (904) 377-5822.

Sincerely,

OCCIDENTAL CHEMICAL COMPANY

W. W. Atwood

cc: Mr. J. Cole, Jacksonville FDER (w/enc.)
Mr. M. P. McArthur, Occidental Chemical Company, General Manager
Dr. J. Koogler, Sholtes & Koogler Environmental Consultants

OCCIDENTAL CHEMICAL COMPANY, FLORIDA OPERATIONS, Post Office Box 300, White Springs, Florida 32096, Telephone 904 397-8101

May 21, 1982

Mr. Steve Smallwood
Florida Department of
Environmental Regulation
Northwest District Branch Office
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

DER
MAY 27 1982
BAQM

Subject: Air Construction Permit Applications -
Auxiliary Boilers and No. 2 DAP Plant

Reference: PSD-FL-083

Dear Mr. Smallwood:

Attached are four (4) copies each of construction permit applications for the existing DAP Plant No. 2 and three (3) auxiliary boilers ("B", "C" & "D") at Occidental's White Springs, Florida, Suwannee River Chemical Complex.

The applications request an increase in fuel oil sulfur from 0.8% to 1.0% for the boilers and from 0.8% to 1.5% for the DAP plant. The applications are submitted in conjunction with a request for PSD Approval (PSD-FL-083) which is under review by your staff.

Should you have any questions, please contact me at (904) 397-8269 or Dr. John Koogler at (904) 377-5822.

Sincerely,

OCCIDENTAL CHEMICAL COMPANY

W. W. Atwood

WWA:sc

cc: Mr. J. Cole, Jacksonville FDER, (w/enc.)
Mr. M. P. McArthur, Occidental Chemical Company, General Manager
Dr. J. Koogler, Sholtes & Koogler, Environmental Consultants

AC 24-56209

May 7, 1982

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

DER

MAY 27 1982

BAQM

## APPLICATION TO ~~OPERATE~~/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Sulfuric Acid Production [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [ ] Operation [X] Modification

COMPANY NAME: Occidental Chemical Company COUNTY: Hamilton

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 "E"

SOURCE LOCATION: Street U.S. 41 City White Springs

UTM: East 320.860 km North 3,369.750 km

Latitude ____ ° ____ ' ____ "N Longitude ____ ° ____ ' ____ "W

APPLICANT NAME AND TITLE: Occidental Chemical Company

APPLICANT ADDRESS: Post Office 300, White Springs, FL 32096

### SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Occidental Chemical Company

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: M P McArthur

M.P. McArthur, V.P. & General Manager
Name and Title (Please Type)

Date: 5/24/82 Telephone No. (904) 397-8101

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: John B. Koogler

John B. Koogler, Ph.D., P.E.
Name (Please Type)

(Affix Seal)

SHOLTES & KOOGLER ENVIRONMENTAL CONSULTANTS
Company Name (Please Type)

1213 NW 6th Street, Gainesville, FL 32601
Mailing Address (Please Type)

Florida Registration No. 12925 Date: 5/14/82 Telephone No. (904) 377-5822

[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.

Sulfur burning sulfuric acid plant is vented through an $SO_2$ - $SO_3$ converter, a double absorption tower and demister for product recovery and sulfur dioxide and sulfuric acid mist emission control. Plant is currently permitted to produce 2000 TPD of 100 percent $H_2SO_4$; proposed production rate is 2500 TPD. (CONTINUED ON PAGE 2a)

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction July 1982 Completion of Construction July 1987

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.)

There will be no physical modification to the existing absorption tower or mist eliminators.

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Unit was previously permitted under AC-24-2715 issued 2/28/78 and expiring 12/31/80; and AO-24-34847 issued 5/28/81 and expiring 12/30/85.

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: permitted for 8760 hours/year operation

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. | Yes |
| 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 II: A (Continued)

To achieve the increased production rate the size of the economizer will be increased, the gas handling system will be increased and the catalyst loading will be increased. The absorption towers and mist eliminators will not be modified.

With no modification the plant can operate at a rate of 2,250-2,300 TPD. the physical modifications described will permit a production rate of 2,500 TPD. Because of present market conditions it is planned to operate the plants up to 2,250-2,300 TPD as necessary for the next 2-3 years and then make the modifications necessary to increase the capacity to 2,500 TPD. This schedule explains the July 1987 Completion of Construction Date.

## SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

(See Attachment 1)

A. Raw Materials and Chemicals Used in your Process, if applicable:

| Description | Contaminants | | Utilization Rate - lbs/hr | Relate to Flow Diagram |
|---|---|---|---|---|
| | Type | % Wt | | |
| Sulfur | Ash | App. 0.005% | 68,232 | A (Attachment 3) |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 68,232

2. Product Weight (lbs/hr): 212,585 (98% acid); 208,333 (100% acid)

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 | |
| Sulfur Dioxide | 416.7 | 1825 | NSPS | 416.7 | 416.7 | 1825 | B |
| $H_2SO_4$ Mist | 15.6 | 68.3 | NSPS | 15.6 | 15.6 | 683 | B |
| $NO_x$ | 14.8 | 64.8 | BACT | 14.8 | 14.8 | 64.8 | B |
| CO | 0.1 | 0.5 | BACT | 0.1 | 0.1 | 0.5 | B |
| | | | | | | | |

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]) |
|---|---|---|---|---|
| Double Absorption | $SO_2$ | 99.7% | --- | Design & Test |
| Contact $H_2SO_4$Monsanto | | | | |
| Plant | | | | |
| Brink Demister in | $H_2SO_4$ | 90 + % | | Vendor |
| exist of absorber | | | | Guarantee |
| | | | | |

[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 NOT APPLICABLE

| 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.

None

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 200 ft. Stack Diameter: 9.5 ft.

Gas Flow Rate: 129,700 ACFM Gas Exit Temperature: 181 °F.

Water Vapor Content: 0 % Velocity: 30.5 FPS

## SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

| Type of Waste | Type 0 (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 ($^oF$) |
|---|---|---|---|---|---|
| | | | 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. ATTACHMENT 1
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. ATTACHMENT 2
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). ATTACHMENT 2
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.). N/A
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). ATTACHMENT 1
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. ATTACHMENT 3
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). ATTACHMENT 4
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. ATTACHMENT 5

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

(Also see PSD-FL-082)

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 |
|---|---|
| $SO_2$ | 4.0 lb $SO_2$/ton 100% acid |
| $H_2SO_4$ Mist | 0.15 lb mist/ton 100% acid |
| | |
| | |

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 |
|---|---|
| $SO_2$ | 4.0 lb $SO_2$/ton 100% acid |
| $H_2SO_4$ Mist | 0.15 lb mist/ton 100% acid |
| | |
| | |

D. Describe the existing control and treatment technology (if any). - Double absorption towers for $SO_2$ absorption and Brinks HV mist eliminators for acid mist control

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 |
|---|---|
| $SO_2$ | 4.0 lb $SO_2$/ton 100% acid |
| $H_2SO_4$ | 0.15 lb mist/ton 100% acid |
| | |
| | |

*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:

2. Efficiency*:

3. Capital Cost:

4. Life:

5. Operating Cost:

6. Energy:

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

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:

See PSD-FL-082

*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 PSD-FL-082

A. Company Monitored Data

1. _____ 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. _____ Year(s) of data from ____/____/____ (month day year) to ____/____/____ (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 1

## PRODUCTION RATE CALCULATION

PRODUCT: Sulfuric Acid as 98% $H_2SO_4$

PRODUCT RATE: 2500 Short tons per day (STPD) of 100% $H_2SO_4$ as 98% $H_2SO_4$

-or-

212,585 lbs/hr (2500 ÷ 0.98 x 2,000 ÷ 24) of 98% Sulfuric Acid

PROCESS LOSSES: 0.005% equivalent to ash content of sulfur (consider negligible). Recovery is 99.7% equivalent to emission of 4# $SO_2$ per ton of 100% $H_2SO_4$ produced.

PROCESS INPUT:

SULFUR: 2500 STPD of 100% $H_2SO_4$ equivalent to 816 STPD of Sulfur (2000 x 32/98) which at an efficiency of 99.7% requires 819 STPD of Sulfur (816 ÷ 0.997).

-or-

68,232 lbs/hr (819 x 2,000 ÷ 24)

SULFUR RECOVERY EFFICIENCY:

Input - 68,232 lb/hour
Stack - 416.7 lb/hr of $SO_2$ or 208.4 lb/hr or S

Efficiency = (68,232 - 208.4)/68,232 x 100

= 99.7%

ATTACHMENT 2

## POLLUTANT EMISSION RATE CALCULATIONS

OPERATING FACTOR = 8,760 hrs/yr

PRODUCTION RATE = 2,500 TPD 100% $H_2SO_4$

SULFUR DIOXIDE @ 4.0 lb/ton acid

Hourly = 4.0 x 2,500/24
= 416.7 lb/hr

Annual = 416.7 x 8,760/2000
= 1,825 TPY

MIST @ 0.15 lb/ton acid

Hourly = 0.15 x 2,500/24
= 15.6 lb/hr

Annual = 15.6 x 8,760/2000
= 68.3 TPY

$NO_x$ @ $2.1 \times 10^{-6}$ lb/SCF (test results on an existing sulfuric acid plant)

Typical Stack Gas Characteristics

$SO_2$ - 230 ppm
$O_2$ - 7%

GAS FLOW RATE

= $11,800/[0.263 - 0.0126(O_2\%)]$

= $11,800/[0.263 - 0.0126(7)]$

= 67,500 SCF/ton of acid

EMISSION RATE

Hourly = $2,500/24 \times 67,500 \times 2.1 \times 10^{-6}$
= 14.8 lb/hr

Annual = 14.8 x 8,760/2000
= 64.8 TPY

CO

Sulfur consumption = 0.335 tons/ton Acid including losses.

Carbon content of sulfur ∿ 0.25% (assume to be "petroleum")

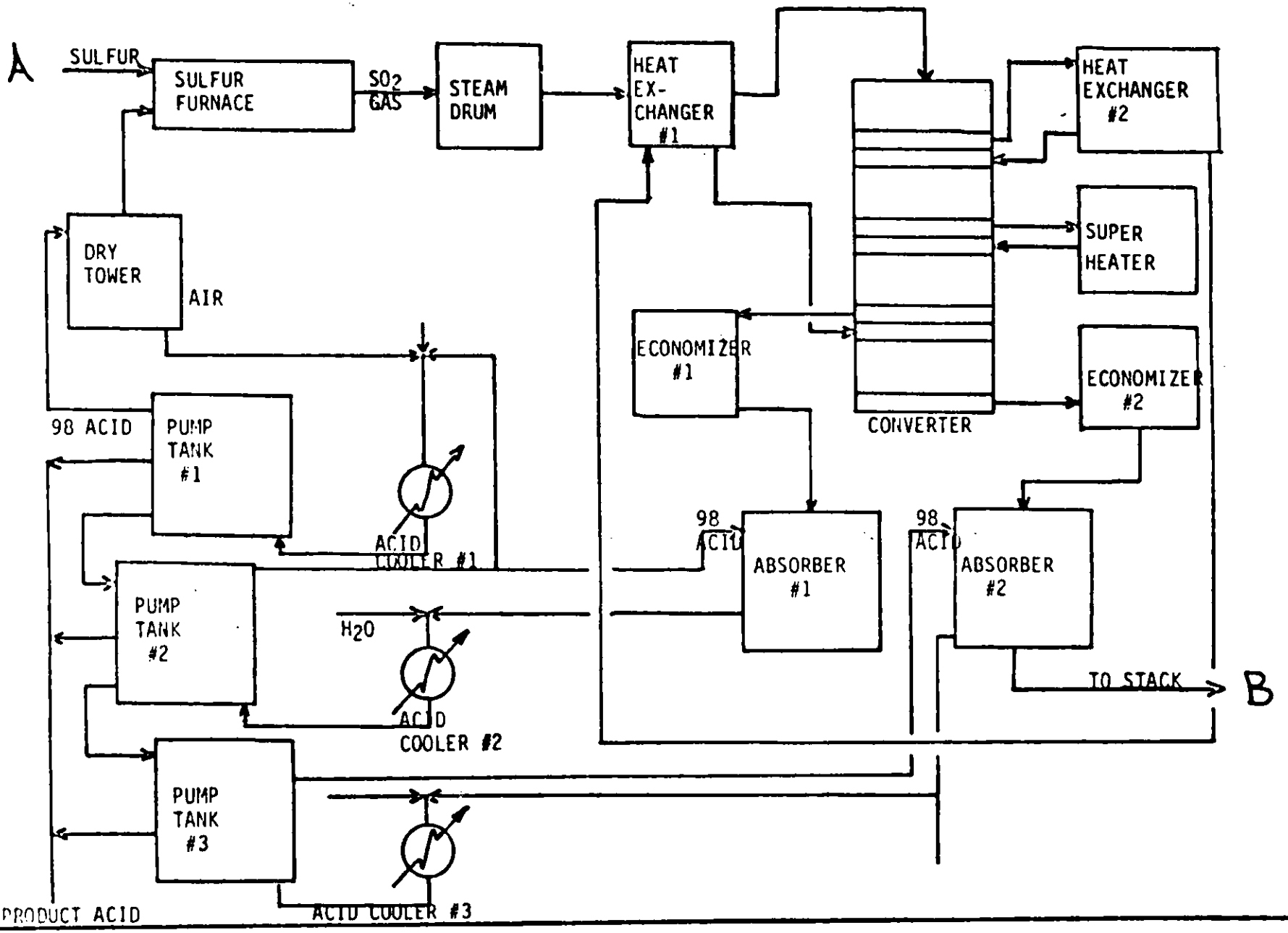
"Petroleum" content of Sulfur

= 2,500/4 x 0.335 x 0.0025
x 2000 lb/ton
= 174.5 lb/hr
x 1/8 lb/gal
= 21.8 equivalent gal/hr

EMISSION RATE @ 5 lb CO/1000 gal

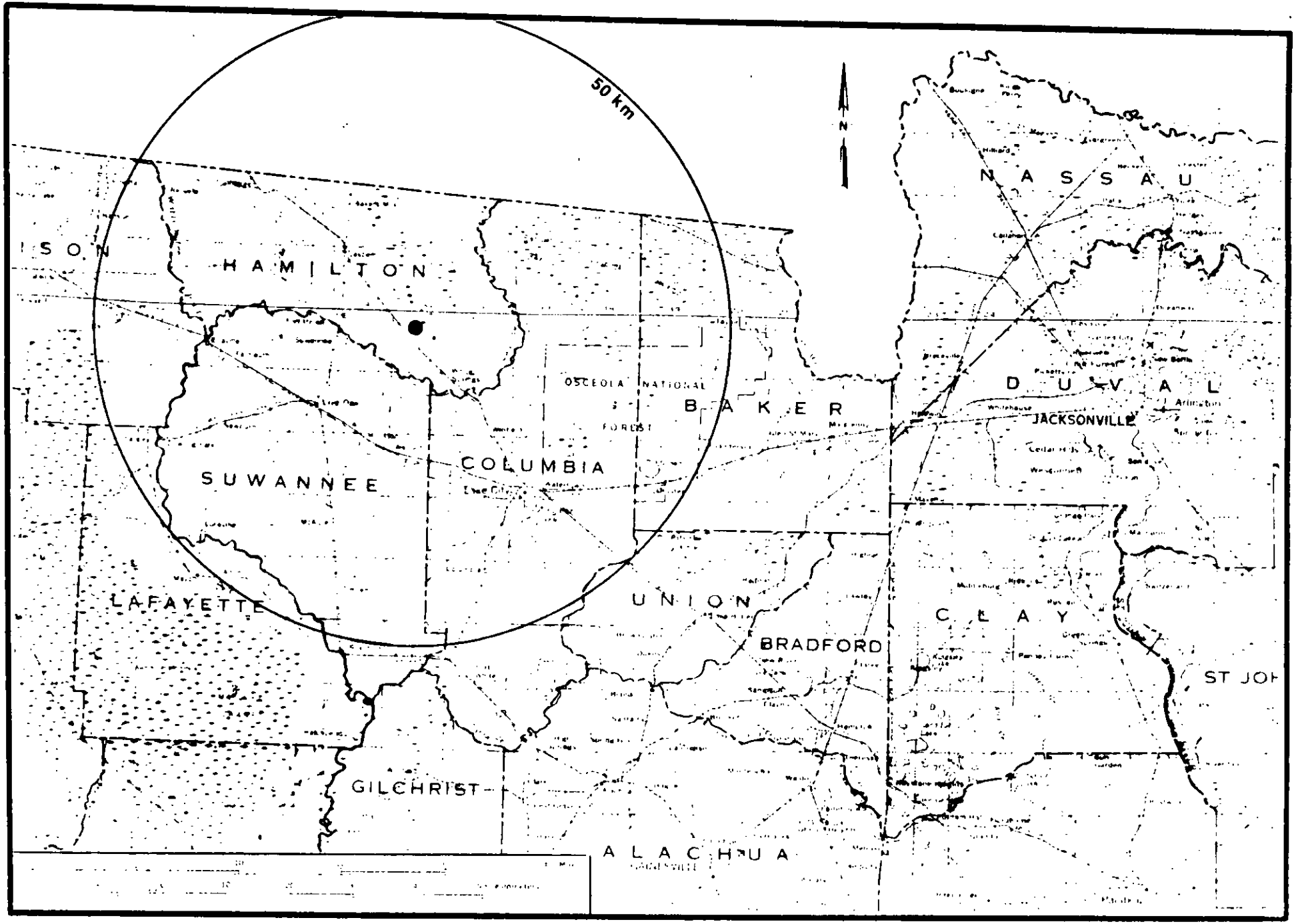
Hourly = 21.8/1000 x 5
= 0.11 lb/hr

Annual = 0.11 8,760/2000
= 0.5 TPY



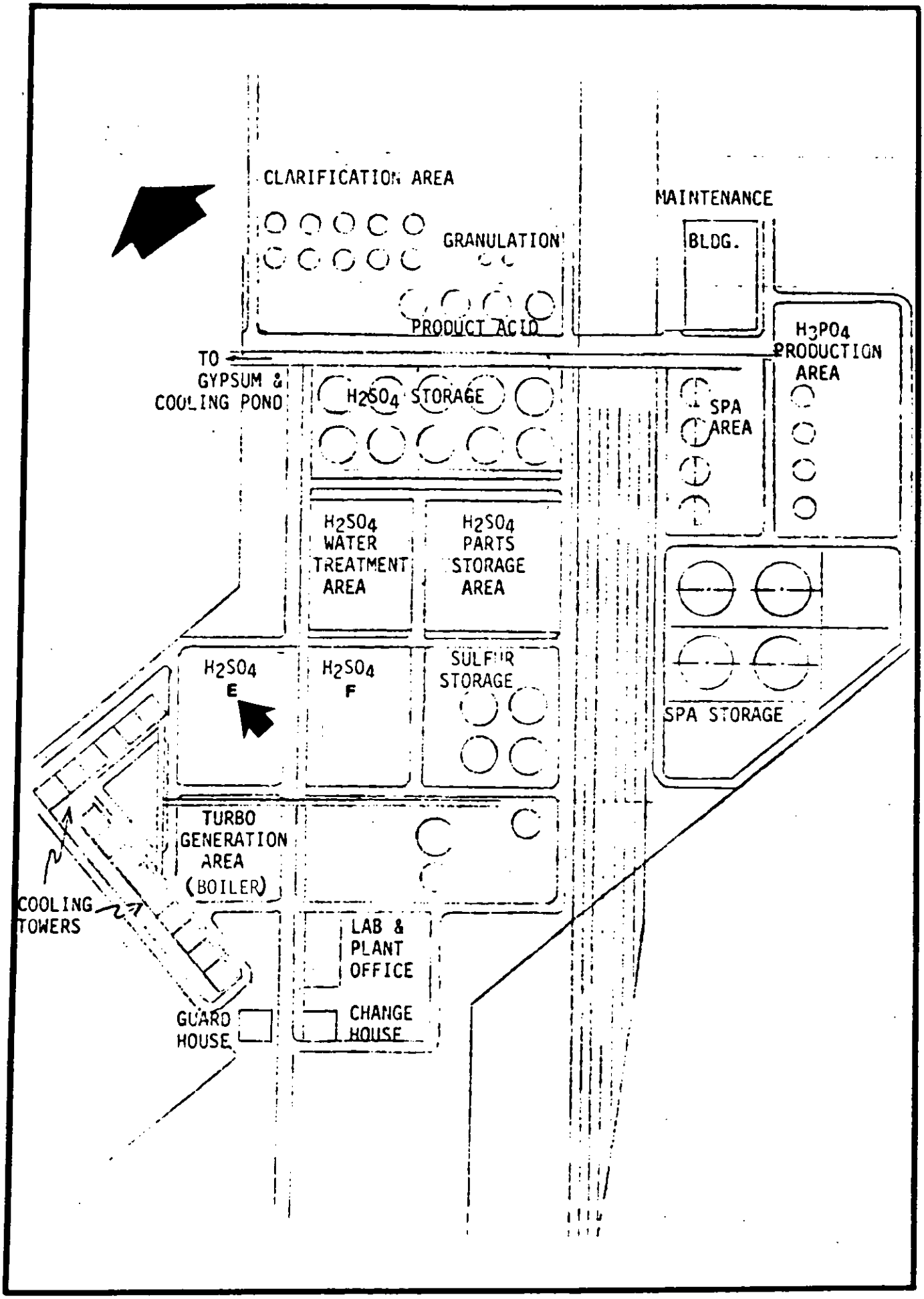

DOUBLE CONTACT/DOUBLE ABSORPTION - SULFURIC ACID MANUFACTURE

ATTACHMENT 3




ATTACHMENT 4

ATTACHMENT 5



AC24-56210

May 6, 1982

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

DER

MAY 27 1982

BAQM

## APPLICATION TO ~~OPERATE~~/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Auxiliary Boiler [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [ ] Operation [X] Modification

