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Department of
Environmental Protection BUREAU OF AIR REGULATION

DIVISION OF AIR RESOURCES MANAGEMENT

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Identification of Facility Addressed in This Application

1. Facility Owner/Company Name : CF Industries, Inc.	
2. Site Name : Plant City Phosphate Complex	
3. Facility Identification Number :	0570005 [] Unknown
4. Facility Location : CF Industries, Inc. Plant City Phosphate Complex 10608 Paul Buchman Highway Plant City, Florida 33565 Street Address or Other Locator : 10608 Paul Buchman Highway City : Plant City County : Hillsborough Zip Code : 33565	
5. Relocatable Facility? [] Yes [X] No	6. Existing Permitted Facility? [X] Yes [] No

I. Part 1 - 1

DEP Form No. 62-210.900(1) - Form

Effective : 3-21-96

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official :

Name : Herschel E. Morris
Title : General Manager

2. Owner or Authorized Representative or Responsible Official Mailing Address :

Organization/Firm : CF Industries, Inc.
Street Address : P.O. Drawer L
City : Plant City
State : FL Zip Code : 33564

3. Owner/Authorized Representative or Responsible Official Telephone Numbers :

Telephone : (813)782-1591 Fax : (813)788-9126

4. Owner/Authorized Representative or Responsible Official Statement :

I, the undersigned, am the owner or authorized representative of the non-Title V source addressed in this Application for Air Permit or the responsible official, as defined in Rule 62-210.200, F.A.C., of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions units.*

Herschel Morris
Signature

6/11/99
Date

* Attach letter of authorization if not currently on file.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type
004	A Phosphoric Acid Unit	A1CE
007	B Phosphoric Acid Unit	A1CE

Purpose of Application and Category

Category I : All Air Operation Permit Applications Subject to Processing Under Chapter 62-213, F.A.C.

This Application for Air Permit is submitted to obtain :

- Initial air operation permit under Chapter 62-213, F.A.C., for an existing facility which is classified as a Title V source.

- Initial air operation permit under Chapter 62-213, F.A.C., for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number :

- Air operation permit renewal under Chapter 62-213, F.A.C., for a Title V source.

Operation permit to be renewed :

- Air operation permit revision for a Title V source to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number :

Operation permit to be revised :

- Air operation permit revision or administrative correction for a Title V source to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application.

Operation permit to be revised/corrected :

- Air operation permit revision for a Title V source for reasons other than construction or modification of an emissions unit.

Operation permit to be revised :

Reason for revision :

Category II : All Air Operation Permit Applications Subject to Processing Under Rule 62-210.300(2)(b), F.A.C.

This Application for Air Permit is submitted to obtain :

- Initial air operation permit under Rule 62-210.300(2)(b), F.A.C., for an existing facility seeking classification as a synthetic non-Title V source.

Current operation/construction permit number(s) :

- Renewal air operation permit under Rule 62-210.300(2)(b), F.A.C., for a synthetic non-Title V source.

Operation permit to be renewed :

- Air operation permit revision for a synthetic non-Title V source.

Operation permit to be revised :

Reason for revision :

Category III : All Air Construction Permit Applications for All Facilities and Emissions Units

This Application for Air Permit is submitted to obtain :

I. Part 4 - 2

DEP Form No. 62-210.900(1) - Form
Effective : 3-21-96

- Air construction permit to construct or modify one or more emissions units within a facility (including any facility classified as a Title V source).

Current operation permit number(s), if any :
0570005-007-AV

- Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

Current operation permit number(s) :

- Air construction permit for one or more existing, but unpermitted, emissions units.

Application Processing Fee

Check one :

Attached - Amount : \$0.00

Not Applicable.

Construction/Modification Information

1. Description of Proposed Project or Alterations :	
Requested Modification of "Condition C.1." of Title V Air Permit No. 0570005-700-AV	
The purpose of this construction application is to request a 10% increase in the permitted hourly and daily processing rates for both phosphoric acid units (i.e., increase A Phosphoric Acid from 59 tons/hour to 65 tons/hour and a maximum daily rate of 1,560 tons per day and increase B Phosphoric Acid from 87.8 tons/hour to 97 tons/hour and a maximum daily rate of 2328 tons per day), measured as 100% P2O5 from phosphate rock. The requested increase will not require any construction or physical modification of either production unit (i.e., process equipment or air abatement equipment), only the modification of "Subsection C.1." of the facility Title V Air Permit No. 0570005-007- AV.	
The requested change in the processing rates will not increase actual fluoride emissions from the phosphoric acid production units by more than 0.2 tons per year based on the results of the 1998 compliance test, the annual hours of production and the modeled emissions data. The 1999 compliance test will be conducted at rates above the current maximum permitted rates and within 10% of the proposed rates, in order to demonstrate the emission rates at the increased processing rates.	
The actual date of commencement of the project will be the date of the first scheduled compliance test at the increased hourly processing rates for each unit.	
2. Projected or Actual Date of Commencement of Construction :	03-Jun-1997
3. Projected Date of Completion of Construction :	08-Jun-1999

Professional Engineer Certification

1. Professional Engineer Name : George Thomas Cucchi Registration Number : PE-0048508
2. Professional Engineer Mailing Address :

I. Part 5 - 1



Organization/Firm : CF Industries, Inc.	
Street Address : 10608 Paul Buchman Highway	
City : Plant City	State : FL Zip Code : 33565
3. Professional Engineer Telephone Numbers :	
Telephone : (813)782-1591	Fax : (813)788-9126

I. Part 5 - 2

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Effective : 3-21-96

Organization/Firm : CF Industries, Inc.

Street Address : 10608 Paul Buchman Highway

City : Plant City

State : FL Zip Code : 33565

3. Professional Engineer Telephone Numbers :

Telephone : (813)782-1591

Fax : (813)788-9126

4. Professional Engineer Statement :

I, the undersigned, hereby certify, except as particularly noted herein, that :*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollutant control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [] if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [] if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [] if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature
(seal)

Date

* Attach any exception to certification statement.

Application Contact

1. Name and Title of Application Contact :

Name : J. Michael Messina
Title : Chief, Environmental Services

2. Application Contact Mailing Address :

Organization/Firm : CF Industries, Inc.
Street Address : P.O. Drawer L
City : Plant City
State : FL Zip Code : 33564

3. Application Contact Telephone Numbers :

Telephone : (813)782-1591 Fax : (813)788-9126

Application Comment

The existing "A & B Phosphoric Acid Plants" are currently permitted under FDEP Permit No. 0570005-007-AV (Subsection C.). CF Industries, Inc. is requesting a modification of the existing permit (i.e., ten percent increases in the hourly processing rates for both the A & B Phosphoric Acid Units). The requested increases will increase the maximum daily process input rates to 1,560 tons per day at the A Phosphoric Acid Unit and 2,328 tons per day at the B Phosphoric Acid Unit, measured as 100% rock P2O5.

The requested change in the hourly production rate will not increase actual fluoride emissions from the phosphoric acid production units based on the results of the 1998 compliance tests and the annual hours of production. However, the modeled emissions data predicts an annual fluoride emissions increase of approximately 0.2 tons per year.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility, Location, and Type

1. Facility UTM Coordinates : Zone : 17 East (km) : 388.00 North (km) : 3116.00			
2. Facility Latitude/Longitude : Latitude (DD/MM/SS) : Longitude (DD/MM/SS) :			
3. Governmental Facility Code :	4. Facility Status Code : A	5. Facility Major Group SIC Code : 28	6. Facility SIC(s) : 2874
7. Facility Comment : "A and B Phosphoric Acid Units are Wet-Process Phosphoric Acid Plants and are permitted under the facility's Title V Air Permit No. 0570005-007-AV (Subsection C) and only A Phosphoric Acid Unit is subject to 40 CFR 60 NSPS Subpart T - Standards of Performance for Wet - Process Phosphoric Acid Plants. Fluoride emissions from both units are primarily controlled by packed bed scrubbers with "Kimre" packing or equivalent packing and the A Phosphoric Acid Unit is equipped with a cyclonic scrubber.			

Facility Contact

1. Name and Title of Facility Contact : J. Michael Messina Chief, Environmental Services	
2. Facility Contact Mailing Address : Organization/Firm : CF Industries, Inc. Street Address : 10608 Paul Buchman Highway City : Plant City State : FL Zip Code : 33564	
3. Facility Contact Telephone Numbers : Telephone : (813)782-1591 Fax : (813)788-9126	

II. Part 1 - 1

Facility Regulatory Classifications

1. Small Business Stationary Source?	N
2. Title V Source?	Y
3. Synthetic Non-Title V Source?	N
4. Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?	N
5. Synthetic Minor Source of Pollutants Other than HAPs?	N
6. Major Source of Hazardous Air Pollutants (HAPs)?	N
7. Synthetic Minor Source of HAPs?	N
8. One or More Emissions Units Subject to NSPS?	Y
9. One or More Emission Units Subject to NESHAP?	N
10. Title V Source by EPA Designation?	N
11. Facility Regulatory Classifications Comment :	
The A Phosphoric Acid Unit is subject to 40 CFR 60 NSPS Subpart T - Standards of Performance for Wet-Process Phosphoric Acid Plants and the B Phosphoric Acid Unit is not.	

B. FACILITY REGULATIONS

Rule Applicability Analysis

Local Hillsborough County Environmental Protection Commission, Chapter 1-1 through 1-12.

This application is for an air construction permit for two similar emission sources (A Phosphoric Acid Unit and B Phosphoric Acid Unit) located at CF Industries, Inc. (Plant City Phosphate Complex). The facilities, in general are subject to Chapter 62-4, Florida Administrative Code (F.A.C.) Permits, and also specific requirements of Chapter 62-210, F.A.C. Stationary - General Requirements, Chapter 62-212, F.A.C. Stationary Sources - Preconstruction Review, Chapter 62-213, F.A.C. Stationary Sources - Emission Standards, Chapter 62-296.403, F.A.C. Phosphate Processing and Chapter 62-297, F.A.C. Phosphate Processing and Chapter 62.297, Stationary - Emissions Monitoring.

B. FACILITY REGULATIONS

List of Applicable Regulations

Chapter 62-4, Florida Administrative Code (F.A.C.) Permits

Chapter 62-210, F.A.C. Stationary Sources - General Requirements

Chapter 62-212, F.A.C. Stationary Sources - Preconstruction Review

Chapter 62-213, F.A.C. Stationary Sources - Emission Standards

Chapter 62-296.403, F.A.C. Phosphate Processing

Chapter 62.297, Stationary - Emissions Monitoring

Local Hillsborough County Environmental Protection Commission, Chapter 1-1 through 1-12.

