DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)	Initial / Date
Mr. Bruce Mitchell	
2. DER - Tallahassee	Initial / Date
3. DARM - BAR	Initial / Date
4. Twin Towers	Initial / Date

REMARKS:

Carlos with Hillsborough County and I will process this application, but we wanted to make sure with you NSR will not be triggered since CAPS processed other permits for CF Industries, Inc.

RECT

APR

Day 30 is 4-21-92

Division of Air Resources Management

Frank Foerdemann

INFORMATION	
	Review & Return
	Review & File
	Initial & Forward

DISPOSITION	
	Review & Respond
	Prepare Response
	For My Signature
	For Your Signature
	Let's Discuss
	Set Up Meeting
	Investigate & Report
	Initial & Forward
	Distribute
	Concurrence
	For Processing
	Initial & Return

FROM:

Jim McDonald

DATE 3-31-92

PHONE

SC 542-6100
Ext 421

4-7-92

Spoke to Jim McDonald. Since there is no specific source data to make a decision on, then the HCEPC/SWD will send a inc. letter response; and, cc BAR. Upon receipt of the inc. response, a decision will be made on the proper reviewing authority.

Bruce

X-Train Cooler Addition

RECEIVED
MAR 23 1992
E.P.C. OF H.C.
AIR PROGRAM

AC29-210979

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

RECEIVED
APR 1992
Hillsborough County Environmental Protection Commission

SOURCE TYPE: "X"-Train Granulation Plant [ ] New[1] [X] Existing[1]

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

COMPANY NAME: CF Industries, Inc., Plant City Phosphate Complex COUNTY: Hillsborough

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) "X"-Train scrubbers consisting of venturi, cyclonic and packed bed scrubbers.

SOURCE LOCATION: Street 10609 Highway 39 North City Plant City

UTM: East 17-358.9 North 3092.8

Latitude 28 ° 09 ' 55 "N Longitude 82 ° 08 ' 37 "W

APPLICANT NAME AND TITLE: J.E. Parsons, General Manager

APPLICANT ADDRESS: P.O. Drawer L, Plant City, Florida 33566

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of CF Industries, Inc.,Plant City Phosphate Complex

I certify that the statements made in this application for a Construction Permit 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: J. E. Parsons

J.E. Parsons, General Manager
Name and Title (Please Type)

Date: 3/18/92 Telephone No. 813-782-1591

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: C. Fred Deuel

C. Fred Deuel
Name (Please Type)

(Affix Seal)

C. Fred Deuel & Associates
Company Name (Please Type)

5151 Gall Boulevard, Zephyrhills, FL 33541
Mailing Address (Please Type)

Florida Registration No. 3896 Date: 3/20/92 Telephone No. 813-782-6717

[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.

The project consists of adding a product cooler and associated scrubbing equipment to the "X"-Train Granulation Unit. After construction the unit will be a duplicate of the "Y"-Train and will be in compliance with all applicable environmental regulations producing DAP/MAP and GTSP. The cooler is not used on GTSP production.

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

Start of Construction July, 1992 Completion of Construction December, 1992

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.)

Fan	$ 110,240	Piping	$ 11,255	Total Cost Estimate
Scrubber	131,934	Concrete	5,700	$ 1,248,900
Cyclone	197,647	Seal Tanks	3,700	
Ducts	112,750	Misc. & Labor	675,650	

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

Present Operating Permit #A029-167059 Issued 9/28/89

Expires 9/29/94

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: ____

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. No
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII. No
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. This plant is in the area of influence of the Tampa Non-Attainment Area for Particulates but was exempted by modeling.