COMPANY NAME: Occidental Chemical Company COUNTY: Hamilton

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 "E"

SOURCE LOCATION: Street US 41 City White Springs

UTM: East 321.300 km North 3,369.830 km

Latitude ____ ° ____ ' ____ "N Longitude ____ ° ____ ' ____ "W

APPLICANT NAME AND TITLE: Occidental Chemical Company

APPLICANT ADDRESS: Post Office Box 300, White Springs, Florida 32096

### SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Occidental Chemical Company

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: M. P. McArthur

M. P. McArthur, V.P. & General Manager
Name and Title (Please Type)

Date: 5/24/82 Telephone No. (904) 397-8101

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: John B. Koogler

John B. Koogler, P.E.
Name (Please Type)

(Affix Seal)

SHOLTES & KOOGLER ENVIRONMENTAL CONSULTANTS
Company Name (Please Type)

1213 NW 6th Street, Gainesville, FL 32601
Mailing Address (Please Type)

Florida Registration No. 12925 Date: 5/14/82 Telephone No. (904) 377-5822

[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.

Oil fired auxiliary steam boiler will be used to augment steam produced from the sulfuric acid plants to provide operating flexibility in the phosphoric acid production and evaporation process. It is proposed to increase the sulfur content of the fuel fired to the boiler from 0.8% to 1.0%.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction July, 1982 Completion of Construction July, 1982

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.)

NOT APPLICABLE - No add on pollution control equipment.

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Unit was previously permitted under FDER No. AC-24-2717 issued 2/28/78 and expiring on 12/31/80 and AO-24-34846 issued 5/7/81 and expiring 9/30/85.

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: Annual operating factor is 97.5%.

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. YES
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: NOT APPLICABLE

| Description | Contaminants | | Utilization Rate - lbs/hr | Relate to Flow Diagram |
|---|---|---|---|---|
| | Type | % Wt | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): NOT APPLICABLE

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 | |
| Sulfur Dioxide | 170.7 | 729 | BACT | 170.7 | 170.7 | 729 | 1 (Att.3) |
| Part. Matter | 13.9 | 59 | BACT | 13.9 | 13.9 | 59 | |
| $NO_X$ | 64.0 | 273 | BACT | 64.0 | 64.0 | 273 | |
| CO | 5.3 | 23 | BACT | 5.3 | 5.3 | 23 | |
| HC | 1.1 | 5 | BACT | 1.1 | 1.1 | 5 | |

D. Control Devices: (See Section V, Item 4) NOT APPLICABLE

| Name and Type (Model & Serial No.) | Contaminant | Efficiency | Range of Particles[5] Size Collected (in microns) | Basis for Efficiency (Sec. V, It[5] |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

[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 | |
| Oil | 6.0 | 25 | 156 |
| | | | |
| | | | |
| | | | |

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis: (Oil)

Percent Sulfur: 1.0 Percent Ash: 0.09

Density: 8 lbs/gal Typical Percent Nitrogen: Nil

Heat Capacity: 18,300 BTU/lb 146,400 BTU/gal

Other Fuel Contaminants (which may cause air pollution): None

F. If applicable, indicate the percent of fuel used for space heating. Annual Average N/A Maximum _____

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

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 50 ft. Stack Diameter: 5.25 ft.

Gas Flow Rate: 67,000 ACFM Gas Exit Temperature: 311 °F.

Water Vapor Content: 9 % Velocity: 51.8 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.
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). ATTACHMENT 2
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. ATTACHMENT 3
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). ATTACHMENT 4
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. ATTACHMENT 5

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

(Also See PSD-FL-082)

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 |
|---|---|
| Sulfur Dioxide | 1.1 lb/$10^6$BTU input; use of 1.0% sulfur fuel oil. |
| | |
| | |
| | |

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:

Presently No. 6 fuel oil with an 0.8% sulfur content is used to control sulfur dioxide emissions.

| Contaminant | Rate or Concentration |
|---|---|
| Sulfur Dioxide | 0.9 lb/$10^6$BTU input; 0.8% sulfur fuel oil |
| | |
| | |
| | |

*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:

2. Efficiency*:

3. Capital Cost:

4. Life:

5. Operating Cost:

6. Energy:

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

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:

SEE PSD APPLICATION PSD-FL-082.

*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 PSD-FL-082)

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 1

## FUEL USE RATES

| | |
|---|---|
| FUEL: | Oil at 0.8% Sulfur |
| PRODUCT: | 125,000 lbs/hr steam @ 1,000 BTU/lb. |
| EFFICIENCY: | 80% |
| HEAT INPUT | 156 MM BTU/hr.<br>(125,000 ÷ 0.8 x 1000) |
| FUEL INPUT: | |
| Oil: | 8538 lbs/hr (156 MM ÷ 18,300) or 25 BBLS/hr<br>(156 MM ÷ 146,000 ÷ 42) |

ATTACHMENT 2

## POLLUTANT EMISSION RATE CALCULATIONS

OPERATING FACTOR = 8,760 hrs/yr x 0.975

PRODUCTION RATE (STEAM) = 125,000 lbs/hr.

SULFUR DIOXIDE:

Hourly: = 1.0% Sulfur fuel
= 125,000 lbs steam/hr x 1000 BTU/lb steam x 1/0.8 efficiency x 1/18,300 BTU/lb 0.1 x (0.01 x 2) lbs $SO_2$/lb oil
= 170.7 lbs/hr.

Annual: = 170.7 x 8,760/2000 x 0.975
= 729 TPY.

PARTICULATE MATTER:

Hourly: = 8,538 lbs fuel/hr (from above) x 1/8 lb/gal x 1/1000 x [10(1.0) + 3]
= 13.9 lbs/hr.

Annual: = 13.9 lbs/hr x 8,760/2000 x 0.975
= 59 TPY.

$NO_X$:

Hourly: = 8,538 lbs fuel/hr x 1/8 x 1/1000 x 60 lb $NO_X$/1000 gal.
= 64.0 lbs/hr.

Annual: = 64.0 x 8,760/2,000 x 0.975
= 273 TPY.

CO:

Hourly = 8,538 x 1/8 x 1/1000 x 5 lbs CO/1000 gal.
= 5.3 lbs/hr.

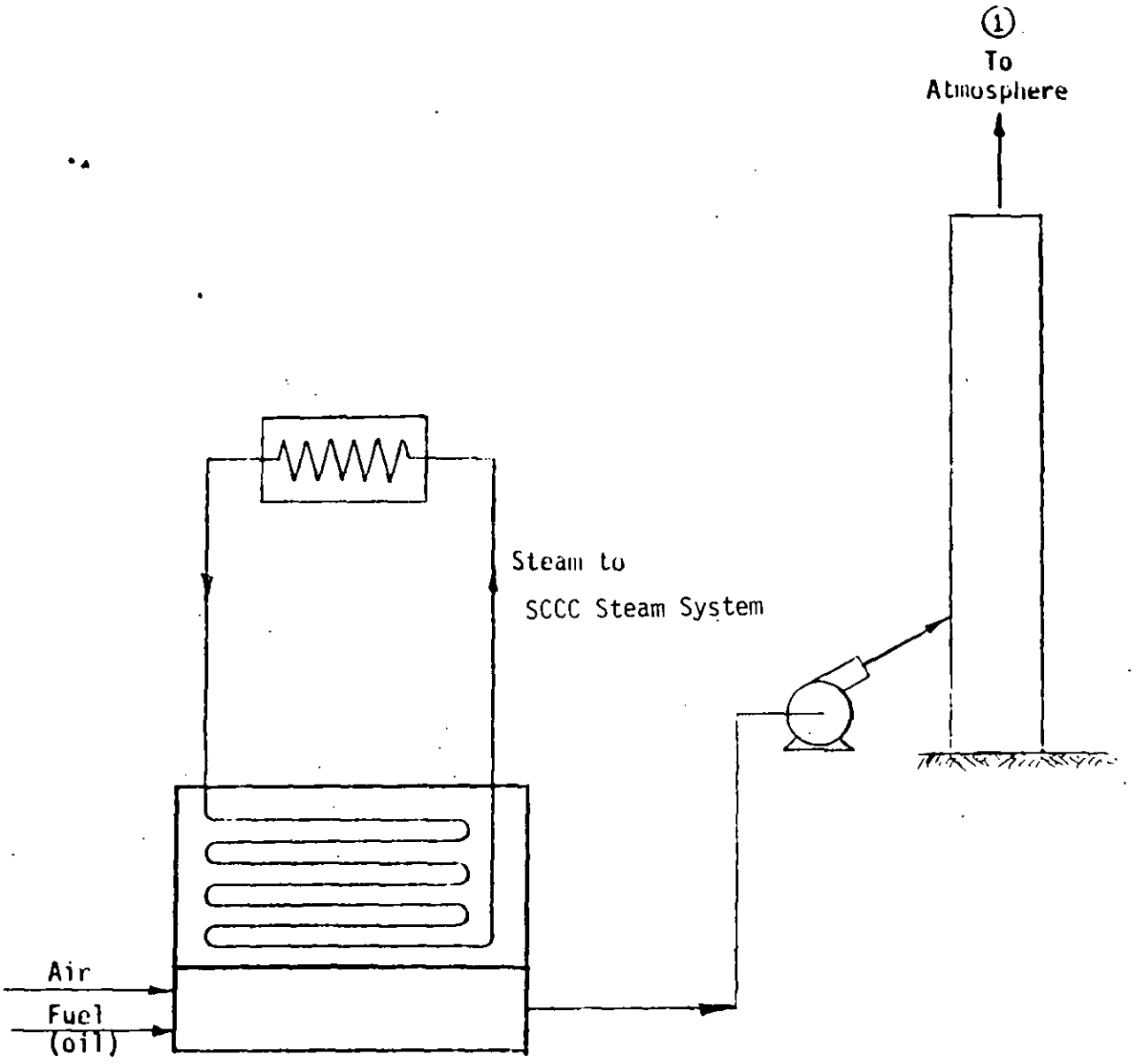
Annual: = 5.3 x 8,760/2000 x 0.975
= 23 TPY.

HYDROCARBONS:

Hourly: = 8,538 x 1/8 x 1/1000 x 1 lb/1000 gal.
= 1.1 lbs/hr.

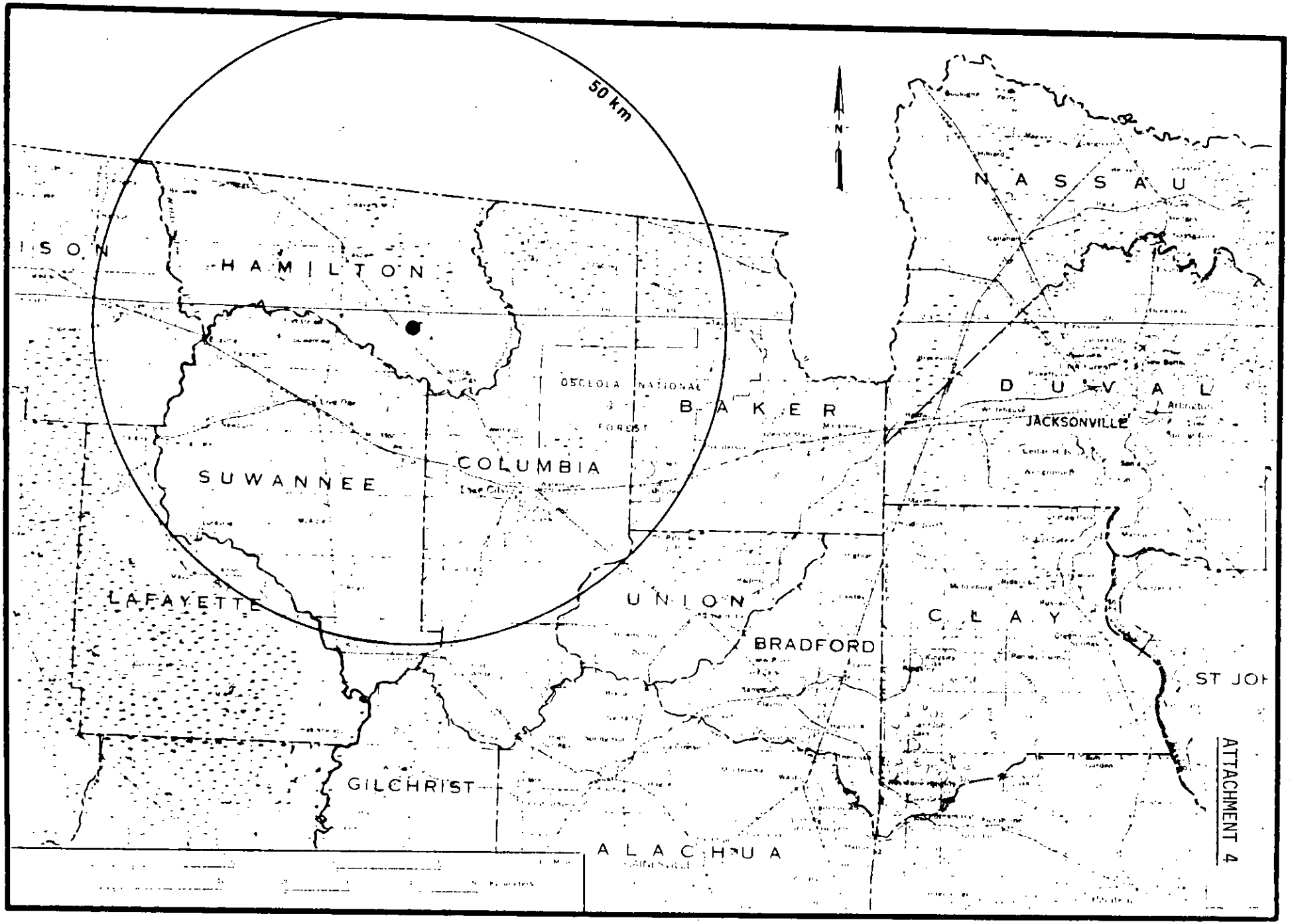
Annual: = 1.1 x 8,760/2000 x 0.975
= 5 TPY.

ATTACHMENT 3

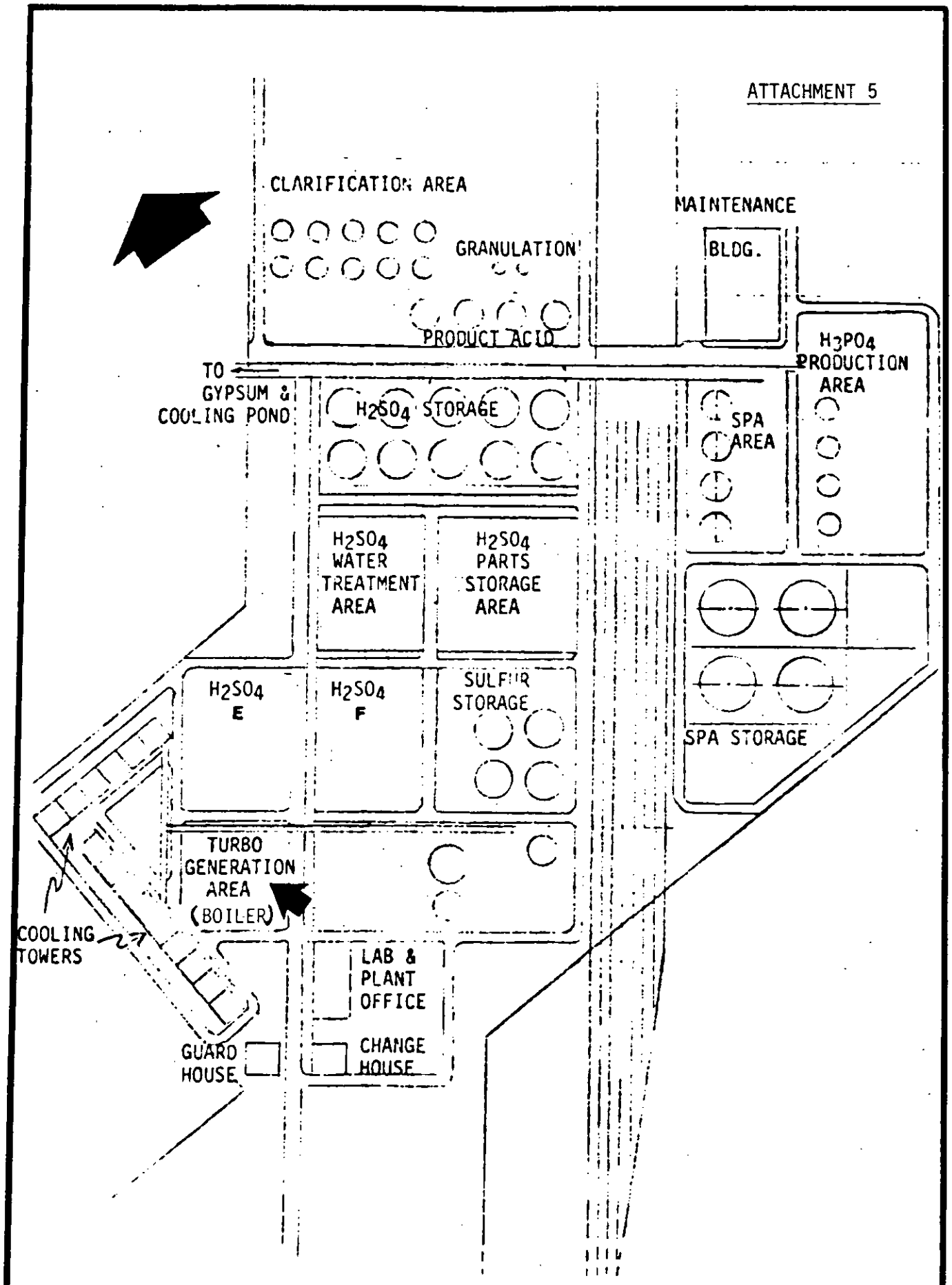



PROCESS FLOW DIAGRAM

SULFURIC ACID PLANT AUXILIARY BOILER
OXY/SPA CHEMICAL COMPLEX


50 km
N
NASSAU
HAMILTON
OSCEOLA NATIONAL FOREST
BAKER
DUVAL
JACKSONVILLE
SUWANNEE
COLUMBIA
LAFAYETTE
UNION
BRADFORD
CLAY
GILCHRIST
ALACHUA
ATTACHMENT 4

ATTACHMENT 5



AC 24-56211

May 7, 1982

DER

MAY 27 1982

BAQM

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

**APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES**

SOURCE TYPE: Sulfuric Acid Production [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [ ] Operation [X] Modification

COMPANY NAME: Occidental Chemical Company COUNTY: Hamilton

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 "F"

SOURCE LOCATION: Street U.S. 41 City White Springs

UTM: East 321.110 km North 3,369.800 km

Latitude ____ ° ____ ' ____ "N Longitude ____ ° ____ ' ____ "W

APPLICANT NAME AND TITLE: Occidental Chemical Company

APPLICANT ADDRESS: Post Office Box 300, White Springs, FL 32096

**SECTION I: STATEMENTS BY APPLICANT AND ENGINEER**

A. APPLICANT

I am the undersigned owner or authorized representative* of Occidental Chemical Company

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: M.P. McArthur

M.P. McArthur, V.P. & General Manager
Name and Title (Please Type)

Date: 5/24/82 Telephone No. (904) 397-8101

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: J.B. Koogler

John B. Koogler, Ph.D., P.E.
Name (Please Type)

(Affix Seal)

SHOLTES & KOOGLER ENVIRONMENTAL CONSULTANTS
Company Name (Please Type)

1213 NW 6th Street, Gainesville, FL 32601
Mailing Address (Please Type)

Florida Registration No. 12925 Date: 5/14/82 Telephone No. (904) 377-5822

[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.