II. Part 3b - 1

DEP Form No. 62-210.900(1) - Form
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C. FACILITY POLLUTANTS

Facility Pollutant Information

1. Pollutant Emitted	2. Pollutant Classification
FL	B

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information

Pollutant 1

1. Pollutant Emitted :	FL	
2. Requested Emissions Cap :	(lbs/hour)	(tons/year)
3. Basis for Emissions Cap Code :		
4. Facility Pollutant Comment :	N/A; pollutant reported in Section H."Emissions Unit Pollutant Detailed Information".	

II. Part 4b - 1

D. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements for All Applications

1. Area Map Showing Facility Location :	Figure 1
2. Facility Plot Plan :	Figure 2
3. Process Flow Diagram(s) :	Figure 3
4. Precautions to Prevent Emissions of Unconfined Particulate Matter :	NA
5. Fugitive Emissions Identification :	NA
6. Supplemental Information for Construction Permit Applic	NA

Additional Supplemental Requirements for Category I Applications Only

7. List of Proposed Exempt
8. List of Equipment/Activities Regulated under Title
9. Alternative Methods of Operation :
10. Alternative Modes of Operation (Emissions
11. Identification of Additional Applicable
12. Compliance Assurance Monitoring
13. Risk Management Plan Verification :
14. Compliance Report and Plan :
15. Compliance Certification (Hard-copy Requir

III. EMISSIONS UNIT INFORMATION

A. TYPE OF EMISSIONS UNIT (Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 1

A Phosphoric Acid Unit

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

- [X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
- [] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

2. Single Process, Group of Processes, or Fugitive Only? Check one :

- [X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
- [] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
- [] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

III. Part 1 - 1

Emissions Unit Information Section 1

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section : A Phosphoric Acid Unit		
2. Emissions Unit Identification Number : 004 [] No Corresponding ID [] Unknown		
3. Emissions Unit Status Code : A	4. Acid Rain Unit? [] Yes [X] No	5. Emissions Unit Major Group SIC Code : 28
6. Emissions Unit Comment : The existing "A Phosphoric Acid Unit" is currently permitted under DEP Permit No. 0570005-007-AV. CF Industries, Inc. is requesting a ten percent increase in the hourly processing rate for wet rock from 59 tons/hour to 65 tons/hour, measured as 100% P2O5.		

Emissions Unit Information Section 1

A Phosphoric Acid Unit

Emissions Unit Control Equipment 1

1. Description :

Cyclonic scrubber

2. Control Device or Method Code : 85

Emissions Unit Information Section 1

A Phosphoric Acid Unit

Emissions Unit Control Equipment 2

1. Description :	
Packed bed scrubber with "kimre" packing or equivalent packing	
2. Control Device or Method Code :	1

**C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)**

Emissions Unit Information Section 1
A Phosphoric Acid Unit

Emissions Unit Details

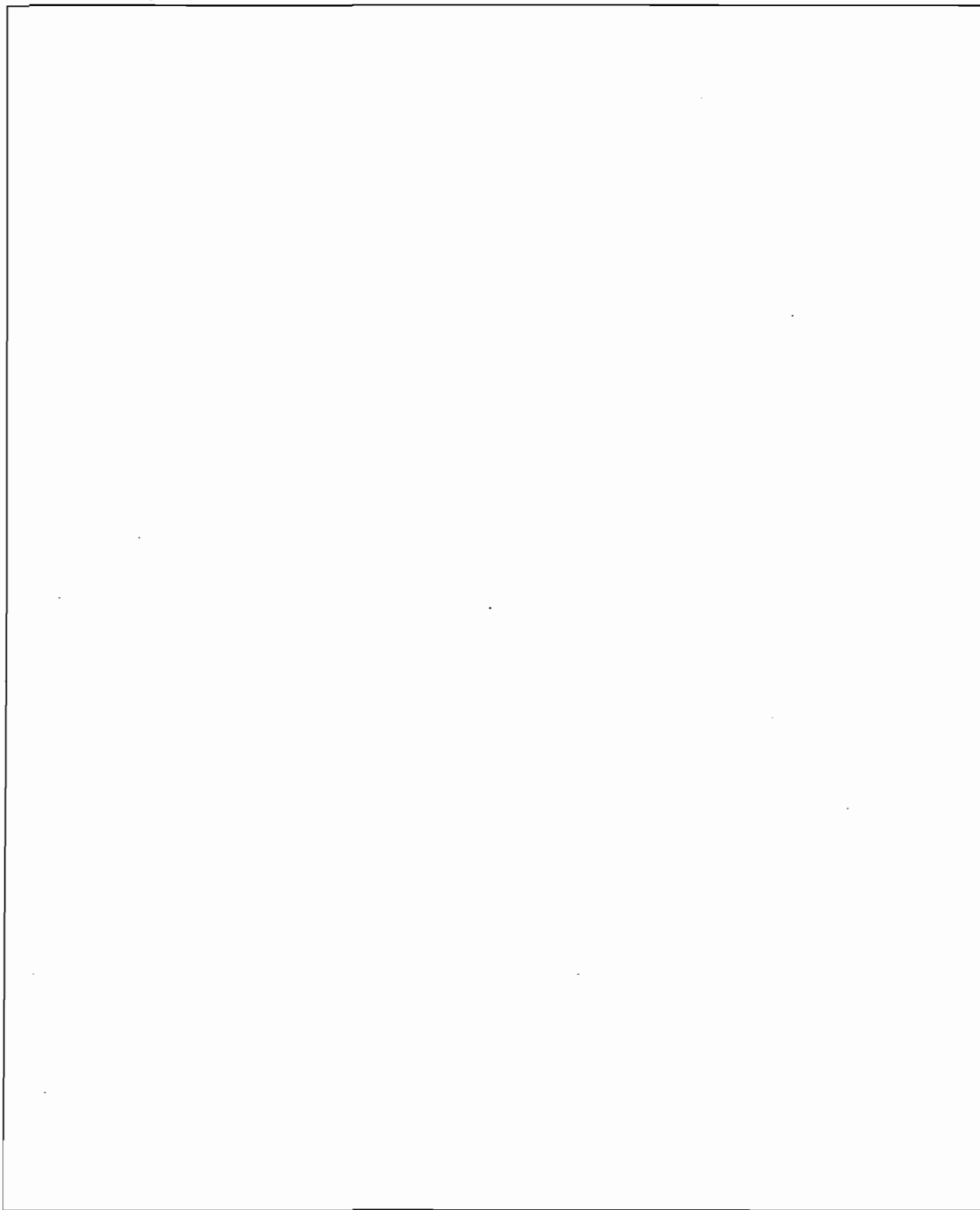
1. Initial Startup Date :	12-Jan-1965	
2. Long-term Reserve Shutdown Date :		
3. Package Unit :		
Manufacturer :	Model Number :	
4. Generator Nameplate Rating :	MW	
5. Incinerator Information :		
Dwell Temperature :	Degrees Fahrenheit	
Dwell Time :	Seconds	
Incinerator Afterburner Temperature :	Degrees Fahrenheit	

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate :	0	mmBtu/hr
2. Maximum Incinerator Rate :	lb/hr	tons/day
3. Maximum Process or Throughput Rate :	59	tons/hour
4. Maximum Production Rate :		
5. Operating Capacity Comment :		
The current maximum permitted wet rock processing rate for this unit is 59 tons/hour and 1,416 tons/day, measured as 100% P2O5.		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule :		
24 hours/day	7 days/week	
52 weeks/year	8,760 hours/year	



**D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)**

Emissions Unit Information Section 1

A Phosphoric Acid Unit

Rule Applicability Analysis

Local Hillsborough County Environmental Protection Commission, Chapter 1-1 through 1-12.

This application is for an air construction permit for two similar emission sources (A Phosphoric Acid Unit and B Phosphoric Acid Unit) located at CF Industries, Inc. (Plant City Phosphate Complex). The facilities, in general are subject to Chapter 62-4, Florida Administrative Code (F.A.C.) Permits, and also specific requirements of Chapter 62-210, F.A.C. Stationary - General Requirements, Chapter 62-212, F.A.C. Stationary Sources - Preconstruction Review, Chapter 62-213, F.A.C. Stationary Sources - Emission Standards, Chapter 62-296.403, F.A.C. Phosphate Processing and Chapter 62-297, F.A.C. Phosphate Processing and Chapter 62.297, Stationary - Emissions Monitoring.

III. Part 6a - 1

DEP Form No. 62-210.900(1) - Form

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Emissions Unit Information Section 1

A Phosphoric Acid Unit

List of Applicable Regulations

Chapter 62-4, Florida Administrative Code (F.A.C.) Permits

Chapter 62-210, F.A.C. Stationary Sources- General Requirements

Chapter 62-212, F.A.C. Stationary Sources - Preconstruction Review

Chapter 62-213, F.A.C. Stationary Sources - Emission Standards

Chapter 62-296.403, F.A.C. Phosphate Processing

Chapter 62.297, Stationary - Emissions Monitoring

Local Hillsborough County Environmental Protection Commission, Chapter 1-1 through 1-12.

III. Part 6b - 1

DEP Form No. 62-210.900(1) - Form

Effective : 3-21-96

E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 1

A Phosphoric Acid Unit

Emission Point Description and Type :

1. Identification of Point on Plot Plan or Flow Diagram :	A Phosphoric Acid		
2. Emission Point Type Code :	1		
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking : (limit to 100 characters per point)			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common : Scrubber stack located on the north side of the A Phosphoric Acid Unit.			
5. Discharge Type Code :	V		
6. Stack Height :	85	feet	
7. Exit Diameter :	5.0	feet	
8. Exit Temperature :	105	°F	
9. Actual Volumetric Flow Rate :	54200	acfm	
10. Percent Water Vapor :	6.00	%	
11. Maximum Dry Standard Flow Rate :	48500	dscfm	
12. Nonstack Emission Point Height :	0	feet	
13. Emission Point UTM Coordinates :			
Zone :	17	East (km) :	388.000
		North (km) :	3115.000
14. Emission Point Comment : The data provided in boxes 8, 9, 10, and 11 was obtained from the 1998 compliance test.			

III. Part 7a - 1

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 1

A Phosphoric Acid Unit

Segment Description and Rate : Segment 1

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) : Fuel Type N/A; No fossil fuels are consumed during the operation of A Phosphoric Acid Unit.	
2. Source Classification Code (SCC) : 30101601	
3. SCC Units : Tons Processed	
4. Maximum Hourly Rate : 59.00	5. Maximum Annual Rate : 516,840.00
6. Estimated Annual Activity Factor :	
7. Maximum Percent Sulfur :	8. Maximum Percent Ash :
9. Million Btu per SCC Unit :	
10. Segment Comment : None	

III. Part 8 - 1

G. EMISSIONS UNIT POLLUTANTS
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 1

A. Phosphoric Acid Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 - FL	001	085	EL

III. Part 9a - 1

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 1

A Phosphoric Acid Unit

Visible Emissions Limitation : Visible Emissions Limitation 1

1. Visible Emissions Subtype :	20
2. Basis for Allowable Opacity :	RULE
3. Requested Allowable Opacity :	Normal Conditions : 20 % Exceptional Conditions : % Maximum Period of Excess Opacity Allowed : min/hour
4. Method of Compliance :	Ref. EPA Method 9.
5. Visible Emissions Comment :	62-297.310(4)(a)2, F.A.C. lists the general visible emissions standards (not to equal or be greater than 20%).