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

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

As stated on present operating permit

Description	Contaminants		Utilization Rate - ~~lbs/hr~~ T/hr	Relate to Flow Diagram
	Type	% Wt		
39.8% Phos.Acid	F	2.0	122.3 on DAP 130.6 on MAP	A
			52.4 on GTSP	
Phosphate Rock	F	3.8	25.2 on GTSP	C on GTSP
Sulfuric Acid	None		1.0	C
Ammonia	None		23.1 on DAP 14.1 on MAP	B

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

1. Total Process Input Rate (~~lbs/hr~~ T/hr): 145 on DAP, MAP 78 on GTSP
2. Product Weight (~~lbs/hr~~ T/hr): 100 on DAP, MAP 55 on GTSP

C. Airborne Contaminants Emitted:

Maximum lb/hr emissions from past compliance tests

Name of Contaminant GTSP	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr By Permit	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			~~lbs/hr~~	T/yr	
Fluoride	0.73	0.11	0.15 lbs/T	3.8		470	E
Particulate	9.32	2.38	32.6 lbs/hr	32.6		10535	E
DAP/MAP							
Fluoride	1.2	0.17	0.06 lbs/T	2.2		442	E
Particulate	11.61	1.67	32.6	32.6		4345	E

Actual emissions T/yr taken from 1991 annual operating report for air emissions.

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]
Ducon Cooler Cyclone	Particulate	89+%	0 - 10	design
Ducon Cooler Scrubber	Particulate F	70+% 70+%	-	design
Ducon F Abatement Scrubber	Particulate F	89+% 89+%	-	design
Overall Efficiency for both F and Particulate = 99.8%			by 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

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Natural Gas	0.005	0.044	45
Standby fuel is fuel oil with a maximum S content of 1.6%			

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

Fuel Analysis: Natural Gas

Percent Sulfur: 0 Percent Ash: 0

Density: _____ lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: 1031 BTU/cu ft ~~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.

No liquid or solid wastes are generated. Process pond water is used in the scrubbers and is recycled to the cooling pond. Waste product recycles to the system.

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

Stack Height: 180 ft. Stack Diameter: 9.2 ft.

Gas Flow Rate: 175000 ACFM Gas Exit Temperature: 140 °F.

Water Vapor Content: 18.0 % Velocity: 44 FPS

SECTION IV: INCINERATOR INFORMATION

N/A

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.
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).
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.).
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).
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.
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).
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.

9. An application fee of $20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
[ ] Yes [ ] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) [ ] Yes [ ] No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration

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

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:
5. Useful Life:
6. Operating Costs:
7. Energy:
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

10. Stack Parameters

a. Height: ft. b. Diameter: ft.

c. Flow Rate: ACFM d. Temperature: °F

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy*: h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy**: h. Maintenance Costs:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power — KWH design rate.

3.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Life: f. Operating Cost:

g. Energy: h. Maintenance Cost:

*Explain method of determining efficiency above.

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space and operate within proposed levels:

4.

a. Control Device

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device:

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:

*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

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.