Sulfur burning sulfuric acid plant is vented through an $SO_2$ - $SO_3$ converter, a double absorption tower and demister for product recovery and sulfur dioxide and sulfuric acid mist emission control. Plant is currently permitted to produce 2000 TPD of 100 percent $H_2SO_4$; proposed production rate is 2500 TPD. (CONTINUED ON PAGE 2a)

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction July 1982 Completion of Construction July 1987

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.)

There will be no physical modification to the existing absorption tower or mist eliminators.

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Unit was previously permitted under AC-24-2715 issued 2/28/78 and expiring 12/31/80; and AO-24-34847 issued 5/28/81 and expiring 12/30/85.

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: permitted for 8760 hours/year operation

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. | Yes |
| 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 II: A (Continued)

To achieve the increased production rate the size of the economizer will be increased, the gas handling system will be increased and the catalyst loading will be increased. The absorption towers and mist eliminators will not be modified.

With no modification the plant can operate at a rate of 2,250-2,300 TPD. the physical modifications described will permit a production rate of 2,500 TPD. Because of present market conditions it is planned to operate the plants up to 2,250-2,300 TPD as necessary for the next 2-3 years and then make the modifications necessary to increase the capacity to 2,500 TPD. This schedule explains the July 1987 Completion of Construction Date.

## SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

(See Attachment 1)

A. Raw Materials and Chemicals Used in your Process, if applicable:

| Description | Contaminants | | Utilization Rate - lbs/hr | Relate to Flow Diagram |
|---|---|---|---|---|
| | Type | % Wt | | |
| Sulfur | Ash | App. 0.005% | 68,232 | A (Attachment 3) |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 68,232

2. Product Weight (lbs/hr): 212,585 (98% acid); 208,333 (100% acid)

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 | |
| Sulfur Dioxide | 416.7 | 1825 | NSPS | 416.7 | 416.7 | 1825 | B |
| $H_2SO_4$ Mist | 15.6 | 68.3 | NSPS | 15.6 | 15.6 | 683 | B |
| $NO_x$ | 14.8 | 64.8 | BACT | 14.8 | 14.8 | 64.8 | B |
| CO | 0.1 | 0.5 | BACT | 0.1 | 0.1 | 0.5 | B |
| | | | | | | | |

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]) |
|---|---|---|---|---|
| Double Absorption | $SO_2$ | 99.7% | --- | Design & Test |
| Contact $H_2SO_4$Monsanto | | | | |
| Plant | | | | |
| Brink Demister in | $H_2SO_4$ | 90 + % | | Vendor |
| exist of absorber | | | | Guarantee |
| | | | | |

[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 NOT APPLICABLE

| 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.

None

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 200 ft. Stack Diameter: 9.5 ft.

Gas Flow Rate: 129,700 ACFM Gas Exit Temperature: 181 °F.

Water Vapor Content: 0 % Velocity: 30.5 FPS

## SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

| Type of Waste | Type 0 (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. ATTACHMENT 1
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. ATTACHMENT 2
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). ATTACHMENT 2
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.). N/A
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). ATTACHMENT 1
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. ATTACHMENT 3
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). ATTACHMENT 4
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. ATTACHMENT 5

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

(Also see PSD-FL-082)

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 |
|---|---|
| $SO_2$ | 4.0 lb $SO_2$/ton 100% acid |
| $H_2SO_4$ Mist | 0.15 lb mist/ton 100% acid |
| | |
| | |

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 |
|---|---|
| $SO_2$ | 4.0 lb $SO_2$/ton 100% acid |
| $H_2SO_4$ Mist | 0.15 lb mist/ton 100% acid |
| | |
| | |

D. Describe the existing control and treatment technology (if any). - Double absorption towers for $SO_2$ absorption and Brinks HV mist eliminators for acid mist control

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 |
|---|---|
| $SO_2$ | 4.0 lb $SO_2$/ton 100% acid |
| $H_2SO_4$ | 0.15 lb mist/ton 100% acid |
| | |
| | |

*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:

2. Efficiency*:

3. Capital Cost:

4. Life:

5. Operating Cost:

6. Energy:

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

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:

See PSD-FL-082

*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 PSD-FL-082

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 1

## PRODUCTION RATE CALCULATION

PRODUCT: Sulfuric Acid as 98% $H_2SO_4$

PRODUCT RATE: 2500 Short tons per day (STPD) of 100% $H_2SO_4$ as 98% $H_2SO_4$

-or-

212,585 lbs/hr (2500 ÷ 0.98 x 2,000 ÷ 24) of 98% Sulfuric Acid

PROCESS LOSSES: 0.005% equivalent to ash content of sulfur (consider negligible). Recovery is 99.7% equivalent to emission of 4# $SO_2$ per ton of 100% $H_2SO_4$ produced.

PROCESS INPUT:

SULFUR: 2500 STPD of 100% $H_2SO_4$ equivalent to 816 STPD of Sulfur (2000 x 32/98) which at an efficiency of 99.7% requires 819 STPD of Sulfur (816 ÷ 0.997).

-or-

68,232 lbs/hr (819 x 2,000 ÷ 24)

SULFUR RECOVERY EFFICIENCY:

Input - 68,232 lb/hour
Stack - 416.7 lb/hr of $SO_2$ or 208.4 lb/hr or S

Efficiency = (68,232 - 208.4)/68,232 x 100

= 99.7%

ATTACHMENT 2

## POLLUTANT EMISSION RATE CALCULATIONS

OPERATING FACTOR = 8,760 hrs/yr

PRODUCTION RATE = 2,500 TPD 100% $H_2SO_4$

SULFUR DIOXIDE @ 4.0 lb/ton acid

Hourly = 4.0 x 2,500/24
= 416.7 lb/hr

Annual = 416.7 x 8,760/2000
= 1,825 TPY

MIST @ 0.15 lb/ton acid

Hourly = 0.15 x 2,500/24
= 15.6 lb/hr

Annual = 15.6 x 8,760/2000
= 68.3 TPY

$NO_x$ @ $2.1 \times 10^{-6}$ lb/SCF (test results on an existing sulfuric acid plant)

Typical Stack Gas Characteristics

$SO_2$ - 230 ppm
$O_2$ - 7%

GAS FLOW RATE

= $11,800/[0.263 - 0.0126(O_2\%)]$

= $11,800/[0.263 - 0.0126(7)]$

= 67,500 SCF/ton of acid

EMISSION RATE

Hourly = $2,500/24 \times 67,500 \times 2.1 \times 10^{-6}$
= 14.8 lb/hr

Annual = 14.8 x 8,760/2000
= 64.8 TPY

CO

Sulfur consumption = 0.335 tons/ton Acid including losses.

Carbon content of sulfur ~ 0.25% (assume to be "petroleum")

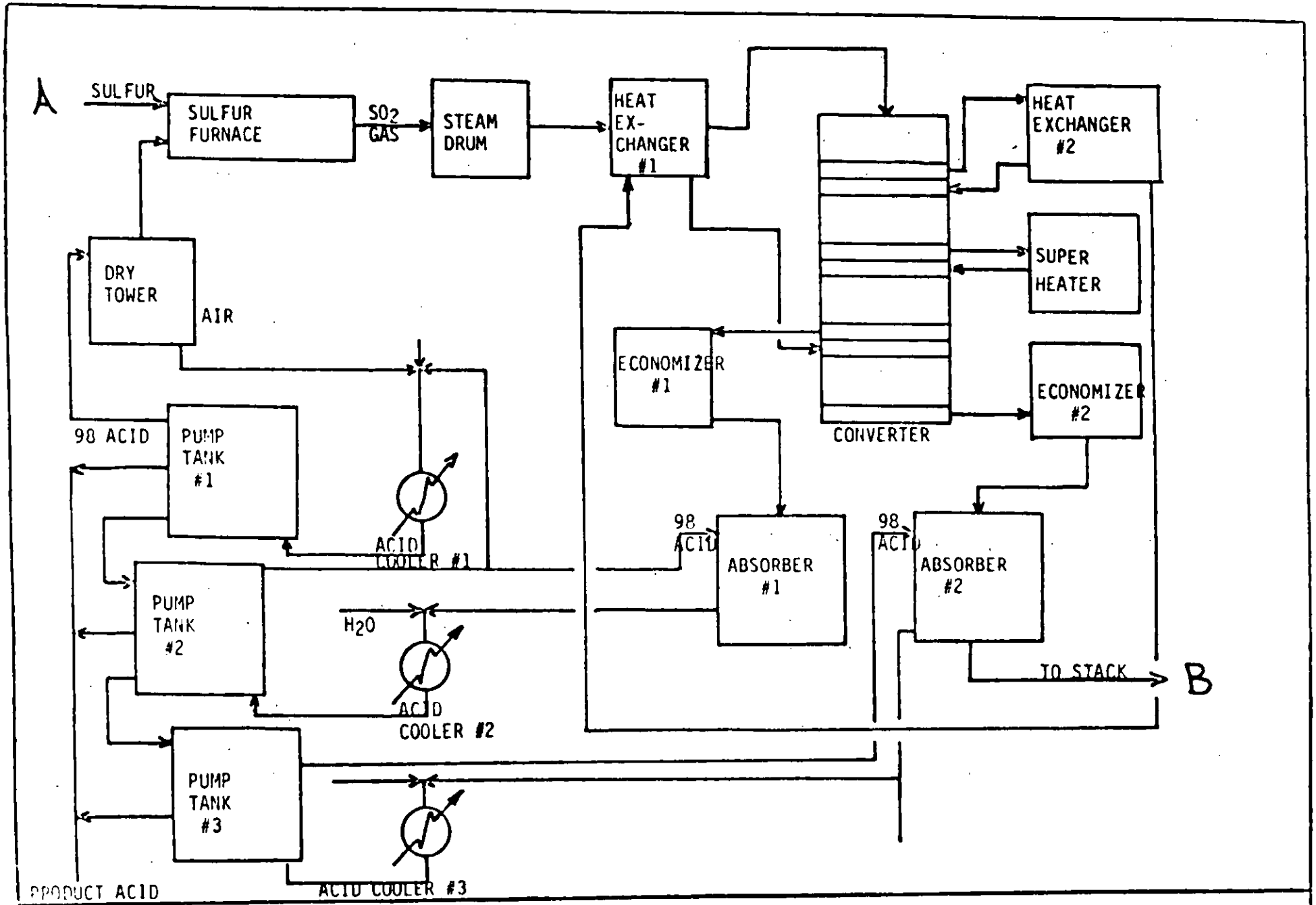
"Petroleum" content of Sulfur

= 2,500/4 x 0.335 x 0.0025
x 2000 lb/ton
= 174.5 lb/hr
x 1/8 lb/gal
= 21.8 equivalent gal/hr

EMISSION RATE @ 5 lb CO/1000 gal

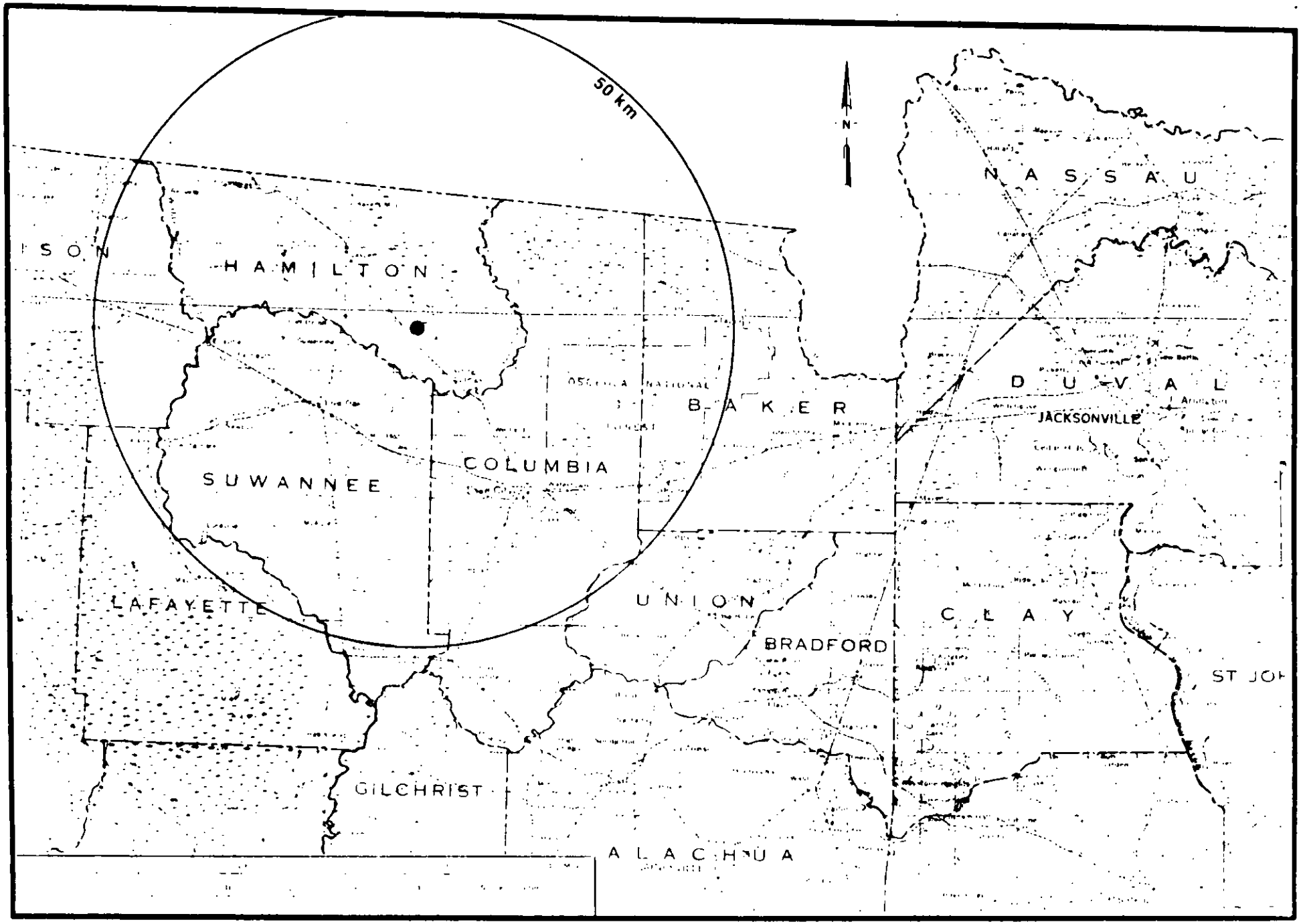
Hourly = 21.8/1000 x 5
= 0.11 lb/hr

Annual = 0.11 8,760/2000
= 0.5 TPY



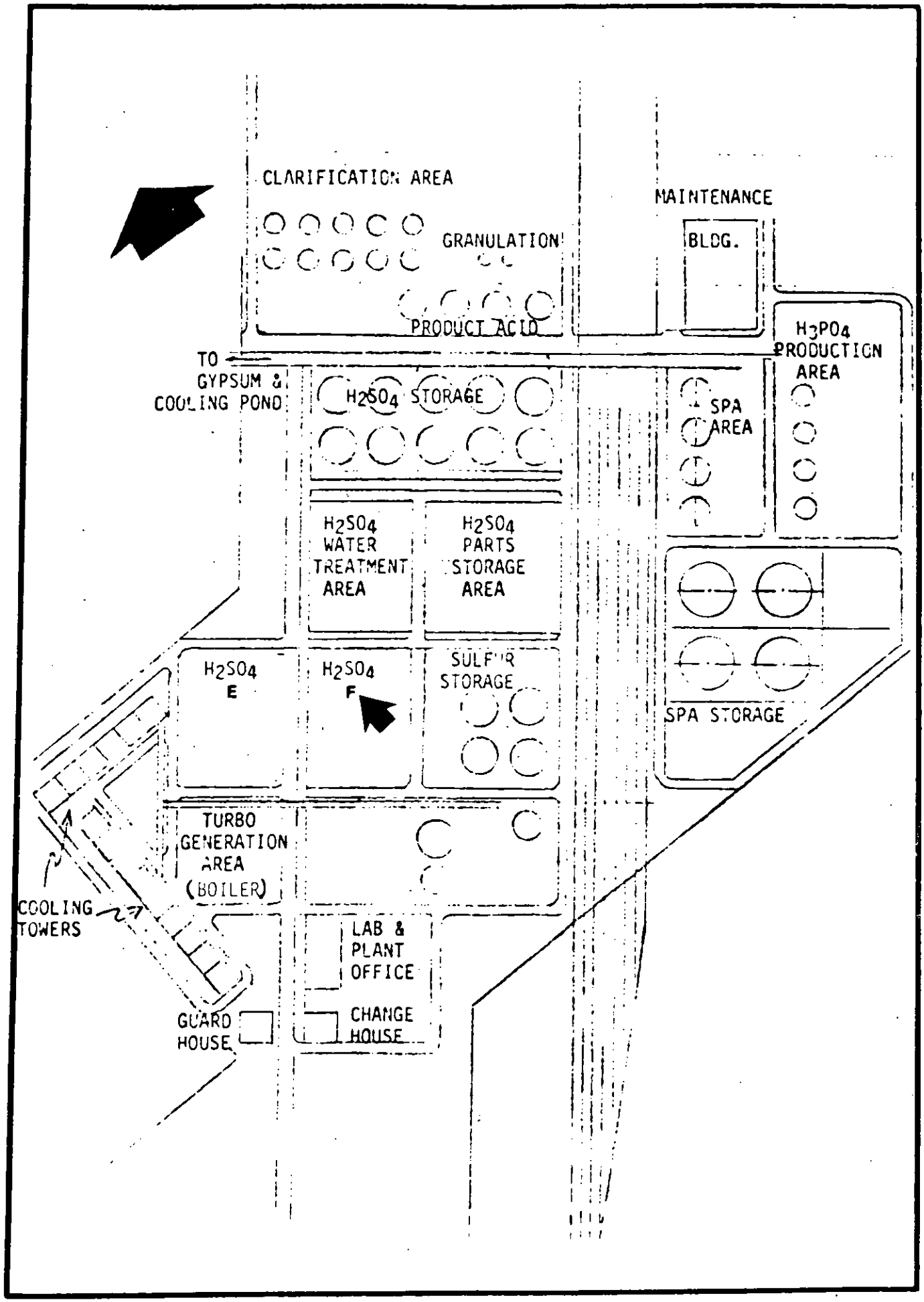

DOUBLE CONTACT/DOUBLE ABSORPTION - SULFURIC ACID MANUFACTURE

ATTACHMENT 3




ATTACHMENT 4

ATTACHMENT 5



AC 24-56212

May 10, 1982

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

DER

MAY 27 1982

BAQM

**APPLICATION TO [redacted]/CONSTRUCT AIR POLLUTION SOURCES**

SOURCE TYPE: Auxiliary Boiler [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [ ] Operation [X] Modification