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 1

A Phosphoric Acid Unit

Continuous Monitoring System Continuous Monitor 1

1. Parameter Code :	2. Pollutant(s):
3. CMS Requirement	
4. Monitor Information Manufacturer : Model Number : Serial Number :	
5. Installation Date :	
6. Performance Specification Test Date :	
7. Continuous Monitor Comment : N/A; this facility is not equipped with a continuous monitoring system.	

**K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT
TRACKING INFORMATION**

Emissions Unit Information Section 1

A Phosphoric Acid Unit

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

-] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.
-] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.
-] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
-] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
-] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

III. Part 12 - 1

2. Increment Consuming for Nitrogen Dioxide?

-] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.
-] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
-] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
-] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
-] None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3. Increment Consuming/Expanding Code :			
PM :	SO2 :	NO2 :	
4. Baseline Emissions :			
PM :	lb/hour	tons/year	
SO2 :	lb/hour	tons/year	
NO2 :		tons/year	
5. PSD Comment :			
None			

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 1

A Phosphoric Acid Unit

Supplemental Requirements for All Applications

1. Process Flow Diagram :	Figure 3
2. Fuel Analysis or Specification :	NA
3. Detailed Description of Control Equipment :	Figure 4
4. Description of Stack Sampling Facilities :	NA
5. Compliance Test Report :	3/12/98
6. Procedures for Startup and Shutdown :	NA
7. Operation and Maintenance Plan :	NA
8. Supplemental Information for Construction Permit Application :	NA
9. Other Information Required by Rule or Statute :	NA

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operations :
11. Alternative Modes of Operation (Emissions Trading) :

12. Identification of Additional Applicable Requirements :

13. Compliance Assurance Monitoring
Plan :

14. Acid Rain Application (Hard-copy Required) :

Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))

Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)

New Unit Exemption (Form No. 62-210.900(1)(a)2.)

Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

III. Part 13 - 2

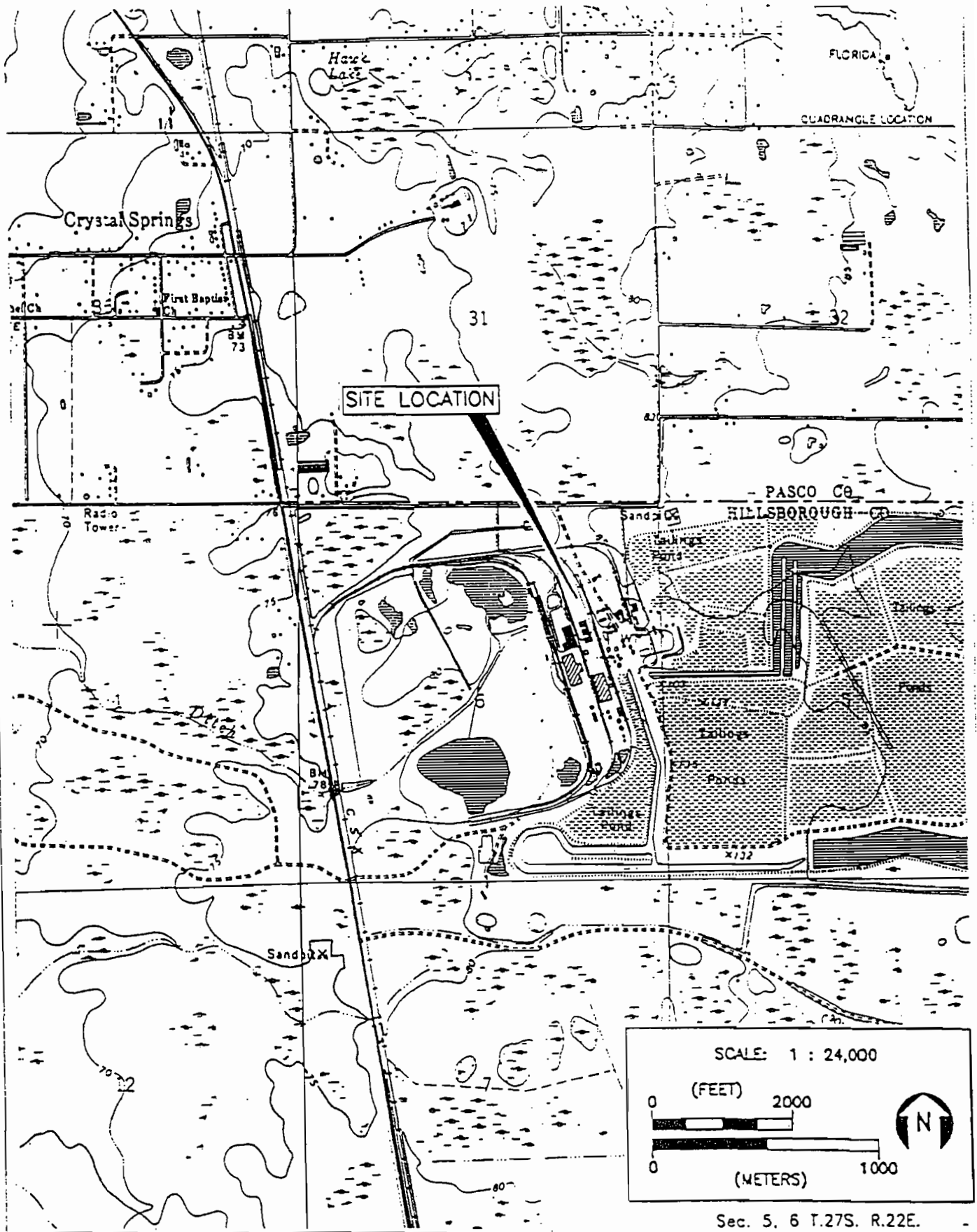
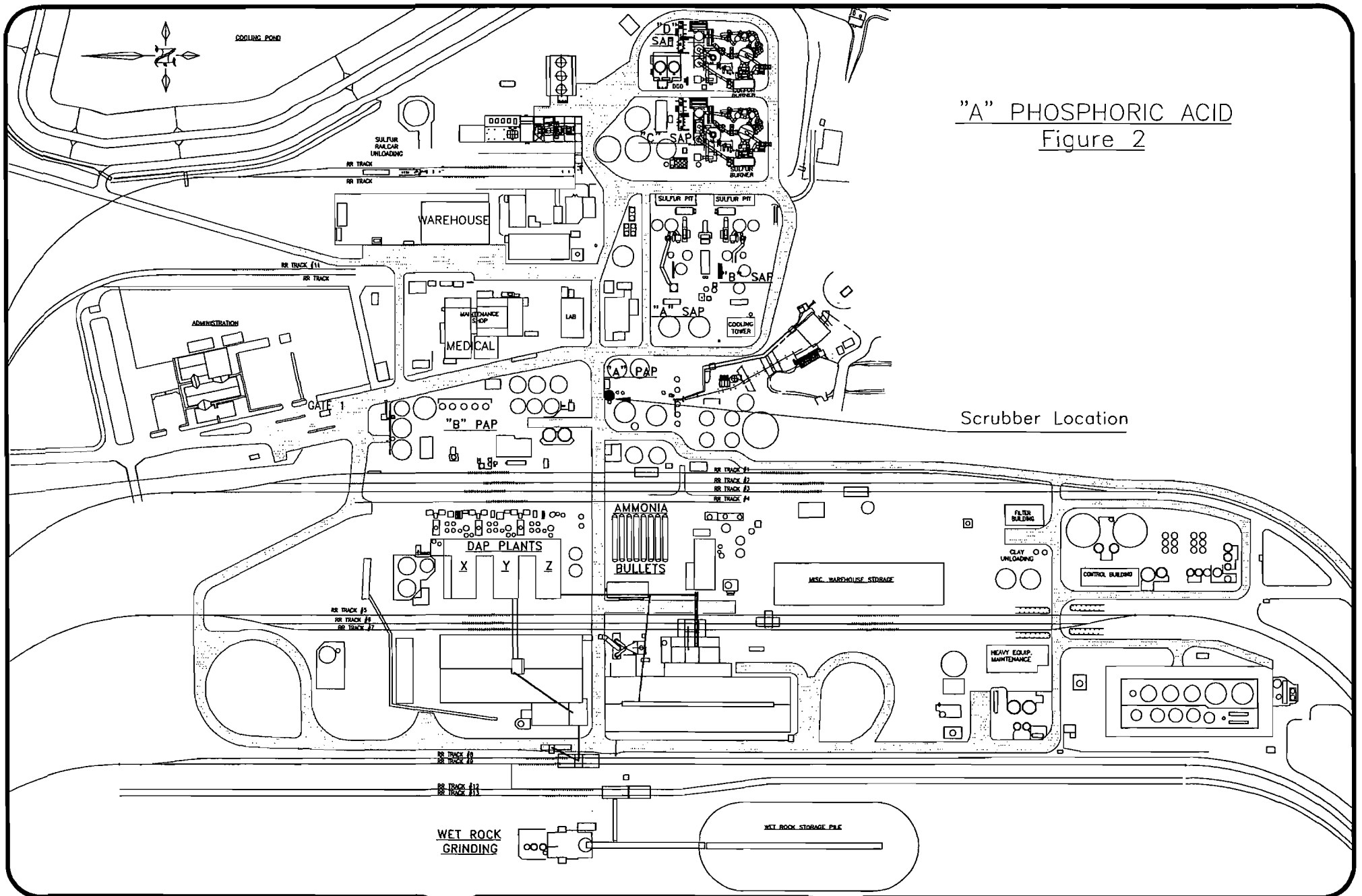