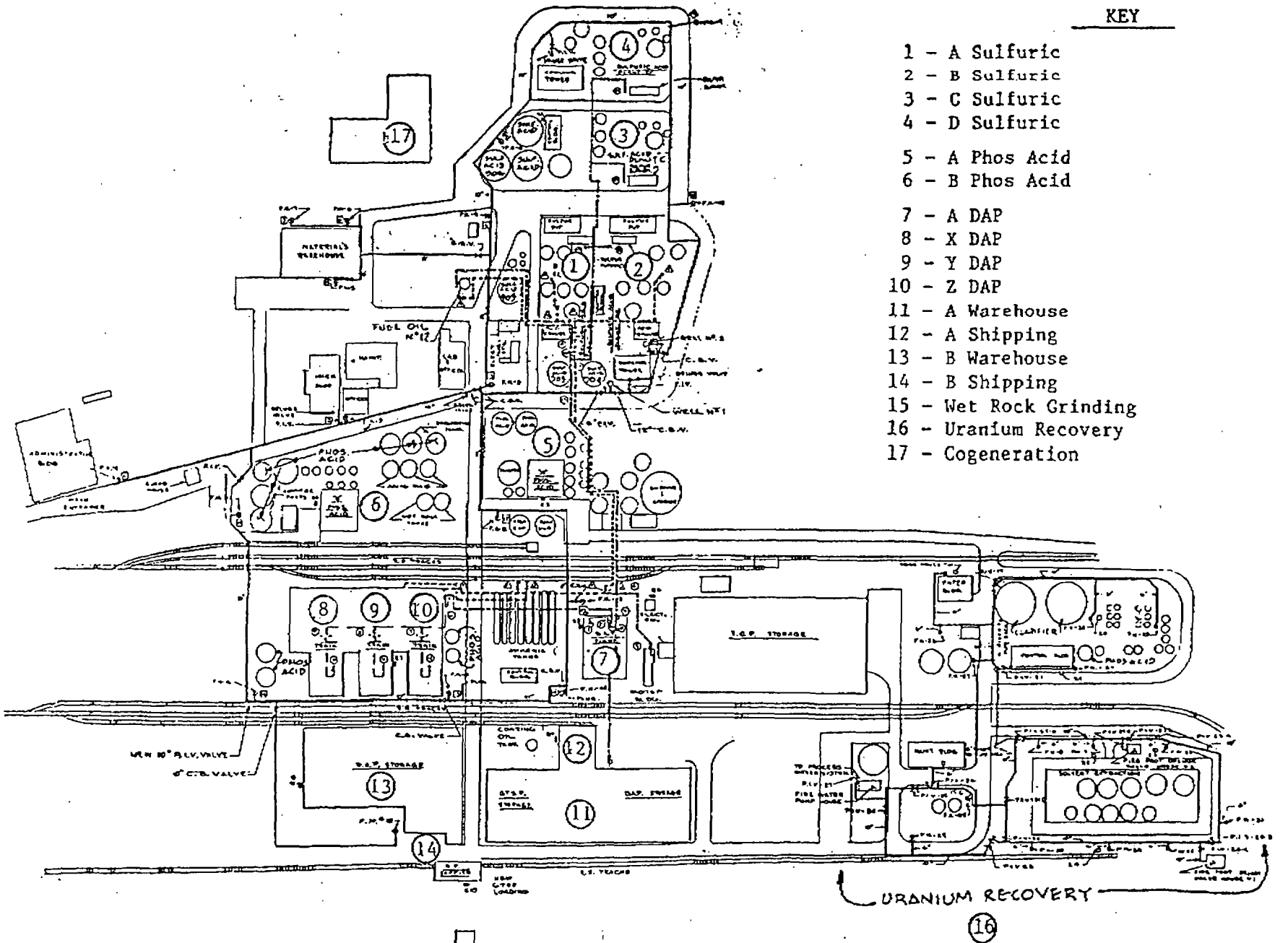
F. Attach all other information supportive to the PSD review.

*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.