COMPANY NAME: Occidental Chemical Company COUNTY: Hamilton

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 "B"

SOURCE LOCATION: Street SR 137 City White Springs

UTM: East 328.320 km North 3,368.810 km

Latitude ____ ° ____ ' ____ "N Longitude ____ ° ____ ' ____ "W

APPLICANT NAME AND TITLE: Occidental Chemical Company

APPLICANT ADDRESS: Post Office Box 300, White Springs, FL 32096

**SECTION I: STATEMENTS BY APPLICANT AND ENGINEER**

A. APPLICANT

I am the undersigned owner or authorized representative* of Occidental Chemical Company

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: M P McArthur

M. P. McArthur, V.P. & General Manager
Name and Title (Please Type)

Date: 5/24/82 Telephone No. (904) 397-8101

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: J B Koogler

John B. Koogler, P.E.
Name (Please Type)

(Affix Seal)

SHOLTES & KOOGLER, ENVIRONMENTAL CONSULTANTS
Company Name (Please Type)

1213 NW 6th Street, Gainesville, FL 32601
Mailing Address (Please Type)

Florida Registration No. 12925 Date: 5/14/82 Telephone No. (904) 377-5822

[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.

Gas fired auxiliary steam boiler with stand-by oil firing, capability will be used to augment steam produced from the sulfuric acid plants to provide operating flexibility in the phosphoric acid production and evaporation process. It is proposed to increase the sulfur content of the stand-by fuel from 0.8% to 1.0%.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction July, 1982 Completion of Construction July, 1982

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.)

No pollution control equipment

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Unit was previously permitted under FDER AO-24-2500 issued 10/28/75 and expiring 9/30/80 and AO-24-34186 issued 10/10/80 and expiring 9/30/85.

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: 8,760 hours per year

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. | YES |
| 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)

1. Total Process Input Rate (lbs/hr): NOT APPLICABLE

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 | |
| Sulfur Dioxide | 174.8 | 765.8 | BACT | 174.8 | 174.8 | 765.8 | 1 |
| Part. Matter | 14.2 | 62.3 | N/A | 14.2 | 14.2 | 62.3 | 1 |
| NOx | 65.6 | 287.2 | N/A | 65.6 | 65.6 | 287.2 | 1 |
| CO | 5.5 | 23.9 | N/A | 5.5 | 5.5 | 23.9 | 1 |
| Hydrocarbons | 1.1 | 4.8 | N/A | 1.1 | 1.1 | 4.8 | 1 |

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] |
|---|---|---|---|---|
| | | | | |
| NOT APPLICABLE | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

[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 | |
| Oil | 6.5 | 26.0 | 160 |
| Gas | 0.04 | 0.160 | 160 |
| | | | |
| | | | |

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis: (Oil)

Percent Sulfur: 1.0 Percent Ash: 0.09

Density: 8 lbs/gal Typical Percent Nitrogen: Nil

Heat Capacity: 18,300 BTU/lb 146,400 BTU/gal

Other Fuel Contaminants (which may cause air pollution): NONE

F. If applicable, indicate the percent of fuel used for space heating. Annual Average N/A Maximum

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

NONE

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 35 ft. Stack Diameter: 4.8 ft.

Gas Flow Rate: 34,000 ACFM Gas Exit Temperature: 380 °F.

Water Vapor Content: 9 % Velocity: 31 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. ATTACHMENT 1.

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. ATTACHMENT 1

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). ATTACHMENT 1

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. ATTACHMENT 2

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). Attachment 3

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. ATTACHMENT 4

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

(Also See PSD-FL-083)

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 |
|---|---|
| $SO_2$ | 1.1 lb/$10^6$ Btu input (1% Sulfur Oil) |
| | |
| | |
| | |

D. Describe the existing control and treatment technology (if any). Presently No. 6 fuel oil with 0.8% sulfur is used to control sulfur dioxide emissions.

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 |
|---|---|
| $SO_2$ | 0.9 lb/$10^6$ Btu (0.8% Sulfur Oil) |
| | |
| | |
| | |

*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:

2. Efficiency*:

3. Capital Cost:

4. Life:

5. Operating Cost:

6. Energy:

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

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:

See PSD-FL-083

*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 PSD-FL-083)

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 or 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 1

FUEL: Gas or oil at 1.0% S

HEAT INPUT: 160.0 MM BTU/hr

FUEL INPUT:

Oil: 8743 lbs/hr (160MM ÷ 18,300) or 26.0 BBLS/hr
(160 MM ÷ 146,000 ÷ 42) or 1093 gal/hr

Gas: 0.160 MM CF/hr (160 ÷ 1000) (NOTE: "Average" usage @ 25% of maximum)

OPERATING FACTOR: 8760 hours/year

EMISSIONS:

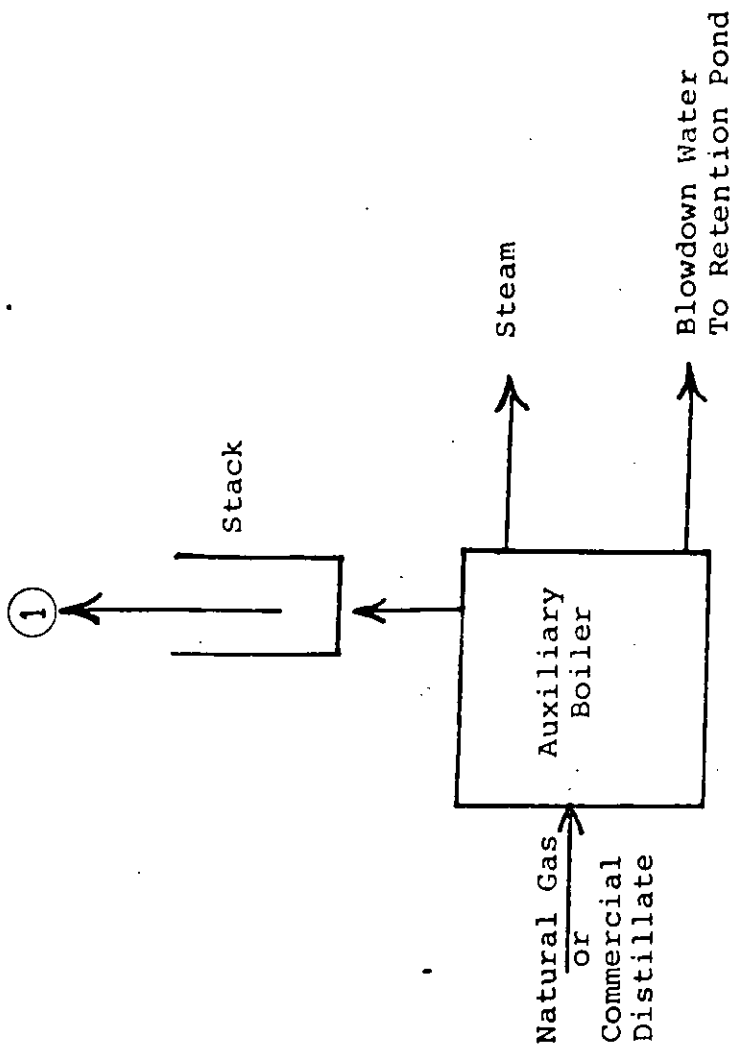
$SO_2$ = (8743 lb/hr) x (0.01 x 2 lb $SO_2$/lb fuel)
= 174.8 lb/hr
= 765.8 ton/yr

Part. Matter = (1093 gal/hr) x ((10 x 1.0) + 3)/1000 lb PM/gal
= 14.2 lb/hr
= 62.3 ton/yr

$NO_x$ = (1093 gal/hr) x (60/1000 lb $NO_x$/gal)
= 65.6 lb/hr
= 287.2 ton/yr

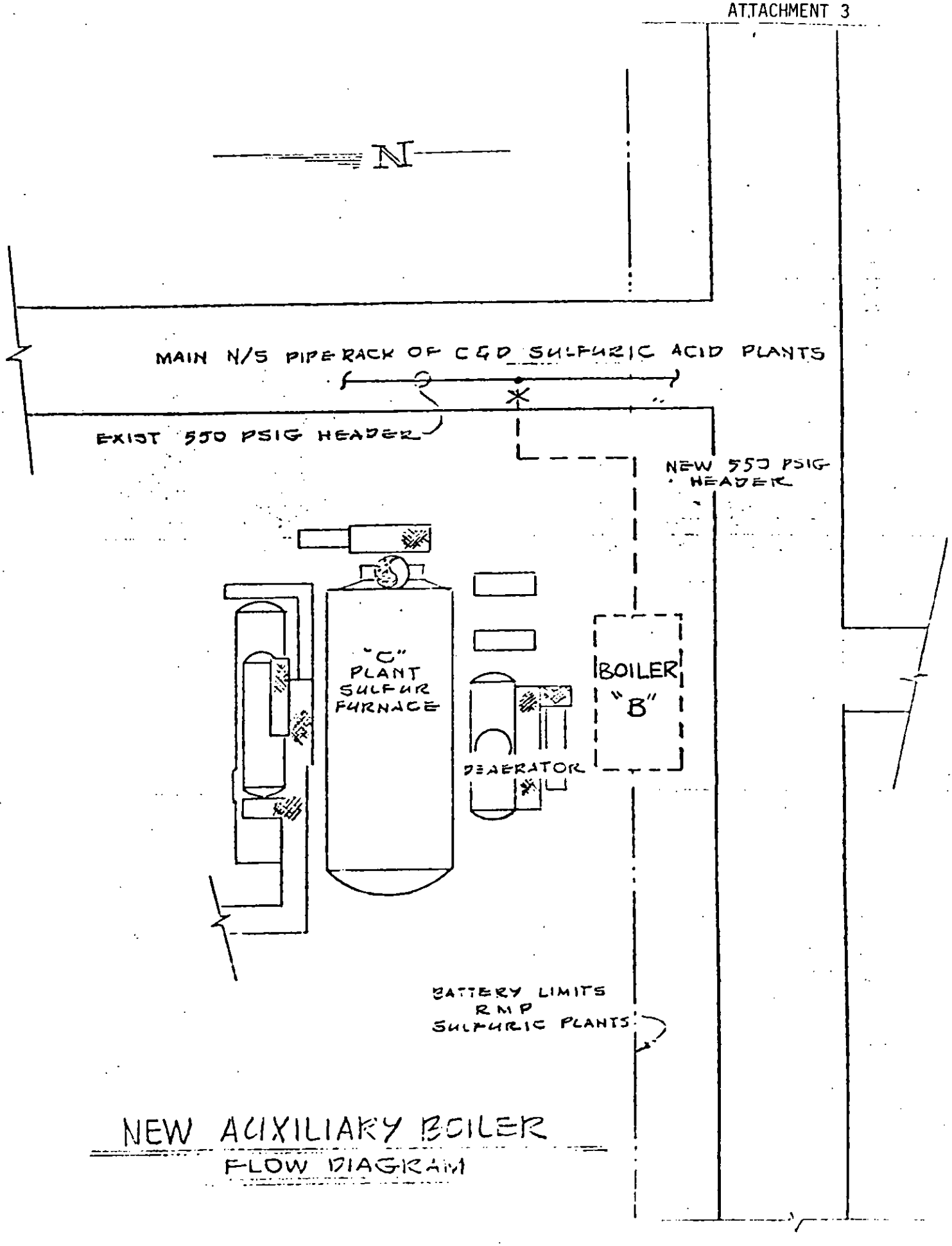
CO = (1093 gal/hr) x (5/1000 lb CO/gal)
= 5.5 lb/hr
= 23.9 ton/yr

Hydrocarbons = (1093 gal/hr) x (1/1000 lb HC/gal)
= 1.1 lb/hr
= 4.8 ton/yr



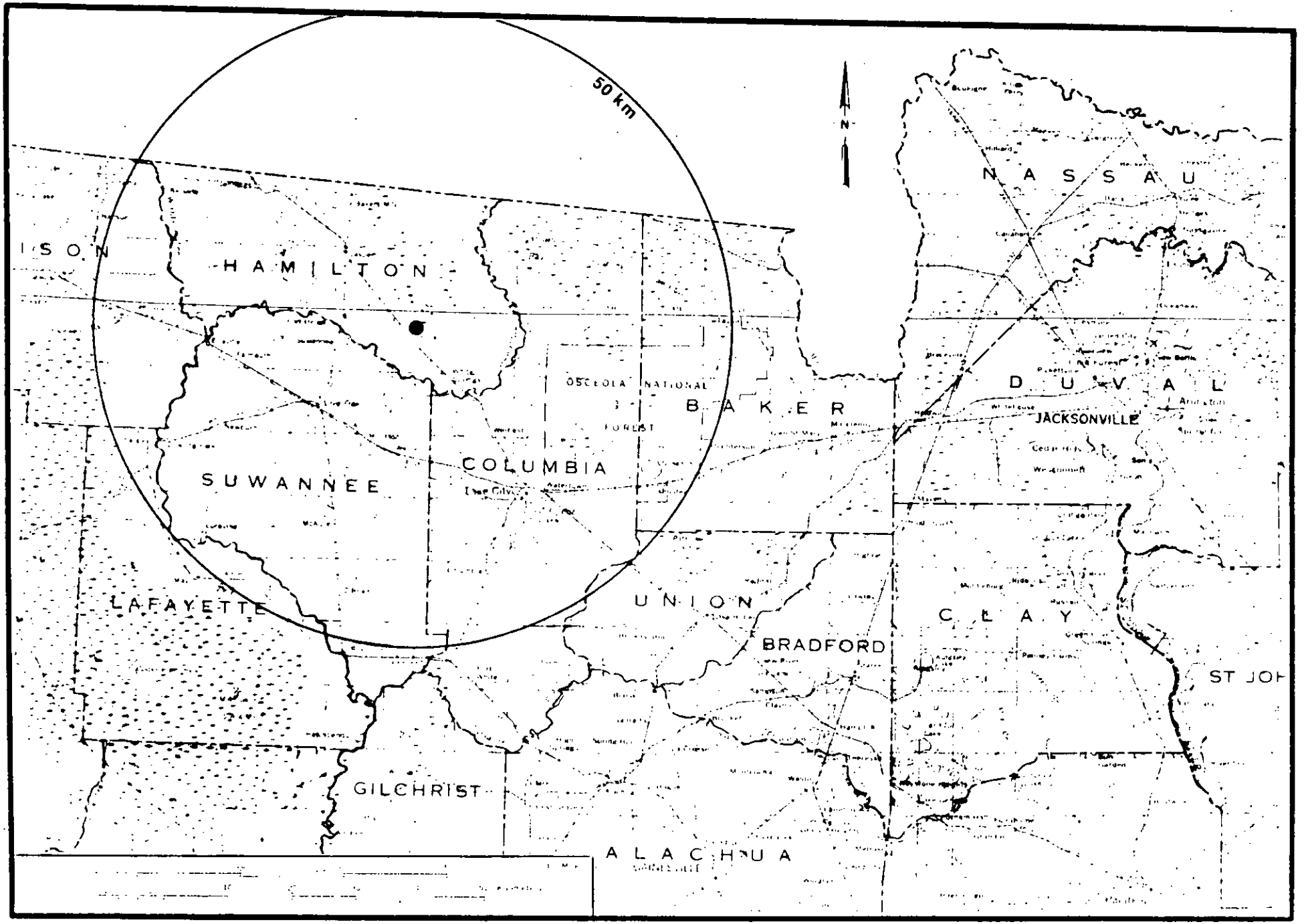

AUXILIARY BOILER

ATTACHMENT 3




# NEW AUXILIARY BOILER

## FLOW DIAGRAM




ATTACHMENT 4

AC 24-56213

May 14, 1982

DER

MAY 27 1982

BAQM

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO ~~OPERATE~~/CONSTRUCT
AIR POLLUTION SOURCES

SOURCE TYPE: Auxiliary Boiler [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [ ] Operation [XX] Modification

COMPANY NAME: Occidental Chemical Company COUNTY: Hamilton

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) Auxillary Boiler "D"

SOURCE LOCATION: Street S.R. 137 City White Springs

UTM: East 328.320 km North 3,368.810 km

Latitude ____ ° ____ ' ____ "N Longitude ____ ° ____ ' ____ "W

APPLICANT NAME AND TITLE: Occidental Chemical Company

APPLICANT ADDRESS: Post Office Box 300, White Springs, Florida 32096

**SECTION I: STATEMENTS BY APPLICANT AND ENGINEER**

A. APPLICANT

I am the undersigned owner or authorized representative* of Occidental Chemical Company

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: M P McArthur

M.P. McArthur, V.P. & General Manager
Name and Title (Please Type)

Date: 5/24/82 Telephone No. (904) 397-8101

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: J.B. Koogler

J.B. Koogler, Ph.D., P.E.
Name (Please Type)

SHOLTES & KOOGLER ENVIRONMENTAL CONSULTANTS
Company Name (Please Type)

1213 NW 6th Street, Gainesville, FL 32601
Mailing Address (Please Type)

(Affix Seal)

Florida Registration No. 12925 Date: 5/14/82 Telephone No. (904) 377-5822

[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.

Gas fired auxiliary steam boiler with stand-by oil firing capability is used to augment steam produced from the sulfuric acid plants to provide operating flexibility in the phosphoric acid production and evaporation process. Sulfur content of oil will be increased from 0.8% to 1.0%.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction July 1982 Completion of Construction July 1982

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.)

No pollution control equipment.

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

FDER Construction Permit No. Ac-24-2700 and 2701 issued 7/6/77 and expiring 12/31/79; AO-24-21059 issued 3/6/80 for boilers C and D and expiring 1/31/85.