Figure 1
A - Phosphoric Acid



"A" PHOSPHORIC ACID
Figure 2

Scrubber Location

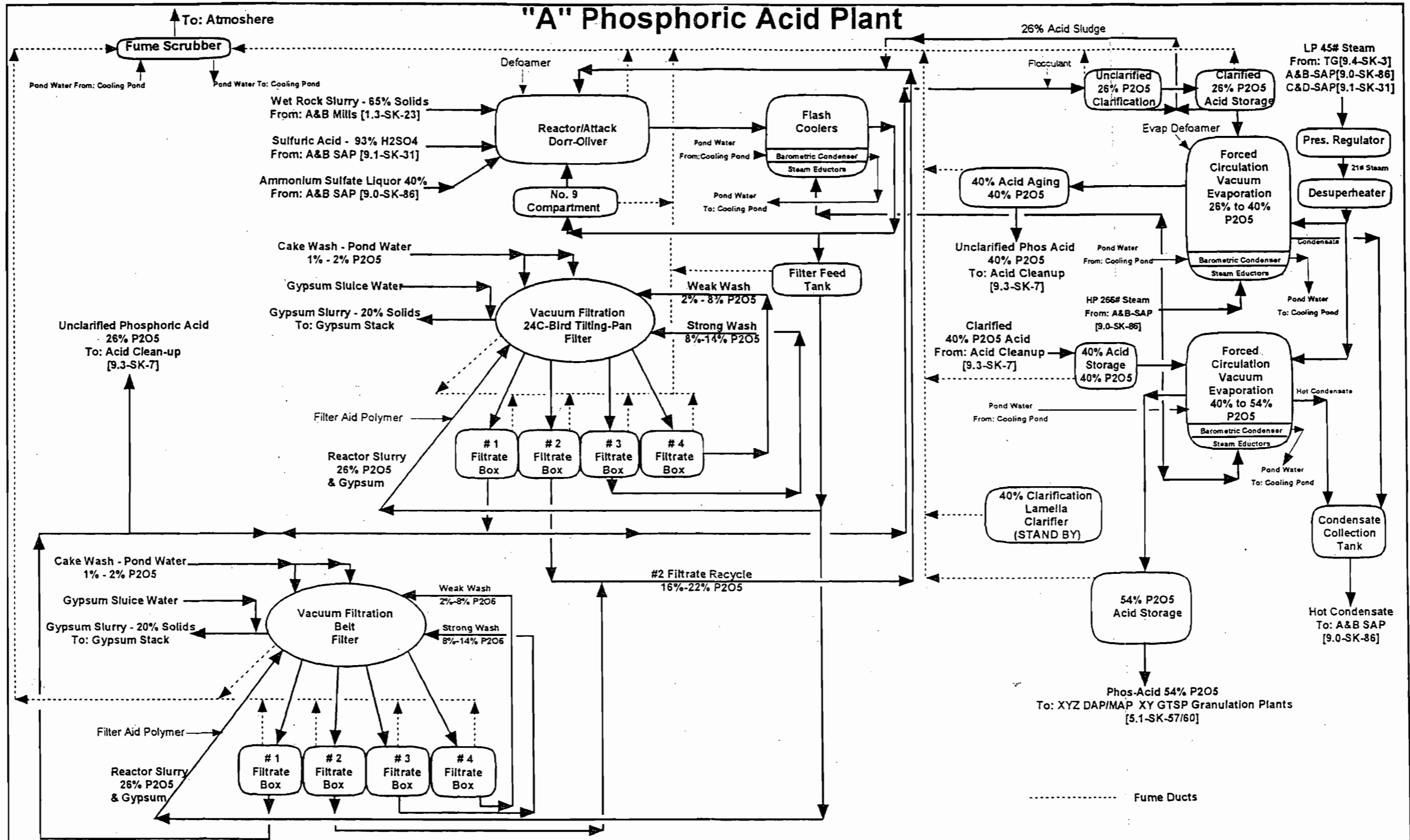
REV. BY	REV. DATE	REV. NO.	REVISION DESCRIPTION

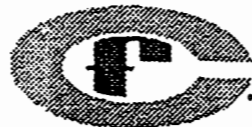
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PLOT SCALE	1
PLOT DATE	4/2/97

DWG. BY	CFI
DWG. DATE	7/29/96
DWG. SCALE	N.T.S.

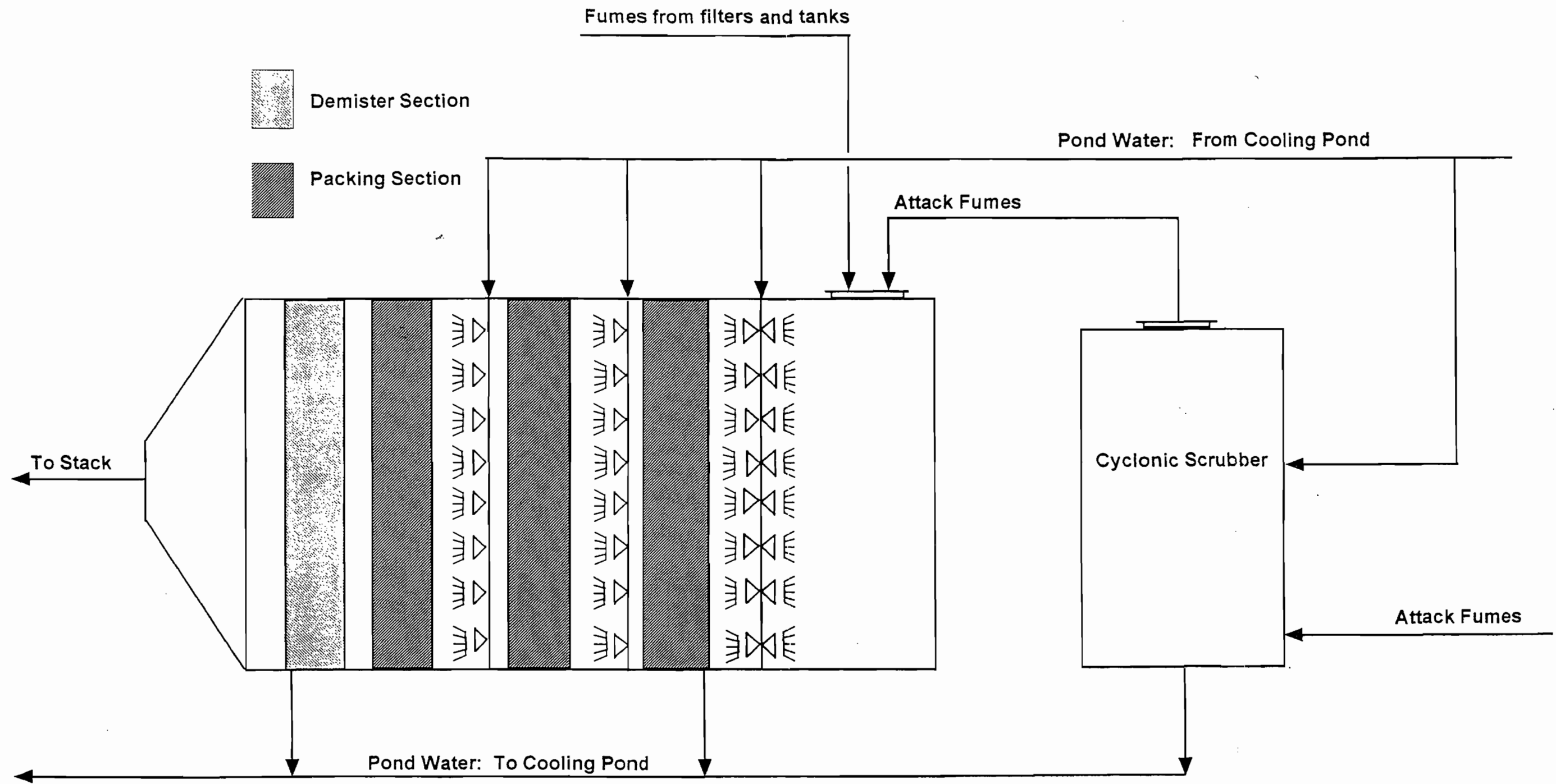


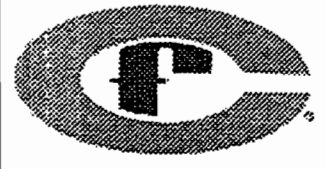
CF Industries, Inc.
PLANT CITY PHOSPHATE COMPLEX



Revision	By	Date	CF Industries, Inc. Plant City Phosphate Complex P.O. Drawer L Plant City, Florida 33564 Phone: (813) 782-1591 Fax: (813) 788-9126	Title	DWR. NO
Added Proposed Belt Filter Figure 3	Randy Charlot James Byrd	03/03/97 03/24/97			"A" Phosphoric Acid Plant Block Flow Diagram

"A" Phosphoric Acid Plant Fume Scrubber



Revision	By	Date	 CF Industries, Inc. Plant City Phosphate Complex P.O. Drawer L Plant City, Florida 33564 Phone: (813) 782-1591 Fax: (813) 788-9126	Title	DWR. NO
Figure 4	James Byrd	03/27/97		"A" Phosphoric Acid Plant Fume Scrubber	B-20-FW-020

CF Industries
A Phosphoric Acid Unit
Process Rate Increase Emission Analysis
Figure 5

Sources of Data for Spreadsheet:

- A. **P₂O₅ Feed (TPD)**
Historical Compliance Tests reported some of the data in TPH, which was multiplied by 24. The remaining data was calculated from the reported F loading (lb F/ton P₂O₅) and F emission rates (lb F/hr).
- B. **F Out (lb/hr)**
From Historical Compliance Tests
- C. **F (lb/ton)**
Historical Compliance Tests reported most of the data. The remaining data was calculated from the reported F emission rate (lb F/hr) divided by the P₂O₅ Feed (TPH).
- D. **Gas Flow (DSCFM)**
From the 1998 Compliance Tests
- E. **Stack Temp (°F)**
From the 1998 Compliance Tests
- F. **Current VP (mg/scf)**
Vapor Pressures were derived from the stack temp using Hansen's graphical presentation of the Russian data.

Sample Calculations:

- A. **F Equilib. (lb/hr)**
Gas Flow (60) (Current VP)/453,600
- B. **F Out (ton/yr)**
For A-PAP, (F Out in lb/hr) (8017 hr/yr)/(2,000 lb/ton)
For B-PAP, (F Out in lb/hr) (8217 hr/yr)/(2,000 lb/ton)
Note: All conversions from lb/hr to ton/yr used the above calculations.
- C. **Current NTU**
- ln F Inlet - F Equilib.
F Out - F Equilib.

*Arthur O. Hansen and Robert J. Danos, The Design and Selection of Scrubbers for Granulation Plants (presented at the Central Florida Section, AIChE Annual Spring Meeting, Clearwater, Florida, May 24, 1980)

D. F Inlet (lb/hr)

The F Inlet was calculated using a ratio from sample data (January 14, 1997). The scrubber inlet is the sum of the "Reactor" and "Inlet" data. The "Inlet" data is comprised of vapors from the filters and tanks. The belt filter was assumed to add 7,000 acfm @ 110°F. The F Loading in the filter area was assumed to remain the same, at 1.67 mg/cu.ft. in A-PAP and 0.52 mg/cu.ft. in B-PAP.