I. FACILITY DIAGRAM



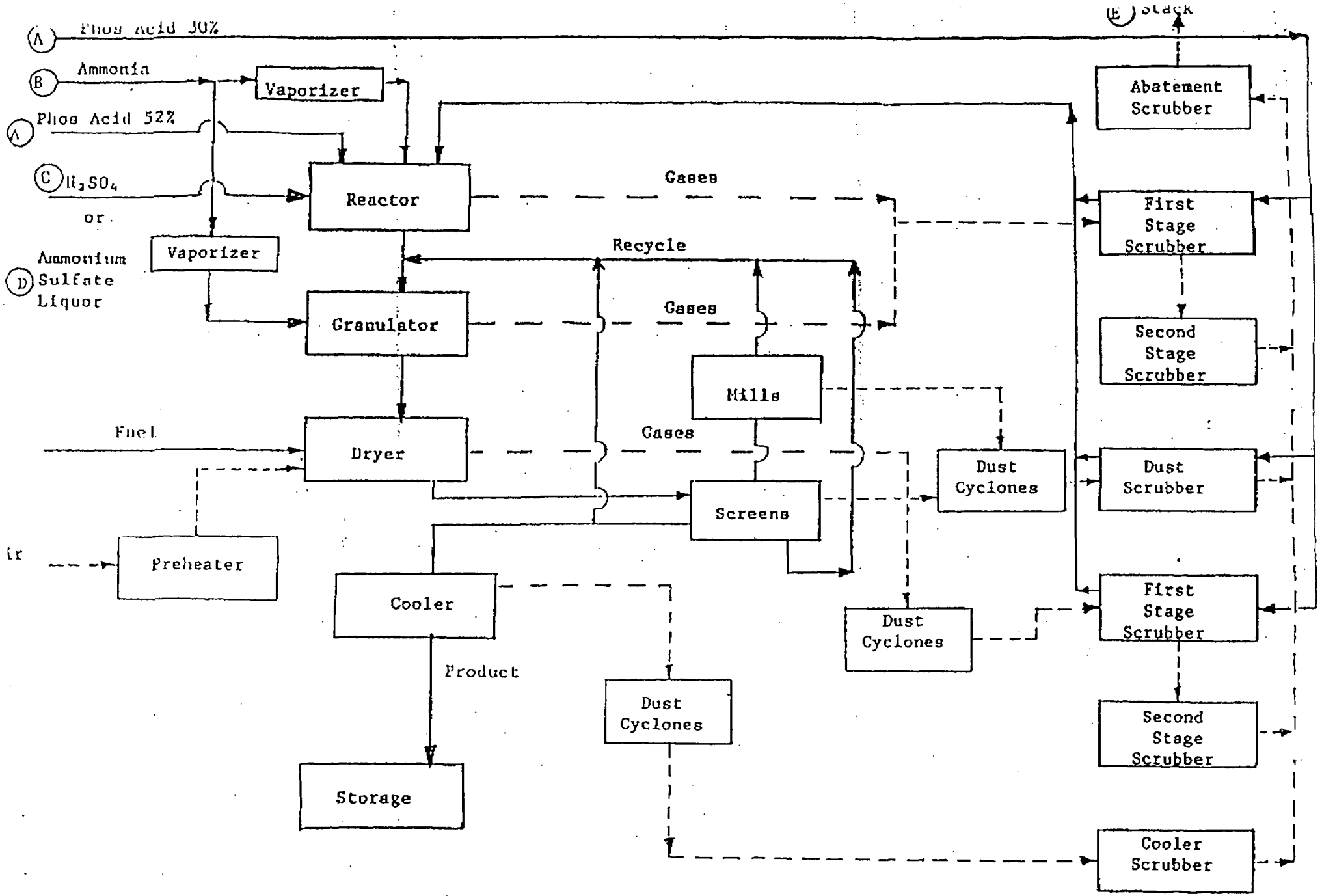


FIGURE VI - DAP PROCESS FLOW DIAGRAM

NOTE: Second Stage Scrubbers and Cooler Scrubbers use Pond Water as the scrubbing medium

REV. 5/89

GRANULAR TRIPLESUPERPHOSPHATE PLANTS SPECIFICATION

GRANULAR TRIPLESUPERPHOSPHATE WILL BE PRODUCED IN TWO TRAINS USING THE DIRECT REACTION OF PHOSPHATE ROCK AND PHOSPHORIC ACID IN A SLURRY MEDIUM FOLLOWED BY GRANULATION, DRYING AND SCREENING. AIR POLLUTION CONTROL SYSTEMS WILL BE PROVIDED SO THAT NO FUGITIVE DUST OR VISIBLE EMISSIONS WILL OCCUR AT ANY LOCATION WITHIN THE BATTERY LIMITS OF THE TRIPLESUPERPHOSPHATE PLANT FROM ANY SOURCE. GASEOUS FLUORIDE EMISSIONS WILL BE LIMITED TO 35 LB./DAY AS F OR 70 LB./DAY AS F TOTAL FOR THE GRANULATION TRAINS, TRIPLE STORAGE, AND TRIPLE SHIPPING.