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: 8760 hours per year

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. | Yes |
| 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)

1. Total Process Input Rate (lbs/hr): Not Applicable

2. Product Weight (lbs/hr): _____

C. Airborne Contaminants Emitted: Gas/Oil

| 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 | |
| Sulfur Dioxide | 0.1/128.7 | 0.3/564 | BACT | 0.1/128.7 | 0.1/128.7 | 0.3/564 | 1 |
| Part. Matter | 1.2/10.7 | 5.3/47 | BACT | 1.2/10.7 | 1.2/10.7 | 5.3/47 | 1 |
| $NO_x$ | 21.0/49.2 | 92/215 | NA | 21.0/49.2 | 21.0/49.2 | 92/215 | 1 |
| CO | 2.0/4.1 | 9/18 | NA | 2.0/4.1 | 2.0/4.1 | 9/18 | 1 |
| HC | 0.4/0.8 | 2/4 | NA | 0.4/0.8 | 0.4/0.8 | 2/4 | 1 |

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]) |
|---|---|---|---|---|
| | NOT APPLICABLE | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

[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 | |
| Oil | 5 | 19.5 | 120 |
| Gas | 0.03 | 0.12 | 120 |
| | | | |
| | | | |

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis: Gas/Oil

Percent Sulfur: -/1.0 Percent Ash: -/0.09

Density: -/8 lbs/gal Typical Percent Nitrogen: -/Nil

Heat Capacity: 1000*/18,300 BTU/lb -/146,400 BTU/gal

Other Fuel Contaminants (which may cause air pollution): None

F. If applicable, indicate the percent of fuel used for space heating. Annual Average N/A Maximum ____

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

Boiler water blow-down to water recirculation pond

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack): (Single stack for "C" and "D" boilers)

Stack Height: 104 ft. Stack Diameter: 6.5 ft.

Gas Flow Rate: 100,000 (50,000 ea. boiler) ACFM Gas Exit Temperature: 380 °F

Water Vapor Content: 9 % Velocity: 50 FPS

*BTU/$ft^3$

## SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

| Type of Waste | Type 0 (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. ATTACHMENT 1
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.
   ATTACHMENT 1
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). ATTACHMENT 1
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.).
   N/A
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). N/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.
   ATTACHMENT 2
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).
   ATTACHMENT 3
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.
   ATTACHMENT 4

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

(Also See PSD-FL-083)

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 |
|---|---|
| $SO_2$ | 1.1 lb/$10^6$ BTU; use of oil with |
| | 1.0% Sulfur Content. |
| | |
| | |

D. Describe the existing control and treatment technology (if any).

1. Control Device/System: Presently No. 6 fuel oil with 0.8% sulfur is used to control sulfur dioxide emissions.
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 |
|---|---|
| $SO_2$ | 0.9 lb/$10^6$ BTU; use of oil |
| | with 0.8% Sulfur |
| | |
| | |

*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:

2. Efficiency*:

3. Capital Cost:

4. Life:

5. Operating Cost:

6. Energy:

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

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:

See PSD-FL-083

*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 PSD-FL-083

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.

FUEL: Gas
Oil at 1.0% Sulfur

HEAT INPUT: $120 \times 10^6$ BTU/hr

FUEL INPUT: Gas = $120 \times 10^6$ BTU/hr x 1/1000 $ft^3$/BTU
= $0.12 \times 10^6$ $ft^3$/hr

Oil = $120 \times 10^6$ BTU/hr x 1/146,400 gal/BTU
= 820 gal/hr

OPERATING FACTOR: 8760 hour/year

EMISSIONS:

Sulfur Dioxide (Potential and Actual)

Gas: $SO_2$ = $0.6 \times 10^{-6}$ lb/$ft^3$ x $0.12 \times 10^6$ $ft^3$/hr
= 0.1 lb/hr
= 0.3 TPY

Oil: $SO_2$ = (0.157 x 1.0) lb/gal x 820 gal/hr
= 128.7 lb/hr
= 564 TPY

Particulate Matter (Potential and Actual)

Gas: PM = $10 \times 10^{-6}$ lb/$ft^3$ x $0.12 \times 10^6$ $ft^3$/hr
= 1.2 lb/hr
= 5.3 TPY

Oil: PM = [10(1.0) + 3]/1000 lb/gal x 820 gal/hr
= 10.7 lb/hr
= 46.7 TPY

Nitrogen Oxides (Potential and Actual)

Gas: $NO_x$ = $175 \times 10^{-6}$ lb/$ft^3$ x $0.12 \times 10^6$ $ft^3$/hr
= 21.0 lb/hr
= 92.0 TPY

Oil: $NO_x$ = 0.060 lb/gal x 820 gal/hr
= 49.2 lb/hr
= 215.5 TPY

Carbon Monoxide (Potential and Actual)

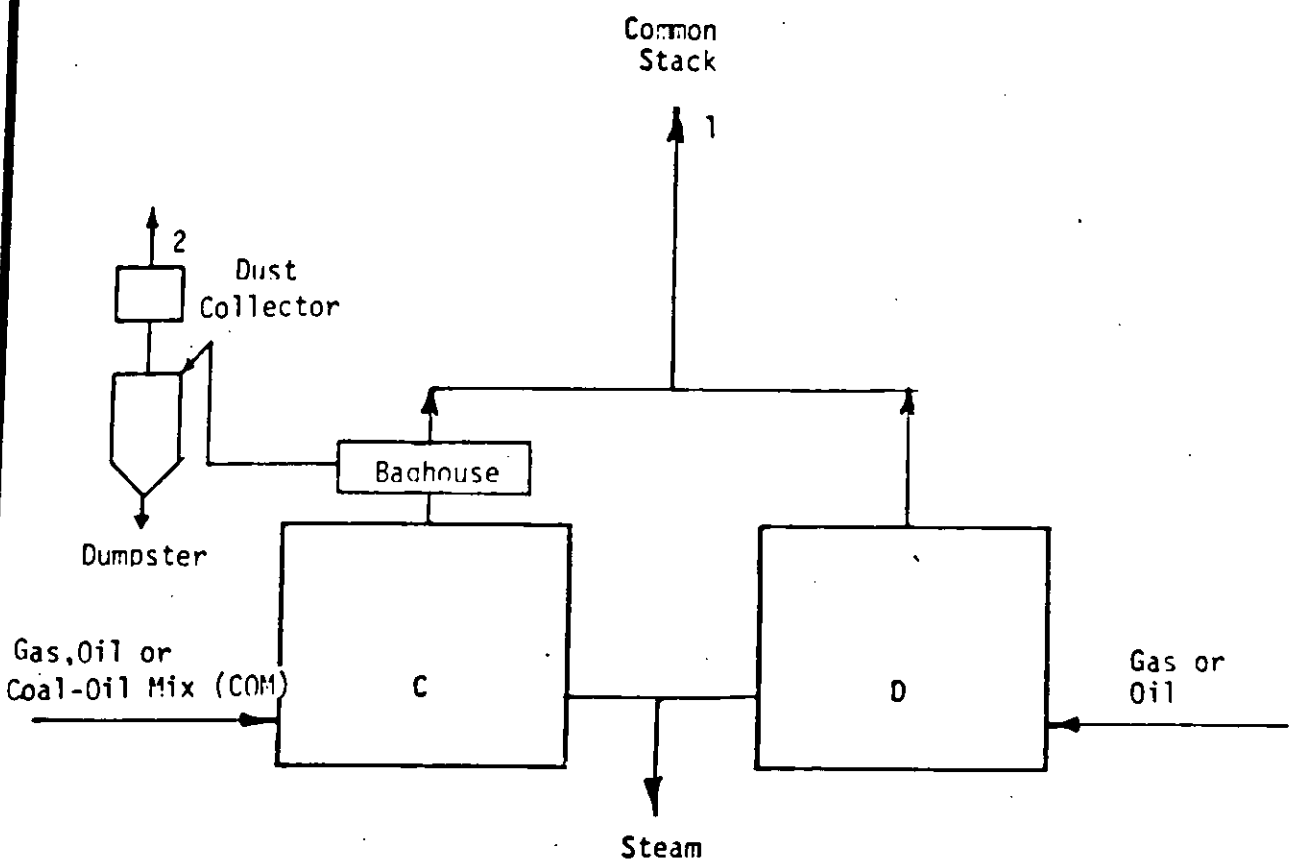
Gas: CO = $17 \times 10^{-6}$ lb/ft$^3$ x $0.12 \times 10^6$ ft$^3$/hr
= 2.0 lb/hr
= 8.9 TPY

Oil: CO = 0.005 lb/gal x 820 gal/hr
= 4.1 lb/hr
= 18.0 TPY

Hydrocarbons (Potential and Actual)

Gas: HC = $3 \times 10^{-6}$ lb/ft$^3$ x $0.12 \times 10^6$ ft$^3$/hr
= 0.4 lb/hr
= 1.6 TPY

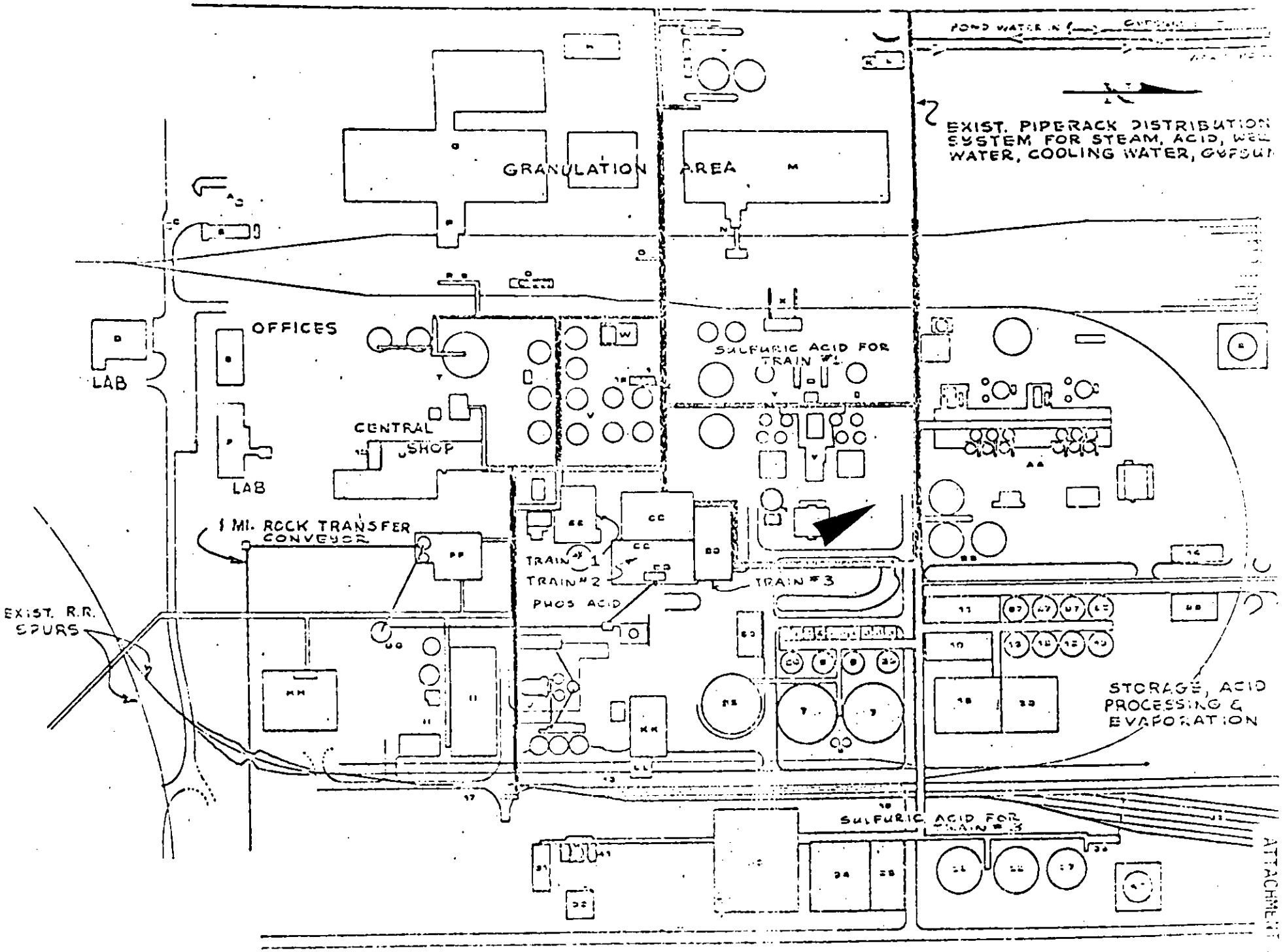
Oil: HC = 0.001 lb/gal x 820 gal/hr
= 0.8 lb/hr
= 3.6 TPY



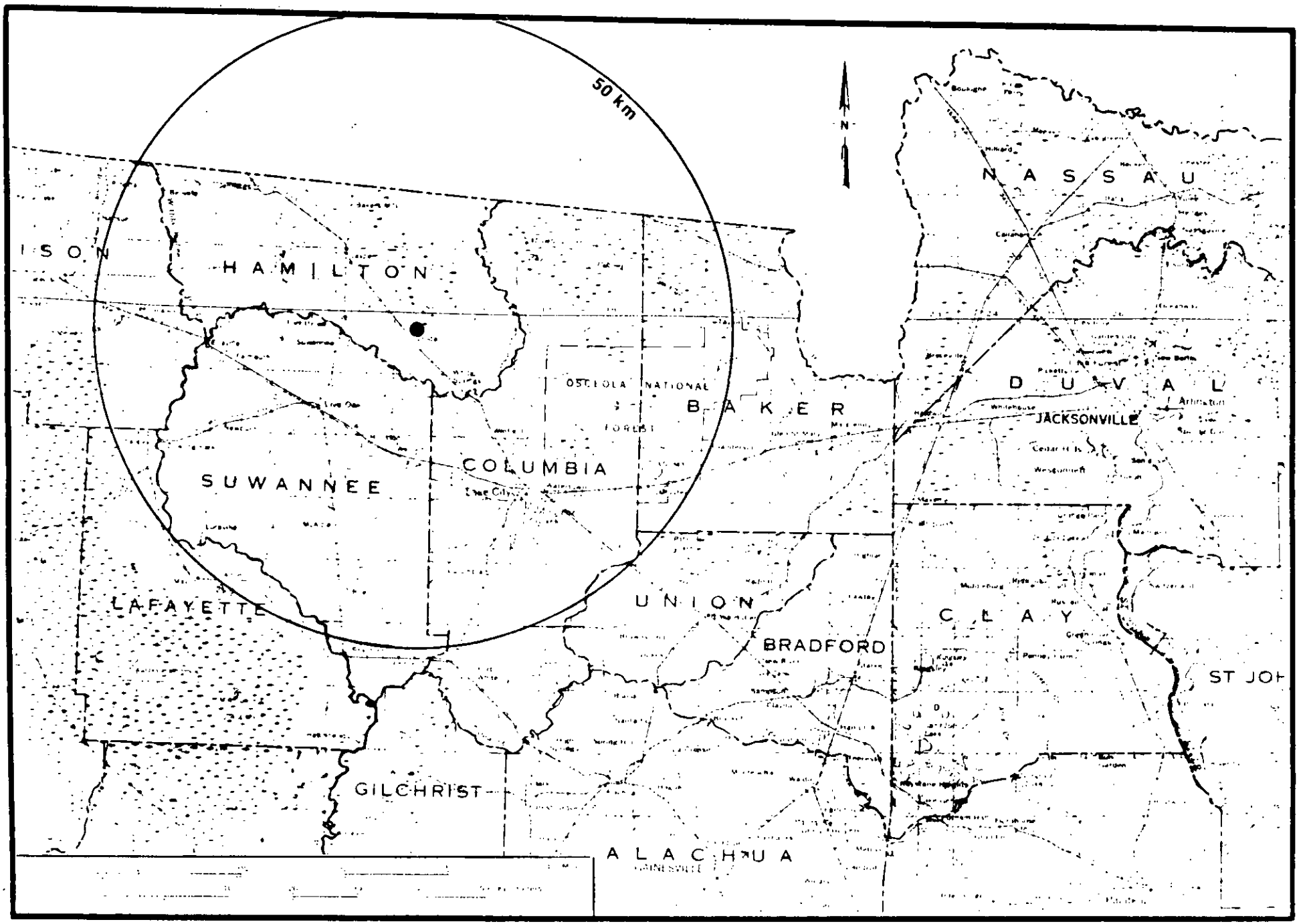

FLOW SHEET

AUXILIARY BOILERS C & D
SUWANNEE RIVER CHEMICAL COMPLEX

OCCIDENTAL CHEMICAL COMPANY
WHITE SPRINGS, FLORIDA




ATTACHMENT 3




ATTACHMENT 4

AC 24-56214

May 14, 1982

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

DER

MAY 27 1982

BAQM

## APPLICATION TO ~~OPERATE~~/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Auxiliary Boiler [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [ ] Operation [X] Modification

COMPANY NAME: Occidental Chemical Company COUNTY: Hamilton

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) Auxillary Boiler "C"

SOURCE LOCATION: Street S.R. 137 City White Springs

UTM: East 328.320 km North 3,368.810 km

Latitude ____ ° ____ ' ____ "N Longitude ____ ° ____ ' ____ "W

APPLICANT NAME AND TITLE: Occidental Chemical Company

APPLICANT ADDRESS: Post Office Box 300, White Springs, FL 32096

### SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Occidental Chemical Company

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]

M.P. McArthur, V.P. & General Manager
Name and Title (Please Type)

Date: 5/24/82 Telephone No. (904) 397-8101

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]

J.B. Koogler, Ph.D., P.E.
Name (Please Type)

(Affix Seal)

SHOLTES & KOOGLER ENVIRONMENTAL CONSULTANTS
Company Name (Please Type)

1213 NW 6th Street, Gainesville, FL 32601
Mailing Address (Please Type)

Florida Registration No. 12925 Date: 5/14/82 Telephone No. (904) 377-5822

[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.

Existing gas fired auxiliary steam boiler with stand-by oil firing capability is used to augment steam produced from the sulfuric acid plants to provide operating flexibility in the phosphoric acid production and evaporation process. Boiler has been modified to accept a mix of ground coal and oil (COM) with same sulfur content but increased ash. A dust collector has been installed to reduce particulate matter emissions. It is now proposed to increase the sulfur content of the oil from 0.8% to 1.0% and the COM from 0.7% to 0.9%.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction July 1982 Completion of Construction July 1982

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.)

$1,200,000 Baghouse

340,000 Enclosed Ash Removal System

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Construction Permit No. AC-24-2700 and 2701 issued 7/6/77 and expiring 12/31/79; Operating Permit No. AO-24-21059 issued 3/6/80 and expiring 1/31/85 covering boilers "C" and "D"; AC-24-40968 issued 6/30/81 to cover COM modification and expiring 7/31/82.

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: 8760 hr/year

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. | Yes |
| 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)

1. Total Process Input Rate (lbs/hr): Not Applicable

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 | |
| | See Page 3A | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

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] |
|---|---|---|---|---|
| Baghouse (4 modules) | Part. | 90+% | 10% < 20 u | Design |
| | | | 90% > 20 u | |
| | | | 50% > 30 u | |
| Bin Vent Dust Collector (6) | | 90+% | | Design |
| | | | | |
| | | | | |

[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

[6] Bin Vent Dust Collector will emit approx. 10% Baghouse Emissions. When burning gas and oil the baghouse will not be used.