For A-PAP,

$$\text{Total Air Flow (scfm)} = 48,500 \text{ scfm}$$

$$\text{F Loading} = 11,800(1,557.6/1,100)(23.54) + (20,500)(1.75) + 7,000(1.67) = 440,890 \text{ mg/min}$$

$$\text{F Inlet} = \frac{440,890(\text{Gas Flow})(60)(2.2046)}{\text{Total Air Flow}(1,000,000)} = 87.55$$

For B-PAP,

$$\text{Total Air Flow (scfm)} = 32,000 \text{ scfm}$$

$$\text{F Loading} = 23,508(2,317.7/2,021)(17.69) + 12,022(0.66) + 8,000(0.52) = 445,467 \text{ mg/min}$$

$$\text{F Inlet} = \frac{424,221(\text{Gas Flow})(60)(2.2046)}{\text{Total Air Flow}(1,000,000)} = 63.06 \text{ lb/hr}$$

CF Industries
10% Increase in Hourly Wet Rock Processing
A-PAP Fume Scrubber

DATE	P2O5 Feed TPD	F Out lb/hr	F lb/ton Feed	F Out ton/yr	Gas Flow DSCFM	Stack Temp F	F Inlet lb/hr	Current VP mg/scf	F Equilib lb/hr	Current NTU	New P2O5 Feed TPD	New F Equilib lb/hr	New F Out lb/hr	New F lb/ton Feed	New F ton/yr
2/18/98	1303.2	0.63	0.01160	2.525	46194	104.5	87.55	0.045	0.2764	5.51	1557.6	0.3146	0.6681	0.0103	2.678
2/18/98	1300.8	0.59	0.01089	2.365	45906	103.6	87.07	0.043	0.2622	5.58	1557.6	0.2987	0.6263	0.0097	2.511
2/19/98	1312.8	0.36	0.00658	1.443	48408	105.9	91.24	0.048	0.3101	7.51	1557.6	0.3510	0.4009	0.0062	1.607
2/19/98	1312.8	0.60	0.01097	2.405	48084	106.2	90.70	0.049	0.3124	5.75	1557.6	0.3539	0.6414	0.0099	2.571
2/19/98	1312.8	0.66	0.01207	2.646	47504	107.4	89.73	0.052	0.3258	5.59	1557.6	0.3696	0.7036	0.0108	2.821
2/20/98	1324.8	0.69	0.01250	2.766	46718	106.4	88.42	0.050	0.3063	5.44	1557.6	0.3482	0.7317	0.0113	2.933

Average	1311.2	0.588333	0.010767	2.358	47135.7	105.6667	89.12	0.047898	0.298876	5.90	1557.6	0.3393	0.62866	0.0097	2.520
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CF Industries
10% Increase in Hourly Wet Rock Processing
B-PAP Fume Scrubber

DATE	P2O5 Feed TPD	F Out lb/hr	F lb/ton Feed	F Out ton/yr	Gas Flow DSCFM	Stack Temp F	F Inlet lb/hr	Current VP mg/scf	F Equilib lb/hr	Current NTU	New P2O5 Feed TPD	New F Equilib lb/hr	New F Out lb/hr	New F lb/ton Feed	New F ton/yr
1/28/98	1982.4	0.25	0.00303	1.027	29292	89.3	63.06	0.011	0.0410	5.71	2317.7	0.0513	0.2602	0.0027	1.069
1/28/98	1970.4	0.25	0.003045	1.027	29363	88.5	63.18	0.009	0.0341	5.68	2317.7	0.0425	0.2584	0.0027	1.062
1/28/98	2018.4	0.21	0.002497	0.863	28824	88.7	62.26	0.009	0.0352	5.87	2317.7	0.0441	0.2189	0.0023	0.899
1/29/98	1987.2	0.24	0.002899	0.986	29393	89.7	63.24	0.012	0.0447	5.78	2317.7	0.0558	0.2511	0.0026	1.032
1/29/98	2008.8	0.26	0.003106	1.068	28845	90.3	62.29	0.013	0.0491	5.69	2317.7	0.0615	0.2724	0.0028	1.119
1/29/98	2006.4	0.28	0.003349	1.150	28678	90.7	62.00	0.014	0.0523	5.61	2317.7	0.0656	0.2933	0.0030	1.205

Average	1995.6	0.25	0.002987	1.020	29066	89.5	62.67	0.011	0.0427	5.72	2317.7	0.0535	0.2590	0.0027	1.064
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III. EMISSIONS UNIT INFORMATION

A. TYPE OF EMISSIONS UNIT (Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 2

B Phosphoric Acid Unit

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

- [X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
- [] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

2. Single Process, Group of Processes, or Fugitive Only? Check one :

- [X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
- [] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
- [] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

III. Part 1 - 2

**B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)**

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section : B Phosphoric Acid Unit		
2. Emissions Unit Identification Number : 007 [] No Corresponding ID [] Unknown		
3. Emissions Unit Status Code : A	4. Acid Rain Unit? [] Yes [X] No	5. Emissions Unit Major Group SIC Code : 28
6. Emissions Unit Comment : The existing "B Phosphoric Acid Unit" is currently permitted under FDEP Permit No. 057005-007-AV. CF Industries, Inc. is requesting a ten percent increase in the hourly processing rate for wet rock from 87.8 tons/hour to 97 tons/hour or a maximum daily rate of 2328 tons per day, measured as 100% P ₂ O ₅ from phosphate rock.		

Emissions Unit Information Section 2

B Phosphoric Acid Unit

Emissions Unit Control Equipment 1

1. Description :

North American Steel packed bed scrubber, with "Kimre" packing or equivalent packing.

2. Control Device or Method Code : 1

III. Part 3 - 3

C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 2
 B Phosphoric Acid Unit

Emissions Unit Details

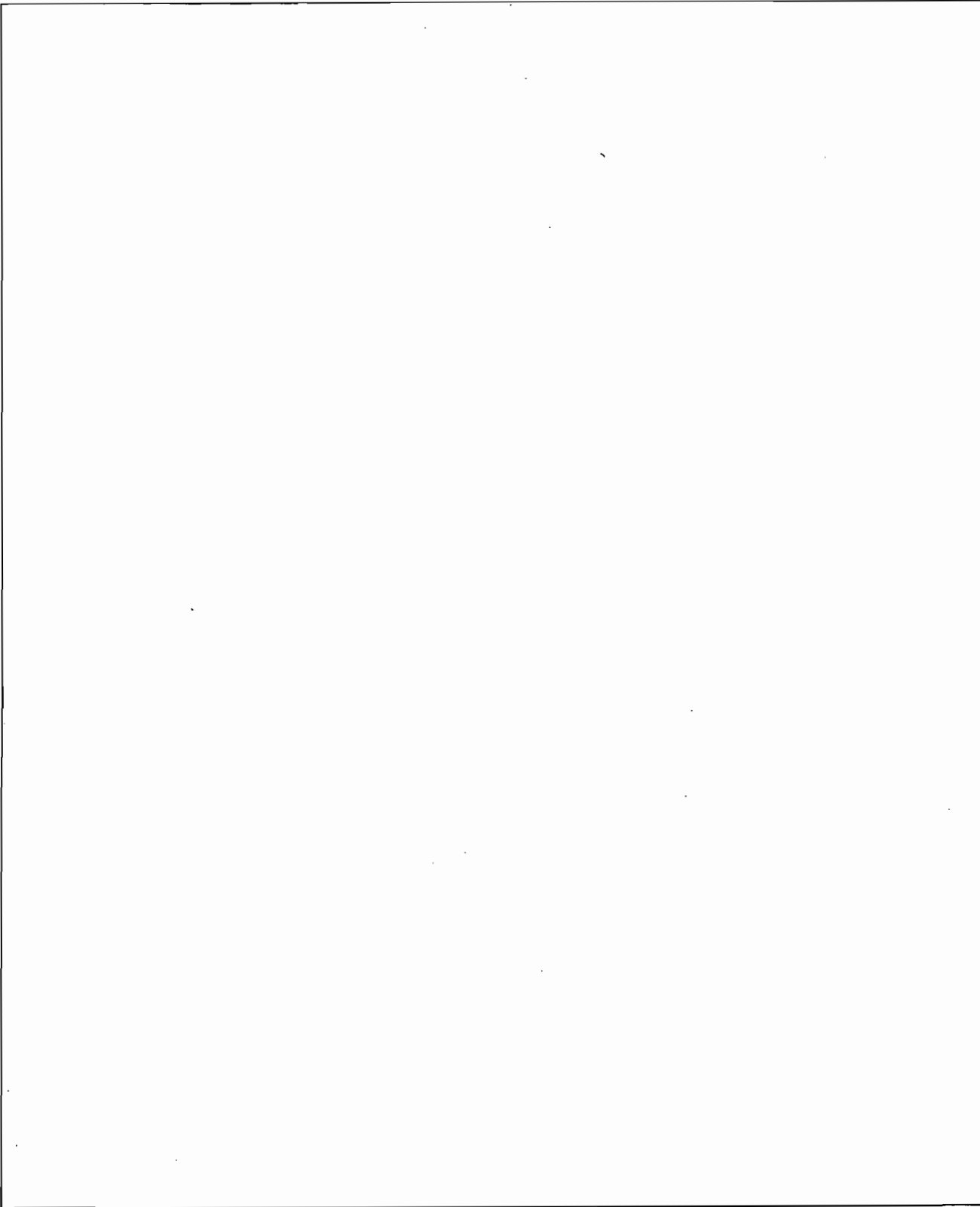
1. Initial Startup Date :	01-Aug-1975	
2. Long-term Reserve Shutdown Date :		
3. Package Unit :		
Manufacturer :	Model Number :	
4. Generator Nameplate Rating :	MW	
5. Incinerator Information :		
Dwell Temperature :	Degrees Fahrenheit	
Dwell Time :	Seconds	
Incinerator Afterburner Temperature :	Degrees Fahrenheit	

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate :	mmBtu/hr	
2. Maximum Incinerator Rate :	lb/hr	tons/day
3. Maximum Process or Throughput Rate :	2107	Tons P2O5/day
4. Maximum Production Rate :		
5. Operating Capacity Comment :		
The maximum permitted wet rock input or throughput rate for this plant is 87.8 tons/hour or 2107 tons/day, measured as 100% P2O5 from phosphate rock.		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule :		
24 hours/day	7 days/week	
52 weeks/year	8,760 hours/year	



III. Part 4 - 4

**D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)**

Emissions Unit Information Section 2

B Phosphoric Acid Unit

Rule Applicability Analysis

Local Hillsborough County Environmental Protection Commission, Chapter 1-1 through 1-12.