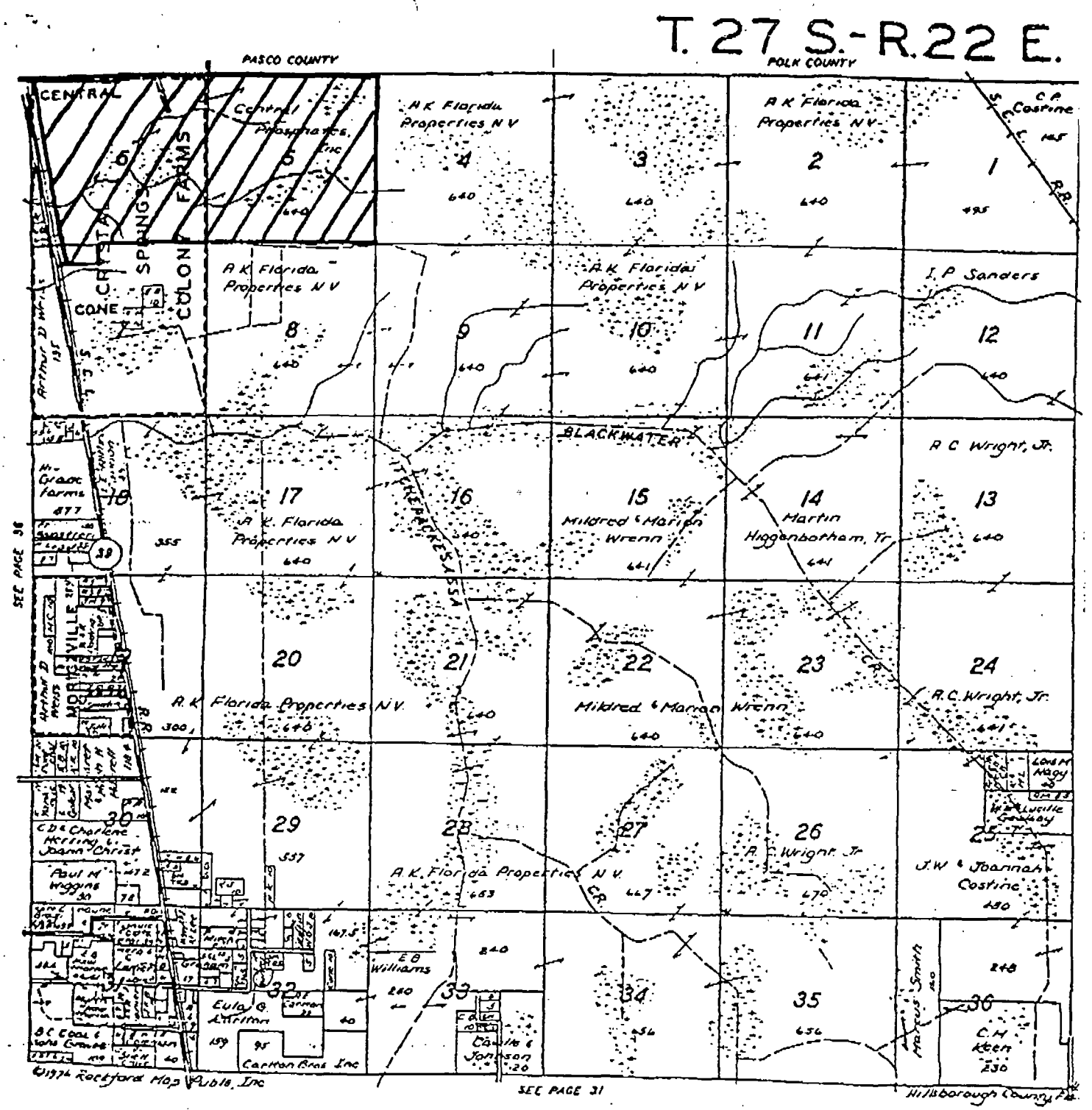
I. PLANT SIZE

A. SECONDARY PHOSPHATE ROCK UNLOADING & STORAGE

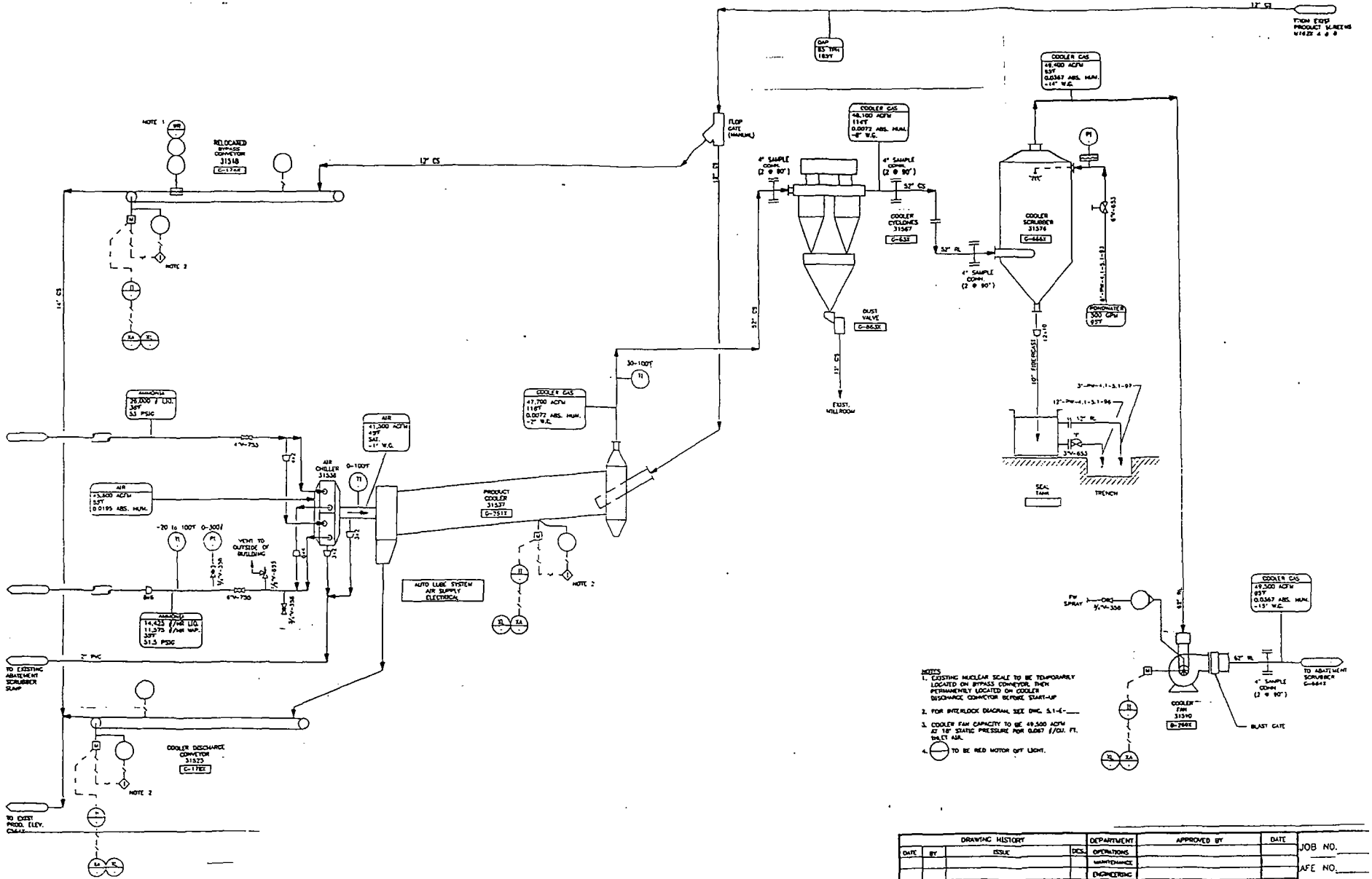
1.00	NUMBER OF UNLOADING STATIONS:	ONE
2.00	UNLOADING RATE:	100 TPH
3.00	OPERATING TIME:	THE UNLOADING STATION SHALL BE CAPABLE OF OPERATION 330 DAYS PER YEAR, 24 HRS. PER DAY AT FULL CAPACITY OF 100 TONS PER HOUR.
4.00	STORAGE:	TWO SILOS OF GROUND PHOSPHATE ROCK: 1,310 TONS LIVE STORAGE EACH; A TOTAL OF 2,620 TONS OF LIVE STORAGE.