Sect. III, C Airborne Contaminants Emitted

GAS/OIL/COM

| | Emissions (lb/hr) | Emissions (TPY) | Standard | Allowable Emissions (lb/hr) | Potential Emission (lb/hr) | Potential Emission (TPY) |
|---|---|---|---|---|---|---|
| $SO_2$ | 0.1/128.7/130.6 | 0.3/563.9/572.1 | BACT | 0.1/128.7/130.6 | 0.1/128.7/130.6 | 0.3/563.9/572.1 |
| PM | 1.2/10.7/3.8 | 5.3/46.7/16.6 | BACT | 1.2/10.7/3.8 | 1.2/10.7/37.9 | 5.3/46.7/165.9 |
| $NO_x$ | 21.0/49.2/54.6 | 92.0/215.5/239.2 | NA | 21.0/49.2/54.6 | 21.0/49.2/54.6 | 92.0/215.5/239.2 |
| CO | 2.0/4.1/4.2 | 8.9/18.0/18.4 | NA | 2.0/4.1/4.2 | 2.0/4.1/4.2 | 8.9/18.0/18.4 |
| HC | 0.4/0.8/1.0 | 1.6/3.6/4.5 | NA | 0.4/0.8/1.0 | 0.4/0.8/1.0 | 1.6/3.6/4.5 |

E. Fuels

| Type (Be Specific) | Consumption* | | Maximum Heat Input (MMBTU/hr) |
|---|---|---|---|
| | avg/hr | max./hr | |
| Oil | 5 | 19.5 | 120 |
| Gas | 0.03 | 0.12 | 120 |
| Coal-Oil Mix (COM) | 5.1 | 19.1 | 120 |
| | | | |

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis: Gas/Oil/COM

Percent Sulfur: -/1.0/0.9 Percent Ash: -/0.09/4.5

Density: -/8/9.3 lbs/gal Typical Percent Nitrogen: -/Nil/0.737

Heat Capacity: 1000*/18,300/16,040 BTU/lb -/146,400/149,172 BTU/gal

Other Fuel Contaminants (which may cause air pollution): None

F. If applicable, indicate the percent of fuel used for space heating. Annual Average N/A Maximum

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

Fly ash (1,000 lbs/day when using COM) to landfill and boiler water blow-down to water recirculation pond

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack): (single stack for C and D boilers)

Stack Height: 104 ft. Stack Diameter: 6.5 ft.

Gas Flow Rate: 100,000 (50,000 ea. boiler) ACFM Gas Exit Temperature: 380 °F.

Water Vapor Content: 9 % Velocity: 50 FPS

*BTU/ft$^3$

## 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 ($^oF$) |
|---|---|---|---|---|---|
| | | | 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. ATTACHMENT 1

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.
ATTACHMENT 1

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). ATTACHMENT 1

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.). Submitted with Application for Ac-24-40968

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).
ATTACHMENT 1

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.
ATTACHMENT 2

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).
ATTACHMENT 3

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.
ATTACHMENT 4

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

(Also See PSD-FL-083)

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 [XX] No

| Contaminant | Rate or Concentration |
|---|---|
| | |
| | |
| | |
| | |

C. What emission levels do you propose as best available control technology?

| Contaminant | Rate or Concentration |
|---|---|
| $SO_2$ | 1.1 lb/$10^6$ BTU; use of oil with |
| | 1.0% Sulfur or COM with 0.9% Sulfur |
| | |
| | |

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:

Presently No. 6 fuel oil with 0.8% sulfur or COM with 0.7% sulfur is used to control sulfur dioxide emissions.

| Contaminant | Rate or Concentration |
|---|---|
| $SO_2$ | 0.9 lb/$10^6$ BTU; use of oil with |
| | 0.8% Sulfur or COM with 0.7% Sulfur |
| | |
| | |

*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:

2. Efficiency*:

3. Capital Cost:

4. Life:

5. Operating Cost:

6. Energy:

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

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:

See PSD-FL-083

*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 PSD-FL-083)

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.

FUEL: Gas
Oil at 1.0% sulfur
Coal-Oil Mix at 0.9% sulfur

HEAT INPUT: $120 \times 10^6$ BTU/hr

FUEL INPUT: Gas = $120 \times 10^6$ BTU/hr x 1/1000 $ft^3$/BTU
= $0.12 \times 10^6$ $ft^3$/hr

Oil = $120 \times 10^6$ BTU/hr x 1/146,400 gal/BTU
= 820 gal/hr

Coal-Oil = $120 \times 10^6$ BTU/hr x 1/149,172 gal/BTU
= 804 gal/hr
x 9.3 lbs/gal
= 7481 lbs/hr @ 50% oil and 50% coal
x 0.5 = 3741 lbs/hr coal
= 3741 lbs/hr oil
x 1/8
= 467 gal/hr oil

OPERATING FACTOR: 8760 hours/year

EMISSIONS:

Sulfur Dioxide (Potential and Actual)

Oil: $SO_2$ = (0.157 x 1.0) lb $SO_2$/gal x 820 ga/hr
= 128.7 lbs/hr
x 8760/2000
= 563.9 TPY

Coal-Oil: $SO_2$ = 7481 lb/hr x 0.009 lbs/lb x 2 lb $SO_2$/ls S x 0.97
= 130.6 lbs/hr
x 8760/2000
= 572.1 TPY

Gas: $SO_2$ = $0.6 \times 10^6$ lb/$ft^3$ x $0.12 \times 10^6$ $ft^3$/hr
= 0.1 lb/hr
= 0.3 TPY

Nitrogen Oxides (Potential and Actual

Oil: $NO_x$ = 0.060 lb $NO_x$/gal x 820 gal/hr
= 49.2 lbs/hr
x 8760/2000 x 1.0
= 215.5 TPY

Coal-Oil: $NO_x$ @ 0.4552 lb $NO_x$ (as $NO_2$)/$10^6$BTU from test data provided by KVB
$NO_x$ = 0.4552 lb/$10^6$ BTU x ($120 \times 10^6$) BTU/hr
= 54.6 lbs/hr
x 8760/2000
= 239.2 TPY

Gas: $NO_X$ = 175 x $10^{-6}$ lb/$ft^3$ x 0.12 x $10^6$ $ft^3$/hr
= 21.0 lb/hr
= 92.0 TPY

Particulate Matter (Potential)

Oil: PM = [10(1.0) + 3]/1000 lb/gal x 820 gal/hr
= 10.7 lbs/hr
= 8760/2000
= 46.6 TPY

Coal-Oil: PM = 17 lb/ton coal x 3741/2000 tons.hr + [10(1.0) + 3]/1000 lb/gal
x 467 gal/hr
= 31.8 + 6.1
= 37.9 lbs/hr
x 8760/2000
= 165.9 TPY

Gas: PM = 10 x $10^{-6}$ lb/$ft^3$ x 0.12 x $10^6$ $ft^3$/hr
= 1.2 lb/hr
= 5.3 TPY

Particulate Matter (Actual)

Oil: PM = 10.7 lbs/hr
= 46.7 TPy
} baghouse will be by-passed when fuel oil and gas are used.

Coal-Oil: PM = 37.9 lb/hr x (1-0.9)
= 3.8 lb/hr
x 8760/2000
= 16.6 TPY

Gas: PM = 1.2 lb/hr
= 5.3 TPY

Carbon Monoxide (Potential and Actual)

Oil: CO = 820 gal/hr x 5/1000 lb CO/gal
= 4.1 lb/hr
x 8760/2000
= 18.0 TPY

Coal-Oil: CO = (467 gal/hr x 5/1000 lb CO/gal) + (3741/2000 ton/hr x 1 lb/ton)
= 2.3 + 1.9
= 4.2 lb/hr
x 8760/2000
= 18.4 TPY

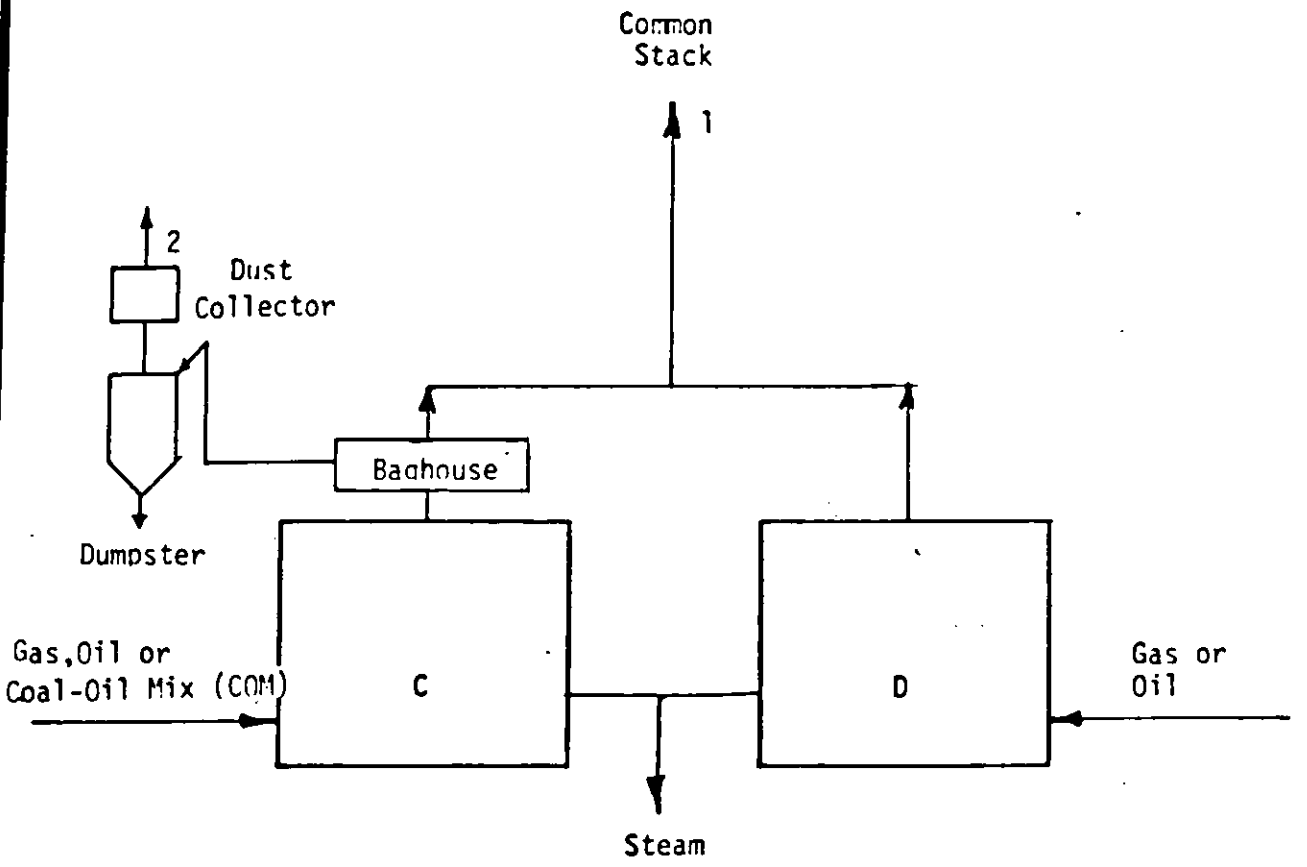
Gas: CO = 17 x $10^{-6}$ lb/$ft^3$ x 0.12 x $10^6$ $ft^3$/hr
= 2.0 lb/hr
= 8.9 TPY

Hydrocarbons (Potential and Actual)

Oil: HC = 820 gal/hr x 1/1000 lb HC/gal
= 0.8 lb/hr
x 8760/2000
= 3.6 TPY

Coal-Oil: HC = (467 gal/hr x 1/1000 lb HC/gal) + 3741/2000 ton/hr x 0.3 lb/ton)
= 1.0 lb/hr
x 8760/2000
= 4.5 TPY

Gas: HC = $3 \times 10^{-6}$ lb/ft$^3$ x 0.12 x $10^6$ ft$^3$/hr
= 0.4 lb/hr
= 1.6 TPY

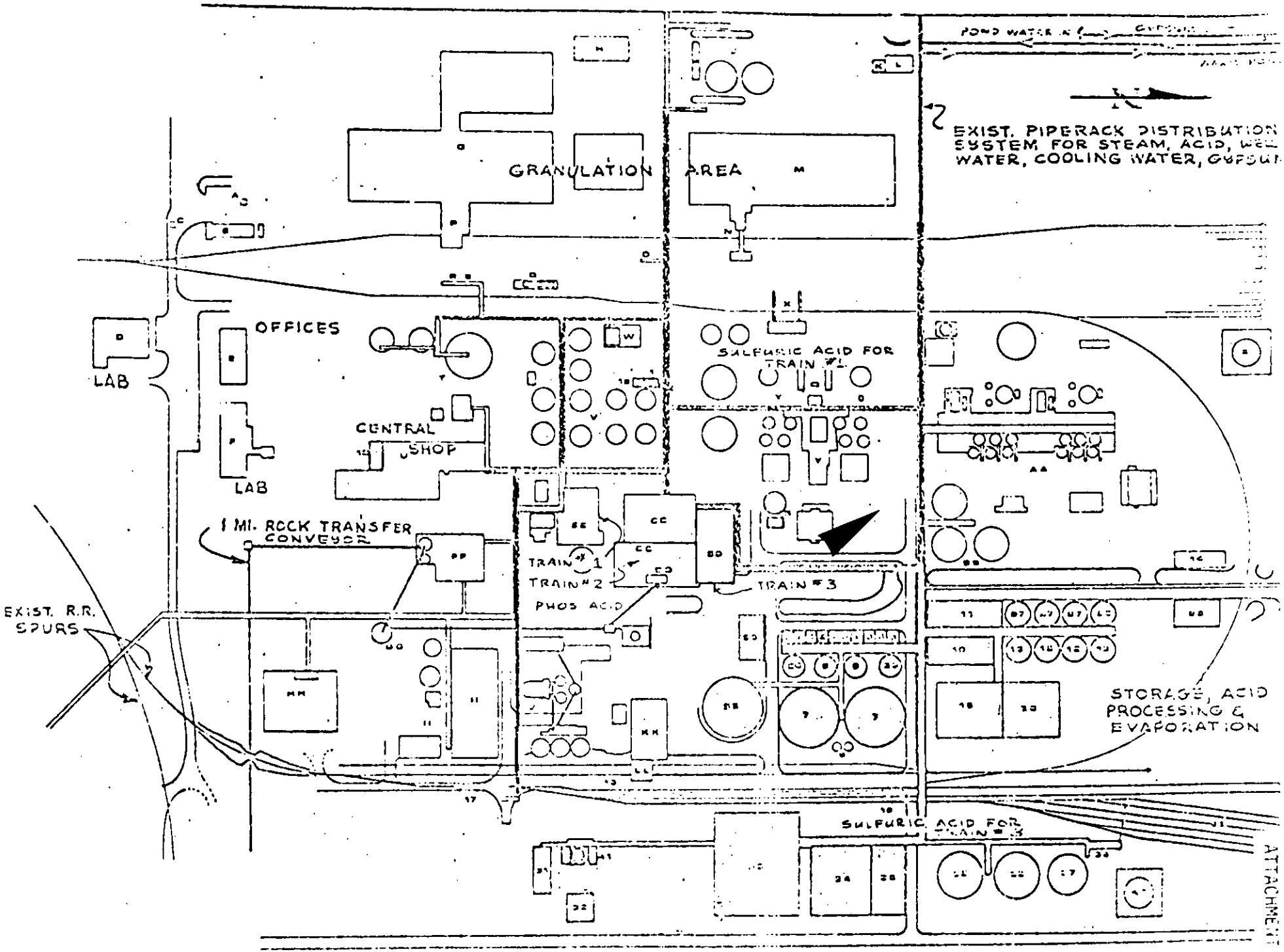



FLOW SHEET

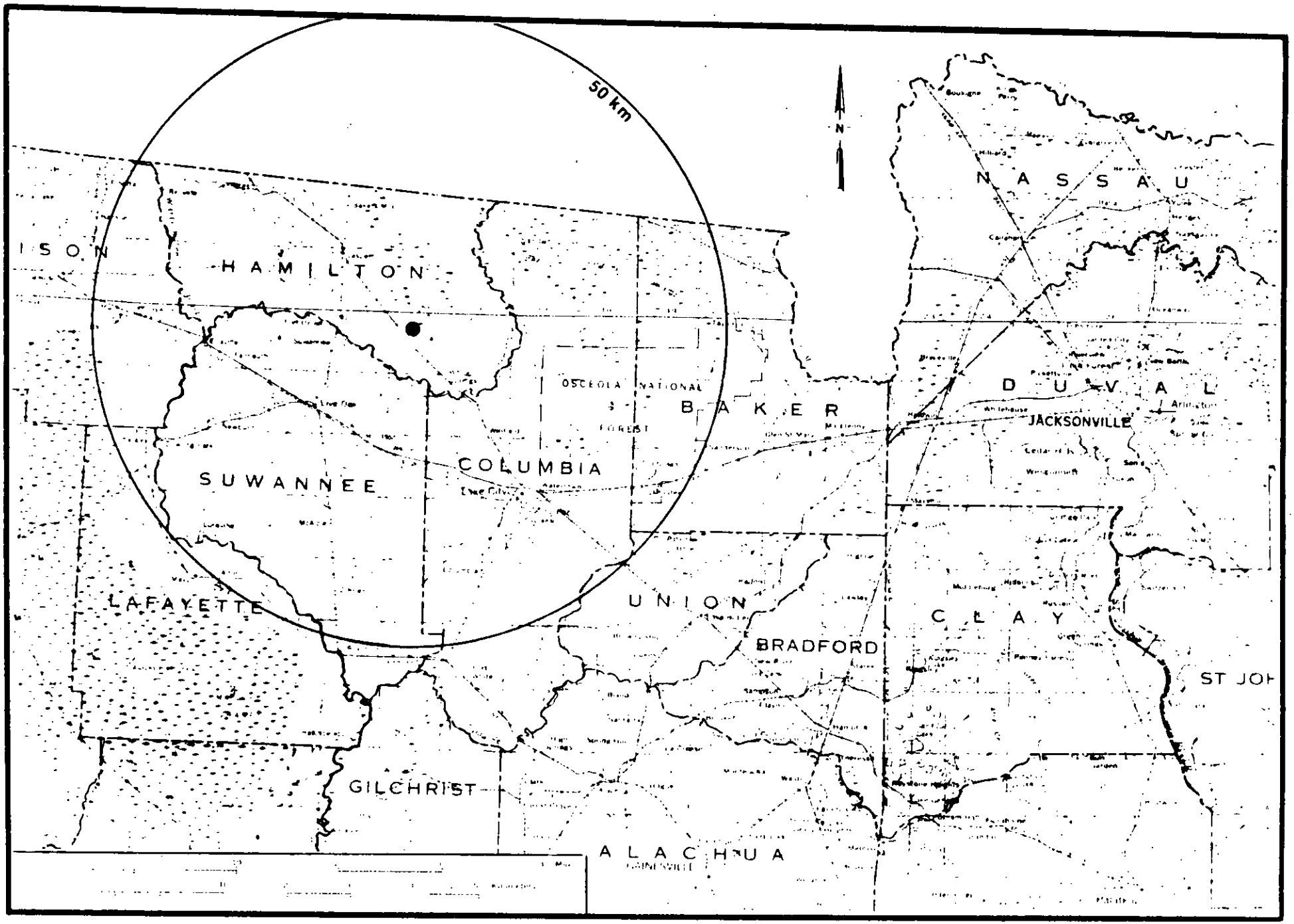
AUXILIARY BOILERS C & D
SUWANNEE RIVER CHEMICAL COMPLEX

OCCIDENTAL CHEMICAL COMPANY
WHITE SPRINGS, FLORIDA

*NOTE - Baghouse is by-passed when Gas and Oil are used as fuels.