This application is for an air construction permit for two similar emission sources (A Phosphoric Acid Unit and B Phosphoric Acid Unit) located at CF Industries, Inc. (Plant City Phosphate Complex). The facilities, in general are subject to Chapter 62-4, Florida Administrative Code (F.A.C.) Permits, and also specific requirements of Chapter 62-210, F.A.C. Stationary - General Requirements, Chapter 62-212, F.A.C. Stationary Sources - Preconstruction Review, Chapter 62-213, F.A.C. Stationary Sources - Emission Standards, Chapter 62-296.403, F.A.C. Phosphate Processing and Chapter 62-297, F.A.C. Phosphate Processing and Chapter 62.297, Stationary - Emissions Monitoring.

III. Part 6a - 2

DEP Form No. 62-210.900(1) - Form
Effective : 3-21-96

List of Applicable Regulations

Chapter 62-4, Florida Administrative Code (F.A.C.) Permits

Chapter 62-210, F.A.C. Stationary Sources - General Requirements

Chapter 62-212, F.A.C. Stationary Sources - Preconstruction Review

Chapter 62-213, F.A.C. Stationary Sources - Emissions Standards

Chapter 62-297, F.A.C. Stationary Emissions Monitoring

Chapter 62-296.403, F.A.C. Phosphate Processing

Local Hillsborough County Environmental Protection Commission, Chapters 1-1 through 1-12.

E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 2

B Phosphoric Acid Unit

Emission Point Description and Type :

1. Identification of Point on Plot Plan or Flow Diagram :	B Phosphoric Acid		
2. Emission Point Type Code :	1		
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking : (limit to 100 characters per point)			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common : Scrubber stack located at the northwest corner of the reactor.			
5. Discharge Type Code :	V		
6. Stack Height :	119	feet	
7. Exit Diameter :	4.0	feet	
8. Exit Temperature :	95	°F	
9. Actual Volumetric Flow Rate :	32500	acfm	
10. Percent Water Vapor :	5.50	%	
11. Maximum Dry Standard Flow Rate :	3200	dscfm	
12. Nonstack Emission Point Height :	0	feet	
13. Emission Point UTM Coordinates :			
Zone :	17	East (km) :	388.000
		North (km) :	3116.000
14. Emission Point Comment : The data provided in boxes 8, 9, 10, and 11 was obtained from the 1998 compliance test.			

III. Part 7a - 2

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 2

B Phosphoric Acid Unit

Segment Description and Rate : Segment 1

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) : Wet - Process Phosphoric Acid Plant No Fossil fuels are consumed by this unit.	
2. Source Classification Code (SCC) : 31001601	
3. SCC Units : Tons Processed	
4. Maximum Hourly Rate : 87.80	5. Maximum Annual Rate : 769,128.00
6. Estimated Annual Activity Factor :	
7. Maximum Percent Sulfur :	8. Maximum Percent Ash :
9. Million Btu per SCC Unit :	
10. Segment Comment : None.	

III. Part 8 - 2

G. EMISSIONS UNIT POLLUTANTS
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 2

B Phosphoric Acid Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 - FL	001		EL

III. Part 9a - 2

DEP Form No. 62-210.900(1) - Form
Effective : 3-21-96

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 2

B Phosphoric Acid Unit

Pollutant Potential/Estimated Emissions : Pollutant 1

1. Pollutant Emitted : FL		
2. Total Percent Efficiency of Control :	99.00	%
3. Potential Emissions :	1.0400000 lb/hour	4.6000000 tons/year
4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
5. Range of Estimated Fugitive/Other Emissions: to tons/year		
6. Emissions Factor	0	Units lb/ton P2O5
Reference 0570005-007-AV C.2.		
7. Emissions Method Code :		
8. Calculations of Emissions : See (figure 6 a,b,c) for the calculated emissions for this unit after the processing rate increase. The calculations are based on the 1998 compliance test which consisted of six runs.		
9. Pollutant Potential/Estimated Emissions Comment : The potential emissions presented in Section H.3. are consistent with current permit limits from the existing operation permit, (0570005-007-AV Subsection C.).		

Emissions Unit Information Section 2
B Phosphoric Acid Unit

Pollutant Information Section 1

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	RULE
2. Future Effective Date of Allowable Emissions :	
3. Requested Allowable Emissions and Units :	
4. Equivalent Allowable Emissions :	
	1.04 lb/hour 4.60 tons/year
5. Method of Compliance :	Annual compliance test; EPA Method 1-5, 13A or 13B.
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) :	None.

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 2

B Phosphoric Acid Unit

Visible Emissions Limitation : Visible Emissions Limitation 1

1. Visible Emissions Subtype :	20
2. Basis for Allowable Opacity :	RULE
3. Requested Allowable Opacity :	Normal Conditions : 20 % Exceptional Conditions : % Maximum Period of Excess Opacity Allowed : min/hour
4. Method of Compliance :	EPA Method 9.
5. Visible Emissions Comment :	Chapter 62-296.310(4)(a)2, F.A.C. lists the general visible emissions standard as (not to be equal to or greater than 20%).

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 2
B Phosphoric Acid Unit

Continuous Monitoring System Continuous Monitor 1

1. Parameter Code :	2. Pollutant(s):
3. CMS Requirement	
4. Monitor Information Manufacturer : Model Number : Serial Number :	
5. Installation Date :	
6. Performance Specification Test Date :	
7. Continuous Monitor Comment : N/A: the unit is not equipped with a continuous emissions monitoring system.	

III. Part 11 - 2

DEP Form No. 62-210.900(1) - Form
Effective : 3-21-96

**K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT
TRACKING INFORMATION**

Emissions Unit Information Section 2

B Phosphoric Acid Unit

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

-] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.
-] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.
-] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
-] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
-] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

III. Part 12 - 3

DEP Form No. 62-210.900(1) - Form
Effective : 3-21-96

2. Increment Consuming for Nitrogen Dioxide?

-] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.
-] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
-] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
-] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
-] None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3. Increment Consuming/Expanding Code :			
PM :	SO2 :	NO2 :	
4. Baseline Emissions :			
PM :	lb/hour	tons/year	
SO2 :	lb/hour	tons/year	
NO2 :		tons/year	
5. PSD Comment :			
None.			

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 2

B Phosphoric Acid Unit

Supplemental Requirements for All Applications

1. Process Flow Diagram :	Figure 3
2. Fuel Analysis or Specification :	NA
3. Detailed Description of Control Equipment :	Figure 4
4. Description of Stack Sampling Facilities :	NA
5. Compliance Test Report :	2/6/98
6. Procedures for Startup and Shutdown :	NA
7. Operation and Maintenance Plan :	NA
8. Supplemental Information for Construction Permit Application :	NA
9. Other Information Required by Rule or Statue :	NA

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operations :
11. Alternative Modes of Operation (Emissions Trading) :

III. Part 13 - 3

12. Identification of Additional Applicable Requirements :

13. Compliance Assurance Monitoring
Plan :

14. Acid Rain Application (Hard-copy Required) :

Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))

Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)

New Unit Exemption (Form No. 62-210.900(1)(a)2.)

Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

III. Part 13 - 4

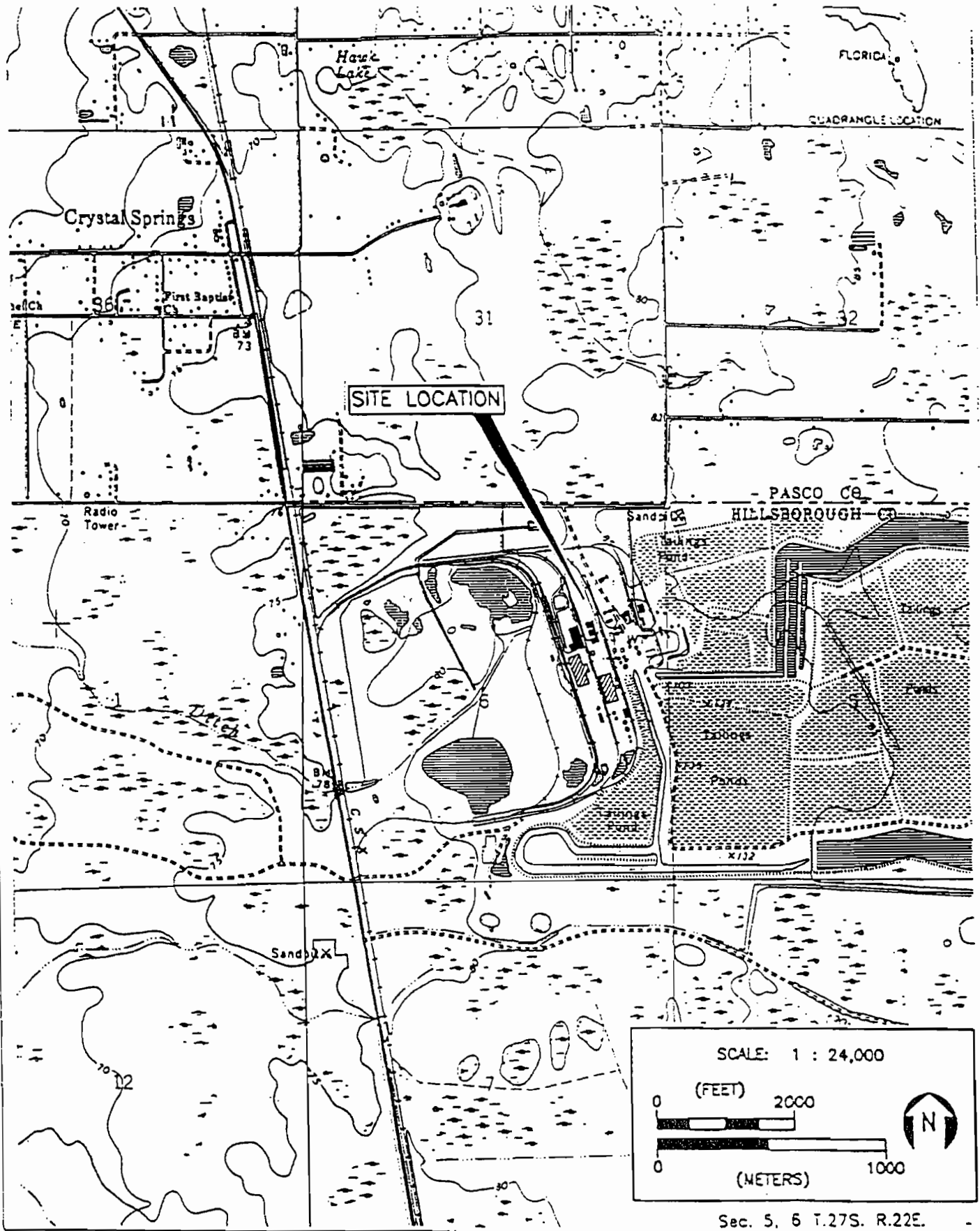
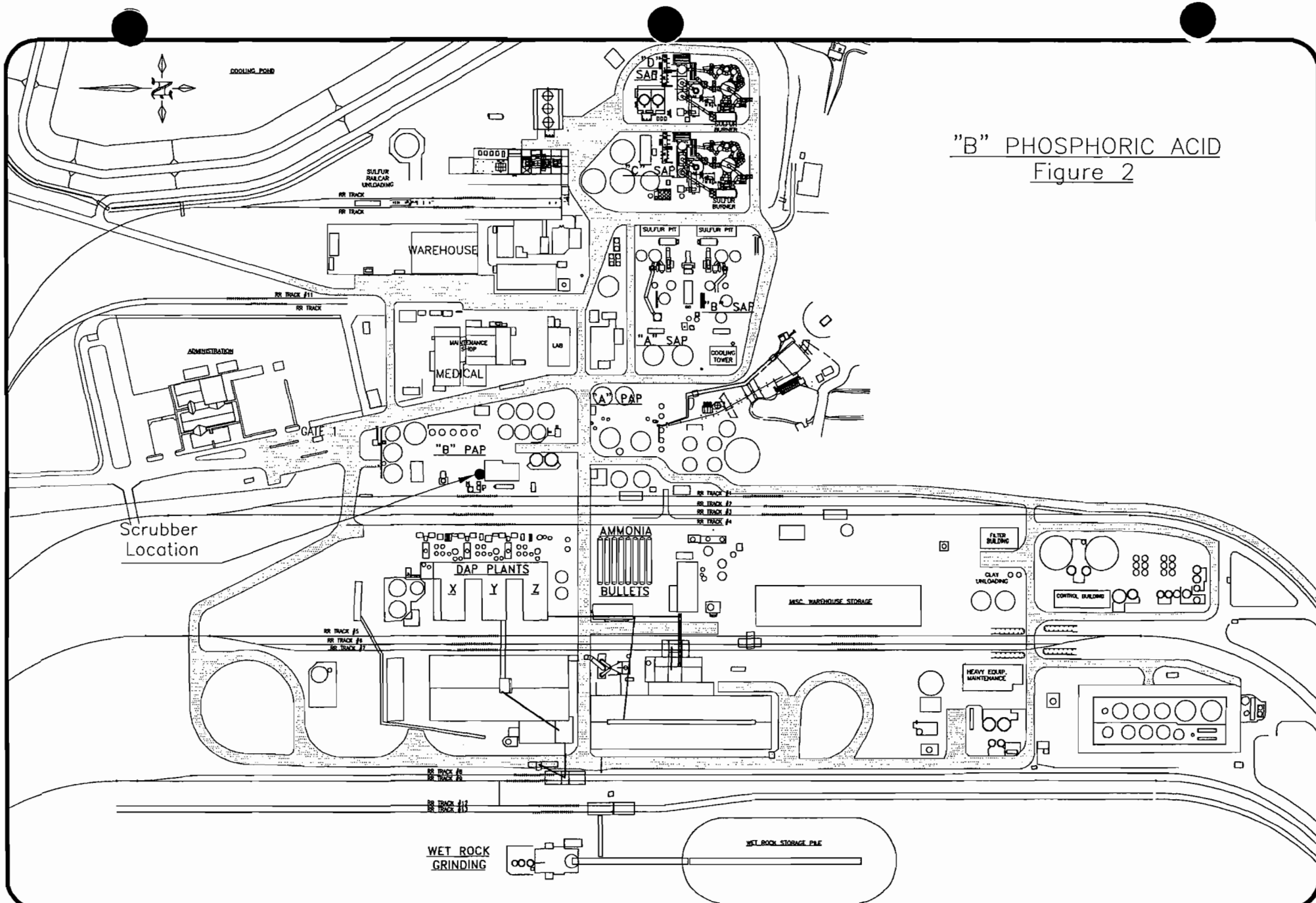


Figure 1
B - Phosphoric Acid

Sec. 5, 6 T.27S. R.22E.



"B" PHOSPHORIC ACID
Figure 2

REV. BY	REV. DATE	REV. NO.	REVISION DESCRIPTION

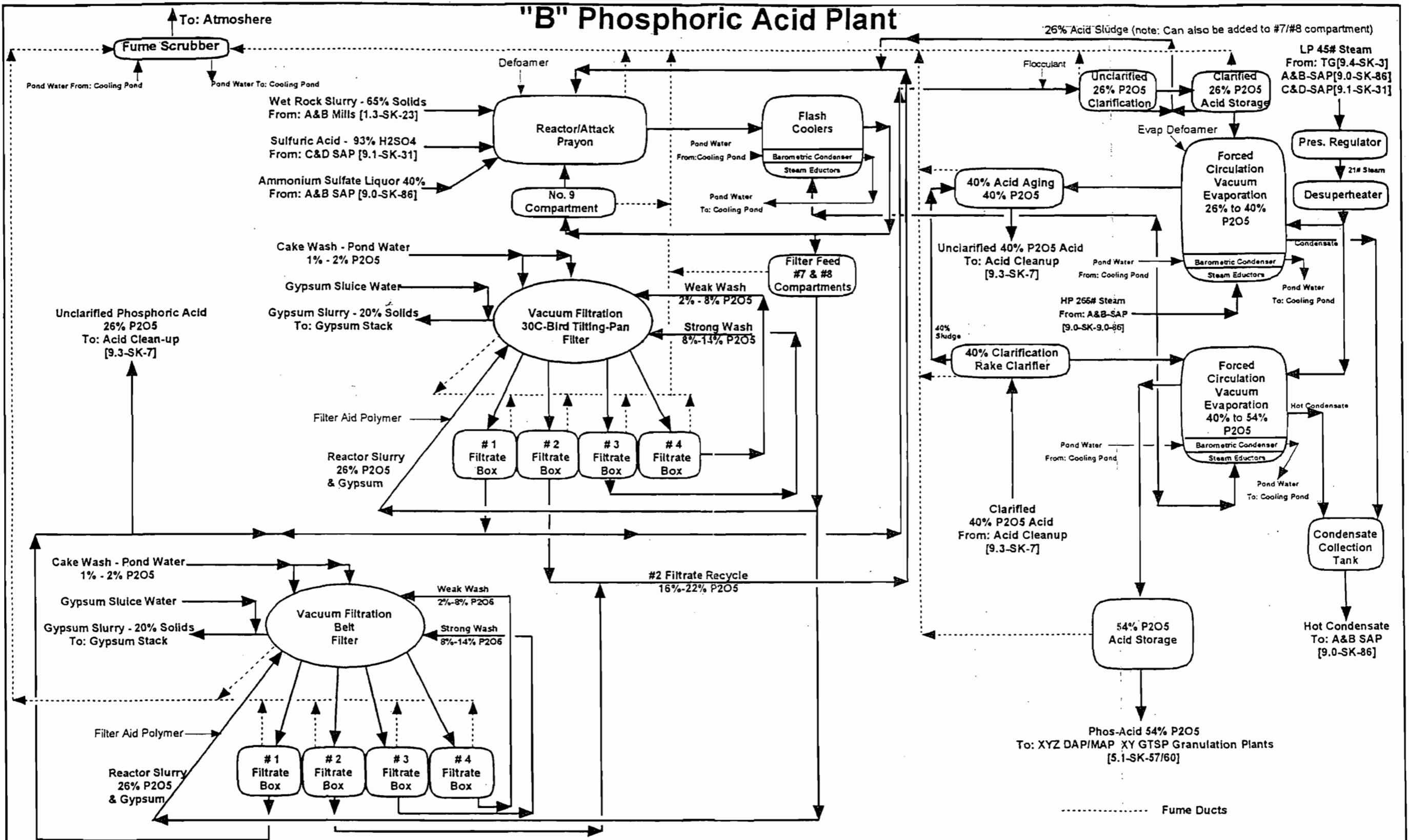
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PLOT DATE	4/2/97


DWG. BY	CFI
DWG. DATE	7/29/96
DWG. SCALE	N.T.S.



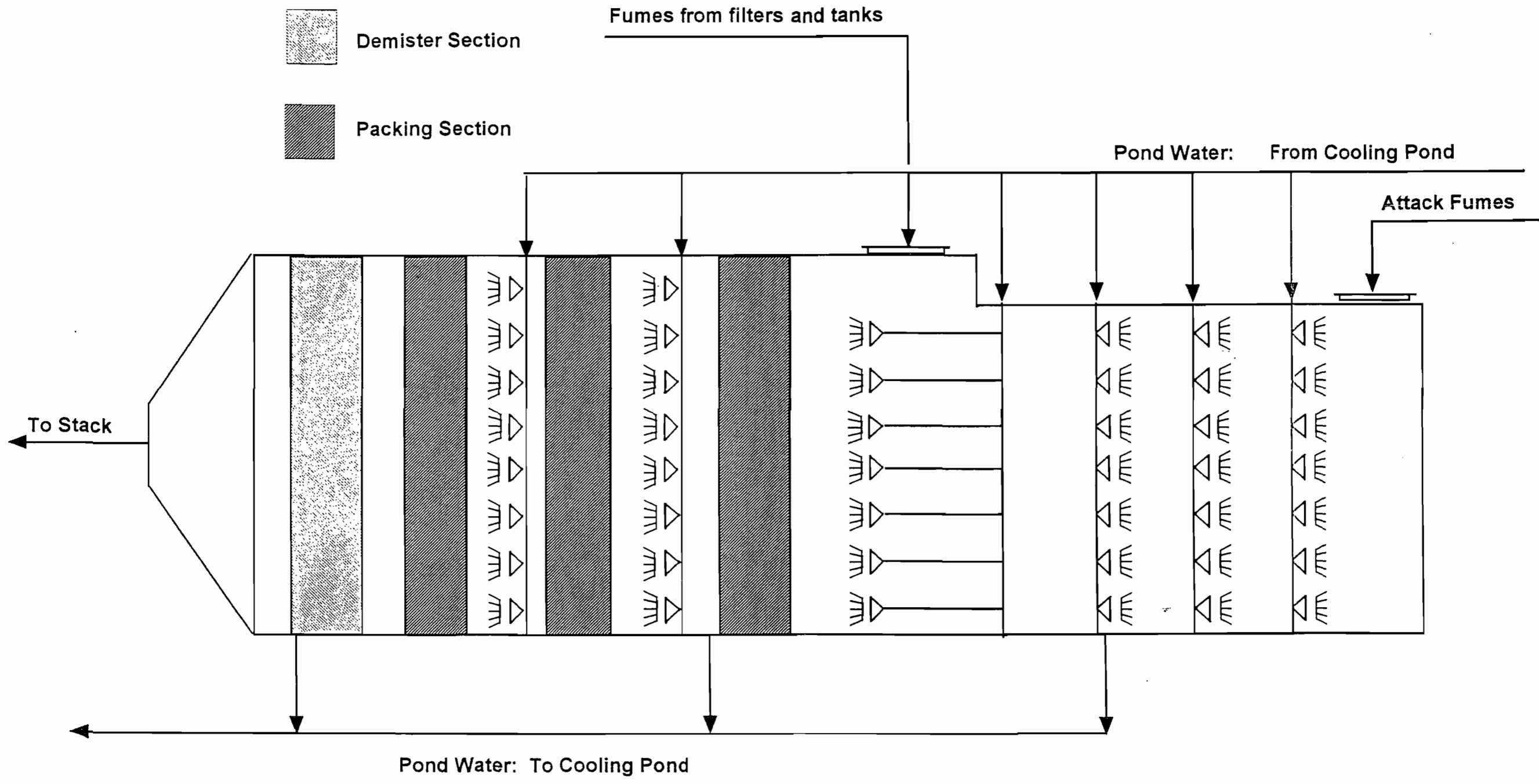
CF Industries, Inc.
PLANT CITY PHOSPHATE COMPLEX