B. PHOSPHORIC ACID SHIFT TANKS

1.00	NUMBER OF TANKS:	EIGHT; FOUR PER TRAIN.
2.00	SIZE OF TANKS:	200 TONS OF P_2O_5 AS 40% P_2O_5 ACID EACH, A TOTAL CAPACITY OF 1,600 TONS P_2O_5 (4,000 TONS "AS-IS" ACID)
3.00	RECEIPT OF PHOSPHORIC ACID:	200 GPM



CF INDUSTRIES, INC.
PLANT CITY PHOSPHATE COMPLEX
SITE LOCATION MAP



DRAWING HISTORY				DEPARTMENT	APPROVED BY	DATE
DATE	BY	ISSUE	DCN	OPERATIONS		
				MAINTENANCE		
				ENGINEERING		
				SAFETY		

JOB NO. ____
AFE NO. ____

CF Industries, Inc.

PLANT CITY PHOSPHATE COMPLEX
DAP/GTSP "X" TRAIN
COOLER, SCRUBBER & FAN INSTALLATION
P & I DIAGRAM

DRAWING NO. 5.1-F-001
REVISION

SECTION V
SUPPLEMENTAL REQUIREMENTS

1. Derivation of Input and Product Rates

Known:

Phosphoric Acid	=	39.8% P_2O_5
Ammonia	=	99.5% NH_3 - 81.9% N
DAP Product	=	18% N 46.2% P_2O_5
Recovery	=	95%

100 T/hr DAP Product = 200,000 lbs

P_2O_5 $\frac{200,000 \text{ lbs}}{.95}$ = 210,526 lbs DAP x 46.2% P_2O_5 = 97,263 lbs P_2O_5 input

$\frac{97,263 \text{ lbs } P_2O_5}{.398 \text{ Phos. Acid Concentration}}$ = 244,380 lbs 39.8% Phos.Acid Input

NH_3 Required at 95% Recovery

210,526 lbs DAP x 18.0% N = 37,895 lbs N

37,895 lbs N x 17/14 = 46,015 lbs NH_3

$\frac{46,015}{.995}$ = 46,246 lbs of 99.5% NH_3 input

2. Basis of Emission Estimate

All emission estimates are based on past compliance tests on both DAP and GTSP. There will not be an increase in emissions as measured by the Student T Test contained in 40 CFR 60, Appendix C.

Compliance tests shall be performed using EPA or DER procedures, such as:

Particulates	EPA Method 5
Fluorides	EPA 13A or 13B or DER 13
Visible Emissions	EPA Method 9

Other test shall be by EPA Methods 1, 2, 4, 5, 9, 13B and 17.

3. Potential Discharge

Potential emissions are based on present stack emissions and efficiencies as stated in the original Construction Application, dated May 30, 1974. Page 5C, Section III states "The overall efficiency will exceed 99.8%". Therefore, potential emissions are calculated as follows:

Actual emissions are taken from annual emissions reports.

$$\text{Potential Emissions} = \frac{\text{Actual (T/Hr)}}{\text{Hours operated x 8,760 hrs/yr x operating factor}} \over (1 - \text{scrubber efficiency})$$

SECTION V
SUPPLEMENTAL REQUIREMENTS

4. **Derivation of Control Device Efficiency**

As stated in (3) above, the overall efficiency by design exceeds 99.8%. Further substantiation is found on Page 1 of the Design Specification titled "Granular Triplesuperphosphate Plants Specification", which shows a maximum of 70 lbs/day F from all three production plants and storage and shipping.

For Fluorides:

$$\text{Efficiency} = \frac{\text{F in} - \text{F out}}{\text{F in}} \times 100$$