ATTACHMENT 3




ATTACHMENT 4

AC 24-56215

May 14, 1982

DER

MAY 27 1982

BAQM

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

**APPLICATION TO ~~OPERATE~~/CONSTRUCT AIR POLLUTION SOURCES**

SOURCE TYPE: Granular Fertilizer Plant [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [ ] Operation [X] Modification

COMPANY NAME: Occidental Chemical Company COUNTY: Hamilton

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) Diammonium Phosphate Plant #2

SOURCE LOCATION: Street S.R. 137 City White Springs

UTM: East 328.20 km E North 3368.82 km N

Latitude ____ ° ____ ' ____ "N Longitude ____ ° ____ ' ____ "W

APPLICANT NAME AND TITLE: Occidental Chemical Company

APPLICANT ADDRESS: Post Office Box 300, White Springs, FL 32096

**SECTION I: STATEMENTS BY APPLICANT AND ENGINEER**

A. APPLICANT

I am the undersigned owner or authorized representative* of Occidental Chemical Company

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: M P McArthur

M.P. McArthur, V.P. & General Manager
Name and Title (Please Type)

Date: 5/24/82 Telephone No. (904) 397-8101

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: J.B. Koogler

J.B. Koogler, Ph.D., P.E.
Name (Please Type)

(Affix Seal)

SHOLTES & KOOGLER ENVIRONMENTAL CONSULTANTS
Company Name (Please Type)

1213 NW 6TH Street, Gainesville, FL 32601
Mailing Address (Please Type)

Florida Registration No. 12925 Date: 5/14/82 Telephone No. (904) 377-5822

[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.

Granular fertilizer plant reacting ammonia with phosphoric acid is vented to wet venturi-cyclonic scrubbers and entrainment separator. Dry product screening and crushing facilities are vented to dry cyclones for product recovery in series with wet scrubbers for emission control. A gas fired dryer has oil firing capability. It is proposed to increase the sulfur content of the fuel oil from 0.8% to 1.5%.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction July 1982 Completion of Construction July 1982

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.)

Not applicable - no air pollution control equipment is used to control $SO_2$ emissions.

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

FDER No. AO-24-10781 issued 7/7/78 and expiring 8/31/80; AO-24-33051 issued 9/16/80 and expiring 9/16/85.

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 XX No

F. Normal equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr ____ ; if seasonal, describe: 8760 hours/year

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. | Yes |
| 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.

*Not for sulfur dioxide

## SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

(See Attachment 1)

A. Raw Materials and Chemicals Used in your Process, if applicable:

| Description | Contaminants | | Utilization Rate - lbs/hr | Relate to Flow Diagram |
|---|---|---|---|---|
| | Type | % Wt | | |
| Phosphoric Acid | F | 1-3 | 145,263 | 1 |
| Anhydrous Ammonia | None | -- | 28,165 | 2 |
| Sulfuric Acid | None | -- | 2,400 (max) | 8 |
| | | | | |
| | | | | |

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 175,828

2. Product Weight (lbs/hr): 120,000

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 | |
| Fluoride (as F) | 1.74 | 6.1 | 17-2.600(3) | 1.74 | NOT APPLICABLE | | 7 |
| DAP Dust(6) | 46 | 193 | 17-2.610(1) | 46 | NOT APPLICABLE | | 7 |
| Sulfur Dioxide(7) | 11.8 | 51.5 | BACT | 11.8 | 59.0 | 258 | 7 |
| | | | | | | | |
| | | | | | | | |

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 and | F | 96.0% | --- | Design and |
| Entrainment Separator | | | | Test Data |
| Badger/Polycon | | | | |
| | Dust | 95.5% | --- | |
| | | | | |
| | | | | |

[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

(6) Dry process weight is 466 TPH (E= 17.3 p $^{0.16}$ where P = 466). Weight is design recycle product ration of 9.3:1 on average design rate of 50 TPH.

(7) Assuming stand-by oil used 100% of time with 80% removal of $SO_2$ in scrubbers.

E. Fuels

| Type (Be Specific) | Consumption* | | Maximum Heat Input (MMBTU/hr) |
|---|---|---|---|
| | avg/hr | max./hr | |
| Gas | 4.9 | 5.9 | 36 (30 Avg.) |
| Oil Stand-By | 0.030 | 0.036 | 36 (30 Avg.) |
| | | | |
| | | | |

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis: Gas/Oil

Percent Sulfur: -/0.8 Percent Ash: -/0.09

Density: -/8 lbs/gal Typical Percent Nitrogen: -/Nil

Heat Capacity: 1000 BTU/ft$^3$/18300 BTU/lb -/146,400 BTU/gal

Other Fuel Contaminants (which may cause air pollution): None

F. If applicable, indicate the percent of fuel used for space heating. Annual Average N/A Maximum

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

Scrubber effluent is pumped to the cooling pond with recirculated water. Dust from cyclones returned to process.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 140 ft. Stack Diameter: 8 ft.

Gas Flow Rate: 130,000 ACFM Gas Exit Temperature: 125 °F.

Water Vapor Content: 10 % Velocity: 43 FPS

## SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

| Type of Waste | Type 0 (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 ($^oF$) |
|---|---|---|---|---|---|
| | | | 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. ATTACHMENT 1
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.
   ATTACHMENT 1
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
   ATTACHMENT 1
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.).
   N/A for $SO_2$
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).
   ATTACHMENT 1
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.
   ATTACHMENT 2
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).
   ATTACHMENT 3
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.
   ATTACHMENT 4

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

(Also See PSD-FL-083)

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 |
|---|---|
| Fluoride - Fluoride emissions are not effected by this fuel modification. | |
| | |
| | |
| | |

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 |
|---|---|
| $SO_2$ | 0.41 lb/ton $P_2O_5$ input (fuel with 1.5% sulfur) |
| | |
| | |
| | |

D. Describe the existing control and treatment technology (if any).

Presently fuel oil with 0.8% sulfur oil is used in the DAP dryer. This results in the emission rate shown below.

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 |
|---|---|
| $SO_2$ | 0.22 lb/ton $P_2O_5$ input (fuel with 0.8% sulfur) |
| | |
| | |
| | |

*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:

2. Efficiency*:

3. Capital Cost:

4. Life:

5. Operating Cost:

6. Energy:

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

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:

See PSD-FL-083

*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 PSD-FL-083

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.

CALCULATION FOR SECTION III, A, B & C

PRODUCT: Diammonium Phosphate as 46% $P_2O_5$, 18% N granules

PRODUCT RATE: 1,440 Short tons per day (STPD)

-or-

120,000 pounds per hour (1,440 x 2,000 ÷ 24)

PROCESS LOSSES: -5% of $P_2O_5$ in phosphoric acid input or 95% recovery
-6.5% of ammonia input or 93.5% recovery

PROCESS INPUT:

Phosphoric Acid: 697 STPD of 100% $P_2O_5$ from both 30 & 50% $P_2O_5$ acid(1) (1,440 x 0.46 ÷ 0.95)

-or-

1,743 STPD of 40% $P_2O_5$ acid from 30 & 50% mixed "half & half" (697 ÷ 0.40)

-or-

145,263 lbs/hr 40% $P_2O_5$ acid

-or-

72,632 lbs/hr of 30% $P_2O_5$ acid and
72,632 lbs/hr of 50% $P_2O_5$ acid

Ammonia: 277 STPD of 100% nitrogen (1,440 x 0.18 ÷ 0.935)

-or-

338 STPD of $NH_3$ (277 x 17 ÷ 14 ÷ 0.996)(2)

-or-

28,165 lbs/hr.

Sulfuric Acid: Used for "grade control" may average about 2,400 lbs/hr of 93% acid.

Total Process Input Rate: 175,828 lbs/hr (145,263 + 28,165 + 2,400)

ALLOWABLE EMISSIONS:

Fluoride: Based on rule at 0.06#F per ton $P_2O_5$ input it is 1.74#/hr (.06 x 697 ÷ 24). Based on previous average permitted rate it is 1.45#/hr (50 TPH ÷ 60 TPH x 697 TPD x .06 ÷ 24). Annual emission of 6.1 tons Per Year is based on 1.45#/hr and does not change (1.45 x 24 x 7 x 50 ÷ 2,000).

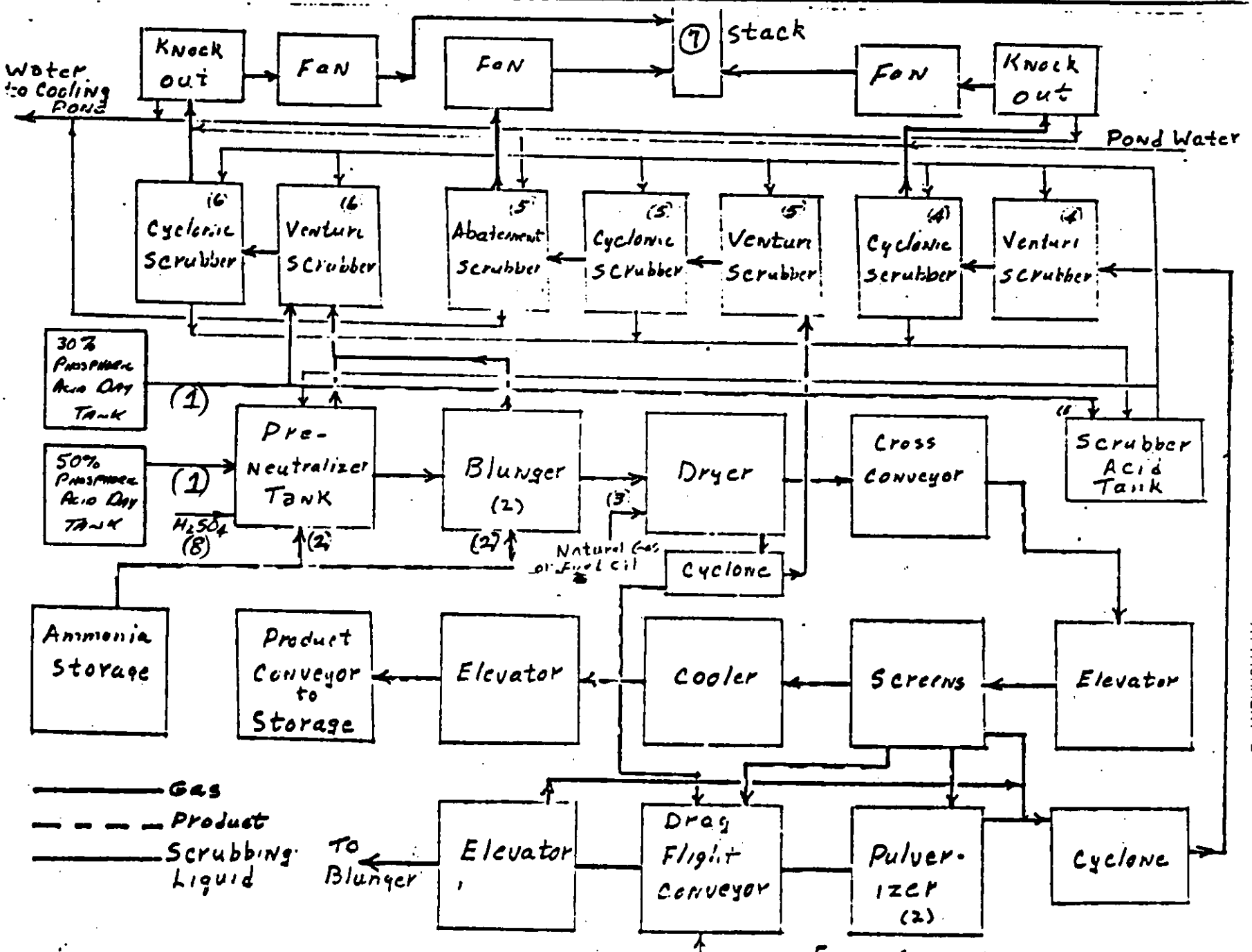
---

NOTE: (1) Water-Heat balance in slurry process requires an average 40% $P_2O_5$ strength feed acid at previous, average permitted rate.
(2) Purity of anhydrous ammonia is 99.6% $NH_3$.

Sulfur Dioxide: $36 \times 10^6$ BTU/hr x 1/18,300 lb/BTU
x (0.015 x 2) lb $SO_2$/lb x (1-0.8) eff.
= 11.8 lb/hr
x 1/29.04 hr/ton $P_2O_5$
= 0.41 lb $SO_2$/ton $P_2O_5$
11.8 x 8760/2000
= 51.7 TPY

ATTACHMENT 2

# DAP PRODUCTION USING A 30% - 50% SPLIT PHOSPHORIC ACID FEED



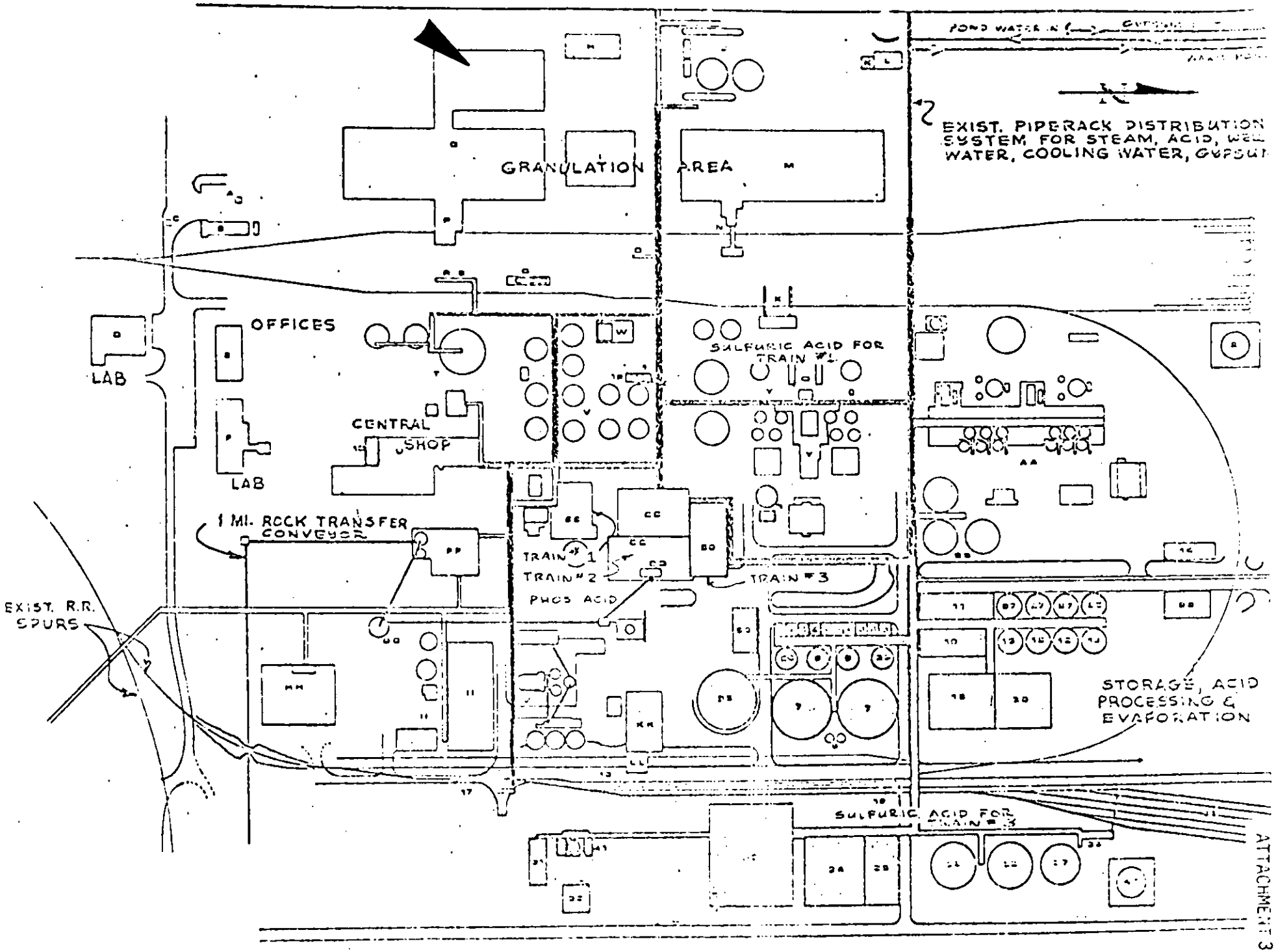

DRAWN BY
DATE
SCALE
REVISION
REVISION
REVISION

FLOW DIAGRAM

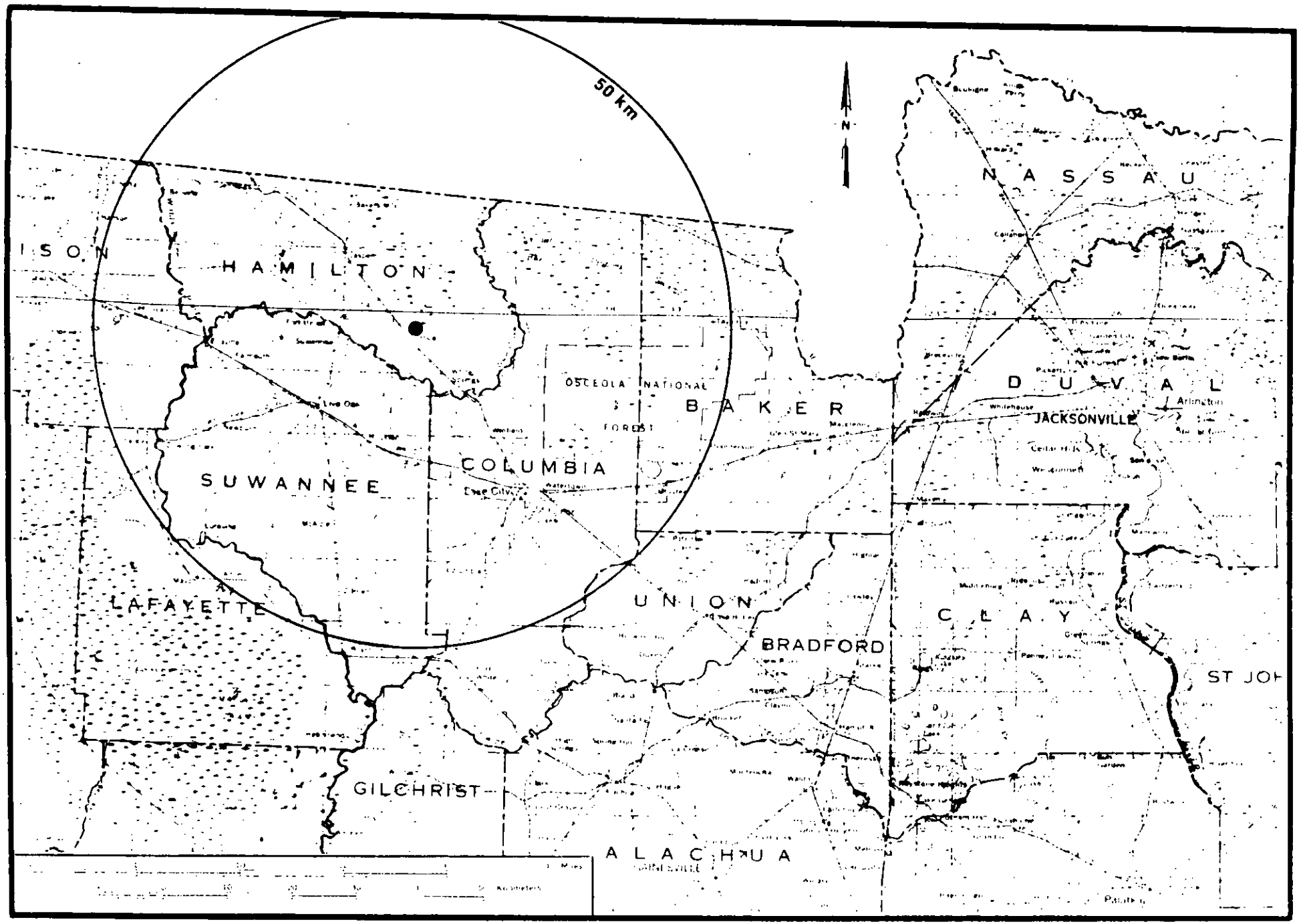
DIAMMONIUM PHOSPHATE PLANT

OCCIDENTAL OF FLORIDA

CHARGE NO.
JOB NO.
REV NO.
SHEET NO. 14




ATTACHMENT 3




ATTACHMENT 4

ATTACHMENT 1

FUEL PRICES

EASTERN SEABOARD PETROLEUM COMPANY, INC.
P. O. BOX 3233, STATION F—6531 EVERGREEN AVE.
JACKSONVILLE, FLORIDA 32206

OFFICES
JACKSONVILLE
TAMPA

TELEPHONE 904/358-9678
CABLE ADDRESS
EASTPET

August 20, 1981

RECEIVED
AUG 21 1981
PURCHASING

Mr. Gilbert McGhin
Occidental Chemical Company
PO Box 300
White Springs, FL 32096

Dear Mr. McGhin:

In response to your request for projections on No. 6 fuel prices, I submit the following:

| Grade #6 | Current Price per bbl | 4th Qtr (DEC) 81 | 1st Qtr 82 | 2nd Qtr 82 | 3rd Qtr 82 | Actual Dec. 1981 Cost(1) |
|---|---|---|---|---|---|---|
| .8% | $29.900 | $31.39 | $34.53 | $34.53 | $36.26 | 34.07/bbl |
| 1% | 29.265 | 30.73 | 33.80 | 33.80 | 35.49 | 32.77/bbl |
| 1.5% | 28.75 | 30.19 | 33.21 | 33.21 | 34.87 | 30.38/bbl |
| 2.0% | 27.75 | 29.14 | 32.05 | 32.05 | 33.65 | 29.38/bbl |

Each of the above prices are fob Jacksonville, delivery to White Springs is an additional $1.13 per barrel.