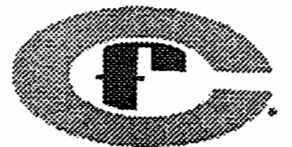
"B" Phosphoric Acid Plant



Revision	By	Date	CF Industries, Inc.	Title	DWR. NO
Added Proposed Belt Filter	Randy Chralot	03/03/97	 Plant City Phosphate Complex P.O. Drawer L Plant City, Florida 33564 Phone: (813) 782-1591 Fax: (813) 788-9126	"B" Phosphoric Acid Plant Block Flow Diagram	2.1-SK-119A
Figure 3	James Byrd	03/19/97			

"B" Phosphoric Acid Plant Fume Scrubber



Revision	By	Date	 CF Industries, Inc. Plant City Phosphate Complex P.O. Drawer L Plant City, Florida 33564 Phone: (813) 782-1591 Fax: (813) 788-9126	Title	DWR. NO
Figure 4	James Byrd	03/24/97		"B" Phosphoric Acid Plant Fume Scrubber	2.1-F-005

CF Industries
B Phosphoric Acid Unit
Process Rate Increase Emission Analysis
Figure 6

Sources of Data for Spreadsheet:

- A. **P₂O₅ Feed (TPD)**
Historical Compliance Tests reported some of the data in TPH, which was multiplied by 24. The remaining data was calculated from the reported F loading (lb F/ton P₂O₅) and F emission rates (lb F/hr).
- B. **F Out (lb/hr)**
From Historical Compliance Tests
- C. **F (lb/ton)**
Historical Compliance Tests reported most of the data. The remaining data was calculated from the reported F emission rate (lb F/hr) divided by the P₂O₅ Feed (TPH).
- D. **Gas Flow (DSCFM)**
From the 1998 Compliance Tests
- E. **Stack Temp (°F)**
From the 1998 Compliance Tests
- F. **Current VP (mg/scf)**
Vapor Pressures were derived from the stack temp using Hansen's graphical presentation of the Russian data.*

Sample Calculations:

- A. **F Equilib. (lb/hr)**
Gas Flow (60) (Current VP)/453,600
- B. **F Out (ton/yr)**
For A-PAP, (F Out in lb/hr) (8017 hr/yr)/(2,000 lb/ton)
For B-PAP, (F Out in lb/hr) (8217 hr/yr)/(2,000 lb/ton)
Note: All conversions from lb/hr to ton/yr used the above calculations.

*Arthur O. Hansen and Robert J. Danos, The Design and Selection of Scrubbers for Granulation Plants (presented at the Central Florida Section, AIChE Annual Spring Meeting, Clearwater, Florida, May 24, 1980)

C. Current NTU

$$\ln \frac{F \text{ Inlet} - F \text{ Equilib.}}{F \text{ Out} - F \text{ Equilib.}}$$

D. F Inlet (lb/hr)

The F Inlet was calculated using a ratio from sample data (January 14, 1997). The scrubber inlet is the sum of the "Reactor" and "Inlet" data. The "Inlet" data is comprised of vapors from the filters and tanks. The belt filter was assumed to add 7,000 acfm @ 110°F. The F Loading in the filter area was assumed to remain the same, at 1.67 mg/cu.ft. in A-PAP and 0.52 mg/cu.ft. in B-PAP.

For A-PAP,

$$\text{Total Air Flow (scfm)} = 48,500 \text{ scfm}$$

$$\text{F Loading} = 11,800(1,557.6/1,100)(23.54) + (20,500)(1.75) + 7,000(1.67) = 440,890 \text{ mg/min}$$

$$\text{F Inlet} = \frac{440,890(\text{Gas Flow})(60)(2.2046)}{\text{Total Air Flow}(1,000,000)} = 87.55$$

For B-PAP,

$$\text{Total Air Flow (scfm)} = 32,000 \text{ scfm}$$

$$\text{F Loading} = 23,508(2,317.7/2,021)(17.69) + 12,022(0.66) + 8,000(0.52) = 445,467 \text{ mg/min}$$

$$\text{F Inlet} = \frac{424,221(\text{Gas Flow})(60)(2.2046)}{\text{Total Air Flow}(1,000,000)} = 63.06 \text{ lb/hr}$$

A. F Inlet (lb/hr)

For B-PAP,

Total Air Flow (in scfm) = Reactor + Inlet = $23,508(520/637.8) + 12,022(520/564.9) = 30,232.6\text{scfm}$

F Loading = $23,508(\text{Prod.}/2,021)(17.69) + 12022(0.66)$
For Prod. = 2,114.3, F Loading = 422,412 mg/min

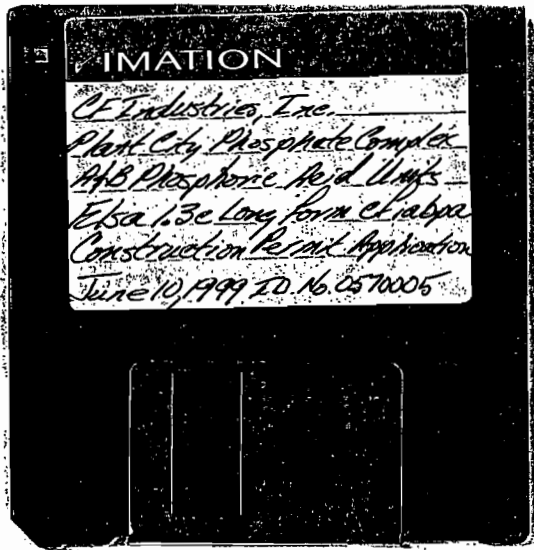
$$\begin{aligned} \text{F Inlet} &= \frac{\text{F Loading (Gas Flow)}(60)(2.2046)}{\text{Total Air Flow (1,000,000)}} \\ &= \frac{422,412(29,280)(60)(2.2046)}{30232.6(1,000,000)} = 54.1 \text{ lb/hr} \end{aligned}$$

CF Industries
10% Increase in Hourly Wet Rock Processing
A-PAP Fume Scrubber

DATE	P2O5 Feed TPD	F Out lb/hr	F lb/ton Feed	F Out ton/yr	Gas Flow DSCFM	Stack Temp F	F Inlet lb/hr	Current VP mg/scf	F Equilib lb/hr	Current NTU	New P2O5 Feed TPD	New F Equilib lb/hr	New F Out lb/hr	New F lb/ton Feed	New F ton/yr
2/18/98	1303.2	0.63	0.01160	2.525	46194	104.5	87.55	0.045	0.2764	5.51	1557.6	0.3146	0.6681	0.0103	2.678
2/1898	1300.8	0.59	0.01089	2.365	45906	103.6	87.07	0.043	0.2622	5.58	1557.6	0.2987	0.6263	0.0097	2.511
2/19/98	1312.8	0.36	0.00658	1.443	48408	105.9	91.24	0.048	0.3101	7.51	1557.6	0.3510	0.4009	0.0062	1.607
2/19/98	1312.8	0.60	0.01097	2.405	48084	106.2	90.70	0.049	0.3124	5.75	1557.6	0.3539	0.6414	0.0099	2.571
2/19/98	1312.8	0.66	0.01207	2.646	47504	107.4	89.73	0.052	0.3258	5.59	1557.6	0.3696	0.7036	0.0108	2.821
2/20/98	1324.8	0.69	0.01250	2.766	46718	106.4	88.42	0.050	0.3063	5.44	1557.6	0.3482	0.7317	0.0113	2.933
Average	1311.2	0.588333	0.010767	2.358	47135.7	105.6667	89.12	0.047898	0.298876	5.90	1557.6	0.3393	0.62866	0.0097	2.520

CF Industries
10% Increase in Hourly Wet Rock Processing
B-PAP Fume Scrubber

DATE	P2O5 Feed TPD	F Out lb/hr	F lb/ton Feed	F Out ton/yr	Gas Flow DSCFM	Stack Temp F	F Inlet lb/hr	Current VP mg/scf	F Equilib lb/hr	Current NTU	New P2O5 Feed TPD	New F Equilib lb/hr	New F Out lb/hr	New F lb/ton Feed	New F ton/yr
1/28/98	1982.4	0.25	0.00303	1.027	29292	89.3	63.06	0.011	0.0410	5.71	2317.7	0.0513	0.2602	0.0027	1.069
1/28/98	1970.4	0.25	0.003045	1.027	29363	88.5	63.18	0.009	0.0341	5.68	2317.7	0.0425	0.2584	0.0027	1.062
1/28/98	2018.4	0.21	0.002497	0.863	28824	88.7	62.26	0.009	0.0352	5.87	2317.7	0.0441	0.2189	0.0023	0.899
1/29/98	1987.2	0.24	0.002899	0.986	29393	89.7	63.24	0.012	0.0447	5.78	2317.7	0.0558	0.2511	0.0026	1.032
1/29/98	2008.8	0.26	0.003106	1.068	28845	90.3	62.29	0.013	0.0491	5.69	2317.7	0.0615	0.2724	0.0028	1.119
1/29/98	2006.4	0.28	0.003349	1.150	28678	90.7	62.00	0.014	0.0523	5.61	2317.7	0.0656	0.2933	0.0030	1.205
Average	1995.6	0.25	0.002987	1.020	29066	89.5	62.67	0.011	0.0427	5.72	2317.7	0.0535	0.2590	0.0027	1.064



IMATION

CF Industries, Inc.
Plant City Phosphate Complex
A/B Phosphoric Acid Units
EPCA 1.3c Long Form Change
Construction Permit Application
June 10, 1999 10.16.0570005