Barring any flare-up in the Middle East, we should see fuel oil prices somewhat more stable than in the last two years. The current meeting in Geneva of the OPEC countries will have a great impact on price and supply. We believe the Saudi's will be successful in stabilizing crude prices from that region of the world.

I hope you will find this information helpful and if I can be of any further assistance, please give me a call.

Very truly yours,

Arnold E. Seaton

Arnold E. Seaton
Assistant Vice President

AES/tab

cc: Craig Taylor

(1) Price quoted by Arnold E. Seaton to J. B. Koogler during telephone conversation of 11/24/81.

Belcher

August 20, 1981

Mr. J. Craig Taylor
Occidental Chemical Company
Florida Operations
P. O. Box 300
White Springs, FL 32096

Dear Mr. Taylor:

The following are prices, effective August 20, 1981, for the products listed below:

| | | Dec. 1981 Price(1) | |
|---|---|---|---|
| Diesel Fuel/#2 | $1.0036 Per Gallon | | |
| #6 Fuel Oil (.8% Sulphur) | .7731 Per Gallon | 0.8733 Per Gallon | 36.68/bbl |
| #6 Fuel Oil (1.0% Sulphur) | .7255 Per Gallon | 0.7898 Per Gallon | 33.17 |
| #6 Fuel Oil (1.5% Sulphur) | .7017 Per Gallon | 0.7612 Per Gallon | 31.97 |
| #6 Fuel Oil (2.0% Sulphur) | .6779 Per Gallon | 0.7269 Per Gallon | 30.53 |
| #6 Fuel Oil (2.5% Sulphur) | .6707 Per Gallon | | |

These prices, exclusive of taxes, are delivered prices to your White Springs, Florida location.

Thank you for your business.

Sincerely,

J R Sauls

BELCHER OIL COMPANY
J. R. Sauls
Manager-Mid-Gulf Area

JRS/ke

cc: Bob Travis

(1)Prices quoted by Mr. Huhn of Belcher to J.B. Koogler during telephone conversation of 11/24/81.

**B. & M. Oil Company**
P.O. Box 1288—909 S. Ohio Ave.
Live Oak, FL 32060
(904)362-6340
Night-(904)362-1182

August 18, 1981

Occidental Chemical Company
P. O. Box 300
White Springs, FL 32096
Attn: Mr. Gilbert McGinn, Supervisor
Materials Management

Dear Gilbert:

Based upon our phone conversation of August 18, 1981, our current bid price on #6 fuel oil is as follows:

| | |
|---|---|
| Maximum Suffer Content of .8% | $.81 gal. 34.02 |
| Maximum Suffer Content of 1.0% | Not Available |
| Maximum Suffer Content of 1.5% | $.78 gal. 32.76 |
| Maximum Suffer Content of 2.0% | Not Available |
| Maximum Suffer Content of 2.5% | $.73 gal. 30.66 |

Above listed prices include freight to White Springs, Florida.

Prices are not firm, but may fluctuate from time-to-time as the World Oil Market fluctuates.

Based upon my observation of the leading oil price indicators, I believe the projected price for the next several months will remain stable to approximately a 2 to 3% maximum increase in cost.

Therefore, the projected cost of #6 fuel oil for the next 2 to 3 quarters should remain at or not over the below cost:

| | |
|---|---|
| Maximum Suffer Content of .8% | $.84 gal. |
| Maximum Suffer Content of 1.0% | Not Available |
| Maximum Suffer Content of 1.5% | $.81 gal. |
| Maximum Suffer Content of 2.0% | Not Available |
| Maixmum Suffer Content of 2.5% | $.75 gal. |

Thanking you for all your courteousness in this matter and I will be looking forward to hearing from you.

Sincerely,

Don Boyette
President

DB:vbh

Fuel costs not updated in December, 1981 because of unfavorable cost differential between this quotation and quotations from Belcher and Eastern Seaboard.

ATTAHMENT 1

# Sulfur Dioxide Emission Rate Calculations

## Occidental Chemical Company
## Hamilton County, Florida

## Swift Creek Chemical Complex

### Sulfuric Acid Plant 'E' (New Source)

Present Permitted Rate - 2000 ton/day

Proposed Rate - 2500 ton/day

$SO_2$ = 2500 ton/day × 1/24 day/hr × 4.0 lb $SO_2$/ton
= 416.7 lb $SO_2$/hr
= 52.5 g/sec

### Sulfuric Acid Plant 'F' (New Source)

Identical to 'E'

### Boiler 'E' (New Source)

Present Permitted Fuel - No. 6 0.1 w/ 0.8% S

Proposed Fuel - No. 6 0.1 w/ 1.0% S

$SO_2$ = 125,000 lb/hr steam × 1000 BTU/lb × 1/0.8 efficiency
× 1/18300 lb oil/BTU × (0.01 × 2) lb $SO_2$/lb oil
= 170.8 lb $SO_2$/hr
= 21.5 g/sec

## Suwannee River Chemical Complex

### Boiler 'B' (New Source)

Present Permitted Fuel - No. 6 0.1 w/ 0.8% S

Proposed Fuel - No 6 0.1 w/ 1.0% S

$SO_2$ = 160 × $10^6$ BTU/hr input × 1/18300 lb oil/BTU × (0.01 × 2) lb $SO_2$/lb oil
= 174.9 lb $SO_2$/hr

## Boiler 'C' (New Source)[1]

Present Permitted Fuel - No 6 Oil w/ 0.8% S

Proposed Fuel - No 6 Oil w/ 1.0% S

$SO_2$ = 120 x $10^6$ BTU/hr input x 1/18300 lb/BTU x (0.01 x 2)
= 131.1 lb $SO_2$/hr
= 16.5 g/sec

## Boiler 'D' (New Source)[1]

Identical to Boiler 'C'

## DAP No 2 - 'Z' Train (Existing Source)

Present Permitted $SO_2$ Emission Rate - 6.3 lb/hr

Present and Proposed $P_2O_5$ input - 697 tpd ; 29.0 tph

Proposed Fuel - No 6 Oil w/ 1.5% S

$SO_2$ = 36 x $10^6$ BTU/hr x 1/18300 lb/BTU x (0.015 x 2)
x (1 - 0.8) absorption factor
= 11.8 lb/hr (0.41 lb $SO_2$ / ton $P_2O_5$ input)

$SO_2$ increase = 11.8 - 6.3 lb/hr
= 5.5 lb/hr
= 0.69 g/sec

(1) Boilers "C" and "D" are vented thru a common stack

ATTACHMENT 2

OCCIDENTAL FUEL USES & ANNUAL FUEL COSTS

## FUEL USE BY SOURCE

The sources affected by the proposed fuel changes are:

I. PSD-FL-082 (SCCC)

| | |
|---|---|
| Auxiliary Boiler E | - Annual Operating Factor - 97.5%<br>- Heat Input - 156 x $10^6$ Btu/hr |

II. PSD-FL-083 (SRCC)

| | |
|---|---|
| Auxiliary Boiler B | - Annual Operating Factor - 25%<br>- Heat Input - 160 x $10^6$ Btu/hr |
| Boiler C | - Annual Operating Factor - 25%<br>- Heat Input - 120 x $10^6$ Btu/hr |
| Boiler D | - Annual Operating Factor - 25%<br>- Heat Input - 120 x $10^6$ Btu/hr |
| Z Train (DAP No.2) | - Annual Operating Factor - 95%<br>- Heat Input - 30 x $10^6$ Btu/hr |

## DECEMBER, 1981 FUEL COSTS

Eastern Seaboard

| Sulfur Content (%) | Heat Content (Btu/gal) | Price per Gallon ($) | Price per $10^6$Btu ($) |
|---|---|---|---|
| 0.8 | 144,650 | 0.8112 | 5.6080 |
| 1.3(1) | 148,140 | 0.7461 | 5.0364 |
| **Belcher** | | | |
| 0.8 | 144,650 | 0.8733 | 6.0373 |
| 1.3(1) | 148,140 | 0.7726 | 5.2153 |

(1) Price for 1.3% sulfur fuel was obtained by interpolation between prices of 1.0 and 1.5 percent sulfur fuels.

assume 100% oil fuel - gas is not often available

## FUEL COST BY SOURCE

| Source | Annual Heat Input ($10^{12}$ Btu/yr) | Fuel Cost ($/year) 0.8% Sulfur | Fuel Cost ($/year) 1.3% Sulfur | Fuel Cost Differential ($/year) 0.8 - 1.3% Sulfur |
|---|---|---|---|---|
| **Eastern Seaboard Prices** | | | | |
| Boiler E | 1.332 | 7,472,077 | 6,710,479 | 761,597 |
| Boiler B | 0.350 | 1,965,043 | 1,764,754 | 200,289 |
| Boiler C | 0.263 | 1,473,782 | 1,323,566 | 150,216 |
| Boiler D | 0.263 | 1,473,782 | 1,323,566 | 150,216 |
| Z Train (DNP) | 0.250 | 1,400,093 | 1,257,388 | 142,706 |
| Total | | 13,784,777 | 12,379,753 | 1,405,024 |
| **Belcher Prices** | | | | |
| Boiler E | 1.332 | 8,044,074 | 6,948,845 | 1,095,230 |
| Boiler B | 0.350 | 2,115,470 | 1,827,441 | 288,029 |
| Boiler C | 0.263 | 1,586,602 | 1,370,581 | 216,022 |
| Boiler D | 0.263 | 1,586,602 | 1,370,581 | 216,022 |
| Z Train (DNP) | 0.250 | 1,507,272 | 1,302,052 | 205,221 |
| Total | | 14,840,020 | 12,819,500 | 2,020,520 |

SHOLTES & KOOGLER

ATTACHMENT 3

POLLYPHOS PLANT SULFUR DIOXIDE EMISSION MEASUREMENTS

# SUMMARY OF SULFUR DIOXIDE EMISSION MEASUREMENTS

## A & B POLLYPHOS REACTORS

OCCIDENTAL CHEMICAL COMPANY
SUWANNEE RIVER CHEMICAL COMPLEX
WHITE SPRINGS, FLORIDA

MARCH, 1981

SHOLTES & KOOGLER
ENVIRONMENTAL CONSULTANTS
1213 NW 6TH STREET
GAINESVILLE, FLORIDA 32601
(904) 377-5822

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To the best of my knowledge, all applicable field and analytical procedures except as noted in Section 4.0 comply with FDER requirements and all test data and plant operating data are true and correct.

Signature

Date

Attachment 3

Derivation of $SO_2$
Emission Rates for Selected Sources

Occidental Chemical Company
Hamilton County, Florida

ATTACHMENT 3

# SULFUR DIOXIDE EMISSION RATE CALCULATIONS

## OCCIDENTAL CHEMICAL COMPANY
## HAMILTON COUNTY, FLORIDA

## SWIFT CREEK CHEMICAL COMPLEX

### SULFURIC ACID PLANT 'E' (NEW SOURCE)

Present Permitted Rate - 2000 ton/day

Proposed Rate - 2500 ton/day

$SO_2$ = 2500 ton/day x 1/24 day/hr x 4.0 lb $SO_2$/ton
= 416.7 lb $SO_2$/hr
= 52.5 g/sec

### SULFURIC ACID PLANT 'F' (NEW SOURCE)

Identical to 'E'

### BOILER 'E' (NEW SOURCE)

Present Permitted Fuel - No. 6 0.1 w/ 0.8% S

Proposed Fuel - No 6 0.1 w/ 1.0% S

$SO_2$ = 125,000 lb/hr steam x 1000 BTU/lb x 1/0.8 efficiency
x 1/18300 lb 0.1/BTU x (0.01 x 2) lb $SO_2$/lb 0.1
= 170.8 lb $SO_2$/hr
= 21.5 g/sec

## SUWANNEE RIVER CHEMICAL COMPLEX

### BOILER 'B' (NEW SOURCE)

Present Permitted Fuel - No. 6 0.1 w/ 0.8% S

Proposed Fuel - No 6 0.1 w/ 1.0% S

$SO_2$ = 160 x $10^6$ BTU/hr input x 1/18300 lb 0.1/BTU x (0.01 x 2) lb $SO_2$/lb
= 174.9 lb $SO_2$/hr

## Boiler "C" (New Source)[1]

Present Permitted Fuel - No 6 0.1 w/ 0.8% S

Proposed Fuel - No 6 0.1 w/ 1.0% S

$SO_2$ = 120 x $10^6$ BTU/hr input x 1/18300 lb/BTU x (0.01 x 2)
= 131.1 lb $SO_2$/hr
= 16.5 g/sec

## Boiler "D" (New Source)[1]

Identical to Boiler "C"

## DAP No 2 - "Z" Train (Existing Source)

Present Permitted $SO_2$ Emission Rate - 6.3 lb/hr

Present and Proposed $P_2O_5$ input - 697 tpd ; 29.0 tph

Proposed Fuel - No 6 0.1 w/ 1.5% S

$SO_2$ = 36 x $10^6$ BTU/hr x 1/18300 lb/BTU x (0.015 x 2)
x (1 - 0.8) absorption factor
= 11.8 lb/hr (0.41 lb $SO_2$ / ton $P_2O_5$ input)

$SO_2$ increase = 11.8 - 6.3 lb/hr
= 5.5 lb/hr
= 0.69 g/sec

---

(1) Boilers "C" and "D" are vented thru a common stack

TABLE 1

SUMMARY OF PERMITTED OR ACTUAL
SULFUR DIOXIDE EMISSIONS

OCCIDENTAL CHEMICAL COMPANY
SRCC & SCCC

| SOURCE NAME | EMM. RATE LB/HR | EMM. RATE (G/SEC) | STACK HT. (M) | STACK TEMP. (DEG-K) | EXIT VEL. (M/SEC) | STACK DIA. (M) |
|---|---|---|---|---|---|---|
| Sulfuric Acid A | 1208.3 | 152.25 (1) | 61.0 | 350.0 | 15.50 | 1.80 |
| Sulfuric Acid B | 1208.3 | 152.25 (1) | 61.0 | 350.0 | 15.50 | 1.80 |
| Sulfuric Acid C | 300.0 | 37.80 (2) | 45.7 | 356.0 | 28.70 | 1.59 |
| Sulfuric Acid D | 300.0 | 37.80 (2) | 45.7 | 356.0 | 28.70 | 1.59 |
| DAP 1 | 11.1 | 1.40 (4) | 36.6 | 322.0 | 12.20 | 2.13 |
| DAP 2 | 11.8 | 1.49 (4) | 42.7 | 325.0 | 13.10 | 2.44 |
| GTSP/Dical | 11.1 | 1.40 (10) | 32.3 | 314.0 | 13.10 | 2.13 |
| Auxiliary Boiler A | 102.4 | 12.90 (5) | 12.2 | 466.0 | 12.50 | 1.13 |
| Pollyphos Feed Prep. | 4.9 | 0.62 (4) | 28.7 | 342.0 | 14.90 | 1.07 |
| Pollyphos Reactor A | 5.0 | 0.63 (6) | 30.5 | 322.0 | 10.10 | 1.22 |
| Pollyphos Reactor B | 5.0 | 0.63 (6) | 30.5 | 322.0 | 10.10 | 1.22 |
| SPA #1 | 0.8 | 0.10 (6) | 30.5 | 318.0 | 17.80 | 0.43 |
| Rock Dryer #3 (SCCC) | 38.1 | 4.80 (10) | 15.2 | 317.0 | 17.20 | 2.16 |
| Rock Dryer East | 28.7 | 3.61 (10) | 18.3 | 343.0 | 5.70 | 2.95 |
| Rock Dryer West | 28.7 | 3.61 (10) | 18.3 | 343.0 | 5.70 | 2.95 |
| Auxiliary Boiler B | 174.9 | 22.00 (7) | 10.7 | 468.0 | 9.50 | 1.46 |
| Auxiliary Boilers C & D | 262.2 | 33.00 (8) | 31.7 | 468.0 | 15.20 | 1.98 |
| Sulfuric Acid E | 416.7 | 52.50 (3) | 61.0 | 356.0 | 9.30 | 2.90 |
| Sulfuric Acid F | 416.7 | 52.50 (3) | 61.0 | 356.0 | 9.30 | 2.90 |
| Auxiliary Boiler E | 170.8 | 21.50 (4) | 15.3 | 428.0 | 15.90 | 1.60 |

(1) At 1000 tpd 100% $H_2SO_4$ and 29 lb $SO_2$/ton of acid
(2) At 1800 tpd 100% $H_2SO_4$ and 4 lb $SO_2$/ton of acid
(3) At 2500 tpd 100% $H_2SO_4$ and 4 lb/$SO_2$/ton of acid
(4) At 1.5% sulfur fuel and 80% $SO_2$ sorption
(5) At 62.5 x $10^6$ BTU/hr and 1.5% of sulfur fuel. A 25% operating factor is imposed when Sulfuric Acid Plants A and B are operating at rated capacity
(6) Based on emission measurements
(7) At 160 x $10^6$ BTU/hr and 1.0% sulfur fuel
(8) Two boilers at 120 x $10^6$ BTU/hr each and 1.0% sulfur fuel
(9) At 156 x $10^6$ BTU/hr and 1.0% sulfur fuel
(10) Actual emissions with 1.5% sulfur fuel